

■ Natural Resources Conservation Service: A Productive Nation in Harmony with a Quality Environment

As USDA's lead agency for conservation technical assistance, the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service) works closely with other USDA agencies involved in conservation priorities, including the Consolidated Farm Service Agency; the Agricultural Research Service; the Forest Service; and the Cooperative State Research, Education, and Extension Service. Through these agencies, USDA administers a wide range of programs to address this country's natural resource challenges as they affect private lands in agricultural and other uses.

■ NRCS Major Accomplishments in FY 1994	
■ Decisionmakers receiving technical services:	<i>1.1 million</i>
■ Acres treated annually through conservation technical assistance:	<i>63.1 million</i>
■ Tons of soil erosion reduced through conservation technical assistance:	<i>244 million</i>
■ Acres mapped by NRCS:	<i>25.4 million</i>
■ Number of soil surveys ready for publication:	<i>53</i>

Our well-being depends on healthy, productive, and diverse ecosystems and their sustainable use. Just as soil, water, and habitat are interrelated, the programs that address these resources are interrelated, and programs that help one resource also benefit others. If you stop erosion, for example, you also enhance soil productivity and protect water and air quality. Improving the environment can enhance the economic health and future of communities throughout the United States.

The mission of NRCS is to provide leadership and administer programs to help land owners and land users conserve, improve, and sustain our natural resources and the environment, while enabling the United States to continue serving as the world's preeminent producer of food and fiber.

A Partnership Approach to Resource Conservation

For six decades, NRCS employees have worked side-by-side with landowners, conservation districts, State and local governments, and urban and rural partners to restore and enhance the American landscape. The agency helps landowners and communities take a comprehensive approach in conservation planning, going beyond soil to an understanding of how all natural resources—soil, water, air, plants, animals—relate to each other and to humans. The agency works to solve the natural resource challenges on the Nation's private lands—reducing soil erosion, improving soil health and rangeland health, protecting water quality and supply, conserving wetlands, and providing fish and wildlife habitat.

Most NRCS employees serve in USDA's network of local, county-based offices, including those in Puerto Rico and the Pacific Basin. The rest are at State, regional, and national offices, providing technology, policy, and administrative support. They serve all people who live and work on the land. Nearly three-fourths of the agency's technical assistance goes to helping farmers and ranchers develop conservation systems uniquely suited to their land and their ways of doing business.

The agency helps rural and urban communities curb erosion, conserve and protect water, and solve other resource problems. American Indian tribes, Alaska Natives, Pacific Islanders, and other native groups work with NRCS on a variety of initiatives that include resource inventories and the adaptation of conservation programs to fit the special needs of their people and their land. Also, countries around the globe seek NRCS advice on building their own conservation delivery systems and in coping with severe natural resource problems.

Conservation is the work of many—no one can do it alone. NRCS relies on many partners to help set conservation goals, work with people on the land, and provide services. In addition to local conservation districts, State conservation agencies, and other State and Federal agencies, the partners include NRCS Earth Team volunteers, AmeriCorps members, agricultural and environmental groups, and professional societies.

