

RESOURCE MANAGEMENT SYSTEMS AND QUALITY CRITERIA

INTRODUCTION

Section III of the Field Office Technical Guide (FOTG) describes how the Natural Resources Conservation Service (NRCS) assists landowners to plan for and manage their soil, water, and related natural resources. The NRCS Nine Step Planning Process, as described in the National Planning Procedures Handbook (NPPH), furnishes the steps for developing a conservation plan. This section explains how Section III supports the planning process and utilizes information contained in all other sections of the FOTG to formulate a comprehensive conservation plan for whole farm or programmatic purposes. The resource management system process described in this section is the systematic process called for in the National Environmental Policy Act (NEPA). It is a process that not only meets the intent of NEPA but provides a logical evaluation and planning protocol for the development of resource management systems.

Section III is designed to assist the planner and decision maker in the process of selecting conservation practices (prescriptive actions) and develop conservation management system (CMS) alternatives. Practices/CMS are then evaluated for the land use(s) and resource concern(s) identified during step three (Inventory Resources) of the NRCS Planning Process. The information leads seamlessly to the subsequent steps of the planning process – especially step four (Analyze Resource Data), step five (Formulate Alternatives) and step six (Evaluate Alternatives).

Section III is a dynamic or living document in that it will be revised as necessary to reflect changes in conservation practices, policies, or guidance. Users are advised to check periodically on the New York FTOG to be certain that they have the most up-to-date information.

QUALITY CRITERIA

The NRCS is responsible for providing national leadership and administration of conservation programs to conserve soil, water, and related resources on the Nation's private lands. A primary goal is to provide technical assistance to decision makers (landowners, farmers, ranchers) for the planning, implementation, operation, and maintenance of Resource Management Systems (RMS) which achieves a level of resource protection that (1) prevents degradation and (2) permits sustainable use. An RMS is one kind of a Conservation Management System (CMS) which can be designed and applied to treat natural resource concerns and opportunities.

To achieve the goal of an RMS, it is necessary to use a set of Quality Criteria (QC) for each of the five primary resources: soil, water, air, plants, and animals (SWAPA) as well as the human, social, and cultural concerns. These criteria establish the minimum level of treatment required to prevent resource degradation and permit sustainable use. The "NRCS-National Planning Procedures Handbook" (Amendment 4, March 2003) defines quality criteria as "A quantitative or qualitative statement of a treatment level required to achieve an RMS for identified resource considerations for a particular land area. It is established in accordance with local, state, and federal programs and regulations in consideration of ecological, economic, and social effects."

In effect, the quality criteria are a major tool in (1) formulating conservation management systems and alternatives, and (2) ensuring that the NRCS uses defensible, systematic approach to conservation planning as per the agency's environmental compliance policy.

PRACTICE SELECTION GUIDE SHEETS

The Practice Selection Guide Sheets (PSGS) are a planning tool in Section III. They list various practices for each land use (setting) applicable to the resource (soil, water, air, plants, and animals (SWAPA) and associated natural resource concerns (e.g. soil erosion – sheet and rill erosion). Thus the PSGS are organized as follows:

- 1) Land Use Setting
 - (a) Cropland
 - (b) Forest Land
 - (c) Hayland
 - (d) Headquarters
 - (e) Mined Land
 - (f) Pastureland
 - (g) Recreation Land
 - (h) Wildlife Land

- 2) Natural Resource
 - (a) Soil
 - (b) Water
 - (c) Air
 - (d) Plant
 - (e) Animal

- 3) Natural Resource Concerns (broad categories)
 - (a) Soil Erosion
 - (b) Soil Condition
 - (c) Water - Quantity
 - (d) Water Quality – Groundwater
 - (e) Water Quality – Surface Water
 - (f) Air (Quality)
 - (g) Plants
 - (h) Animals – Fish and Wildlife
 - (i) Animals - Domestic

The broad natural resource categories are broken down into specific natural resource concerns as shown in Table 1. An example of this structure is.

