Section III - Field Office Technical Guide

Resource Management Systems

And

Conservation Systems

Introduction – Resource Management Systems (RMS)

The technical guide policy provides opportunities for flexibility in resource planning levels to meet specific needs. Planning levels are defined in the section, the quality criteria are established, the RMS formulation process described, and guidance documents are developed for the following land uses.

1. Cropland
2. Forestland
3. Wildlife Land
4. Pasture/Hayland
5. Mined Land
6. Farm Headquarters (With Livestock)
7. Farm Headquarters (No Livestock)
8. Urban Land

Ref: 450 General Manual – Part 401

NRCS provides technical assistance to decision-makers to protect, maintain, and improve soil, water, air, plant, and animal resources and related human considerations. The guidelines outlined in this Section are to be used to establish treatment levels necessary to adequately address natural resource concerns and human considerations. These concerns and considerations are identified during the planning process for the development of resource management, conservation systems or conservation treatment. This section includes a description of important resource considerations for conservation planning and examples for setting quality criteria for treatment.

Quality criteria and guidance documents are filed in Section III of the Field Office Technical Guide (FOTG). Section III contains Resource Management System (RMS) Quality criteria, with supporting guidance documents, followed by program criteria and related guidance documents needed to meet levels of treatment defined by legislated programs and initiatives that are different from RMS criteria.

General Manual Section 180, Part 409 provides policy for conservation planning. The National Planning Procedures Handbook (NPPH) provides procedures and information for developing resource management systems (RMS) to prevent or treat problems for a resource area and take advantage of opportunities associated with these resources.

The conservation planner, through on-site visits and interviews with the client, will identify the resource concerns and determine considerations to be addressed in the plan.

Definitions

Benchmark Condition

The present condition or situation used as a point of reference to measure change in resource conditions resulting from conservation treatment.

Common Resource Areas

A geographical area where resource concerns, problems, and treatment needs are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographical boundaries of the common resource area.

Conservation System

A combination of conservation practices and resource management that achieve a specific level of treatment of soil, water, air, plant, and/or animal resource concerns. For example, Farm Bill Programs Involving “Highly

Erodible Land" (HEL) may need one of the following component systems to meet eligibility requirements for certain USDA programs.

Conservation Plan

A record of the client's decisions and supporting information, for treatment of a unit of land or water as a result of the planning process that meets the FOTG quality criteria for each natural resource (soil, water, air, plant, and animal) and takes into account economic and social considerations or meets the required level of treatment for a specific program or initiative if the client is made aware of alternative treatments, but is not ready to commit to a resource management system level of treatment. The plan describes the schedule of operations and activities needed to solve the identified natural resource concerns and problems.

Conservation Treatment

Any and all conservation practices, management measures, and works of improvement that have the purpose of alleviating resource concerns, solving or reducing the severity of natural resource use problems or taking advantage of resource opportunities.

Progressive Planning

A point in the planning process where the client is ready willing and able to make some but not all of the decisions necessary to achieve resource sustainability for soil, water air, plants and animals.

Quality Criteria

Quantitative or qualitative statements of the treatment level required to achieve a resource management system for identified resource considerations for a particular land use.

Resource Management System

A conservation system that meets or exceeds the quality criteria in the FOTG for resource sustainability for all identified resource concerns for soil, water, air, plants and animals.

Resource Consideration

Elements or conditions of the natural resources that may be sensitive to change by natural forces or human activity.

Resource Concern

A subset of a resource consideration that more specifically identifies or narrows the scope of analysis of a resource consideration. Concerns are identified by predictive models, direct measurements, observation or client objectives.

Resource Problem

A condition related to one or more resource concerns that does not meet the minimum acceptable quality criteria shown in the FOTG, Section III.

Legislative Program Conservation System Definitions

Basic Conservation System (BCS)

An erosion control subsystem which is a component of a RMS. It must achieve soil loss tolerance requirements for the principle soil it is to protect. The term BCS applies only to conservation plans and conservation systems developed to carry out the HEL provisions of the Farm Bills. It is a component conservation system on HEL that reduces sheet and rill erosion to the soil loss tolerance level (T) prescribed for the soil type and treats concentrated flow erosion.

Alternative Conservation System (ACS)

An erosion control subsystem for HEL that which achieves a substantial reduction in existing soil loss rates. The term ACS only applies to conservation plans and conservation systems developed to carry out the HEL provisions of the Farm Bills.