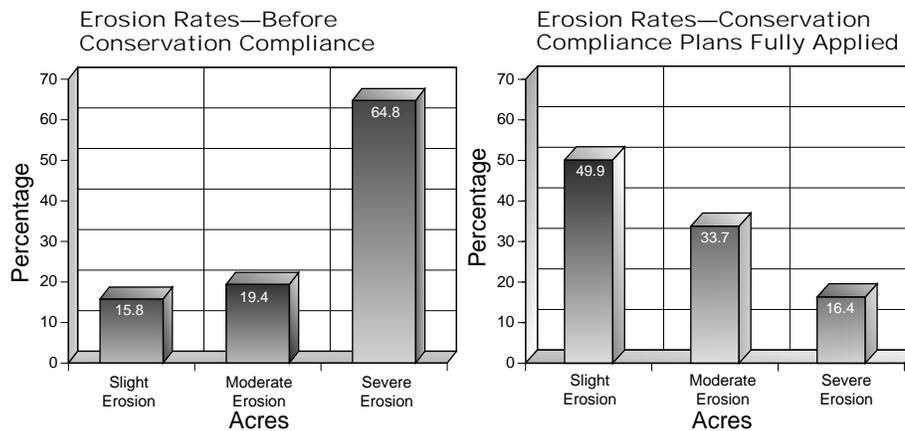
Conservation Technical Assistance

NRCS provides conservation technical assistance to land users, communities, units of State and local government, and other Federal agencies in planning and implementing natural resource solutions to reduce erosion, improve soil and water quantity and quality, improve and conserve wetlands, enhance fish and wildlife habitat, improve air quality, improve pasture and range conditions, reduce upstream flooding, and improve woodlands. The purpose of applying these solutions is to sustain agricultural productivity and protect and enhance the natural resource base. This assistance is based on voluntary local landowner cooperation and recognizes the value of educational, technical, and financial assistance.

The 1985 Food Security Act, as amended by the Food, Agriculture, Conservation, and Trade Act of 1990, calls for NRCS to implement the following provisions: highly erodible land, wetland (swampbuster), Wetlands Reserve Program, and Conservation Reserve Program. NRCS technical field staff make highly erodible

Figure 10-2.

Soil erosion rates before and after the 1985 Food Security Act



Farmers have made tremendous progress in the last 10 years in reducing soil erosion on the Nation's most highly erodible cultivated cropland.

Categories of erosion

- Slight: Erosion rates at or below tolerable levels
- Moderate: Erosion rates between one and two times tolerable levels
- Severe: Erosion rates more than two times above tolerable levels

SOURCE: USDA Natural Resources Conservation Service, Conservation Compliance 1994 Status Reviews, preliminary data as of February 9, 1995

land and wetland determinations, and they assist land users in developing and implementing necessary conservation plans. NRCS is also the lead Federal agency for delineating wetlands on agricultural lands for purposes of complying with the provisions of the Food Security Act and Section 404 of the Clean Water Act. NRCS administers the following five cost-share programs:

1. Wetlands Reserve Program
2. Great Plains Conservation Program
3. Colorado River Basin Salinity Control Program
4. Water Bank Program, and
5. Forestry Incentives Program.

NRCS also provides technical assistance to individuals and groups participating in the Agricultural Conservation Program and Conservation Reserve Program.

Soil Surveys

NRCS conducts soil surveys cooperatively with other Federal agencies, land-grant universities, State agencies, and local units of government. Soil surveys provide the public with local information on the uses and capabilities of their soil resource. Soil surveys are based on scientific analysis and classification of the soils, and are used to determine land capabilities and conservation treatment needs. The published soil survey for a county or designated area includes maps and interpretations, with explanatory information that is the foundation of resource policy, planning, and decisionmaking for Federal, State, county, and local community programs.

