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# Minnesota Department of Agriculture

### Pesticide Management Plan

### Status Report

## January 22, 2001



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#### I. Introduction

Minnesota Statute 18B.045 authorized the development of a state pesticide management plan (PMP) and requires a biennial report on the plan status. The pesticide management plan is a guide for the state on the management of the use of pesticides that impact water resources. A final draft of the plan was published in 1996. Revisions to the plan were made in 1998 and published at that time. The United States Environmental Protection Agency approved of the original 1996 version in 1997 and later approved the modified 1998 PMP. The EPA 1997 approval letter with comments is attached.

#### II. PMP Status

<u>Ground Water Monitoring</u>. Beginning in 1996 the MDA began a complete redesign of its ground water monitoring program. The redesign was undertaken specifically to meet the requirements of Minnesota statutes 103H, 18B, and the PMP. The redesign also incorporated the many lessons learned from the previous 10 years of monitoring as well as recommendations from the MDA's Common Detection Advisory Committee (CDAC). The primary emphasis of the redesign was to link changes in agricultural practices in hydrogeologically sensitive areas to changes in ground water quality as needed to evaluate the success of the PMP. The decision to focus on sensitive areas was a direct result of language in the 1989 Ground Water Protection Act in MS 103H.101 that directs state agencies to prioritize their programs accordingly.

The redesign was accomplished through a cooperative multi-member group that included representatives from the USGS, MPCA, MDNR, MDH, local county cooperators and numerous other interested parties. A joint process involving USGS, MPCA and MDA hydrologists developed the specifics of the design. Continuous input from MPCA and USGS hydrologists was sought during the physical installation of wells. County agencies were responsible for installing the wells. Most counties installed the wells through a contract with MDA while other counties provided their own funding for the installation of monitoring wells. In addition, MPCA hydrologists assisted with on-site installation of several wells in the program. All participants in the program, including the Counties, MPCA, MDNR, and USGS, are allowed to access the wells for their purposes rather than installing new wells for their needs. Where appropriate the USGS, MPCA and MDNR have offered suitable wells to the pesticide monitoring program in order to complete the network without duplication of effort. Installation of new wells has taken two years with wells in Morrison county remaining to be completed as soon as sufficient funds are available.

All the new wells are installed on land owned by participating farmers and landowners. Participation by farmers and landowners is strictly voluntary. The overall participation rate exceeds 80 percent and in some counties every landowner approached was willing to participate. In every county additional landowners have come forward offering their land as a site for more wells if needed by the program. Few additional well sites are needed immediately, however it has been noted that other farmers and landowners may be interested in participating.

Ground water monitoring cooperatives have been developed in the following counties:

Hubbard	Benton
Becker	Sherburne
Otter Tail	Stearns
Wadena	Pope
Todd	Kandiyohi
Morrison	Wright

The cooperatives are entities established by a written, but non-binding, agreement consisting of the counties, the MDA and local landowners. A copy of a representative county- MDA agreement is attached. In most cooperatives the county, through contracts with the MDA, is responsible for the monitoring well installation. MDA staff are usually on-site for well drilling and also do the well sampling, sample analysis, data interpretation, and report writing. The counties are responsible for the contacts with local landowners and farmers. The counties collect pesticide use information and maintain the associated GIS components of the program if they have the capability. Each county and the MDA jointly develop and implement the appropriate chemical management plans for that county. The MDA reports back to the counties on the effectiveness of the PMP in their area. When complete the central sands monitoring cooperative network will be unique across the nation as the only large-scale ground water monitoring program yet established to assess the effectiveness of a state pesticide management plan.

<u>BMP development and promotion.</u> Generic BMPs were adopted in 1997. Generic BMPs are those best management practices that are beneficial to implement whether or not a pesticide is impacting water resources. If implemented for every pesticide used generic BMPs are assumed to be capable of reducing or eliminating pesticide impacts on the state's water resources. The generic BMPs include such things as agronomic practices to ensure a healthy crop, scouting to assess the need for control, maintaining good records, crop rotation, precautions and location for mixing and loading, and several additional recommended activities. BMP promotional materials and activities were developed and distributed through direct mail brochures, dealer meetings, pesticide applicator training sessions, MDA newsletters, news releases, newspaper advertisements, attendance at fairs and water testing clinics, as well as many other means. The PMP and associated BMPs will be on the program for applicator training sessions again in 2001 and in future years as well. In addition to generic BMPs atrazine specific BMPs have been developed and continue to be promoted through the same mechanisms as generic BMPs. In 1993, following official adoption by the MDA, the primary registrant of atrazine adopted the atrazine BMPs as changes to the label. By placing the BMPs on the label the manufacturer of atrazine voluntarily designated the BMPs mandatory rather than voluntary. Although the BMPs remain mandatory, the MDA believes it is best to continue to promote the use of these label requirements. Promotion of the atrazine specific BMPs will continue for as long as atrazine is in use in the state. Water quality monitoring data collected between 1986 and 1996 has shown the atrazine BMPs to be effective in significantly reducing atrazine concentrations in ground water. The results of this monitoring indicate that Minnesota's PMP is the first in the nation to utilize a broad scale voluntary pesticide management plan to successfully improve water quality.

<u>Common Detection Advisory Committee.</u> The common detection advisory committee did not meet in 1999 because no additional ground water monitoring data was available. Data was not available as a result of the redesign of the monitoring network and the installation of new wells. A meeting was planned for late 2000 but has been delayed to early 2001. The delay is due, in part, to unanticipated delays in filling a new position dedicated to implementing the state's pesticide non-point program, and the need to appoint new members to the committee. The next meeting is expected to occur in late February to early March 2001.

