ARS SENIOR STAFF CONFERENCE

Ladies and Gentlemen--Co-workers in Agriculture.

I believe that there is a growing realization today of the importance of our physical resource base in planning for a quality America. This understanding is reflected in a demand for more and better soils information, for flood plain data, for sediment control information, and many other kinds of facts. As our data guides more and more individuals and organizations in making sound land and water planning decisions, it can't help but result in an increased awareness and appreciation of our programs in research and action.

I believe, too, there is a growing understanding and concern for environmental improvement on the part of the people of this Nation, and that means to us more and better soil and water conservation. In no sense do I minimize the associated problems. But an increased public awareness is a requisite to getting more resource conservation on the land, and today we have that asset.

Thanks, also, to the efforts of many there is a growing understanding of the linkage between all-out food and fiber production and the need to protect and enhance our soil and water resource base. Here again we can and are making a major contribution; it is still the basic mission of my Service and yours, too, I believe.

We do have a strong and viable partner in the Nation's 3,000 districts. They are assuming broader and broader responsibilities in the conservation arena today. Our work together is resulting in an increasingly better working arrangement with State and local agencies.

Notes used by Norman A. Berg, Associate Administrator, Soil Conservation Service, U.S. Department of Agriculture at ARSSenior Staff Conference, October 23, 1974

We both recognize that our greatest resource in these difficult times is the skill and dedication of our employees. We can think of no better way to mark our four decades of progress than by demonstrating to the people of this country that we are still young enough to be searching constantly for new ideas, new approaches, and new techniques of resource conservation. Therefore, the Administrator has asked the State Conservationists throughout this next year to intensify their efforts to encourage SCS employees to search for these new approaches and to submit those that appear to have real promise for approval so that we can capture fully their benefits.

Let me read you the brief foreword to the SCS Framework Plan, which is now three years old.

> "The mission of the Soil Conservation Service is to assist in the conservation, development, and productive use of the Nation's soil, water, and related resources so that all Americans may enjoy:
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> ...Quality in the natural resource base for sustained use;
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> ...Quality in the environment to provide attractive, convenient, and satisfying places to live, work, and play; and
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> ...Quality in the standard of living based on community improvement and adequate income."

Three specific National Objectives for 1975 for SCS are:

1. Improve the quality of conservation plans to provide for a complete conservation system, contribute to all three SCS mission objectives, and serve as a basis for long-term conservation contracting or compliance with State erosion and sediment control laws.
2. Give priority to resource management systems that fully provide land treatment for control of nonpoint sources of pollution.
3. Encourage conservation districts, States, local units of government, and the private sector to provide more technical services in the installation and maintenance of conservation measures.

We are encouraging cooperators with such plans to make firm decisions for the use of all their land as soon as possible.

Many states in their concern for nonpoint source pollution control have also passed legislation requiring the development and implementation of a conservation plan in cooperation with the local conservation district.

A year ago the USDA launched its "Produce More, Protect More" campaign, as millions of formerly set-aside acres went back into production. No one could foresee then, of course, that the 1973-74 crop year would be notable for some of the worst weather for agriculture in many years. The bad news began with drought in the southern high

plains, followed by spring floods in the northern plains and elsewhere, and a disastrous series of rainstorms in the midwest, followed by widespread drought in parts of the Plains and the Corn belt.

As if all this were not enough of a trial, the Midwest experienced an unseasonable freeze in September and Louisiana had a hurricane in the cane fields.

These setbacks underscore the fact that farmers and ranchers simply cannot afford to let up on conservation. We need to redouble efforts to assist them. We need to help them use soils information to select the right kinds of acres for crops and we need to show them how to protect those acres from erosion. We want to help farmers make their acres as productive as possible, but we want to make sure that the cropping systems leave the land resilient enough to bounce back after flood drought, or what have you.

Farmers and ranchers now have about seven million more cattle and calves than a year ago, and 20 million more than five years ago. More and more of them will be shipped to market as "grass fat" cattle. SCS is in a leading position to assist ranchers who are producing meat on native grazing lands. We have joined five other USDA agencies in reporting to Assistant Secretary Long on opportunities to do this. Accelerating technical assistance to all range operators will be vital.

