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Editor's Note

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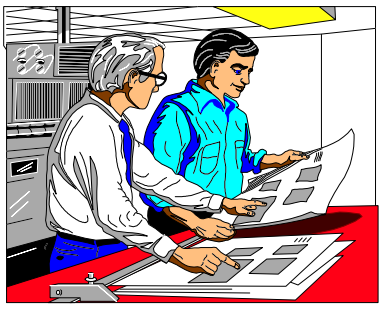
You are invited to submit stories for future issues of this newsletter to Stanley Anderson, National Soil Survey Center, Lincoln, Nebraska. Phone—402-437-5357; FAX—402-437-5336; email—sanderson@nssc.nrcs.usda.gov.



Reasons for Adopting the MLRA Organization Approach to Soil Survey

By Thomas E. Calhoun, Soil Survey Division Program Manager, NRCS, Washington, D.C.

This is the second of two papers providing background information on managing soil survey by Major Land Resource Areas (MLRA's). This paper provides more of the reasons why the change to that organizational concept was made. The first paper dealt more with the evolution or history of the concept.

The current concept of managing a soil survey program by Major Land Resource Areas is primarily a concept of how to update older surveys to meet current standards and then maintain them as relevant parts of a dynamic soil information system.

As states with many out-of-date surveys began to develop plans for updating them, they were faced with the issue of updating surveys while continuing to map in previously unmapped areas without significant increases in funding or staff.

The staff in Texas was one of the first to grapple with this issue as they looked at their needs in the western parts of the Texas Panhandle, or High Plains area. In his report on a meeting held in July of 1980, Paul Unger writes that he

> ...participated in a workshop, sponsored by the Soil Conservation Service, entitled "Field Study to Determine Adequacy of the Soil Surveys in the Texas High Plains." The underlying theme of the workshop was to determine how soil surveys could or should be revised to better meet current or future needs. This was mainly in regard to some of the older surveys that were out of print or those that were made before the development of current standards. (Unger, 1980)

That meeting resulted in a listing of the research needed to help develop new interpretations of soils in the area.

Charles M. Thompson, State Soil Scientist in Texas, in a letter to his State Conservationist reporting on the same meeting, wrote:

> All of the High Plains (MLRA-77) of Texas has soil survey coverage that is considered as modern soil surveys. There are 42 counties that are wholly or partially within the High Plains LRA. All counties have a published soil survey with the exception of Roberts County. Roberts County is scheduled for immediate release. Soil surveys date from the early 1950's to the present time. Some surveys lack interpretations and some have outdated and obsolete interpretations. Some surveys have outdated map scales and base maps. About 18 counties are out of print and unavailable for distribution. Land use changes have rendered some surveys obsolete for operational use. Further, laboratory data are

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Operation of MLRA 94A (East Part) in Michigan

By William E. Frederick, Soil Scientist Liaison, State Office, Natural Resources Conservation Service, East Lansing, Michigan.

With the acceleration of the soil survey program in Michigan in the mid-1980's, soil surveys were initiated in the upper part of the Lower Peninsula. Initiation of these surveys provided a unique opportunity for application of MLRA procedures and principles to completing the "once over" soil survey in this part of the State long before implementation of the MLRA concept really began.

MLRA 94A (Northern Michigan and Wisconsin Sand Drift) consists of 16 counties in the northern part of the Lower Peninsula of Michigan plus portions of 8 additional counties. Over the past 10 to 12 years, there have been five to seven soil survey project crews consisting of Natural Resources Conservation Service, Forest Service, and Michigan Department of Agriculture soil scientists, who have worked very closely together to achieve a seamless survey in this area.

The first steering committee meeting of the MLRA was held in 1991. The committee consisted of all field soil scientists in the project offices, resource soil scientists in the area, state office soil scientists, and cooperators from the Michigan Department of Agriculture; the United States Department of Agriculture, Forest Service; and Michigan State University. Since there has never been an official soil survey project leader for the MLRA, the State Soil Scientist or Soil Scientist Liaison has chaired the committee.

