

USDA-NRCS

**STATE SOIL SCIENTISTS:  
LEADERSHIP IN THE SOIL  
SCIENCE DIVISION**

SOIL SURVEY AND TECHNICAL SOIL SERVICES

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## Overview

Soil survey information and soil science expertise is the foundation of the Natural Resources Conservation Service (NRCS) mission and conservation planning and program activities. The mission of the Soil Science Division (SSD) and the National Cooperative Soil Survey (NCSS) is to provide leadership and service to produce and deliver scientifically based soil information to help society to understand, value, and wisely manage global resources (NSSH, 600.00). The demand for soils information is growing and requests for specific data and analysis are constantly evolving and continually changing. Demand is driven by change in agricultural program policy, new environmental resource models, land use changes, increased use of soils information in conservation planning, including soil health measurements, and evolving land-use law, regulation, policy, and environmental concerns. Soil surveys require continual improvement in order to assure an accurate and complete database that can satisfy evolving needs for data and analysis. As a result, the demand for technical soil services will continue to expand. State soil scientists are fundamental to fulfilling this foundational mission. Regionalization of the Soil Science Division only enhances this important leadership role.

## Background

Legislative authority for technical soil services is given in [Public Law 89-560](#) -- *Soil Surveys for Resource Planning and Development*, dated September 7, 1966. This law provided legal authority for the Technical Soil Services Program of the U.S. Department of Agriculture by specifying that soil surveys are needed by States and other public agencies in connection with community planning and resource development. Authority for technical and/or other assistance needed for use of soil surveys also is provided by [7 CFR Chapter VI, Subchapter B—Conservation Operations, Part 610.4—Technical Assistance Furnished](#). This regulation states that the NRCS provides technical assistance to land users and others who are responsible for making decisions and setting policies that influence land use, conservation treatment, and resource management. Technical assistance furnished by NRCS consists of program assistance, planning assistance, application of conservation practices, and assistance in the technical phases of USDA cost-share programs.

These authorities define the mission of the Soil Science Division:

1. Make an inventory of the soil resources of the United States
2. Keep the inventory current to meet contemporary needs
3. Interpret the information and make it available in a useful form
4. Provide technical assistance and promote the use of soil survey for a wide range of community planning and resource development issues related to both nonfarm and farm uses

The NCSS has successfully implemented these authorities for the past 50 years. However, with reduced budgets, the subsequent requirement for increased efficiencies, and the realignment of the SSD, State soil scientists are critical to continue and advance a successful soils program in NRCS. State Soil programs will benefit from the Soil Science Division realignment with overarching outcomes:

- Greater emphasis on technical soil services
- Greater public awareness and outreach
- Time to build a stronger cooperative Soil Survey program
- Advocate for Soil Survey information use in nontraditional areas

## Business Process

### Roles and Responsibilities

The State soil scientist's roles and responsibilities have always included both soil survey and technical soil services; the only modification with realignment is the removal of supervision of major land resource area (MLRA) soil survey staff by the State soil scientist. However, State soil scientists will continue to provide support to the Soil Survey Program by serving as a primary member of soil survey management teams; in this role, State soil scientists will collaborate with Soil Survey regional directors and State Conservationists to coordinate activities of soil survey regions and MLRA soil survey offices. These tasks include approving plans and prioritizing projects for soil survey and ecological site project work in the State.

The National Soil Survey Handbook (NSSH) outlines the responsibilities of the State soil scientist in the National Cooperative Soil Survey ([NSSH, 601.02](#)). These proposed responsibilities include, but are not limited to—

- Providing technical soil services to other staffs and leadership to resource soil scientists.
- Developing cooperative relationships to enhance the funding, progress, use, and understanding of soil surveys.
- Serving as the primary liaison to NCSS cooperators.
- Coordinating and hosting an annual meeting of State NCSS cooperators to plan and coordinate soil survey activities and technical soil services.
- Periodically hosting regional or national NCSS conferences.
- Serving as member of the management team(s) for the soil survey regional offices serving the State (refer to section 608.01(f)).
- Documenting the needs for updating soil survey maps, data, and interpretations.

