Creek 30-4 (township of Lincoln, Trempealeau Co.) - is a 2.1 mile tributary of the Trempealeau River. The stream is managed as a forage fishery and the 1990 survey found 6 minnow and other forage species. The stream has a shifting sand substrate with some gravel and rubble.

Water resource problems include sedimentation of riffles and pools and streambank erosion. Land use in the stream corridor is mostly open pasture and meadow.

Water Resource Objectives

The following water resource management objectives are recommended for the Plum Creek subwatershed:

1. Enhance the forage fish community in Plum Creek.

Other Pollutant Sources

The watershed plan is primarily designed to control nonpoint pollution sources, especially those sources which are indeed manageable. There are some sources in the Middle Trempealeau River project area which affect water quality, but are not directly involved in the nonpoint pollution control program. These other sources are often managed through existing permit programs or other administrative and regulatory actions. Sources of pollution with permits are not considered to be significant water quality problems as long as they meet the permit conditions established for their discharge.

Municipal Wastewater Treatment Facilities

Arcadia

The city discharges directly to the Trempealeau River after treatment. The quantity of discharge water is relatively high compared to the other dischargers in the project area (See table 3-7). This treatment plant has improved their effluent considerably after new construction in 1989 made it possible for a higher level of pollutant control. Suspended solids averaged 52 mg/l prior to the construction, but are now reduced to 8 mg/l.

Independence

This city discharges its treated effluent directly into Elk Creek just upstream from the confluence of Elk Creek and the Trempealeau River. This treatment plant discharges a much smaller quantity of water and does not receive a large amount of industrial wastewater like the city of Arcadia.

Whitehall

The largest single source of treated wastewater comes from this community which is accepting wastewater from outside of its corporate limits. The city of Blair sends its wastewater to Whitehall for treatment and discharge. This discharger has had a history of some effluent limit violations for suspended solids, primarily due to high loads of solids from one of the industrial contributors.

Industrial Wastewater Treatment Facilities

AMPI

Associated Milk Producers, Inc. is located in Blair and produces a substantial amount of wastewater most of which is pretreated and sent to the municipal plant in Whitehall. In addition to the discharge to Whitehall, AMPI has two other discharge points. One discharge to the Trempealeau River contains effluent from noncontact cooling water and condensate of whey water. Tappen Coulee Creek receives noncontact cooling water also.

A-G Coop

This facility discharges treated wastewater to Meyers Valley Creek and to the area groundwater. In addition, the industry discharges a considerable amount of pretreated wastewater to the city of Arcadia for additional treatment and eventual discharge. Some land spreading is also associated with this operation and is under permit. Currently the discharge to Meyers Valley Creek is being investigated, and some permit conditions are being revised.

Table 3-8. Point Source Dischargers of the Middle Trempealeau River Watershed

Discharger	Flow MGD[1]	Suspended Solids-mg/l	Annual Est. Solids-Load[2]
Arcadia	.455	8	6
Independence	.062	4.7	.5
Whitehall	.570	41.2	36
AMPI	.187	15.3	4
AG Coop	.183	16.2	5
AG Coop	.070	17.5	2
			53.5 tons

[1] MGD means million gallons per day.
[2] Amount of solid pollutants reaching surface water in tons.

Solid Waste Landfill Sites

Blair

The city has a closed landfill close to the watershed boundary east of the city limits. There is no reported or suspected groundwater contamination associated with this site.

Independence

The city has a closed landfill site located southeast of the city near Kirth Valley Road. There is no reported or suspected groundwater contamination associated with this site.

Arcadia

This city has an open landfill that recently (August 1991) experienced a barrel removal project. Waste materials and associated soils were analyzed and have been classified as non-hazardous solid waste.

CHAPTER FOUR
Management Actions: Control Needs and Eligibility for Cost-Share Funding

Introduction

The development of management actions is based on the planning activities accomplished during the initial phase of the project. The land and water inventories of nonpoint pollution problems described in Chapter 3 are analyzed in association with previously determined water resource objectives and pollutant reduction amounts required to achieve the objectives. The management actions will determine how many units of best management practices will be targeted for reduction. Landowner eligibility for cost-sharing will depend on whether that landowner's nonpoint source pollution levels fall within the targeted range of pollution reduction quantities. For eligible landowners, all sources of pollution categorized as essential and required (Category 1) must be controlled as a requirement of participation in the cost-sharing program. The control of Category 1 sites is essential to achieving the water quality objectives. Category 2 sites are those sites which are considered eligible, but not required. The use of Category 2 allows a greater degree of flexibility for the landowner and provides a reasonable approach to controlling nonpoint sources that are difficult to correct.

The use of cost effective approaches allows the implementation of best management practices on those sites which are most likely to provide the most pollution control. The range of practices includes farm management activities like crop rotations and manure management planning to more structural practices like manure storage and stream bank riprap. The implementation of the best management practices is further described in Chapter 5.

Specific Management Actions by Source and Type

Croplands and other rural lands

Uplands - Control of upland sediment sources was set at 50 percent for agricultural lands with exceptions for some subwatersheds. The following subwatersheds have lower reduction goals as indicated:

Botana - 30%
Irvin - 30%
Plum - 40%

Welch - 40%
North - 40%

Sediment reductions are set by the water resource appraisal process. The upland inventory was analyzed to identify farm and rural fields that contribute relatively high amounts of sediment to surface waters. Fields with high sediment delivery and highly erodible lands were identified and found to be contributing 49% of the sediment delivered in the watershed. The analysis also showed that five of the subwatersheds had high rates of sediment delivery on fields that were difficult to control.

Upland sources that are contributing sediment at a rate that exceeds .3 tons per acre will be required to reduce that rate to .3 tons per acre or "T." There are 27,466 acres of land contributing 49% of the total sediment load. The rate at which sediment erodes from fields and enters surface waters is different than the amount of soil eroded from a farm field. Usually the amount of field erosion is far greater than the amount of sediment reaching a stream. By comparing soil erosion to sediment delivery, it was determined that fields with more than 5 tons per acre of soil loss are contributing about half of all the sediment entering streams from farm fields.

Table 4-1 outlines the eligibility for upland sediment control and sets the criteria for assigning the various management categories.

Table 4-1. Upland Sediment Eligibility Criteria

Management Category	Rate of Sediment Delivery (tons/acre/yr)	Inventoried USLE Rate (ton/acre/year)	Target Reductions Land (tons/acre/year)
I	> .3	≥ 'T'	≥ .3 or 'T'
II	> .3	> 'T'	.3
II	< .3	> 'T'	'T'
III	< .3	< 'T'	none

Eligible landowners with greater than .3 tons per acre per year of sediment delivery and a USLE soil loss rate greater than "T" will be required to apply controls to reduce that rate. A landowner could meet this reduction goal by reducing the rate on highly erodible lands or by controlling high sediment delivery on other sites as long as the control practice is cost effective. The farm plan will be used to determine the best method for an eligible landowner to meet upland sediment reduction goals.

Gullies

Control of sediment from gullies is required for each participating landowner whenever gullies exceed a certain dimension and meet the criteria for eligibility. Gullies which have active erosion and have a greater than four-foot depth average combined with a four-foot or greater average width are required to be controlled. Criteria for required control are as follows:

1. The gully is active and shows signs of significant bare soils and recent movement of sediment.

2. The gully has a clear and definable channel or hydraulic connection to a surface water body.

Gullies less than four feet by four feet meeting the criteria are eligible, but not required (category 2).

Animal Lot Runoff

Reductions in organic loading from animal lots and barnyards in the following subwatersheds are set at 60 percent and represent those subwatersheds that have a high priority for organic pollutant control:

American Valley
Irvin Coulee
Reynolds Coulee
Swinns Valley
Traverse Valley

Low priority subwatersheds with a 50 percent organic pollutant reduction goal are:

Botana Valley	Maule Coulee
Lewis Valley	Meyers Valley
Plum Creek	North Creek
Wickham Valley	

For high priority subwatersheds, the landowners contributing the top 60 percent of pollutant load are category I (eligible and required). Category II landowners (eligible, but not required) are defined as having pollutant loads exceeding 20 lbs up to the category I level. Barnyards with pollutant loads below 20 lbs. are not eligible.

For low priority subwatersheds, the landowners contributing the top 50 percent of pollutant load are category I. Category II landowners are defined as having pollutant loads exceeding 20 lbs up to the category I level. Barnyards with pollutants below 20 lbs. are not eligible.

There are four subwatersheds which have relatively low levels of organic loading and will have a separate management strategy. The following subwatersheds will have special management categories assigned because of the relatively low levels of organic pollution associated with their barnyards:

Welch Coulee
Tappen Coulee
Larkin Valley
Lakes Coulee

For Welch, Tappen, Larkin and Lakes subwatersheds, any barnyard with a phosphorous load greater than 20 lbs. is Category I, and Category II is defined as those barnyards with a phosphorous loading of less than 20 lbs. and contributing within the top 50% (at the 90% control level) within their specific subwatershed.

Table 4-2 lists all of the subwatersheds and the number of landowners in each management category.

Table 4-2. Eligible Categories for Barnyard Runoff Management by Subwatershed

Subwatershed	Category I	Category II	Category III
American	16	5	25
Irvin	7	3	10
Reynolds	8	1	10
Swinns	6	7	25
Traverse	14	10	38
Botana	4	0	10
Lewis	5	0	16
Maule	7	1	14
Meyers	6	5	6
North	6	1	15
Plum	10	1	32
Wickham	6	6	18
Welch	0	5	9
Tappen	1	2	5
Larkin	1	2	8

Subwatershed	Category I	Category II	Category III
Lakes	3	5	15
	100	54	256

All barnyards participating in the project must reduce organic pollutant loading to 10 lbs. Exceptions to this rule include those barnyards in Welch, Tappen, Larkin, and Lakes Coulee. These subwatersheds have a target level that will be below 10 lbs. because some of the barnyards that are eligible have less than 10 lbs. under current existing conditions. For those eligible barnyards with less than 10 lbs. of pollutant loading, the target level for reduction is 5 lbs.

Organic pollutant loading reductions must be accomplished using an incremental approach to the design of a barnyard runoff control practice. If uphill contributing areas are diverted to the extent that design target organic loading rates are achieved, then cost-sharing will be limited to a diversion. If additional designs are required to achieve the 10 lb. or 5 lb. limit, they will be planned on an incremental basis to achieve the limit.

The barnyard inventory for this project reported no internally drained barnyards. Therefore, there is no special management category or eligibility criteria needed for this type of barnyard.

Manure spreading

Control of manure spreading on unsuitable acres will be reduced in low priority subwatersheds by requiring participating landowners, with 30 or more critical acres spread, to assist LCD planning staff in the development of a manure management plan, as a condition of the project participation. Implementation of the manure management plan will be strongly encouraged, but not required (Category II). Landowners who, according to the manure management plan, are unable to reduce unsuitable acres spread to less than or equal to 20 acres will be eligible, but not required to install a manure storage system (Category II). Landowners receiving cost-share assistance for a manure storage system may not spread on any unsuitable acres.

Low priority watersheds include:

American Valley
Irvin Coulee
Reynolds Coulee
Swinns Valley
Traverse Valley
Botana Valley
Lewis Valley
Plum Creek
Wickham Valley
Meyers Valley
North Creek
Welch Coulee
Tappen Coulee

Control of manure spreading on unsuitable acres will be reduced in high priority subwatersheds by requiring landowners, with 40 or more critical acres spread, to develop a manure management plan as a condition of project participation (Category I). Landowners who must spread on 20 or more unsuitable acres after implementation of the animal waste management plan will be required to install manure storage (Category I). Landowners receiving cost-share assistance for a manure storage system may not spread on any unsuitable acres. Landowners with 30 to 39 critical acres spread will have the same project participation requirements as landowners in low priority subwatersheds.

High priority subwatersheds include:

Larkin Valley
Lakes Coulee
Maule Coulee

The animal waste management plan must conform to the specifications defined in SCS-WI Technical Guide #590, excluding appendix B. Table 4-3 summarizes the eligibility categories for manure spreading.

The following provisions are placed in the watershed plan to represent agreed upon items concerning the implementation of nutrient management planning in the project.

1. Landowners with 30 or more critical acres spread and living in low priority subwatersheds, will be required to assist the LCD on the development of a manure management plan (590 plan) as a condition of project participation.

2. Landowners in low priority subwatersheds will be strongly encouraged to implement the manure management plan, but not required (Category II).

3. Landowners in low priority subwatersheds, who according to the manure management plan are unable to reduce unsuitable acres spread to less than or equal to 20 acres, will be eligible but not required to install a manure storage system (Category II). Landowners receiving cost-share assistance for manure storage must follow their manure management plan.

4. Landowners in high priority subwatersheds that have 40 or more critical acres spread will be required to develop a manure management plan as a condition of project participation (Category I).

5. Landowners, in high priority subwatersheds, who must spread on 20 or more unsuitable acres after implementation of the manure management plan will be required to install manure storage (Category I).

6. Landowners receiving cost-share assistance for a manure storage may not spread on any unsuitable acres

7. Landowners, in high priority subwatersheds, with 30 to 39 critical acres spread will have the same project participation requirements as landowners in low priority watersheds.

8. This committee agreed to meet on a regular basis, not to exceed three meetings per year. The committee will work on potential problems, concerns and misunderstandings which may arise over the implementation of the 590 Animal Waste Management plan,

9. The committee agreed to strive to keep the lines of communication open between the DNR, DATCP, LCD and UW-Extension.

10. The committee agreed to utilize the SCS 590 standards as primarily an educational tool to educate landowners on the economic and environmental benefits of following a manure management plan.

11. The committee agreed to submit a series of reports on how the 590 standards are being implemented, problems in developing 590 plans and how 590 is effecting farmers in the Middle Trempealeau Watershed. This report will be developed on an annual basis.

12. The committee agreed that the 1.4 version of BARNY for rating barnyards would be used for the watershed project.

13. The committee agreed that changes to the plan could be made only if mutually agreed upon by DNR, DATCP, and the LCD.

Table 4-3. Manure Spreading Eligibility Criteria for Manure Management Planning

HIGH PRIORITY SUBWATERSHEDS			
Management Category	Critical Acres Spread	Landowner Acreage Criteria (acres)	Number of Affected Landowners
I	266	≥ 40	5
II	111	30-39	3
III	375	<30	28
LOW PRIORITY SUBWATERSHEDS			
Management Category	Critical Acres Spread	Landowner Acreage Criteria (acres)	Number of Affected Landowners
II	1994	≥30	41
III	1882	<30	167

Stream Bank Erosion

Control of sediment from stream banks is set at 40 percent of mass sediment loading for all subwatersheds. Each landowner participating in the program will be required to reduce sediment loading from stream banks by 40 percent on all agriculturally impacted stream banks.

Livestock Access

All participants in the project must restrict livestock access to stream banks where there is evidence of erosion and habitat degradation from trampling and livestock activity. Livestock restrictions can be accomplished by fencing, limiting grazing, or rotational grazing. The implementation procedures for limiting livestock access are more fully discussed in Chapter 5. The application of livestock access restrictions can be used as one method for reducing stream bank erosion; however, if this practice alone cannot achieve a 40 percent reduction in mass loading, then additional structural measures will be required.

Fish structures

Participants in the program that require stream bank stabilization by rock riprap are eligible for fish structures in the following subwatersheds:

Traverse Valley	American Valley
Swinns Valley	Lakes Coulee
Irvin Creek	Reynolds Coulee

Easements

The use of NR 120 authorized easements is restricted to lands which require some kind of permanent vegetative cover. NR 120 easements can be considered when certain best management practices are planned. Shoreline buffers, critical area stabilization, and wetland restoration are practices that can be used along with NR 120 easements. The county LCD must indicate to the DNR how an easement will be used in conjunction with the best management practices.

Additional criteria for easement eligibility includes riparian lands along a limited number of high priority streams. The Traverse Valley, Swinns Valley, Irvin Creek, American Valley, Lakes Coulee, and Reynolds Coulee meet the criteria for NR 120 easement eligibility and are the only streams with this priority.

Easements cannot be purchased with program funds to facilitate or create limited grazing, stream bank fencing, or other structural practices like rock riprap. Easements may be obtained in the high priority streams, even though there are other lower cost practices such as crop rotation, reduced tillage, contour plowing, or contour strips available.

NR 120 easements are also available on lands with nonpoint sources of pollution that may require a high cost practice or nonconventional practice. The easement must be in conjunction with shoreline buffers, critical area stabilization, or wetland restoration. Riparian areas that have high sediment delivery, but low soil loss rates, are examples of situations that may require high cost, nonconventional practices.

The easements obtained on lands outside the high priority areas must offer a level of pollution control that is similar in cost or lower than best management practices like terraces or sediment basins. Easements may not be purchased with program funds in areas outside of the high priority subwatersheds if lower cost practices like crop rotation, reduced tillage, contour plowing, or contour strips provide an adequate level of control.

Easements to Support Wetland Restoration

Wetland restoration sites can use easements to facilitate their acquisition. Wetland restoration can be a cost-shared practice with or without an easement. Eligibility for wetland restoration

includes any areas identified by the County LCD which were previous wetlands and meet the criteria for eligibility. The purchase of an easement for these sites must be approved by the nonpoint source and land management section of the DNR Bureau of Water Resources. Wetland restoration is an eligible practice when the following land use conditions are present:

1. Cultivated organic soils with tile or open channel drainage systems discharging to a permanent flowing stream.

2. Pastured wetlands riparian to permanent flowing streams.
3. Prior converted wetlands downslope or upslope from fields identified as critical upland sediment sources in the WIN inventory. Additional criteria concerning wetland restoration requires that all upland fields draining to a wetland restoration site must be controlled to a soil loss rate that is less than or equal to the soil's "T" value. In addition, one or more of these same fields must still have a sediment loss rate (after the application of any erosion control measures) greater than the sediment delivery rate of .3 tons per acre.

The use of easements or wetland restoration as best management practices will require that all Category I sources be controlled through a cost-share agreement for the landowner involved.

Proposed easements must be approved by the DNR nonpoint source and land management section. The review of each proposed easement will include a cost effectiveness analysis and an evaluation of the water quality problems associated with the water resource.

Ordinances

The requirement for ordinances to control construction site erosion is not apparent at this time in the project area. The sources of pollutants in agricultural lands far exceeds the amount from urban or developing areas; however, the importance of construction site erosion control should not be diminished because of this mass loading comparison. There are other reasons to control sediment from construction sites besides water quality protection. Sediment deposition in ditches, storm sewers, and road surfaces results in significant costs for cleanup.

The County LCD has recognized the potential for water quality impacts from uncontrolled construction site erosion and agreed to the following activities:

- Continue to assist the Zoning Administrator in the review of applications for construction (building permits) of any land disturbing activity which falls within the boundaries of the county's floodplain and shoreline zoning ordinance jurisdiction.

