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**before the**

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## Introduction

Chairman Bishop, Ranking Member Fortenberry, and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the Natural Resources Conservation Service (NRCS) and the manner in which we help America's farmers, ranchers, and forest landowners realize economic opportunities through the adoption of conservation practices and systems. When implemented and maintained over time, these efforts can also help mitigate the impacts of a changing climate and increased weather volatility. I appreciate the ongoing support and leadership this Subcommittee has provided for voluntary, private lands conservation, and the improvement of our soil, water, and other invaluable natural resources as embodied in the recent support for the 2018 Farm Bill.

Since the establishment during the Dust Bowl – the greatest environmental disaster of the previous century – of the Soil Conservation Service, our predecessor agency, NRCS has recognized that the adoption of conservation practices must not only address critical resource issues but do so in an economically beneficial manner for producers. NRCS programs provide

producers with the technical and financial assistance needed to incorporate the beneficial changes that our conservation practices can bring to improve the resiliency of their operations.

While NRCS does not provide agronomic advice, working in concert with many partners, including public and private entities, agricultural operators, and private landowners, the agency provides conservation technical and financial assistance that enables agricultural producers and their operations to thrive and remain sustainable. More than 70 percent of land in the United States is held by private landowners. Decisions those landowners and operators make every day not only have an impact on their land but that of their neighbors, their watersheds, and ultimately the entire U.S. population.

The 2018 Farm Bill built upon our existing conservation programs, including the Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), the Agricultural Conservation Easement Program (ACEP), and the Regional Conservation Partnership Program (RCPP). NRCS, through its unique delivery system, provides assistance to individual landowners across the Nation through local field offices. Through these programs, NRCS continues to make strides helping farmers, ranchers, foresters, and other private landowners restore and enhance our Nation's natural resource base in a voluntary, incentive-based fashion. Perhaps most importantly, the decisions surrounding the implementation and prioritization of these programs and funding are made on the local level, through Local Working Groups and State Technical Committees to ensure local needs are addressed. In this manner, NRCS is attuned to the threats that face our Nation's farmers at the farm level and tailor our assistance to help them recover from and mitigate the impacts of extreme weather events.

**NRCS Conservation Practices – Improving Agricultural Resiliency**

Farmers, ranchers, and forest landowners are experiencing increased vulnerability to their operations from climatic extremes and variability in temperature and precipitation and from events such as fires, invasive pests, droughts, and floods. Within the last year alone, we have seen fires across the West and our prairies, hurricanes pummel the Southeast, volcanic eruptions in Hawaii, extreme drought in the Texas Panhandle, and just last month, historic snowfall and flooding across the Northern Plains and Midwest. That weather is not something producers can plan for on a daily basis, those impacts will take years, in many cases, for full recovery.

While other USDA agencies provide assistance with mitigating the economic risks of natural disasters, NRCS helps producers understand their soils and landscapes and the vulnerabilities to their agricultural systems from these conditions of increased weather volatility. Specifically, we work to improve soil health through conservation, restoration, and improved management of croplands, forests, wetlands, and pasture/rangeland. This work increases carbon sequestration and builds resilience to variable climatic conditions and extreme weather to protect food and fiber production. We also provide assistance for disaster recovery through reseedings and other measures to address soil erosion and water-quality issues, debris removal, streambank stabilization, etc.

***Conservation Programs.*** NRCS offers a suite of working lands and easement programs that provide assistance to agriculture producers and others for addressing their natural resource

concerns. The suite of working lands programs includes the EQIP, the CSP, and ACEP. Each of these programs assist producers with implementing land stewardship practices and activities. Under the easement programs, NRCS restores, protects, and enhances wetlands and grasslands and assists third parties with protecting agricultural lands. The RCPP incorporates features from EQIP, CSP, and ACEP in coordination with third parties. NRCS is continuously working to achieve environmental benefits in a cost-effective manner and to improve more effective ways to leverage technical assistance to convey the economic return to the producer through environmental improvements. NRCS does not seek financial gain on potentially marketable environmental services.