Snow Survey and Water Supply Forecasts

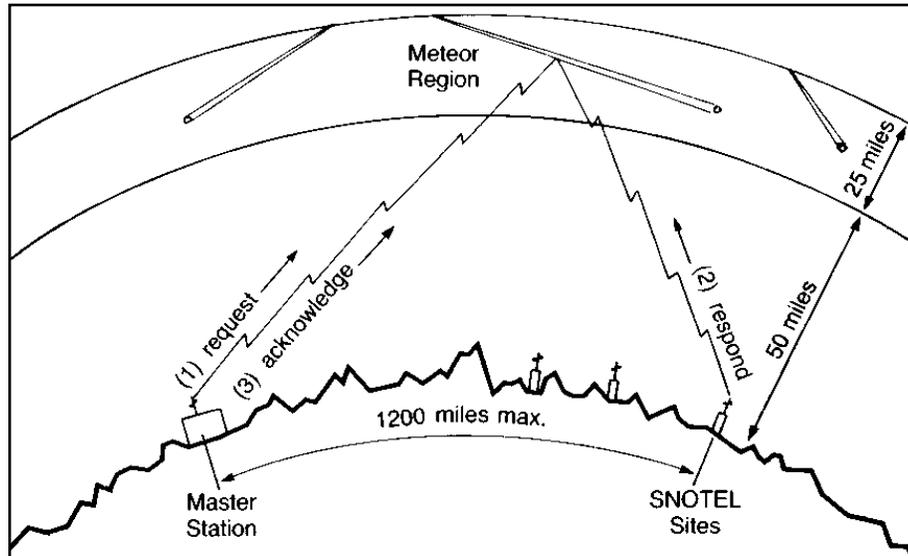
NRCS field staff collect data from more than 1,200 remote high mountain sites to provide Western States and Alaska with vital information on future water supplies. The data are assembled and analyzed and water yield forecasts are made. Forecasts provide estimates of annual water availability, spring runoff, and summer stream flows. Water supply forecasts are used by individuals, organizations, and State and Federal agencies to make decisions relating to agricultural production, fish and wildlife management, municipal and industrial water supply, urban development, flood control, recreation power generation, and water quality management. The National Weather Service includes them in their river forecasting function.

Plant Materials Centers

NRCS employees at 26 Plant Materials Centers assemble, test, and encourage increased plant propagation and usefulness of plant species for biomass production, carbon sequestration, erosion reduction, wetland restoration, water quality improvement, streambank and riparian area protection, and coastal dune stabilization, and to meet other special conservation treatment needs. The work is carried out cooperatively with State and Federal agencies, commercial businesses, and seed and nursery associations. After species are proven, they are released to the private sector for commercial production. In 1993, NRCS developed cultivars that were turned over to others to produce plant stock that generated \$211 million in revenue for private sector nurseries and seed companies.

Figure 10-3.

Snow surveys and meteor burst technology



Water supply forecasting is enhanced by automated snow survey data collection through a snowpack telemetry (SNOTEL) network. This figure depicts the meteor burst technique used to transmit data from remote SNOTEL sites.

Billions of sand-sized meteorites enter the atmosphere daily. As each particle heats and burns in the region 50 to 75 miles above the Earth's surface, its disintegration creates a trail of ionized gases. The trails diffuse rapidly, usually disappearing within a second, but their short lifespan is adequate for SNOTEL communications to be completed.

The process has three major steps: (1) master stations request data from remote sites; (2) sites respond by transmitting their current data; and (3) finally a master station acknowledges receipt and signals the site transmitter to stop. This complex exchange, taking place in a fraction of a second, is possible thanks to microprocessors.