- Land Use.....Crop Land
- Natural Resource (SWAPA)Water
- Broad Natural Resource Concern.....Water Quality - Surface
- Specific Natural Resource Concern.....Excessive Suspended Sediment and Turbidity

TABLE 1 – NATURAL RESOURCE BROAD CATEGORIES AND ASSOCIATED SPECIFIC CONCERNS

SOIL	
BROAD CATEGORY	SPECIFIC RESOURCE CONCERN
Soil Erosion	Sheet and Rill
	Wind
	Ephemeral Gully
	Classic Gully
	Streambank
	Shoreline
	Irrigation Induced
	Mass Movement
	Road, Road Sides and Construction Sites
Soil Condition	Organic Matter Depletion
	Compaction
	Subsidence
	Contaminants - Salts and Other Chemicals
	Contaminants - Animal Waste and Other Organics N (Nitrogen)
	Contaminants - Animal Waste and Other Organics P (Phosphorus)
	Contaminants - Animal Waste and Other Organics K (Potassium)
	Contaminants - Commercial Fertilizer N
	Contaminants - Commercial Fertilizer P
	Contaminants - Commercial Fertilizer K
	Contaminants - Residual Pesticides
	Damage from Sediment Deposition
WATER	
Water Quantity	Excessive Seepage
	Excessive Runoff, Flooding, or Ponding
	Excessive Subsurface Water
	Drifted Snow
	Inadequate Outlets
	Inefficient Water Use on Irrigated Land

TABLE 1 – NATURAL RESOURCE BROAD CATEGORIES AND ASSOCIATED SPECIFIC CONCERNS (CONTINUED)

WATER (CONTINUED)	
BROAD CATEGORY	SPECIFIC RESOURCE CONCERN
Water Quantity (continued)	Inefficient Water Use on Non-irrigated Land
	Reduced Capacity of Conveyances by Sediment Deposition
	Reduced Storage of Water Bodies by Sediment Accumulation
	Aquifer Overdraft
	Insufficient Flows in Water Courses
Water Quality - Groundwater	Harmful Levels of Pesticides
	Excessive Nutrients and Organics
	Excessive Salinity
	Harmful Levels of Heavy Metals
	Harmful Levels of Pathogens
	Harmful Levels of Petroleum
Water Quality - Surface Water	Harmful Levels of Pesticides
	Excessive Nutrients and Organics
	Excessive Suspended Sediment and Turbidity
	Excessive Salinity
	Harmful Levels of Heavy Metals
	Harmful Temperatures of Surface Water
	Harmful Levels of Pathogens
	Harmful Levels of Petroleum
AIR	
Air Quality	Particulate matter less than 10 micrometers in diameter (PM 10)
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)
	Excessive Ozone
	Excessive Greenhouse Gas - CO ₂ (carbon dioxide)
	Excessive Greenhouse Gas - N ₂ O (nitrous oxide)
	Excessive Greenhouse Gas - CH ₄ (methane)
	Ammonia (NH ₃)
	Chemical Drift
	Objectionable Odors
	Reduced Visibility
	Undesirable Air Movement
	Adverse Air Temperature

TABLE 1 – NATURAL RESOURCE BROAD CATEGORIES AND ASSOCIATED SPECIFIC CONCERNS (CONTINUED)

PLANTS	
BROAD CATEGORY	SPECIFIC RESOURCE CONCERN
Condition	Not Adapted or Suited
	Productivity, Health and Vigor
	Threatened or Endangered Plant Species - Plant Species Listed or Proposed for Listing Under the Endangered Species Act
	Threatened or Endangered Plant Species - Declining Species, Species of Concern
	Noxious and Invasive Plants
	Forage Quality and Palatability
	Wildfire Hazard
ANIMALS	
Fish and Wildlife	Inadequate Food
	Inadequate Cover/Shelter
	Inadequate Water
	Inadequate Space
	Habitat Fragmentation
	Imbalance Among and Within Populations
	Threatened and Endangered Species - Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act
	Threatened and Endangered Species - Declining Species, Species of Concern
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage
	Inadequate Shelter
	Inadequate Stock Water
	Stress and Mortality

In addition, Section V, (Conservation Effects) contains an additional tool that aids in the development of CMS, the Conservation Practice Physical Effects (CPPE). The CPPE provides a scale of effects score ranging from +5 to -5. A score can be applied to the identified resource concern(s) for the conservation planning unit (CPU). The score(s) will then help to assess the effectiveness of the practice(s) on the identified resource concerns and also provide guidance to help ameliorate negative practice\CMS impacts on identified and associated SWAPA resources and resource concerns.