***Soil Health Management System (SHMSs)***. NRCS is helping producers implement SHMSs with the best available understanding of soil health and conservation. Instilling Farmer to Farmer programs as well as local soil health networks to facilitate exposure of practice implementation are an effective means to increase impact. SHMSs are combinations of location- and situation-adapted NRCS practices built into systems that minimize soil disturbance and maximize soil cover, living roots, and diversity in combination with system-adapted nutrient and pest management. These systems increase farm resilience through adaptation, increased water-use efficiency, decreased erosion, and increased mitigation through carbon sequestration by increasing biomass (e.g., use of cover crops), reducing tillage (reducing carbon loss and fuel use), and increased fertilizer efficiency. The 2018 Farm bill defined cover crops as a "good farming practice," thereby reducing disincentives for implementing soil health practices. The 2018 Farm Bill further emphasizes soil health by recognizing soil testing and remediation as EQIP practices, for example.

***Nitrogen Stewardship.*** NRCS provides technical and financial assistance for the development and implementation of enhanced nutrient management plans that improve nitrogen use efficiency, reduce nitrogen use and agricultural nitrous oxide emissions, reduce costs, and improve water quality. NRCS field staff are trained to provide nutrient management planning and implementation assistance to USDA clients using nutrient movement risk assessment tools and by implementing practices to reduce agricultural emissions.

***Livestock.*** NRCS actively works with producers in grasslands systems (pasture and range) as well as confined operations (feedlots and dairies). Practices such as prescribed and rotational grazing, range planting, and forage and biomass planting ensure that grassland areas are maximizing productivity, sequestering carbon, and increasing resiliency to conditions such as prolonged droughts. NRCS technical specialists are also working with producers to improve manure handling to decrease emissions of greenhouse gases such as methane, improve water quality, and increase energy production.

***Agroforestry and Herbaceous Wildlife Habitat.*** NRCS continues promotion of conservation practices such as the windbreaks, silvopasture, riparian forest and herbaceous buffers, and upland wildlife habitat. Improved woodlands have significant carbon sequestration benefits as well co-benefits such as decreasing erosion, increasing flood control, enhancing soil fertility, and improving water quality, air filtration, and wildlife habitat.

***Improving knowledge of soils, ecological sites, and land-use.*** NRCS Soil Survey, National Resources Inventory (NRI), and Conservation Effects Assessment Project (CEAP) Programs

build the foundation of knowledge to better direct land-use decisions for improving on- and off-farm resources in rural area as well as program policy. Through these efforts, we better understand land and soil characteristics, land use trends, and impacts of conservation practices on water, soil, and air quality.

***The Snow Survey and Water Supply Forecasting (SSWSF) Program***. The SSWSF collects high elevation snow data in the Western United States and provides managers and users with snowpack data and water supply forecasts. NRCS field staff collects and analyzes data on snow depth, snow water equivalent, and other climate parameters, and the data are used to provide estimates of annual water availability, spring runoff, and summer stream flows. The water supply forecasts are used by individuals, Tribes, organizations, and units of government for decisions relating to agricultural production, hydroelectric power generation, fish and wildlife management, municipal and industrial water supply, reservoir managements, urban development, flood control, recreation, and water-quality management.

***Plant Materials Centers.*** NRCS plant material centers have been developing plant materials that are more resilient to changing conditions while providing farmers with a marketable crop. For example, the issue of saltwater intrusion because of storm surge has become increasingly problematic within the United States' coastal zones. Managing the impact of saltwater intrusion from storm surge situations will require producers to use more adaptive agricultural practices. NRCS is currently identifying vulnerable areas of saline impacted soils along the East and Gulf coasts through the compilation of GIS mapping, remote sensing imagery, and soil survey information. Our scientists are improving the agency technical resources and updating vegetative recommendations for Practice Standards that address this resource concern. These

resources will aid field staff with assessing the saltwater inundation/intrusion problem and assist with providing sound technical recommendations. We are also improving the knowledge of the economics of growing value-added conservation plants as an alternative to abandoning salt impacted lands.