Shortly after the initial meeting of the steering committee, special subcommittees for legend development, special features development, map unit development, and geomorphic or landform map development were initiated. It was decided that, with the completion of the soil survey of Alcona County in 1991, there would be an MLRA soil survey legend and the Alcona County legend would be the first part of that legend. The legend subcommittee reviewed the more recently completed soil surveys in the MLRA and decided which of the map units were viable and would be added to the MLRA legend. At the end of each county field review, new map units were approved and added to the MLRA legend. They were assigned a number that will be used in the county publication as well as in the MLRA legend.

A geomorphic tour of the MLRA was conducted in 1992. In 1998, a landform map of the northern part of the Lower Peninsula, including MLRA's 94A and 96, was completed. The landform committee also proposed a change in the boundary of MLRA 94A. This change will slightly reduce the size of the MLRA and create a new MLRA (94C) in the northeastern part of the Lower Peninsula. The proposal for the new MLRA was based on climatic data as well as landform differences. It was forwarded to the Soils Staff of MO Region 11, where it was approved.

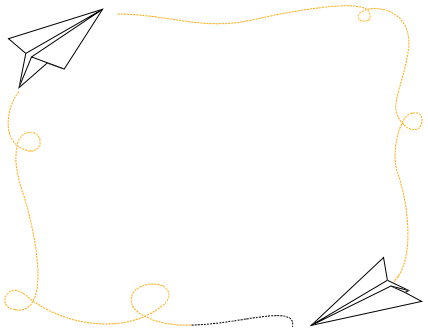
Over the years other special studies have been conducted in MLRA 94A. One of these was a field trip in which the real concept of the Emmet series, which had been mapped extensively in the area, was reconsidered.

One of the most important factors in the success of the soil survey program in MLRA 94A has been the close communication between field soil scientists in different counties. The soil scientists were encouraged to attend some or all parts of soil survey field reviews and were required to attend the field reviews involving counties adjacent to their counties.

Resource soil scientists have also participated in the MLRA project by assisting in mapping, soil investigation, and collection of site index and plant data and by developing a special plant communities table for the soil survey publications.

Since the MLRA concept was initiated in this area, seven surveys have been completed and three remain incomplete. The three remaining soil surveys will be completed in 1999, in 2000, and in 2003.

We hope that a within the next year or two, or before all soil scientists leave this area, an MLRA office for MLRA's 94A, 94C, and 96 will be opened and a project leader selected. The major responsibilities of this project staff will be to review and edit county joins done prior to the MLRA project and thus achieve a seamless survey of the area, to maintain and update the NASIS data base for the MLRA's, and to complete map compilation of the older soil survey projects either for update projects or for addition to the Soil Survey Geographic Database (SSURGO).



Updating the MLRA Soil Survey—Concepts, Chronology, and Application

--Excerpts of a letter from Steve Elmer, MLRA Soil Survey Project Leader, Rock Falls, Illinois, to Mark LaVan, Resource Soil Scientist, Fairfield, Iowa

With the approaching completion of the last remaining countywide soil surveys at the beginning of the 1990's, Illinois began to implement the earlier established national Major Land Resource Area (MLRA) concept in response to requests for updated soil survey information.

In 1991, MLRA offices were opened and staffed at five locations around the State. Each office was given responsibility for specific MLRA's in their area of the State. Planning meetings were held, and guidelines and protocol were established for future soil survey activity under the MLRA approach. Larry Ratliff, Carl Glocker, and others from regional and national levels attended many of these early sessions and helped to provide program direction.

Within the Midwest Region, multistate geomorphic/landform tours and work sessions were held, promoting and implementing the MLRA approach to updating soil surveys. Soil scientists from the field, State Office, and regional levels joined with university soil scientists, geological survey specialists, and others. MLRA 105 and 108 geomorphic tours and a Fort Wayne regional soil series workshop in 1994 are two examples of these activities during the first half of the decade.