- Assisting soil survey users in understanding and applying soil survey information.
- Coordinating the development of localized soil interpretations.
- Providing soils training to NRCS field staff and specialists in other disciplines.
- Ensuring the technical content, coordination, and quality of soil information in the field office technical guides.
- Assisting in national soil program initiatives.
- Marketing soil survey information.
- Providing advice and expertise on soil-related issues to all NRCS conservation programs.
- Posting updated soil survey data to the Soil Data Warehouse.
- Supplementing and distributing a State subset of the National Soil Information System (NASIS) data.
- Preparing digital files for general soil maps, index maps, soil legends, special feature legends, geology maps, and block diagrams for use in publications.
- Providing leadership for identifying the need for new soil survey information and interpretations within the State.
- Providing leadership for the development of new soil survey applications, technology, and information delivery within the State.

Regionalization of the SSD will afford State soil scientists the ability to focus on the expansion of technical soil services in their State. Examples include:

- Provide technical soil services leadership – directly carry out selected activities and coordinate and direct resource soil scientists; collaborate with soil survey regional directors to utilize local soil survey staff to provide additional technical soil services support.
- Develop and implement annual technical soil services business plan; this business plan will document the State’s need for technical soil services and will define the scope of services delivered by MLRA Soil Survey staff.
- Supervise staff including, but not limited to assistant State soil scientists, resource soil scientists, National Resource Inventory (NRI) specialists, Geographic Information Systems (GIS) specialists, and other discipline specialists (varies by State).
- Provide leadership for the NCSS within the State by establishing and expanding relationships with stakeholders and partners.
- Coordinate and manage agreements with other agencies and cooperators.
- Prepare and manage annual budget requests to meet State goals.
- Coordinate the acquisition of digital elevation data (LiDAR, IFSAR, etc.) in collaboration with partners.