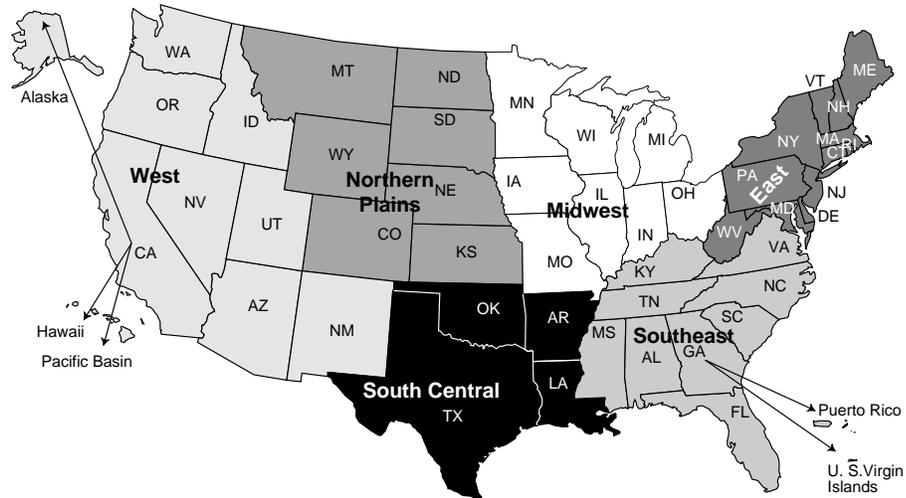
Wetlands Reserve Program

The Wetlands Reserve Program is a voluntary incentive program to assist owners of eligible land to restore and protect wetlands. The primary objectives of the program are to preserve and restore wetlands, improve wildlife habitat, and protect migratory waterfowl. Wetland restoration improves water quality and provides flood water retention, ground water recharge, open space, and esthetic values.

The Secretary of Agriculture uses program funds to purchase long term and permanent easements that provide for the restoration and protection of wetlands. Eligible lands include farmed wetlands, prior converted wetlands that have a history of food and fiber production, limited areas of natural wetland that significantly add to the

Figure 10-4.

Wetlands Reserve Program Acreage by NRCS Region¹



Region	² 1992 Recorded Acres (rounded)	³ 1994 Accepted Acres (rounded)
East	50	700
Southeast	17,400	17,300
Midwest	7,750	19,600
Northern Plains	0	6,700
South Central	12,700	24,400
West	4,300	6,300
TOTALS	42,200	75,000

¹ 1995 WRP expanded to all States. Signup was March 30-June 30, 1995; landowners offered 570,000 acres during the signup.

² 1992 Pilot WRP program offered in nine States through September 1993. Figures are recorded official easements; 6,000-8,000 additional acres in process.

³ 1994 program expanded to 20 States with signup from February 28-March 11, 1994.

values of the easement area, riparian corridors that connect protected wetland areas, and associated upland buffer areas. The easements require the landowner to agree to the implementation of restoration and protection actions on the easement area. Compatible use of the easement area may be allowed by NRCS where such use is fully consistent with the long term protection and enhancement of the wetland values of the easement. Technical assistance is provided mainly by NRCS and the U.S. Fish and Wildlife Service.

Program participants who sell permanent easements receive one lump sum easement payment, not to exceed the agricultural value of the land. They also receive restoration cost share funding of 75 to 100 percent. Participants who sell

nonpermanent easements receive 50 to 75 percent of the easement payment amount that would have been paid for a permanent easement on the same site and 50 to 75 percent of the restoration cost share. Title clearance and associated legal expenses are covered by NRCS. Actual implementation of the restoration practice may be undertaken in a variety of ways (for example by the landowner, by the landowner contracting for the work, or by NRCS entering into a cooperative agreement with a conservation district or other appropriate entity to accomplish the work).

After two signups in 1992 and 1994, the Department had about 110,000 acres enrolled in the program. Another 100,000 acres are expected to be enrolled in 1995 in the first nationwide signup.

Watershed Planning

NRCS provides assistance to local communities in watershed planning in response to requests by sponsoring local organizations. The agency works with sponsors to develop watershed plans that meet sponsors' priorities and provide natural resource benefits.

Small Watersheds Projects

NRCS provides technical and financial assistance—in cooperation with local sponsoring organizations, State agencies, and other public agencies—to voluntarily plan and install watershed-based projects on private lands. The program empowers local people or decisionmakers, builds partnerships, and requires local and State funding contributions. The purposes of watershed projects include watershed protection; flood prevention; water quality improvements; soil erosion reduction; rural, municipal, and industrial water supply; irrigation water management; sedimentation control; fish and wildlife habitat enhancement; and creation and restoration of wetlands and wetland functions.