- Continue to cooperate with the DNR and Army Corps of Engineers in the review of land disturbing activities which falls within their wetland jurisdiction.

- Will assist the Zoning Administrator in reviewing building permit applications within environmentally sensitive areas which may have an adverse impact on ground and/or surface water quality.

- Will continue to meet with representatives of various town boards to insure that town boards are aware of the various permits needed for road construction or bridge repair in environmentally sensitive areas.

- Will provide technical assistance to the Trempealeau County Zoning Committee and Board of Adjustment concerning the need to require pertinent BMPs from the Wisconsin Construction Site Handbook for land disturbing activities occurring in environmentally sensitive areas.

- Will agree to review, internally, trends in land disturbing activities within Trempealeau County and discuss implications with the LCC on an annual basis to determine if enactment and enforcement of a Construction Site Erosion Control Ordinance is in the best interest of the citizens and environment of Trempealeau County.

Livestock waste storage ordinances are required in this project for both Trempealeau and Buffalo counties. Trempealeau County has an ordinance regulating animal wastes and requiring a storage facility plan for permit issuance. Buffalo County will be required to adopt an ordinance by 1998. In the event Buffalo County is not able to adopt a manure storage ordinance, Trempealeau County and its part of the priority watershed project will not be required to pay back grant funds. Buffalo County will have a separate grant for this project and will have responsibility for ordinance adoption that is independent of Trempealeau County.

Developed Urban Lands

The Middle Trempealeau River project has four percent of developed land which includes roads, farmsteads, and communities. The nonpoint sources of pollution from this small area are relatively insignificant compared to the much larger sources in the rural lands. The only urban source identified in the urban inventory as a priority is stream bank erosion. Urban landowners with eroding stream banks are eligible for cost sharing.

The county LCD will work with urban landowners and municipalities to facilitate the development of cost-share agreements with eligible landowners.

Nutrient and Pesticide Management

The strategy to implement nutrient management will include the use of specific information and education activities described in Chapter 5. These activities will target project area landowners. Nutrient management is also discussed as a management strategy for manure spreading in section 3 of Chapter 4. Nutrient management planning will be consistent with the SCS Technical Guide 590 and the Best Management Practices Handbook produced by UW-Extension and DATCP (Technical Bulletin ARM-1).

Pesticide Management

The strategies for pesticide management will be implemented through the use of specific information and education activities described in Chapter 5. Pesticide management planning will be consistent with the Best Management Practices Handbook.

CHAPTER FIVE
Local Government's Implementation Program

Introduction

This chapter identifies the means for implementing the management actions for nonpoint source control described in Chapter IV, and describes the county's nonpoint source implementation strategy for rural areas. Included in the implementation program for rural areas is an information and education strategy. The success of this priority watershed project depends on the aggressive implementation of these nonpoint source control strategies.

More specifically this chapter identifies:

1. The agencies and units of government responsible for carrying out the identified tasks;
2. The best management practices (BMPs) necessary to control pollutants on the critical sites identified in Chapter IV;
3. The cost-share budget;
4. The cost containment policies;
5. The cost-share agreement reimbursement procedures including administrative procedures for carrying out the project;
6. Staffing needs including total hours per year and number of staff to be hired;
7. Schedules for implementing the project;
8. The involvement of other programs;
9. The information and education activities that will be carried out in the project area; and
10. The project budget including the expense for cost-sharing; and staffing for technical assistance, administration, and the information and education program.

Project Participants: Roles and Responsibilities

Landowners and Land Operators

Owners and operators of public and private lands are important participants in the priority watershed program. They will adopt BMPs which reduce nonpoint sources of water pollution and protect and enhance fish, wildlife and other resources. Land owners and land operators in the Middle Trempealeau River Watershed eligible for cost-share assistance through the priority watershed program include: 1) individuals; 2) Trempealeau County, and Buffalo County; 3) other governmental units described in NR 120.02(19); 4) corporations; and 5) the State of Wisconsin.

Trempealeau and Buffalo Counties are the primary units of government responsible for implementing this plan in rural areas.

The Trempealeau and Buffalo County Land Conservation Committees (LCC) will act for the respective County Boards, will be responsible contractually and financially to the State of Wisconsin for management of the project in areas with rural land uses. The County LCCs will coordinate the activities of all other agencies involved with the rural portion of the project.

The specific responsibilities for these counties are defined in the Wisconsin Administrative Rules, s. NR 120.04, and are summarized below:

1. Identify in writing a person to represent the county during implementation of the project.

2. Contact all owners or operators of lands identified as significant nonpoint sources (Cat I) within one year of signing the nonpoint source grant agreement. The counties' strategies for contacting landowners are included in this chapter.

3. Develop farm conservation plans consistent with the needs of the project.

4. Enter into nonpoint source cost-share agreements with eligible landowners and enforce the terms and conditions of cost-share agreements as defined in s. NR 120.13, Wisconsin Administrative Code.

5. For lands the county owns or operates, to enter into cost-share agreements with DNR to correct identified nonpoint sources and fulfill their obligations as a cost-share recipient.

6. Design best management practices and verify proper practice installation.

7. Reimburse cost share recipients for the eligible costs of installing BMPs at the rates consistent with administrative rules and established in this plan.

8. Prepare and submit annual work plans for activities necessary to implement the project. The Trempealeau and Buffalo County LCDs shall submit a workload analysis and grant application to the DATCP (DATCP) as required in s. Ag. 166.50.

9. Prepare and submit to the DNR (DNR) and the DATCP (DATCP) the annual resource management report required under s. NR 120.21(7) to monitor project implementation by tracking changes in the nonpoint source inventory, and quantifying pollutant load reductions which result from installing BMPs.

10. Participate in the annual watershed project review meeting.

11. Conduct the information and educations activities identified in this plan for which they are responsible.

DNR

The role of the DNR (DNR) is identified in s. 144.24, Stats. and s. NR 120, Wis. Adm. Code. (NR 120) The Department has been statutorily assigned the overall administrative responsibility for the Wisconsin Nonpoint Source Pollution Abatement Program. The Department's role is summarized below.

Project Administration

Project administration includes working with the counties to ensure that work commitments required during the 8-year project implementation phase can be met. The DNR will participate in the annual work planning process with the county.

The Department reviews cost-share agreements signed by the county and the participating landowners for installing BMPs. The DNR provides guidance when questions arise concerning the conformance of proposed activities with the statutes, administrative rules, and the watershed plan.

Financial Support

Financial support for implementation of the priority watershed project is provided to each county in two ways: a local assistance grant agreement, and a nonpoint source grant agreement. These agreements are described later in this chapter.

The DNR may also enter into cost-share agreements directly with local or state units of government for the control of pollution sources on land the governments own or operate.

Project Evaluation

The DNR has responsibility for priority watershed project monitoring and evaluation activities. These efforts determine if changes in water quality occur as best management practices and other pollution controls are installed or implemented. The water quality evaluation and monitoring strategy for the Middle Trempealeau River Watershed are included in Chapter VIII. The DNR documents the results of monitoring and evaluation activities in interim and final priority watershed project reports.

Technical Assistance

The DNR provides technical assistance to the county on the design and application of best management practices. This assistance is primarily for urban areas.

Other Responsibilities. These include:

1. The appropriate District Nonpoint Source Coordinator to arrange for DNR staff to assist county staff with site reviews to determine the impacts of nonpoint sources on wetlands and/or groundwater quality.

2. Assisting county staff to integrate wildlife and fish management concerns into selection and design of BMPs.

DATCP

The role of the DATCP (DATCP) is identified in s. 144.25, stats., ch. 92 stats., and NR 120. In summary, the DATCP will:

1. Manage a training program for the staff involved with project implementation.

2. Cooperate with the University of Wisconsin - Extension to act as a clearinghouse for information related to agricultural best management practices, sustainable agriculture, and nutrient and pest management.

3. Assist the counties to carry out the information and education activities or tasks described in this plan.

4. Assist county staff to identify watershed participants subject to federal or state conservation compliance programs.

5. Assist counties, if requested, to develop a manure storage ordinance.

6. Assist county staff to complete annual workload analyses and grant applications for work conducted under the priority watershed project.

7. Participate in the annual project review meetings.

8. If the need arises, assist in developing technical standards for agricultural BMPs, and provide technical assistance to county staff concerning application of these practices.

9. Assist county staff to evaluate the site specific practicality of implementing rural best management practices.

Other Agencies

The Middle Trempealeau River Watershed Project will receive assistance from the agencies listed below.

Soil Conservation Service (SCS)

This agency works through the local LCC to provide technical assistance for planning and installing conservation practices. The local SCS personnel will work with the county staff to provide assistance with technical work when requested by the Land Conservation Committee and if SCS staff time is available. Personnel from the Area SCS office will provide staff training and engineering assistance for best management practices. Efforts will be made by DATCP to assist SCS to coordinate the Middle Trempealeau River Priority Watershed Project with the conservation compliance and other conservation provisions of the 1985 and subsequent Federal Farm Bills.

University of Wisconsin Extension (UWEX)

County and Area Extension agents will provide support in developing and conducting a public information and education program aimed at increasing voluntary participation in the project. This will include assistance to carry out the information and education activities identified in this plan.

Agricultural Stabilization and Conservation Service (ASCS)

ASCS administers most of the federal programs aimed at the stabilization of the prices paid producers for agricultural products and administers federal funds for rural soil and water and other resource conservation activities. The Agricultural Conservation Program (ACP) which is administered by ASCS will, to the extent possible, be coordinated with the Middle Trempealeau River Priority Watershed Project. In addition other conservation incentives such as the Conservation Reserve Program (CRP) will be used whenever possible to control critical nonpoint sources of pollution.

Agricultural Best Management Practices (BMPs)

BMPs Eligible For Cost-Sharing And Their Rates

Best management practices are those practices identified in NR 120 which are determined in this watershed plan to be the most effective controls of the nonpoint sources of pollution. The practices eligible for cost-sharing under the Middle Trempealeau River Watershed Project and the cost share rates for each BMP are listed in table 5-1 and 5-2 below.

Design and installation of all BMPs must meet the conditions listed in NR 120. Generally these practices use specific standard specifications included in the SCS Field Office Technical Guide. In some cases additional specifications may apply. The applicable specifications for each BMP can be found in NR 120.14. The Department may approve alternative best management practices and alternative design criteria based on the provisions of NR 120.15 where necessary to meet the water resource objectives.

Table 5-1. State Cost-Share % Rates for Best Management Practices[5]

Best Management Practice	State Cost Share Rate
Contour and Field Strip Cropping	50 % [5]
Field Diversions and Terraces	70%
Grassed Waterways	70%
Critical Area Stabilization	70% [1,6]
Grade Stabilization Structures	70%
Agricultural Sediment Basins	70%
Shoreline and Streambank Stabilization	70% [2]
Shoreline Buffers	70% [1]
Barnyard Runoff Management	70%
Animal Lot Relocation	70%
Manure Storage Facilities	70% [3]
Wetland Restoration	70% [3]
Nutrient and Pesticide Management	50% [7]

Best Management Practice	State Cost Share Rate
Trout Structures	70% [4]
Spring Development	70%

[1] Easements may be entered into with landowners identified in the watershed plan in conjunction with these BMPs. See Chapter IV for an explanation of where easements may apply.
[2] Pasture pumps are an eligible component to this BMP.
[3] Maximum cost share amount is $10,000 including no more than $5,000 for manure transfer equipment (Legislation is proposed to change these amounts. If the legislation is adopted the cost share amount will correspond with the new statutory language.
[4] Only approved for American, Irvin, Lakes, Reynolds, Swinns and Traverse subwatersheds.
[5] See table 5-2 for BMPs cost shared at a flat rate.
[6] This is critical area stabilization other than tree planting. See table 5-2 for the tree planting flat rate.
[7] Spill control basins have a state costs share rate of 70%.

Table 5-2. Practices Using a Flat Rate for State Cost-Share Funding

BEST MANAGEMENT PRACTICE	FLAT RATE
Contour Farming	NA[1,2]
Contour or Field Strip Cropping	$ 12.00/ac[1]
Reduced Tillage	NA[2]
Streambank Fencing 3 strand barbed wire electric	 $ 12.00/rod $ 8.00/rod
Woodland Fencing 3 strand barbed wire electric	 $ 8.50/rod $ 5.50/rod
Critical Area Stabilization Tree Planting	 $125.00/ac

[1] Wildlife habitat restoration components of this practice are cost-shared at 70%
[2] NA means that cost share funds are not available for this practice.

Following is a brief description of some of the most commonly used BMPs included in table 5-1 and 5-2. A more detailed description of these practices can be found in NR 120.14.

1. Contour Farming - The farming of sloped land so that all operations from seed bed preparation to harvest are done on the contour.

2. Contour and Field Stripcropping - Growing crops in a systematic arrangement, usually on the contour, in alternate strips of close grown crops, such as grasses or legumes, and tilled row crops.

3. Reduced Tillage - A system which leaves a roughened surface or substantial amounts of crop residue in or on the soil surface after crops are planted. The system consists of no more then one primary tillage pass in the fall or spring and no more than 2 passes with light or secondary tillage equipment prior to planting. It is utilized in two situations; one for continuous row crops or long corn rotations, the other for short crop rotations or for the establishment of forages and small grains.

4. Critical Area Stabilization - The planting of suitable vegetation on critical nonpoint source sites and other treatment necessary to stabilize a specific location.

5. Grassed Waterways - A natural or constructed channel shaped, graded and established with suitable cover as needed to prevent erosion by runoff waters.

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

7. Livestock Exclusion from Woodlots - The exclusion of livestock from woodlots to protect the woodlots from grazing by fencing or other means.

8. Shoreline and Streambank Stabilization - The stabilization and protection of stream and lake banks against erosion and the protection of fish habitat and water quality from livestock access. This practice includes streambank rip-rap, streambank sloping and seeding, stream crossings, watering ramps, streambank fencing and fish habitat structures. This practice may include pasture pumps for watering livestock.

9. Terraces - A system of ridges and channels with suitable spacing and constructed on the contour with a suitable grade to prevent erosion in the channel.

10. Field Diversions - The purpose of this practice is primarily to divert water from areas it is in excess or is doing damage to where it can be transported safely.

11. Barnyard Runoff Management - Structural measures such as filter systems and/or diversions and rain gutters to redirect surface runoff around the barnyard, and collect, convey or temporarily store runoff from the barnyard.

12. Manure Storage Facility - A structure for the storage of manure for a period of time that is needed to reduce the impact of manure as a nonpoint source of pollution. Livestock operations where this practice applies are those where manure is winter spread on fields that have a high potential for runoff to lakes, streams and groundwater. The facility is needed to store and properly spread manure according to a management plan.

13. Agricultural Sediment Basins - A structure designed to reduce the transport of sediment eroded from critical agricultural fields and other pollutants to surface waters and wetlands.

14. Shoreline Buffers - A permanently vegetated area immediately adjacent to lakes, streams, channels and wetlands designed and constructed to manage critical nonpoint sources or to filter pollutants from nonpoint sources.

15. Animal Lot Relocation - Relocation of an animal lot from a critical site such as a floodway to a suitable site to minimize the amount of pollutants from the lot to surface or groundwater.

16. Wetland Restoration - The construction of berms or destruction of the function of tile lines or drainage ditches to create conditions suitable for wetland vegetation.

17. Nutrient Management - The management and crediting of nutrients for the application of manure and commercial fertilizers, and crediting for nutrients from legumes. Management includes the rate, method and timing of the application of all sources of nutrients to minimize the amount of nutrients entering surface or groundwater. This practice includes manure nutrient testing, routine soil testing, and residual nitrogen testing.

Procedures for Manure Spreading Management

a. Refer to Chapter 4 for eligibility criteria to be used for development of manure management plans.

b. The SCS 590 standard will be utilized primarily as an educational tool to educate landowners on the economic and environmental benefits of following a manure management plan.

c. A committee, comprised of representatives from the LCD, UWEX, DATCP, and DNR will meet on a regular basis, not to exceed three meetings per year. The committee will work on potential problems, concerns and misunderstandings which may arise over the implementation of the 590 Animal Waste Management plan.

d. The committee will strive to keep the lines of communication open between the DNR, DATCP, LCD, and UWEX.

e. A series of reports will be submitted and reviewed by the committee on, how the 590 standards are being implemented, problems in developing 590 plans and how 590 is effeting farmers in the Middle Trempealeau River Watershed project.

18. Pesticide Management - The management of the handling, disposal and application of pesticides including the rate, method and timing of application to minimize the amount of pesticides entering surface and groundwater. Structural practices such as spill control

basins will be eligible for cost-sharing if organic and/or toxic contaminants exceed the Preventative Action Limit (PAL).

19. Spring Development - Improving springs and seeps by excavating cleaning, capping, or providing collection and storage facilities in order to provide a watering area for livestock and restrict their access to the total spring area to reduce damage to the wet area and improve water quality.

20. Shoreland Grazing Management - A management plan that provides for the maintenance of a vegetated buffer along the banks of streams, lakes and drainage ways in the presence of livestock. The objectives of the practice are to buffer nutrient runoff, protect fish and wildlife habitat, reduce bank erosion and instream turbidity, and preserve stream channel structure. Plans will be based on SCS Std. 510 and UWEX guidelines. Structural practices such as fencing, stream crossings, watering access, watering facilities, spring development, and streambank and shoreland protection may be included in the practice. Implementation of shoreland grazing management will take one of the following forms based on an evaluation of both environmental and management factors:

    a. Livestock Exclusion - Total livestock exclusion through the use of fencing or relocation, from all or portions of the shoreland. Used when other means can not be expected to provide adequate shoreland protection.

    b. Limited Term or Deferred Grazing - Controls animal density (stocking rate) to maintain vegetative cover and limits grazing to a period from late Spring to early Fall.

    c. Rotational Grazing - A grazing management scheme that divides the pasture into multiple cells (usually 5 to 30) that receive a short but intensive grazing period followed by a recovery period of approximately 28 days. Rotational grazing increases pasture production while enhancing a dense, stable vegetative cover.

21. Easements - Although not considered to be Best Management Practices, easements are useful legal tools and their applicability is defined in Chapter IV, Management Actions. Details for such arrangements will be worked out between DNR and the counties during implementation phase.

BMPs Not Cost-Shared

BMPs not cost-shared, but which shall be included on the cost share agreement if necessary to control the nonpoint sources, are listed in NR 120.17. Several examples are included below.

1. That portion of a practice to be funded through other programs.

2. Practices previously installed and necessary to support cost-shared practices.

3. Changes in crop rotations and other activities normally and routinely used in growing crops or which have installation costs that can be passed on to potential consumers.

