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VIEWS OF SOIL AND WATER CONSERVATION DISTRICT DIRECTORS REGARDING DEVELOPMENT AND IMPLEMENTATION OF FARM CONSERVATION PLANS AND IMPLICATIONS FOR WATER QUALITY MANAGEMENT PLANNING IN NEW YORK STATE

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FOREWARD

This report is an outgrowth of research activities conducted under contract with the New York State Department of Environmental Conservation. The research project is titled, "Approach to Best Management Practices to Control Nonpoint Sources of Water Pollution From Agriculture".

The survey results represent compilations of information, judgments, and views provided by Soil and Water Conservation District directors. The directors are not always in agreement. Others at county and state levels may agree or disagree with these responses. The survey responses do, however, provide first-hand indications from SWCD directors on several questions related to resource conservation and management and the implications for planning to improve water quality.

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VIEWS OF SOIL AND WATER CONSERVATION DISTRICT DIRECTORS REGARDING DEVELOPMENT AND IMPLEMENTATION OF FARM CONSERVATION PLANS AND IMPLICATIONS FOR WATER QUALITY MANAGEMENT PLANNING IN NEW YORK STATE

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Planning for management of the quality of the State's water resources is a continuing process. A number of uncertainties complicate this planning process. The national water quality goals -- "fishable, swimmable" waters by 1983 and elimination of discharges into waters by 1985[1] -- are general and must be translated into water quality standards and programs for intra- and interstate waters. The initial phase of controlling pollutants from municipal and industrial "point" sources is well underway. If this control results in achievement of water quality goals, there is less need to address pollution from "nonpoint" sources[2], including agricultural and silvicultural activities.[3,4] Effluent standards for pollutants from nonpoint sources in New York have not been determined. Since pollutants from nonpoint sources have diffuse origins, ambiguity exists as to what problem situations exist, the consequent effects on degradation of water quality, and what should be done and by whom. Potential pollutants originating from agricultural activities include sediment, soil nutrients, pesticides, and pathogens. However, the relationship between any farming practice and the subsequent impact on water quality is often uncertain.

An interim product of the planning process is development of areawide plans for controlling pollutants from both point and nonpoint sources to achieve state and national water quality goals. Plans will be developed for six "designated" areas of the State, areas which because of urban-industrial concentrations or other factors have substantial water quality problems. A plan must also be developed for the remainder of the State, the "nondesignated area", where most potential problems from nonpoint sources are expected to originate.

Areawide plans are subject to annual review and certification by the Governor or his designee and can be modified at that time. Modifications may be necessary as experiences, new information, and new legislation warrant.

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One component of the plan for the "nondesignated" area will be a process to identify the occurrence, if any, of agriculturally and silviculturally related nonpoint sources of pollution and, in turn, to specify procedures and methods for controlling, to the extent feasible, pollutants from these identified sources.[5] Several groups participate in the evolvement of this plan. A network of county policy advisory committees provides a means for public participation. State agencies will review components of the plan prior to certification by the Governor.

Directors of the Soil and Water Conservation Districts (SWCD) will likely be involved in identifying and(or) reviewing potential nonpoint sources of pollution and the appropriate measures for correcting the problems. Roles of the SWCD Boards are outlined in a subsequent section.

Focus of the Study

The SWCD boards have legislated mandates to provide leadership for soil and water conservation activities in their counties. This traditional focus on conservation measures has been recently expanded to include activities related to water quality planning. Since, the SWCD boards may eventually be the institutional mechanisms for implementing and monitoring those practices for controlling pollutants from nonpoint sources in agriculture, some dialogue with SWCD directors on this possible role is timely and useful -- timely because the statewide water quality management plan is yet to be developed and useful so as to get a better understanding of their attitudes toward practices and procedures for water quality planning, particularly practices in farm conservation plans.

Selected Legislation Requiring Planning for Improving Water Quality

The Federal Water Pollution Act Amendments of 1972[6] specify general water quality goals and require development and implementation of areawide management plans to assure adequate control of pollutants affecting water quality in each State. These plans will represent the State's program to eliminate discharge of pollutants into naviagble waters[7] by 1985, and, wherever attainable, to provide for the protection and propagation of fish, shellfish, and wildlife and for the recreational use of water by 1983. Plans must include consideration of available means to meet water quality standards, including effluent limitations for pollutants from point sources and processes for management of pollutants from nonpoint sources.

More recently, the Clean Water Act of 1977[8] provides modifications and additions to the 1972 Amendments. This Act authorizes establishment of the Rural Clean Water Program. Features of this program include 5-10 year contracts with rural landowners and operators to provide technical and fi-

nancial assistance for installing and maintaining practices designed to control pollutants from nonpoint sources. Under such contracts, the landowner or operator agrees to effectuate a farm plan certified to be technically adequate by the Soil Conservation Service (SCS) and approved by the appropriate county SWCD board.

Several states have laws providing for erosion and sediment control.[9] Reductions in soil movements to water courses can have a positive impact on improving water quality. Land-use legislation by local governments, such as zoning for exclusive purposes, can also be a component of a system of laws and regulations related to water quality management planning.

Legislation - New York

A number of laws are related to water quality planning activities. The Environmental Conservation Law of 1972 prescribes a State policy to:

> "... improve and coordinate the environmental plans, functions, powers and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations and the concerned individual, and to develop and manage the basic resources of water, land, and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations."[10]

Included in the Law and subsequent amendments are provisions to establish a State Pollutant Discharge Elimination System (SPDES) to prohibit discharges of pollutants from point sources into classified waters unless a permit for discharge has been issued by the Department of Environmental Conservation.[11] Preservation and protection of freshwater wetlands[12] and tidal wetlands[13] are also included. Permits are required prior to disturbing stream banks or beds[14] and for purchase, application, and disposal of pesticides.[15] If discharges of sewage, garbage, or decomposable matter of any kind into waters threaten public health or create a public nuisance, DEC may order that such discharges by discontinued.[16]

The Department of Health has primary responsibility for approving the quantity and quality of specific water supply systems in terms of public health standards.[17] Local health boards must enforce the Public Health Law, the State Sanitary Code, and local sanitary codes whether promulgated by the county or any political subdivision within a county.[18]

The Soil Conservation Districts Law of 1940 and subsequent amendments created the Soil Conservation Districts.[19] The districts have a general charge to promote the conservation of soil and water resources, the prevention of floodwater and sediment damages, and related activities. A 1975 amendment requires owners or occupiers of more than 25 acres of agricultural land or "concentrated" agricultural operations on 25 or fewer acres to apply by January 1978 to the appropriate SWCD for a soil and water conservation plan for the land under their ownership or control.[20] The plan must include practices providing an orderly method for landowners and occupiers to follow in limiting soil erosion and in reducing the amount of

pollutants entering into the waters or on the lands of the State. Target levels for limiting erosion and reducing movements of pollutants are not specified. All plans are to be developed by January 1980 and are subject to review at least once in every five years after development. The SWCD's have responsibility for establishing priorities for development and review of such plans.

A Closer Look at the SWCD's

Since their origin in 1940, the SWCD Boards have engaged in activities, including the following:

(a) to conduct surveys, investigations, and research relating to the character of soil erosion and floodwater and sediment damages, and the preventive and control measures needed;

(b) to carry out these preventive and control measures;

(c) to cooperate or enter into agreements and to furnish financial or other aid for carrying on of erosion control, flood prevention, sediment damage prevention, and land use adjustments toward effective conservation and utilization of the lands and waters within the district; and

(d) to develop comprehensive plans for the conservation of soil resources and for the control and prevention of soil erosion in the district.[21]

The last activity was expanded through amendments to include conservation of water resources, prevention of floodwater and sediment damages and agricultural water management in the plans.

More recently, the SWCD Boards have been given responsibilities which expand and(or) complement their responsibilities for conservation measures to include activities in water quality planning and management. For example, the Department of Environmental Conservation (DEC) launched a pilot program assigning responsibility for evaluating applications for permits to disturb streambanks to the Rockland County Soil and Water Conservation District.[22] As noted earlier, a 1975 amendment to the Soil and Water Conservation Districts Law specifies that the SWCD Boards shall assume responsibility for establishing priorities for development and review of soil and water conservation plans for (i) limiting soil erosion, and (ii) reducing the amount of pollutants entering waters and lands.

Provisions in the 1977 Clean Water Act require the SWCD Boards to review and approve farm plans developed to control pollutants from nonpoint sources. These plans are prerequisite to initiating the 5-10 year contracts for technical assistance and cost sharing with cooperating farmers. The Boards are also given authority, along with the Secretary of Agriculture, to determine the priority of assistance among individual landowners or operators so that most critical water quality problems are addressed first. The SWCD's may enter into agreements to administer all or part of the Rural

Clean Water Program in their counties.

Although SWCD's have relied on voluntary landowner participation, their functional and organizational structure makes them attractive candidates for managing a program(s) for alleviating pollution from nonpoint sources in agriculture. The Boards have developed grassroots ties with farmers and rural landowners. Since some directors are farmers or have farm backgrounds, they have experience in dealing with farmers and their problems. Reports prepared by the Environmental Protection Agency (EPA)[23] and the experiences in Iowa, Ohio, and Indiana[24] suggest that SWCD's have traditionally been trusted by farmers for sound advice regarding sediment and erosion control, as well as other land management problems. SWCD's can use this trust to encourage farmers to implement pollution abatement practices. Reliance on a visible local group, such as SWCD's, for administration is an important aspect of public acceptance.[25]

Composition of SWCD Boards

The five members of the SWCD boards are appointed by the respective county board of supervisors. Two directors are appointed from the county board of supervisors. Two "practical farmers" are also appointed. The fifth member is appointed from the county at large to represent the urban, suburban and rural nonfarm landownership interests. The two members from the county board are appointed annually. The other three members have staggered, three year appointments. Consequently, the SWCD boards can have up to 3 new members each year. This potential turnover in board membership may have implications for continuity and execution of SWCD programs.

Staffing and Funding

Most districts have full- and(or) part-time staff employees.[26] The majority, however, have only 1 or 2 full-time employees identified as "clerk" and "technician". Most districts having part-time employees reported only 1 or 2; their types of work were not identified. Thus, most districts have relatively few employees for executing SWCD programs.

Districts are not empowered to tax, borrow, or issue notes of bonded indebtedness. The districts receive annual appropriations from their respective county legislatures for partially underwriting costs of their activities. Levels of appropriations vary considerably among counties.[27] Districts may also assess charges to individual farmers receiving technical and other assistance. In addition, a 1975 amendment to the Soil and Water Conservation Districts Law authorizes appropriations of State funds directly to districts for reimbursement for up to 50 percent of the amount expended each year in "employment of conservation field technicians or district managers and the purchase of supplies and equipment related to these positions."[28] A maximum of $4000 is authorized to each district in any fiscal year. Federal assistance may also be available through programs such as CETA, the Comprehensive Employment and Training Act.

Given current funding and staffing arrangements, the capacity for SWCD's to expand the scope and depth of present activities seems doubtful. An expanded role in water quality planning will require additional resources. New legislative authorities may be needed. The additional requirements for

resources will be geared to the severity of nonpoint pollution problems among counties. At this time, however, problem areas and magnitudes of problems have not been identified. The Clean Water Act of 1977 includes authorizations of $200,000,000 for fiscal year 1979 and $400,000,000 for fiscal year 1980 for administration and cost sharing of practices for reducing pollutants from nonpoint sources in rural areas across the United States.[29] If appropriated, some monies will be available to support SWCD activities. The U.S. Congress did not appropriate funds for 1979. However, authorizations for appropriations in subsequent years continue in effect.

SURVEY PROCEDURES

Since there is current interest in expanding the thrust of soil and water conservation plans, subsequently referred to farm conservation plans, from maintaining and(or) improving soil productivity to include practices having more direct linkages to improving water quality, more information is needed on SWCD directors' views of farm conservation plans as vehicles for implementing water quality management programs and directors' roles in these processes.

Mail Survey of SWCD Board Directors

Because of time and financial constraints, directors in each county were contacted through a mail survey. Personal interviews would have been preferable. Since these individuals represent a cross-section of backgrounds -- farmers, county supervisors, and others -- with possibly differing perspectives and concepts of goals, each respondent was requested to complete the questionnaire from the vantage point of a SWCD director rather than a personal viewpoint if, in fact, there would be any difference. Also, individual responses were requested rather than completion by deliberation and collective judgment of the Board. Considerable variability among directors' responses within each county concerning problems and appropriate corrective measures would complicate reaching agreement on development and implementation of water quality planning programs.

The Questionnaire

The principal focus of questions developed for the survey was the concept of farm conservation plans -- specifically, and within the context of implementing water quality management practices and programs. If directors feel that these plans are not a suitable vehicle for addressing actual or potential problem pollutants, then other approaches, including modifications of current plans, must be examined. Implementation strategies are important. Should adoption and maintenance of practices appropriate for correcting identified problem situations be on a voluntary basis?

Other questions are designed to generate information on the extent to which farmers have farm plans, the currentness of these plans, and the degree to which practices in the plans have been implemented. These answers provide indicators as to the current and future work load for preparing and updating farm conservation plans.

Directors were asked to specify the phenomena they considered to be potential problems in their counties and whether or not practices in farm conservation plans, as currently being developed, would be effective in reducing or controlling these problems. Cost sharing programs would condition farmers' willingness to adopt certain practices. Directors were also asked to provide indications of those levels of cost sharing for specific practices that, in their opinion, would help induce farmers to adopt the practices. Also, they commented on other incentives and(or) penalties that would help strengthen the intent and expected effectiveness of implementing practices in farm conservation plans. A copy of the survey questionnaire is in Appendix 1.

Response to Survey

Questionnaires were mailed to each director. A reminder was sent to nonrespondents. Since there was essentially no response following the reminder, another questionnaire was mailed to nonrespondents.

Of the 290 questionnaires mailed to directors in each of the 57 counties in New York, 160 were returned for an overall response rate of 55 percent. Based on reported occupations, about 74 percent of the respondents were active or retired farmers and 26 percent were nonfarmers. Response varied from zero to 100 percent among directors in individual counties. It is not known whether the survey responses received would be representative or views of those directors who for whatever reason did not participate in the survey. Response levels are summarized in Table 1 where the counties have been grouped according to Land Resource Areas (LRA's). These areas are delineated according to similarities in soils, water resources, land use and type of farming, and climate.[30] See Figure 1 for a geographical depiction of LRA's in New York.

SURVEY RESULTS

Responses to individual questions are grouped according to similarity of subject matter. Most discussion will focus on survey results at the LRA and Total levels. At times, responses have been grouped according to two occupational groupings -- farmers and all others -- to examine any differences in response patterns between these groups.

For several questions, responses by counties are given in Appendix 2 so that variation within and among counties can be reviewed. The limited number of responses at the county level, however, does not permit extensive examination. When a single response was received for a county, information for that questionnaire is not included in subsequent tables. This was done to respect the confidentiality of individual respondents.

Table 1. Frequency of response from SWCD directors, by counties grouped according to Land Resources Areas (LRA), New York.

LRA 101	Response
Cayuga	1
Erie	0
Genesee	3
Livingston	3
Monroe	3
Niagara	2
Oneida	5
Onondaga	2
Ontario	3
Orleans	3
Oswego	2
Seneca	3
Wayne	4
Yates	4
	38

LRA 140	
Albany	3
Allegany	3
Broome	2
Cattaraugus	4
Chautauqua	3
Chemung	4
Chenango	5
Cortland	4
Delaware	5
Greene	3
Madison	2
Montgomery	3
Otsego	3
Schnectady	3
Schoharie	4
Schuyler	5
Steuben	2
Sullivan	0
Tioga	4
Tompkins	4
Ulster	4
Wyoming	3
	73

LRA 142	Response
Clinton	1
Franklin	0
Jefferson	0
St. Lawrence	3
	4

LRA 143	
Essex	2
Fulton	4
Hamilton	0
Herkimer	5
Lewis	4
Saratoga	4
Warren	3
	22

LRA 144	
Columbia	2
Dutchess	4
Orange	4
Putnam	0
Rensselaer	4
Rockland	2
Washington	5
Westchester	0
	21

LRA 149	
Nassau	0
Suffolk	2
	2

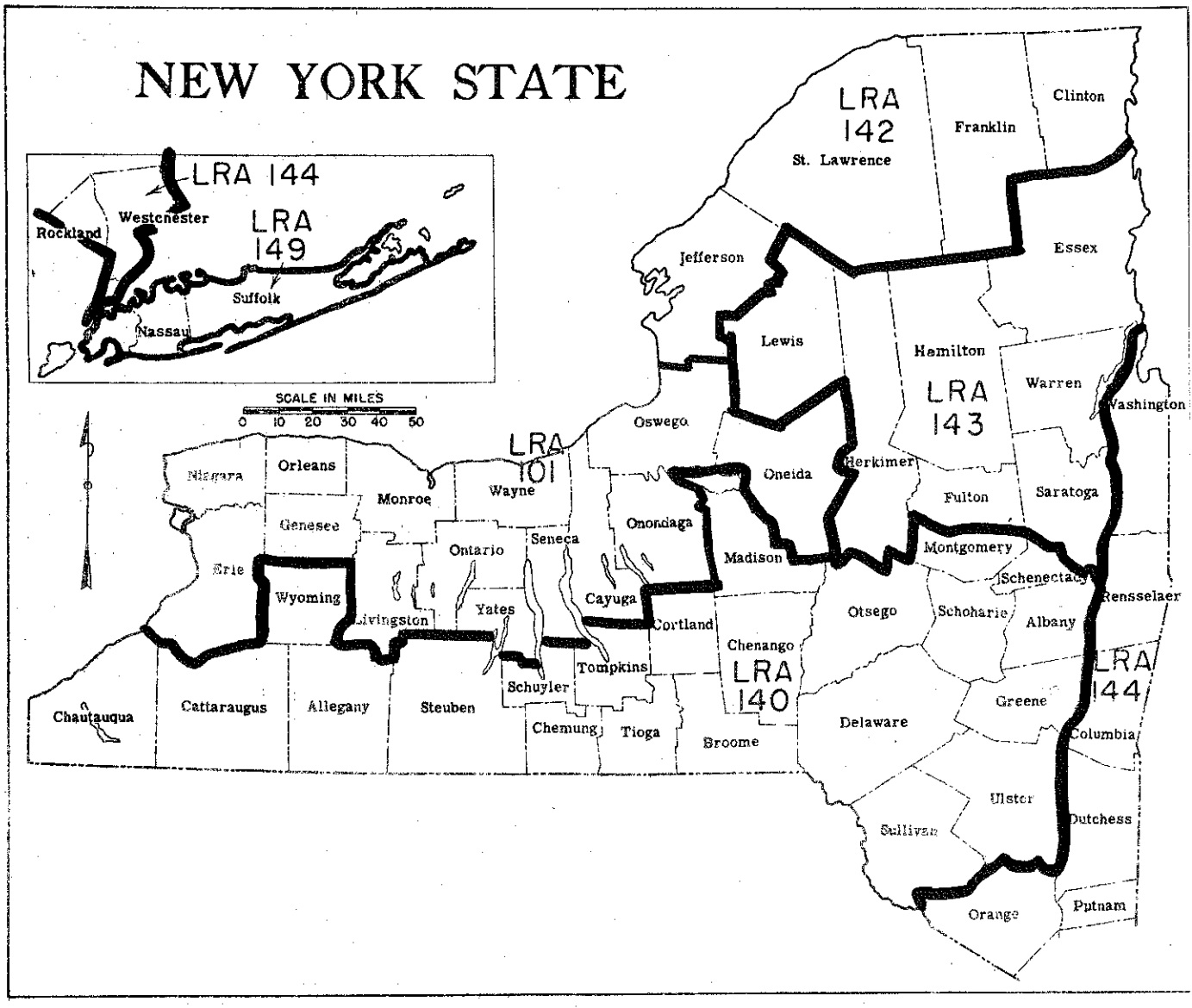

Figure 1. Delineation of Land Resource Areas (LRA's) in New York.