#### III Conclusion

The creation of the MDA and county cooperative ground water monitoring system is a significant step towards an effective, scientifically defensible, and cost effective means of linking actual pesticide use activities to ground water quality. The system is currently operational with monitoring data being collected on a routine basis. This significant accomplishment, in conjunction with other activities outlined in this report, provides a solid base for the successful implementation of the PMP 

#### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 5 77 WEST JACKSON BOULEVARD

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**REPLY TO THE ATTENTION OF:** 

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Maseo

Gene Hugoson, Commissioner Minnesota Department of Agriculture 90 West Plato Boulevard St. Paul, Minnesota 55107-2094

Dear Mr. Hugoson:



Thank you for your submission of the <u>Minnesota Pesticide</u> <u>Management Plan</u> (Plan). After a comprehensive Region 5 program review, we have determined that the Plan is consistent with the United States Environmental Protection Agency's (U.S. EPA) <u>Pesticides and Ground-Water Strategy</u>, and we concur that it contains sufficient scope and detail to satisfy the adequacy criteria for Generic State Management Plans contained in U.S. EPA's <u>Guidance for Pesticides and Ground Water State</u> <u>Management Plans</u> (Guidance). For your records, we have enclosed a concurrence document which contains the adequacy criteria (in italics) contained in the Guidance, and the justification of how each criteria is met by the Plan.

We are confident that Minnesota's Plan will provide a suitable framework within which to develop Pesticide-Specific State Management Plans (PSMPS). It is important to remember, however, that pesticide management for ground water protection continues to evolve. We know that you will continue to take advantage of new information and new tools related to pesticides and ground water, and to recognize that some modifications might be required when developing PSMPS to accommodate the final Pesticides and Ground Water State Management Plan Rule (SMP Rule).

We acknowledge that the development of Minnesota's Plan involved creating or strengthening existing partnerships between many Federal, local, and Minnesota State agencies. Minnesota continues to be a leader in the development and implementation of ground water protection programs, and we thank you for all your

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outstanding efforts. Once the SMP Rule is finalized, we look forward to working with you in the development of PSMPS.

Sincerely yours,

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David A. Ullrich Acting Regional Administrator

Enclosure

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#### Basis for Concurrence on the April, 1996 Minnesota Pesticide Management Plan (MN SMP)

Component 1: State's Philosophy and Goals Toward Protecting Ground Water (MN SMP Chapters 1 & 2)

#### A Generic State Management Plan must include:

A statement that addresses both the ground waters to be protected and the degree of protection to be achieved under the SMP. The State's goal must be no less protective than <u>EPA's Pesticides and Ground Water Strategy</u> (<u>Strategy</u>) goal of preventing unreasonable adverse effects to human health and the environment and protecting the environmental integrity of the nation's ground water.

#### Basis for Concurrence:

Minnesota has a ground water degradation prevention goal (Minnesota Statutes SS 103H.001) that states that ground water be maintained in its natural condition, free from any degradation caused by human activities. It is recognized that for some human activities this degradation prevention goal cannot always be achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged (p. 7).

Minnesota believes that the degradation prevention policy will result in prevention of additional pollution and eventual improvement in ground water quality as pollution sources are controlled or removed and the most serious problems cleaned up (p. 8).

Minnesota Rules Chapter 7060 is a rule which regulates discharges of pollutants to ground water. Under Chapter 7060 Minnesota waters are classified according to their highest priority use, which for ground water is their use now or in the future as a source of drinking, culinary, or food processing water. This classification is established to protect ground waters as potable water supplies by preventing and abating pollution, therefore all ground water will be protected as a potential drinking water source (pp. 8, 52). The stated goal of protection efforts, whether it is the use of established reference points, a more stringent standard, or a goal of pristine ground water quality. If established reference points are used, reaching those points should be considered a failure of prevention and therefore failure to meet the ground water protection goal.

#### Basis for Concurrence:

The Minnesota Department of Agriculture (MDA) is required by statute to consider Health Risk Limits (HRLs), which are human health based ground water standards, when declaring Common Detection or adopting Water Resource Protection Requirements (WRPRs). HRLs are equivalent to U.S. EPA Maximum Contaminant Levels (MCLs) except for atrazine, where the HRL is higher than the MCL. WRPRs must be designed to prevent pollution from exceeding HRLs(p.50). MDA will also consider Chapter 7060 Rules, which require protection of ground water as potential drinking water, when making MN SMP decisions (p. 52).

Numeric limits are not used to set protection goals. Minnesota does not allow degradation to occur up to a certain limit before requiring action be taken (p. 8). This is why the management approach outlined in the SMP starts with voluntary prevention measures and uses Common Detection rather than arbitrary percentages of the HRL or other standards as a trigger for more vigorous measures.

MDA will consider Minnesota Rule, Chapter 7050 when making SMP decisions for surface water (p. 52).

Component 2: Roles and Responsibilities of State Agencies (MN SMP Chapter 4)

A Generic State Management Plan must:

• Identify and describe the general responsibility of each participating agency responsible for the development and implementation (including enforcement) of the SMP. This should also include a description of how the State agencies intend to use the programs and expertise of Federal Agencies-- e.g., the U.S. Geological Survey, USDA Soil

conservation Service (now the Natural Resources Conservation Service), USDA Extension Service, etc. -- in carrying out the SMP.

#### Basis for Concurrence:

Several state agencies have defined roles in the management of water resources. As defined in Minnesota's 1994 Ground Water Protection Act (GWPA) amendments, these are (pp. 23-24, Appendix D pp. 99-106, Minnesota Statutes SS 103A.204)

The Environmental Quality Board (EQB) is responsible for creation of a water resources committee to coordinate state ground water protection programs and prepare a biennial ground water policy report that includes the findings in the ground water protection report coordinated by the Minnesota Pollution Control Agency (MPCA) for the U.S. EPA.

MPCA is responsible for water quality monitoring and reporting, and the development of best management practices and regulatory mechanisms for protection of ground water from nonagricultural chemical contaminants. MPCA is also responsible for protection of surface waters including establishing numerical limits for pesticides in surface water bodies.

MDA is responsible for sustainable agriculture, integrated pest management, water quality monitoring, and the development of best management practices (BMPs) and regulatory mechanisms for protection of ground water from agricultural chemical contaminants. MDA also conducts pesticide registration, pesticide applicator training, pesticide ground water and surface water quality monitoring, waste pesticides and container collection, and licensing and permitting of pesticide storage facilities. In addition, MDA performs incident response activities, manages the Agricultural Chemical Response and Reimbursement Account (ACRRA) created to reimburse persons for costs incurred in cleaning up agricultural chemical incidents resulting from the use, handling, storage, transportation, and distribution of agricultural chemicals. Finally, MDA performs compliance inspections, manages the Energy and Sustainable Agricultural Project which was established to demonstrate and promote

alternative practices which are energy efficient, environmentally sound, profitable, and enhance the selfsufficiency of Minnesota farmers.