By 1993, the first three county update projects had begun in northern and southwestern Illinois. As with the former county soil survey agreements, these projects received input from Federal, State, and local agencies. Two primary objectives of the cooperating agencies were to have the existing soil survey information placed onto digital orthophotography at a scale of 1:12,000 in a digital format and to join the soil mapping across similar landscapes and political boundaries.

Currently, counties interested in updating their soil survey information still sign agreements with the Natural Resources Conservation Service (NRCS) and the Illinois Department of Agriculture, and updates may be completed as individual projects. NRCS has been able to give the counties a cost break for orthophotomaps when several counties agree to request updates together. Such was the case with the adjacent northwestern Illinois counties of Henry, Mercer, and Rock Island, which have identical update completion schedules, have similar soils and landscapes, and are being treated as one project during the field investigation and legend correlation phases. Each county will receive a customized digital soil survey product (maps, manuscript, and data) in accordance with their individual agreement contracts at the conclusion of the project.

Project staff are not remapping during updates, except for partial areas in six or seven of the oldest existing surveys that were completed in the 1940's and 1950's. In all other surveys, existing documentation (correlation documents, lab data, field notes, pedon descriptions, etc.), the large knowledge base of experienced soil scientists, new and/or recent information within the county or region, and field transects as needed are used to update existing soil survey information.

Most update projects are expected to take 2 to 4 years to complete. This time period is not unusual, but updating two to seven of these county projects at the same time with the same or a smaller crew requires fresh thinking. For example, each of the four adjacent counties in the Quad Cities area that our team of three soil scientists is currently updating simultaneously has the same 3-year schedule (1997-2000) not only for completing whatever fieldwork is needed but also for correlating the county legend so that it joins with the adjacent update counties and conforms to current MLRA standards and guidelines. The schedule also includes completing map recompilation onto orthophotography, editing the data base in the new NASIS format, and developing computer-generated manuscripts based upon the new product.

With that kind of workload and timetable, remapping is not possible. In most cases it is not necessary. As the soil survey crews of the past several decades applied their experience, they provided a good record of soil conditions that can be built upon. With the exception of possible data gaps, such as subsequent soil-parent material-geological studies and research findings, and nonjoins with adjacent counties, existing information can be brought up to today's standards.

Fieldwork in the form of transects or selected block mapping on specific landscapes can normally be completed during the early stages of each project. The evaluation of soils and landscapes

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on a regional basis, even when individual counties are being updated, can also result in a more accurate description and linkage of landscape similarities and differences. This regional evaluation is a central tenet of the MLRA concept.

All MLRA soil survey activities will include, among other things, acceptable joins with adjacent update projects. On the other hand, update project information may not have perfect joins with existing adjacent county soil surveys if more recent data and soil knowledge dictate otherwise. The goal is to improve upon the accuracy and consistency of existing information regarding soils, geology, and parent material and may involve recorrelating soils in adjacent counties when information in those areas is updated at some future date.

Standards provided in the National Soil Survey Handbook, the *Keys to Soil Taxonomy*, the *Soil Survey Manual*, and regional and State MLRA and cooperating agency guidelines are being followed. When Illinois began implementing the MLRA concept in the early 1990's, it was decided that MLRA legend(s) would be developed from each county update project legend correlated from that point on. Our initial MLRA 108 soil legend, for instance, was the correlated Bureau County soil legend. This survey area was the initial MLRA soil survey update project completed in MLRA 108.

Pedons representing each approved map unit were placed in an MLRA series/map unit file. Map units that are correlated in Bureau County and are also on the legends of subsequent county update projects in MLRA 108 are considered already approved on that subsequent legend. The same typifying pedon is used for that map unit wherever it is encountered, as long as it is considered a match. Pedons encountered in subsequent updates that were not mapped in the Bureau County project are correlated and added to the MLRA legend. The MLRA legend is thus built upon with each update project.