Number of Farmers with Farm Conservation Plans, Currentness of Plans, and Percent Implementation of Plans

SWCD directors were asked to provide indications of the percent of all farmers in their respective counties having farm conservation plans and the percentage of these plans they consider no longer current and, consequently, need updating. The need for updating was reported in the context of the appropriateness of existing plans for not only limiting soil erosion but also reducing the amount of pollutants entering waters and on lands. These responses provide indicators of the "job to be done" if all farmers are to have farm conservation plans by 1980. The number of farmers with conservation plans can, of course, be verified through SWCD and Soil Conservation Service records. The percentage of plans needing updating and the levels of implementation are somewhat judgemental but do provide current indicators of SWCD directors' views.

Responses to this series of questions are in Table 2. Among all respondents, nearly 60 percent indicated that half or fewer of the farmers had farm conservation plans. About 29 percent of those reporting specified that between half and three-fourths of all farmers had plans.

Directors in LRA 140 reported a relatively higher percentage of farmers with plans as compared with responses at other LRA levels. Responses for individual counties are in Table 1, Appendix 2. In Genesee County, for example each of the three directors responding had a different impression of the percent of farmers in the county with farm conservation plans. One felt that about one-fourth of the farmers had a plan. Another reported that between a fourth and half had plans, while the third respondent indicated that half to three-quarters of the farmers had plans. As noted earlier, these percentages can be verified at the county level.

A number of farm conservation plans are simply out of data. Changes in cropping patterns and cultivation practices may require changes in previous farm plans. Changes in design of structural practices and new management techniques may be additional factors. Until relatively recently, the principal focus has been on practices for reducing soil erosion. More attention is now being given to practices for disposing of livestock wastes and reducing levels of sediment reaching water courses. As noted earlier, State legislation requires that the plans include provisions for not only limiting soil erosion but reducing the amounts of pollutants entering waters and lands.

About one third of all directors responding indicated that 25 percent or less of the current plans need updating (Table 2). Nearly 31 percent indicated that more than half the existing plans require change. Response patterns at LRA levels are comparable to those at the TOTAL level except for LRA 144 plus 149 where relatively fewer plans were considered to need updating. In most counties, there was considerable difference of opinion among those directors responding as to the percent of farm plans needing updating (Table 1, Appendix 2).

Farm conservation plans are effective only if implemented. Several reasons may account for incomplete implementation. Farmers may consider

Table 2. Frequency of response regarding percent of farmers currently having farm conservation plans and percent of plans needing updating, by designated percent ranges and by LRA's[a].

	Percent Range	% Farmers With Farm Plans					% Plans Needing Updating				
		0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]
LRA 101		6	20	10	2	-	11	9	6	10	2
(Percent)		(15.8)	(52.6)	(26.3)	(5.3)		(28.9)	(23.7)	(15.8)	(26.3)	(5.3)
LRA 140		3	27	30	10	3	24	21	11	11	6
(Percent)		(4.1)	(37.0)	(41.1)	(13.7)	(4.1)	(32.9)	(28.8)	(15.1)	(15.1)	(8.2)
LRA 142,143		10	10	2	3	1	7	7	1	6	5
(Percent)		(38.5)	(38.5)	(7.7)	(11.5)	(3.8)	(26.9)	(26.9)	(3.8)	(23.1)	(19.2)
LRA 144,149		10	7	5	1	-	8	7	3	1	4
(Percent)		(43.5)	(30.4)	(21.7)	(4.3)		(34.8)	(30.4)	(13.0)	(4.3)	(17.4)
TOTAL		29	64	47	16	4	50	44	21	28	17
(Percent)		(18.1)	(40.0)	(29.4)	(10.0)	(2.5)	(31.2)	(27.5)	(13.1)	(17.5)	(10.6)

[a] Land Resource Areas (LRA). See Figure 1.

[b] NR denotes no response to this question.

only certain practices in the plans attractive; but to get cost sharing for these, they must have a complete plan. Changes in farm enterprises and financial situations subsequent to development of the plan may also account for lack of implementation. Others simply haven't got around to it yet. Some eventually will; others won't. Whatever the reason(s), additional implementation may require new or expanded programs of educational, technical, and cost sharing assistance.

Summaries of directors' responses concerning the extent of implementation of existing farm conservation plans in their respective counties are in Table 3. They were asked to estimate the percent of farmers who have plans that are (a) fully implemented, (b) half or more, but not fully implemented, (c) some, but less than half implemented, and (d) no implementation. Estimates for (a) through (d) sum to 100 percent. To facilitate presenting these results, responses were grouped according to percentage ranges.

About 74 percent of all directors responding indicated that less than a fourth of existing farm conservation plans have been fully implemented. Another 14 percent reported that a fourth to half of the plans have been fully implemented. At the other end of the continuum, two-thirds reported that less than a fourth of the plans have had no implementation. Other categories of implementation are interpreted similarly. For example, about 83 percent reported that half or fewer of existing plans have been more than half implemented but not fully. Responses for individual counties are in Table 2, Appendix 2.

To summarize, a majority of all directors responding indicated that relatively few plans have been fully implemented but also that relatively few plans have had no implementation. Most plans have been implemented to some extent. However, nearly 60 percent of the directors indicated that half or fewer of the farmers had farm conservation plans. In addition, nearly 31 percent reported that, in their opinion, half or more of the existing plans need updating.

Problem Perception

Since directors on SWCD Boards have differing backgrounds, they may be expected to view potential or actual problems and corresponding remedies from somewhat different perspectives. The complexity of estimating relationships between remedial practices and controlling movements of various pollutants through time and space was previously mentioned. Yet, despite these relative unknowns, perceptions by SWCD directors are important in affecting future directions of what is done in controlling pollutants from nonpoint sources in agriculture, where this is done, and by whom. In this context, directors were asked to indicate whether selected situations, having potentially adverse effects on surface and groundwater quality, were problems of sufficient magnitude in their respective counties so that corrective measures are required. Identification of problems is often difficult. Some forms of soil and streambank erosion are visually observable. Water quality monitoring systems are usually necessary to detect potentially adverse concentrations of soil nutrients and(or) pesticides that aren't visually detectable through fish kills and algal bloom. Corrective measures should be appropriate

Table 3. Estimates of the extent to which existing farm conservation plans have been implemented by farmers, by degree of implementation and by LRA's.[a]

	% Plans Fully Implemented					% Plans More Than Half Implemented					% Plans Less Than Half Implemented					% Plans With No Implementation				
Percent Range	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]
LRA 101	31	5	-	-	2	16	20	-	1	1	10	17	8	-	3	28	5	-	1	4
(Percent)	(81.6)	(13.2)			(5.3)	(42.1)	(52.6)		(2.6)	(2.6)	(26.3)	(44.7)	(21.1)		(7.9)	(73.7)	(13.2)		(2.6)	(10.5)
LRA 140	57	9	2	-	5	22	32	4	1	8	24	33	8	1	7	49	12	2	1	9
(Percent)	(78.1)	(12.3)	(2.7)		(6.8)	(38.4)	(43.8)	(5.5)	(1.4)	(11.0)	(32.9)	(45.2)	(11.0)	(1.4)	(9.6)	(67.1)	(16.4)	(2.7)	(1.4)	(12.3)
LRA 142,143	15	4	1	1	5	13	9	-	-	4	5	14	1	-	6	13	5	1	1	6
(Percent)	(57.7)	(15.4)	(3.8)	(3.8)	(19.2)	(50.0)	(34.6)			(15.4)	(19.2)	(53.8)	(3.8)		(23.1)	(50.0)	(19.2)	(3.8)	(3.8)	(23.1)
LRA 144,149	16	4	1	-	2	8	7	7	-	1	12	9	-	-	2	16	5	-	-	2
(Percent)	(69.6)	(17.4)	(4.3)		(8.7)	(34.8)	(30.4)	(30.4)		(4.3)	(52.2)	(39.1)			(8.7)	(69.6)	(21.7)			(8.7)
TOTAL	119	22	4	1	14	65	68	11	2	14	51	73	17	1	18	106	27	3	3	21
(Percent)	(74.4)	(13.8)	(2.5)	(0.6)	(8.8)	(40.6)	(42.5)	(6.9)	(1.2)	(8.8)	(31.9)	(45.6)	(10.6)	(0.6)	(11.2)	(66.2)	(16.9)	(1.9)	(1.9)	(13.1)

[a] Land Resource Areas (LRA). See Figure 1.

[b] NR denotes no response to this question.

for the problem identified. These measures could be structural, such as diversion ditches and terraces or managerial, such as more efficient use of agricultural chemicals and improved practices for disposing livestock wastes.

In addition to the survey responses summarized in Table 4, secondary data on erosion rates, agricultural chemical usage, and livestock numbers provide additional indications of possible problems in individual counties. Survey responses are also grouped according to occupations of respondents -- farmers and all others.

Soil erosion

Soil erosion can take different forms -- wind, sheet, rill, and gully. Some forms, such as gully erosion, are readily observable. Sheet erosion occurs through gradual movements of thin layers of soil over extensive areas and is more difficult to detect. Directors were asked if soil erosion, in whatever form, was a problem sufficiently serious in their respective counties to require action. Based on responses from all directors, 77 percent reported, "Yes, soil erosion is a problem", about 18 percent said "No", and about 4 percent did not complete this question. The response pattern for directors who are farmers was similar to that for nonfarmers.

Responses at the LRA levels were variable. Sixty percent of directors in LRA 142 plus 143 reported "Yes" while nearly 92 percent reported similarly in LRA 101. Nonresponse was relatively low among all LRA's. In examining responses at county levels, directors from counties in LRA 101 were essentially in agreement as to whether or not soil erosion was a problem. There was considerably less agreement, for example, among directors of counties in LRA 142 plus 143.

Table 4 also includes estimates of the average, annual tonnage of sheet erosion from selected categories of agricultural land, as reported by the Soil Conservation Service.[31] These categories include cropland, both "adequately treated" and "needing treatment", and land in orchards, vineyards, and bush fruits. These are the lands usually included in soil erosion control programs for farmers. Erosion from other agricultural lands such as pasture and woodlands has been excluded. As expected, estimates of amounts of sheet erosion vary among counties. In LRA 101, for example, annual average losses are estimated to range from 0.8 tons to 7.2 tons per acre per year. Nearly all respondents from LRA 101, however, reported that soil erosion was a problem. Based on estimated correlation coefficients, little correspondence exists between respondents' indications of whether or not soil erosion is a problem and the estimated levels of sheet erosion among the respective counties.

Streambank erosion and sedimentation in streams and road ditches

Directors also shared their views on other forms of soil movements. Nearly 85 percent indicated that streambank erosion was a problem requiring corrective measures. Twelve percent expressed a contrary view; 3.2 percent did not respond. A relatively higher percentage of nonfarmers considered streambank erosion a problem than did the farmer respondents -- 90.2 percent as compared with 82.9 percent.

Table 4. Frequency of response regarding whether specified potential nonpoint source pollutants are serious problems such that corrective measures are required, by potential problem and associated data and by county and LRA.[a]

	Soil Erosion is a problem			Soil Erosion from Agricultural Land	Streambank Erosion is a problem			Sedimentation in streams is a problem			Streambank Erosion	Runoff of soil nutrients is a problem			Commercial Fertilizer Applied
LRA 101	Yes	No	NR[b]	Tons/Acre/Year[c]	Yes	No	NR[b]	Yes	No	NR[b]	Tons/BankMile/Year[d]	Yes	No	NR[b]	Tons/Acre Applied[e]
Genesee	3	-	-	3.7	3	-	-	3	-	-	196.3	2	1	-	.20
Livingston	2	1	-	4.2	2	1	-	3	-	-	257.9	1	2	-	.18
Monroe	3	-	-	3.7	3	-	-	3	-	-	155.9	1	2	-	.20
Niagara	-	2	-	0.8	2	-	-	2	-	-	3.5	1	1	-	.17
Oneida	5	-	-	5.6	5	-	-	5	-	-	8.9	-	5	-	.18
Onondaga	2	-	-	5.7	2	-	-	2	-	-	30.2	1	1	-	.20
Ontario	3	-	-	5.1	2	1	-	3	-	-	21.2	-	3	-	.20
Orleans	3	-	-	1.4	-	3	-	3	-	-	35.0	1	2	-	.23
Oswego	2	-	-	2.3	-	2	-	2	-	-	23.2	-	2	-	.25
Seneca	3	-	-	4.9	2	1	-	3	-	-	22.0	1	2	-	.17
Wayne	4	-	-	2.8	2	2	-	3	1	-	110.5	1	3	-	.21
Yates	4	-	-	7.2	3	-	1	4	-	-	56.0	1	3	-	.20
Total 101	34	3	0		26	10	1	36	1	0		10	27	0	
(Percent)	(91.9)	(8.1)	0		(70.3)	(27.0)	(2.7)	(97.3)	(2.7)	0		(27.0)	(73.0)	0	

Table 4. (continued)

	Soil Erosion is a problem			Soil Erosion from Agricultural Land	Streambank Erosion is a problem			Sedimentation in streams is a problem			Streambank Erosion	Runoff of soil nutrients is a problem			Commercial Fertilizer Applied
LRA 140	Yes	No	NR	Tons/Acre/Year	Yes	No	NR	Yes	No	NR	Tons/BankMile/Year	Yes	No	NR	Tons/Acre Applied
Albany	2	-	1	5.7	3	-	-	3	-	-	6.5	-	3	-	.08
Allegany	3	-	-	1.5	3	-	-	3	-	-	282.0	-	3	-	.18
Broome	2	-	-	3.8	2	-	-	2	-	-	56.8	-	2	-	.17
Cattaraugus	3	1	-	3.1	4	-	-	4	-	-	46.0	-	4	-	.17
Chautauqua	3	-	-	2.4	3	-	-	2	1	-	101.6	-	3	-	.20
Chemung	4	-	-	2.6	4	-	-	4	-	-	96.3	1	3	-	.20
Chenango	5	-	-	3.5	5	-	-	4	1	-	25.0	2	3	-	.18
Cortland	4	-	-	5.3	4	-	-	3	-	1	107.2	-	4	-	.18
Delaware	3	2	-	5.9	5	-	-	2	2	1	11.5	-	4	1	.19
Greene	1	1	1	2.5	3	-	-	2	-	1	19.7	-	2	1	.19
Madison	1	1	-	4.2	1	1	-	1	1	-	39.1	1	1	-	.18
Montgomery	3	-	-	2.7	3	-	-	3	-	-	221.4	-	3	-	.17
Otsego	1	2	-	4.9	3	-	-	3	-	-	22.9	1	2	-	.01
Schenectady	3	-	-	1.6	3	-	-	3	-	-	176.9	3	-	-	.21
Schoharie	4	-	-	9.8	4	-	-	4	-	-	275.9	-	4	-	.18
Schuyler	4	1	-	3.9	5	-	-	4	1	-	26.1	-	5	-	.16
Steuben	1	-	1	5.6	2	-	-	2	-	-	248.7	-	1	1	.21
Tioga	2	1	1	3.4	4	-	-	3	1	-	43.0	-	3	1	.16
Tompkins	3	-	1	4.1	3	-	1	3	-	1	51.1	-	3	1	.18
Ulster	-	4	-	4.0	4	-	-	3	1	-	58.6	-	4	-	.19
Wyoming	2	-	-	4.1	2	1	-	3	-	-	62.4	-	3	-	.21
Total 140	55	13	5		70	2	1	61	8	4		8	60	5	
(Percent)	(75.3)	(17.8)	(6.8)		(95.9)	(2.7)	(1.4)	(83.6)	(11.0)	(5.5)		(11.0)	(82.2)	(6.8)	

Table 4. (continued)