4. Changes in location of unconfined manure stacks involving no capital cost.

5. Manure spreading management.

6. Other activities the DNR and the Counties determine are necessary to achieve the objectives of the watershed project.

Activities and Sources of Pollution Not Eligible For Cost Share Assistance

Priority watershed cost-share funds cannot be used to control sources of pollution and land management activities specifically listed in NR 120.10(2). The following is a partial list of ineligible activities most often inquired about for cost-sharing in rural areas.

1. Operation and maintenance of cost-shared BMPs,

2. Actions which have drainage of land or clearing of land as the primary objective,

3. Practices already installed,with the exception of repairs to the practices which were rendered ineffective due to circumstances beyond the control of the landowner,

4. Activities covered under the Wisconsin Pollution Discharge Elimination System (WPDES) Program or covered in other ways by Chapter 147 of Wis. Stats. (including livestock operations with more than 1,000 animal units, or livestock operations issued a notice of discharge under ch. NR 243),

5. Septic system controls or maintenance,

6. Dredging activities,

7. Silvicultural activities,

8. Bulk storage of fertilizers and pesticides,

9. Activities and structures intended primarily for flood control,

10. Practices required to control sources which were adequately controlled at the time the cost-share agreement was signed, with the exception of those that occur beyond the control of the landowner,

11. Other practices or activities determined by DNR not to meet the objectives of the program.

Cost-Share Budget

Costs of Installing BMPs: The quantity and type of management practices that are required to meet this projects water quality objectives are listed in tables 5-3, 5-3a and 5-3b. The capital cost of installing the BMPs are listed in this table assuming landowner participation rates of 100% and 75%. Also included are the units of measurement and cost share amount per unit for the various BMPs.

The capital cost of installing the Best Management Practices in Trempealeau and Buffalo Counties is approximately $9.5 million and $1.6 million, respectively, assuming 100% participation.

- State funds necessary to cost-share this level of control would be about $6.4 million and $1.0 million for Trempealeau and Buffalo Counties, respectively.
- The local share provided by landowners and other cost-share recipients would be about $3.1 million and $0.5 million, respectively.

At a 75% level of participation, the state funds needed to cover capital installation would be about $4.8 million and $0.8 million for Trempealeau and Buffalo Counties, respectively.

Easement Costs

Chapter IV identifies where nonpoint source program funds can be used to purchase easements. The estimated cost of purchasing easements on eligible lands in Trempealeau and Buffalo Counties is shown in table 5-3 through 5-3b. At 100% participation, the estimated purchase price of easements on eligible lands would be $16,400 and $3,600 in Trempealeau and Buffalo Counties, respectively. At 75% participation, the cost would be $12,300 and $2,700; respectively. The easement costs would be paid for entirely by the state. However, it is very difficult to determine landowner response to easements as a management tool. Easements are a relatively new tool in the Priority Watershed Program. Therefore, it is very difficult to estimate cost.

Table 5-3. Cost-Share Budget Needs for Rural Management Practices in the Middle Trempealeau River Watershed

				100% Participation		75% Participation	
Management Needs Best Management Practices	Number	Cost/Unit	Total Cost (1)	State Share	Local Share	State Share	Local Share
Upland NPS Control							
Change in Crop Rotation	9,365 ac	NA[2]	0	0	0	0	0
Contour Cropping	2,250 ac	NA[2]	0	0	[3]	0	[3]
Contour Strip Cropping	4,700 ac	$12	56,400	56,400	[3]	42,300	[3]
Reduced Tillage	7,808 ac	NA[2]	0	0	0	0	0
Critical Area Stabilization	700 ac	$250	175,000	122,500	52,500	91,875	39,375
Tree Planting	5,200 ac	$125	650,000	650,000	[3]	487,500	[3]
Grass Waterways	378 ac	$3,000	1,134,000	793,000	240,200	595,350	255,150
Field Diversions & Terraces	23,200 ft	$3.50	81,200	56,840	24,360	42,630	18,270
Spring Development (4)	78 ea	$2,500	195,000	136,500	58,500	102,375	43,875
Grade Stabilization	210 ea	$8,000	1,680,000	1,176,000	504,00	882,000	378,000
Agricultural Sediment Basin	14 ea	$20,000	280,000	196,000	84,000	147,000	63,000
Nutrient and Pest. Mgmt.	14,100 ac	$25	352,500	176,250	176,250	132,188	132,188
Shoreline Buffers	120 ac	$150	18,000	12,600	5,400	9,450	4,050
Wetland Restoration	12 ea	$2,000	24,000	16,800	7,200	12,600	5,400
Livestock Exclusion							
3 strand barbed wire	12,700 rods	$8.50	107,950	107,950	[3]	80,963	[3]
Electric	3,800 rods	$5.50	20,900	20,900	112,500	15,675	84,375
Spill Control Basins	25 ea	$15,000	375,000	262,500	[3]	196,875	[3]
Animal Waste Management							
Barnyard Runoff Control							
Complete System	118 ea	$20,000	2,360,000	1,652,000	708,000	1,239,000	531,000
Clean Water Diversion	29 ea	$4,000	152,000	106,400	45,600	79,800	34,200
Manure Storage Facility (5)	49 ea	$30,000	1,470,000	490,000	980,000	367,500	735,000
Manure Spreading Management	49 ea	NA	0	0	0	0	0
Streambank Erosion Control							
Shape and Seeding	52,700 ft	$3.50	184,450	129,115	55,335	96,836	41,501
Fencing							
3 strand barbed wire	3,900 rods	$12.00	46,800	46,800	[3]	35,100	[3]
Electric	1,415 rods	$8.00	11,320	11,320	[3]	8,490	[3]
Rip-Rap	52,850 ft	$25	1,321,250	924,875	396,375	693,656	297,281
Livestock/Machinery							
Crossing/Watering	108 ea	$3,500	378,000	264,600	113,400	198,450	85,050
Ramp					0		0
Limited Grazing	12,710 ac	NA	0	0	27,225	0	20,419
Fish Structures	330 ea	$275	90,750	63,525	25,875	47,644	19,406
Remote Watering Systems	115 ea	$750	86,250	60,375		45,281	
Subtotal:			$11,250,770	$7,534,050	$3,716,720	$5,650,538	$2,787,540
Easements	50 ac	$400	20,000	20,000	0	15,000	0
TOTALS			$11,270,770	$7,554,050	$3,716,720	$5,665,538	$2,787,540

[1] Total cost to control identified critical pollution sources.
[2] NA means that cost share funds are not available for this practice.
[3] Local share consists of labor and any additional equipment costs.
[4] Technical standards and eligibility criteria for spring development are yet to be determined.
[5] Maximum cost-share is $10,000 of which a maximum of $5,000 can be for waste transfer.

Source: DNR, DATCP: and Land Conservation Departments of: Trempealeau and Buffalo Counties

Table 5-3a. Cost-Share Budget Needs for Rural Management Practices in the Middle Trempealeau River Watershed

				100% Participation		75% Participation	
Management Needs Best Management Practices	Number	Cost/Unit	Total Cost (1)	State Share	Local Share	State Share	Local Share
Upland NPS Control							
Change in Crop Rotation	8,065 ac	NA[2]	0	0	0	0	0
Contour Cropping	2,100 ac	NA[2]	0	0	0	0	0
Contour Strip Cropping	4,200 ac	$12	50,400	50,400	[3]	37,800	[3]
Reduced Tillage	5,880 ac	NA[2]	0	0	0	0	0
Critical Area Stabilization	600 ac	$250	150,000	015,000	45,000	78,750	33,750
Tree Planting	5,000 ac	$125	625,000	625,000	[3]	468,750	[3]
Grass Waterways	336 ac	$3,000	1,008,000	705,600	302,400	529,200	226,800
Field Diversions & Terraces	20,000 ft	$3.50	70,000	49,600	21,000	36,750	15,750
Spring Development (4)	68 ea	$2,500	170,000	119,000	51,000	89,250	38,250
Grade Stabilization	175 ea	$8,000	1,400,000	980,000	420,000	735,000	315,000
Agricultural Sediment Basin	12 ea	$20,000	240,000	168,000	72,000	126,000	54,0000
Nutrient and Pest. Mgmt.	10,100 ea	$25	252,500	126,250	126,250	94,688	94,688
Shoreline Buffers	100 ac	$150	15,000	10,500	4,500	7,875	3,375
Wetland Restoration	10 ea	$2,000	20,000	14,000	6,000	10,500	4,500
Livestock Exclusion							
3 strand barbed wire	12,000 rods	$8.50	102,000	102,000	[3]	76,500	[3]
Electric	3,000 rods	$5.50	16,500	16,500	[3]	12,375	[3]
Spill Control Basins	25 ea	$15,000	375,000	262,500	112,500	196,875	84,375
Animal Waste Management							
Barnyard Runoff Control							
Complete System	100 ea	$20,000	2,000,000	1,400,000	600,000	1,050,000	450,000
Clean Water Diversion	34 ea	$4,000	136,000	95,200	40,800	71,400	30,600
Manure Storage Facility (5)	41 ea	$30,000	1,230,000	410,000	820,000	307,500	615,000
Manure Spreading Management	41 ea	NA	0	0	0	0	0
Streambank Erosion Control							
Shape and Seeding	43,700 ft	$3.50	152,950	107,065	45,885	80,299	34,414
Fencing							
3 strand barbed wire	2,900 rods	$12.00	34,800	34,800	[3]	26,100	[3]
Electric	715 rods	$8.00	5,720	5,720	[3]	4,290	[3]
Rip-Rap	42,850 ft	$25	1,071,250	749,875	321,375	562,406	241,031
Livestock/Machinery							
Crossing/Watering Ramp	88 ea	$3,500	308,000	215,600	92,400	161,700	69,300
Limited Grazing	12,600 ac	NA	0	0	0	0	0
Fish Structures	255 ea	$275	70,125	49,088	21,038	36,816	15,778
Remote Watering Systems	100 ea	$750	75,000	52,500	22,500	39,375	16,875
Subtotal:			$9,578,245	$6,453,598	$3,124,648	$4,840,198	$2,343,486
Easements	41 ac	$400	16,400	16,400	0	12,300	0
TOTALS			$9,594,645	$6,469,998	$3,124,648	$4,852,498	$2,343,486

[1] Total cost to control identified critical pollution sources.
[2] NA means that cost share funds are not available for this practice.
[3] Local share consists of labor and any additional equipment costs.
[4] Technical standards and eligibility criteria for spring development are yet to be determined.
[5] Maximum cost-share is $10,000 of which a maximum of $5,000 can be for waste transfer.

Source: DNR, DATCP: and Land Conservation Departments of: Trempealeau and Buffalo Counties

Table 5-3. Cost-Share Budget Needs for Rural Management Practices in the Middle Trempealeau River Watershed

				100% Participation		75% Participation	
Management Needs Best Management Practices	Number	Cost/Unit	Total Cost (1)	State Share	Local Share	State Share	Local Share
Upland NPS Control							
Change in Crop Rotation	1,300 ac	NA[2]	0	0	0	0	0
Contour Cropping	150 ac	NA[2]	0	0	[3]	0	[3]
Contour Strip Cropping	500 ac	$12	6,000	6,000	[3]	4,500	[3]
Reduced Tillage	1,200 ac	NA[2]	0	0	0	0	0
Critical Area Stabilization	100 ac	$250	25,000	17,500	7,500	13,125	5,625
Tree Planting	200 ac	$125	25,000	25,000	[3]	18,750	[3]
Grass Waterways	42 ac	$3,000	126,000	88,200	27,800	66,150	28,350
Field Diversions & Terraces	3,200 ft	$3.50	11,200	7,840	3,360	5,880	2,520
Spring Development (4)	10 ea	$2,500	25,000	17,500	7,500	13,125	5,625
Grade Stabilization	35 ea	$8,000	280,000	196,000	84,000	147,000	63,000
Agricultural Sediment Basin	2 ea	$20,000	40,000	28,000	12,000	21,000	9,000
Nutrient and Pest. Mgmt.	4,000 ac	$25	100,000	50,000	50,000	27,500	37,500
Shoreline Buffers	20 ac	$150	3,000	2,100	900	1,575	675
Wetland Restoration	2 ea	$2,000	4,000	2,800	1,200	2,100	900
Livestock Exclusion							
3 strand barbed wire	700 rods	$8.50	5,950	5,950	[3]	4,463	[3]
Electric	800 rods	$5.50	4,400	4,400	[3]	3,300	[3]
Spill Control Basins	0 ea	$15,000	0	0	0	0	0
Animal Waste Management							
Barnyard Runoff Control							
Complete System	18 ea	$20,000	360,000	252,000	108,000	189,000	81,000
Clean Water Diversion	4 ea	$4,000	16,000	11,200	4,800	8,400	3,600
Manure Storage Facility (5)	8 ea	$30,000	240,000	80,000	160,000	60,000	120,000
Manure Spreading Management	8 ea	NA	0	0	0	0	0
Streambank Erosion Control							
Shape and Seeding	9,000 ft	$3.50	31,500	22,050	9,450	16,538	7,088
Fencing							
3 strand barbed wire	1,000 rods	$12.00	12,000	12,000	[3]	9,000	[3]
Electric	700 rods	$8.00	5,600	5,600	[3]	4,200	[3]
Rip-Rap	10,00 ft	$25	250,000	175,000	75,000	131,250	56,250
Livestock/Machinery							
Crossing/Watering Ramp	20 ea	$3,500	70,000	49,000	21,000	36,750	16,750
Limited Grazing	110 ac	NA	0	0	0	0	0
Fish Structures	75 ea	$275	20,625	14,438	6,188	10,828	4,641
Remote Watering Systems	15 ea	$750	11,250	7,875	3,375	5,906	2,531
Subtotal:			$1,672,525	$1,089,453	$592,073	$810,339	$444,054
Easements	9 ac	$400	3,600	3,600	0	2,700	0
TOTALS			$1,676,125	$1,084,053	$592,073	$813,039	$444,054

[1] Total cost to control identified critical pollution sources.
[2] NA means that cost share funds are not available for this practice.
[3] Local share consists of labor and any additional equipment costs.
[4] Technical standards and eligibility criteria for spring development are yet to be determined.
[5] Maximum cost-share is $10,000 of which a maximum of $5,000 can be for waste transfer.

Source: DNR, DATCP: and Land Conservation Departments of: Trempealeau and Buffalo Counties

Cost Containment

Cost Containment Procedures: Chapter NR 120 requires that cost containment procedures be identified in this plan.

Cost-share payments will be based on actual installation costs. If actual installation costs exceed the amount of cost-sharing determined by the bidding, range of costs and average cost methods the amount paid the grantee may be increased with the approval of the appropriate land conservation committee. Appropriate documentation regarding the need for changes will be submitted to DNR. The cost containment procedures to be used by Trempealeau and Buffalo Counties are described in each county's bidding procedure. Copies of the bidding procedure can be obtained from each county LCD. If these procedures change, they are subject to approval by DATCP and DNR.

Bids and Average Costs

All structural BMPs in Trempealeau County are required to be bid out according to the LCD bidding procedure. Nonstructural BMPs are subject to average costs to verify cost containment. In Buffalo County, conservation practices estimated to cost in excess of $5,000 are to be bid according to Buffalo County LCD's bidding procedure. Conservation practices estimated to cost less than $5,000 are subject to average cost.

Flat Rates

BMPs using flat rates are shown in table 5-2. The rates shown are the state's share of the practice installation costs. The counties have established flat rates for determining labor rates for the farmer and his machinery. See the county's policy for these rates.

Cost-Share Agreement Reimbursement Procedures

Nonpoint Source Grant Agreement and Administration

General Information

The Nonpoint Source Grant Agreement is the means for transmitting funds from the DNR (through the Nonpoint Source Program) to Trempealeau and Buffalo Counties for use in funding the state's share of cost share agreements. Cost share agreements are the means to transmit funds from the counties to the landowners.

A portion of the Nonpoint Source Grant is forwarded to Trempealeau and Buffalo Counties to allow the county to set up an "up front" account. Funds from this account are used by the county to pay landowners after practices are installed under the project. As this account is drawn down, the county will request reimbursements from DNR to replenish the account. The counties will submit reimbursement requests on a quarterly basis or sooner if needed. This reimbursement schedule will insure that the "up front" account balance is maintained at an adequate level. The NPS Grant Agreement will be amended annually to provide funding needed for cost sharing for the year. The funds obligated under cost share agreements must never exceed the total funds in the NPS Grant Agreement.

Fiscal Management Procedures, Reporting Requirements

Counties are required by NR 120 to maintain a financial management system that accurately tracks the disbursement of all funds used for the Middle Trempealeau River Watershed Project. The records of all watershed transactions must be retained for 3 years after the date of final project settlement. A more detailed description of the fiscal management procedures can be found in NR 120.25 and NR 120.26.

Cost Share Agreement and Administration

Purpose and Responsibilities

Consistent with s. 144.25, Stats. and NR 120, Wis. Adm. Code, cost-share funding is available to landowners for a percent of the costs of installing BMPs to meet the project objectives. Landowners have three years after formal approval of the watershed plan to enter into cost-share agreements. Practices included on cost-share agreements must be installed within the schedule agreed to on the cost-share agreement. Unless otherwise approved, the schedule of installing BMPs will be within 5 years of signing of the cost-share agreement. Practices must be maintained for a minimum of ten years from the date of installing the final practice included in the cost-share agreement.

The cost-share agreement is a legal contract between the landowner and the county. The agreement includes the name and other information about the landowner and grant recipient, conditions of the agreement, the practices involved and their location, the quantities and units of measurement involved, the estimated total cost, the cost share rate and amount, the timetable for installation, and number of years the practice must be maintained. The agreements also identify and provide information on practices not cost-shared through the nonpoint program but that are essential to controlling pollution sources (such as crop rotations). These items will be completely listed in the conservation plan and the conservation plan is tied to the CSA via addendum 2 of the CSA. Once it is signed by both parties, they are legally bound to carry out the provisions in it.

If land ownership changes, the cost-share agreement remains with the property and the new owner is legally bound to carry out the provisions. NR 120.13(9) and (10) has more information on changes of land ownership and the recording of cost-share agreements.

Local, state, or federal permits may be needed prior to installation of some BMPs. The areas most likely to need permits are zoned wetlands and the shoreline areas of lakes and streams. These permits are needed whether the activity is a part of the watershed project or not. Landowners should consult with the County Planning and Zoning Department or the Land Conservation Department offices to determine if any permits are required. The landowner is responsible for acquiring the needed permits prior to installation of practices.

The cost-share agreement binds the county to provide the technical assistance needed for the planning, design, and verification of the practices on the agreement, and to provide the cost-share portion of the practice costs.

Counties are responsible for enforcing compliance of cost-share agreements to which they are a party. Where DNR serves as a party to an agreement with a unit of government, the DNR will take responsibility for monitoring compliance. The responsible party will insure that BMPs installed through the program are maintained in accordance with the operation and maintenance plan for the practice for the appropriate length of time. Trempealeau and Buffalo counties will check for compliance with practice maintenance provisions once every three years after the last practice has been installed. The county must check maintenance at its own expense after the Nonpoint Source Agreement has lapsed, unless state funding for this activity becomes available at any time during the implementation or monitoring phase of this project.