CONSERVATION MANAGEMENT SYSTEMS

A Conservation Management System (CMS) consists of any combination of conservation practices, including management practices that achieve a level of treatment consistent with the minimum Quality Criteria (QC) contained in the FOTG.

There are a variety of Conservation Management Systems (CMS) that depend upon the level of resource protection desired, required by law, and dependent upon the human considerations. The CMS is an umbrella for the following types of unique systems:

Whole Farm or Programmatic Based Conservation Plans

Resource Management System (RMS)

An RMS is combination of conservation and management practices that treats all identified soil, water, air, plant, and animal resource concerns found on the farm to the minimum level of protection as listed in the quality criteria (QC).

An RMS level conservation plan is considered to be in place once the minimum level of treatment has been addressed for each of the resource concerns. The use and implementation of the QC will be consistent with Federal, State, and local laws and regulations. In addition, the use of the QC will meet the performance standards as described in Section IV of the FOTG for conservation practices planned and/or installed.

An RMS is not to be confused with others for treatment of highly erodible land - a Basic Conservation System (BCS) and an Alternative Conservation System (ACS). A BCS or ACS for Food Security Act (FSA) compliance, addresses the cropland sheet and rill soil erosion only and therefore do not meet the minimum criteria for an RMS.

A more detailed discussion of an RMS is found below under the Resource Management System Criteria and Resource Management System Performance Standards sub-headings.

Progressive Planning (partial system)

The planning process is progressive when a client is ready, willing, and able to make decisions and implement some, but not all of the decisions necessary to achieve an RMS level of management. The rate of progress in moving to this level of protection and sustainability will depend upon the client's desires and constraints – both natural resource, economic and human based.

1985 Food Security Act Highly Erodible Land (HEL) Conservation Compliance Plans

Alternative Conservation System (ACS)

An (ACS) is an erosion control system for treating sheet, rill, wind, and ephemeral gully erosion on highly erodible land. The system(s) is/are documented in the FOTG. It achieves a substantial reduction in soil loss as defined in the National Food Security Act Manual (NFSAM). This term applies only to conservation plans and conservation systems developed to carry out the provisions of the Food Security Act of 1985, as amended.

Basic Conservation System (BCS)

This term applies only to conservation management systems developed to carry out the HEL provisions of the Food Security Act of 1985. It is a system for treating sheet, rill, wind, and ephemeral gully erosion on highly erodible land. A BCS may be a component of an RMS. It must achieve soil loss tolerance (T) which treats the erosion (noted above) of the principal soil it is designed to protect. The BCS must also be documented in the FOTG. Additional treatment may be "built" on a BCS as a conservation plan becomes more detailed and addresses the full realm of resource concerns on the farm. Additional information about a BCS is contained in the NFSAM.

FORMULATION AND GOALS OF CONSERVATION MANAGEMENT SYSTEMS (CMS)

The formulation of a CMS is a process of inventorying the natural resources, their interaction with each other, and determining the impact of alternative treatment(s). The goal of planning a CMS is to select and evaluate treatment alternatives that help to solve identified resource concern(s). In some instances, additional treatment measures may be required to offset negative effects from applying the proposed treatment(s). For example, sheet and rill erosion can be addressed through the installation of a diversion and a grassed waterway. However, the diversion may have a negative impact on surface water quality due to concentrating contaminants (nutrients, pesticides, or pathogens). The solution will be to identify the practice(s) best suited to address this problem and which are appropriate to the land use and setting, and the farmer’s objectives and economic conditions. When an RMS cannot be achieved, progressive planning will help to achieve the RMS level of protection in the future. The progression on individual planning units shall always be that which will lead to the eventual implementation of a RMS.

HUMAN CONSIDERATIONS

Additional considerations used in the planning process to develop, evaluate and select suitable conservation treatments for decision makers may include legal, social, cultural, economic, aesthetic, managerial, and other factors outside of the natural resources concerns. These considerations are also crucial to conservation planning and, in some cases, must be addressed as required by certain Federal, State, or local laws. They must also be accounted for with respect to NRCS Environmental Compliance policy and procedure. Table 2 provides information about the human concerns.