	Soil Erosion is a problem			Soil Erosion from Agricultural Land	Streambank Erosion is a problem			Sedimentation in streams is a problem			Streambank Erosion	Runoff of soil nutrients is a problem			Commerical Fertilizer Applied
LRA 142,143	Yes	No	NR	Tons/Acre/Year	Yes	No	NR	Yes	No	NR	Tons/BankMile/Year	Yes	No	NR	Tons/Acre Applied
Essex	1	-	1	0.9	1	-	1	1	1	-	26.8	1	-	1	.18
Fulton	1	3	-	3.9	2	2	-	2	2	-	27.7	1	3	-	.18
Herkimer	5	-	-	4.8	4	-	1	3	-	2	52.2	-	2	3	.16
Lewis	2	2	-	2.9	4	-	-	3	1	-	32.6	1	3	-	.17
St. Lawrence	1	2	-	0.8	2	1	-	2	1	-	199.8	-	3	-	.17
Saratoga	3	1	-	2.2	4	-	-	4	-	-	7.9	2	2	-	.18
Warren	2	1	-	1.4	1	2	-	2	1	-	27.0	-	2	-	.10
Total 142,143	15	9	1		18	5	2	17	6	2		6	15	4	
(Percent)	(60.0)	(36.0)	(4.0)		(72.0)	(20.0)	(8.0)	(68.0)	(24.0)	(8.0)		(24.0)	(60.0)	(16.0)	
LRA 144,149															
Columbia	1	1	-	4.1	1	1	-	1	1	-	47.5	-	2	-	.18
Dutchess	4	-	-	6.5	4	-	-	4	-	-	6.5	-	4	-	.18
Orange	2	2	-	4.8	3	-	1	3	1	-	91.4	-	2	2	.31
Rensselaer	4	-	-	1.7	4	-	-	4	-	-	19.9	1	1	2	.19
Rockland	-	1	1	12.3	2	-	-	2	-	-	74.0	-	2	-	.40
Suffolk	2	-	-	4.5	1	1	-	1	1	-	0	-	2	-	1.0
Washington	5	-	-	1.0	5	-	-	4	1	-	81.3	-	5	-	.20
Total 144,149	18	4	1		20	2	1	19	4	0		1	18	4	
(Percent)	(78.3)	(17.4)	(4.3)		(87.0)	(8.7)	(4.3)	(82.6)	(17.4)	0		(4.3)	(78.3)	(17.4)	
TOTAL	122	29	7		134	19	5	122	19	6		25	120	13	
(Percent)	(77.2)	(18.4)	(4.4)		(84.8)	(12.0)	(3.2)	(84.2)	(12.0)	(3.8)		(15.8)	(75.9)	(8.2)	
Farmers[f]	90	22	5		97	15	5	98	14	5		14	93	10	
(Percent)	(76.9)	(18.8)	(4.3)		(82.9)	(12.8)	(4.3)	(83.8)	(12.0)	(4.3)		(12.0)	(79.5)	(8.5)	
Farms[f]	32	7	4		37	4	0	35	5	1		11	27	2	
(Percent)	(78.0)	(17.1)	(4.9)		(90.2)	(9.8)	0	(85.4)	(12.2)	(2.4)		(26.8)	(65.9)	(7.3)	

Table 4. (continued)

LRA 101	Barnyard Runoff is a problem			Runoff from Manure Spreading is a problem			Cattle & Calves per Acre of Farmland	Pesticides in Runoff is a problem			Sprays and Dusts Applied
	Yes	No	NR	Yes	No	NR	Head/Acre[g]	Yes	No	NR	Percent[h]
Genesee	1	2	-	-	2	1	.18	-	2	1	44.9
Livingston	2	1	-	2	1	-	.15	1	2	-	37.2
Monroe	1	2	-	1	2	-	.11	1	2	-	46.3
Niagara	1	1	-	-	2	-	.24	-	2	-	15.0
Oneida	1	4	-	1	4	-	.23	-	5	-	18.5
Onondaga	2	-	-	2	-	-	.18	1	1	-	37.0
Ontario	-	3	-	-	3	-	.13	-	3	-	47.8
Orleans	1	2	-	-	3	-	.11	-	3	-	56.2
Oswego	1	1	-	-	2	-	.18	-	2	-	25.2
Seneca	2	1	-	1	2	-	.09	1	2	-	38.0
Wayne	2	2	-	1	3	-	.11	2	2	-	64.0
Yates	1	3	-	1	3	-	.10	1	3	-	48.2
Total 101	15	22	0	9	27	1		7	29	1	
(Percent)	(40.5)	(59.5)	0	(24.3)	(73.0)	(2.7)		(18.9)	(78.4)	(2.7)	

Table 4. (continued)

LRA 140	Barnyard Runoff is a problem			Runoff from Manure Spreading is a problem			Cattle & Calves per Acre of Farmland	Pesticides in Runoff is a problem			Sprays and Dusts Applied
	Yes	No	NR	Yes	No	NR	Head/Acre	Yes	No	NR	Percent
Albany	-	3	-	-	3	-	.15	-	3	-	15.6
Allegany	1	2	-	1	2	-	.16	-	3	-	12.4
Broome	1	-	1	-	2	-	.20	-	2	-	13.6
Cattaraugus	1	3	-	-	4	-	.22	-	4	-	21.9
Chautauqua	1	2	-	1	2	-	.20	-	3	-	33.6
Chemung	1	2	1	-	3	1	.15	1	3	-	15.4
Chenango	2	3	-	-	5	-	.21	-	4	1	10.2
Cortland	2	2	-	-	4	-	.24	-	4	-	44.2
Delaware	3	2	-	2	3	-	.20	-	5	-	11.0
Greene	-	2	1	1	1	1	.14	-	2	1	9.9
Madison	1	1	-	1	1	-	.23	-	1	1	24.5
Montgomery	-	3	-	1	2	-	.24	-	3	-	15.0
Otsego	1	2	-	-	3	-	.21	1	2	-	15.7
Schenectady	3	-	-	3	-	-	.14	3	-	-	10.7
Schoharie	1	3	-	-	4	-	.19	-	4	-	15.1
Schuyler	1	4	-	-	5	-	.13	-	5	-	23.6
Steuben	-	1	1	-	1	1	.14	-	1	1	42.5
Tioga	-	3	1	-	4	-	.20	-	3	1	18.9
Tompkins	-	3	1	-	3	1	.20	-	3	1	39.2
Ulster	4	-	-	4	-	-	.13	-	4	-	64.1
Wyoming	3	-	-	-	3	-	.26	-	3	-	42.1
Total 140	26	41	6	14	55	4		5	62	6	
(Percent)	(35.6)	(56.2)	(8.2)	(19.2)	(75.3)	(5.5)		(6.8)	(84.9)	(8.2)	

Table 4. (continued)

LRA 142,143	Barnyard Runoff is a problem			Runoff from Manure Spreading is a problem			Cattle & Claves per Acre of Farmland	Pesticides in Runoff is a problem			Sprays and Dusts Applied
	Yes	No	NR	Yes	No	NR	Head/Acre	Yes	No	NR	Percent
Essex	2	-	-	1	1	-	.12	-	1	1	14.2
Fulton	1	3	-	1	3	-	.21	-	3	1	13.1
Herkimer	1	2	2	1	1	2	.24	-	2	3	14.2
Lewis	1	2	1	2	2	-	.25	-	3	1	13.3
St. Lawrence	1	2	-	1	2	-	.19	1	2	-	8.4
Saratoga	2	2	-	3	1	-	.18	1	2	1	25.0
Warren	1	2	-	1	2	-	.16	-	3	-	16.7
Total 142,143	9	13	3	11	12	2		2	16	7	
(Percent)	(36.0)	(52.0)	(12.0)	(44.0)	(48.0)	(8.0)		(8.0)	(64.0)	(28.0)	
LRA 144,149											
Columbia	1	1	-	1	1	-	.23	-	2	-	36.9
Dutchess	1	3	-	1	3	-	.23	-	4	-	33.4
Orange	1	2	1	1	3	-	.19	-	3	1	41.0
Rensselaer	3	1	-	3	1	-	.19	-	3	1	20.3
Rockland	-	2	-	-	2	-	.20	1	1	-	88.9
Suffolk	-	2	-	-	2	-	.02	-	2	-	127.3
Washington	1	4	-	1	4	-	.22	-	5	-	22.3
Total 144,149	7	15	1	7	16	0		1	20	2	
(Percent)	(30.4)	(65.2)	(4.3)	(30.4)	(69.6)	0		(4.3)	(87.0)	(8.7)	
TOTAL	57	91	10	41	110	7		15	127	16	
(Percent)	(36.1)	(57.6)	(6.3)	(25.9)	(69.6)	(4.4)		(9.5)	(80.4)	(10.1)	
Farmers[f]	39	69	9	27	84	6		7	99	11	
(Percent)	(33.3)	(59.0)	(7.7)	(23.1)	(71.8)	(5.1)		(6.0)	(84.6)	(9.4)	
Others[f]	18	22	1	14	26	1		8	28	5	
(Percent)	(43.9)	(53.7)	(2.4)	(34.1)	(63.4)	(2.4)		(19.5)	(68.3)	(12.2)	

[a] Land Resource Areas (LRA). See Figure 1.

[b] No response to this question.

[c] Estimated average annual tonnage of sheet erosion from combined sources of cropland (adequately treated); cropland (needing treatment); and orchards, vineyards, bush fruits. Source: U.S.D.A. Soil Conservation Service, Erosion and Sediment Inventory. New York. March 1975.

[d] Source: Erosion and Sediment Inventory.

[e] Commercial fertilizer applied, as reported on farms with sales of $2500 or more. Source: 1974 Agricultural Census. New York. April 1977.

[f] Response grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

[g] 1974 Agricultural Census.

[h] Acres on which sprays and dusts were applied as a percent of total cropland acres. Source: 1974 Agricultural Census.

Directors from counties in LRA 140 were nearly unanimous in their views. Almost 96 percent reported streambank erosion as being a problem. There was less agreement among respondents from other LRA's. Estimates of streambank erosion are also provided by SCS. Based on estimated correlation coefficients, no consistent pattern among the distribution of responses between "Yes" and "No" and indicators of streambank erosion within counties was evident.

Sedimentation in streams and road ditches was viewed as a problem by about 84 percent of all directors responding. Farmers and nonfarmers were essentially in agreement. Slightly over 97 percent of those from LRA 101 responded similarly. In LRA 142 plus 143, 68 percent reported "Yes" while 24 percent did not consider sedimentation a problem. The degree of association between the pattern of "Yes" and "No" responses among counties and the corresponding estimated level of streambank erosion was very low.

Runoff of soil nutrients

Movements of soil nutrients can have differing adverse consequences. When soil erosion is occuring, nutrients strongly adsorbed to fine soil particles move with the soil. Soluble and particulate forms of nutrients will move in overland and subsurface flows. Nutrient losses and subsequent deposition affect soil productivity. Nutrients eventually reaching water courses may have adverse effects on water quality. In some situations, beneficial effects may occur. A number of problems exist in identifying (i) conditions under which movements of soil nutrients occur, (ii) possible chemical transformations of these nutrients through time and space, (iii) where and under what conditions deposition occurs on land and in waters, and (iv) the actual or potential effect on water quality.

Relatively few of the directors reporting, only about 16 percent, considered runoff of soil nutrients to be a problem (Table 4). Nearly 80 percent indicated this runoff was not perceived as a problem or was not a problem. Another 8 percent didn't respond and(or) were undecided. In comparing responses from farmers with nonfarmers, the percentage of the latter reporting runoff of soil nutrients as a problem was more than twice as high as for the farmer respondents.

Some differences at the LRA levels are evident. Relatively more respondents in LRA's 101 and 142 plus 143 viewed this runoff a problem. Conversely, only about 4 percent of those from LRA 144 plus 149 reported "Yes"; however, 17.4 percent did not complete the question.

Types and concentrations of soil nutrients in runoff are dependent upon a number of factors including soil characteristics, cultivation practices, crops grown, and application rates and techniques for nutrients applied either in commercial or organic form. Consequently, no appropriate independent indicator of potential incidence of movements of soil nutrients is available. The 1974 Agricultural Census does provide data on the tonnage of commercial fertilizer applied to cropland on commercial farms with sales of $2500 or more. No consistent pattern of association between survey responses and relative levels of applications of commercial fertilizer was observable.

Runoff from barnyards and manure spreading

Nutrient losses may also result from barnyard runoff and from manure spreading, particularly during winter months when the ground is frozen and(or) snow melt is occurring. About 36 percent of the directors reported that barnyard runoff was a problem of such degree that something should be done to reduce it. Around 58 percent disagreed and only 6 percent did not respond to this question. This percentage distribution of responses is similar to those at the LRA levels. Nonfarmers felt relatively more strongly that barnyard runoff was a problem than did farmer respondents.

With regard to runoff from winter spreading of manure, about 26 percent of all directors reported this a problem; nearly 70 percent indicated "No". Respondents in LRA 142 plus 143 were about equally divided as to whether or not a problem existed.

Response patterns within counties were variable. This variability may be expected to result in differing views on the need for corrective measures and the relative priorities for these measures vis-a-vis reductions in soil erosion, sedimentation, and movements of soil nutrients. A cattle intensity factor representing the average number of cattle and calves per acre of farmland was derived and is included in Table 4. Based on estimated correlation coefficients, no consistent correspondence between the cattle density factor and the relative number of reports that barnyard runoff or runoff from winter manure spreading is a problem was observable among responses from individual counties.

Pesticides in soil runoff

Pesticides is another category of pollutant that is difficult to assess in terms of potential degradation of water quality. Corrective measures could include better management of the use-levels and timing of pesticide applications and of disposal of unused pesticides and containers. Relatively few of the directors reporting considered pesticides in soil runoff to be a serious problem. Only 9.5 percent indicated "Yes"; the majority reported "No". Response patterns were similar at the LRA levels, except in LRA 101 where close to 19 percent of the directors considered this a problem. Among all respondents, the percentage of nonfarmers viewing pesticides in soil runoff a problem was three times as high as their farmer counterparts.

An indication of pesticide usage represented by the acres on which sprays and dusts were applied as a percent of total cropland acres is included in Table 4. No consistent association between this factor and reports of whether or not pesticides in soil runoff are a problem was observable among responses from various counties.

Problems warranting legislated action

In addition to providing indications of whether or not certain potential pollutants were problems in their counties, respondents shared their views on the need for additional legislation to help ensure correction of the identified problems. Those favoring additional legislation also designated the problems requiring new initiatives. Respondents were not asked nor did they volunteer any specifics concerning, for example, the type of legislation, incentives for adoption, or penalties for nonadoption.

Close to 69 percent of the directors responding indicated that, in their view, additional legislative action was not warranted (Table 5). About 28 percent disagreed. Response patterns at LRA levels were similar except for respondents from LRA 144 plus 149. When responses are grouped according to replies from farmers and nonfarmers, slightly over 38 percent of the nonfarmers favored additional legislative initiatives as compared with only about 24 percent of the farmers.

Among the 44 respondents who considered legislation appropriate, the need for measures related to reducing streambank erosion, sedimentation in streams and ditches, and soil erosion was cited most frequently. Such problems are more observable and, with the exception of soil erosion, largely outside the control of individual farmers. These factors may account for the expressed need for additional legislative measures to correct these particular problems.

Expected Effectiveness of Practices in Farm Conservation Plans Toward Reducing Movements of Potential Pollutants

Farm conservation plans represent an existing means for recommending practices to reduce the incidence of potential pollutants. To be effective, practices must be implemented and maintained. Based on the proposed objectives of the 1979 Agricultural Conservation Program, the two principal thrusts will be to not only conserve soil and water resources but to prevent degradation of the human environment as affected by the conduct of agricultural operations.[32]

Responses on expected effectiveness of practices in farm conservation plans are summarized in Table 6. The response pattern for directors who are farmers is essentially similar to nonfarmers. Responses at county levels are in Table 3, Appendix 2.

Soil erosion

There was strong agreement that farm conservation plans can be effective in reducing or controlling soil erosion; 95 percent of all directors responding took this position. Directors from LRA 101 and 140 were unanimous in considering the plans to be effective. In the remaining LRA's, between 80-85 percent reported similarly.

Streambank erosion

There was considerably less agreement on the appropriateness of farm conservation plans for reducing or controlling streambank erosion. Eighty percent of the directors reporting from LRA 101 indicated that farm conservation plans would be effective. Respondents from other LRA's were less positive.

Sedimentation in streams and road ditches

Eighty percent of all directors reporting indicated that farm conservation plans would be effective in reducing sedimentation. Affirmative

Table 5. SWCD directors' views on whether or not the potential pollutants specified in Tab 4 are sufficiently serious to warrant legislated measures requiring correction of the problems, by LRA.[a]

	LRA 101	LRA 140	LRA 142,143	LRA 144,149	Total	Total[c] Farmers	Total[c] Others
Yes	11	17	6	10	44	28	16
(Percent)	(28.9)	(23.3)	(23.1)	(43.5)	(27.5)	(23.7)	(38.1)
No	26	53	18	13	110	85	25
(Percent)	(68.4)	(72.6)	(69.2)	(56.5)	(68.8)	(72.0)	(59.5)
NR[b]	1	3	2	-	6	5	1
(Percent)	(2.6)	(4.1)	(7.7)		(3.8)	(4.2)	(2.4)
Total	38	73	26	23	160	118	42
(Percent)	(100.0)	(100.0)	(100.0)	(100.0)		(100.0)	(100.0)
Problems warranting legislated action							
Soil erosion	8	5	2	4	18		
Streambank erosion	5	17	3	7	32		
Sedimentation	4	11	1	6	22		
Runoff of soil nutrients	1	1	1	3	6		
Barnyard runoff	1	3		3	7		
Runoff from manure spreading	1	1	1	3	6		
Pesticides in runoff	2	1		3	6		

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to occupation reported -- farmers and all others. See ques 19, Appendix 1.