Other Conservation Systems

Certain federal, state, and local programs are designed to address specific resources. For example, the "Unified National Strategy for Animal Feeding Operations" and its associated "Comprehensive Nutrient Management Plan (CNMP) Guidance Document" requires that only soil and water resource concerns be addressed. When providing assistance to land users desiring a CNMP our goal is to provide complete RMS planning assistance and a RMS plan. However, if a RMS cannot be achieved the minimum level that must be achieved for a CNMP is the treatment of the soil and water resource concerns to their respective quality criteria levels.

The Environmental Quality Incentives Program (EQIP) is an example of another federal program requires only that the resource concerns being cost shared or addressed in the application to be planned and applied to the quality criteria level.

NRCS field offices providing planning assistance to land users using federal, non-USDA, state, and local programs designed to treat specific resource concerns (not all five resource concerns) should coordinate the minimum resource treatment with the sponsoring agency or group and have the concurrence of the State Conservationist.

Human Considerations

In addition to addressing the five natural resource concerns to an established quality criteria level for Resource Management System planning, one must also consider the human side of the natural resource equation.

The following "Human Considerations" are guidelines designed as a checklist for conservation planners to assure the human dimension is considered in the formulation and evaluation of resource management systems:

A. Economics

1. Cost Effectiveness. Is there a reasonable relationship between the cost of a system and the changes in the "resource" conditions it brings about?
2. Financial Condition. Is there an ability to acquire funds to install and maintain the system over time without destroying the financial viability of the normal farm operations?
3. Markets. Are there adequate and available markets for the farm enterprise products?
4. Input Level. Are there adequate or sufficient management skills, land, labor, and equipment present or obtainable to operate and maintain the system.
5. Base Acreage. Is the base acreage for USDA programs adequately available?
6. USDA Programs. Would the system preclude a normal degree of participation in USDA programs?
7. Sustainability. Is there a reasonable expectation of long-term profitability for the operation as a whole?

B. Social

1. Public Health and Safety. Are local community standards regarding public health and safety followed?

2. Values. Are social, family, religious values, peer pressure, and societal goals considered?
3. Client Characteristics. Are client characteristics including age, planning horizon, special emphasis groups, and resources (limited or otherwise) considered?
4. Risk Tolerance/Aversion. Is the degree of risk reasonable compared to the alternative?
5. Tenure. Will tenure (owner or renter) or time availability (e.g. part-time, absentee) affect the ability to install, manage, or maintain the system?

C. Cultural Resources

1. Absence or Presence. Is the absence or presence of cultural resources established using the State Historic Preservation Officer's (SHIPO) definition of cultural resources?
2. Significance. When the presence is established, significance will be determined by qualified cultural resource personnel according to the National Register of Historic Places criteria.
3. Neutral or Positive Effects. The system can be applied to an area containing significant cultural resources if it has a neutral or positive effect on that resource.
4. Negative Effect / Mitigation. Systems can be applied if negative effects are avoided or mitigation occurs to lessen or eliminate those negative effects as agreed to by the consulting parties. (General Manual 420 – Part 401).

Resource Management Systems (RMS) and The RMS Formulation Process

The RMS formulation process is a conservation planning process (a problem solving process). It is a process of assisting land users to develop RMS. This is accomplished by leading the land user through a process of identifying the current and predictable resource concerns, determining land user goals and objectives, analyzing the resource data, formulating treatment options with the land user, and the land user making decisions on treatment to achieve a RMS level of treatment that meet his/her goals and objectives.

All conservation planning is directed towards implementing a RMS. Conservation planning assistance is provided to land users to progressively plan as much treatment towards a RMS as the decision maker is willing and able to attain at any point in time. The progressive planning approach is the incremental process of building a conservation plan consistent with a land user's ability to make decisions over a period of time.

The RMS is considered applied when the quality criteria contained in this section (Section III – FOTG) are met and the treatment is applied according to Section IV of the FOTG for the identified resource problems.