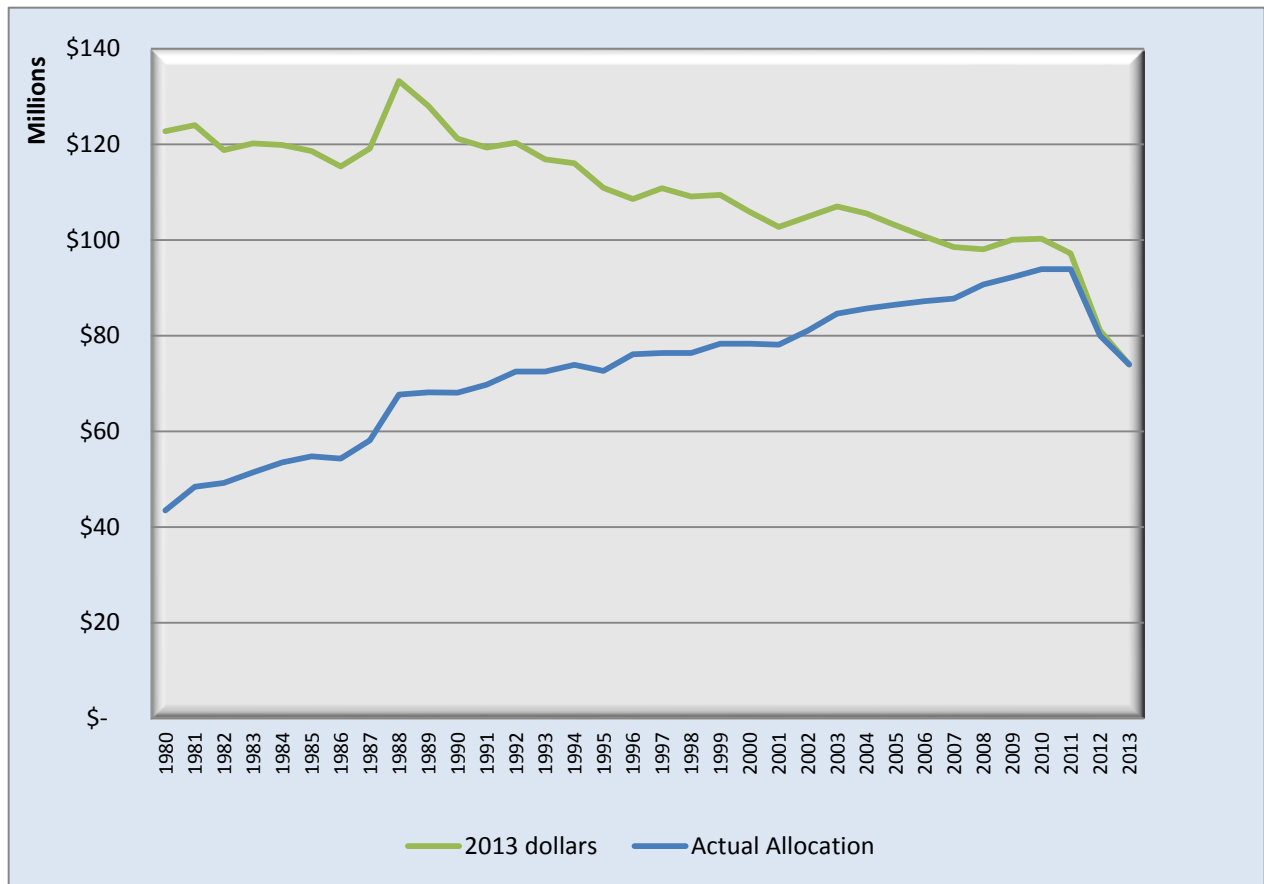
- Collaborate with NRCS State resource conservationist in developing and implementing ecological site descriptions for conservation planning and restoration of plant communities.
- Serve as primary member of soil survey management teams to coordinate activities of soil survey regions and MLRA soil survey offices; includes approving plans and prioritizing projects for soil survey and ecological site project work in the State.
- Review and provide feedback on MLRA soil survey completed projects and milestones and soil survey regional office quality assurance reports.
- Lead, coordinate, or collaborate on special projects such as:
  - Soil Health – collect and analyze dynamic soil property as related to land use and conservation practices (coordinate with MLRA soil survey offices); assure soil-health-related training, field assessments, sampling, and recommendations are provided to field office staffs for conservation planning.
  - Soil Climate Analysis Network (SCAN) – maintenance, data analysis, and user/partner interface (coordinate with soil survey regions).
  - National Ecological Observation Network (NEON) – collaborate with National Science Foundation to conduct real-time ecological studies spanning all levels of biological organization and temporal and geographical scales.
  - Soil Moisture Monitoring Network (SMMN) – assist with collecting and analyzing soil moisture data for input into drought modeling and monitoring.
  - Soil Interpretations – develop soil interpretations for State and locally important issues such as sewage disposal soil ratings and limitations based on local and State health regulations, suitability of soils for storm water runoff, soil suitability and sustainability for forest biomass harvesting, crop productivity indices.

## Allocations

Historically, the CO-02 program funding has steadily increased about 2 to 5 percent each year from 1980 through 2011. However, the CO-02 funding was decreased about 15 percent from \$93 million in 2011 to \$80 million in 2012 (*figure 1*). The immediate result of these program fund reductions was that 24 soil survey offices in 21 States were closed at the end of fiscal year (FY) 2012 and personnel reassigned to other positions to offset the loss of funding. Further reductions in funding are expected in the upcoming years. Concurrent to office closures, the realignment of the SSD to 12 regions, each led by a regional director, will supervise and manage the MLRA soil survey offices in their area.