Table 6. Views on the effectiveness of farm conservation plans, as currently being developed, in reducing or controlling potential nonpoint source pollutants, by potential problem and by LRA[a]

	Soil Erosion			Streambank Erosion			Sedimentation in Streams			Runoff of Soil Nutrients			Barnyard Runoff			Runoff from Manure Spreading			Pesticides in Runoff		
	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]
LRA 101	38	-	-	31	4	3	35	1	2	32	4	2	30	7	1	27	10	1	21	14	3
(Percent)	(100.0)			(80.0)	(11.4)	(8.6)	(91.4)	(2.9)	(5.7)	(82.9)	(11.4)	(5.7)	(82.9)	(14.3)	(2.9)	(74.3)	(22.9)	(2.9)	(60.0)	(31.4)	(8.6)
LRA 140	73	-	-	47	25	1	59	9	5	65	3	5	52	17	4	56	13	4	44	23	6
(Percent)	(100.0)			(64.4)	(34.2)	(1.4)	(80.8)	(12.3)	(6.8)	(89.0)	(4.1)	(6.8)	(71.2)	(23.3)	(5.5)	(76.7)	(17.8)	(5.5)	(60.3)	(31.5)	(8.2)
LRA 142,143	22	2	2	14	10	2	19	4	3	19	5	2	16	7	3	16	7	3	11	10	5
(Percent)	(84.6)	(7.7)	(7.7)	(53.8)	(38.5)	(7.7)	(73.1)	(15.4)	(11.5)	(73.1)	(19.2)	(7.7)	(61.5)	(26.9)	(11.5)	(61.5)	(26.9)	(11.5)	(42.3)	(38.5)	(19.2)
LRA 144,149	19	3	1	11	10	2	15	5	3	16	4	3	13	5	5	15	4	4	12	7	4
(Percent)	(82.6)	(13.0)	(4.3)	(47.8)	(43.5)	(8.7)	(65.2)	(21.7)	(13.0)	(69.6)	(17.4)	(13.0)	(56.5)	(21.7)	(21.7)	(65.2)	(17.4)	(17.4)	(52.2)	(30.4)	(17.4)
TOTAL	152	5	3	103	49	8	128	19	13	132	16	12	111	36	13	114	34	12	88	54	18
(Percent)	(95.0)	(3.1)	(1.9)	(64.4)	(30.6)	(5.0)	(80.0)	(11.9)	(8.1)	(82.5)	(10.0)	(7.5)	(69.4)	(22.5)	(8.1)	(71.2)	(21.2)	(7.5)	(55.0)	(33.8)	(11.2)
Farmers[c]	113	2	3	74	36	8	94	15	9	97	12	9	82	27	9	87	23	8	67	38	13
(Percent)	(95.8)	(1.7)	(2.5)	(62.7)	(30.5)	(6.8)	(79.7)	(12.7)	(7.6)	(82.2)	(10.2)	(7.6)	(69.5)	(22.9)	(7.6)	(73.7)	(19.5)	(6.8)	(56.8)	(32.2)	(11.0)
Others[c]	39	3	-	29	13	-	34	4	4	35	4	3	29	9	4	27	11	4	21	16	5
(Percent)	(92.9)	(7.1)		(69.0)	(31.0)		(81.0)	(9.5)	(9.5)	(83.3)	(9.5)	(7.1)	(69.0)	(21.4)	(9.5)	(64.3)	(26.2)	(9.5)	(50.0)	(38.1)	(11.9)

[a] Land Resource Areas (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

responses at the LRA levels ranged from about 65 percent in LRA 144 plus 149 to 91.4 percent for directors responding from LRA 101.

Runoff of soil nutrients

Farm conservation plans are generally considered to be effective in reducing movements of soil nutrients. Eighty-three and 89 percent of the directors reporting from LRA 101 and 140, respectively, responded "Yes". For the remaining LRA's, around 70 percent of the respondents considered the plans effective. The nonresponse rates at the LRA level varied from about 6 to 13 percent for this question.

Runoff from barnyards and winter manure spreading

Around 70 percent of all directors responding reported that farm conservation plans would be effective for controlling runoff from barnyards and from winter spreading of manure. Respondents in LRA 142 plus 143 and LRA 144 plus 149 were somewhat less positive about the effectiveness of plans for reducing or controlling these phenomena.

Pesticides in soil runoff

Practices in farm conservation plans were viewed as being only somewhat effective in reducing movements of pesticides. Fifty-five percent of all directors reported "Yes, the plans would be effective". Nearly 34 percent responded "No". Respondents from LRA 142 plus 143 and LRA 144 plus 149 were less positive.

Other appropriate practices

In addition to views on the effectiveness of practices in farm conservation plans in reducing the occurrence of pollutants, several directors cited additional farm management practices that would be appropriate in certain situations.

Soil nutrient losses Responses were varied. The most frequent comments were that present practices are enough and winter groundcover would be effective in reducing losses. Respondents also indicated, that more attention should be given to the timing and rates of application of fertilizers and livestock wastes. Other practices mentioned less frequently were no-till cultivation, strip cropping, and different crop rotations.

Barnyard runoff Several reported that present practices are adequate. Lagoons and storage pits, diversions, and grass fiter strips were often cited. Mentioned less often were relocating the barnyard, paving barnyards, and better management of existing barnyards.

Runoff from manure spreading Again, several respondents felt no additional action was needed. Those providing comments recommended a combination of manure storage and spreading during those months when the manure can be incorporated into the soil or when the possibility of surface runoff is minimized; that is, better management of manure disposal.

Pesticides in runoff Among those providing comments, most did not consider pesticides in runoff a problem. Others reported that better management of pesticide usage in terms of levels and timing of applications would be effective.

Farm Conservation Practices and Farm Income

Farmers' receptiveness to implementing specific practices and entire farm conservation plans is directly linked to their expectations of short and longer-term net economic returns associated with these practices. Adoption of practices represents modifications of existing farming operations. These modifications can create uncertainties, situations many farmers want to avoid. Some will be operating at the margin of economic survival. They may be unable or, at least reluctant, to introduce changes having uncertain effects on yields and net returns.

Directors considered the following general question: "Do you feel that conservation practices are essential to the maintenance and(or) improvement of farm production and income?" The question is, of course, better posed to farmers, the adopters of the practices. But, considering responsibilities of the SWCD boards, members' views on the income effects of practices will likely have implications for their emphases on implementing and monitoring these practices. An overwhelming majority, 92.5 percent of all directors responding, reported "Yes" (Table 7). Farmers and nonfarmers were essentially in agreement. Since the responses are so supportive of the practices, indications at county levels are not included in Appendix 2. Respondents in LRA 144 plus 149 were somewhat less positive where about 78 percent responded "Yes" and 13 percent "No". Few comments were provided. Control of soil erosion and movements of soil nutrients were cited as the most important benefits resulting from practices in farm conservation plans. Certain practices, however, provide a payoff to the farmer only several years into the future. These practices have less appeal to farmers principally concerned with short-term returns necessary for them to stay in business within the present and near future.

Directors responded to another general question as to whether or not they thought soil and water conservation practices have become less attractive to farmers than they were 5 years ago. Practices may be more or less attractive due to factors such as (i) changes in farm enterprises, (ii) changes in the technical specifications for installing practices, (iii) modifications in cost sharing arrangements, and (iv) changes in prices paid and received.

Directors were given a specific list of soil and water conservation practices. Based on responses in Table 8, "liming" and "tile drains" are generally as attractive to implementors now as 5 years ago. Among all directors responding, only about 6 percent reported "tile drains" as less attractive now while 12.5 percent responded similarly with regard to "liming". Responses at county levels are in Table 4, Appendix 2.

Table 7. Responses on whether or not conservation practices are essential to the maintenance and(or) improvement of farm production and income, by LRA.[a]

	Yes	No	NR[b]	Total
LRA 101	37	-	1	38
(Percent)	(97.4)		(2.6)	(100.0)
LRA 140	69	2	2	73
(Percent)	(94.5)	(2.7)	(2.7)	(100.0)
LRA 142,143	24	1	1	26
(Percent)	(92.3)	(3.8)	(3.8)	(100.0)
LRA 144,149	18	3	2	23
(Percent)	(78.3)	(13.0)	(8.7)	(100.0)
TOTAL	148	6	6	160
(Percent)	(92.5)	(3.8)	(3.8)	

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

Table 8. Frequency of response regarding whether specified conservation practices have become less attractive to farmers than they were 5 years ago, by practice by LRA.[a]

	Contouring			Liming			Tile Drains			Terraces			Grassed Waterways		
	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]
LRA 101	21	15	2	3	34	1	4	33	1	17	16	5	16	22	-
(Percent)	(55.3)	(39.5)	(5.3)	(7.9)	(89.5)	(2.6)	(10.5)	(86.8)	(2.6)	(44.7)	(42.1)	(13.2)	(42.1)	(57.9)	
LRA 140	33	39	1	13	58	2	3	68	2	35	34	4	19	49	5
(Percent)	(45.2)	(53.4)	(1.4)	(17.8)	(79.5)	(2.7)	(4.1)	(93.2)	(2.7)	(47.9)	(46.6)	(5.5)	(26.0)	(67.1)	(6.8)
LRA 142,143	9	14	3	4	21	1	3	21	2	11	10	5	6	17	3
(Percent)	(34.6)	(53.8)	(11.5)	(15.4)	(80.8)	(3.8)	(11.5)	(80.8)	(7.7)	(42.3)	(38.5)	(19.2)	(23.1)	(65.4)	(11.5)
LRA 144,149	7	13	3	-	19	4	-	20	3	12	4	7	6	14	3
(Percent)	(30.4)	(56.5)	(13.0)		(82.6)	(17.4)		(87.0)	(13.0)	(52.2)	(17.4)	(30.4)	(26.1)	(60.9)	(13.0)
TOTAL	70	81	9	20	132	8	10	142	8	75	64	21	47	102	11
(Percent)	(43.8)	(50.6)	(5.6)	(12.5)	(82.5)	(5.0)	(6.2)	(88.8)	(5.0)	(46.9)	(40.0)	(13.1)	(29.4)	(63.8)	(6.9)

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

About 64 percent of all directors considered "grassed waterways" as attractive as the practice was 5 years ago; nearly 30 percent disagreed. Responses regarding "contouring" were somewhat mixed. Among those reporting from LRA 101, 55 percent considered contouring less attractive; 45 percent of those from LRA 140 responded similarly. Only 34.6 and 30.4 percent among those reporting from LRA 142 plus 143 and LRA 144 plus 149, respectively, reported that "contouring" was less attractive than 5 years ago.

Most respondents did not offer comments as to why practices have become less attractive. Among those who did, comments mentioned most frequently were that installation of structural practices has become too expensive and that larger machinery is not always amenable to smaller fields resulting from installing structural measures.

Farmers choose to implement certain parts of farm conservation plans and not others. One hypothesis is that the practices implemented are, for various reasons, the most profitable components of the entire plan. The SWCD directors provided their views on whether or not farmers are generally more interested in management measures as compared with structural measures and the likely reasons for this preference. Survey responses in Table 9 strongly support the contention that farmers prefer management measures. Nearly 84 percent of the directors reporting took this position; only 12 percent disagreed. Response patterns for farmers and nonfarmers were similar. Directors were rather explicit in supporting their views. The majority of those making comments stated that practices such as liming are not only relatively inexpensive but provide economic returns within a short time period. Structural measures, such as terracing, contouring, and grassed waterways are either too expensive to install and maintain, reduce the flexibility in conducting farming operations, and(or) only provide benefits after several years have gone by. Farmers have good intentions but also need to protect their short-term profit positions.

Levels of Federal Cost Sharing

Since the availability of cost sharing monies likely affects the selection of practices adopted by farmers and the rate at which practices are installed, comments on cost sharing arrangements are of interest. County ASCS committees have some discretion in setting cost sharing levels for approved practices. Consequently, rates can be structured to encourage adoption of certain practices relative to others. Some practices, for example, are more closely linked to reducing the degradation of water quality than others.

Directors were asked for indications of the relative importance of the levels of cost sharing associated with implementing practices. Slightly over 66 percent of all directors reporting indicated that "Yes, cost sharing has been the most important factor"; about 28 percent disagreed (Table 10). Referring to LRA levels about 75 percent of those reporting from LRA 140 responded "Yes". The frequency of positive responses was somewhat lower among remaining LRA's -- 65.8 percent in LRA 101, 61.5 percent in LRA 142 plus 143, and 43.5 percent in LRA 144 plus 149. Percentages of nonresponse

Table 9. Directors' views on farmers' relative interest in management measures, such as liming and strip cropping as compared with structural measures, such as terracing and grassed waterways, by LRA.[a]

	LRA 101	LRA 140	LRA 142,143	LRA 144,149	Total
Yes - more interested in management practices	31 (81.5)	66 (90.4)	19 (73.1)	18 (78.3)	134 (83.8)
No	5 (13.2)	5 (6.8)	7 (26.9)	2 (8.7)	19 (11.9)
NR[b]	2 (5.3)	2 (2.7)	-	3 (13.0)	7 (4.4)
Total	38 (100.0)	73 (100.0)	26 (100.0)	23 (100.0)	

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

Table 10. Directors' views on whether or not levels of Federal cost sharing have been the most important factor affecting acceptance and implementation of most practices in farm conservation plans, by LRA.[a]

	LRA 101	LRA 140	LRA 142,143	LRA 144,149	Total
Yes, cost sharing is most important	25 (65.8)	55 (75.3)	16 (61.5)	10 (43.5)	106 (66.2)
No	9 (23.7)	15 (20.5)	9 (34.6)	12 (52.2)	45 (28.1)
NR[b]	4 (10.5)	3 (4.1)	1 (3.8)	1 (4.3)	9 (5.6)
Total	38 (100.0)	73 (100.0)	26 (100.0)	23 (100.0)	

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

were relatively low. Few directors volunteered comments as to factors other than cost sharing which were most important. Among those mentioned were the need for a positive attitude toward the practices and for education and technical assistance.

Respondents also designated the minimum level of Federal cost sharing they considered appropriate for ensuring voluntary implementation of a selected number of practices included in farm conservation plans. Responses are summarized according to the specified practice.

Strip cropping

Among directors responding, nearly 19 percent reported that no cost sharing funds are needed while 16 percent thought the level of cost sharing should only be 25 percent of installation costs (Table 11). Fifty percent cost sharing was mentioned most frequently -- slightly over 36 percent specified this level. Another 23 percent reported the level should be 75 percent or higher.

Considering responses at the LRA levels, 50 percent cost sharing was cited most frequently. Responses among individual counties are in Table 5, Appendix 2.

Permanent open drainage systems

Only 7 percent of the respondents indicated that no cost sharing was needed (Table 12). Most respondents -- nearly 54 percent -- specified that cost sharing at the 50 percent level was necessary. About a fifth thought the level should be 75 percent or higher. When responses are grouped according to reported occupations, directors who are also farmers cited cost sharing levels of 50 percent or higher more frequently than nonfarmers.

Responses at the LRA levels were distributed somewhat similarly. Responses among individual counties are in Table 6, Appendix 2.

Practices for controlling barnyard runoff

Based on responses in Table 13, directors reported the need for relatively high levels of cost sharing assistance to ensure installation of barnyard control measures. Just over 34 percent of the respondents designated 50 percent cost sharing as the appropriate level. Half the respondents specified 75 percent or higher. Designations by farmers were comparable to those by nonfarmers.

A similar response pattern was also evident at the LRA level, with the exception of respondents in LRA 144 plus 149. In these areas, cost sharing at the 50 percent level was mentioned by nearly 48 percent of the respondents while slightly over 26 percent specified cost sharing in the range of 75-100 percent. Responses among individual counties are in Table 7, Appendix 2.

Manure handling and storage system

One fourth of all directors responding specified 50 percent cost sharing, about one third designated 75 percent, and another 29 percent reported that

Table 11. Designated minimum levels of Federal cost sharing to ensure implementation of STRIP CROPPING as a component of farm conservation plans, by percent of cost sharing and by LRA.[a]

	Percent of Cost Sharing						
	None	25%	50%	75%	76-100%	NR[b]	Total
LRA 101	6	4	13	9	3	3	38
(Percent)	(15.8)	(10.5)	(34.2)	(23.7)	(7.9)	(7.9)	(100.0)
LRA 140	11	17	23	15	4	3	73
(Percent)	(15.1)	(23.3)	(31.5)	(20.5)	(5.5)	(4.1)	(100.0)
LRA 142,143	9	-	10	2	1	4	26
(Percent)	(34.6)		(38.5)	(7.7)	(3.8)	(15.4)	(100.0)
LRA 144,149	4	1	12	2	1	3	23
(Percent)	(17.4)	(4.3)	(52.2)	(8.7)	(4.3)	(13.0)	(100.0)
TOTAL	30	22	58	28	9	13	160
(Percent)	(18.8)	(13.8)	(36.2)	(17.5)	(5.6)	(8.1)	
Farmers[c]	22	19	37	23	7	10	118
(Percent)	(18.6)	(16.1)	(31.4)	(19.5)	(5.9)	(8.5)	(100.0)
Others[c]	8	3	21	5	2	3	42
(Percent)	(19.0)	(7.1)	(50.0)	(11.9)	(4.8)	(7.1)	(100.0)

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[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

Table 12. Designated minimum levels of Federal cost sharing to ensure implementation of PERMANENT OPEN DRAINAGE SYSTEMS as a component of farm conservation plans, by percent of cost sharing and by LRA.[a]

	Percent of Cost Sharing						
	None	25%	50%	75%	76-100%	NR[b]	Total
LRA 101	4	9	18	3	1	3	38
(Percent)	(10.5)	(23.7)	(47.4)	(7.9)	(2.6)	(7.9)	(100.0)
LRA 140	3	9	41	13	6	1	73
(Percent)	(4.1)	(12.3)	(56.2)	(17.8)	(8.2)	(1.4)	(100.0)
LRA 142,143	3	3	16	2	-	2	26
(Percent)	(11.5)	(11.5)	(61.5)	(7.7)		(7.7)	(100.0)
LRA 144,149	1	3	11	4	2	2	23
(Percent)	(4.3)	(13.0)	(47.8)	(17.4)	(8.7)	(8.7)	(100.0)
TOTAL	11	24	86	22	9	8	160
(Percent)	(6.9)	(15.0)	(53.8)	(13.8)	(5.6)	(5.0)	
Farmers[c]	7	13	65	18	8	7	118
(Percent)	(5.9)	(11.0)	(55.1)	(15.3)	(6.8)	(5.9)	(100.0)
Others[c]	4	11	21	4	1	1	42
(Percent)	(9.5)	(26.2)	(50.0)	(9.5)	(2.4)	(2.4)	(100.0)

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

Table 13. Designated minimum levels of Federal cost sharing to ensure implementation of BARNYARD RUNOFF CONTROL PRACTICES as a component of farm conservation plans, by percent cost sharing and by LRA.[a]

	Percent of Cost Sharing						
	None	25%	50%	75%	76-100%	NR[b]	Total
LRA 101	1	1	11	13	9	3	38
(Percent)	(2.6)	(2.6)	(28.9)	(34.2)	(23.7)	(7.9)	(100.0)
LRA 140	5	2	26	24	14	2	73
(Percent)	(6.8)	(2.7)	(35.6)	(32.9)	(19.2)	(2.7)	(100.0)
LRA 142,143	1	1	7	7	7	3	26
(Percent)	(3.8)	(3.8)	(26.9)	(26.9)	(26.9)	(11.5)	(100.0)
LRA 144,149	2	1	11	2	4	3	23
(Percent)	(8.7)	(4.3)	(47.8)	(8.7)	(17.4)	(13.0)	(100.0)
TOTAL	9	5	55	46	34	11	160
(Percent)	(5.6)	(3.1)	(34.4)	(28.8)	(21.2)	(6.9)	
Farmers[c]	8	4	38	35	24	9	118
(Percent)	(6.8)	(3.4)	(32.2)	(29.7)	(20.3)	(7.6)	(100.0)
Others[c]	1	1	17	11	10	2	42
(Percent)	(2.4)	(2.4)	(40.5)	(26.2)	(23.8)	(4.8)	(100.0)

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

cost sharing should be in the range of 76-100 percent (Table 14). When responses are grouped according to reported occupations, designations by farmers were skewed toward the 75-100 percent levels while nonfarmers cited the 50-75 percent levels more frequently.