The RMS Formulation Process

A. The Preplanning Phase

The preplanning phase involves the use of at least 4 different sources of information. These include:

1. Inventory resource conditions for the field office area.

This data will reside in Section I of the FOTG. It will include information about:

- Cost Data
- Maps
- Erosion Prediction
- Nutrient Leaching and Runoff Prediction
- Climatic Data
- Cultural Resource Information

- Threatened and Endangered Species List
- Laws

2. Conservation Practice Physical Effects (CPPE) Document

This document is in Section V of the FOTG. It provides guidance on the effects of conservation practices on resource concerns.

3. Quality Criteria

These criteria are in Section III of the FOTG. They provide the criteria to determine minimum treatment levels for the soil, water, air, plant, and animal resources and guidance for determining when a particular treatment system is a RMS.

4. Guidance Documents

These documents represent examples of commonly occurring resource concerns for given land uses and resource settings displayed with typical conservation practices and treatment used to solve the resource problems. These documents are usually specific to a particular area (county or multi-county area - common resource area).

Site Specific RMS Formulation

This process begins with identifying current and predictable resource problems, concerns, and opportunities for the soil, water, air, plant, and animal resources on a specific field or conservation treatment unit (groups of fields with similar concerns and management needs) basis.

The goal of the RMS formulation process is to: (1) identify all the resource concerns, (2) identify the conservation practices and treatments that will address the resource concerns, (3) evaluate the physical and management effects each of those practices and treatments will have on each resource concern, and (4) from the entire list of candidate practices and treatments identified to treat the resource concerns – select the combination that best addresses the resource concerns and the goals and objectives of the land user.

The experienced conservation planner who is familiar with the resource concerns of the local area and its treatment performs this formulation process mentally and can communicate the process to the land users. However, a more structured process can be used for the following purposes:

1. Training conservation planners.
2. Documenting the development of RMS Guide Documents for local land uses and resource settings that are filed in Section III of the FOTG.
3. Documenting complicated land use and resource concerns fields or CTU's.
4. Documenting RMS development where a complaint is involved.
5. Visually displaying the process to communicate resource concerns and treatment options to the respective land user.

The Structured Process:

The resource concerns should be documented in a format that will allow the planner and the land user to view the concerns and the practices/treatments to address those concerns. This will facilitate more informed / educated decision-making on the part of the land user and the planner. The "Site Specific Practice Effects Worksheet" (Exhibit 1 - Example Completed Form) can be used to display identified resource concerns and

the effect of candidate practices/treatments to address those concerns. Other formats can be developed locally. This format is available through an EXCEL Spreadsheet Ohio Guidesheet Program (April 2002 ver).

Step 1.

Identify and record the resource concerns, problems, and opportunities. See Exhibit 1.

Step 2.

Using previously prepared guidance documents in the local FOTG and/or the Conservation Practice Physical Effects information in Section V of the local FOTG list candidate practices and treatments from Section IV of the local FOTG that will address the resource concerns. See Exhibit 1.

Step 3.

Evaluate the conservation practice physical effect of applying each practice to each identified resource concern. The effects can be displayed in narrative form to describe the effect of the practice on the particular concern. See Exhibit 1. Some practices will have no effect on a particular concern and some can actually have a negative effect. This step begins the process of identifying which practice or combination of practices best treat the resource concerns, meets the land users goals and objectives, and minimizes negative physical effects on the resource concerns.

Guidance to evaluate practice effects:

1. Ask yourself if this practice is applied to standard what physical or management effect will this have on the given resource concern. It is important to understand that not all practices have positive effects on all the resource concerns. For example, the installation of tile will provide a significant improvement to remove excess subsurface water from the soil, but may have a negative effect on contributing more nitrates to the surface water. By going through this process additional concerns may be identified. If the practice results in a negative effect on a particular concern than additional practices may need to be applied to address the negative effect. For example, using Nutrient Management (Standard 590) one could address the negative effect of the tile drainage.

2. Be site specific in your evaluation of physical effects. The same practice and resource concerns on one site could produce different physical effects on another site. For example, we have two farms one with livestock and the application of manure on the site and the other farm with no livestock or manure application. Both farms have a gully erosion concern and both are concerned with nutrients in the ground and surface water. A Water and Sediment Control Basin (WASCOB) is proposed to treat gully erosion. The WASCOB will have a significant positive physical effect to address the gully erosion concern. However, when one evaluates the WASCOB effect on nutrients getting into the ground and surface water the WASCOB on the farm where manure is applied can have a negative effect because the WASCOB can provide a direct conduit to transport nutrients via a tile inlet to surface water. The WASCOB on the farm without manure application may have much less potential to deliver nutrients to ground and surface water.