TABLE 2 – HUMAN CONSIDERATIONS IN CONSERVATION PLANNING

HUMAN (SOCIAL, CULTURAL, AND ECONOMIC CONCERNS)	
BROAD CATEGORY	SPECIFIC RESOURCE CONCERN
Human	Land Use
	Capital
	Labor
	Management Level
	Profitability
	Risk
	Social Well-Being
	Social
	Cultural

The human considerations expand the SWAPA concept to SWAPA + H. Law or statute prescribes addressing some of these criteria; e.g., the National Historic Preservation Act, Environmental Justice. Human considerations should be considered early in the planning process since they can help guide the planner to provide the appropriate information which the client needs to make informed decisions.

The human considerations are presented below with key questions to guide the evaluation. Research has shown that the decision making process for farmers and ranchers is multifaceted and can become quite complex. Planners must be fully aware of this fact and be sensitive to the choices, economic and other constraints, and opportunity costs that farmers face in the decision making process.

The following questions help to provide information critical to human considerations:

Land use

- Is the present land use suitable for the proposed alternative?
- Will land use change after practice(s) installation?
- How will a change affect the operation? (Ex., Feed and Forage Balance Sheet)
- Will the action affect resources on which people depend for subsistence, employment or recreation?
- Will land be taken in or out of production?

Capital

- Does the producer have the funds or ability to obtain the funds needed to implement the proposed alternative?
- What are the impacts of the cost of the initial investment for this alternative?
- What are the impacts of any additional annual costs for Operation and Maintenance?
- What possible impact does implementing this alternative have on the client's future eligibility for farm programs?

Labor

- Does the client understand the amount and kind of labor needed to implement, operate and maintain the proposed practice(s)?
- Does the client have the skills and time to carry out the conservation practice(s) as it is planned or will they have to hire someone?

Management level

- Does the client understand the inputs (e.g. mowing) needed to operate and maintain the conservation practice(s)?
- Does the client understand their responsibility to operate and maintain practice(s) as planned and implemented?
- Is it necessary for the client to obtain additional education, or hire a technical consultant to operate and/or maintain the practice(s)?

Profitability

- Profitability describes the relative benefits and costs to the farm operation and is often measured in dollars. An activity is profitable if the benefits are greater than the costs. Many investments on the farm require a higher rate of return to justify and/or compete with other possible investments. Competition for capital is closely related to variables such as market conditions, available labor, and knowledge to operate and maintain a practice or CMS.
- Is the proposed alternative needed and feasible?
- Do the benefits of improving the current operation outweigh the installation and maintenance costs (positive benefit/cost ratio)?
- Is there a reasonable expectation of long-term profitability/benefits for the operation if implemented?
- Will crop, livestock, or wildlife yield increase/decrease?

Risk

- Risk is the potential for monetary loss, physical injury, or damage to resources or the environment.
- Will the proposed alternative risk the client's eligibility to participate in NRCS conservation programs?
- What are the possible impacts due to a change in yield?
- Is there flexibility in modifying the conservation plan at a future date?
- What issues are involved with the timing of installation and maintenance?
- What are the cash flow requirements of this alternative?
- What, if any, are the hazards involved?

Social Well-Being

- What effect (both positive and negative) will the action have on the client and community with regard to:
 - Health and Safety
 - Family and community life (e.g. What are the implications for their children? Will it cause/resolve community conflict?)
 - Employment (e.g. Will the action prevent/allow the client to keep farming?)
- Are the proposed alternatives compatible with the client's values?
- Are the proposed alternatives compatible with the community's values?
- What is the social climate of the surrounding community?
- Will the action affect community institutions, traditions or values, or the way of life for individuals (what are the off-site effects)?

Social

- Public health and safety is maintained or improved.
- Treatment type is compatible with community characteristics.
- Treatment level is compatible with client characteristics.

Cultural

- Protection of cultural resources is consistent with the NRCS General Manual 420, Part 401.

Economic

- Does the treatment level reflect the ability of the farmer to pay and is it representative of the typical costs for area?
- Are the inputs (management, capital, labor) required for treatment readily available?
- Is the conservation treatment consistent with government program participation.