Respondents from LRA 140 mentioned the 75 percent or higher cost sharing levels more frequently than their counterparts in the other LRA's. Responses at county levels are in Table 8, Appendix 2.

Implementation of Practices

A number of potential factors affecting farmers' decisions to adopt practices in farm conservation plans were identified in previous sections. To date, adoption of practices has been on a voluntary basis. When cost sharing is received for installing a particular practice, that practice must then be implemented. There is evidence that farmers have tended to be selective in implementing practices in plans. Farmers have had a preference for practices which are productivity increasing, such as liming and drainage rather than for practices designed for controlling soil erosion, the principal goal in the development of farm conservation plans.[33] The overwhelming majority of respondents in this survey viewed farmers as being more interested in management practices than permanent structural measures (Table 9).

Directors were asked to consider several factors expected to affect farmers' decisions toward implementing practices in farm conservation plans and then to rank these factors according to the directors' views of their relative importance (Table 15). Several directors -- about 44 percent -- either did not complete the question or completed it incorrectly. For example, a few respondents ranked the factors using values of 1, 2, and 8 only. See question 13, Appendix 2. The intended ranking procedure was simply misunderstood.

The rank values in Table 15 reflect values of decreasing importance where 1 represents "most important" and 8 denotes "least important". Responses are represented as percentage distributions and are grouped according to whether respondents reported being farmers or engaged in some other occupation. The percentage distributions of rankings by the 90 directors -- 64 farmers and 26 nonfarmers -- tend to be similar. Farmers attached relatively most importance to "awareness and understanding of the farm conservation plan program"; 31.2 percent ranked this factor first as compared with 23.1 percent of the nonfarmers. The latter group emphasized the "expected effect of implementation on farmer's income". Rankings for this factor are skewed toward rank values 1 through 4. Farmers also supported this ranking distribution but somewhat less intensively.

Concerning "availability of technical assistance", no pattern of ranking was discernable among farmers. About the same percentage ranked this factor 6 or 7 as did 1 or 2. Nonfarmers viewed this factor as being of lesser importance. The percentage distribution of their responses is skewed toward rank values 4 through 7.

Table 14. Designated minimum levels of Federal cost sharing to ensure implementation of MANURE HANDLING and STORAGE SYSTEMS as a component of farm conservation plans, by percent cost sharing and by LRA.[a]

	Percent of Cost Sharing						
	None	25%	50%	75%	76-100%	NR[b]	Total
LRA 101	-	3	13	12	7	3	38
(Percent)		(7.9)	(34.2)	(31.6)	(18.4)	(7.9)	(100.0)
LRA 140	4	2	14	24	27	2	73
(Percent)	(5.5)	(2.7)	(19.2)	(32.9)	(37.0)	(2.7)	(100.0)
LRA 142,143	2	1	5	9	6	3	26
(Percent)	(7.7)	(3.8)	(19.2)	(34.6)	(23.1)	(11.5)	(100.0)
LRA 144,149	1	2	8	4	6	2	23
(Percent)	(4.3)	(8.7)	(34.8)	(17.4)	(26.1)	(8.7)	(100.0)
TOTAL	7	8	40	49	46	10	160
(Percent)	(4.4)	(5.0)	(25.0)	(30.6)	(28.8)	(6.2)	
Farmers[c]	7	7	24	34	38	8	118
(Percent)	(5.9)	(5.9)	(20.3)	(28.8)	(32.2)	(6.8)	(100.0)
Others[c]	-	1	16	15	8	2	42
(Percent)		(2.4)	(38.1)	(35.7)	(19.0)	(4.8)	(100.0)

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

Table 15. Rankings among specified factors affecting farmers' implementation of their farm conservation plans, as reported by SWCD directors.[a]

		Rank[b]	1	2	3	4	5	6	7	8	Total
							(Percent)				
Awareness and understanding of the farm conservation plans program	Farmers		31.2	10.9	3.1	18.8	12.5	9.4	6.2	7.8	100.0
	Others		23.1	3.8	15.4	15.4	-	7.7	11.5	23.1	100.0
Availability of technical assistance for implementing practices	Farmers		15.6	18.8	10.9	10.9	10.9	14.1	14.1	4.7	100.0
	Others		7.7	11.5	3.9	23.1	15.4	26.9	7.7	3.8	100.0
Levels of ASCS cost sharing for implementing practices in plans	Farmers		14.1	20.3	20.3	15.6	7.8	9.4	12.5	-	100.0
	Others		19.2	11.5	11.5	19.2	15.4	11.5	7.7	3.8	100.0
Total ASCS cost sharing funds available for distribution within counties	Farmers		6.2	12.5	14.1	12.5	10.9	10.9	10.9	21.9	100.0
	Others		3.8	23.1	7.7	3.8	7.7	-	38.5	15.4	100.0
Farmers' Tenure	Farmers		7.8	10.9	26.6	9.4	10.9	14.1	10.9	9.4	100.0
	Others		15.4	19.2	19.2	3.8	15.4	11.5	7.7	7.7	100.0
Expected effect of implementation on farmer's income	Farmers		20.3	15.6	12.5	20.3	17.2	4.7	7.8	1.6	100.0
	Others		23.1	23.1	19.2	23.1	7.7	3.8	-	-	100.0
Length of farmers' planning horizons	Farmers		4.7	10.9	10.9	3.1	17.2	18.8	20.3	14.1	100.0
	Others		7.7	7.7	19.2	7.7	11.5	19.2	19.2	7.7	100.0
Permanence of practices in plans	Farmers		-	1.6	1.6	9.4	12.5	18.8	15.6	40.6	100.0
	Others		-	-	3.8	3.8	26.9	19.2	7.7	38.5	100.0

[a] Response grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

[b] Ranking code: 1 = most important, 2 = second most important, ..., 8 = least important.
Percentage rankings based on responses from 64 farmers and 26 nonfarmers completing the ranking procedure correctly. The remaining 70 respondents misunderstood the intended ranking procedure or did not answer this question.

Farmers tended to attach relatively more importance to the cost-sharing factors than did nonfarmers. A well-defined pattern of responses is evident for "permanence of practices in plans". Since most responses occur at the lower end of the ranking scale, rank values 5 through 8, directors attach relatively low importance to this factor as it affects farmers' implementation of farm conservation plans. This distributional pattern is also somewhat representative of the rankings for "length of farmers' planning horizons".

Directors also ranked a limited number of specific measures as to their expected importance in encouraging farmer adoption of practices in farm conservation plans (Table 16). Among the measures ranked, "tax credits" and "higher levels of cost sharing" were cited as being most important by both farmers and nonfarmers. Most respondents ranked these factors from 1 to 3. The two regulatory schemes, "regulation of farm practices" and "restrictions on land use", were designated as measures least likely to encourage farmer adoption of practices by both groups of respondents. The majority of responses associated with these measures were ranked 4 and 5. "Educational programs" was ranked 3 by most respondents with about an equal number considering this factor to be more or less important.

As noted earlier, the legislation requiring farmers to apply for and to have farm conservation plans by 1980 does not include any provisions concerning incentives for adoption of the plans or penalties for nonadoption. Directors shared their views on whether or not the legislation should be strengthened and the corresponding means that seem appropriate. Based on responses in Table 17, about 35 percent of the directors reported that "Yes, the legislation should be strengthened. Nearly 61 percent disagreed. Response patterns among farmers and nonfarmers differ considerably. Slightly over 57 percent of nonfarmers reported "Yes" as compared with only 27 percent of the farmers. Conversely, 71.2 percent of the farmers indicated the legislation should not be strengthened while only 31 percent of the nonfarmers held this view.

Referring to responses at the LRA levels, views were most pronounced among respondents in LRA 142 plus 143 where only about 17 percent reported "Yes" while 75 percent indicated "No".

Among the 56 respondents who reported that incentives or penalties would be appropriate, most indicated that higher allowances for cost sharing and tax credits would be the most appropriate incentives. Concerning possible penalties, responses were equally divided between the view that there should be no penalties and that a system of fines or withholding of Federal assistance should result.

Among the 97 respondents who felt that the legislation should <u>not</u> include allowances for incentives or penalties, about two-fifths felt that "There are too many regulations already and farmers don't need more". Another fifth preferred no action at this time but a "wait and see" approach. Educational programs to better understand the nature of farm conservation plans were also proposed. The remaining respondents provided various reasons or did not comment.

Table 16. Rankings among specified measures for encouraging farmer adoption of practices in farm conservation plans, as reported by SWCD directors.

	Rank[a]	1	2	3	4	5	Total
				(Percent)			
Tax credits for cost of implementing practices	Farmers	43.8	42.2	10.9	3.1	-	100.0
	Others	57.7	26.9	7.7	7.7	-	100.0
Regulation of farm practices through a permit system	Farmers	-	1.6	12.5	32.8	53.1	100.0
	Others	-	7.7	3.8	57.7	30.8	100.0
Higher levels of cost sharing for implemented practices	Farmers	43.8	37.5	9.4	1.6	7.8	100.0
	Others	30.8	42.3	23.1	-	3.8	100.0
Restrictions on land use[b]	Farmers	1.6	6.2	14.1	51.6	26.6	100.0
	Others	3.8	-	19.2	30.8	46.2	100.0
Educational programs[c]	Farmers	10.9	12.5	53.1	10.9	12.5	100.0
	Others	7.7	23.1	46.2	3.8	19.2	100.0

[a] Ranking code: 1 = most likely to encourage adoption, 2 = second most likely, ..., 5 = least most likely to encourage adoption.
Percentage rankings based on responses from 64 farmers and 26 nonfarmers completing the ranking procedure correctly. The remaining 70 respondents misunderstood the intended ranking procedure or did not answer this question.

[b] Restrictions such as limiting certain areas (fields) to pasture or hay only.

[c] Educational programs to increase awareness of conservation plans and pollution control practices.

Table 17. Directors' responses on whether or not legislation requiring farm conservati plans should be strengthened through a system of incentives and(or) penaltie by LRA.

	Yes, legislation should be strengthened	No	NR[b]	Total
LRA 101	15	22	1	38
(Percent)	(39.5)	(57.9)	(2.6)	(100.0)
LRA 140	25	45	3	73
(Percent)	(34.2)	(61.6)	(4.1)	(100.0)
LRA 142,143	4	20	2	26
(Percent)	(15.4)	(76.9)	(7.7)	(100.0)
LRA 144,149	12	10	1	23
(Percent)	(52.2)	(43.5)	(4.3)	(100.0)
TOTAL	56	97	7	160
(Percent)	(35.0)	(60.6)	(4.4)	
Farmers[c]	32	84	2	118
(Percent)	(27.1)	(71.2)	(1.7)	(100.0)
Others[c]	24	13	5	42
(Percent)	(57.1)	(31.0)	(11.9)	(100.0)

[a] Land Resource Area (LRA). See Figure 1.

[b] No response to this question.

[c] Responses grouped according to accupation reported -- farmers and all others. See question 19, Appendix 1.

Finally, directors were asked, "Whom do you think should supervise and monitor the adoption and maintenance of practices recommended in farm plans?" Sixty five percent of all directors responding indicated that the SWCD boards should have this role (Table 18). Some qualified their responses by stipulating that the Boards should conduct the supervision but the monitoring should be conducted by a regulatory agency having authority for such a function. Respondents considered the Boards knowledgable, of local origin and closest to the problems, and to have the organizational structure to execute these roles.

An additional 29.4 percent thought there should be no supervision. Farmers would voluntarily adopt practices in their farm conservation plans. Other organizations such as Co-operative Extension and DEC were infrequently cited. Responses at the county levels are in Table 9, Appendix 2.

Farmers' preferences differ from nonfarmers. Just over one third of the directors who are also farmers favored a voluntary approach as compared with only 14.3 percent of the nonfarmers. A fairly comparable percentage -- about 64 percent of the farmers and 69 percent of the nonfarmers -- designated the SWCD boards. Nonfarmers expressed a relatively stronger preference for personnel from Co-operative Extension, Environmental Management Councils, or DEC to assume these responsibilities.

SUMMARY AND CONCLUSIONS

Federal and State legislation specifies that farm plans must be developed as components of processes for reducing or controlling pollutants from nonpoint sources in agriculture. One provision of the Clean Water Act of 1977, requires that Soil and Water Conservation District (SWCD) boards approve individual farm plans designed to improve water quality prior to farmers becoming eligible for 5-10 year contracts providing technical and financial assistance for implementation of practices in the plans. State legislation requires that the SWCD boards assume responsibility for prioritizing development and review of soil and water conservation plans designed to (i) limit soil erosion and (ii) reduce the volume of pollutants entering waters and on lands.

In addition to current activities, the Boards may execute additional roles in implementing the agricultural nonpoint pollution component of the Statewide plan for water quality management as required by the Federal Water Pollution Control Act Amendments of 1972. Additional responsibilities by the Boards in various phases of water quality planning will require additional staff and funds.

In this context, a mail survey of SWCD directors was conducted focusing on farm conservation plans, per se, and as means toward reducing the incidence of potential pollutants from nonpoint sources in agriculture. Of the 290 questionnaires mailed to directors in each of 57 counties in New York, 160 or 55 percent were completed and returned. About three-fourths of the directors responding reported being active or retired farmers.

Table 18. Directors' preferences for the supervision and monitoring of farmers' adoption and maintenance of practices recommended in farm conservation plans, by LRA[a].

	No supervision-voluntary approach	SWCD Boards[b]	County Personnel[c]	DEC[d]	NR[e]	Total
LRA 101	10	26	2	-	-	38
(Percent)	(26.3)	(68.4)	(5.3)			(100.0)
LRA 140	24	47	1	-	1	73
(Percent)	(32.9)	(64.4)	(1.4)		(1.4)	(100.0)
LRA 142,143	8	18	-	-	-	26
(Percent)	(30.8)	(69.2)				(100.0)
LRA 144,149	5	13	2	2	1	23
(Percent)	(21.7)	(56.5)	(8.7)	(8.7)	(4.3)	(100.0)
TOTAL	47	104	5	2	2	160
(Percent)	(29.4)	(65.0)	(3.1)	(1.2)	(1.2)	
Farmers[f]	41	75	1	-	1	118
(Percent)	(34.7)	(63.6)	(0.8)		(0.8)	(100.0)
Others[f]	6	29	4	2	1	42
(Percent)	(14.3)	(69.0)	(9.5)	(4.8)	(2.4)	(100.0)

[a] Land Resource Areas (LRA). See Figure 1.

[b] County Soil and Water Conservation District Boards.

[c] Principally, Co-operative Extension personnel and county Environmental Management Councils.

[d] Department of Environmental Conservation.

[e] No response to this question.

[f] Responses grouped according to occupation reported -- farmers and all others. See question 19, Appendix 1.

Among directors reporting, about 60 percent indicated that half or fewer of the farmers currently have farm conservation plans. About one third of the directors reported that half or more of the plans developed to date require revision and updating. Most farm plans have been implemented to some extent. The majority of directors responding indicated that relatively few plans have had no implementation. Based on these responses, time and resources required to develop additional plans, update existing ones, and increase the level of implementation would be substantial and in excess of current levels of funding to the SWCD's.

SWCD directors had rather well defined views on whether or not specified potential pollutants from nonpoint sources were of sufficiently serious magnitude in their respective counties so that corrective measures are required. Nearly 77 percent of the respondents indicated that soil erosion was a problem. Around 85 percent reported streambank erosion and sedimentation in streams plus road ditches as problems. With regard to runoff of soil nutrients, only 16 percent of those reporting viewed this as a problem. When responses are grouped by occupation reported, only 12 percent of the farmer directors and nearly 27 percent of the nonfarmers designated movements of soil nutrients a problem. Only 9.5 percent of all respondents reported pesticides in runoff as a problem; the percentage of nonfarmers holding this view was three times higher than the comparable percentage for farmers.

There was less agreement on runoff from barnyards. Nearly 36 percent considered this a problem, 58 percent did not, and 6 percent did not complete the question. Concerning runoff from winter spreading of manure, 26 percent reported this a problem while nearly 70 percent disagreed. Nonfarmers on SWCD boards reported these as problems more frequently than the farmer directors.

About one-third of all respondents considered the problems sufficiently serious that legislation requiring corrective measures was necessary -- nearly 24 percent of the farmers held this view as compared with just over 38 percent of the nonfarmer directors. Among those who thought additional legislative was necessary, measures related to controlling soil erosion, streambank erosion, and sedimentation were mentioned most frequently.

The directors -- farmers and nonfarmers -- viewed farm conservation plans, as currently being developed, as generally effective in reducing or controlling soil erosion, sedimentation, and runoff of soil nutrients. Around two-thirds of all respondents considered the plans effective for reducing or controlling streambank erosion and runoff from barnyards. With regard to reducing the incidence of pesticides in soil runoff, 55 percent of the directors considered the plans effective, about 34 percent disagreed, and 11 percent did not complete the question.