3. On sites involving a land use change, evaluate the practice used to make the land use change against the “present” resource concerns and evaluate the remaining practices in the system against the “predicted” resource concerns. For example, if cropland is going to be converted to pasture use the practice Pasture and Hayland Planting (512) to evaluate the physical effects against the resource concerns identified with the land being in cropland. Use practices such as “Planned Grazing System” to evaluate the physical effects against the predicted concerns with the site being used a pasture.

Step 4.

Develop RMS Options or Alternatives. Evaluate the "Site Specific Practice Effects Worksheet", or locally developed document, to determine which combinations of practices will form a RMS "Option or Alternative" for the land user to address the resource concerns and his/her goals and objectives. The RMS "Options or Alternatives" can be displayed on the "RMS Options Worksheet" (Exhibit 2a thru 2c Completed Example Form) or other locally developed documents to serve the same purpose. The purpose is to give the land user a clear visual as to which option or alternative best meets his/her goals and objectives and treatment of the resource concerns.

Guidance to develop RMS options / alternatives:

1. Select and list practices that will adequately address each resource concern. This involves looking at one resource concern and identifying all the practices necessary to address that resource concern. For example, if a cropland has a concern involving "sheet and rill erosion" it may require the application of several practices (conservation crop rotation, cover crops, and no till) to adequately address the sheet and rill erosion. Just as one rates the physical and management effect on the "Site Specific Practice Effects Worksheet" for each practice on each resource concern, one also rates the physical and management effect of each practice on each resource concern on the "RMS Options Worksheet". This clearly displays / documents the effect of the system on the resource concerns. After one resource concern is addressed move to the next resource concern and repeat the process of identifying the practice(s) needed to address that resource concern. Some of the practices used to address one resource concern can address multiple concerns. For example, a conservation crop rotation and no till may address sheet and rill erosion and also address soil tilth. When practices have been listed that will address all the resource concerns to he minimum quality criteria level then you have a viable RMS option or alternative.

2. From the list of practices identified to treat all the resource concerns on the "Site Specific Practice Effects Worksheet" some practices will have a more significant effect on a particular resource concern than another or some practices may be more cost effective to treat a resource concern. These effects can serve as a basis to develop one or more options or alternatives for the land user to choose which option best treats the resource concerns and meets his/her goals and objectives.

Site Specific Practice Effects Worksheet" Exhibit 1 - Example Completed Form)