The Board of Water and Soil Resources (BWSR) is responsible for reporting on ground water education and outreach with local government officials, local water planning and management, and local cost share programs.

The Minnesota Department of Natural Resources (MDNR) is responsible for water quantity monitoring and regulation, sensitivity mapping, and development of a plan for the use of integrated pest management and sustainable agriculture on state-owned lands.

The Minnesota Department of Health (MDH) is responsible for regulation of wells and borings, and the development of HRLs under Minnesota Statutes SS 103H.201.

The University of Minnesota, other state agencies, local agencies, federal agencies, pesticide manufacturers and dealers, and other organizations also conduct pesticide pollution prevention activities:

The University of Minnesota will assist in BMP development (p. 62) and BMP promotion (p. 64).

The University of Minnesota Cooperative Extension Service (MCES) will provide training of pesticide applicators (p. 66), participate in the BMP evaluation team (p. 69), and BMP promotion and education (pp. 64, 67).

The Soil and Water Conservation Districts (SWCDs) will provide a local coordination role for BMP promotion (pp. 64, 67).

The United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) will be involved in BMP development and promotion (pp. 60, 62, 67).

**Pesticide dealers** will be utilized for BMP promotion (pp. 64, 65).

Identify a liaison who will serve as a single contact point for all formal communications concerning the SMP process between EPA and the State. The purpose is to have a single contact point responsible for the transmittal and receipt of official correspondence and information. The nature of the liaison could take the form of a task force chairperson, a special council secretary, or any other entity or person that is able to communicate with EPA regarding the SMP.

#### Basis for Concurrence:

The Minnesota Ground Water Protection Act (GWPA) designates MDA as the state lead agency for development of the SMP (p. 93). Although the MN SMP does not identify a specific liaison, MDA has stated that the commissioner of their agency will be the official liaison.

Describe the coordination mechanisms between all participating State agencies, local entities, and appropriate federal agencies. This must include a description of the process the State will use to work with the USDA-NRCS State office to coordinate pesticide management measures of SMPs and Conservation Compliance Plans developed under the Food Security Act of 1985. Any Memoranda of Understanding between participating agencies or other coordination mechanisms to implement the SMP should be discussed.

#### Basis for Concurrence:

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Initial coordination for the MN SMP process came about through the involvement of Minnesota's Pesticide Management Advisory Committee which includes representatives of state, Federal and local agencies, the University of Minnesota and other participants (pp. 29, 89). Minnesota's GWPA amendments gives the EQB responsibility to review the biennial status report on development and implementation of the MN SMP before it is given to the Legislative Water Commission. The EQB coordinates with representatives of state agencies, citizens, and other interested groups to prepare a biennial report every even-numbered year as described in Minnesota Statutes (p. 23).

Development of the SMP has been coordinated with the revision of the Minnesota Nonpoint Source (NPS) management plan, developed by the MPCA under section 319 of the Clean Water Act (CWA). The NPS management plan includes a full implementation chapter on pesticide management. It is anticipated that this chapter will be amended in 1996 to be fully compatible with the MN SMP (p. 29).

BWSR will provide a coordinating mechanism to local agencies (p. 24).

MDA will coordinate BMP development with NRCS utilizing USDA-NRCS national standards (p. 62).

Describe how local governments are included in activities under the SMP. If the State delegates pesticide management responsibilities to localities, describe the general responsibilities delegated, the criteria, if any, for delegation, and the State's oversight of these activities. when local governments have authority to address State ground water related objectives and priorities, States must demonstrate that program coordination, guidance, or oversight is provided.

#### Basis for Concurrence:

The MN SMP advisory committee includes representatives of local agencies and this committee is involved in the initial coordination in the SMP process. The EQB coordinates with representatives of state agencies, citizens, and other interested groups to prepare a biennial report. The SWCDs will provide local coordination of BMP promotions. BWSR provides a local coordinating mechanism to local agencies.

Contain official concurrences from the directors of all State agencies with responsibilities under the SMPs stating their agreement with the plan. Basis for Concurrence:

The final submittal of the MN SMP was signed off by the commissioners of MDA and MPCA.

#### Component 3: Legal Authority (MN SMP Appendix B)

A Generic State Management Plan must:

Describe the general legal authorities of the State to implement the plan successfully. This includes Federal legislation, regulations and program delegation, and State legislation and regulations, available to the State. The SMP should cite relevant State laws and regulations. Gaps that may exist in current authorities must be identified and measures to remedy those deficiencies should be outlined (include a timeline).

#### Basis for Concurrence:

The MN SMP describes the general legal authorities and legislation that MDA will use to protect ground water from agrichemical contamination on pages 93-98. MDA derives regulatory and enforcement authorities for the MN SMP from the Minnesota Pesticide Control Act, Minnesota Statutes Chapters 18B and 18D. MDA derives authority to develop the MN SMP and respond to nonpoint source contamination from the Minnesota GWPA, Minnesota Statutes 103H. MDA also has authority to respond to point-source contamination under the authority of the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation and Liability Act.

The MN SMP does not identify any gaps in authority (p. 93).

Component 4: Resources (MN SMP Appendix C)

A Generic State Management Plan must:

Indicate generally what categories of personnel or

technical expertise are anticipated to be necessary for planning and implementation of the SMP and whether the State currently has access to those categories of individuals.

#### Basis for Concurrence:

The Agronomy and Plant Protection Services, Laboratory Services, and Program Management Support Divisions of MDA have the primary responsibility for implementation of the MN SMP (p. 100). Expertise is available in these Divisions for the development/implementation of the MN SMP.

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MDH has the expertise available to develop HRLs and perform risk assessments on human exposure to pesticides (p. 102).

MPCA has expertise available to support monitoring projects, and provide input on MN SMP activities (p. 104).

The University of Minnesota has the expertise available to develop educational programs, BMPs, and pest management programs. (P. 106).

The MCES has the expertise to train pesticide applicators on pesticides and ground water quality (p. 105).

Include an estimate of the costs, both physical and operational, to develop and implement the plan. Costs associated with implementing preventive measures, conducting vulnerability assessments, public education, monitoring (including laboratory costs), and enforcement, responding to detections, promoting public participation, record-keeping, and reporting should be considered when projecting costs.