An overwhelming majority of directors considered conservation practices to be essential to the maintenance and(or) improvement of farm production and income. They also reported that farmers are relatively more interested in productivity-increasing practices rather than structural practices primarily designed for controlling soil erosion.

About 66 percent of the respondents reported that the levels of Federal cost sharing have been the most important factor affecting acceptance and

implementation of practices in farm conservation plans. Other important factors cited were awareness and understanding of the farm conservation plan program and the expected effect of implementation on farmers' incomes.

Directors preferred that the SWCD boards have responsibility for supervising and monitoring the adoption and maintenance of practices recommended in farm conservation plans. Slightly over 65 percent of those reporting took this position. Another 29.4 percent preferred no supervision, and voluntary action by farmers.

While SWCD directors considered practices in farm conservation plans generally effective in reducing or controlling movements of a number of possible pollutants, several factors complicate that prospect. Several farmers don't have plans. Among those who do, a number of plans have not been fully implemented and(or) need updating. The plans relate to management of land in farms. Other land areas not in farms or agricultural operations would not be covered.

If plans are to be delivery mechanisms, these limitations must be resolved. To date, participation in the program has been voluntary. The correspondence between farmers volunteering to implement practices and farming operations identifiable as sources of problem pollutants will strongly affect the eventual impact of soil and water conservation practices on improving the quality of receiving waters. The success of a voluntary approach is directly linked to farmers' views of the economic return on investment in recommended practices and being convinced that their operations are contributing to the degradation of water quality. A well-defined structure of incentives and(or) penalties may be necessary to ensure implementation and maintenance of practices under a voluntary system.

Modification of farm conservation plans to include more practices designed to control various forms of potential pollutants in addition to practices to control soil erosion represents the initial step toward identifying and reducing movements of pollutants from nonpoint sources in agriculture. The requirement for continuous planning allows for adjustments in initial plans and strategies as experiences, new information, and new legislation warrant.

Footnotes

[1] Federal Water Pollution Control Act Amendments of 1972. Sec. 101(a), Pub. L. No. 92-500, 86 Stat. 816.

[2] Nonpoint sources are not defined in the 1972 Amendments. They are, by inference, the accumulated pollutants in the stream, diffuse runoff, seepage, and percolation from millions of small point sources presently not covered by effluent permits for point sources issued under the National Pollution Discharge Elimination System. See U.S. Environmental Protection Agency. Guidelines for State and Areawide Water Quality Management Program Development. Washington, D.C. Nov. 1976. p. 7-1.

[3] Holmes, B.H. "Analysis of Clean Water Act of 1977." Natural Resource Economics Division, Economics, Statistics, and Cooperative Service, USDA. Working Paper No. 51. June 1978.

[4] Garner, Mary M. "Regulatory Programs for Nonpoint Pollution Control: the Role of Conservation Districts." J. Soil and Water Conservation. Sept.-Oct. 1977.

[5] Federal Water Pollution Control Act. Sec. 208(b)(2)(F).

[6] Corresponding rules and regulations are in Federal Register, Vol. 40, No. 230, Nov. 29, 1975.

[7] The discharge of pollutants relates to additions of any pollutants to navigable waters from point sources. Navigable waters include all waters of the United States, including the territorial seas. Federal Water Pollution Control Act. Sec. 502.

[8] Federal Water Pollution Control Act. Sec. 208(j).

[9] See, for example, National Association of Conservation Districts, Erosion and Sediment Control Programs: Six Case Studies, Feb. 1977 and Conservation Districts and 208 Water Quality Management, June 1977.

[10] New York Environmental Conservation Law [ECL]. Art. 1, Sec. 1-0101 (McKinney).

[11] ECL. Art. 17, Sec. 17-0801 et seq.

[12] ECL. Art. 24, Sec. 24-0103.

[13] ECL. Art. 25, Sec. 25-0102.

[14] ECL. Art. 15, Sec. 15-0501.

[15] ECL. Art. 33, Sec. 33-0901.

[16] ECL. Art. 17, Sec. 17-1717. Also, see Art. 11, Sec. 11-0503 and Art. 17, Sec. 17-0501.

[17] New York Public Health Law [PHL]. Art. 11 (McKinney)

[18] PHL. Art. 13, Sec. 1308.

Footnotes (con't)

19 New York Soil Conservation Districts Law, amended to Soil and Water Conservation Districts Law [SWCDL] (McKinney).

20 SWCDL. Amendment S. 3421. 1975.

21 SWCDL. Art. 2, Sec. 9.

22 New York State Department of Environmental Conservation, Land Resources Management and Planning Related Programs of the New York State Department of Environmental Conservation, Sept. 1976, Vol. II. p. F-1-6.

23 U.S. Environmental Protection Agency and National Association of Conservation Districts, Conservation Districts and 208 Water Quality Management. June 1977.

24 U.S. Environmental Protection Agency. Legal and Institutional Approaches to Water Quality Management Planning and Implementation, March 1977. pp. V 11-17.

25 Lake, J. and J. Morrison. Environmental Impact of Land Use on Water Quality. Final Report on the Black Creek Project, Allen County, Indiana. Oct. 1977. p. 93.

26 New York State Soil and Water Conservation Committee. New York State Soil and Water Conservation Districts 1976 Report -- 1977 Directors. 1977.

27 Ibid.

28 SWCDL. Art. 3, Sec. 9.

29 Clean Water Act of 1977. Sec. 35(j)(9), Pub. L. No. 95-217, 91 Stat. 1516, 1585.

30 For descriptions of individual LRA's, see Austin, M.E., Land Resource Regions and Major Land Resource Areas of the United States. U.S.D.A. SCS. Agriculture Handbook 296. Dec. 1965.

31 U.S.D.A., Soil Conservation Service. Erosion and Sediment Inventory -- New York. March 1975.

32 Proposal to Establish Policies, Guidelines and Procedures to Govern the 1979 Agricultural Conservation Program. Federal Register, Vol. 43, No. 227, Nov. 24, 1978.

33 See, for example, U.S. General Accounting Office, Report to the Congress, "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention", CED-77-30, Feb. 1977 and U.S.D.A., Agricultural Stabilization and Conservation Service. Agricultural Conservation Program Accomplishments. Washington, D.C. 1976.

APPENDIX 1 -- SURVEY QUESTIONNAIRE

Identification Code _____

Amendment S. 3421 to the Soil and Water Conservation Districts Law requires farmers have a soil and water conservation plan to provide an orderly method for (a) limiting so erosion, and (b) reducing the amount of pollutants entering waters and lands.

1. Approximately what percent of farmers in your county currently have farm conservatio plans?

   _____%

2. What percent of the existing plans do you think should be updated? _____%

3. What are your estimates of the extent to which current farm conservation plans have been implemented by farmers? Percent of farmers who have plans that are:

   _____% fully implemented

   _____% half or more, but not fully

   _____% some, but less than half

   _____% no implementation

   100%

4. Do you feel conservation practices are essential to the maintenance and/or improveme of farm production and income?

   Yes ____ No ____ Comments: _____

   _____

   _____

5. Do you feel certain soil and water conservation practices have become less attracti to farmers than they were 5 years ago? (Please check yes or no for the following)

	Yes	No
Contouring	___	___
Liming	___	___
Tile drains	___	___
Terraces	___	___
Grassed waterways	___	___

Comments: _____

_____

_____

6. Do you feel any of the following are problems of sufficient magnitude in your county to require corrective measures? (Check yes or no for each)

YES	NO	
___	___	Soil erosion from fields
___	___	Streambank erosion
___	___	Sediment deposits in streams and road ditches
___	___	Water contamination from fertilizer nutrients in field runoff
___	___	Manure-laden runoff from barnyards
___	___	Manure-laden runoff from winter manure spreading
___	___	Water contamination from pesticide use

7. Do you feel the problems cited above in question 6 are serious enough to warrant legislation? Yes ____ No ____

If yes, which problems? _____

_____

8. Do you feel that farm conservation plans as they are currently being developed can be effective in reducing or controlling the following: (Check yes or no for each)

YES	NO	
___	___	Soil erosion
___	___	Streambank erosion
___	___	Sedimentation
___	___	Soil nutrient losses (nitrogen and phosphorus)
___	___	Barnyard runoff
___	___	Runoff from manure spreading operations
___	___	Pesticide contamination of waterways

9. What farm management practices in addition to those often listed in farm conservation plans would help control the following?

Practice(s)

Soil nutrient losses _____

Barnyard runoff _____

Runoff from manure spreading operations _____

Pesticide contamination of waterways _____

10. Do you think the level of federal cost sharing programs has been the most important factor affecting the acceptance and implementation of most farm plans to date?

Yes ____ No ____

Comments: _____

_____

11. What do you think is the minimum level of federal cost sharing that insures success implementation of the following practices that may be included in farm conservation plans? (Check one for each practice)

Level of Cost Sharing	Strip Cropping	Permanent Open Drainage Systems	Barnyard Runoff Control	Manure Han and Stora Systems
None needed	____	____	____	____
25%	____	____	____	____
50%	____	____	____	____
75%	____	____	____	____
75-100%	____	____	____	____

12. Do you feel that farmers are generally more interested in management measures like liming and strip cropping rather than more permanent structural measures like terr and grassed waterways?

Yes ____ No ____ Why? _____

_____

_____

13. How would you rank the following factors as they have affected farmers' implementa of their farm conservation plans? (1 = most important, 2 = second most important, 8 = least important)

____ Awareness and understanding of the farm conservation plan program

____ Availability of technical assistance for implementing practices

____ Levels of ASCS cost sharing for implementing practices in farm plans

____ Total ASCS county cost sharing funds available for distribution

____ Farmer's tenure: whether he is an owner or tenant

____ Expected effect of farm plans on the farmer's income

____ Length of time he plans to stay in farming

____ Permanence of practices in plans

Comments: _____

_____

14. What percent of farmers in your county do you think would attend meetings to become more familiar with soil erosion and nutrient and barnyard runoff control measures?

_____%

15. Which of the following measures do you feel would be the most appropriate and likely to succeed in encouraging adoption of farm conservation plans? (1 = most likely success, ... 5 = least likely success)

____ Tax allowances, such as investment tax credits, for implemented measures

____ Regulation of certain farm practices through, for example, a permit system

____ Increased levels of cost sharing for implemented practices

____ Restrictions on land use, for example, limiting certain areas (fields) for pasture or hay only

____ Educational programs to increase awareness of farm conservation plans and pollution control practices

Comments: _____

_____

16. What percentage of farmers in your county do you think are aware of New York S. 3421 requiring application for farm plans by January 1, 1978? _____%

17. Who do you think should supervise and monitor the adoption and maintenance of practices recommended in farm plans? (Check one)

_____ No supervision; voluntary action by the farmer

_____ Soil and Water Conservation District Board personnel

_____ Other personnel at the county level. Specify: _____

_____ Personnel from a State agency. Specify: _____

_____ Other. Specify: _____

Comments: _____

_____

_____

18. The legislation requiring farm conservation plans (S. 3421) does not provide any i centives for implementation or penalties for non-implementation. In your opinion, should the legislation be strengthened?

Yes _____ No _____

If YES, what incentives and/or penalties would strengthen the legislation?

Incentives: _____

_____

Penalties: _____

_____

If NO, why not? _____

_____

_____

19. What is your occupation (please check):

_____ Farmer

_____ Farm supply or farm service business

_____ Self employed (not farm-related)

_____ Employed by business or industry (not farm-related)

_____ County, state, or federal employee

_____ Other (specify) _____

APPENDIX 2 --- TABLES WITH COUNTY RESPONSES

Table 1. Frequency of response regarding percent of farmers currently having farm conservation plans and percent of plans needing updating, by designated percent ranges and by county and LRA.[a]

	% Farmers With Farm Plans					% Plans Needing Updating				
Percent Range:	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]
LRA 101										
Genesee	1	1	1	-	-	1	1	1	-	-
Livingston	-	2	1	-	-	-	-	1	1	1
Monroe	-	3	-	-	-	1	2	-	-	-
Niagara	2	-	-	-	-	2	-	-	-	-
Oneida	-	5	-	-	-	1	-	1	3	-
Onondaga	-	-	2	-	-	-	2	-	-	-
Ontario	-	1	1	1	-	2	1	-	-	-
Orleans	-	2	1	-	-	2	-	-	1	-
Oswego	2	-	-	-	-	1	-	-	1	-
Seneca	-	3	-	-	-	-	-	-	3	-
Wayne	1	1	2	-	-	-	2	2	-	-
Yates	-	2	1	1	-	1	1	1	-	1
Total 101	6	20	9	2	0	11	9	6	9	2
(Percent)	(16.2)	(54.1)	(24.3)	(5.4)	0	(29.7)	(24.3)	(16.2)	(24.3)	(5.4)

able 1. (continued)

LRA 140	Percent Range:	% Farmers With Farm Plans 0-25	26-50	51-75	76-100	NR	% Plans Exceeding Updating 0-25	26-50	51-75	76-100	NR
Albany		1	1	1	-	-	3	-	-	-	-
Allegany		-	1	1	1	-	-	-	2	1	-
Broome		-	-	1	1	-	-	2	-	-	-
Cattaraugus		-	2	-	1	1	1	1	-	2	-
Chautauqua		-	3	-	-	-	1	-	1	1	-
Chemung		-	-	3	1	-	2	2	-	-	-
Chenango		1	3	-	-	1	1	-	2	1	1
Cortland		-	2	2	-	-	1	2	1	-	-
Delaware		-	3	1	-	1	2	-	1	-	2
Greene		-	1	2	-	-	-	1	1	1	-
Madison		-	1	1	-	-	1	1	-	-	-
Montgomery		-	2	1	-	-	1	1	-	1	-
Otsego		-	-	3	-	-	2	1	-	-	-
Schenectady		-	-	3	-	-	-	1	2	-	-
Schoharie		-	1	2	1	-	1	1	-	1	1
Schuyler		-	1	3	1	-	1	4	-	-	-
Steuben		-	-	2	-	-	-	2	-	-	-
Tioga		-	1	3	-	-	-	2	1	1	-
Tompkins		-	-	1	3	-	3	-	-	-	1
Ulster		-	4	-	-	-	3	-	-	-	1
Wyoming		1	1	-	1	-	1	-	-	2	-
Total 140		3	27	30	10	3	24	21	11	11	6
(Percent)		(4.1)	(37.0)	(41.1)	(13.7)	(4.1)	(32.9)	(28.8)	(15.1)	(15.1)	(8.2)

Table 1. (continued)

	% Farmers With Farm Plans					% Plans Needing Updating				
Percent Range:	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR
LRA 142, 143										
Essex	2	-	-	-	-	2	-	-	-	-
Fulton	1	2	1	1	-	1	-	-	1	2
Herkimer	1	2	-	1	1	-	3	-	1	1
Lewis	1	2	1	-	-	-	2	-	1	1
St. Lawrence	3	-	-	-	-	1	1	1	-	-
Saratoga	3	1	-	-	-	1	-	-	2	1
Warren	-	3	-	-	-	2	-	-	1	-
Total 142,143	10	10	2	2	1	7	6	1	6	5
(Percent)	(40.0)	(40.0)	(8.0)	(8.0)	(4.0)	(28.0)	(24.0)	(4.0)	(24.0)	(20.0)
LRA 144, 149										
Columbia	2	-	-	-	-	-	1	1	-	-
Dutchess	1	-	3	-	-	-	3	-	-	1
Orange	3	1	-	-	-	1	-	2	-	1
Rensselaer	-	4	-	-	-	3	1	-	-	-
Rockland	2	-	-	-	-	1	-	-	-	1
Suffolk	1	1	-	-	-	1	-	-	-	1
Washington	1	1	2	1	-	2	2	-	-	1
Total 144,149	10	7	5	1	0	8	7	3	1	4
(Percent)	(43.5)	(30.4)	(21.7)	(4.3)	0	(34.8)	(30.4)	(13.0)	(4.3)	(17.4)
TOTAL	29	64	46	15	4	50	43	21	27	17
(Percent)	(18.4)	(40.5)	(29.1)	(9.5)	(2.5)	(31.6)	(27.2)	(13.3)	(17.1)	(10.8)

[a] Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been ommitted.

[b] No response to this question.

Table 2. Estimates of the extent to which existing farm conservation plans have been implemented by farmers, by degree of implementation and by county and LRA[a].