RESOURCE MANAGEMENT SYSTEMS

Criteria

A Resource Management System (RMS) is a combination of conservation practices and management measures identified by the primary use of land and water. If installed, the RMS will, at a minimum:

- Protect the resource base by meeting acceptable soil losses,
- Maintain acceptable water quality,

- Maintain acceptable ecological and management levels for the selected resource use, and
- Meet the economic and social needs of the decisionmaker.

Additional Treatment

Additional treatment beyond essential treatment may be applied to enhance the resources or to serve secondary or tertiary purposes. This treatment may include practices or management measures that contribute to environmental enhancement by water quality, land productivity, wildlife habitat, and improve health, safety and environmental conditions for the farm and the surrounding watershed. This concept is termed “practice intensity”. Specific actions that can be implemented for a conservation practice are found on the Conservation Practice Standard under “Additional Criteria” section(s).

Performance Standards

The minimum levels of treatment for a RMS apply to all land uses. They may not always apply equally to every land use or to every RMS. However, when a resource problem is identified in the planning process, the treatment used must meet the minimum criteria for the conservation practice standard(s) (see Section IV of the FOTG) in order to establish a RMS.

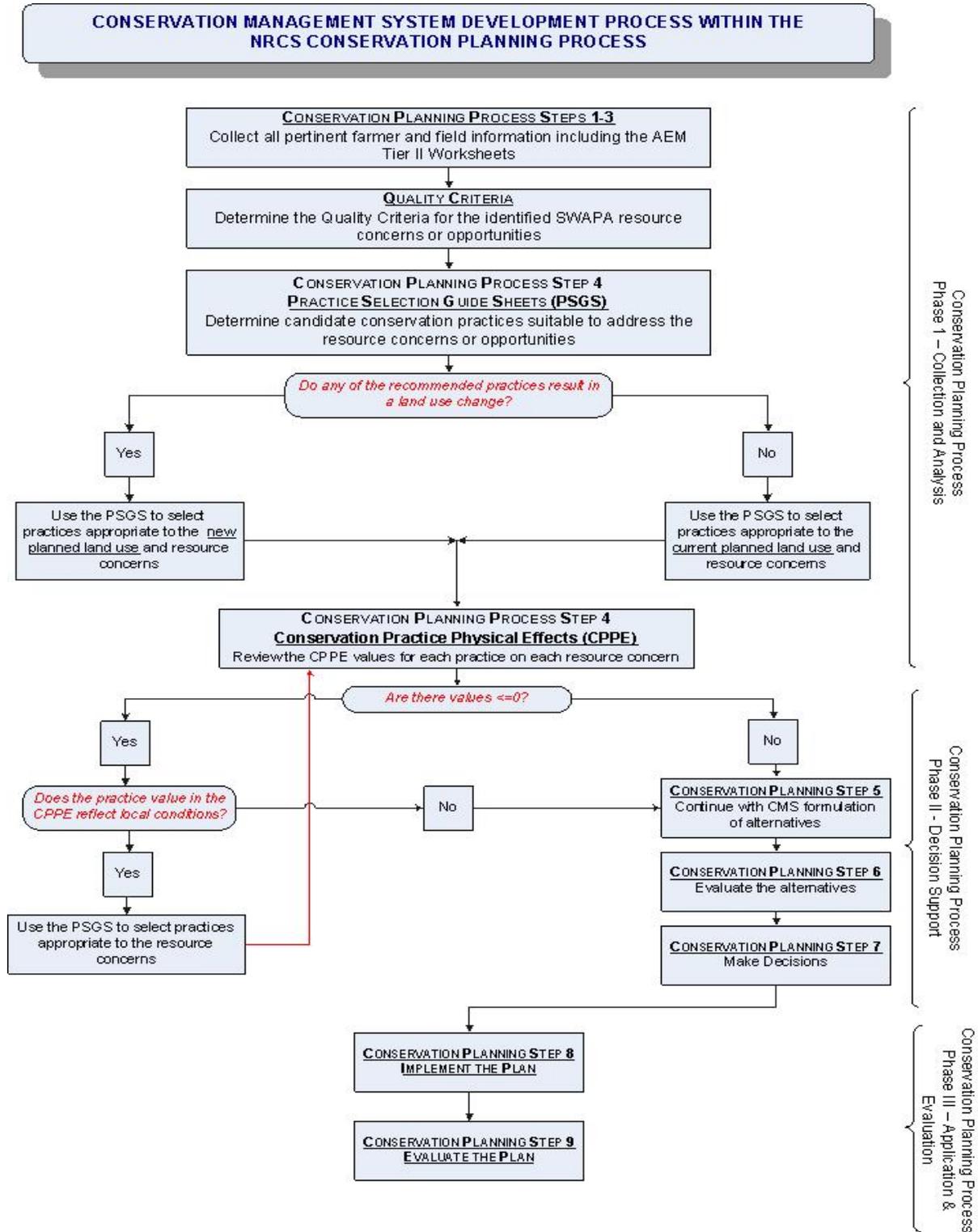
Development Process

Figure 1 outlines the process to be used to establish a CMS. The process is initiated with an evaluation of the natural and human resources. Policy and procedure as contained in the NRCS National Planning Procedures Handbook (NPPH) guide this portion of the process. The Practice Selection Guide Sheets (PSGS) identify those conservation practices most commonly used in New York. Each field office should select those practices for the given resource of concern that, alone or in combination, provide a treatment level that satisfies the Quality Criteria (QC) for an RMS or the significant erosion reduction for HEL compliance planning. The planner and decisionmaker will determine the level of protection for progressive planning.

The Conservation Practice Physical Effects (CPPE) (see Section V of the FOTG) is used to evaluate practice alternatives and identify possible negative effects on other natural resources within and outside of the planning area. A value ≤ 0 on the CPPE for a practice effect on a resource concern must be addressed to the level of protection and sustainability indicated in the QC to complete a RMS. Where negative impacts on other resources are identified and mitigation can not be readily achieved, an alternative practice should be selected from the PSGS. The selection (PSGS) and evaluation (CPPE) process for practices will continue until the resource concerns/opportunities are addressed to the appropriate planning level (RMS, ACS, BCS, etc.).