Emergency Watershed Protection

Under the Emergency Watershed Protection program, NRCS provides assistance to reduce hazards to life and property in watersheds damaged by severe natural events. An emergency exists when floods, fire, drought, or other natural causes result in life or property being endangered. During the past 8 years, the program has been needed and used in an average of 26 States per year. Emergency work includes establishing quick vegetative cover on denuded land, sloping steep land, and eroding banks; opening dangerously restricted channels; repairing diversions and levees; and other emergency work. The emergency area need not be declared a national disaster area to be eligible for technical and financial assistance. Emergency watershed protection is applicable to small-scale, localized disasters as well as disasters of national magnitude. NRCS provides technical and financial assistance for disaster cleanup and subsequent rebuilding; restoration of stream corridors, wetlands, and riparian areas; and urban planning and site location assistance to the Federal Emergency Management Agency when relocating communities out of floodplains. Local people are generally employed on a short-term basis to assist with disaster recovery.

Watershed Operations

Under the Flood Control Act of 1944, NRCS is authorized to administer watershed works of improvement. Flood prevention operations include planning and installing works of improvement and land treatment measures for flood prevention; for the conservation, development, utilization, and disposal of water; and for the reduction of sedimentation and erosion damage. This may also include the development of recreational facilities and the improvement of fish and wildlife habitat. Activities are authorized in 11 specific flood prevention projects covering about 35 million acres in 11 States.

Colorado River Basin Salinity Control Program

This is a voluntary incentive program that supports the objectives of the Nation's commitment to the 1973 International Boundary and Water Commission Agreement concerning the quality of water in the Colorado River delivered downstream to users in the United States and Mexico. The program calls for identifying salt source areas; developing conservation plans; and implementing salinity control measures such as improvement of on-farm irrigation water management, related laterals, and erosion management practices. The Federal Government provides financial and technical assistance to landowners to plan, install, and maintain needed soil and water conservation practices, including replacement of incidental fish and wildlife values. It also conducts research, demonstration, and education activities and evaluates program effectiveness. The program provides for up to 70 percent Federal cost-sharing, with reimbursement of 30 percent of NRCS cost-share funds by the States. The program is authorized in the seven Colorado River Basin States, with current emphasis on projects in Colorado, Nevada, Utah, and Wyoming.

Table 10-5.

<i>Major Accomplishment</i>	<i>Grand Valley, CO</i>	<i>Uinta Basin, UT</i>	<i>Big Sandy, WY</i>	<i>Lower Gunnison, CO</i>	<i>McElmo Creek, CO</i>
Salt load reduction (cumulative) - tons	63,074	77,549	22,313	18,878	2,238
Deep percolation reduction (cumulative) -acre/feet	17,429	56,001	8,582	5,880	2,238
FY 1994 contracts approved	69	113	9	56	39

Forestry Incentives Program

The objectives of this program are to increase the Nation's production of sawtimber and pulpwood on nonindustrial, private forest lands; to decrease expected shortages and rising prices of timber; and to help ensure effective use of available forest lands. Program objectives are met by providing cost-share and technical assistance to landowners to encourage voluntary installation of forestry practices. The program shares up to 65 percent of the cost incurred by the landowner for tree planting and timberstand improvement.

Water Bank Program

The objectives of this program are to preserve and improve migratory waterfowl and wildlife-related resources, conserve surface water and reduce runoff and soil and wind erosion, improve flood control, contribute to improved soil moisture, enhance landscape esthetics, and promote comprehensive water management planning. Ten-year agreements are established between NRCS and landowners and operators in important migratory waterfowl nesting, breeding, and feeding areas for the conservation of wetlands.

River Basin Surveys and Investigations

NRCS cooperates with other Federal, State, and local agencies in conducting river basin surveys and investigations, flood hazard analysis, and flood plain management assistance to aid in the development of coordinated water resource programs, including the development of guiding principles and procedures. Cooperative river basin studies are made up of agricultural, rural, and upstream water and land resources to identify resource problems and determine corrective actions needed. These surveys address a variety of natural resource concerns including water quality improvement, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, and water needs for fish, wildlife, and forest-based industries. Flood plain management assistance includes the identification of flood hazards and the location and use of wetlands. NRCS represents USDA on river basin regional entities and River Basin Interagency Committees that coordinate work among Federal Departments and States.