**Economic Impacts and Opportunities**

It is vital that NRCS, our partners, and other stakeholders develop opportunities for demonstrations that illustrate the economic benefit of conservation on agricultural lands. As private sector companies, crop advisors, and partner organizations develop ways to quantify the economic benefit of conservation practices, we must also develop more robust case studies and financial information to remain a relevant and trusted partner to private landowners, effectively advise producers, and inform others about the economic impact of conservation actions taken by the nation's farmers and ranchers.

NRCS offers opportunities for third parties to engage with moving the country's natural resource efforts forward through partnerships and other arrangements. For example, third parties may:

- Serve as Technical Service Providers where they provide direct technical services such as conservation planning, design, and implementation assistance to farmers, ranchers, and non-industrial private foresters;
- Engage as a partner through RCPP or through one of our other programs or initiatives. Partners typically provide their expertise and technical and financial resources;
- Engage as a partner offering to enhance agency outreach efforts with underserved or other communities; and

- Contribute to the development and testing of innovative conservation approaches through the Conservation Innovation Grants (CIG) or otherwise.

As a non-partner, the private sector may utilize agency tools that are available on-line, our soil survey, or NRI if these resources enable them to improve or enhance their services to agriculture operators and others.

Adoption of conservation tillage results in real monetary change. For example, as determined through the CEAP:

- Fuel use has been reduced by 812.4 million gallons of diesel equivalents, roughly the amount of energy required annually by 3.2 million average households.
- Continuous no-till has been adopted on 21 percent of acres and accounts for 35 percent of the reductions in fuel use and emissions.
- Corn Belt and Northern Plains production regions account for 58 percent (~29 percent each) of the fuel and emission reductions.

Through a CIG award, the National Association of Conservation Districts collaborated with Datu Research to develop a number of case studies exploring the financial impact of implementing soil health practices on farms. A CIG project with Farmland LP, a sustainable farmland investment firm, showed that the firm could provide a market rate of return to its investors while farming in a way that is not just sustainable but regenerative. Beyond these efforts, there are also a multitude of pilot projects and initiatives underway that are exploring ways to financially incentivize conservation. For example, the state of Iowa in 2017 created an oversubscribed

program that provides a per acre reduction in cover crop premiums for farmers who implement cover crops. Our hearing panel colleagues Land O'Lakes in 2017 launched its SUSTAIN Innovation Financing program, which allows Land O'Lakes co-op members to leverage their co-op member equity to take out loans for large-scale, on-farm conservation projects. The Nature Conservancy, using CIG funding, is exploring how good conservation farming can lead to reductions in public drain tax rates paid by producers in Michigan and nearby States.

NRCS has been working for many years to make available to farmers, ranchers, and forest landowners the ability to sell environmental services from conservation practices carried out on their operations.

- NRCS funded the Pinchot Institute (through both a CIG award and a RCPP award) to explore ways to aggregate environmental credits among small private non-industrial forest landowners.
- NRCS funded another CIG project that enables rice producers anywhere in the country who undertake conservation measures to reduce methane emissions (e.g., alternate wetting and drying, dry seeding) and potentially receive economic return for their efforts.
- USDA recently highlighted Bare Ranch in California, which has undertaken conservation efforts with NRCS to demonstrate that a ranching operation can reduce more carbon than it emits after implementing a conservation plan.

These are but a few of the many examples where corporations have made commitments to help meet sustainability goals through reliance on their producers.

**Conclusion**

Mr. Chairman, Ranking Member, and Members of the Subcommittee, our CEAP modeling efforts are giving us greater understanding of where practices need to be placed to realize the greatest environmental benefits. The information also supplies data producers can use to work independently or with others where they can gain the greatest return on investment.

The nation's farmers and ranchers are on the front lines of the risks posed by increased weather volatility. I thank you for letting me summarize how NRCS is assisting private landowners, producers, and others with implementing measures to improve Agriculture's resiliency. I look forward to taking you questions.