(NEXT PAGE)

Figure 1 - Conservation Management System Development Process



FEDERAL CONSERVATION PROGRAMS ADMINISTERED BY NRCS

PLANNING AND PROGRAM INTERACTION

Federal, state, and local governments have or can establish programs, laws, and regulations to address specific public resource concerns about natural resources conservation. In order to meet the goals of these programs, minimum treatment levels have been established for planning and application purposes. The following is a brief description of several of these programs and the resource concerns addressed.

CONSERVATION COMPLIANCE

1985 Food Security Act (FSA) (as amended)

The resource concern of these acts is excessive sheet and rill erosion on highly erodible cropland. All operators, with cropland enrolled in a USDA program, are required to have a conservation plan developed by 1990 and fully implemented by 1995. The minimum level of treatment is established through Alternative Conservation Systems (ACS). These systems are designed to cause a reduction in sheet and rill erosion on highly erodible cropland. The amount of the reduction achieved after treatment is dependent upon the current system employed by the producer and those practices implemented in consideration of economic thresholds.

A second consideration of this act is to control the conversion of federally designated wetlands to other uses. Landowners who convert land designated as "wetland" to cropland purposes may become ineligible for participation in any federal program.

CONSERVATION TECHNICAL ASSISTANCE PROGRAM AND ACTIVITIES

Conservation of Private Grazing Land

The Conservation of Private Grazing Land (CPGL) initiative will ensure that technical, educational, and related assistance is provided to those who own private grazing lands. It is not a cost share program. This technical assistance will offer opportunities for: better grazing land management; protecting soil from erosive wind and water; using more energy-efficient ways to produce food and fiber; conserving water; providing habitat for wildlife; sustaining forage and grazing plants; using plants to sequester greenhouse gases and increase soil organic matter; and using grazing lands as a source of biomass energy and raw materials for industrial products.

Conservation Reserve Program

The Conservation Reserve Program (CRP) provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with Federal, State, and tribal environmental laws, and encourages environmental enhancement. The program is funded through the Commodity Credit Corporation (CCC). CRP is administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations, conservation planning and practice implementation.