Landowner Contact Strategy

The following procedure will be used to make landowner contacts.

1. During the first three months of the implementation period, all landowners or operators with eligible nonpoint sources will receive from the county a mailing explaining the project and how they can become involved.

2. After the initial landowner mailings, county staff will make personal contacts with all landowners that have been identified as having critical nonpoint sources of pollution (Management Category I). These contacts will occur within the cost-share sign-up period.

3. The county will continue to make contacts with eligible (Management Category I and II) landowners and operators until they have made a definite decision regarding participation in the program.

4. The county will contact all eligible landowners (as defined in c above) not signing cost-share agreements by personal letter six months prior to the end of the cost-share sign-up period.

Procedure for Developing a Cost Share Agreement

Eligibility for cost-sharing is verified following a site visit, using the criteria described in Chapter IV.

The development of farm conservation plans will be the primary method used to develop cost-share agreements. These plans are specific to a particular landowner and are a comprehensive approach to the abatement of the nonpoint sources of pollution, and the conservation of soil and other resources. The farm plan takes into consideration the sustainability of the agricultural resources and the management decisions of the owner or operator.

The cost share agreement specifies the items listed in the farm conservation plan that are necessary to reduce the nonpoint sources of pollution. The conservation plan and cost share agreement will document existing management which must be maintained to protect water quality.

The following procedure will be used by the county for developing and administering agreements. Below are the steps from the initial landowner contact through the completion of BMP maintenance.

1. Landowner and county staff meet to discus the watershed project, NPS control practice needs, and coordination with conservation compliance provisions if applicable.

2. Landowner agrees to participate with the watershed project.

3. A farm conservation plan is prepared by the county.

4. The landowner agrees with the plan, a Cost Share Agreement is prepared and both documents are signed by the landowner and the county. A copy of the Cost Share Agreement (CSA) is sent to the DNR Western District Nonpoint Source Coordinator and a copy given to the landowner. The CSA will be recorded by the county with the County Register of Deeds.

5. Practices are designed by the county, or their designee, and a copy of the design is provided to the landowner.

6. Landowner obtains the necessary bids or other information required in the cost containment policy.

7. Amendments to the CSA are made if necessary.

8. The county staff oversee practice installation.

9. The county verifies the installation.

10. The landowner submits paid bills and proof of payment (canceled checks or receipts marked paid) to the county.

11. Land Conservation Committees or their designated representative and if required, county boards, approve cost-share payments to landowners.

12. Checks are issued by the county to the respective landowners and project ledgers are updated.

13. The county records the check amount, number, and date.

14. DNR reimburses the county for expended cost-share funds.

Identifying Wildlife and Fishery Needs

The Trempealeau and Buffalo County staffs will consult with DNR's Western District wildlife management and fisheries management staff to optimize the wildlife and fish management benefits of nonpoint source control BMPs. Specifically, the county staff will contact DNR staff if in the county's opinion: Fence rows, rock piles, wetlands, or other wildlife habitat components will be adversely affected by installation of agricultural BMPs.

The DNR staff will assist county staff at the Counties' request by:

1. Identifying streambank protection practices that benefit fish and wildlife.

2. Identifying wildlife habitat components that could be incorporated into vegetative filter strips along streams or in upland areas.

3. Reviewing placement of agricultural sediment basins to assure that negative impacts on stream fish and aquatic life do not occur and recommending wildlife habitat components.

4. Providing technical assistance when the installation of BMPs will require the removal of obstructions or other wildlife habitat by proposing measures to minimize impact on wildlife habitat.

5. Assisting to resolve questions concerning effects of agricultural nonpoint source BMPs on wetlands.

Submittal to the DNR

Cost-share agreements do not need prior approval from DNR, except in the following instances:

1. where cost-share funds are to be used for practices on land owned or controlled by the county.

2. for agreements or amendments where the cost-share amount for all practices for a landowner exceeds $50,000 in state funds.

3. for grade stabilization structures and agricultural sediment basins with embankment heights between 15 and 25 feet and impoundment capacities of 15 to 50 acre feet.

4. for streambanks to be controlled using riprap or other materials with banks over 6 feet high, according to NR 120.14. If applications are similar to each other in content, they will be reviewed to determine if future applications need be subject to this approval procedure.

5. for animal lot relocation.

6. for roofs over barnyards or manure storage facilities.

Local Assistance Grant Agreement Administration

General Information

The Local Assistance Grant Agreement (LAGA) is a grant from the DNR to Trempealeau and Buffalo Counties for supporting their staffing and support costs of carrying out this watershed plan. Each county will have its own agreement. Consistent with NR 120, the counties will use funds from the LAGA for additional staff to implement the project and conduct information and education activities. Other items such as travel, training, and certain office supplies are also supported by the LAGA. Further clarification of eligible costs supported by this grant is given in NR 120.14(4) and (6).

Grant Agreement Application Procedures

An annual review of the Local Assistance Grant Agreement is conducted through the development of an annual workload analysis by the county. This workload analysis estimates the work needed to be accomplished each year. The workload analysis is provided to DATCP and DNR for review and clarification. Along with the workload analysis, a grant application form is sent. Funds needed to complete the agreed upon annual workload are amended to the local assistance grant agreement.

Fiscal Management Procedures, Reporting Requirements

Trempealeau and Buffalo Counties are required by NR 120 to maintain a financial management system that accurately tracks the disbursement of all funds used for the Middle Trempealeau River Watershed Project. The records of all watershed transactions must be retained for 3 years after the date of final project settlement. A more detailed description of the fiscal management procedures can be found in NR 120.25 and NR 120.26.
NR 120 requires quarterly reports to DATCP from each county in accordance with s. Ag. 166.40(4) accounting for staff time, expenditures, and accomplishments regarding activities funded through the watershed project. Reimbursement requests may be included with the submittal of the quarterly project reports.

Budget and Staffing Needs

This section estimates the funding and staffing required to provide technical assistance for the rural portion of this project. These estimates are based on needs identified for Trempealeau and Buffalo Counties.

Staff Needs

Table 5-4 lists the total estimated staff needed to implement the project in Trempealeau and Buffalo Counties; respectively. Figures are provided for both the 50% and 75% levels of participation. A total of about 99,000 staff hours are required in Trempealeau County and 18,000 staff hours in Buffalo County to implement this plan at a 75% landowner participation rate. This includes 1,200 staff hours in Trempealeau County and 240 staff hours in Buffalo County to carry out the information and education program.

Table 5-4, table 5-5, table 5-6a and table 5-6b Current Workload Analysis' show 4.5 employees in Trempealeau county and 1 employee in Buffalo county working on the Middle Trempealeau River Project. The counties and agencies will determine the need for additional staff based on further analysis of the project requirements. The annual Workload Analysis will be used to determine on-going staff needs. The county will assess the number and type of staff required for the final five years of the project based on the actual landowner participation following the three year cost-share sign-up period.

Table 5-4. Estimated County LCD Staff Needs for Project Implementation

		BUFFALO COUNTY		TREMPEALEAU COUNTY	
Activity	Project Years When Work Will Be Done	75% Landowner Participation (Staff Hours)	50% Landowner Participation (Staff Hours)	75% Landowner Participation (Staff Hours)	50% Landowner Participation (Staff Hours)
Project & Financial Mgmt.	1-8	1,947	1,928	10,237	10,238
Information & Education Program	1-8	240	238	1,201	1,201
Pre-Contact Office Inventory Landowner Contacts, Progress Tracking & Update Inventory	1-8	871	575	5,042	3,361
Conservation Planning & Cost Share Agreement Development	1-8	3,179	2,100	18,416	12,278
Plan Revisions and Monitoring Cost Share Agreement Development	1-8	1,813	1,197	7,893	5,262
Practice Design & Installation					
Upland Sediment Control		3,405	2,249	28,591	19,062
Animal Waste Management		2,415	1,595	12,409	8,274
Streambank Erosion Control		2,713	1,792	11,556	7,704
Training	1-8	1,730	1,143	4,350	3,076
Total LCD Workload:		18,313	12,817	99,695	70,456
Estimated Staff Required for Years 1-3: Hours		1.5 per yr 3,069 per yr	1.0 per yr 2,120 per yr	8.2 per yr 16,997 per yr	5.7 per yr 11,847 per yr
Estimated Staff required for Years 4-8: Hours		0.9 per yr 1,821 per yr	0.6 per yr 1,291 per yr	4.7 per yr 9,741 per yr	3.4 per yr 6,983 per yr

Source: DNR; DATCP and Land Conservation Departments of: Buffalo and Trempealeau Counties

Table 5-5. Total Project Costs at 75% Landowner Participation Rate

	BUFFALO COUNTY	TREMPEALEAU COUNTY	WATERSHED TOTAL
Item	Costs (State Share)	Costs (State Share)	Costs (State Share)
Cost Share Funds: Practices	$810,339	$4,840,198	$5,650,537
Cost Share Funds: Easements	$2,700	$12,300	$15,000
Local Assistance Staff Support*	$281,654	$1,533,309	$1,814,963
Other Direct (travel, supplies, etc.)	$176,000	$219,000	$316,000
	$1,349,323	$7,108,617	$8,457,940

* Salary + Indirect = $32,000/year

Source: DNR; DATCP and Land Conservation Departments of: Buffalo and Trempealeau Counties

Table 5-6a. Grant Disbursement Schedule at 75% Landowner Participation Rate for Buffalo County

Item	Project Year			
	1	2	3	4
Cost Share Funds: Practices	$162,068	$342,136	$324,136	$0
Cost Share Funds: Easements	540	1,080	1,080	0
Local Assistance Staff Support	47,201	47,201	47,201	140,050
Other Direct (travel, supplies, etc.)	35,200	35,200	35,200	70,400
Engineering Assistance	6,000	6,000	6,000	18,000
TOTAL	$252,114	$414,722	$414,722	$231,765

Source: DNR; DATCP and Land Conservation Departments of: Buffalo and Trempealeau Counties

Table 5-6b. Grant Disbursement Schedule at 75% Landowner Participation Rate for Trempealeau County

Item	Project Year			
	1	2	3	4
Cost Share Funds: Practices	$968,040	$1,936,079	$1,936,079	$0
Cost Share Funds: Easements	2,460	4,920	4,920	0
Local Assistance Staff Support	261,414	261,414	261,414	749,068
Information/Education: Direct	37,302	37,302	37,302	121,005
Other Direct (travel, supplies, etc.)	43,800	43,800	43,800	87,600
Engineering Assistance	46,667	46,667	46,667	140,000
TOTAL	$1,313,015	$2,283,515	$2,283,515	$957,673

Source: DNR; DATCP and Land Conservation Departments of: Buffalo and Trempealeau Counties

Staffing Costs

The estimated cost for staff at the 75% participation rate (see table 5-5) is approximately $1.5 million and $.20 million; respectively, in Trempealeau and Buffalo Counties. All of these costs, with the exception of some direct cost items, would be paid for by the state.

Implementation Schedule

Grant Disbursement and Project Management Schedule

Implementation may begin upon approval of this watershed plan by the Trempealeau County Board; Buffalo County Board; DATCP; and the DNR. The priority watershed project implementation period lasts eight years. It includes an initial three year period for contacting eligible landowners and signing cost-share agreements. Practices on any cost-share agreement must be installed within a five year period.

Under extenuating circumstances, the initial period for entering into cost-share agreements can be extended by DNR for a limited period of time if it will result in a significant increase in nonpoint source control. Limited extensions for the installation period for practices on individual cost-share agreements must also be approved by DNR and DATCP.

The disbursement of the grants (Local Assistance and Nonpoint Source) to Trempealeau and Buffalo Counties will be based on an annual workload analysis and grant application process. The estimated grant disbursement schedule based on 75% participation by eligible landowners can be found in tables 5-6a and 5-6b; Trempealeau County, and Buffalo County, respectively.

Total Project Cost

The total state funding required to meet the rural nonpoint source pollution control needs at a 75% level of landowner participation is presented table 5-5. This figure includes the capital cost of practices, staff support, and easement costs presented above. The estimated cost to the state would be $8.4 million and $7.1 million and $1.3 million in Trempealeau and Buffalo Counties, respectively.

Involvement of Other Programs

Coordination With State and Federal Conservation Compliance Programs

The Middle Trempealeau River Watershed Project will be coordinated with the conservation compliance features of the Wisconsin Farmland Preservation Program (FPP) administered by DATCP, and the Federal Food Security Act (FSA) administered by the Soil Conservation Service. DATCP will assist Trempealeau and Buffalo County and the SCS offices to identify landowners within the watershed that are subject to the compliance provisions of FPP and FSA. Conservation Farm Plans were completed for all landowners in FSA on December 31, 1989. Trempealeau County and Buffalo County completed FPP plans by the end of 1989 and 1990, respectively.

There will be a need to implement the conservation plans and in the future amend these plans during the implementation phase of the watershed project. Watershed project supported staff will revise the conservation plans developed for FPP and inform SCS of changes in FSA plans resulting from management decisions and the installation of needed BMPs for nonpoint source pollution abatement. This comprehensive approach to farm planning will facilitate consideration of the various goals and objectives for all the programs which the landowner participates.

Some eroding uplands in management categories 1 and 2 may need control, in addition to that required for meeting sediment delivery targets, in order to meet soil erosion program goals established through other state and federal programs. Where this occurs, technical and financial assistance from the Nonpoint Source Program can be used to support practice design and installation on these critical lands. This assistance applies only where the additional control needed to meet soil erosion goals can be achieved using low cost practices.

Information and Education Program

Introduction

Priority watersheds are designed to provide cost sharing, technical assistance and information to improve the landowners awareness of the need to correct sources of surface and groundwater contamination. Assistance in cost sharing is provided by the State of Wisconsin through the DNR (DNR) . The technical assistance is provided by the local Land Conservation Department (LCD), the Soil Conservation Service (SCS), the DNR (DNR) and the Department of Ag, Trade and Consumer Protection (DATCP) . The education and information component is carried out by the University of Wisconsin -Extension (UWEX) and LCD staff. The key to a successful watershed plan is to teach landowners the benefits of adopting best management practices which will reduce the flow of nutrients and pesticides to our area streams.

Objectives

The objectives of the information and education program for the landowners in the Middle Trempealeau Priority Watershed include:

1. Landowners will learn the importance of adopting soil conservation practices which reduce soil erosion to a predefined "tolerable" level (T) .

2. Landowners will learn the importance of adopting "Best Management Practices (BMPs)" which reduce their reliance on purchased fertilizers and herbicides and reduce run-off of these materials to nearby streams.

3. Landowners will have an increased understanding of how to credit manure and legumes to reduce the possibility of ground and surface water contamination due to the over application of nitrogen and phosphorous from both commercial and home grown sources.

4. Landowners will understand and be aware of the potential requirement to report their use of nutrients (both purchased and home grown), as stated in the SCS 590-1 Standards.

5. Landowners will be aware of the purpose and benefits of the Middle Trempealeau Priority Watershed Project.

6. Landowners will have an increased understanding of the value of streams, groundwater and wetlands, and how present land use practices are affecting these resources.

Audience

The primary audience for this information and education program are the landowners within the boundaries of the Middle Trempealeau Watershed. However, the educational program will also be designed for individuals who provide services and supplies to these landowners, as well as any other interested individuals and the general public. Field days and educational tours will be open to the general public for dissemination of information of new water quality initiatives. Information will also be provided to contractors working in this watershed.

Delivery Team

The University of Wisconsin Extension Offices in Buffalo and Trempealeau Counties will take the lead role in conducting the information and education program. Carl Duley and Dennis Frame will share the Primary responsibility, but will work together with the Land Conservation Departments in both counties, as well as Pat Malone (Trempealeau County CNRED Agent) , Paul Kivlin (Area NPM Coordinator) and Ron Struss (Area Water Quality Agent) . Additional support will be requested as needed.

Specific Information and Educational Activities

Newsletters

1. Designed to assist in meeting objectives 1, 2, 3, 4 and 5 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; all individuals living in the watershed (both farm and nonfarm); agri-businesses working in the watershed, local governmental agencies and officials.

3. Newsletters will be developed locally, at a rate of two per year for the period 1992 - 2,000. The mailing will be done in the fall and spring of the year (October-November and February-March).

4. Articles will be contributed by individuals identified in the delivery team (above), on an As needed basis.

Direct mailings

1. Designed to assist in meeting objectives 1, 2, 3, 4 and 5 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; all individuals living in the watershed (both farm and nonfarm) ; agri-businesses working in the watershed, local governmental agencies and officials.

3. Six direct mailings are budgeted to:

   a. Three mailings to landowners to promote watershed practices and to include a postcard for individuals wishing to be contacted by the Land Conservation Department. These will be mailed in the winter of 1992, February of 1993 and November of 1994.

   b. Three additional mailings will be mailed to promote watershed education meetings, tours and field days. These will be done in-1992, 1993 and 1994.

Newspaper Articles

1. Designed to assist in meeting objectives 1, 2, 3, 4 and 5 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; all individuals living in the watershed (both farm and nonfarm); agri-businesses working in the watershed, local governmental agencies and officials.

3. News releases will be developed at a rate of two per year for the period 1992 and 1993, and one per year from 1994 through the year 2,000.

4. Releases will be mailed to the following papers:
   - Whitehall Times
   - Blair Press
   - Eau Claire Leader Telegram
   - C.F.C. Recorder
   - WI. State Farmer
   - Arcadia News-Leader
   - Winona Daily News
   - Country Today
   - Agri-View
   - Independence News-Wave

a. These articles will focus on unique practices, updates on the progress of the watershed and a description of positive practices and satisfied cooperators.

Radio

1. Designed to assist in meeting objectives 1, 2, 3, 4 and 5 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; all individuals living in the watershed (both farm and nonfarm); agri-businesses working in the watershed, local governmental agencies and officials.

3. Radio news releases will be developed at a rate of two per year for the period 1992 and 1993, and one per year from 1994 through the year 2,000.

4. Radio programs will be conducted on the following stations:
   - WAXX
   - WHTL
   - KWNO

5. These radio programs will focus on unique practices, updates on the progress of the watershed and a description of positive practices and satisfied cooperators.

Video Tape Production

The unique situation Trempealeau County has with a local government television. station provides an opportunity to develop video tapes for watershed landowners. These tapes would be aired on the Trempealeau County Community Television (TCCTV) and made available to landowners who have an interest in learning more about the practices available through this priority watershed.

It was the decision of the Information and Education Committee that tapes be developed that landowners could check out and watch in the comfort of their homes. These tapes would provide information on how the adoption of certain practices could improve and protect both ground and surface water, as well as improve cattle handling and management. The.video tape portion of this I & E plan calls for:

1. Designed to assist in meeting objectives 1, 2, 3, 4 and 5 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. The time line for the development of these tapes is two per year in 1992, two in 1993 and one in 1994.