We are using the Official Series Description (OSD) type location pedon if it represents a map unit on a county legend and is within or adjacent to the MLRA. These steps streamline the legend development process and avoid unnecessary duplication of effort. These benefits will become more evident with each subsequent update, as the data base will already be in place for an increasing number of the map units.

We are proposing new soil series where appropriate and necessary. A new series may be warranted because of recent studies, as a result of separating substratum phases or other phases, because of changes needed when soil properties extend the series control section from 60 to 80 inches as defined by *Soil Taxonomy*, when soils have been correlated as taxadjuncts in the past, or for other reasons. Proposed new series are sent to the regional MLRA office and then routed to adjacent states and partners for comments.

In summary, the MLRA soil survey project leader must gain as much knowledge about the MLRA survey area as possible. MLRA project leaders are the first-line correlators for an MLRA. They are responsible for coordinating the data for many counties simultaneously. They are no longer managing the data for one survey at a time. The MLRA soil survey concept is the future and will bring the National Cooperative Soil Survey effort into the 21st century.

Recipe for Baked Glasses

By Stanley Anderson, Editor, NRCS, National Soil Survey Center.

• Preheat oven to 350 degrees F.

• Season large turkey breast with salt and pepper.

• Place the turkey breast in a cooking pan and cover it with tinfoil.

• Roast the turkey at 350 degrees (20 minutes for each pound).

• About 1/2 hour before roasting is complete, remove the tinfoil and insert a meat thermometer in the fattest part of the turkey.

• Wait about 15 minutes before checking the temperature.

• After opening the oven door, remove your glasses to keep them from steaming over.

• Pay no attention to where you place the glasses.

• Close the oven door.

• Turn up the heat to 450 degrees so that the turkey will brown.

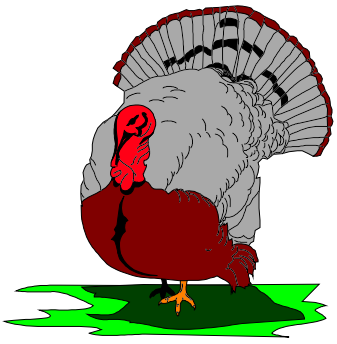
• Immediately start looking for your glasses.

• Check everywhere throughout the house, including the attic and the basement.

• Don't forget to check in the freezer.

• After about 15 minutes of looking, check in the oven.

• If the glasses are golden brown (like the turkey) and have shattered lenses, stick a fork in them. They're done.



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scarce to absent in most surveys. Many soil series concepts have changed with the implementation of Soil Taxonomy. (Thompson, 1980)

Later in the letter, Charles indicates the group's response to the needs for current and future soil surveys:

The group responded to the question by listing several ideas and listing needs. The group felt that one approach to updating would be to use the MLRA as the boundary for resource area interpretations. This approach would provide one interpretative document for the entire MLRA. (Thompson, 1980)

In his summary statement Charles identifies at least three phases in the concept of updating the High Plains MLRA:

1. Identify the needs, status of surveys, and set up work plans and memoranda of understanding for accomplishing the jobs.
2. Update of soil survey interpretations for the MLRA. Preferably in one document that is tied to existing maps.
3. Selective re-mapping and re-publication of counties where the highest priority needs are identified (Long range plan). (Thompson, 1980)

The initial concept established at that time was to bring the interpretations of the entire MLRA up to current standards and needs in one document for the entire area.

The soil survey staff in Oklahoma reviewed the correspondence from the High Plains workshop and asked to be included in the effort. A larger workshop was organized in 1982 to orient all the staffs concerned, including Texas, New Mexico, Oklahoma, and Kansas. At that meeting, Wes Fuchs highlighted the following items in a presentation on alternatives for updating:

1. We need to consider having one supplement (new manuscript) for large part of MLRA-77 with similar soils, land use, etc.
2. We need to integrate the soil survey data into an existing state geographic information system.
3. We need to digitize the survey.
4. We need to prepare one legend for eight survey areas (areas of similar soils)
5. We need to have one correlation document.
6. From all this we will provide each field office with sets of maps for their district and copies of the publication. (Fuchs, 1982)

This outline by Wes more nearly defined the update process as we currently think of it. It was a plan to bring a patchwork quilt, as described by Dennis Lytle in several presentations on the concept, of older surveys of an area with similar soils, climate, geography, and land use up to date under one legend so that interpretations could be made that are consistent across county, state, and regional lines. Subsets of this area, if needed, could be delineated for the purposes of publications or other tailored reports.