Conservation Technical Assistance

The Conservation Technical Assistance (CTA) Program provides technical assistance supported by science-based technology and tools to help people conserve, maintain, and

improve their natural resources. The CTA Program provides the technical capability, including direct conservation planning, design, and implementation assistance, that helps people plan and apply conservation on the land. This assistance is provided to individuals, groups, and communities who make natural resource management decisions on private, tribal, and other non-federal lands. NRCS, through the CTA Program, provides conservation technical assistance that addresses natural resource conservation issues at the local level that are of State and National concern.

Grazing Lands Conservation Initiative (GLCI)

The Grazing Land Conservation Initiative (GLCI) is a nationwide collaborative process of individuals and organizations working to maintain and improve the management, productivity, and health of the Nation's privately owned grazing land. This process has formed coalitions that represent the grass root concerns that impact private grazing land. The coalitions actively seek sources to increase technical assistance and public awareness activities that maintain or enhance grazing land resources.

ENVIRONMENTAL IMPROVEMENT PROGRAMS

Agricultural Management Assistance

Agricultural Management Assistance (AMA) provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation on Tribal and private working lands. Producers may construct or improve water management or irrigation structures; plant trees for windbreaks or to improve water quality; and mitigate risk through production diversification or conservation practices, including soil erosion control, pest management, or transition to organic farming.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) provides a voluntary conservation program for farmers and ranchers that promote agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants on Tribal and private working lands install or implement structural and management practices on eligible agricultural land.

Wildlife Habitat Incentives Program

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat primarily on Tribal and private land. Through WHIP USDA's Natural Resources Conservation Service provides both technical assistance and up to 75% cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed.

STEWARDSHIP PROGRAMS

Conservation Security Program

The Conservation Security Program (CSP) is a voluntary program that provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private working lands. Working lands include cropland, grassland, prairie land, improved pasture, and range land, as well as forested land that is an incidental part of an agriculture operation. The program is available in all 50 States, the Caribbean Area and the Pacific Basin area. The program

provides equitable access to benefits to all producers, regardless of size of operation, crops produced, or geographic location.

More detailed information is available at <http://www.nrcs.usda.gov/programs/> or through the local NRCS Service Center.

NRCS Office locations may be found at <http://offices.sc.egov.usda.gov/locator/app?agency=nrcs> or in the local telephone directory under “Federal Government”.

CONSERVATION MANAGEMENT SYSTEM EXAMPLES

The three examples on the following pages offer agricultural settings as a training tool. They can be used for exercises in developing conservation management systems using the Quality Criteria, Practice Selection Guide Sheets, and the Conservation Practice Physical Effects to develop conservation management systems discussed earlier. Users should also refer to the following documents:

- National Planning Procedures Handbook
- Land Resource Regions and Major Land Resource Areas of the United States (USDA - Agricultural Handbook 296)
- Local County Soil Survey

The examples represent some of the typical farming enterprises and resource conditions in New York. Local offices are encouraged to develop examples that are unique to their location (e.g. vineyards in the Finger Lakes region or irrigated crops in Suffolk County). Once developed, these examples present an excellent training tool. In addition, they offer a method for explanation of the conservation management system development process in New York.

Trainers and others providing support are encouraged to develop scenarios that typify local conditions and farm enterprises.

NRCS Service Center staff may seek assistance in developing additional examples from the Resource Conservationists stationed in their watersheds and/or from the State Resource Conservationist Staff in the State Office.

DAIRY

(CASE STUDIES FROM WORKING FARMS)

INVENTORY AND EVALUATION DATA

- MLRA 144A New England and Eastern New York Upland ,Southern Part
- Farm Type Dairy
- Size 250 acres
- Cropland 80 acres
- Hayland 20 acres
- Pastureland 10 acres
- Woodland 140 acres
- Crops Grown corn silage, small grain (oats), grasses and legumes
- Average Yields corn silage (15 tons/ac.), oats (60 bu./ac.), hay (2.5 tons/ac.)
- Predominant Soils Chenango, Bernardston, Rhinebeck
- Livestock 80 milkers, 65 replacement heifers

BENCHMARK CONDITION

This dairy operation is located upstream from a watershed that is used as a public water supply. Recent new home construction has accelerated in areas surrounding the farm, taking advantage of the scenic overview. Some informal complaints concerning offensive odors have been overheard. There is evidence of soil erosion on cropland acres.