4. All tapes will be limited to fifteen to twenty minutes in length and will be developed in cooperation with the TCCTV.

5. The tape development team will consist of Carl Duley, Dennis Frame, Pat Malone, Paul Kivlin and Ron Struss.

6. The following tapes will be developed:

   - Stream Bank Protection
   - Manure Storage Alternatives
   - Design and Management of Barnyards
   - Nutrient Management Plans
   - Practices Available Through a Priority Watershed

Public Information Meetings

1. Designed to assist in meeting objectives 1, 2, 3, 4 and 5 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. Two meetings are designed to get the priority watershed approved and on line. These meetings include an informational meeting for the general public and the public hearing scheduled for January 6, 19@ This will lead to the County Board Hearing in January of 1992.

4. Materials required include:
   a. Slide Set/Visual Materials
   b. Handouts
   c. Refreshments

Public Educational Meetings

1. Designed to assist in meeting objectives 1, 2, 3 and 4 outlined above.

2. The audience will include landowners and operator s owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. One large group educational meeting will be conducted in the watershed each year (1992 - 2,000) to teach landowners about the changing conservation ethics. The meeting will be held in a central location (probably Arcadia), and will feature a well known speaker to discuss water quality issues. These meetings . will provide a forum

for landowners to learn about the importance of adopting conservation practices and BMPs and maintenance of installed practices. This will also provide an opportunity for landowners to get together and discuss what is going on in the watershed.

4. Materials required include:
   a. Slide Sets/Visual Materials
   b. Handout Materials
   c. Meeting Announcements/Advertising
   d. Speaker Fees
   e. Refreshments

Educational Meeting for Contractors

1. This meeting will be held each year to bring contractors up-to-date on changes to standards and specifications of BMPs,l bidding procedures, and Land conservation Department policies pertaining to the contractors.

2. Materials required include:
   a. Visual materials
   b. Handout materials
   c. Meeting announcements
   d. Refreshments

Field Days

1. Designed to assist in meeting objectives 1, 2, 3 and 4 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. A field day will be conducted each year of the watershed project. These field days will demonstrate and provide information on the effectiveness of adopting best management practices. These meetings will give farmers an opportunity to see how the adoption of these practices can save money and have a positive effect on the environment.

4. Materials required include:
   a. Visual Materials
   b. Handout Materials
   c. Meeting Announcements/Advertising
   d. Speaker Fees
   e. Refreshments
   f. Demonstration Sites
      i. Trempealeau County Health Care Center
      ii. A farm in Glencoe Valley

Nutrient and Pesticide Management Education

1. Designed to assist in meeting objectives 1, 2, 3 and 4 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. Five demonstration plots will be maintained and operated through the year 2,000. These plots include:
   - Nutrient Management Plot (Buffalo and Trempealeau)
   - Pesticide Management Plot (Trempealeau)
   - Manure Management Plot (Buffalo and Trempealeau)

4. The information gained from these practical field experiences will be shared with landowners at field days, educational meetings, in newsletters and news releases.

5. The following outlines the goals and objectives of each plot, as well as the plot layout and design.

Nutrient Management Demonstration Plots

Objectives

The field demonstrations will illustrate the viability of incorporating best management practices into a farm operation. The practices featured in the following demonstrations include:

1. Application of nitrogen in accordance to crop needs.

2. Demonstrating the predictive capabilities of the preplant soil profile nitrate test and the pre-sidress nitrogen test.

3. Nitrogen crediting from legumes and manure.

4. Phosphorous and potassium crediting from manure.

5. Reduced phosphorous applications on fields testing high and excessively high on their soil tests.

Demonstration Site

Two sites will be utilized. one will be located on the Trempealeau County Health Care Center Farm and the other in the township of Glencoe in Buffalo County. A wide range of nutrient management practices, covering nearly forty acres, will be illustrated to area growers.

Evaluation Criteria

The demonstrations will be evaluated according to:

1. Water quality protection
2. Crop yield
3. Labor and equipment requirements
4. Profitability

Treatments

1. No nutrient credits taken for manure or legumes. Commercial fertilizer will be applied at the rates recommended by a local fertilizer dealer.
2. Nutrient credits for legumes and residual soil nitrate will be taken and fertilizer will be applied at the rate recommended by the University of Wisconsin (WISPER Program).
3. Nutrient credits will be taken for legumes, manure and residual soil nitrate. Manure application rates will be calculated and the rate of manure application will be based on the SCS 590-1 standards. Fertilizer will be applied at the rate recommended by the University of Wisconsin (WISPER Program).
4. One plot will be established and remain an "organic" field and will receive all. the required nutrients through manure and legume credits. All weed control will also be accomplished by means of mechanical equipment.

Pesticide Management Demonstration Plot

Objectives

This demonstration will illustrate the viability of incorporating selected best management practices into a farm operation. The practices featured in the following demonstration include:

1. Reduced herbicide application rates with the addition of mechanical weed control methods.

2. A control plot which indicates the weed pressure the field would normally be exposed to.

3. An economic analysis of the most cost effective method of controlling weeds.

Demonstration Site

The site will be located on the Trempealeau County Health Care Center Farm. A wide range of pesticide management practices, covering nearly fifteen acres, will be illustrated to area growers.

Evaluation Criteria

The demonstrations will be evaluated according to:

1. Water quality protection

2. Crop yield

3. Labor and equipment requirements

4. Profitability

Treatments

1. Total mechanical weed control with no applied herbicides.

2. A full rate of herbicide following label recommendations.

3. A reduced rate of herbicide in combination with cultivation.

4. A banded application at the recommended rate combined with a cultivation.

5. A banded application at a reduced rate combined with a cultivation.

6. A full,rate of herbicide applied on a no-till field.

7. A control plot to determine weed pressure.

Manure Management Demonstration Plots

Objectives

The field demonstrations will illustrate the viability of incorporating selected best management practices and adopting the new SCS 590 standards on a farm operation. The practices featured in the following demonstration include:

1. Application of nitrogen in accordance to crop needs.

2. Demonstrating the predictive capabilities of the preplant soil profile nitrate test.

3. Nitrogen crediting from legumes and manure.

4. Manure calibration to determine current application rates.

5. Manure calibration and soil testing and the utilization of the U.W. soil recommendations (WISPER) to determine how much manure can be applied to individual fields.

6. Manure testing to determine the N, P, and K content.

7. Short term manure storage and testing to determine the loss incurred on a dairy farm which is currently stacking manure.

8. An economic analysis of alternative manure storage systems.

9. An economic analysis of alternative cropping systems to best utilize the nutrients available from manure.

Demonstration Site

The site will be located on the Trempealeau County Health Care Center Farm in Trempealeau County and the township of Glencoe in Buffalo County. A wide range of nutrient management practices, covering nearly forty acres, will be illustrated to area growers.

Evaluation Criteria

The demonstrations will be evaluated according to:

1. Water quality protection
2. Crop yield
3. Labor and equipment requirements
4. Profitability

Treatments

1. No nutrient credits taken for manure or legumes. Commercial fertilizer will be applied at the rates recommended by a local-fertilizer dealer.

2. Nutrient credits will be taken for legumes, manure and residual soil nitrate. Manure application rates will be calculated and the rate of manure application will be based on the SCS 590-1 standards.

3. Nutrient credits will be taken for legumes, -manure and residual soil nitrate. Manure application rates will be calculated and the rate of manure application will be based on 150% of the SCS 590-1 standards.

4. One plot will be established and remain an "organic" field and will receive all the required nutrients through manure and legume credits. All weed control will also be accomplished by means of mechanical equipment.

Deep Soil Nitrate Testing

1. Designed to assist in meeting objectives 2, 3, 4 and 6 outlined above.

2. The audience will include landowners and operators owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. This educational activity would provide cost sharing for landowners who wish to take deep soil nitrate test (from one to three feet) in order to determine the amount of residual nitrogen. By determining the amount of residual nitrogen, farmers would be able to better determine their nitrogen requirements.

4. Materials required include:
   a. Handout Materials

b. Advertising
c. Cost Sharing
d. Soil probes for deep soil testing
e. Pails to split samples

Manure Testing

1. Designed to assist in meeting objectives 2, 3, 4 and 6 outlined above.

2. The audience. will include landowners and operators owning and working land in the priority watershed; agribusinesses working in the watershed, local governmental agencies and officials.

3. This educational activity would provide cost sharing for landowners who wish to take manure tests. Recent studies in Minnesota and Iowa indicate that manure varies widely in nutrients from farm to farm. Farmers who wish to accurately determine the nutrients supplied by manure would be encouraged to sample it and base their fertilizer application rates according to the University of Wisconsin WISPER Program.

4. Materials required include:
   a. Handout Materials
   b. Advertising
   c. Cost Sharing
   d. Equipment to take sample from storage
   e. Containers to transport samples to the lab

Educational Tour

1. Designed to assist in meeting objectives 1, 2, and 5.

2. The audience will include landowners and land users in the priority watershed; agri-businesses working in the watershed and local governmental agencies.

3. A streambank management/BMPs tour will be conducted in each county. These' tours will be done once to show interested landowners how to protect streams from runoff and nutrient contamination. The tour will be to an operation which has adopted a wide number of practices and will serve as a good demonstration site.

4. Materials required include:

   a. Visual Materials
   b. Handout Materials
   c. Meeting Announcements/Advertising
   d. Refreshments '

e. Demonstration Sites
f. Transportation

Promotional Items

The Information and Education Committee has decided that they would like to have place mats developed to promote the watershed and best management practices. According to Ron Struss (Area Specialist), place mats can be purchased for $1,380. This quote is for 30,000 place mats. Estimates.are that we could use 60,000 to 120,000 over a period of three years. These place 'mats would be given to the restaurants in Whitehall, Blair, Independence, Arcadia and others located within the boundaries of the Middle Trempealeau Priority Watershed.

Abandon Well Protection

The information and education committee would like to offer farmers and opportunity to properly abandon wells no longer in use. However, because this is a regulated practice and the DNR will not allow this to be a cost-shared practice, we have decided to run.educational meetings in each township on how to properly abandon a well. Eleven meetings will be conducted in the first three years of the watershed to educate landowners on how to seal their well and protect the groundwater.

Table 5-7. Information and Education Plan Summary

Activity	Occurrence	Location	Agencies
Newsletters	Twice/Year	Entire Watershed	LCD and UWEX (locally)
Mailings (to promote sign up)	Winter 91 February 93 November 94	Entire Watershed	LCD and UWEX (locally)
Mailings (to promote meetings)	1992 1993 1994	Entire Watershed	LCD and UWEX (locally)
Newspaper	Twice/year Once/year	1992 - 1993 1994 - 2000	LCD and UWEX (local & area)
Radio	Twice/year Once/year	1992 - 1993 1994 - 2000	LCD and UWEX (local & area)

Activity	Occurrence	Location	Agencies
Video Tapes	Three in 1992 Two in 1993	Stream Prot. Manure Storage Avail. Pract. Barnyards 590 Planning	LCD Extension LCD & Ext. LCD & Ext. SCS, LCD & Ext.
Information Meetings	January 1992 January 1992	Arcadia Whitehall	LCD & EXT with DNR & DATCP
Education Meetings	Once a year	Arcadia	Extension
Contractor Workshop	Once a year	Whitehall	LCD & Ext.
Field Day	Once a year	Whitehall Glencoe Valley	Extension
BMP Ed. - Nutrient - Pesticides - Manure	 Annually Annually Annually	Two locations in Watershed - Whitehall - Glencoe	Extension
Deep Soil Nitrate Test	Annually	Entire Watershed	LCD and Extension
Manure Testing	Annually	Entire Watershed	LCD and Extension
Education Tour	Once in each County	Depends on streambank	LCD and Extension
Abandon Wells	Eleven	townships	LCD and Extension
Placemats	Once	Entire Watershed	Area Extension Office

Table 5-8. Labor Requirements for I. and E. Activities

Activity	LCD	UWEX	DNR	DATCP
Newsletters	130	80	4	4
Direct Mailings	12	12	0	0
News Releases	20	20	0	0
Radio Programs	0	10	0	0
Video Tapes	60	200	0	0
Public Information	50	84	16	16
Public Education	200	256	0	0
Field Days	48	225	12	12
BMP Education	85	325	0	0
Deep Soil Nitrate Testing	100	100	0	0
Manure Testing	75	125	0	0
Streambank Tour	100	40	0	0
Contractor Workshop	256	40	0	0
Placemat Development	40	80	0	0
Proper Well Abandonment	80	80	0	0
Total	1,256	1,677	32	32

Table 5-9. Budget for Information and Education Plan

Activity	Total Number	Total Cost	1st Year	2nd Year	3rd Year	4-8 Years
Newsletters	16	12,000	1,500	1,500	1,500	7,500
Mailings	6	2,505	835	835	835	0
Newspaper	10	250	50	50	25	125
Radio	10	125	25	25	12.5	62.5
Video Tapes	5	5,000	3,000	2,000	0	0
Information Meetings	2	750	750	0	0	0

Activity	Total Number	Total Cost	1st Year	2nd Year	3rd Year	4-8 Years
Education Meetings	8	8,000	1,000	1,000	1,000	5,000
Contractor Workshop	8	800	100	100	100	500
Field Day	12	3,000	500	500	500	1,500
BMP Education - Nutrient - Pesticides - Manure	5 Plots 8 Years 8 Years 8 Years	 40,000 20,000 10,000	 20,000 9,500 2,000	 5,000 1,500 1,150	 2,500 1,500 1,150	 12,500 7,500 5,700
Deep Soil Nitrate Test	10,000	110,000	6,600	13,750	13,750	75,900
Manure Testing	1,750	28,000	2,000	2,800	3,200	20,000
Education Tour	Two	1,250	625	625	0	0
Placements	60,000	2,760	2,760	0	0	0
Well Abandonment	11	22,000	8,000	8,000	6,000	0
Totals		266,440	59,245	38,835	32,073	136,287

CHAPTER SIX
Integrated Resources Management

Introduction

The integration of resource management activities in the Middle Trempealeau River Priority Watershed will allow for coordination of existing federal, state, and local programs. The availability of programs to assist the implementation process is dependent on the specific program requirements and how they apply to this project.

Stewardship Program - DNR

Funded by a legislative action in 1990, the Stewardship Program provides opportunities for public acquisition of important natural resources, especially along riparian areas. The program can support the purchase of easements along streams in the watershed project. Riparian areas that are threatened by agricultural or urban land uses can be protected through this program by acquiring specific land rights that prevent future degradation. Chapter 4, section 4 discusses the use and eligibility of another type of easement allowed under the existing priority watershed program. The use of easements under the NR 120 program is described in chapter 4. The eligibility of riparian areas under the Stewardship Program requires that the stream be approved for the program by action of the Natural Resources Board. The Board will review proposals for stewardship acquisition on referral by the local DNR fish manager. The process of developing an easement under the Stewardship Program will require a coordinated effort between the Wisconsin DNR, county staff, and private landowners.

Fish Habitat Improvement

Wisconsin DNR fish managers have available a number of programs designed to use funds for improving fish habitat through installation of structural practices, land acquisitions, easements, and management activities. The use of other program funds outside the priority watershed program for fishery improvements will be coordinated by the local DNR fish manager. Priority watershed funds used for such activities as easement acquisitions and fish habitat structures (NR 120.14(14)(b)i) must also be coordinated with the local fish manager. Chapter 3 of this plan incorporates discussion of the importance of fishery objectives in this water quality project.

Agricultural Programs

USDA programs like the Conservation Reserve Program (CRP) and the Agricultural Conservation Program (ACP) provide funding for projects that have a direct impact on water quality. Although some of these programs are not targeted towards water quality, the continued or expanded use of them should help in protecting water resources. These programs will continue to be used in the project area and may provide additional funding to landowners.

DNR Forestry Program

Involvement of the DNR forestry program includes several objectives. The Managed Forest Law and its provisions can be promoted through the priority watershed program. Informational and educational materials will be provided to the County Land Conservation Department by the DNR county forester. These materials will be provided on an occasional basis to county staff for distribution to project area landowners. Landowners who have an interest in finding out about the Managed Forest Law can call the DNR county forester.

Another objective of the Forestry Program is to support information and education efforts about forest regeneration and proper harvesting techniques. A specific information and education activity is included in Chapter 5 for this objective. Tree planting on critical areas in need of vegetative stabilization is another practice which will be encouraged by the county staff and supported by the DNR county forester.

Wildlife Management Program

One of the most important objectives for this program will be to assist the county staff in recreating wildlife habitat where habitat is lost due to construction of Best Management Practices. Wildlife habitat restoration is required by administrative rule for a number of Best Management Practices that will be installed in the project. Wildlife habitat shall be recreated to replace wildlife habitat lost through removal due to the construction of any of the following Best Management Practices:

Contour and field strip cropping
Field diversions
Terraces
Grassed waterways
Critical area stabilization
Grade stabilization structures
Shoreline buffers

Technical assistance in recreating lost wildlife habitat will be provided by the DNR wildlife manager on an as-needed basis. Easement acquisitions under the Stewardship Program or the priority watershed program will also receive technical support from the DNR wildlife manager for developing the wildlife habitat potential of the site.

CHAPTER SEVEN
Progress Assessments

Introduction

This chapter describes how progress will be monitored in the Middle Trempealeau River Priority Watershed Project. The strategy includes two components:

1. administrative review, and

2. pollution reduction evaluation

Information on these components will be collected by the county Land Conservation Department (LCD) and reported to DNR and DATCP. Additional information on the numbers and types of practices on cost-share agreements; funds encumbered on cost-share agreements, and funds expended will be provided by DNR's Bureau of Community Assistance.

Upon completion of the landowner sign-up period, an interim report will be prepared cooperatively by the LCD's, cities/villages, DATCP, and DNR. This report will summarize the administrative, pollutant load reduction, and water quality information that is available at that time. The report will make preliminary conclusions on the success of the project to date and will recommend actions to be taken during the rest of the implementation phase.

Administrative Review

This component will focus on the progress of the counties in implementing the project. The project will be evaluated with respect to 1) amount and types of BMPs on Cost-Share Agreements and installed (accomplishment reporting), 2) financial expenditures, and 3) staff time spent on project activities.

Accomplishments Reporting

The Computer Assisted Management and Planning System, (CAMPS) is a computer data management system that has been developed by the US Soil Conservation Service (SCS). It is used by SCS, DNR and DATCP to meet the accomplishment reporting requirements of all

three agencies. Data on administrative accomplishments will be collected by each county LCD using CAMPS, and will be provided to DNR and DATCP for program evaluation.