#### Basis for Concurrence:

Cost estimates are not included in the MN SMP. MDA feels that the GWPA has given Minnesota state agencies

adequate ability to develop and implement the MN SMP. The GWPA established new agency functions, responsibilities, funding mechanisms, and new staff complements (p. 99). MDA will include cost estimates in Pesticide Specific SMPs once the State Management Plan Rule is final.

Discuss the current funding available for implementation of the program, existing and potential funding sources for the future, and a commitment to pursue additional funding if needed. If the SMP indicates that adequate funding is not available at the present time, the States should indicate what activities in the SMP will go unfunded and what impact less than full implementation will have on the goal of protecting the ground water resource.

#### Basis for Concurrence:

MDA intends to fund the MN SMP through several sources including Clean Water Act 106 Ground Water Grant funds, U.S. EPA's Consolidated Pesticide Cooperative Agreement, registration fees on pesticide products, certification and licensing fees, permit programs, and surcharges (p. 100).

MDH monitoring for pesticides is funded through a service connection fee, and the Safe Drinking Water Act. Development of HRL's is supported by the general fund. Abandoned well sealing and well construction/maintenance are funded through the general fund, registration/licensing fees, and well notification and permit fees (p. 102).

MPCA receives funding for their role in the development and implementation of the MN SMP through the Clean Water Act 106 Ground Water Grant (p. 103).

There was no identified need for additional funding.

Component 5: Basis for Assessment and Planning (MN SMP Chapters 3 & 9)

A Generic State Management Plan must:

Discuss the State's approach and activities to assess vulnerability (considering factors such as pesticide usage, soil type, depth to ground water, aquifer material, precipitation, and irrigation use) on a subcounty level for the geographic area in which the State intends to allow pesticide use.

In addition, the use of monitoring, modeling, other geographic planning methods or tools, such as Geographic Information Systems (GIS), or work developed by other programs used in developing the approach should be described. Sources of the above data must be identified. Assessment and planning efforts should utilize and integrate the data available from on going State and federal assessment and mapping programs such as those available from the USGS and USDA's NRCS.

#### Basis for Concurrence:

The vulnerability of ground water to pesticide contamination will be evaluated by combining the Geologic Sensitivity Criteria (Minnesota Statutes S 103A.101, subd. 3) with the soils sensitivity criteria to designate High Risk Areas in Minnesota. These maps will then be combined with the pesticide leaching rating for specific pesticides:

1. Geologic Sensitivity Criteria are based on the known or estimated time of travel for a water borne contaminant to travel vertically from its source at or near the land surface to an aquifer. The ratings range from very high (shortest estimated time of travel) to very low.

2. Soils sensitivity criteria is determined using a screening method developed by the USDA-NRCS to evaluate the relative potential loss of pesticides from soils from leaching and runoff. Screening results are expressed as an overall potential for loss of a

specific pesticide when used on a specific soil map unit. Soil leaching and surface loss ratings are either severe, moderate or slight. The screening process is not, at this time, specific enough to Minnesota conditions to be used as more than a general planning aid.

3. Ground water vulnerability assessment will be prepared using digitized USDA-NRCS State Soil Survey maps, Minnesota soil leaching ratings identified for all soil map units, combined with the leaching ratings in order to produce a generic map showing vulnerability of soils to pesticide leaching.

4. Geologic Sensitivity Assessments will be combined with soil pesticide leaching ratings for counties with completed geologic sensitivity assessments and soil surveys. Areas with both severe leaching potentials and high or very high geologic sensitivity will be designated as high risk areas for pesticide leaching. As of April 1993 preliminary sensitivity ratings (1. above) have been developed for 15 counties, with more comprehensive evaluations for surficial and deeper aquifers available for seven counties and one fourcounty regional area. In addition, 42 counties have a digitized soil survey information system in place (3. above) (pp. 59-61).

In addition, Minnesota will utilize the following water resource information: 1) published reports and maps including soil atlases and county soil surveys, geological and hydrogeologic maps of Minnesota available from the Minnesota Geological Survey (MGS), hydrologic atlases published by the U.S. Geological Survey (USGS), MGS county atlases, USGS reports, and miscellaneous studies conducted by state agencies, colleges and universities, and consulting firms, and 2) well records and boring logs from the MDH. Minnesota will utilize soil resource information which includes state soil surveys produced and published for individual counties by the USDA-NRCS (pp. 15-18).

Pesticide management areas are equivalent to landscape/landform units and are delineated by using geologic sensitivity, pesticide use, cropping practices, and climate (pp. 37, 71). These areas will be utilized to prioritize monitoring and BMP promotion. BMP promotion areas are smaller areas within pesticide management areas and will be based on townships or watersheds (p. 71).

Discuss how the State will determine current or reasonably expected sources of drinking water (taking into account factors such as land use, remoteness, quality and/or availability of alternative water supplies) and ground water that is hydrologically connected to surface water. If a State is affording priority protection to all ground water no matter the use and value, as many States are, then the State may not have to delineate and define these.

#### Basis for Concurrence:

Minnesota treats all ground water as potential sources of drinking water, and therefore does not intend to specifically delineate or define underground sources of drinking water.

Discuss how the State's assessment of ground water vulnerability and monitoring, and the use and value of ground water, will be used to set priorities for protection activities, design and implement prevention and response programs, and determine and evaluate the effectiveness of management measures.

For example, the SMP may discuss how a combination of modeling and monitoring will be used to determine what management practices should be employed in those areas. Some States may choose to use information developed by one agency on pesticide use and cropping practices in combination with hydrogeologic sensitivity maps produced by another agency to determine specific ground water protection management measures to be implemented in vulnerable areas. A State also may decide to place a moratorium on pesticide use within Wellhead Protection Areas, critical recharge areas, or highly valued aquifers.

#### Basis for Concurrence:

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Geologic Sensitivity Assessments will be combined with soil pesticide leaching ratings for counties with completed geologic sensitivity assessments and soil surveys. Areas with both severe leaching potentials <u>and</u> high or very high geologic sensitivity will be designated as high risk areas for pesticide leaching (p. 61). Areas designated as high risk will be priority areas for BMP promotion (p. 62). Special BMP Promotion Areas can be declared based on monitoring data, being a high risk area, or designated as a Wellhead Protection Area (p. 67).