Great Plains Conservation Program (GPCP)

This program offers long-term solutions to natural resource problems in the 10 States comprising the Great Plains region. NRCS helps farmers, ranchers, and others make and implement conservation plans to bring improved economic and social stability to the Great Plains area. This is accomplished by accelerating the conversion of cropland not suited for continuous cropping to less intensive uses; preventing deterioration of cropland and rangeland; enhancing fish, wildlife, and recreation resources; and promoting better land management. Farmers and ranchers participating in the program contribute nearly 60 percent of the costs.

GPCP is a special program targeted to total conservation treatment of entire farms or ranches having severe soil and water resource problems. Program participation is voluntary and is carried out by applying a conservation plan on the entire

operating unit. GPCP has been effective in addressing the needs of small and limited resource farmers and providing assistance to American Indians. In addition to significantly reducing erosion and sediment, the program addresses water quality problems and provides wildlife and other environmental benefits.

Resource Conservation and Development (RC&D) Program

This program is initiated and directed at the local level by volunteers. It is regional and encompasses multiple communities, various units of government, and grassroots organizations. The program serves as a catalyst for these civic-oriented groups to share knowledge and resources in a collective attempt to solve common problems facing their region. The RC&D Program offers aid in balancing an area's environmental, economic, and social needs. Assistance is obtained from the private sector, corporations, and foundations, and all levels of government contribute to the program. This combination of local leadership and coordination of State and Federal resources is an efficient way for communities to achieve local goals cooperatively. In FY 1994, RC&D areas completed 1,984 projects and donated 415,000 hours of time. Every dollar of NRCS Federal technical and financial assistance devoted to local projects was matched by \$13 from other sources. In mid-1995 there were 277 authorized RC&D areas involving 2,016 counties across the country.

National Resources Inventory

Every 5 years, NRCS issues a report card on how well the Nation is sustaining natural resources on nonfederal land. Called the "National Resources Inventory," or

Figure 10-5.

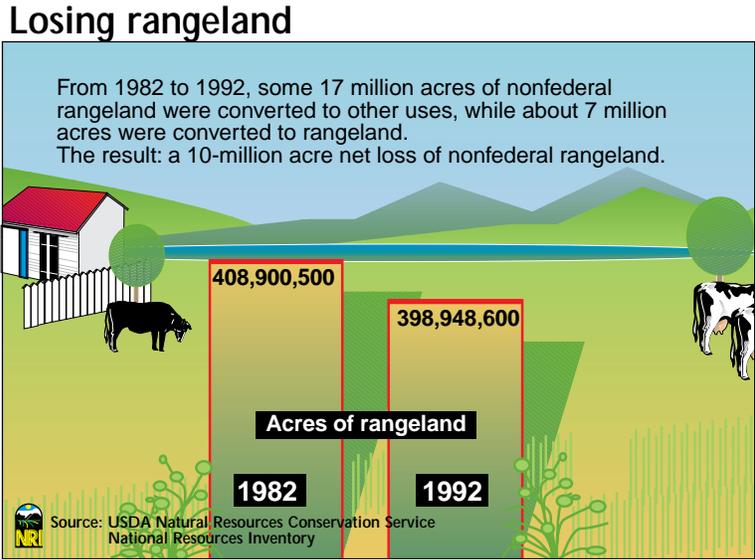
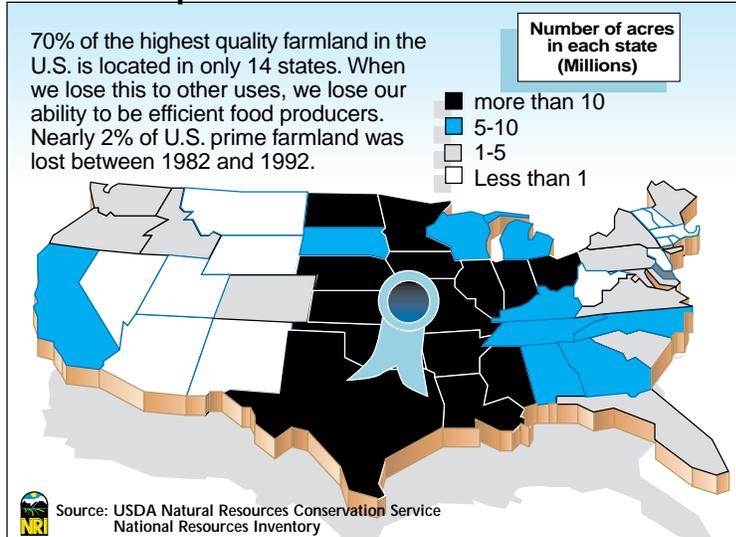