The county LCD's will provide the following data to DNR and DATCP on a quarterly basis:

1. number of personal contacts made with landowners,

2. completed I&E activities,

3. number of farm conservation plans prepared for the project,

4. number of cost-share agreements signed,

5. number of farm conservation plan and cost-share agreement status reviews completed, and

6. number of farms and acres of cropland checked for proper maintenance of Best Management Practices.

In addition to preparing quarterly reports, county LCD representatives will meet with DNR and DATCP staff annually to review progress and plan for the next year.

The annual meeting will be conducted in February of each year of the project. At that time, summaries of information will be presented by the county LCD which will include the annual accomplishment report. All of the reporting categories required quarterly will be summarized for the preceding year, and pollutant load reductions for upland sediment, barnyard runoff, manure spreading, gully erosion and stream bank erosion will be reported by the county LCDs at the meeting. The county LCDs will also review internally the number of building permits issued in the project area for their respective counties in the preceding year (see chapter 4, section 5).

Financial Expenditures

The LCD will provide the following financial data to DNR and DATCP on a quarterly basis:

1. number of landowner cost-share agreements signed,

2. amount of money committed on cost-share agreements,

3. number of landowner reimbursement payments made, and amount paid for BMP installation,

4. expenditures for staff travel,

5. expenditures for information and education program,

6. expenditures for equipment, materials, and supplies,

7. expenditures for professional services and staff support costs,

8. total project expenditures for LCD staff,

9. staff training expenditures,

10. interest money earned and expended, and

11. total county LCD budget and expenditures on the project.

Time Spent on Project Activities

The LCD will provide time summaries to both departments for the following activities on a quarterly basis:

1. project and fiscal management,

2. clerical assistance,

3. pre-design and conservation planning activities,

4. technical assistance: practice design, installation, cost-share agreement status review and monitoring,

5. educational activities,

6. training activities, and

7. leave time.

Pollutant Reduction Evaluation

Purpose

The purpose of this evaluation component is to calculate reductions in the amount of important pollutants as a result of installing Best Management Practices. Five key sources have been identified for estimating changes in pollutant loads in the Middle Trempealeau River Watershed: a) upland sediment, b) runoff from barnyards, c) critical acres winter spread with manure, d) gully erosion, and e) stream bank erosion. The tracking procedure for each source is described below. These pollutant categories will be reported by the county LCD at the annual meeting.

Procedure

1. Upland Sediment Sources

   The county LCD will use the WIN (Wisconsin Nonpoint Source) model to estimate sediment reductions due to changes in cropping practices. Data for the WIN model will be provided by each county LCD through CAMPS.

2. Barnyard Runoff

   Each county will use the BARNY (Modified ARS) model to estimate phosphorus reductions due to the installation of barnyard control practices. The county will report the information to DNR through CAMPS.

3. Manure Spreading

   The county will record for each landowner, the actual number of critical acres which are no longer spread with winter manure. This change will be recorded using the CAMPS system.

4. Gully Erosion

   The county will record for each landowner, the actual number of gullies present at the time of contact and the number of gullies to be controlled through Best Management Practices identified on the Cost-Share Agreement.

5. Stream Banks

   The county LCD will calculate changes in stream bank sediment in terms of tons of sediment and length of eroding sites. A tally will be kept of landowners contacted, the amount of stream bank sediment being generated at the time of contact, changes in erosion levels estimated after installing Best Management Practices, and number of fish habitat structures installed.

Cost-Share Agreements

Another form of tracking is required for cost-share agreements and amendments to the agreements. Every cost-share agreement and amendment shall be submitted to the DNR nonpoint source coordinator as explained in Chapter 5 along with a tracking sheet. The tracking sheet will be a form prepared by the DNR that will require the county LCD to report the following types of information:

- landowner name
- ID number

- cost-share agreement number
- amendment number
- subwatershed
- contact records
- original or inventoried pollutant loads for upland sediment, barnyard runoff, manure spreading, stream bank erosion, and gully erosion
- updated or more recent pollutant loads for each of the pollutant categories
- controlled status for each of the pollutant categories
- comments and narrative explanations for existing and changed conditions

The tracking sheet will be required for every cost-share agreement. Tracking sheets are also required for amendments to cost-share agreements whenever the amendment changes the quantity of the BMP associated with a previous cost-share agreement or whenever the pollutant control will be increased or decreased from the original amounts indicated on the cost-share agreement tracking sheet. Added or deleted practices in whole or in part require a tracking sheet. Changes in dollar amounts for BMP installations associated with cost differentials due to inaccurate estimates or unforeseen site conditions do not require a tracking sheet.

Watershed mapping

Continuous recording of the location of management practices will be accomplished by the county LCD. Recording will consist of placing the name of the practice on 7.5 minute topographical maps (USGS) and sketching the approximate boundaries of the practice, or the area affected by the practice. For example, a stream bank erosion control practice would list the type, rock riprap, shoreline stabilization, fish structure, or whatever practice is applied. The area affected can be represented on the map by drawing a line along the stream. A grassed waterway can also be indicated by using a line. Barnyard runoff or grade control structures can be located at single discrete sites. The mapped locations should be done only for the study sites which consist of the following subwatersheds:

Swinns Valley
Traverse Valley
American Valley Creek
Plum Creek
Lakes Coulee Creek

All BMPs should be mapped for these sites and indicate whether they are planned or have been installed. The maps will be reviewed annually by the DNR at the annual meeting scheduled each February.

CHAPTER EIGHT
Evaluation Monitoring Plan

Introduction

The primary purpose of this monitoring plan is to evaluate how well the Middle Trempealeau River Priority Watershed project achieves identified objectives in selected water resources in the watershed. The plan identifies monitoring locations, methods and analysis techniques that will be used in the assessment. The principal methods to be employed in the assessment include fishery surveys, habitat evaluation, macroinvertebrate sampling, temperature and dissolved oxygen monitoring, flow and water chemistry monitoring.

Objectives of the Watershed Project

All monitoring in the Middle Trempealeau watershed will necessarily be related to project objectives as identified in the watershed plan. Following is a general summary of the Middle Trempealeau River Priority Watershed project objectives:

1. Improve warmwater fishery habitat in the Trempealeau River by reducing sediment and organic loading from subwatershed streams.

2. Reduce fecal coliform bacteria levels in the Trempealeau River to provide a more favorable environment for recreational users.

3. Improve or enhance existing trout fisheries by improving overall habitat conditions.

4. Enhance the forage fish community of non-trout streams.

Most of the streams in the Middle Trempealeau watershed are capable of supporting viable trout populations with a significant reduction in nonpoint source loadings. Table 1 is a summary of project objectives for major streams in the watershed.

Water Resources To Be Monitored

Due to workload and financial constraints, it will not be possible to assess all water resources in the Middle Trempealeau watershed. Rather, monitoring will primarily focus on a limited number of waterbodies that generally meet the following criteria:

1. The water resource is currently being impacted by nonpoint source pollution and has significant potential for improvement;

2. The waterbody is affected by landowners that are likely to become cooperators in the watershed project;

3. The study area is well suited for the monitoring techniques to be used;

4. And, the waterbody is representative of other water resources with similar management objectives in the watershed.

Water resources to be considered for evaluation monitoring in the Middle Trempealeau watershed are described as follows:

Swinns Valley Creek - is a 7.5 mile tributary of the Trempealeau River. The stream is managed as a forage fishery, but a 1990 fish survey found evidence of natural brook trout reproduction in the headwaters area. The management objective for Swinns Valley Creek is to upgrade the stream to a Class II trout fishery.

Traverse Valley Creek - is a 8.2 mile tributary of the Trempealeau River. The stream is managed as a Class II brook and brown trout fishery. A 1990 fish survey found natural brook trout reproduction in the upstream portion. Evaluation will primarily be focused in the stream reach above the junction of Hunt Valley Road and CTH X where higher landowner participation levels are expected. Project objectives for this stream are to upgrade the Buffalo County portion of Traverse Valley Creek to a Class I trout fishery and to improve the Class II fishery in the lower portion.

American Valley Creek - is a 4.1 mile tributary of Turton Creek. The stream is currently managed as a forage fishery, but a 1990 fish survey found two age classes of brook trout. The project objective for American Valley Creek is to upgrade the stream to a Class II trout fishery.

Plum Creek - is a 4.6 mile tributary of the Trempealeau River with a forage fishery. The project objective is to enhance the forage fish community in Plum Creek.

Lakes Coulee Creek - is a 6.2 mile tributary of the Trempealeau River. The stream is managed as a Class III trout fishery, but a 1990 fish survey found no trout. The project objective for Lakes Coulee Creek is to improve habitat conditions sufficient to enhance the Class III fishery.

Trempealeau River - will be monitored at the beginning and end of the implementation period to determine whether the project objective of reduced bacteria levels has been achieved.

Reference Sites - Three to five "reference" streams will also be selected in the DNR Western District to establish monitoring sites where few if any land use changes are expected to occur during the next 10 years. These reference sites will be selected in areas that may or may not be within priority watersheds. The reference sites will be similar to the above project sites in terms of size, gradient and watershed topography. The reference sites will hopefully provide information on long-term trends in habitat and water quality conditions that are independent of land use changes.

Monitoring Techniques

A variety of monitoring methods will be used in assessing the effectiveness of the watershed project, including habitat evaluations, fishery surveys, macroinvertebrate sampling, and physical, chemical and biological monitoring.

Habitat Evaluation

Availability of suitable habitat is a major factor limiting trout fisheries in the Middle Trempealeau watershed. Since a primary objective of this watershed project is to improve trout habitat, much of the assessment effort will focus on factors directly or indirectly affecting the trout fishery. Several key habitat related factors that limit coldwater fisheries in the Middle Trempealeau watershed include; lack of suitable spawning substrate, scarcity of instream cover, elevated water temperatures and possibly occasional low D.O. conditions.

The U.S. Fish and Wildlife Service has developed a habitat evaluation procedure that focuses on habitat requirements of selected wildlife species. The end product of the procedure is a numerical habitat suitability index (HSI) on a 0.0 to 1.0 scale, with 1.0 as the optimal level (Terrell, et al., 1982).

The HSI will be used to compare habitat conditions prior to, and after project implementation at several sites in the Middle Trempealeau watershed on the previously identified stream reaches. Habitat evaluation sites will primarily be located where BMP implementation is expected to measurably improve stream conditions. In most cases, significant improvements in the HSI can only be expected where BMPs directly affecting stream habitat, such as streambank fencing and barnyard management, are implemented.

Habitat evaluation will require collection of considerable physical data at each site. Data requirements include maximum/minimum temperature, minimum D.O., turbidity, velocity and numerous other instream physical parameters Because of the considerable data requirements, use of the HSI will be limited to fewer than 15 sites in the watershed. Precise sites for the HSI analysis will be identified after cost-share agreements have been signed for practices that

will immediately benefit fish habitat. An HSI will be determined for each site before and several years after practices have been installed.

Fisheries

Electrofishing surveys were conducted in 1990 at 45 sites in 25 streams to assess pre-implementation fishery conditions in the watershed (see Middle Trempealeau River Appraisal Report). Single-run electrofishing surveys were run on several 1000' reaches of each stream studied. The fish survey results were used with other information to develop project objectives and an evaluation monitoring strategy. Additional fishery data will be collected to supplement HSI determinations and to help assess overall success of the watershed project.

Macroinvertebrate Sampling

Stream macroinvertebrates were sampled at 20 sites in the watershed in 1990 as part of the water quality appraisal. A Hilsenhoff Biotic Index (HBI) was determined for each site to assess water quality conditions. Macroinvertebrate sample results to date indicate good to excellent water quality in the streams studied (see Middle Trempealeau River Appraisal Report).

The HBI primarily reflects long-term oxygen conditions in streams, but does not necessarily measure other habitat-related variables such as turbidity, toxics or sedimentation. Use of the HBI will generally be limited to sites where organic loading and low D.O. levels are likely to be of concern, such as below barnyards and/or pasture areas located in close proximity to streams. Other macroinvertebrate biometrics, such as diversity indices and functional feeding group analysis will also be used, where appropriate, to assess changes in water quality or habitat. Samples collected for HBI determinations can be used for these and other biometrics.

Dissolved Oxygen and Temperature

Dissolved oxygen and temperature data will be collected to determine whether these parameters are limiting to trout carryover or reproduction. Continuous D.O. and temperature monitoring will be conducted during summer low flow at selected stream sites using LICOR dataloggers and YSI D.O. meters. Water temperature extremes will be recorded with maximum/minimum thermometers placed in streams at other sites and recorded on a monthly basis. Dissolved oxygen and temperature monitoring will be conducted in the vicinity of habitat evaluation sites to calibrate the HSI models.

Water Quality Monitoring

Monthly water quality monitoring will be conducted at one site on each of the study stream during the first year of project implementation. The water quality data will be used to help calibrate models used in calculating HSIs.

Bi-weekly bacteriological samples will be collected at each of the study sites and three sites on the Trempealeau River during the first year of project installation. This monitoring will be used to establish pre-implementation fecal coliform and fecal streptococcus levels in the study streams and the Trempealeau River.

Sampling Approach

Evaluation monitoring in the Middle Trempealeau watershed will primarily be focused in the study streams identified in Section II. Some adjustments in sampling sites and timing may be necessary as project implementation proceeds. Several of the monitoring techniques that will be used require minimal lead time to conduct, allowing considerable flexibility in site selection. Monitoring will only be conducted where it appears that landowner participation rates will be high and there is potential for measurable stream improvements. If cost-share sign-up rates are lower than expected in a particular subwatershed, monitoring efforts will be directed to a watershed with higher participation levels.

Habitat Suitability Index

One to 3 sites per study stream will be selected for the HSI analysis. Sites will generally be located in stream reaches where landowners have signed cost-share agreements and practices such as streambank fencing and barnyard runoff controls will be installed. Sites will be selected and the HSI analysis will be conducted after cost-share agreements have been signed, but before installation begins. The county LCDs will be asked to assist the Department in identifying sites in the study stream areas by providing an annual update of cost-share agreement locations and implementation activities.

Habitat evaluations will be conducted at selected sites in the study streams identified in Section II. The survey sites will include stream reaches that are 20 to 40 times the average channel width. The selected reach should contain unique features that are limiting to a particular life stage or the species in general (brook trout, brown trout, creek chub and white sucker will be the species of concern). Each study reach will be identified using 7.5 minute USGS topographic maps and LORAN coordinates. A steel fence post will be placed at the starting point of each survey for future reference.

The HSI analysis requires considerable data collection at each site. Table 8-1 is a summary of some of the model variables that will be measured or estimated for each site.

Table 8-1. A Partial Listing of HSI Model Variables for Stream Studies (Modified from Terrell, et al., 1982).

Morphometric and Hydrologic Variables	Water Quality Variables
Ave. annual base flow	Minimum dissolved oxygen
Ave. discharge	Minimum/maximum pH
Ave. max. stream depth	Minimum/maximum temperature
Ave. stream width	Ave. nitrate-nitrogen
Stream gradient	
Cover Variables	
Ave. % of streambank covered by rooted vegetation	
Ave. pool class rating	
Ave. size of substrate	
Percent backwater areas	
Percent cover	
Percent substrate types	
Percent inundated vegetation	
Percent pools	
Percent stream shaded	
Percent substrate embeddedness	
Vegetation index	

The HSI analysis will be conducted at each study site before BMP installation, and approximately 2-3 years after installation. It is expected that most of the HSI sites will be identified within the first 3 years of project implementation. The HSI data collection and analysis will be conducted by DNR District Water Resources staff.

Water Quality Monitoring

Water quality monitoring will be conducted by DNR District staff at selected sites for one year, beginning July 1992, to provide a data base for the HSI models. Monthly water quality samples will be collected from one site on each study stream during the first year of project

implementation. Parameters to be monitored include dissolved oxygen, temperature, pH, turbidity, nitrate-nitrogen and ammonia-nitrogen.

Bacteriological samples will be collected bi-weekly from 3 sites on the Trempealeau River and one site on each of the study streams from May-September 1992. The bacteria sampling will be conducted by DNR District staff and sent to the State Laboratory of Hygiene for fecal coliform and fecal streptococcus analysis.
Watershed mapping

The selection of monitoring sites under the proposed strategy is highly dependent upon where nonpoint source controls are actually implemented. Consequently, continuous tracking of the location of signed cost-share agreements and implementation activities is essential during the project. The respective county LCD staff will be asked to map these activities for the proposed study stream watersheds on 7.5 minute USGS topographic maps during project implementation. The topographic maps will be updated on an annual basis during the life of the project. County LCD annual work plans should include time for these mapping activities.

Fish Surveys

Fish surveys will generally be limited to stream sections where the 1990 surveys were conducted and where HSI analysis are conducted. An attempt will be made to conduct surveys at several sites on each study stream before and after project implementation. The number and timing of surveys will depend on implementation activities and available personnel and equipment. It is anticipated that approximately three sites will be surveyed per year between FY 92 and FY 95. The sites will be re-surveyed following project implementation.

Fish surveys will be conducted using a double-run, mark-recapture population estimate method. Trout will be captured and marked (ie. fin-clipped), released and re-surveyed at least 24 hours later. Single-run surveys will be conducted where insufficient numbers of trout are present to conduct mark-recapture surveys. All fish will be counted and identified to species, and all trout will be measured to the nearest 0.1 inch. The surveys will likely be conducted by DNR District Water Resources staff unless funding becomes available to Fish Management staff to conduct the surveys. Annual trout stocking records are maintained by the DNR Area Fish Manager.

Physical stream conditions will also be measured or estimated at each site including streamflow, width, depth, substrate composition and streambank characteristics. Stream survey data will be recorded on DNR fish survey forms and forms developed by Lyons (1990) (see Appendix B).

Macroinvertebrate Sampling

Macroinvertebrates will be initially sampled at 1-2 sites in each of the study streams in spring and fall, 1992. The sample sites will be located at the 1991 sites and in riffle areas of the HSI study sites where possible. In some cases it will be necessary to delay macroinvertebrate sampling until HSI sites have been identified. Preference will be given to riffle areas below problem barnyards that are likely to be controlled through the watershed project.

Two sites will be monitored throughout the project to examine long-term trends in the macroinvertebrate community. Macroinvertebrate samples will be collected annually in spring at sites in Swinns Valley Creek and Traverse Valley Creek. Three replicate samples will be collected at each site on each sampling date.

Samples will be collected by DNR District Water Resources staff using a D-frame net and procedures established by Hilsenhoff (1977, 1982). The samples will be preserved in 70% ethanol and sent to UW-Stevens Point for identification and data entry.

Dissolved Oxygen and Temperature

Dissolved oxygen and temperature monitoring will be conducted over a 4-6 week period during summer low flow conditions in 1992 at 1-2 sites in each of the study streams. Continuous D.O. and temperature monitoring will be conducted for 48-72 hour periods using a Model 57 YSI D.O. meter connected to a LICOR datalogger. An attempt will also be made to collect data during summer precipitation events.