MDA will also develop, promote, and evaluate BMPs through the use pesticide management areas. Pesticide management areas are large areas of the state, based on land form characteristics, such as the central sands plains or southeastern karst regions. Efforts to evaluate the effectiveness of pesticide management strategies will be focused on these specific areas instead of statewide. Monitoring will be confined to these areas to assess effectiveness of BMP promotion areas (P. 71). BMP promotion areas will be small areas such as several townships, small watersheds, or an urban watershed (p. 71).

Identify the limitations of the assessment and discuss how those limitations are taken into account in the design of prevention and response programs. For example, if a State applies prevention measures on broad regional or county-level designations, then subcounty level assessments may not be needed, but the State should explain why the measures chosen are likely to be adequate to meet program goals. Conversely, if a State plan allows sub-county or farm-level distinctions in applying prevention measures in order to avoid overregulation, it should explain the basis for making such distinctions, and how protection goals should be met.

Note: The State's assessment and priority should reflect the SMP goal (Component 1) and should be at a level that complements monitoring (Component 6), prevention (Component 7), and response (Component 8) activities. Over time, new or changed information from monitoring and ongoing assessment activities should be used to refine and update the assessment.

#### Basis for Concurrence:

The USDA-NRCS screening process is not, at this time, specific enough to Minnesota conditions to be used as more than a general planning aid. At this time, MDA will only use it in the promotion of voluntary BMPs (p. 60).

#### Component 6: Monitoring (MN SMP Chapter 6)

A Generic State Management Plan must:

• Describe the State's monitoring program for pesticides and pesticide degradates (breakdown products or metabolites); the uses to which monitoring will be applied; and the parties responsible for various functions associated with monitoring. Key elements of a monitoring program must include scope and objective, design and justification, monitoring protocols, quality assurance/quality control, sampling methodology, analytical methods, and analytes.

#### Basis for Concurrence:

The MDA developed a water quality monitoring program prior to and separate from the MN SMP. MDA's water quality monitoring program will be coordinated with the implementation of the MN SMP and will expand to meet the additional needs of the MN SMP utilizing exiting resources available to the MDA.

The <u>purpose</u> of the MDA water quality monitoring program is to define the long term impacts of normal pesticide use on water quality. The <u>goal</u> of Minnesota's water quality monitoring is to provide information on the impacts of the routine use of pesticides on the state's ground and surface water so pesticides may be managed

to prevent or minimize degradation of the state's water resources. The objectives of the ground water monitoring for pesticides at the MDA are 1) determine statewide spatial differences in pesticide concentrations and occurrence; 2) determine long term trends in pesticide concentrations over time; 3) monitor for significant changes in pesticide concentrations and occurrences over time; 4) determine the characteristics of pesticide water quality monitoring data; 5) provide analysis of land use, pesticide management, and hydrologic and geologic attributes that may result in water resource degradation; 6) provide the basic information from which the efficacy of pesticide management plans may be determined; and 7) disseminate the information extracted from the monitoring data to the appropriate information users, policy makers, scientists, and interested citizens (pp. 35-36).

Ground water monitoring networks have been developed to meet the following objectives: 1) describe the extent of contamination in different geographic regions and types of aquifers or water systems, 2) describe the temporal trends and peaks in contamination levels at individual wells or bodies of water, and 3) to monitor for large differences over several years in the same geographic area. To fulfill these objectives the monitoring program is structured into project areas based on general landscape units, which are qualitatively ranked according to geologic sensitivity, pesticide use, cropping practices, and climate. Those units with a large percentage of acreage in row crops, sandy soils, surficial sand and gravel aquifers, and relatively large amounts of irrigation are given the highest priority. Since monitoring resources are limited, once landscape units are prioritized, monitoring is initiated (p. 37).

Monitoring networks utilize small diameter observation or monitoring wells when available; otherwise domestic drinking water wells are used. Wells are sampled at varying frequencies and selected either systematically or by judgment. The formation in which the well is completed must be known and must be in the suspected flow path of seepage from a region's pesticide use (p. 37).

A small number of background wells, far removed from recharge areas that have had pesticide applications or upgradient of other pesticide sources, are sampled to assist with quality control. These wells are of similar depths and are completed in similar geologic materials as network wells in the region (p. 37).

Monitoring networks are designed based on physical characteristics of specific land forms of interest. Study areas are selected within land form units by delineation using soil association maps. The highest priority has been given to the sand plain regions because of the value of these aquifers for shallow rural wells, the limited adsorption capacity of the soils, the high water transmission rates of the soil and vadose zone material, and the existing hydraulic studies and monitoring wells in these regions. Karst bedrock areas have the next highest priority due to the rapid recharge of water to the aquifers, and alluvial river valley aquifers, fractured crystalline bedrock aquifers, and buried sand aquifers are also of interest to the program and will be monitored as time and resources permit (pp. 37-38).

Water quality data will be reviewed on an annual basis by the MDA. A report will be prepared discussing classes of compounds detected in Minnesota, typical concentrations, geographic locations, criteria and benchmarks for evaluation, the likelihood of further detections in Minnesota, and recommendations for additional monitoring needs. Monitoring information will be analyzed to determine if pesticide detections are a result of point or non-point source contamination. Detections determined to be the result of a point source will be referred to MDA's Incident Response Unit for evaluation and possible remediation (p. 42). MDA's laboratory operates under a Quality Assurance Project Plan (QAPP) approved by U.S. EPA on 7/19/94. This QAPP covers pesticide laboratory and field activities. In addition, MDA has developed a ground water sampling guidance which contains field sampling and handling procedures.

MDA will consider ground and surface water monitoring data from other organizations, public or private, when making pesticide decisions (p. 41). Other organizations that collect monitoring data include MDH, MPCA, USGS, U.S. Fish and Wildlife Service, other states, local units of government, and pesticide registrants.