To assist in implementing the realigned Soil Science Division, each State is allocated CO-02 funds equal to a GS-13, step 5 salary and benefits (except for Delaware, Rhode Island, and

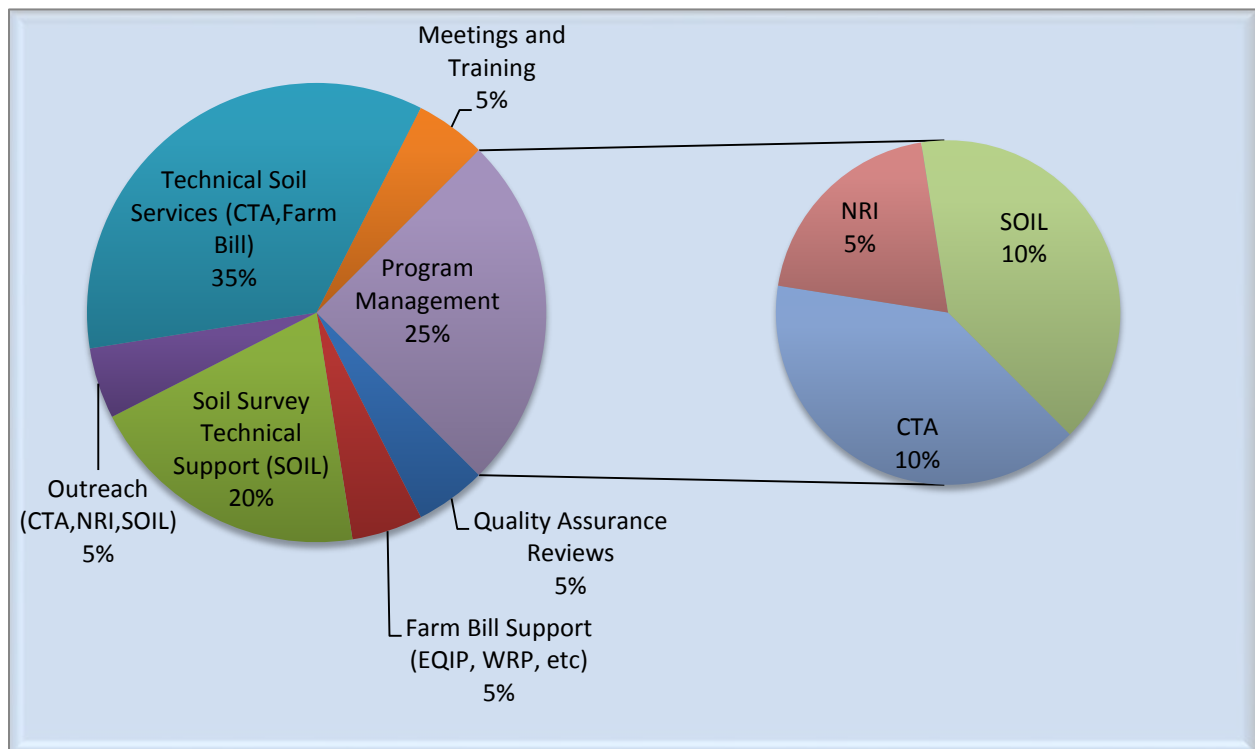
Vermont, which are allocated salary and benefits equal to GS-12, step 5), plus additional for support. State soil scientists, resource soil scientists, national resource inventory specialists, GIS specialists, and other State soils staff may charge to the CO-02 fund for activities related to soil survey. For other program funds (CTA, EQIP, WRP, etc.) to support State soils staff, States request funding primarily through the State resource assessment to support technical and program assistance. *Appendix 1* shows the major WebTCAS program codes and examples of activities that State soil scientists, resource soil scientists, inventory specialists, GIS specialists, and other State soils staff typically perform.