	% Plans Fully Implemented					% Plans More Than Half Implemented					% Plans Less Than Half Implemented					% Plans With No Implementation				
Percent range:	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]	0-25	26-50	51-75	76-100	NR[b]
LRA 101																				
Genesee	1	1	-	-	1	-	2	-	-	1	1	1	-	-	1	2	-	-	-	1
Livingston	2	-	-	-	1	2	1	-	-	-	1	-	-	-	2	-	1	-	-	2
Monroe	3	-	-	-	-	1	2	-	-	-	-	2	1	-	-	3	-	-	-	-
Niagara	1	1	-	-	-	-	2	-	-	-	1	1	-	-	-	2	-	-	-	-
Oneida	5	-	-	-	-	5	-	-	-	-	-	4	1	-	-	2	3	-	-	-
Onondaga	2	-	-	-	-	1	1	-	-	-	-	2	-	-	-	2	-	-	-	-
Ontario	3	-	-	-	-	-	3	-	-	-	1	2	-	-	-	3	-	-	-	-
Orleans	3	-	-	-	-	2	-	-	1	-	2	-	1	-	-	2	-	-	-	1
Oswego	1	1	-	-	-	1	1	-	-	-	-	-	2	-	-	2	-	-	-	-
Seneca	3	-	-	-	-	2	1	-	-	-	1	1	1	-	-	2	-	-	1	-
Wayne	2	2	-	-	-	2	2	-	-	-	2	1	1	-	-	3	1	-	-	-
Yates	4	-	-	-	-	-	4	-	-	-	1	2	1	-	-	4	-	-	-	-
Total 101 (Percent)	30 (81.1)	5 (13.5)	-	-	2 (5.4)	16 (43.2)	19 (51.4)	-	1 (2.7)	1 (2.7)	10 (27.0)	16 (43.2)	8 (21.6)	-	3 (8.1)	27 (73.0)	5 (13.5)	-	1 (2.7)	4 (10.8)

Table 2. (continued)

LRA 140	% Plans Fully Implemented					% Plans More Than Half Implemented					% Plans Less Than Half Implemented					Plans With No Implementation				
Percent range:	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR
Albany	3	-	-	-	-	-	3	-	-	-	-	1	2	-	-	3	-	-	-	-
Allegany	3	-	-	-	-	-	3	-	-	-	-	3	-	-	-	3	-	-	-	-
Broome	2	-	-	-	-	-	1	1	-	-	1	1	-	-	-	2	-	-	-	-
Cattaraugus	2	1	-	-	1	1	1	1	-	1	2	1	-	-	1	2	-	1	-	1
Chautauqua	3	-	-	-	-	-	3	-	-	-	1	2	-	-	-	3	-	-	-	-
Chemung	2	1	1	-	-	1	1	1	-	1	2	1	-	-	1	3	-	-	-	1
Chenango	4	-	-	-	1	1	3	-	-	1	3	1	-	-	1	3	-	-	1	1
Cortland	4	-	-	-	-	1	2	1	-	-	2	1	1	-	-	3	-	-	-	1
Delaware	4	-	-	-	1	3	-	-	-	2	-	3	1	-	1	2	1	-	-	2
Greene	3	-	-	-	-	2	1	-	-	-	1	1	-	1	-	2	1	-	-	-
Madison	2	-	-	-	-	2	-	-	-	-	1	1	-	-	-	1	1	-	-	-
Montgomery	1	2	-	-	-	2	1	-	-	-	2	1	-	-	-	1	2	-	-	-
Otsego	1	2	-	-	-	-	3	-	-	-	3	-	-	-	-	3	-	-	-	-
Schenectady	3	-	-	-	-	-	3	-	-	-	-	3	-	-	-	3	-	-	-	-
Schoharie	3	1	-	-	-	4	-	-	-	-	2	1	1	-	-	1	2	1	-	-
Schuyler	5	-	-	-	-	1	3	-	1	-	2	1	2	-	-	4	1	-	-	-
Steuben	-	1	-	-	1	1	-	-	-	1	1	-	-	-	1	1	-	-	-	1
Tioga	4	-	-	-	-	4	-	-	-	-	-	4	-	-	-	1	3	-	-	-
Tompkins	1	1	1	-	1	-	2	-	-	2	1	1	-	-	2	2	-	-	-	2
Ulster	4	-	-	-	-	4	-	-	-	-	-	4	-	-	-	4	-	-	-	-
Wyoming	3	-	-	-	-	1	2	-	-	-	-	2	1	-	-	2	1	-	-	-
Total	57	9	2	-	5	28	32	4	1	8	24	33	8	1	7	49	12	2	1	9
(Percent)	(78.1)	(12.3)	(2.7)		(6.8)	(38.4)	(43.8)	(5.5)	(1.4)	(11.0)	(32.9)	(45.2)	(11.0)	(1.4)	(9.6)	(67.1)	(16.4)	(2.7)	(1.4)	(12.3)

Table 2. (continued)

Percent range:	% Plans Fully Implemented					% Plans More Than Half Implemented					% Plans Less Than Half Implemented					% Plans With No Implementation				
	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR	0-25	26-50	51-75	76-100	NR
LRA 142 & 143																				
Essex	1	-	-	-	1	1	-	-	-	1	1	-	-	-	1	-	-	-	1	1
Fulton	2	-	1	1	-	1	2	-	-	1	1	1	1	-	1	3	-	-	-	1
Herkimer	2	-	-	-	3	-	4	-	-	1	-	2	-	-	2	2	-	-	-	3
Lewis	2	2	-	-	-	2	2	-	-	-	2	2	-	-	-	3	1	-	-	-
St. Lawrence	3	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	3	-	-	-
Saratoga	4	-	-	-	-	4	-	-	-	-	-	4	-	-	-	3	1	-	-	-
Warren	1	2	-	-	-	2	1	-	-	-	1	2	-	-	-	2	-	1	-	-
Total 142,143	15	4	1	1	4	13	9	-	-	3	5	14	1	-	5	13	5	1	1	5
(Percent)	(60.0)	(16.0)	(4.0)	(4.0)	(16.0)	(52.0)	(36.0)			(12.0)	(20.0)	(56.0)	(4.0)		(20.0)	(52.0)	(20.0)	(4.0)	(4.0)	(20.0
LRA 144 & 149																				
Columbia	2	-	-	-	-	-	2	-	-	-	-	2	-	-	-	2	-	-	-	-
Dutchess	4	-	-	-	-	-	-	4	-	-	4	-	-	-	-	4	-	-	-	-
Orange	4	3	-	-	1	1	-	3	-	-	3	-	-	-	1	3	-	-	-	1
Rensselaer	3	1	-	-	-	4	-	-	-	-	1	3	-	-	-	-	4	-	-	-
Rockland	1	-	-	-	1	1	-	-	-	1	1	-	-	-	1	1	-	-	-	1
Suffolk	1	-	1	-	-	2	-	-	-	-	1	1	-	-	-	1	1	-	-	-
Washington	5	-	-	-	-	-	5	-	-	-	2	3	-	-	-	5	-	-	-	-
Total 144,149	16	4	1	-	2	8	7	7	-	1	12	9	-	-	2	16	5	-	-	2
(Percent)	(69.6)	(17.4)	(4.3)		(8.7)	(34.8)	(30.4)	(30.4)		(4.3)	(52.2)	(39.1)			(8.7)	(69.6)	(21.7)			(8.
TOTAL	118	22	4	1	13	65	67	11	2	13	51	72	17	1	17	105	27	3	3	20
(Percent)	(74.5)	(14.1)	(2.7)	(0.7)	(8.1)	(41.6)	(43.6)	(5.4)	(0.7)	(8.7)	(30.9)	(47.0)	(10.1)	(0.7)	(10.7)	(66.4)	(16.8)	(2.0)	(2.0)	(12.

[a] Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b] No response to this question.

Table 3. Views on the effectiveness of farm conservation plans, as currently being developed, in reducing or controlling potential nonpoint source pollutants, by potential problem and by county and LRA[a]

LRA 101	Soil Erosion			Streambank Erosion			Sediment Deposits in streams			Soil Nutrient Runoff			Barnyard Runoff			Winter Manure Spread Runoff			Pesticide Runoff		
	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	(N/R)	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]
Genesee	3	-	-	2	1	-	3	-	-	3	-	-	2	1	-	2	1	-	1	1	1
Livingston	3	-	-	2	1	-	3	-	-	1	2	-	2	1	-	2	1	-	2	1	-
Monroe	3	-	-	2	1	-	3	-	-	3	-	-	3	-	-	2	1	-	2	1	-
Niagara	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-
Oneida	5	-	-	4	-	1	4	1	-	4	1	-	2	3	-	1	4	-	1	4	-
Onondaga	2	-	-	2	-	-	2	-	-	2		-	2	-	-	2	-	-	2	-	-
Ontario	3	-	-	3	-	-	3	-	-	3	-	-	2	1	-	3	-	-	2	1	-
Orleans	3	-	-	2	-	1	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-
Oswego	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	1	1	-
Seneca	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-	2	1	-
Wayne	4	-	-	3	1	-	4	-	-	4	-	-	3	1	-	2	2	-	2	2	-
Yates	4	-	-	3	-	1	2	-	2	1	1	2	3	-	1	2	1	1	1	1	2
Total 101	37	0	0	30	4	3	34	1	2	31	4	2	29	7	1	26	10	1	21	13	3
(Percent)	(100)	0	0	(81.1)	(10.8)	(8.1)	(91.9)	(2.7)	(5.4)	(83.8)	(10.8)	(5.4)	(78.4)	(18.9)	(2.7)	(70.3)	(27.0)	(2.7)	(56.8)	(35.1)	(8.1)

TABLE 3. (continued)

	Soil Erosion			Streambank Erosion			Sediment Deposits in streams			Soil Nutrient Runoff			Barnyard Runoff			Winter Manure Spread Runoff			Pesticide Runoff		
	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR
LRA 140																					
Albany	3	-	-	2	1	-	3	-	-	3	-	-	3	-	-	3	-	-	1	2	-
Allegany	3	-	-	1	2	-	1	2	-	3	-	-	2	1	-	3	-	-	3	-	-
Broome	2	-	-	-	2	-	1	1	-	2	-	-	-	2	-	2	-	-	2	-	-
Cattaraugus	4	-	-	2	2	-	2	-	2	2	-	2	2	-	2	2	-	2	2	-	2
Chautauqua	3	-	-	3	-	-	2	1	-	2	-	1	2	1	-	3	-	-	-	2	1
Chemung	4	-	-	4	-	-	3	-	1	3	-	1	3	-	1	3	-	1	3	-	1
Chenango	5	-	-	2	3	-	3	2	-	5	-	-	3	2	-	3	2	-	2	2	1
Cortland	4	-	-	3	1	-	4	-	-	4	-	-	3	1	-	4	-	-	4	-	-
Delaware	5	-	-	3	2	-	4	-	1	4	-	1	5	-	-	5	-	-	4	-	1
Greene	3	-	-	1	2	-	2	1	-	3	-	-	2	1	-	2	1	-	2	1	-
Madison	2	-	-	2	-	-	2	-	-	2	-	-	1	1	-	1	1	-	2	-	-
Montgomery	3	-	-	2	1	-	3	-	-	3	-	-	1	2	-	1	2	-	2	1	-
Otsego	3	-	-	2	1	-	2	1	-	3	-	-	3	-	-	2	1	-	3	-	-
Schenectady	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-
Schohaire	4	-	-	2	2	-	4	-	-	4	-	-	3	1	-	3	1	-	1	3	-
Schuyler	5	-	-	4	1	-	5	-	-	4	1	-	4	1	-	4	1	-	3	2	-
Steuben	2	-	-	-	1	1	-	1	1	2	-	-	1	1	-	1	1	-	2	-	-
Tioga	4	-	-	4	-	-	4	-	-	2	2	-	3	-	1	2	1	1	1	3	-
Tompkins	4	-	-	2	2	-	4	-	-	4	-	-	2	2	-	3	1	-	1	3	-
Ulster	4	-	-	4	-	-	4	-	-	4	-	-	3	1	-	3	1	-	-	4	-
Wyoming	3	-	-	1	2	-	3	-	-	3	-	-	3	-	-	3	-	-	3	-	-
Total 140	73	0	0	47	25	1	59	9	5	65	3	5	52	17	4	56	13	4	44	23	6
(Percent)	(100)	0	0	(64.4)	(34.2)	(1.4)	(80.8)	(12.3)	(6.8)	(89.0)	(4.1)	(6.8)	(71.2)	(23.3)	(5.5)	(76.7)	(17.8)	(5.5)	(60.3)	(31.5)	(8.2)

TABLE 3
(continued)

	Soil Erosion			Streambank Erosion			Sediment Deposits in streams			Soil Nutrient Runoff			Barnyard Runoff			Winter Manure Spread Runoff			Pesticide Runoff		
	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR
LRA 142,143																					
Essex	2	-	-	2	-	-	1	1	-	-	2	-	-	2	-	-	2	-	-	1	1
Fulton	3	-	1	2	1	1	2	1	1	3	-	1	3	-	1	3	-	1	3	-	1
Herkimer	4	-	1	4	-	1	4	-	1	4	-	1	4	-	1	3	-	2	2	1	2
Lewis	3	1	-	-	4	-	3	-	1	3	1	-	1	2	1	2	2	-	2	2	-
St. Lawrence	3	-	-	-	3	-	2	1	-	2	1	-	3	-	-	3	-	-	1	2	-
Saratoga	4	-	-	3	1	-	4	-	-	4	-	-	3	1	-	2	2	-	2	2	-
Warren	2	1	-	2	1	-	2	1	-	2	1	-	1	2	-	2	1	-	1	2	-
Total 142,143	21	2	2	13	10	2	18	4	3	18	5	2	15	7	3	15	7	3	11	10	4
(Percent)	(84.0)	(8.0)	(8.0)	(52.0)	(40.0)	(8.0)	(72.0)	(16.0)	(12.0)	(72.0)	(20.0)	(8.0)	(60.0)	(28.0)	(12.0)	(60.0)	(28.0)	(12.0)	(44.0)	(40.0)	(16.0)
LRA 144,149																					
Columbia	2	-	-	-	2	-	-	2	-	2	-	-	-	1	1	1	1	-	2	-	-
Dutchess	4	-	-	4	-	-	4	-	-	4	-	-	4	-	-	4	-	-	4	-	-
Orange	3	-	1	2	-	2	2	-	2	2	-	2	2	-	2	2	-	2	1	-	2
Rensselaer	3	1	-	2	2	-	3	1	-	3	1	-	3	1	-	3	1	-	1	3	-
Rockland	1	1	-	-	2	-	1	-	1	-	1	1	-	-	2	-	-	2	-	1	1
Suffolk	1	1	-	-	2	-	1	1	-	1	1	-	1	1	-	1	1	-	-	2	-
Washington	5	-	-	3	2	-	4	1	-	4	1	-	3	2	-	4	1	-	4	1	-
Total 144,149	19	3	1	11	10	2	15	5	3	16	4	3	13	5	5	15	4	4	12	7	4
(Percent)	(82.6)	(13.0)	(4.3)	(47.8)	(43.5)	(8.7)	(65.2)	(21.7)	(12.0)	(69.6)	(17.4)	(13.0)	(56.5)	(21.7)	(21.7)	(65.2)	(17.4)	(17.4)	(52.2)	(30.4)	(17.4)
TOTAL [a]	150	5	3	101	49	8	126	19	13	130	16	12	109	30	13	112	34	12	88	53	17
(Percent)	(94.9)	(3.2)	(1.9)	(63.9)	(31.0)	(5.1)	(79.7)	(12.0)	(8.2)	(82.3)	(10.1)	(7.6)	(69.0)	(22.8)	(8.2)	(70.9)	(21.5)	(7.6)	(55.7)	(33.5)	(10.8)

[a] Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b] No response to this question.

Table 4. Frequency of response regarding whether specified conservation practices have become less attractive to farmers than they were 5 years ago, by practice and by county and LRA[a].

	Contouring			Liming			Tile Drains			Terraces			Grassed Waterways		
	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]	Yes	No	NR[b]
LRA 101															
Genesee	2	1	-	1	2	-	1	2	-	-	3	-	1	2	-
Livingston	1	2	-	-	3	-	-	3	-	1	2	-	1	2	-
Monroe	1	2	-	-	3	-	1	2	-	2	1	-	2	1	-
Niagara	1	1	-	-	2	-	-	2	-	1	1	-	1	1	-
Oneida	4	1	-	-	4	1	-	4	1	4	-	1	3	2	-
Onondaga	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
Ontario	-	3	-	-	3	-	-	3	-	-	3	-	-	3	-
Orleans	1	1	1	-	3	-	-	3	-	1	-	2	1	2	-
Oswego	2	-	-	-	2	-	-	2	-	2	-	-	-	2	-
Seneca	2	1	-	1	2	-	1	2	-	1	2	-	2	1	-
Wayne	4	-	-	1	3	-	1	3	-	4	-	-	2	2	-
Yates	3	-	1	-	4	-	-	4	-	1	1	2	3	1	-
Total 101	21	14	2	3	33	1	4	32	1	17	15	5	16	21	-
(Percent)	(56.8)	(37.8)	(5.4)	(8.1)	(89.2)	(2.7)	(10.8)	(86.5)	(2.7)	(45.9)	(40.5)	(13.5)	(43.2)	(56.8)	

Table 4. (continued)

LRA 140	Contouring			Liming			Tile Drains			Terraces			Grassed Waterways		
	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR
Albany	-	3	-	-	3	-	-	3	-	2	1	-	-	3	-
Allegany	3	-	-	-	3	-	-	3	-	3	-	-	2	1	-
Broome	1	1	-	-	2	-	-	2	-	1	-	1	-	2	-
Cattaraugus	2	2	-	-	4	-	1	3	-	2	2	-	1	3	-
Chautauqua	2	1	-	1	2	-	-	2	1	2	-	1	-	1	2
Chemung	2	2	-	-	4	-	-	4	-	3	1	-	1	2	1
Chenango	2	3	-	-	5	-	1	4	-	4	1	-	2	2	1
Cortland	2	2	-	2	2	-	-	4	-	-	4	-	-	3	1
Delaware	1	4	-	-	5	-	1	4	-	1	3	1	-	5	-
Greene	2	1	-	1	2	-	-	3	-	-	3	-	1	2	-
Madison	1	1	-	1	-	1	-	2	-	-	2	-	-	2	-
Montgomery	2	1	-	-	3	-	-	3	-	3	-	-	3	-	-
Otsego	1	2	-	1	2	-	-	3	-	2	1	-	1	2	-
Schenectady	-	3	-	-	3	-	-	3	-	-	3	-	-	3	-
Schoharie	1	3	-	2	2	-	-	4	-	2	2	-	1	3	-
Schuyler	3	2	-	2	3	-	-	5	-	4	1	-	1	4	-
Steuben	1	-	1	1	-	1	-	1	1	1	-	1	1	1	-
Tioga	1	3	-	1	3	-	-	4	-	-	4	-	3	1	-
Tompkins	3	1	-	1	3	-	-	4	-	3	1	-	2	2	-
Ulster	-	4	-	-	4	-	-	4	-	-	4	-	-	4	-
Wyoming	3	-	-	-	3	-	-	3	-	2	1	-	-	3	-
Total 140	33	39	1	13	58	2	3	68	2	35	34	4	19	49	5
(Percent)	(45.2)	(53.4)	(1.4)	(17.8)	(79.5)	(2.7)	(4.1)	(93.2)	(2.7)	(47.9)	(46.6)	(5.5)	(26.0)	(67.1)	(6.8)

Table 4. (continued)

	Contouring			Liming			Tile Drains			Terraces			Grassed Waterways		
LRA 142 & 143	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR	Yes	No	NR
Essex	-	2	-	1	1	-	-	1	1	1	1	-	-	1	1
Fulton	1	3	-	-	4	-	-	4	-	1	2	1	-	4	-
Herkimer	2	2	1	2	3	-	1	4	-	2	2	1	2	2	1
Lewis	3	1	-	1	3	-	-	4	-	2	2	-	1	3	-
St. Lawrence	-	3	-	-	3	-	-	3	-	2	1	-	1	2	-
Saratoga	3	1	-	-	4	-	2	2	-	3	1	-	2	2	-
Warren	-	1	2	-	2	1	-	2	1	-	-	3	-	2	1
Total 142,143	9	13	3	4	20	1	3	20	2	11	9	5	6	16	3
(Percent)	(36.0)	(52.0)	(12.0)	(16.0)	(80.0)	(4.0)	(12.0)	(80.0)	(8.0)	(44.0)	(36.0)	(20.0)	(24.0)	(64.0)	(12.0)
LRA 144 & 149															
Columbia	-	2	-	-	2	-	-	2	-	-	1	1	-	2	-
Dutchess	-	4	-	-	4	-	-	4	-	3	1	-	-	4	-
Orange	2	2	-	-	4	-	-	4	-	3	1	-	-	4	-
Rensselaer	2	2	-	-	4	-	-	4	-	2	-	2	3	1	-
Rockland	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2
Suffolk	1	-	1	-	1	1	-	1	1	1	-	1	1	-	1
Washington	2	3	-	-	4	-	-	5	-	3	1	1	2	3	-
Total 144,149	7	13	3	-	19	4	-	20	3	12	4	7	6	14	3
(Percent)	(30.4)	(56.5)	(13.0)	-	(82.6)	(17.4)	-	(87.0)	(13.0)	(52.2)	(17.4)	(30.4)	(26.1)	(60.9)	(13.0)
TOTAL	70	79	9	20	130	8	10	140	8	75	62	21	47	100	11
(Percent)	(44.3)	(50.0)	(5.7)	(12.7)	(82.3)	(5.1)	(6.3)	(88.6)	(5.1)	(47.5)	(39.2)	(13.3)	(29.7)	(63.3)	(7.0)

[a] Single county responses have been omitted for Cayuga, LRA 101 and Clinton, LRA 142.