LANDOWNER OBJECTIVES (HUMAN CONSIDERATIONS)

Maintain the resource base from degradation, meet the mandates of the 1985 FSA, increase herd size by 15%, maximize profits, remain competitive, and pass the farm down to children.

PROBLEM DEFINITION

Sheet, rill, and ephemeral erosion exceed 6 tons/ac./yr., pasture and hayland plant quality and quantity is poor-moderate, daily spreads animal wastes when possible but stockpiles during winter months when fields are inaccessible.

PRIMARY RESOURCE CONCERNS

- Soil Erosion (sheet, rill, ephemeral)
- Water..... Quality (surface water contaminants)
- Air..... Quality (airborne odors)
- Plants Forage quality and palatability
- Animals (Domestic)..... Inadequate quantities and quality of feed and forage

CASH GRAIN

INVENTORY AND EVALUATION DATA

- MLRA 101 Ontario Lake Plain and Finger Lakes Region
- Farm Type Cash Grain
- Size 250 acres
- Cropland 200 acres
- Hayland None
- Pastureland None
- Woodland 50 acres
- Crops Grown Corn for grain
- Average Yields (120 bu./ac.)
- Predominant Soils Ontario, Alton, Hilton
- Livestock None

BENCHMARK CONDITION

The landowner operates this land unit as a cash grain farm. Some of the fields are HEL and cropland acres exhibit ongoing erosion. No wetlands are present. There is an interest in improving habitat conditions to attract a variety of wildlife and there are questions concerning the impact of the farm on water quality.

LANDOWNER OBJECTIVES (HUMAN CONSIDERATIONS)

Continue to maintain a viable cash grain operation, meet mandates for the 1985 FSA, minimize potential for groundwater pollution, and improve wildlife habitat.

PROBLEM DEFINITION

The cropland is currently operated as 5 different fields separated by hedgerows. The farmer does not follow an integrated pest management or nutrient management plan. He/she has indicated that the primary source of domestic water is from a shallow driven well and is concerned about potential impacts on ground water quality. Soil erosion exceeds 6 tons/ac./yr.

PRIMARY RESOURCE CONCERNS

- Soil Erosion (sheet, rill, ephemeral gully)
- Water..... Quality (harmful levels of pesticides)
- Air..... Particulate matter <10 mm, and reduced visibility
- Plants Productivity, health, and vigor
- Animals (Fish and Wildlife) Inadequate cover and shelter

CATTLE (BEEF)

INVENTORY AND EVALUATION DATA

- MLRA 140 Glaciated Allegheny Plateau & Catskill Mountains
- Farm Type Beef
- Size 250 acres
- Cropland 30 acres
- Hayland 30 acres
- Pastureland 70 acres
- Woodland 120 acres
- Crops Grown corn grain/silage, mixed grass/legume hay
- Average Yields corn (15 tons/ac.) mixed hay (2 tons/ac.)
- Predominant Soils Lordstown, Arnot
- Livestock 50 brood cows, 20 replacements

BENCHMARK CONDITION

The farm currently supports 50 brood cows and 20 replacement heifers. The animals are grazed in 2 large undivided pastures. Pasture quality is poor-moderate. In drier years, hay must be fed to compensate for lack of pasture regrowth. Corn is used to supplement feed requirements. Cropland erosion is evident.

LANDOWNER OBJECTIVES (HUMAN CONSIDERATIONS)

Increase herd size by 50%, produce high quality forage, provide for adequate livestock water, protect the resource base.

PROBLEM DEFINITION

Forage quality and quantity are limited which limits the ability to expand herd size. Although water is not limited in quantity, it is not properly located. Erosion on pastureland is 1 ton/ac./yr, while cropland acres exhibit sheet and rill erosion rates exceeding 6 tons/ac./yr.

PRIMARY RESOURCE CONCERNS

- Soil Erosion (sheet and rill)
- Water..... Quantity (excess water seeps)
- Air..... Objectionable Odors
- Plants Forage quality and palatability
- Animals (Domestic)..... Inadequate shelter