**Figure 1. Historical CO-02 program funding. Actual allocation (blue) is adjusted to 2013 dollars (green) using a Consumer Price Index inflation calculator (U.S. Bureau of Labor Statistics).**

## Workload Analysis

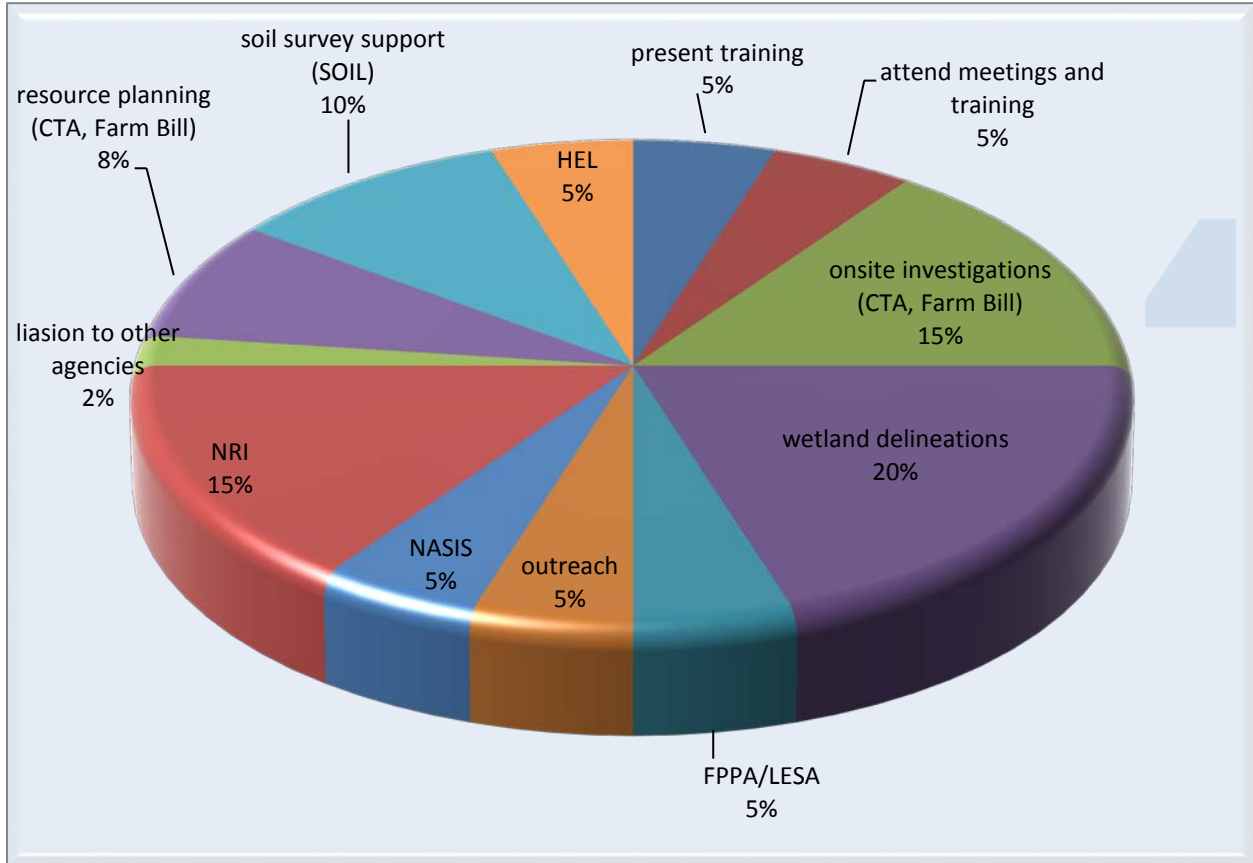
State soil scientists and resource soil scientists have both discretionary (CTA, NRI, SOIL) and Farm Bill (EQIP, WRP, etc.) duties and responsibilities. A workload analysis is valuable for preparation of business plans and annual plan of operations. *Figure 2* shows a proposed typical workload analysis for a State soil scientist in the new SSD structure. As with any program manager, about 25 percent of time is spent on program management (budget management, supervision, policy, etc.). The remaining 75 percent is directed to technical soil services support for CTA and Farm Bill programs, soil survey support (approving and reviewing MLRA soil survey office project plans, organizing annual work planning conference, reviewing soil databases, etc.), meetings and training, outreach, and other various duties.