[b] No response to this question.

Table 5. Designated minimum levels of Federal cost sharing to ensure implementation of STRIP CROPPING as a component of farm conservation plans, by percent of cost sharing and by county and LRA[a].

	None	25%	50%	75%	75-100%	NR[b]
LRA 101						
Genesee	-	-	1	1	-	1
Livingston	-	-	1	2	-	-
Monroe	-	1	1	1	-	-
Niagara	1	1	-	-	-	-
Oneida	-	-	5	-	-	-
Onondaga	-	-	1	1	-	-
Ontario	-	-	2	1	-	-
Orleans	2	-	-	-	-	1
Oswego	1	-	1	-	-	-
Seneca	-	-	-	3	-	-
Wayne	-	1	1	-	1	1
Yates	1	1	-	-	2	-
Total 101	5	4	13	9	3	3
(Percent)	(13.5)	(10.8)	(35.1)	(24.3)	(8.1)	(8.1)

Table 5. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 140						
Albany	-	1	1	1	-	-
Allegany	1	1	1	-	-	-
Broome	1	1	-	-	-	-
Cattaraugus	-	1	2	-	-	1
Chautauqua	-	-	-	1	1	1
Chemung	-	1	1	-	1	1
Chenango	3	1	1	-	-	-
Cortland	-	1	1	1	1	-
Delaware	1	2	-	2	-	-
Greene	-	1	1	1	-	-
Madison	-	1	1	-	-	-
Montgomery	-	-	2	1	-	-
Otsego	1	1	1	-	-	-
Schenectady	-	3	-	-	-	-
Schoharie	-	-	2	1	1	-
Schuyler	-	-	3	2	-	-
Steuben	-	1	1	-	-	-
Tioga	1	-	-	3	-	-
Tompkins	3	-	1	-	-	-
Ulster	-	1	3	-	-	-
Wyoming	-	-	1	2	-	-
Total 140	11	17	23	15	4	3
(Percent)	(15.1)	(23.3)	(31.5)	(20.5)	(5.5)	(4.1)

Table 5. (continued)

	None	25%	50%	75%	75-100%	N/R
LRA 142,143						
Essex	1	-	-	1	-	-
Fulton	1	-	2	-	-	1
Herkimer	-	-	4	-	-	1
Lewis	2	-	-	1	1	-
St. Lawrence	1	-	2	-	-	-
Saratoga	1	-	2	-	-	1
Warren	2	-	-	-	-	1
Total 142,143	8	-	10	2	1	4
(Percent)	(32.0)		(40.0)	(8.0)	(4.0)	(16.0)
LRA 144,149						
Columbia	-	-	2	-	-	-
Dutchess	-	-	4	-	-	-
Orange	1	-	1	1	1	-
Rensselaer	1	1	2	-	-	-
Rockland	-	-	1	-	-	1
Suffolk	-	-	-	1	-	1
Washington	2	-	2	-	-	1
Total 144,149	4	1	12	2	1	3
(Percent)	(17.4)	(4.3)	(52.2)	(8.7)	(4.3)	(13.0)
TOTAL	28	22	58	28	9	13
(Percent)	(17.7)	(13.9)	(36.7)	(17.7)	(5.7)	(8.2)

[a]Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b]No response to this question.

Table 6. Designated, minimum levels of Federal cost sharing to ensure implementation of PERMANENT OPEN DRAINAGE SYSTEMS as a component of farm conservation plans, by percent of cost sharing and by county and LRA[a].

	None	25%	50%	75%	75-100%	NR[b]
LRA 101						
Genesee	-	-	2	-	-	1
Livingston	-	-	1	2	-	-
Monroe	-	1	2	-	-	-
Niagara	-	-	2	-	-	-
Oneida	1	3	1	-	-	-
Onondaga	1	1	-	-	-	-
Ontario	-	1	1	1	-	-
Orleans	-	1	1	-	-	1
Oswego	-	-	2	-	-	-
Seneca	-	-	3	-	-	-
Wayne	-	-	2	-	1	1
Yates	1	2	1	-	-	-
Total 101	3	9	18	3	1	3
(Percent)	(8.1)	(24.3)	(48.6)	(8.1)	(2.7)	(8.1)

Table 6. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 140						
Albany	-	-	2	1	-	-
Allegany	-	-	3	-	-	-
Broome	-	2	-	-	-	-
Cattaraugus	-	-	2	-	1	1
Chautauqua	1	-	-	1	1	-
Chemung	-	-	3	-	1	-
Chenango	-	1	4	-	-	-
Cortland	-	-	3	-	1	-
Delaware	-	1	3	1	-	-
Greene	-	1	1	-	1	-
Madison	-	-	2	-	-	-
Montgomery	-	-	1	2	-	-
Otsego	-	-	2	1	-	-
Schenectady	-	-	3	-	-	-
Schoharie	-	-	3	-	1	-
Schuyler	-	-	3	2	-	-
Steuben	-	-	2	-	-	-
Tioga	-	-	1	3	-	-
Tompkins	2	-	2	-	-	-
Ulster	-	4	-	-	-	-
Wyoming	-	-	1	2	-	-
Total 140	3	9	41	13	6	1
(Percent)	(4.1)	(12.3)	(56.2)	(17.8)	(8.2)	(1.4)

Table 6. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 142,143						
Essex	-	-	1	1	-	-
Fulton	2	-	2	-	-	-
Herkimer	-	-	4	-	-	1
Lewis	-	2	1	1	-	-
St. Lawrence	-	-	3	-	-	-
Saratoga	-	1	2	-	-	1
Warren	1	-	2	-	-	-
Total 142,143	3	3	15	2	-	2
(Percent)	(12.0)	(12.0)	(60.0)	(8.0)		(8.0)
LRA 144,149						
Columbia	-	-	-	2	-	-
Dutchess	-	-	4	-	-	-
Orange	-	-	2	1	1	-
Rensselaer	1	2	1	-	-	-
Rockland	-	1	-	-	1	-
Suffolk	-	-	1	-	-	1
Washington	-	-	3	1	-	1
Total 144,149	1	3	11	4	2	2
(Percent)	(4.3)	(13.0)	(47.8)	(17.4)	(8.7)	(8.7)
TOTAL	10	24	85	22	9	8
(Percent)	(6.3)	(15.2)	(53.8)	(13.9)	(5.7)	(5.1)

[a] Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b] No response to this question.

Table 7. Designated minimum levels of Federal cost sharing to ensure implementation of BARNYARD RUNOFF CONTROL PRACTICES as a component of farm conservation plans, by percent cost sharing and by county and LRA[a].

	None	25%	50%	75%	75-100%	NR[b]
LRA 101						
Genesee	1	-	-	1	-	1
Livingston	-	-	3	-	-	-
Monroe	-	-	2	1	-	-
Niagara	-	-	-	2	-	-
Oneida	-	-	-	2	3	-
Onondaga	-	-	1	1	-	-
Ontario	-	-	1	2	-	-
Orleans	-	1	1	-	-	1
Oswego	-	-	-	-	2	-
Seneca	-	-	1	1	1	-
Wayne	-	-	2	-	1	1
Yates	-	-	-	2	2	-
Total 101	1	1	11	12	9	3
(Percent)	(2.7)	(2.7)	(29.7)	(32.4)	(24.3)	(8.1)

Table 7. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 140						
Albany	-	-	3	-	-	-
Allegany	-	-	1	1	1	-
Broome	-	-	1	-	1	-
Cattaraugus	-	-	2	-	1	1
Chautauqua	-	-	-	1	1	1
Chemung	-	-	3	-	1	-
Chenango	-	-	4	1	-	-
Cortland	-	-	1	2	1	-
Delaware	-	-	2	-	3	-
Greene	-	-	2	-	1	-
Madison	-	-	1	1	-	-
Montgomery	-	-	-	2	1	-
Otsego	-	1	1	1	-	-
Schenectady	-	-	2	1	-	-
Schoharie	-	-	-	3	1	-
Schuyler	2	-	-	3	-	-
Steuben	1	-	-	1	-	-
Tioga	-	-	1	2	1	-
Tompkins	2	-	2	-	-	-
Ulster	-	1	-	3	-	-
Wyoming	-	-	-	2	1	-
Total 140	5	2	26	24	14	2
(Percent)	(6.8)	(2.7)	(35.6)	(32.9)	(19.2)	(2.7)

Table 7. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 142,143						
Essex	-	-	-	-	1	1
Fulton	1	-	1	1	1	-
Herkimer	-	-	2	2	-	1
Lewis	-	-	1	1	2	-
St. Lawrence	-	1	1	1	-	-
Saratoga	-	-	2	-	1	1
Warren	-	-	-	1	2	-
Total 142,143	1	1	7	6	7	3
(Percent)	(4.0)	(4.0)	(28.0)	(24.0)	(28.0)	(12.0)
LRA 144,149						
Columbia	-	-	1	1	-	-
Dutchess	-	-	4	-	-	-
Orange	1	-	-	1	2	-
Rensselaer	1	1	2	-	-	-
Rockland	-	-	-	-	1	1
Suffolk	-	-	-	-	1	1
Washington	-	-	4	-	-	1
Total 144,149	2	1	11	2	4	3
(Percent)	(8.7)	(4.3)	(47.8)	(8.7)	(17.4)	(13.0)
TOTAL	9	5	55	44	34	11
(Percent)	(5.7)	(3.2)	(34.8)	(27.8)	(21.5)	(7.0)

[a] Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b] No response to this question.

Table 8. Designated minimum levels of Federal cost sharing to ensure implementation of MANURE HANDLING and STORAGE SYSTEMS as a component of farm conservation plans, by percent cost sharing and by county and LRA[a].

	None	25%	50%	75%	75-100%	NR[b]
LRA 101						
Genesee	-	-	-	2	-	1
Livingston	-	-	2	1	-	-
Monroe	-	1	1	1	-	-
Niagara	-	-	-	2	-	-
Oneida	-	-	4	1	-	-
Onondaga	-	-	1	1	-	-
Ontario	-	-	1	1	1	-
Orleans	-	1	1	-	-	1
Oswego	-	-	-	-	2	-
Seneca	-	-	2	-	1	-
Wayne	-	1	1	-	1	1
Yates	-	-	-	2	2	-
Total 101	-	3	13	11	7	3
(Percent)	-	(8.1)	(35.1)	(29.7)	(18.9)	(8.1)

Table 8. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 140						
Albany	-	-	1	2	-	-
Allegany	-	-	1	-	2	-
Broome	-	-	-	2	-	-
Cattaraugus	-	-	2	-	1	1
Chautauqua	1	-	-	1	1	-
Chemung	-	-	2	-	1	1
Chenango	-	-	1	3	1	-
Cortland	-	-	-	2	2	-
Delaware	-	-	2	-	3	-
Greene	-	-	1	1	1	-
Madison	-	-	-	1	1	-
Montgomery	-	-	-	1	2	-
Otsego	-	-	1	1	1	-
Schenectady	-	-	-	3	-	-
Schoharie	1	-	-	-	3	-
Schuyler	1	-	-	1	3	-
Steuben	-	-	1	-	1	-
Tioga	-	-	-	1	3	-
Tompkins	1	1	1	1	-	-
Ulster	-	1	-	3	-	-
Wyoming	-	-	1	1	1	-
Total 140	4	2	14	24	27	2
(Percent)	(5.5)	(2.7)	(19.2)	(32.9)	(37.0)	(2.7)

Table 8. (continued)

	None	25%	50%	75%	75-100%	NR
LRA 142,143						
Essex	-	-	-	1	-	1
Fulton	1	-	1	1	1	-
Herkimer	-	-	2	2	-	1
Lewis	1	-	-	1	2	-
St. Lawrence	-	1	1	1	-	-
Saratoga	-	-	-	2	1	1
Warren	-	-	1	1	1	-
Total 142,143	2	1	5	9	5	3
(Percent)	(8.0)	(4.0)	(20.0)	(36.0)	(20.0)	(12.0)
LRA 144,149						
Columbia	-	-	-	2	-	-
Dutchess	-	-	4	-	-	-
Orange	1	-	-	-	3	-
Rensselaer	-	2	1	1	-	-
Rockland	-	-	-	-	1	1
Suffolk	-	-	-	-	1	1
Washington	-	-	3	1	1	-
Total 144,149	1	2	8	4	6	2
(Percent)	(4.3)	(8.7)	(34.8)	(17.4)	(26.1)	(8.7)
TOTAL	7	8	40	48	45	10
(Percent)	(4.4)	(5.1)	(25.3)	(30.4)	(28.5)	(6.3)

[a] Single county responses for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b] No response to this question.

Table 9. Directors' preferences for supervision and monitoring of farmers' adoption and maintenance of practices recommende in farm conservation plans, by county and LRA[a].

LRA 101	No supervision-voluntary approach	SWCD[b] Boards	County[c] Personnel	DEC[d]	Other	NR[e]	Total
Genesee	1	2	-	-	-	-	3
Livingston	1	2	-	-	-	-	3
Monroe	-	2	1	-	-	-	3
Niagara	1	1	-	-	-	-	2
Oneida	1	4	-	-	-	-	5
Onondaga	-	2	-	-	-	-	2
Ontario	1	2	-	-	-	-	3
Orleans	-	2	1	-	-	-	3
Oswego	-	2	-	-	-	-	2
Seneca	2	1	-	-	-	-	3
Wayne	1	3	-	-	-	-	4
Yates	1	3	-	-	-	-	4
Total 101	9	26	2	-	-	-	37
(Percent)	(24.3)	(70.3)	(5.4)				(100.0)

Table 9. (continued)

LRA 140	No supervision-voluntary approach	SWCD Boards	County Personnel	DEC	Other	NR	Total
Albany	1	2	-	-	-	-	3
Allegany	2	1	-	-	-	-	3
Broome	-	2	-	-	-	-	2
Cattaraugus	3	1	-	-	-	-	4
Chautauqua	-	3	-	-	-	-	3
Chemung	-	4	-	-	-	-	4
Chenango	-	3	1	-	-	1	5
Cortland	2	2	-	-	-	-	4
Delaware	4	1	-	-	-	-	5
Greene	2	1	-	-	-	-	3
Madison	-	2	-	-	-	-	2
Montgomery	1	2	-	-	-	-	3
Otsego	1	2	-	-	-	-	2
Schenectady	-	3	-	-	-	-	3
Schoharie	2	2	-	-	-	-	3
Schuyler	-	5	-	-	-	-	4
Steuben	-	2	-	-	-	-	2
Tioga	3	1	-	-	-	-	4
Tompkins	2	2	-	-	-	-	4
Ulster	-	4	-	-	-	-	4
Wyoming	-	2	-	-	-	1	3
Total 140	23	47	1	-	-	2	73
(Percent)	(31.5)	(64.4)	(1.4)			(2.7)	(100.0)

Table 9. (continued)

LRA 142,143	No supervision-voluntary approach	SWCD Boards	County Personnel	DEC	Other	NR	Total
Essex	1	1	-	-	-	-	2
Fulton	2	2	-	-	-	-	4
Herkimer	2	3	-	-	-	-	4
Lewis	1	2	-	-	1	-	4
St. Lawrence	-	3	-	-	-	-	3
Saratoga	-	4	-	-	-	-	4
Warren	1	2	-	-	-	-	3
Total 142,143	7	17	-	-	1	-	25
(Percent)	(28.0)	(68.0)			(4.0)		(100.0)
LRA 144,149							
Columbia	2	-	-	-	-	-	2
Dutchess	-	3	1	-	-	-	2
Orange	3	1	-	-	-	-	3
Rensselaer	-	2	-	2	-	-	4
Rockland	-	1	-	-	-	1	2
Suffolk	-	1	1	-	-	-	2
Washington	-	5	-	-	-	-	5
Total 144,149	5	13	2	2	-	1	23
(Percent)	(21.7)	(56.5)	(8.7)	(8.7)		(4.3)	(100.0)
TOTAL	44	103	5	2	1	3	158
(Percent)	(27.8)	(65.2)	(3.2)	(1.3)	(0.6)	(1.9)	(100.0)

[a] Single county response for Cayuga, LRA 101 and Clinton, LRA 142 have been omitted.

[b] County Soil and Water Conservation District Boards.

[c] Principally, Co-operative Extension personnel and county Environmental Management Councils.

[d] Department of Environmental Conservation