Component 7: Prevention Actions (MN SMP Chapters 4, 7, 8 and 9)

A Generic State Management Plan must:

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Address the types of preventive measures that will be implemented in the absence of actual detection of pesticides in ground water which the State has deemed to be valuable or vulnerable. Indicate how preventative measures will be reevaluated and what increasingly stringent types of measures will be imposed if contamination of ground water is found or is increasing toward the reference point. The SMP must also indicate the factors and rationale considered in choosing these measures and the triggers that would lead to a State's implementation of more stringent measures. At a minimum, confirmed detections of a pesticide in ground water need to be treated as a cause for concern and should trigger some action to diagnose the cause of the particular detection and determine whether any further regulatory/management approaches are needed. For example, a State may indicate that it will implement educational efforts regarding source reduction of pesticides, even when the pesticide has not been detected in ground water; that if detections are confirmed in ground water the State will move to measures that involve enforceable use limitations; and that if the level of a pesticide or breakdown product

in ground water is found to be increasing toward the MCL or other established reference point, the State will implement use prohibitions.

#### Basis for Concurrence:

The Minnesota SMP describes both activities geared toward preventing ground water contamination ("predetection" activities) and ensuring that contamination is slowed or stopped once it occurs ("post-detection"). voluntary actions occur in the absence of detection and when a pesticide has been put into Common Detection status. Mandatory actions can take place when there is evidence of increasing trends towards the HRL, or when BMPs are shown to be ineffective.

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Pre-Detection Activities: MDA will develop and promote Generic BMPs, promote Integrated Pest Management (IPM) and sustainable agriculture in the absence of detection (pp. 57-58). BMPs will be developed and implemented according to the potential of the geographic site for contamination (p. 62). BMPs will be developed on a soil specific basis (p. 71). Areas designated as high risk or special BMP promotion areas are priority areas for implementation (p. 62). Generic BMPs can also be implemented on a statewide basis and on a crop specific basis (p. 63). BMPs will be promoted on a pesticide management area level, township level, a special BMP promotion area, and a soils level (p. 62). Special BMP promotion areas are places where significant pesticide contamination of ground or surface water exists or could potentially exist in geographically contiguous areas. These areas are delineated for several possible reasons including monitoring data results, declaration as highly sensitive areas as determined by vulnerability assessments, or designation as Wellhead Protection Areas (p. 67)

**Post-Detection Activities:** Detections and respective concentrations of a pesticide which are determined after investigation and analysis to be a result of a point source will be referred to MDA's Incident Response unit for evaluation and possible remediation. Detections determined to be a result of a non-point source will be evaluated for Common Detection (CD) status (p. 42). CD is defined as the detection of a pollutant that is not due to misuse or unusual or unique circumstances, but is likely to be the result of normal use of a product or practice. A CD advisory team consisting of representatives from a commodity group, local unit of government, environmental organization, pesticide retailer, pesticide registrant, crop producer, state government (MPCA), MCES, University of Minnesota, and a crop protection organization will recommend pesticides for CD status. CD status triggers development of voluntary BMPs for those pesticides (p. 43), and the formation of management teams to oversee the implementation of management plans for specific pesticides (p. 79). Specific BMPs will also be developed for pesticides listed in U.S. EPA's State Management Plan Rule (p. 63). BMPs will be promoted in areas described above.

A MN SMP evaluation team will be convened by the MDA either upon the determination of Common Detection status or a requirement by U.S. EPA to develop Pesticide Specific SMPs. This evaluation team will provide technical support for the development of SMPs for specific pesticides. The evaluation team will include MDA, the Minnesota Extension Service, farm organizations, farmers, environmental organizations, and industry. The evaluation team will meet subsequent to the annual review for common detection status. Team activities will be ongoing as long as pesticides remain in common detection status (p. 69).

MDA will evaluate the effectiveness and adoption rate of BMPs by ground water monitoring (p. 72), field audits, surveys, and direct interviews (pp. 74-75). In addition to the activities listed above, the MDA conducts many activities and programs which are preventive in nature. These activities include pesticide registration, pesticide applicator training, water quality monitoring, waste pesticides and container collection, licensing and permitting of facilities, incident response, establishment of the ACRRA, compliance inspection, enforcement, the Energy and Sustainable Agriculture Project, and environmental analysis (pp. 25-28).

Component 8: Response to Detections of Pesticides (MN SMP Chapters 10 & 11)

A Generic State Management Plan must:

Describe the actions that State will take if a pesticide has exceeded or is expected to exceed reference points in ground water. when a pesticide level in ground water approaches, reaches, or exceeds an MCL or other reference point as a result of normal agriculture use, an aggressive stance should be taken, including the possibility of prohibiting further use of the pesticide in the affected areas. Detections below reference points should also trigger actions to prevent contamination with the potential to pose risks to human health and the environment. The State's response section of its SMP may overlap with its prevention section. However, it must at a minimum pick up where the prevention section left off.

#### Basis for Concurrence:

MDA can implement mandatory BMPs through rule development (Water Resource Protection Requirements -WRPRs) if voluntary BMPs are ineffective (pp. 79, 84). WRPRs will be adopted due to increasing ground water/surface water trends, the relationship of pesticide concentrations, trends, frequencies of detections and seasonal variations to the applicable ground water standards, and if voluntary BMPs are not adopted or are ineffective in preventing ground water standards from being exceeded (p. 85). WRPRs may apply to the whole state or in areas designated by the Commissioner of Agriculture (p. 84). Mandatory use changes and restriction or cancellation of product registration will be considered (p. 5). MDA may also deny or cancel the registration of a pesticide if it is determined to pose an unreasonable adverse effect on the environment (p. 87).

Describe the steps that will be taken, and who will be responsible for: (1) identifying, if possible, the source of contamination, (2) ascertaining whether contamination resulted from normal use in accordance with label directions and other requirements, or from misuse or accident, and (3) determining whether the detection was found in a vulnerable or non- vulnerable area, which may be critical in establishing how the State assesses leaching potential. In cases of misuse, enforcement actions should be pursued.

#### Basis for Concurrence:

Page 97 lists some of the actions that the Commissioner of Agriculture will perform to determine the source of contamination from agricultural chemicals. If the contamination is determined to be from a point source, the incident will be referred to MDA's Incident Response Program (p. 27). Incidents of misuse will be referred to MDA's Enforcement Unit.

Describe the State's response policy regarding contaminated ground water that is used as a source of drinking water. The SMP must discuss generally what steps will be taken to protect public health. The State may need to provide or fund interim sources of drinking water if necessary. If the contamination constitutes a violation of the SDWA regulations for which the Public Water System is responsible, these detections should be referred for enforcement action under authority of SDWA. The State will also need to determine actions for responding to contamination in private wells, including notifying well owners.