Over the next 10 years, the need for this approach nationally continued to be advocated by some and was studied at the National Soil Survey Center. In 1996, the opportunity to implement the MLRA approach to soil surveys was presented. Factors that helped to make the MLRA organization for soil survey a reality included: 1) near completion of initial soil survey coverage for private lands in the United States; 2) implementation of the National Soil Information System (NASIS); 3) the need for and use of multicounty, statewide, and national data sets for farm bills and by other agencies; 4) requests by states to have their soil survey funding provided by MLRA soil survey areas; 5) an initiative to digitize all published soil surveys; and 6) the 1996 Agency Reorganization driven by Vice President Gore's National Performance Review and the Federal Deficit.

A brief discussion of the importance of each of these factors is necessary if one is to understand how the whole picture developed.

1. The near completion of the initial soil survey coverage on the nation's private lands, about 91 percent at the time of implementation, was important from the programmatic standpoint. The soil survey program had been in existence for almost 100 years, and modern soil surveys were available for much of the country. The Office of Management and Budget as well as congressional committees continued to ask when the program would end. The concept of continuing the program in perpetuity with its existing structure was not politically viable. A significant change was needed to demonstrate the agency's accomplishment of its significant task of providing soil survey coverage for the nation's private lands and to change the program focus from producing data to developing and using information based on the soil survey data the agency had been collecting over the past 40 years.

Acknowledging that there was still some work to be done on initial surveys, the agency wanted to elaborate on and market several new strategies for the soil survey program. First, the

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soil survey program was an information program, and an information life cycle management approach was necessary to maintain the data set of soil survey information (valued at a replacement cost of 5 billion dollars) the agency had developed. The concept of each soil survey needing to be remapped after about 25 years was obsolete in light of current technology and lack of political support. Second, although there was still work to be done in providing initial soil surveys for remaining private lands, in many cases the need to modernize older mapping was more urgent. These two needs were not mutually exclusive but could be met more efficiently under a geographically based approach to project soil surveys. Third, some efficiencies could be realized by staffing for quality assurance of project soil surveys on a geographic basis. Fourth, there was a need for more emphasis on meeting customer needs by diversifying the soil survey products, using soil information in implementing the agency's programs, and meeting other resource planning needs. These "technical services" were best conducted on a political (state and county) basis since the majority of customers were accustomed to receiving services on that basis, and the partnerships developed through the National Cooperative Soil Survey were primarily developed around state and county entities.

2. The implementation of NASIS was significant in that it freed the soil survey program from the notion that each soil survey must be a discrete entity unto itself. Separation of map unit data from the map unit delineation provided a mechanism to more easily correlate mapping across county, state, and regional boundaries and to coordinate soil characteristics and interpretations across these boundaries. In NASIS, legends could be managed by several different soil survey areas rather than by just one. Because NASIS is an accumulative data base, it helped to focus on areas lacking data or having data that was inconsistent within areas with similar soils. It provided a mechanism for improving the quality of soil data and a new approach to updating and filling in data gaps.

3. The 1985 Farm Bill was the first that tied commodity crop payments to conservation. The concept of Highly Erodible Land, a new soil interpretation, was developed. Landowners were paid to place their most highly erodible land into conservation reserves, and conservation plans that would reduce erosion to acceptable levels were required if the landowner was going to qualify for commodity crop subsidies. It was no longer acceptable to have discontinuities in soil mapping and in interpretations between counties, states, and regions. Such inconsistencies could, on one piece of land, cause a farmer to qualify for the Conservation Reserve Program on one side of a county line and not on the other. The soil did not change; however, the soil information might differ county by county. A mechanism was needed to bring the soil surveys of the nation up to standards and to eliminate many of these inconsistencies as efficiently and expeditiously as possible.