Additional temperature data will be collected with minimum/maximum thermometers during summer low flow conditions. These thermometers can be placed in a stream for extended periods to measure temperature extremes.

USGS Monitoring

A USGS monitoring station should be constructed and operated on Swinns Valley Creek at or near the STH 95 bridge. The Swinns Valley site would monitor an approximately 14 square mile watershed where relatively high landowner participation levels are anticipated.

Monitoring should begin as soon as possible and continue throughout the project life. Monthly baseline and event-related samples should be collected for total phosphorus, total suspended solids, ammonia-nitrogen, fecal coliform and fecal streptococcus. The station should also measure continuous streamflow, dissolved oxygen, pH and temperature. The monitoring station should be installed and maintained by USGS staff.

Data Management and Analysis

Habitat evaluation data will be recorded on forms developed for the HSI studies. The habitat data will be used with models developed by U.S. Fish and Wildlife Service to calculate an HSI for the species of concern at each site. Brook trout, brown trout, creek chub and white sucker will be the species of concern in this watershed. The HSI will be used to calculate the amount of suitable habitat (measured as habitat units) available for each species at each site. Changes in pre- and post-project HSIs and habitat units will be used to evaluate project success at improving habitat in the study reaches.

Fish surveys will be conducted according to procedures in the DNR Fish Management Handbook and data will be recorded on the appropriate DNR field sheets. Pre- and post-project fish survey data will be entered onto a LOTUS spreadsheet for analysis. Fish population estimates will be based on formulae identified in the Fish Management Handbook. Statistical analysis, including paired t-tests for significance, will also be conducted on the fishery data.

Macroinvertebrate data will be reported on DNR form 3200-81 (Appendix C). Macroinvertebrate identification and data entry will contracted to UW-Stevens Point. Biometrics in BUGPROGRAM developed by Dr. Stan Szcztko (UW-Stevens Point) will be used to interpret macroinvertebrate data, including;

Hilsenhoffs' Biotic Index, species richness, percent EPT, Margelefs' Diversity Index and functional feeding group analysis. The detectable difference (DD) statistical procedure modified from Narf, et al.(1984) will be used to evaluate the significance of changes in HBI values before and after project implementation.

Dissolved oxygen and temperature data will be recorded on LICOR dataloggers and downloaded into a LOTUS spreadsheet. The data in LOTUS can be displayed in graphical or tabular form. Minimum/maximum temperature data will be stored in a LOTUS spreadsheet and used to calibrate the HSI models.

Continuous water quality monitoring data from the USGS site will be recorded, analyzed and reported by USGS. Total annual streamflow, total phosphorus, ammonia-nitrogen, and suspended sediment loads will be determined. Monitoring results will be reported in the annual USGS Water Resources Data report.

Bacteria data will be log-transformed prior to statistical analysis. A two-sample Students' t-test will be used to compare sample means for pre- and post-implementation bacteria sample data.

Workload and Cost Analysis

Implementation of this evaluation monitoring plan will primarily be the responsibility of District Water Resources Management staff. Assistance will be provided by USGS, Trempealeau and Buffalo County LCDs and the DNR Black River Falls Area Fish Manager.

Workload Analysis

The following analysis focuses on the initial 3 years of project implementation, when most of the pre-implementation monitoring efforts will occur. A similar work effort is anticipated after project implementation is complete (approximately year 2000). Because of the uncertainty of when and where some of the monitoring will be conducted (depending on where BMPs are installed), much of the workload estimates represent a "best guess". Table 8-2 is a summary of proposed monitoring activities, number of anticipated sites and staff responsible for conducting the monitoring.

Table 8-3 is a summary of anticipated time required for each monitoring activity. The hours are divided into Department FTE and LTE time requirements.

Project Costs

Several of the proposed monitoring activities have no new or additional equipment or laboratory costs; including habitat evaluation, D.O. and temperature monitoring. Fish surveys are dependent on availability of electroshocking equipment and may have costs associated with unanticipated equipment failure. Table 7 is a summary of projected monitoring costs during the first 3 years of project implementation.

Watershed mapping

County work plans and grant agreements should include time and funding to map BMP installations on USGS topographical maps as they occur in the study subwatersheds. The counties will be asked to provide the Department an annual map update of project implementation activities. This activity should require about 20 hours per year per county.

Table 8-2. Summary of Proposed Monitoring Activities in the Middle Trempealeau Watershed.

	No. of Sites			
Monitoring Activity	FY92[1]	FY93	FY94	Responsible Staff[2]
Habitat Evaluation	2	3	3	DNR - WRM
Fish Surveys	3	3	3	DNR - WRM & FM
Macroinvertebrate Sampling	5	5	5	DNR - WRM
D.O. & Temp. Monitoring	0	7	5	DNR - WRM
Water Quality Monitoring	7	7	0	DNR - WRM

[1] FY92 - Fiscal year runs from July 1-June 30 (for example: FY92 is July 1, 1991 - June 30, 1992).
[2] DNR-WRM - DNR District Water Resources Management
DNR-FM - DNR Black River Falls Area Fish Management

Table 8-3. Workload Requirements for Monitoring in the Middle Trempealeau Watershed

	FY92[1]		FY93		FY94	
Monitoring Activity	FTE	LTE	FTE	LTE	FTE	LTE
Prelim. Site Evaluation	20		20		20	
Habitat Evaluation	20	20	40	40	40	40
Fish Surveys[2]	60	60	60	60	60	60
Macroinvertebrates	20	20	40	40	20	20
D.O. & Temp. Monitoring	10	01	02	040	20	20
Bacteriological Monitoring	10	40				
Water Quality Monitoring	10	60	10	60		
Data Entry and Analysis	20	20	40	40	20	20
Totals:	160	230	230	280	180	160

[1] Fiscal Year extends from July 1 - June 30 (for example: FY92 is July 1, 1991 - June 30, 1992).
[2] Includes DNR Area Fish Manager and District WRM staff.

Table 8-4. Costs of Middle Trempealeau River Evaluation Monitoring Plan

Macroinvertebrate sampling	
FY92	9 samples (incl. replicates) X $100/sample = $900
FY93	18 samples (incl. replicates) X $100/sample = $1800
FY94	6 samples (incl. replicates) X $100/sample = $600

APPENDIX A
Glossary

ACUTE TOXICITY:
Any poisonous effect produced by a single short-term exposure to a chemical that results in a rapid onset of severe symptoms.

ADVANCED WASTEWATER TREATMENT:
The highest level of wastewater treatment for municipal treatment systems. It requires removal of all but 10 parts per million of suspended solids and biological oxygen and/or 50 percent of the total nitrogen. Advanced wastewater treatment is also known as "tertiary treatment."

AGRICULTURAL CONSERVATION PROGRAM (ACP):
A federal cost-sharing program to help landowners install measures to conserve soil and water resources. ACP is administered by the USDA ASCS through county ACP committees.

ALGAE:
A group of microscopic, photosynthetic water plants. Algae give off oxygen during the day as a product of photosynthesis and consume oxygen during the night as a result of respiration. Therefore, algae effect the oxygen content of water. Nutrient-enriched water increases algae growth.

AMMONIA:
A form of nitrogen (NH_3) found in human and animal wastes. Ammonia can be toxic to aquatic life.

ANAEROBIC:
Without oxygen.

AREA OF CONCERN:
Areas of the Great Lakes identified by the International Joint Commission (IJC) as having serious water pollution problems.

AREAWIDE WATER QUALITY MANAGEMENT PLANS (208 PLANS):
A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each basin in Wisconsin must have a plan prepared for it, according to section 208 of the Clean Water Act.

ANTIDEGRADATION:

A policy stating that water quality will not be lowered below background levels unless justified by economic and social development considerations. Wisconsin's antidegradation policy is currently being revised to make it more specific and meet EPA guidelines.

AVAILABILITY:

The degree to which toxic substances or other pollutants are present in sediments or elsewhere in the ecosystem and are available to affect or be taken up by organisms. Some pollutants may be "bound up" or unavailable because they are attached to clay particles or are buried by sediment. Oxygen content, pH, temperature and other conditions in the water can affect availability.

BACTERIA:

Single-cell, microscopic organisms. Some can cause disease, but others are important in organic waste stabilization.

BASIN PLAN:

See "Areawide Water Quality Management Plan".

BENTHIC ORGANISMS (BENTHOS):

Organisms living in or on the bottom of a lake or stream.

BEST MANAGEMENT PRACTICE (BMP):

The most effective, practical measures to control nonpoint sources of pollutants that runoff from land surfaces.

BIOACCUMULATION:

The uptake and retention of substances by an organism from its surrounding medium and food. As chemicals move through the food chain, they tend to increase in concentration in organisms at the upper end of the food chain such as predator fish, or in people or birds that eat these fish.

BIOASSAY STUDY:

A test for pollutant toxicity. Tanks of fish or other organisms are exposed to varying doses of treatment plant effluent. Lethal doses of pollutants in the effluent are then determined.

BIOCHEMICAL OXYGEN DEMAND (BOD):

A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. BOD_5 is the biochemical oxygen demand measured in a five day test. The greater the degree of pollution, the higher the BOD_5.

BIODEGRADABLE:

Waste that can be broken down by bacteria into basic elements. Most organic wastes such as food remains and paper are biodegradable.

BIOTA:

All living organisms that exist in an area.

BUFFER STRIPS:

Strips of grass or other erosion-resisting vegetation between disturbed areas and a stream or lake.

BULKHEAD LINES:

Legally established lines that indicate how far into a stream or lake an adjacent property owner has the right to fill. Many of these lines were established many years ago and allow substantial filling of the bed of the river and bay. Other environmental laws may limit filling to some degree.

CARCINOGENIC:

A chemical capable of causing cancer.

CATEGORICAL LIMITS:

All point source discharges are required to provide a basic level of treatment. For municipal wastewater treatment plants this is secondary treatment (30 mg/l effluent limits for SS and BOD). For industry the level depends on the type of industry and the level of production. More stringent effluent limits are required, if necessary, to meet water quality standards.

CHLORINATION:

The application of chlorine to wastewater to disinfect it and kill bacteria and other organisms.

CHLORORGANIC COMPOUNDS (CHLORORGANICS):

A class of chemicals that contain chlorine, carbon and hydrocarbon. This generally refers to pesticides and herbicides that can be toxic. Examples include PCB's and pesticides such as DDT and dieldrin.

CHRONIC TOXICITY:

The effects of long-term exposure of organisms to concentrations of a toxic chemical that are not lethal, but is injurious or debilitating in one or more ways. An example of the effect of chronic toxicity is reduced reproductive success.

CLEAN WATER ACT:

See "Public Law 92-500."

COMBINED SEWERS:

A wastewater collection system that carries both sanitary sewage and stormwater runoff. During dry weather, combined sewers carry only wastewater to the treatment plant. During heavy rainfall, the sewer becomes swollen with stormwater. Because the treatment plant cannot process the excess flow, untreated sewage is discharged to the plant's receiving waters, i.e., combined sewer outflow.

CONFINED DISPOSAL FACILITY (CDF):
A structure built to contain and dispose of dredged material.

CONGENERS:
Chemical compounds that have the same molecular composition, but have different molecular structures and formula. For example, the congeners of PCB have chlorine located at different spots on the molecule. These differences can cause differences in the properties and toxicity of the congeners.

CONSERVATION TILLAGE:
Planting row crops while only slightly disturbing the soil. In this way a protective layer of plant residue stays on the surface. Erosion rates decrease.

CONSUMPTION ADVISORY:
A health warning issued by DNR and WDHSS that recommends people limit the fish they eat from some rivers and lakes based on the levels of toxic contaminants found in the fish.

CONTAMINANT:
Some material that has been added to water that is not normally present. This is different from a pollutant, which suggests there is too much of the material present.

CONVENTIONAL POLLUTANT:
Refers to suspended solids, fecal coliforms, biochemical oxygen demand, and pH, as opposed to toxic pollutants

COST-EFFECTIVE:
A level of treatment or management with the greatest incremental benefit for the money spent.

CRITERIA:
See water quality standard criteria.

DDT:
A chlorinated hydrocarbon insecticide that was banned because of its persistence in the environment.

DIOXIN (2,3,7,8-tetrachlorodibenso-p-dioxin):
A chlorinated organic chemical which is highly toxic.

DISINFECTION:
A chemical or physical process that kills organism that cause disease. Chlorine is often used to disinfect wastewater.

DISSOLVED OXYGEN (DO):

Oxygen dissolved in water. Low levels of dissolved oxygen cause bad smelling water and threaten fish survival. Low levels of dissolved oxygen often result from inadequate wastewater treatment. The DNR considers 5 ppm DO necessary for fish and aquatic life.

DREDGING:

Removal of sediment from the bottom of water bodies.

ECOSYSTEM:

The interacting system of biological community and its nonliving surrounding.

EFFLUENT:

Solid, liquid or gas wastes (byproducts) that are disposed on land, in water or in air. As used in the RAP, effluent generally means wastewater discharges.

EFFLUENT LIMITS:

The DNR issues WPDES permits establishing the maximum amount of pollutant to be discharged to a receiving stream. Limits depend on the pollutant and the water quality standards that apply for the receiving waters.

EMISSION:

A direct (smokestack particles) or indirect (busy shopping center parking lot) release of any contaminant into the air.

ENVIRONMENTAL PROTECTION AGENCY (USEPA):

The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air and solid waste pollution control to state agencies.

ENVIRONMENTAL REPAIR FUND:

A fund established by the Wisconsin Legislature to deal with abandoned landfills.

EPIDEMIOLOGY:

The study of diseases as they affect populations rather than individuals, including the distribution and incidence of a disease mortality and morbidity rated, and the relationship of climate, age, sex, race and other factors. EPA uses such data to establish national air quality standards.

EROSION:

The wearing away of the land surface by wind or water.

EUTROPHIC:

Refers to a nutrient-rich lake. Large amounts of algae and weeds characterize a eutrophic lake (see also "Oligotrophic" and "Mesotrophic").

EUTROPHICATION:

The process of nutrient enrichment of a lake loading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

FACILITY PLAN:

A preliminary planning and engineering document that identifies alternative solutions to a community's wastewater treatment problems.

FECAL COLIFORM:

A group of bacteria used to indicate the presence of other bacteria that cause disease. The number of coliform is particularly important when water is used for drinking and swimming.

FISHABLE AND SWIMMABLE:

Refers to the water quality goal set for the nation's surface waters by Congress in the Clean Water Act. All waters were to meet this goal by 1984.

FLOURANTHENE:

A polyaromatic hydrocarbon (PHA) with toxic properties.

FLY ASH:

Particulates emitted from coal burning and other combustion, such as wood burning, and vented into the air from stacks, or more likely, collected by electrostatic precipitators.

FOOD CHAIN:

A sequence of organisms where each uses the next as a food source.

FURANS (2,3,7,8-tetra-chloro-dibenzpfurans):

A chlorinated organic compound which is highly toxic.

GREEN STRIPS:

See buffer strip.

GROUNDWATER:

Undergroundwater-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

HABITAT:

The place or type of site where a plant or animal naturally lives and grows.

HEAVY METALS:

Metals present in municipal and industrial wastes that pose long-tern environmental hazards if not properly disposed. Heavy metals can contaminate ground and surface waters, fish and other food stuffs. The metals of most concern are: arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium and zinc (see also separate listings of these metals for their health effects).

HERBICIDE:

A type of pesticide that is specifically designed to kill plants and can also be toxic to other organisms.

HYDROCARBONS:

Any chemical of a large family of chemicals containing carbon and hydrogen in various combinations.

INCINERATOR:

A furnace designed to burn wastes.

INFLUENT:

Influent for an industry would be the river water that the plant intakes for use in its processing. Influent to a municipal treatment plant is untreated wastewater.

IN-PLACE POLLUTION:

As used in the RAP, refers to pollution from contaminated sediments. These sediments are polluted from post discharges from municipal and industrial sources.

INTERNATIONAL JOINT COMMISSION (IJC):

An agency formed by the United States and Canada to guide management of the Great Lakes and resolve border issues.

ISOROPYLBIPHENYL:

A chemical compound used as a substitute for PCB.

LANDFILL:

A conventional sanitary landfill is "a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading solid wastes in thin layers, materials at the end of each operating day". Hazardous wastes frequently require various types of pretreatment before they are disposed of, i.e., neutralization chemical fixation encapsulation. Neutralizing and disposing of wastes should be considered a last resort. Repurifying and reusing waste materials or recycling them for another use may be less costly.

LC-1:

The concentration that results in 1% mortality of the test animal populations exposed to the contaminant.

LC_{50}:

Lethal concentration for 50% of the test population exposed to a toxicant substance.

LD_{50}:
Lethal dose for 50 percent of the test population exposed to a toxicant substance.

LEACHATE:
The contaminated liquid which seeps from a pile or cell of solid materials and which contains water, dissolved and decomposing solids. Leachate may enter the groundwater and contaminate drinking water supplies.

LOAD:
The total amount of materials or pollutants reaching a given local.

MACROPHYTE:
A rooted aquatic plant.

MASS:
The amount of material a substance contains causing it to have weight in a gravitational field.

MASS BALANCE:
A study that examines all parts of the ecosystem to determine the amount of toxic or other pollutant present, its sources, and the processes by which the chemical moves through the ecosystem.

MESOTROPHIC:
Refers to a moderately fertile nutrient level of a lake between the oligotrophic and eutrophic levels. (See also "Eutrophic" and "Oligotrohpic.")

MILLIGRAMS PER LITER (mg/1):
A measure of the concentration of substance in water. For most pollution measurement this is the equivalent of "parts per million".

MITIGATION:
The effort to lessen the damages caused, by modifying a project, providing alternatives, compensating for losses or replacing lost values.

MIXING ZONE:
The portion of a stream or lake where effluent is allowed to mix with the receiving water. The size of the area depends on the volume and flow of the discharge and receiving water. For streams the mixing zone it is one-third of the lowest flow that occurs once every 10 years for a seven day period.

NONPOINT SOURCE POLLUTION (NSP):
Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards. Pollutants from these sources reach water bodies in runoff, which can best be controlled by proper land management.

NPS:

See nonpoint source pollution.

OLIGOTROPHIC:

Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water. (See also "Eutrophic" and "Mesotrophic.")

OUTFALL:

The mouth of a sewer, drain, or pipe where effluent from a wastewater treatment plant is discharged.

PATHOGEN:

Any infective agent capable of producing disease. It may be a virus, bacterium, protozoan, etc.

PELAGIC:

Referring to open water portion of a lake.

PESTICIDE:

Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

PH:

A measure of acidity or alkalinity, measured on a scale of 0 to 14 with 7 being neutral and 0 being most acid, and 14 being most alkaline.

PHENOLS:

Organic compounds that are byproducts of petroleum refining, textile, dye, and resin manufacture. High concentrations can cause taste and odor problems in fish. Higher concentration can be toxic to fish and aquatic life.