#### Basis for Concurrence:

In cases of ground water and surface water contamination from the use of a pesticide that is not due to misuse or unusual or unique circumstances, MDA will review available data for Common Detection status. In instances where extreme hazard is found, the Commissioner of Agriculture will apply the broad authorities of his office to cancel or restrict registration, without the need to evaluate for Common Detection (p. 32). Incidents reported from MDA inspections, property transfer investigations, MDH public water supply sampling, and other sources that are caused by point sources, are evaluated (p. 25). Alternative drinking water supplies can be provided for point source contamination (p. 93). Although not noted in the SMP, each well owner receives the results of analysis from MDA.

The requirements listed above should be presented in the form of a general corrective response scheme, including timeframes and identification of the agencies responsible for various activities, thereby illustrating the State's capacity for timely, coordinated response to contamination.

#### Basis for Concurrence:

Triggers	Voluntary/Mandatory Actions	Location
No Detections	Develop Generic BMPs, promote IPM, and sustainable agriculture, establish BMP promotion areas	Statewide, high risk areas determined by vulnerability assessments, township, soils level, pesticide management areas
Detections	Common Detection Status declared - voluntary BMPs, pesticide specific BMPs developed	BMP promotion areas, pesticide management areas
Increasing contamination trends towards HRL, BMPs not effective	WRPRs - mandatory use changes, cancellation of pesticide use	Statewide, specific areas designated by the MDA Commissioner

A Generic Management Plan must:

Describe the State's enforcement capabilities, authorities, and compliance activities (i.e., inspections, technical support, penalty provision, etc.) (If such authorities are described in Component 3 on Legal Authority that discussion can be cross referenced in this Component and need not be repeated). The SMP should also identify the State agency with each enforcement authority.

#### Basis for Concurrence:

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MDA's enforcement authorities are derived from the Minnesota Pesticide Control Act. MDA's administrative process is described on pages 27 and 86. Compliance activities are describe on page 86.

Component 10: Public Awareness and Participation (MN SMP Chapter 4)

A Generic State Management Plan must:

Address the public role regarding development of both Generic and Pesticide SMPs and decision-making in implementing the SMPs. The SMP must identify or describe existing legal requirements within the State that would ensure public participation in the process (i.e., an Administrative Procedure Act requiring notice and comment, etc.). If no such legal requirements exist within the State, the SMP must describe any other public participation process the State intends to use in the development of the SMP.

#### Basis for Concurrence:

Public comment was sought during the development of the MN SMP through a notice published in the State Register and by the holding of a series of public meetings. Future public involvement will be sought for BMP development, adoption of WRPRs, and MN SMP amendments (p. 29).

Indicate how, when and by whom the public will be informed of detections in ground water that are considered significant. At a minimum, States must notify the well owner of any detections in ground water. Also, if detections are above the reference point, the State should ensure that all users are notified.

#### Basis for Concurrence:

MDA will notify all well owners of the results of any monitoring.

#### Component 11: Information Dissemination (MN SMP Chapter 9)

A Generic State Management Plan must:

Describe how information regarding prevention measures (e.g., use limitations and precautions) will be relayed to the appropriate audiences. The SMP must describe how the State will update information provided to pesticide users as SMP requirements change due to changing circumstances.

#### Basis for Concurrence:

BMPs and use restrictions will be promoted through NRCS, BWSR, SWCDs, MCES, pesticide dealers, pesticide registrants, crop consultants, MDNR, industry trade associations, and commodity groups (pp. 64, 66).

Describe how pesticide users will be trained or educated in complying with requirements of applying a pesticide where use is governed by an SMP. This description should include identities of the principle groups or agencies to provide training (e.g., USDA Extension Service) and their qualifications, types of information to be included in the training, and time frames for revising and presenting new training as SMP requirements change. Any entities (e.g., pesticide dealers, manufacturers, special interest groups) whose assistance in the training and education is anticipated should be identified and their anticipated roles should also be described.

#### Basis for Concurrence:

Pesticide applicator training will be provided by MCES (p. 66). BMP and use restriction information will be distributed at private pesticide applicator sessions, and commercial/non-commercial applicator recertification workshops. Pesticide dealers, SWCDs, USDA-NRCS, and MCES offices will also be sources of use restriction information.

#### Component 12: Records and Reporting (MN SMP Appendix D)

Information on monitoring results, number of persons reached by outreach, etc. (P. 107) will be reported on a yearly basis. A report on the effectiveness of the MN SMP will be submitted every two years (p. 108).

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### Minnesota Department of Agriculture Agronomy and Plant Protection Division Monitoring and Assessment Unit

Memorandum of Agreement

Between the Minnesota Department of Agriculture and The Stearns County Soil and Water Conservation District Regarding Water Quality Monitoring for Pesticides and Nutrients and the Management of Pesticide and Nutrient Use

September 10, 1997

MDA & Stearns SWCD Local Monitoring Cooperative Agreement printed on : 9/10/97

#### Memorandum of Agreement

Between the Minnesota Department of Agriculture and The Stearns County Soil and Water Conservation District Regarding Water Quality Monitoring for Pesticides and Nutrients and the Management of Pesticide and Nutrient Use

The Minnesota Department of Agriculture (MDA) is charged with protecting the State's water resources from degradation due to the use of pesticides and nutrients. Toward this end the MDA has been monitoring water resources for pesticides and nutrients since the fall of 1985. The data is used to determine areas of the State where pesticides and nutrients are affecting water resources, and to what extent the water resource has been impacted. Management plans aimed at reducing or eliminating the sources of degradation are then developed and implemented. Following implementation of the management plans water quality monitoring information is used to measure the effectiveness of the plans, and to determine whether additional measures need to be put in place.

The purpose of this memorandum of agreement is to 1) establish the roles regarding the design and implementation of the program, 2) promote efficient use of staff and financial assets used for monitoring water resources in the State of Minnesota and Stearns County, 3) provide for the assessment of water quality monitoring data, and 4) ensure a comprehensive, local approach to pesticide and nutrient management in Stearns County.