State:		OHIO	Offices:	West-Central Ohio		Guidesheet:	Crop 2-6%, SWP	OHIO
Client:		N/A				CRA:		N/A
System Name:		Cropland, 2-6% Slopes, SWP Drained, Silt Loam Soils						Cropland, 2-6% Slope
RESOURCE CONCERNS> CONSERVATION PRACTICES ST=Short Term Effects LT=Long Term Effects		Soil Erosion; Sheet & Rill	Soil Erosion; Concentrated Flow	Soil Condition; Tilth, Crusting, Infiltration, Organic Matter	Water Quantity, Subsurface; Excess Water	Water Quality, Surface Water; Pesticides, Nutrients, Organics, Sediment	Plants, Cropland Productivity	Animal Habitat, Wildlife: Food, Water, Cover, Shelter
Conservation Crop Rotation - 328	ST	Sl Decrease	Facilitating	Sl Decrease	N/A	Sl Decrease	Sl Decrease	Facilitating
	LT	Sl Decrease	Facilitating	Sl Decrease	N/A	Sl Decrease	Sl Decrease	Facilitating
Cover & Green Manure Crop - 340	ST	Mod Decrease	Sl Decrease	Sl Decrease	Sl Decrease	Mod Decrease	Sl Decrease	Mod Decrease
	LT	Mod Decrease	Sl Decrease	Mod Decrease	Sl Decrease	Mod Decrease	Sl Decrease	Mod Decrease
Contour Buffer Strips - 332	ST	Sl Decrease	Sl Decrease	Sl Decrease	Sl Increase	Mod Decrease	Sl Decrease	Sl Decrease
	LT	Sl Decrease	Sl Decrease	Sl Decrease	Sl Increase	Mod Decrease	Sl Decrease	Sl Decrease
Field Border - 386	ST	N/A	Insignificant	N/A	N/A	Sl Decrease	N/A	Sl Decrease
	LT	N/A	Insignificant	N/A	N/A	Sl Decrease	N/A	Mod Decrease
Filter Strip - 393A	ST	N/A	Insignificant	N/A	N/A	Sig Decrease	N/A	Mod Decrease
	LT	N/A	Insignificant	N/A	N/A	Sig Decrease	N/A	Mod Decrease
Grade Stabilization Structure - 410	ST	N/A	Sl Decrease	N/A	N/A	Sl Decrease	N/A	N/A
	LT	N/A	Sl Decrease	N/A	N/A	Sl Decrease	N/A	N/A
Grassed Waterway - 412	ST	N/A	Sig Decrease	N/A	N/A	Mod Decrease	N/A	Sl Decrease
	LT	N/A	Sig Decrease	N/A	N/A	Mod Decrease	N/A	Sl Decrease
Nutrient Management - 590	ST	Facilitating	N/A	Facilitating	N/A	Sig Decrease	Sl Decrease	Sl Decrease
	LT	Facilitating	N/A	Facilitating	N/A	Sig Decrease	Sl Decrease	Sl Decrease
Pest Management - 595	ST	N/A	N/A	N/A	N/A	Sig Decrease	Sl Decrease	Sl Decrease
	LT	N/A	N/A	N/A	N/A	Sig Decrease	Sl Decrease	Sl Decrease
Residue Management, Mulch till - 329B	ST	Mod Decrease	Sl Decrease	Mod Decrease	Sl Increase	Sig Decrease	Sl Decrease	Sl Decrease
	LT	Mod Decrease	Sl Decrease	Mod Decrease	Sl Increase	Sig Decrease	Mod Decrease	Sl Decrease
Residue Management, No-till & Strip Till - 329A	ST	Sig Decrease	Sl Decrease	Sig Decrease	Sl Increase	Sig Decrease	Mod Decrease	Sl Decrease
	LT	Sig Decrease	Sl Decrease	Sig Decrease	Sl Increase	Sig Decrease	Sig Decrease	Sl Decrease
Subsurface Drain - 606	ST	Sl Decrease	Facilitating	Sl Decrease	Sig Decrease	Sl Increase	Sig Decrease	N/A
	LT	Sl Decrease	Facilitating	Sig Decrease	Sig Decrease	Sl Increase	Sig Decrease	N/A
Water & Sediment Control Basin - 638	ST	Facilitating	Sig Decrease	N/A	N/A	Sig Decrease	N/A	N/A
	LT	Facilitating	Sig Decrease	N/A	N/A	Sig Decrease	N/A	N/A

Exhibit 2a - Completed Example "RMS Options Worksheet"

RMS #1 Template Label:	Crop-2-6%, SWP, HT	State:	OHIO	MLRA / CRA:	111	Page 1 of 3
RMS #1 Name/Phrase:	Cropland, 2-6% Slopes, SWP Drained, Silt Loam, HighTreatment					Location Area
Present Land Use:	Cropland	Planned Land Use:			Cropland	West-Central Ohio

Planned Practices	Benchmark Description	Planned System Description and How Practice Support the System
Conservation Crop Rotation - 328 Filter Strip - 393A Grade Stabilization Structure - Grassed Waterway - 412 Nutrient Management - 590 Pest Management - 595 Residue Management, Mulch till - Residue Management, No-till & Subsurface Drain - 606 0 0 0 0	The cropland is somewhat poorly drained on 2-6% slopes (average 3%). Corn and soybeans are grown in rotation. Tillage for soybeans includes fall chiseling followed by two spring secondary operations. Approximately 20% corn residue remains after drilling soybeans. Tillage for corn includes one spring field cultivation with about 10% soybean residue after planting corn. Erosion is above tolerable soil loss of 3 tons/ac/yr. The soil crusts severely and has poor tilth. Wildlife habitat is marginal.	The rotation will be changed to C-Sb-C-Sb-Wheat. The soybeans will be no tilled into the corn stubble. The soybean stubble will be spring field cultivated for corn. The wheat stubble will be fall chiseled for corn. The wheat will be no tilled into Sb residue. Soils will be tested for nutrients and nutrients applied per soil test results. Pesticides will be applied with more care and selection based on runoff risk. The ephemeral erosion will be addressed by the grassed waterways and grade stabilization structures. Filter strips will be established adjacent to the ditches and streams to filter sediment, nutrients, and pesticides. The system working together will address the resource concerns.