Understanding the concepts inherent in soil classification makes the mechanism obvious. Instead of looking at soils on a political (county by county) basis, soil surveyors look at soils throughout their entire, normal extent on the landscapes on which they occur and ensure that the information about those soils is consistent across their respective landscape positions. This approach allows the soil surveyors to bring a geographic area up to standards and to focus the collection of additional data on those data gaps that have been identified in the data set. Carrying this thought process one step further, grouping landscapes within similar climatic and physiographic regions for the purposes of mapping, updating, and maintaining soil surveys leads to the MLRA structure for soil survey project activities. These same issues and solutions surfaced when other agencies, such as EPA and DOD, tried to use soil surveys as sets of data rather than as discrete soil survey areas.

4. The issue of states requesting that their soil survey funding be provided on the basis of MLRA projects was not a major factor in the decision to use the MLRA approach, but it was an indication of interest by states in the MLRA concept and in having some accountability for work on MLRA projects. At that time, allocations by MLRA's could not be made since only some states were piloting the MLRA approach to soil survey. Funding some states on that basis and other states on another basis would have led to inequities in state funding. Because of that possibility, the NHQ soil survey program manager convened a group of state soil scientists to help develop a "funding formula" in 1993. The resulting formula projected a total soil survey workload in each state and consequently each state's percentage of the total national soil survey workload. That percentage of the total national workload was (and still is) the percentage of the funding available for state soil survey operations recommended for each state. With the formula in place, it was no longer relevant to funding whether the soil survey project work was on a geographic or a political basis.

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Declining or level budgets in the program after the push for the 1985 Farm Bill caused many states to leave staff positions vacant. At the same time, the need for more soil scientists to provide technical assistance for implementation of the various provisions of the farm bills caused a migration of staff out of soil survey project activities. Because of the limited budgets and the increased need for technical assistance, 16 State Soil Scientist positions were vacant. The program management decided to take advantage of the opportunity to implement the new approach to soil survey project work and to reemphasize the need for strong program leadership.

5. Digitizing soil surveys brought the issues of inconsistencies between soil survey areas into even sharper focus. Mismatched delineations and inconsistent interpretations of soil information across county, state, and regional boundaries become quite evident when surveys are managed by GIS. It also became apparent that those using GIS capability could not deal with the 2,900 individual soil survey legends when trying to analyze resource concerns for areas broader than one soil survey. The MLRA approach could eventually lead to the consolidation of those 2,900 legends into 204 legends that would not change with changing political boundaries and at the same time could improve the quality of the soil survey data by eliminating the mismatches and filling in the data gaps.

6. The final issue was the 1996 Agency Reorganization driven by Vice President Gore's National Performance Review and the Federal Deficit. The impact of declining and level budgets has already been discussed in terms of vacant State Soil Scientist positions. The other major impact was from the precepts of the National Performance Review. Vice President Gore's thrust was to reform government by reducing middle management, using the capabilities of the "information highway," and reengineering old bureaucracies into customer-focused, responsive, flexible organizations that empower the innovation of their employees. Along with these initiatives, Congress passed the Government Performance Results Act, which required that each program develop a strategic plan to guide its operations and with which to measure its accomplishments.

The NRCS (actually USDA in total) responded to these executive- and legislative-branch initiatives by downsizing national, regional, and state staffs, placing more employees at the field (direct customer contact) level, changing the regional office role in the agency, and delivering technology through new channels. This reorganization of NRCS provided the opportunity for the soil survey program to complete its reengineering process.