#### I. PROGRAM COORDINATION

Planning and implementation of an effective water quality monitoring program, and ensuing pesticide and nutrient management plans will require extensive communication between the Stearns County Soil and Water Conservation District (SWCD), the MDA, property owners, citizens, and various County Boards. The MDA has statewide authority through federal or state legislative branches to regulate the use of pesticides and nutrients in Minnesota. Although the MDA has this lead role it would be essentially impossible to implement monitoring and agricultural chemical management plans to account for Stearns County's individual needs without local involvement. Participation by the Stearns SWCD, County Boards, and residents is essential to a well-developed program in the County. The goals of the program, the general approach, and the roles of the MDA and the County relating to program planning and implementation are as follows:

<u>A. Project Goal:</u> To measure the impacts to water resources by the use of pesticides and fertilizers in the Anoka Sand Plain portion of the County, and to

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#### Pesticide and Nutrient Use Management

The philosophy of pesticide and nutrient management in Minnesota has been laid out in the Minnesota Nitrogen Fertilizer Management Plan, and the Minnesota Pesticide Management Plan. The provisions outlined in these documents will be followed. Essentially, if a pesticide or nutrient is contaminating ground water or surface water it is placed in "common detection" status. Following placement in common detection status voluntary best management practices (BMPs) are developed and their use is promoted in the designated areas of concern. Voluntary BMPs generally revolve around a central theme of reducing use of the compounds in question, but may also focus on physical practices. There will likely be a number of different BMPs to choose from in Stearns County's areas of concern.

BMPs are developed based on the results of scientific research experiments, and are assumed to be viable measures if implemented. However, the water resources in agricultural chemical management areas are still monitored as a check on the effectiveness of the BMPs, which results in the need for long-term monitoring programs. If some BMPs are adopted but are not effective they may need to be refined or replaced by newly developed BMPs based on more recent research. Voluntary adoption of BMPs are considered to be a superior means of managing agricultural chemical use, and mandatory measures will not be taken unless necessary. Any regulatory, including enforcement, action taken relating to pesticides will be the responsibility of the Minnesota Department of Agriculture as outlined in the responsibilities section.

#### D. Responsibilities:

#### **Stearns County Soil and Water Conservation District**

1. Provide a list of the water resources of concern for the SWCD jurisdictional area.

2. Assist with delineation of the study area.

3. Secure participation of property owners and permission for access to the sites.

4. Routine check-up on sites to ensure integrity.

5. Occasional sample collection when MDA staff are unavailable.

6. Surveying land owners on their land use and agricultural chemical use activities.

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develop agricultural chemical management plans to reduce or eliminate the measured impact.

#### B. Objectives:

Monitoring:

1. Measure the occurrence and concentration of pesticides and nutrients in ground water in agricultural areas of the Anoka Sand Plain portion of Stearns County.

2. Provide analysis of land use, pesticide use, nutrient use, and hydrologic attributes that may be resulting in ground water degradation.

3. Provide basic information from which the efficacy of pesticide and nutrient management plans may be determined.

4. Disseminate the information developed through the monitoring program to the appropriate policy makers, scientists, and citizens of Stearns County and the State of Minnesota.

Agricultural Chemical Management Plans:

1. Develop and implement generic agricultural chemical management plans consisting of "good stewardship" practices.

2. Develop and implement agricultural chemical management plans specific to those agricultural chemicals commonly detected in the monitoring program.

#### C. Approach:

#### Monitoring

The monitoring program will be part of the Central Sands Monitoring Cooperative. This cooperative encompasses all or parts of Stearns, Benton, Sherburne, Pope, Kandiyohi, Wright and Morrison counties. Samples will be collected from monitoring wells installed specifically for this program. The wells will be placed on a grid system constructed for the Central Sands Monitoring Cooperative following the design for the cooperative. The complete design of the monitoring program will be documented separately as part of the Central Sands Monitoring Cooperative design. The design documentation will include standard operating procedures, quality assurance plans, and data management, analysis and reporting protocols. 7. Local promotion of the monitoring program and associated management plans.

#### MDA

1. Technical consultation and final design of monitoring networks.

2. Analysis of pesticide and nitrate-nitrogen samples and sharing results with the County.

3. Interpretation of laboratory results.

4. Providing all material for sample collection.

5. Provide training to the SWCD staff as needed to assist in the monitoring program.

6. Consult with the SWCD on development of nutrient and pesticide management plans.

7. Assist with the distribution of management plan promotional materials.

8. Assessment of the effectiveness of management plans based on water quality and BMP adoption efforts and data.

9. Provide for installation of monitoring sites.

10. GPS locating of all sites and pertinent physical features deemed necessary by the program.

11. Write reports detailing the results of monitoring and management plan activities.

12. Writing of the program design documentation, including standard operating procedures.

13. Loaning equipment to the SWCD that they may need for other associated efforts.

14. Assist with the development of pesticide and nutrient use surveys.

15. All enforcement activity associated with the developed management plans that falls within the jurisdiction of the MDA.

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16. Additional technical consultation as may be needed to achieve program goals.

#### II. AGREEMENT REVISIONS

Representatives from the MDA and Stearns County SWCD will meet annually to review this agreement and identify areas needing improvement. This Agreement may be modified on the mutual consent of Stearns SWCD and the MDA. Specific issues may be addressed at any time through addendum to the original Memorandum of Agreement.

#### **III TERMS OF AGREEMENT**

This agreement is not intended as a legally binding contract. It is intended to serve as documentation of how the program is structured in order to maintain efficiency and guarantee success. Barring unforeseen obstacles, this monitoring program is intended to operate for a minimum of 20 years beginning July 1, 1997. This agreement with ensuing amendments will serve as the foundation on which the program is built.

#### IV. TERMINATION OF AGREEMENT

Because long-term monitoring may not always be supported by citizens or government entities, it is recognized that this monitoring cooperative may be terminated at any time. However, all parties agree to support this monitoring cooperative to the full extent possible, and will terminate it only if necessary. MDA & Stearns SWCD Local Monitoring Cooperative Agreement printed on : 9/10/97

#### V. SIGNATURES

The below signed individuals, acting on behalf of their respective organizations, endorse the monitoring cooperative between the Minnesota Department of Agriculture and Stearns County Soil and Water Conservation District, and pledge their respective organization's support to develop, implement, and maintain the program as outlined.

Urban Spanier, Chairman Stearns County Soil and Water Conservation District

John W. Hines, Supervisor Monitoring and Assessment Unit Minnesota Department of Agriculture