Resource Concerns	Benchmark Effects	Planned System Effects	Impact of Planned System
Soil Erosion; Sheet & Rill	Erosion is above tolerable levels of 3 ton/ac/yr.	The rotation and residue mgt. will reduce soil loss at or below tolerable levels.	Erosion reduced from 4-6 tons to less than 3 tons/ac/yr.
Soil Erosion; Concentrated Flow	Ephemeral erosion is occuring in the concentrated flow areas about 18" by 6-8".	The grassed WW and stuctures will control the gully erosion.	Soil loss reduced 30-40 tons per 1000 feet.
Soil Condition; Tilth, Crusting, Infiltration, Organic Matter	Crusting impacts crop emergence and water infiltration.	Tilth will be improved with better water infiltration and crop growth.	Crop emergence and growth will improve.
Water Quantity, Subsurface; Excess Water	The wet soils delay crop planting and impact crop growth and yield.	Tile will allow earlier planting and better crop growth.	Yield on affected soils will increase about 30%,
Water Quality, Surface Water; Pesticides, Nutrients, Organics,	The high erosion and extensive use of fertilizer and pesticides impact water quality.	Nutrients, sediment, and pesticides runoff will be reduced.	Water quality goals will be met through BMPs.
Plants, Cropland Productivity	Crops are about 20-30% under yield potential due to tilth and drainage problems.	Drainage and soil tilth will improve growth and yields.	Yields on affected soils will increase about 30%.
Animal Habitat, Wildlife: Food, Water, Cover, Shelter	The primary food and cover for wildlife are dichbanks and small wooded areas.	The additional residue and filter strips will improve food and cover.	Habitat improves from marginal to good.
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Exhibit 2b - Completed Example "RMS Options Worksheet"

RMS #2 Template Label:	Crop MT	State:	OHIO	MLRA / CRA:	111	Page 2 of 3
RMS #2Name/Phrase:	Cropland, 2-6% Slopes, SWP Drained, Silt Loam, Medium Treatment					Location Area
Present Land Use:	Cropland	Planned Land Use:		Cropland		West-Central Ohio

Planned Practices	Benchmark Description	Planned System Description and How Practice Support the System
Conservation Crop Rotation - 328 Grade Stabilization Structure - Grassed Waterway - 412 Nutrient Management - 590 Pest Management - 595 Residue Management, Mulch till - Residue Management, No-till & Subsurface Drain - 606 0 0 0 0 0	The cropland is somewhat poorly drained on 2-6% slopes (average 3%). Corn and soybeans are grown in rotation. Tillage for soybeans includes fall chiseling followed by two spring secondary operations. Approximately 20% corn residue remains after drilling soybeans. Tillage for corn includes one spring field cultivation with about 10% soybean residue after planting corn. Erosion is above tolerable soil loss of 3 tons/ac/yr. The soil crusts severely and has poor tilth. Wildlife habitat is marginal.	The rotation will be changed to C-Sb-C-Sb-Wheat. The soybeans will be no tilled into the corn stubble. The soybean stubble will be spring field cultivated for corn. The wheat stubble will be fall chiseled for corn. The wheat will be no tilled into Sb residue. Soils will be tested for nutrients and nutrients applied per soil test results. Pesticides will be applied with more care and selection based on runoff risk. The ephemeral erosion will be addressed by the grassed waterways and grade stabilization structures. The system working together will address the resource concerns.