**Figure 2. Example of a workload analysis for a State soil scientist.**

The workload analysis for resource soil scientists, *figure 3*, also shows that duties and responsibilities are varied and allocated to both discretionary (CTA, NRI, SOIL) and Farm Bill programs (EQIP, WHIP, WRP, FRPP, etc). Resource soil scientists spend the largest part of their time assisting field offices with technical soil services support (onsite soil investigations, wetland and HEL determinations, training). Additionally, resource soil scientists assist MLRA soil survey offices with soil survey activities; provide FPPA and LESA information to customers;

assist with Envirothon and other youth educational programs; and collaborating with local, State, and Federal agencies.



*Figure 3. Example of a workload analysis for a resource soil scientist.*

## Summary

State soil scientists are essential to fulfilling NRCS’s core mission to benefit the soil, water, air, plants, and animals that result in productive lands and healthy ecosystems and are crucial for the Soil Science Division and NRCS to remain customer-focused and service-oriented. As the demand for soils information continues to increase and requests for specific data and analysis constantly evolves, State soil scientists, as the leaders of soil technical assistance within States, will be at the forefront in continuing to provide soil survey information and soil science expertise to further NRCS’s mission to help people help the land.



## Appendix 1.

WebTCAS program codes and examples of work activities. Applicable to State soil scientists, resource soil scientists, and other affiliated staff.

<b>TECHNICAL ASSISTANCE</b>
<b>CTA-GENRL: Conservation Technical Assistance - General</b>
Wetland delineations/determinations/compliance/appeals
Highly erodible land determinations/compliance/appeals
Resource inventories for conservation planning
Site-specific soil investigations
Outreach (preparing/presenting informational or technical materials, Envirothon, Land Judging)
Farmland Policy Protection Act (FPPA), Land Evaluation Site Assessment (LESA)
GIS (creating maps, performing analyses)
Hydric soils list
Important Farmlands list
Ecological Sites – data collection and analyses; review descriptions
Soil technology development/maintenance
Quality assurance reviews (area/field offices)
Developing workload analysis and business plans
Providing soils information to internal and external customers
Reviewing conservation practice standards
Receiving and presenting training
Maintain the Field Office Technical Guide (FOTG)
Liaison to other Federal, State, local, or nongovernmental agencies
Program management and support (preparing reports, drafting bulletins, supervision, performance plans and reviews, recruiting/hiring)
<b>CTA-NRI: Conservation Technical Assistance – National Resources Inventory</b>
Data collection and analyses
Product publications (fact sheets, summary reports)
Program management and support
<b>SOIL: Soil Survey</b>
Soil survey – initial (mapping, database, compilation, field reviews)
Soil survey – update and maintenance (transects, database, spatial data edits, reviews)
Special studies (carbon, soil quality, dynamic soil properties, other characterization studies)
Soil interpretations development
Maintaining and updating soil databases for Conservation Planning and Farm Bill Programs (RUSLE2, WinPST)
GIS (creating maps, performing analyses)
Program management and support (organizing annual work planning conference, developing business plan, reviewing/approving MLRA soil survey office projects)

## FARM BILL PROGRAMS

**EQIP: Environmental Quality Incentives Program; WHIP: Wildlife Habitat Incentive Program;  
CSP: Conservation Security/Stewardship Program; CRP: Conservation Reserve Program**

Site-specific soil investigations

Developing soil criteria to use in ranking applications

GIS (creating maps, performing analyses)

Ecological Sites – data collection and analyses; review descriptions

Review and update soil rental rates

## EASEMENT PROGRAMS

**FRPP: Farm and Ranch Lands Protection Program; WRP: Wetlands Reserve Program  
GRP: Grasslands Reserve Program; HFRP: Healthy Forests Reserve Program**

Important farmlands identification

HEL and wetland compliance

GIS/GPS (creating maps, performing analyses, verifying easement boundaries)

Conducting onsite visits to determine the condition of the land