We need to strengthen our efforts to develop and implement planned grazing systems on native grazing lands, to permit higher rates of stocking while bringing more rapid improvement of the plant cover and the land resource. We need to push all-season pasture systems where

winters are mostly open. We also need to work with producers on renovating pastures with no-tillage methods that can make them productive in one season instead of two or three.

We must help all landowners design conservation systems that will:

--Use land within its capability;

--Meet runoff and erosion control standards;

--Be flexible enough to adjust to unusual market conditions, and

--Keep options open for shifting the land to other uses that are within its capability.

We are requesting, also, a speed up of the completion of soil surveys, particularly in areas that are experiencing accelerated change in land use.

Some places are undergoing change much faster than others: The areas adjacent to big cities; corridors along some major highways; localities with a boom in vacation or retirement homes. Many of these changes in land use are practically irreversible. If the land use change turns out to be a mistake--and many are turning out that way--the indivisual and the community may have to pay heavy penalties in the form of higher taxes, poor drainage, falling property values, and neighborhood blight. Planners, zoning boards, developers, and law makers are clamoring for accurate information on which to base rational decisions about land use, and soil surveys are one important contribution that we can make to the process. So it is imperative that we get the surveys finished for these areas of critical change and get them into the hands of the people who need them.

One of these places is the Fort Union area in the Northern Great Plains, where surface mining for low sulfur coal is just beginning. The Senate cited the urgent need for soil surveys in this sector in the report of the appropriations committee this year.

Several of us went to the Fort Union area for a first-hand look and saw some encouraging first efforts. The key to doing the job right from a conservation or reclamation standpoint is first, to complete a soil survey of the areas to be mined, and second, to develop with the landowner or operator a plan for each step of the operation, from necessary stockpiling to final seeding.

With proper planning, reclamation can be accomplished. We have a real challenge to work with everyone who can help make it a reality.

In all our programs today, environmental assessment is an integral part of the planning process. It is important, not because it is required, but because it is the right thing to do. Assessments must be designed to be a practical and useful means for:

--Determining the probable impacts of major SCS-assisted actions on the environment,

--Testing relative merits of various alternatives,

--Providing a basis for avoiding or minimizing adverse impacts in plan formulation, and

--Serving as a file for administrative review in deciding which major SCS-assisted actions require an environmental impact statement, or on which an environmental impact statement is <u>not</u> required.

We have published detailed guidelines for developing environmental impact statements and a suggested procedure for conducting environmental assessments. We will do all we can to help our staffs to use these tools with judgment and reason.

Now, with 40 years of experience, I would hope that we have learned enough to foresee many resource problems and that we can take steps to prevent them, instead of letting events dictate to us, as they did in the thirties. Instead of corrective conservation, I think we can practice some protective, creative, conservation.

International Programs. You may have learned of our involvement in a U.S.--Canada study of Great Lakes pollution from land use activities. Substantial progress is being made on several phases of this most important study. One of the milestones is the completion of a state-of-the-art assessment of the relationships between various land uses and water quality. The reports will be made available to you when they are printed.

Another significant spin-off, and one that ties in with land inventorying and monitoring, is a land use inventory of the Great Lakes Basin using machine processed ERTS satellite data. The results so far are encouraging, and with some fine tuning, we should soon have a cost-effective tool for inventorying land use on large areas such as river basins and RC&D projects.

We focus on the following fact of life: That each State Conservationist is going to have to find ways to get his work done without significant increases in manpower--and possibly with fewer people by the end of the year than he has today.

And I say this knowing full well that the Service faces continuously enlarging responsibilities!

We must do the same thing at the office that we do at home with our personal budget and resources: Decide what is <u>most</u> important and what is <u>least</u> important and either prune off those low priority items or find somebody else to help do them.

Identification of Major SCS Research Needs
October 1974

Environmental Quality

1. Develop measures for control and management of nonpoint sources of pollution that include sediment, pesticides, plant nutrients, heavy metals, and salt relate.

2. Waste disposal systems. Development, evaluation, and management of plants suitable for recycling waste resources on land. Relate these to decay and mineralization rates of plant nutrients including manures, and tolerances to drought, salt, and pesticides.