Resource Concerns	Benchmark Effects	Planned System Effects	Impact of Planned System
Soil Erosion; Sheet & Rill	Erosion is above tolerable levels of 3 ton/ac/yr.	The rotation and residue mgt. will reduce soil loss at or below tolerable levels.	Erosion reduced from 4-6 tons to less than 3 tons/ac/yr.
Soil Erosion; Concentrated Flow	Ephemeral erosion is occuring in the concentrated flow areas about 18" by 6-8".	The grassed WW and stuctures will control the gully erosion.	Soil loss reduced 30-40 tons per 1000 feet.
Soil Condition; Tilth, Crusting, Infiltration, Organic Matter	Crusting impacts crop emergence and water infiltration.	Tilth will be improved with better water infiltration and crop growth.	Crop emergence and growth will improve.
Water Quantity, Subsurface; Excess Water	The wet soils delay crop planting and impact crop growth and yield.	Tile will allow earlier planting and better crop growth.	Yield on affected soils will increase about 30%,
Water Quality, Surface Water; Pesticides, Nutrients, Organics,	The high erosion and extensive use of fertilizer and pesticides impact water quality.	Nutrients, sediment, and pesticides runoff will be reduced.	Water quality goals will be met through BMPs.
Plants, Cropland Productivity	Crops are about 20-30% under yield potential due to tilth and drainage problems.	Drainage and soil tilth will improve growth and yields.	Yields on affected soils will increase about 30%.
Animal Habitat, Wildlife: Food, Water, Cover, Shelter	The primary food and cover for wildlife are dichbanks and small wooded areas.	The additional residue will improve food and cover.	Habitat improves from marginal to good.
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Exhibit 2c - Completed Example "RMS Options Worksheet"

RMS #3 Template Label:	Crop - LT	State:		MLRA / CRA:		Page 3 of 3
RMS #3 Name/Phrase:	Cropland, 2-6% Slopes, SWP Drained, Silt Loams, Low Treatment					Location Area
Present Land Use:	Cropland	Planned Land Use:		Cropland		West-Central Ohio

Planned Practices	Benchmark Description	Planned System Description and How Practice Support the System
Conservation Crop Rotation - 328 Grade Stabilization Structure - Grassed Waterway - 412 Nutrient Management - 590 Pest Management - 595 Residue Management, Mulch till - Residue Management, No-till & 0 0 0 0 0 0	The cropland is somewhat poorly drained on 2-6% slopes (average 3%). Corn and soybeans are grown in rotation. Tillage for soybeans includes fall chiseling followed by two spring secondary operations. Approximately 20% corn residue remains after drilling soybeans. Tillage for corn includes one spring field cultivation with about 10% soybean residue after planting corn. Erosion is above tolerable soil loss of 3 tons/ac/yr. The soil crusts severely and has poor tilth. Wildlife habitat is marginal.	The rotation will be changed to C-Sb-C-Sb-Wheat. The soybeans will be no tilled into the corn stubble. The soybean stubble will be spring field cultivated for corn. The wheat stubble will be fall chiseled for corn. The wheat will be no tilled into Sb residue. Soils will be tested for nutrients and nutrients applied per soil test results. Pesticides will be applied with more care and selection based on runoff risk. The ephemeral erosion will be addressed by the grassed waterways and grade stabilization structures. Mulch tillage will be used to address the delayed planting for corn, The system working together will address the resource concerns.

Resource Concerns	Benchmark Effects	Planned System Effects	Impact of Planned System
Soil Erosion; Sheet & Rill	Erosion is above tolerable levels of 3 ton/ac/yr.	The rotation and residue mgt. will reduce soil loss at or below tolerable levels.	Erosion reduced from 4-6 tons to less than 3 tons/ac/yr.
Soil Erosion; Concentrated Flow	Ephemeral erosion is occuring in the concentrated flow areas about 18" by 6-8".	The grassed WW and stuctures will control the gully erosion.	Soil loss reduced 30-40 tons per 1000 feet.
Soil Condition; Tilth, Crusting, Infiltration, Organic Matter	Crusting impacts crop emergence and water infiltration.	Tilth will be improved with better water infiltration and crop growth.	Crop emergence and growth will improve.
Water Quantity, Subsurface; Excess Water	The wet soils delay crop planting and impact crop growth and yield.	Using mulch till in lieu if no till will allow earlier planting for corn.	Yields will be within the clients objectives.
Water Quality, Surface Water; Pesticides, Nutrients, Organics,	The high erosion and extensive use of fertilizer and pesticides impact water quality.	Nutrients, sediment, and pesticides runoff will be reduced.	Water quality goals will be met through BMPs.
Plants, Cropland Productivity	Crops are about 20-30% under yield potential due to tilth and drainage problems.	Drainage and soil tilth will improve growth and yields.	Yields will be within the clients objectives.
Animal Habitat, Wildlife: Food, Water, Cover, Shelter	The primary food and cover for wildlife are dichbanks and small wooded areas.	The additional residue will improve food and cover.	Habitat improves from marginal to good.
0			