PHOSPHORUS:

A nutrient that, when reaching lakes in excess amounts, can lead to overfertile conditions and algae blooms.

PLANKTON:

Tiny plants and animals that live in water.

POINT SOURCES:

Sources of pollution that have discrete discharges, usually from a pipe or outfall.

POLLUTION:

The presence of materials or energy whose nature, location, or quantity produces undesired environmental effects.

POLYCHLORINATED BIPHENYLS(PCBs):

A group of 209 compounds, PCBs have been manufactured since 1929 for such common uses as electrical insulation and heating/cooling equipment, because they resist wear and chemical breakdown. Although banned in 1979 because of their toxicity, they have been detected on air, land and water. Recent surveys found PCBs in every section of the country, even those remote from PCB manufacturers.

POLYCHLORINATED ORGANIC COMPOUNDS:

A group of toxic chemicals which contain several chlorine atoms.

PRETREATMENT:

A partial wastewater treatment required from some industries. Pretreatment removes some types of industrial pollutants before the wastewater is discharged to a municipal wastewater treatment plant.

PRIORITY POLLUTANT:

A list of toxic chemicals identified by the federal government because of their potential impact in the environment and human health. Major dischargers are required to monitor all or some of these chemicals when their WPDES permits are reissued.

PRIORITY WATERSHED:

A drainage area about 100,000 acres in size selected to receive Wisconsin Fund money to help pay the cost of controlling nonpoint source pollution. Because money is limited, only watersheds where problems are critical, control is practical, and cooperation is likely are selected for funding.

PRODUCTIVITY:

A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

PUBLIC LAW 92-500 (CLEAN WATER ACT):

The federal law that sets national policy for improving and protecting the quality of the nation's waters. The law set a timetable for the cleanup of the nation's waters and stated that they are to be fishable and swimmable. This also required all dischargers of pollutants to obtain a permit and meet the conditions of the permit. To accomplish this pollution cleanup, billions of dollars have been made available to help communities pay the cost of building sewage treatment facilities. Amendments in the Clean Water Act were made in 1977 by passage of Public Law 95-217, and in 1987.

PUBLIC PARTICIPATION:

The active involvement of interested and affected citizens in governmental decision-making.

PUBLICLY OWNED TREATMENT WORKS (POTW):

A wastewater treatment plat owned by a city, village or other unit of government.

RAP:

See Remedial Action Plan.

RECYCLING:
The process that transforms waste materials into new products.

REMEDIAL ACTION PLAN:
A plan designed to restore beneficial uses to a Great Lakes Area of Concern.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RF/FS):
An investigation of problems and assessment of management options conducted as part of a superfund project.

RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 (RCRA):
This federal law amends the Solid Waste Disposal Act of 1965 and expands on the Resource Recovery Act of 1970 to provide a program that regulates hazardous wastes, to eliminate open dumping and to promote solid waste management programs.

RETRO-FIT:
The placement of an urban structural practice in an existing urban area, which may involve rerouting existing storm sewers and/or relocating existing buildings or other structures.

RIPARIAN:
Belonging or relating to the bank of a lake, river or stream.

RIPRAP:
Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

RULE:
Refers to Wisconsin administrative rules. See Wisconsin Administrative Code.

RUNOFF:
Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to streams. Runoff can collect pollutants from air or land and carry them to receiving waters.

SECONDARY IMPACTS:
The indirect effects that an action can have on the health of the ecosystem or the economy.

SECONDARY TREATMENT:
Two-stage wastewater treatment that allows the coarse particles to settle out, as in primary treatment, followed by biological breakdowns of the remaining impurities. Secondary treatment commonly removes 90% of the impurities. Sometimes "secondary treatment" refers simply to the biological part of the treatment process.

SEDIMENT:
Soil particles suspended in and carried by water as a result of erosion.

SEICHES:

Changes in water levels due to the tipping of water in an elongated lake basin whereby water is raised in one end of the basin and lowered in the other.

SEPTIC SYSTEM:

Sewage treatment and disposal for homes not connected to sewer lines. Usually the system includes a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

SLUDGE:

A byproduct of wastewater treatment; waste solids suspended in water.

SOLID WASTE:

Unwanted or discharged material with insufficient liquid to be free flowing.

STANDARDS:

See water quality standards.

STORM SEWERS:

A system of sewers that collect and transport rain and snow runoff. In areas that have separated sewers, such stormwater is not mixed with sanitary sewage.

SUPERFUND:

A federal program that provides for cleanup of major hazardous landfills and land disposal areas.

SUSPENDED SOLIDS (SS):

Small particles of solid pollutants suspended in water.

SYNERGISM:

The total effect is greater than the sum of the individual effects. For example, the characteristic property of a mixture of toxicants that exhibits a greater-than-additive cumulative toxic effect.

TACs:

Technical advisory committees that assisted in the development of the Remedial Action Plan.

TERTIARY TREATMENT:

See advanced wastewater treatment.

TOP-DOWN MANAGEMENT:

A management theory that uses biomanipulation, specifically the stocking of predator species of fish to improve water quality.

TOTAL MAXIMUM DAILY LOADS:

The maximum amount of a pollutant that can be discharged into a stream without causing a violation of water quality standards.

TOXIC:

An adjective that describes a substance which is poisonous, or can kill or injure a person or plants and animals upon direct contact or long-term exposure. (Also, see toxic substance.)

TOXIC SUBSTANCE:

A chemical or mixture of chemicals which, through sufficient exposure, or ingestion, inhalation of assimilation by an organism, either directly from the environment or indirectly by ingestion through the food chain, will, on the basis of available information cause death, disease, behavioral or immunologic abnormalities, cancer, genetic mutations, or development of physiological malfunctions, including malfunctions in reproduction or physical deformations, in organisms or their offspring.

TOXICANT:

See toxic substance.

TOXICITY:

The degree of danger posed by a toxic substance to animal or plant life. Also see acute toxicity, chronic toxicity and additivity.

TOXICITY REDUCTION EVALUATION:

A requirement for a discharger that the causes of toxicity in an effluent be determined and measures taken to eliminate the toxicity. The measures may be treatment, product substitution, chemical use reduction or other actions that will achieve the desired result.

TREATMENT PLANT:

See wastewater treatment plant.

TROPHIC STATUS:

The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, and depth of light penetration.

TURBIDITY:

Lack of water clarity. Turbidity is usually closely related to the amount of suspended solids in water.

UNIVERSITY OF WISCONSIN-EXTENSION (UWEX):

A special outreach, education branch of the state university system.

VARIANCE:

Government permission for a delay or exception in the application of a given law, ordinance or regulation. Also, see water quality standard variance.

VOLATILE:

Any substance that evaporates at a low temperature.

WASTELOAD ALLOCATION:

Division of the amount of waste a stream can assimilate among the various dischargers to the stream. This limits the amount (in pounds) of chemical or biological constituent discharged from a wastewater treatment plant to a water body.

WASTEWATER:

Water that has become contaminated as a byproduct of some human activity. Wastewater includes sewage, washwater and the water-borne wastes of industrial processes.

WASTE:

Unwanted materials left over from manufacturing processes, refuse from places of human habitation or animal habitation.

WASTEWATER TREATMENT PLANT:

A facility for purifying wastewater. Modern wastewater treatment plants are capable of removing 95% of organic pollutants.

WATER QUALITY AGREEMENT:

The Great Lakes Water Quality agreement was initially signed by Canada and the United States in 1972 and was subsequently revised in 1978 and 1987. It proves guidance for the management of water quality, specifically phosphorus and toxics, in the Great Lakes.

WATER QUALITY LIMITED SEGMENT:

A section of river where water quality standards will not be met if only categorical effluent standards are met.

WATER QUALITY CRITERIA:

A measure of the physical, chemical or biological characteristics of a water body necessary to protect and maintain different water uses (fish and aquatic life, swimming, etc.).

WATER QUALITY STANDARDS:

The legal basis and determination of the use of a water body and the water quality criteria, physical, chemical, or biological characteristics of a water body, that must be met to make it suitable for the specified use.

WATER QUALITY STANDARD VARIANCE:

When natural conditions of a water body preclude meeting all conditions necessary to maintain full fish and aquatic life and swimming, a variance may be granted.

WATERSHED:

The land area that drains into a lake or river.

WETLANDS:

Areas that are inundates or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas.

WISCONSIN ADMINISTRATIVE CODE:

The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

WISCONSIN FUND:

A state program that helps pay the cost of reducing water pollution. Funding for the program comes from general revenues and bonds and is based on a percentage of the state's taxable property value. The Wisconsin Fund includes these programs:

Point Source Water Pollution Abatement Grant Program - Provides grants for 60% of the cost of constructing wastewater treatment facilities. Most of this program's money goes for treatment plant construction, but three percent of this fund is available for repair or replacement of private, on-site sewer systems.

Nonpoint Source Water Pollution Abatement Grant Program - Funds to share the cost of reducing water pollution. Nonspecified sources are available in selected priority watersheds.

Solid Waste Grant Program - Communities planning for solid waste disposal sites are eligible for grant money. $500,000 will be available each year to help with planning costs.

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT GRANT PROGRAM:

A state cost-share program established by the State Legislature in 1978 to help pay the costs of controlling nonpoint source pollution. Also known as the nonpoint source element of the Wisconsin Fund or the Priority Watershed Program.

WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM (WPDES):

A permit system to monitor and control the point source dischargers of wastewater in Wisconsin. Dischargers are required to have a discharge permit and meet the conditions it specifies.

1993

Year Selected-Map Number	Large-scale Priority Watershed Project	County(ies)
79-1	Galena River*	Grant, Lafayette
79-2	Elk Creek*	Trempealeau
79-3	Hay River*	Barron, Dunn
79-4	Lower Manitowoc River*	Manitowoc, Brown
79-5	Root River*	Racine, Milwaukee, Waukesha
80-1	Onion River*	Sheboygan, Ozaukee
80-2	Sixmile-Pheasant Branch Creek*	Dane
80-3	Big Green Lake*	Green Lake, Fond du Lac
80-4	Upper Willow River*	Polk, St. Crox
81-1	Upper West Branch Pecatonica River*	Iowa, Lafayette
81-2	Lower Black River*	La Crosse, Trempealeau
82-1	Kewaunee River*	Kewaunee, Brown
82-2	Turtle Creek	Walworth, Rock
83-1	Oconomowoc River	Waukesha, Washington, Jefferson
83-2	Little River	Oconto, Marinette
83-3	Crossman Creek/Little Baraboo River	Sauk, Juneau, Richland
83-4	Lower Eau Claire River	Eau Claire
84-1	Beaver Creek	Trempealeau, Jackson
84-2	Upper Big Eau Pleine River	Marathon, Taylor, Clark
84-3	Sevenmile-Silver Creeks	Manitowoc, Sheboygan
84-4	Upper Door Peninsula	Door
84-5	East & West Branch Milwaukee River	Fond du Lac, Washington, Sheboygan, Dodge, Ozaukee
84-6	North Branch Milwaukee River	Sheboygan, Washington, Ozaukee, Fond du Lac
84-7	Milwaukee River South	Ozaukee, Milwaukee
84-8	Cedar Creek	Washington, Ozaukee
84-9	Menomonee River	Milwaukee, Waukesha, Ozaukee, Washington
85-1	Black Earth Creek	Dane
85-2	Sheboygan River	Sheboygan, Fond du Lac, Manitowoc, Calumet
85-3	Waumandee Creek	Buffalo
86-1	East River	Brown, Calumet
86-2	Yahara River - Lake Monona	Dane
86-3	Lower Grant River	Grant
89-1	Yellow River	Barron
89-2	Lake Winnebago East	Calumet, Fond du Lac
89-3	Upper Fox River (Ill.)	Waukesha
89-4	Narrows Creek - Baraboo River	Sauk
89-5	Middle Trempealeau River	Trempealeau, Buffalo
89-6	Middle Kickapoo River	Vernon, Monroe, Richland
89-7	Lower East Branch Pecatonica River	Green, Lafayette
90-1	Arrowhead River & Daggets Creek	Winnebago, Outagamie, Waupaca
90-2	Kinnickinnic River	Milwaukee
90-3	Beaverdam River	Dodge, Columbia, Green Lake
90-4	Lower Big Eau Pleine River	Marathon
90-5	Upper Yellow River	Wood, Marathon, Clark
90-6	Duncan Creek	Chippewa, Eau Claire
91-1	Upper Trempealeau River	Jackson, Trempealeau
91-2	Neenah Creek	Adams, Marquette, Columbia
92-1	Balsam Branch	Polk
92-2	Red River - Little Sturgeon Bay	Door, Brown, Kewaunee
93-1	South Fork Hay River	Dunn, Polk, Barron, St. Croix
93-2	Branch River	Manitowoc, Brown
93-3	Soft Maple/Hay Creek	Rusk
93-4	Tomorrow/Waupaca River	Portage, Waupaca, Waushara

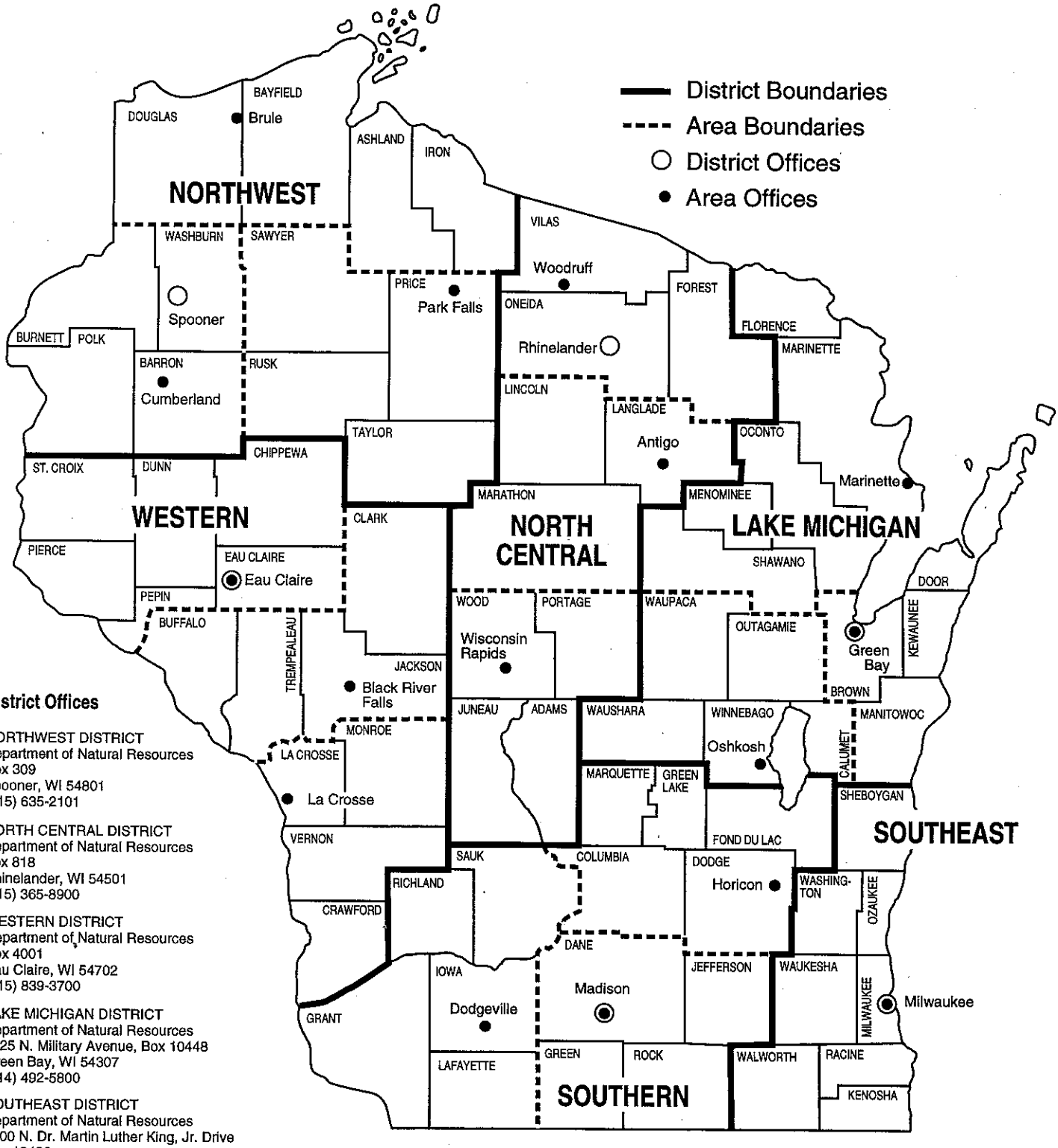
Year Selected-Map Number	Small-scale Priority Watershed Project	County(ies)
SS-1	Bass Lake*	Marinette
SS-90-1	Dunlap Creek	Dane
SS-90-2	Lowes Creek	Eau Claire
SS-90-3	Port Edwards - Groundwater Prototype	Wood
SS-91-1	Whittlesey Creek	Bayfield
SS-91-2	Spring Creek	Rock

Year Selected-Map Number	Priority Lake Project	County(ies)
PL-90-1	Minocqua Lake	Oneida
PL-90-2	Lake Tomah	Monroe
PL-91-1	Little Muskego, Big Muskego, Wind Lakes	Waukesha, Racine Milwaukee
PL-92-1	Lake Noquebay	Marinette
PL-92-2	Lake Ripley	Jefferson
PL-93-1	Camp/Center Lakes	Kenosha
PL-93-2	Lake Mendota	Dane, Columbia
PL-93-3	Hillsboro Lake	Vernon

** Project completed*

Priority Watershed Projects in Wisconsin
1993

DNR Field Districts and Areas



District Offices

NORTHWEST DISTRICT
Department of Natural Resources
Box 309
Spooner, WI 54801
(715) 635-2101

NORTH CENTRAL DISTRICT
Department of Natural Resources
Box 818
Rhinelander, WI 54501
(715) 365-8900

WESTERN DISTRICT
Department of Natural Resources
Box 4001
Eau Claire, WI 54702
(715) 839-3700

LAKE MICHIGAN DISTRICT
Department of Natural Resources
1125 N. Military Avenue, Box 10448
Green Bay, WI 54307
(414) 492-5800

SOUTHEAST DISTRICT
Department of Natural Resources
2300 N. Dr. Martin Luther King, Jr. Drive
Box 12436
Milwaukee, WI 53212
(414) 263-8500

SOUTHERN DISTRICT
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711
(608) 275-3266

REV 7/95

Our Mission:

To protect and enhance our Natural Resources—
our air, land and water;
our wildlife, fish and forests.

To provide a clean environment
and a full range of outdoor opportunities.

To insure the right of all Wisconsin citizens
to use and enjoy these resources in
their work and leisure.

And in cooperation with all our citizens
to consider the future
and those who will follow us.

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