3. Air quality including effects of windblown soils and pesticides.

4. Reclamation of critical eroding areas such as stripmine lands.

5. Further validate use of soil loss predictions on construction sites taking into account filled and compacted soils, long and steep slopes, irregular slopes, and erodibility of subsoils.

6. Prediction of gully erosion involving gully erosion initiation and growth, concentration points of storm runoff, and control of runoff.

7. Relate erosion to sediment yield ratios.

Conservation Tillage

1. Development of conservation tillage systems in zones of short growing seasons.

2. Adapt systems to crops other than corn, sorghum, soybeans, and small grain.

3. Make further developments in systems armed at minimizing energy requirements and "for producing more with protection."

Water Management

1. Erosion control and maximum irrigation stream sizes to meet increased crop production.

2. Water movement in key soils and control of salinity under drip irrigation systems.

3. Integration of various transport models "--runoff, sediment and nutrients into a model that is workable for solving field problems.

4. Channel environmental concerns and related design adjustments necessary to reduce conflicts and problems.

5. Treatment methods to overcome solid dispersion and channel stability problems of channels.

Research Needs

Agricultural research needs appear to focus primarily on the objective measurement and assessment of damages from wind erosion activity to short- and long-run productivity and crop yields and on environmental impact. The following specific research opportunities can contribute to the knowledge and technology for improving the measurement and assessment of wind erosion conditions and activity:

-- To assess the impact of wind erosion on long-term soil productivity and crop yields: obtain information from "bench mark" soils relating crop yield to soil depth or topsoil removed and determine specific soil physical or chemical properties that need to be measured to monitor land damage from wind erosion objectively.

-- To assess wind erosion abrasive damage to crops: (1) continue and expand present research to include economic analysis to establish sandblast tolerances for various crops, and (2) develop a quick and easy test, e.g., like cold hardiness tests for field assessment of plant damage and prediction of yield and economic return.

-- To improve accuracy of the wind erosion equation and facilitate its use in assessing land in condition to blow: (1) further evaluate and define the climatic factor by examining soil drying rates and dryness of particles as functions of hydraulic soil properties and climatic variables, (2) incorporate probability functions for the dynamic variables, especially the climatic factor, and thus convert equation from its present deterministic to a stochastic model, and (3) determine seasonal variation of soil erodibility as influenced by climate and soil properties.

-- To quantify erosion, develop standards for reporting severity of soil blowing for individual windstorms, and assess environmental impact: (1) develop a generally applicable flux equation to predict rates of soil erosion during windstorms, and (2) determine percentages of eroding soil suspended and the residence time and fate of various sizes of soil particles.

-- To both assess land in condition to blow and land damaged: evaluate the feasibility of and improve accuracy of remote sensing by determining light wave band that best describes soil surface erodibility and the influences of soil surface roughness and texture on spectral response.

-- To permit application of the wind erosion equation to determination of large-scale regional assessments of land damage and land in condition to blow: develop data bank and techniques for using remote sensing supplemented with ground truth of climatic data, statistical sampling of benchmark soils at specified times, and probabilities of precipitation, wind, and soil drying.

-- To develop complete farming systems that incorporate water management systems with crop production and wind erosion control systems: research is particularly needed to develop technology for controlling erosion on the vast sandy soil crop-producing areas.

-- To predict impact of emergency tillage accomplished early in the erosion season on total seasonal erosion: evaluate the effectiveness and duration of effectiveness of various emergency tillage implements such as chisels, furrow openers, sandfighters, etc., on soils of varying texture and water content.

-- To obtain statistically significant measurements of land damaged, land in condition to blow, etc: (1) conduct studies and use simulation techniques to measure variability, (2) determined required sampling populations, and (3) develop statistical designs.

-- To better quantify erosion and land damage: develop measuring devices and samplers which can monitor surface creep, saltation, and suspended soil flow in remote locations without constant human attention.

-- To establish and quantify the extent of non-agricultural adverse effects and costs of soil blowing: determine effects of blowing soil and sand on electrical switching devices, farm tractors, and other types of implements, air travel, automobile travel, human health, and livestock health.