Figure 10-6.

Where is prime farmland?



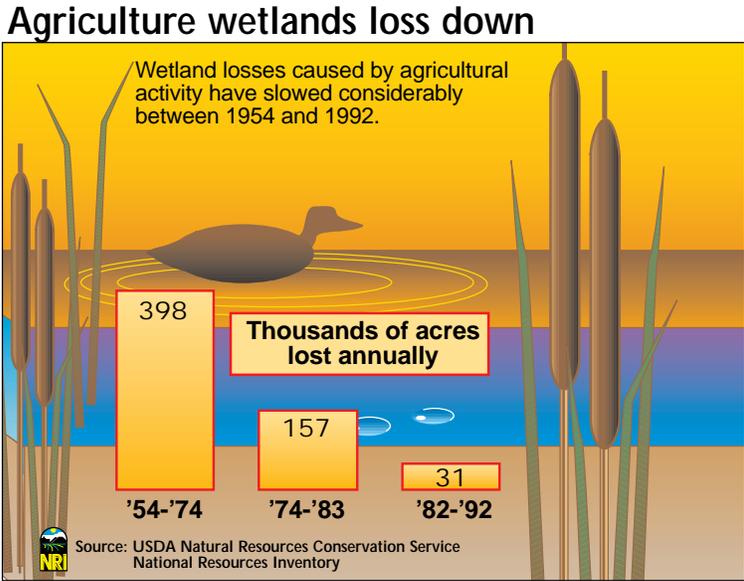
NRI, this report card contains the most comprehensive and statistically reliable data of its kind in the world. It measures trends in soil erosion by water and wind, wetland loss, changes in prime farmland acreage, irrigation, and conservation treatment needs at national and State levels.

In 1994, NRCS released the NRI data comparing resource conditions and trends in 1982 and 1992. Key findings include the following:

- Between 1982 and 1992, the Nation's cropland acreage decreased by about 9 percent (from 421 million to 382 million acres), most of it going into the Conservation Reserve Program; rangeland acreage decreased by about 2 percent (from 409 million to 399 million acres); and developed land increased by 18 percent (from 78 million to 92 million acres).
- The average annual rate of soil erosion for the Nation dropped substantially between 1982 and 1992, largely due to the success of the Nation's farmers in meeting the conservation provisions of the 1985 Farm Bill.
- From 1982 to 1992, 6 million acres of prime farmland—the Nation's best agricultural land—was lost, primarily due to rural and urban development.
- Wetland loss due to agriculture has slowed significantly.

The NRI contributes to resource appraisals authorized by the Soil and Water Resources Conservation Act of 1977. These RCA appraisals, led by NRCS, are the basis for USDA's National Conservation Program as well as farm and environmental legislation.

Figure 10-7.



In 1994, NRI data and analytical software were made available to the public on CD-ROM for the first time. To obtain the NRI database, Data Analysis Software, and spatial data sets, contact: NRCS National Cartographic and GIS Center, Fort Worth Federal Center, Bldg. 23, Room 60, P.O. Box 6567, Fort Worth, TX 76115-0567; or telephone (817) 334-5559, Extension 3135.