Reengineering was, in fact, what was being done to the program. NASIS was completely changing the way data were handled. A data base was being developed so that statistically reliable statements could be made about the composition of map units and about the reliability of interpretations. Tailoring of interpretations to meet local conditions was now possible, and the old standard national interpretations were quickly losing their significance. Management tools were being developed to help more effectively manage project activities. Reports could be generated directly from NASIS, freeing staff from much of the tedium of editing manuscripts. Digitizing soil surveys using orthophotography was bringing the spatial aspects of the surveys into the field office so that areas of interest to clients could be identified and tailored reports with maps could be developed to meet specific needs. The standard published soil survey report was no longer the sole product of the program. Data and information use rather than production was becoming the program focus. All aspects of the program were being changed from data gathering to more data management, information development, data use, and interpretations. It was time to complete the reengineering process and institute a new organizational structure to carry out the newly reengineered program.

The basic precept of the new structure, the MLRA Office concept, was rather simple. The soil survey process (the inventory process) was best carried out on a geographic basis since suites of soils occur geographically, and programs were best implemented on a political basis since customers and partners were organized primarily around municipal, county, state, and regional entities.

The process of developing soil survey legends around MLRA's would be initiated as soil surveys were approved for updating, and quality assurance would be provided by the MLRA Office for a group of MLRA's. Relocation of staff from the National Soil Survey Center closer to the field where they would have a more intimate knowledge of the soils occurring in their assigned geographic area accomplished several things. It met the agency direction of locating staff closer to the field, and it moved some of the higher graded employees out of the National Soil Survey Center. This transfer of employees made the center less of a target during the agency downsizing, thus protecting a critical mass of technical support personnel essential for continuing the innovations

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being implemented in the soil survey program. Technical guidance for project activities was also to be provided through the MLRA staff. Consolidation of the legends into MLRA legends would facilitate using soil digital and attribute soil information in GIS. Data quality could be improved over an entire geographic area since work on a particular soil or landscape would apply throughout its extent rather than terminating at a county line.

Soil survey project staff would be located so that they could work out of one location on many different survey subsets of the MLRA for a significant period of time. As a result, the need for relocation at the conclusion of a survey subset was reduced.

Where appropriate and where opportunities permitted, initial project surveys could also be organized around the MLRA concept.

The State Office staff and the State Soil Scientists were to focus their efforts on using existing soil information, providing the technical assistance needed to implement the agency programs, and meeting customer needs. The State Soil Scientist was responsible for maintaining political contacts within the state and leading the National Cooperative Soil Survey efforts. State work-planning conferences would be reenergized to help set the work priority for a state, alternative sources of funding would be cultivated to help continue the modernization efforts within each state, and appropriate products that meet the needs of customers would be provided.

The MLRA approach to soil survey project management was approved by the agency leadership and instituted with the beginning of fiscal year 1996.

Seventeen MLRA Offices (MO's) were established. There was no magic about the number. It was recommended by a 25-member multidisciplinary team (NRCS, NSSC, 1995), which looked at groupings of MLRA's and workloads and responded to the need for a reasonable number of offices to handle the remaining initial project and ongoing updating project activities of the program.

The program has been operating for 2 years now under the new structure. As with any radical change (and this was a traumatic change for the agency), the full benefit will not be realized immediately. People and institutions both must shed the old as they get comfortable with the new. Benefits are being realized. The digitizing program is now in full swing, and the MLRA Offices are providing the quality assurance necessary for certification where appropriate. Inconsistencies between counties, states, and regions are being addressed and corrected. Data quality is improving. NASIS is on the verge of being totally implemented, and program accountability is probably the best it has been in years. For fiscal year 1998, there is an increase in the acres goaled for soil survey after years of declining goals. There is renewed interest on behalf of State Conservationists and many partners. Many states are holding work-planning conferences where none have been held for several years.

Adjustments will probably be needed to some of the MO areas. One MO has a workload that is much too large to be realistically managed, and some adjustments are needed to better meet the objectives of reengineering.

The future, however, looks bright. The agency is proud of its soil survey program. The centennial of the program will be celebrated in 1999. It will highlight the premier program of its kind.

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