

ABSTRACT

Title of Document: HAVE THE NATIONAL RESOURCES
INVENTORIES ADVANCED CONSERVATION
POLICY?

Daria Alexia Karetnikov, Ph.D., 2012

Directed By: R. H. Sprinkle, M.D., Ph.D., Associate Professor,
School of Public Policy, University of Maryland

Background. Over the last three decades, the USDA's conservation policy has changed dramatically. Not only has the number of programs multiplied and the scope of issues expanded, but a once-casual link between commodity programs and conservation activities has been formalized. One reason for the changes may have been an effort within the USDA's conservation agency, Natural Resources Conservation Service (NRCS), to collect information on natural resource conditions through the National Resources Inventories (NRIs). In the 1970s, Congress mandated the NRIs and also a national agricultural-conservation appraisal and the development of a national program to devise conservation-policy recommendations. Together these mandates constituted the Soil and Water Resources Conservation Act (RCA) appraisal

process. The NRIs have been produced on a huge scale and through great effort, and they have evolved successfully over time. Recently formed Conservation Effects Assessment Project (CEAP) offered another opportunity to use the NRIs. But their integration into policy has been neither consistent nor smooth — nor, heretofore, well understood.

Question. Have the National Resources Inventories advanced conservation policy?

Methods. I followed three policy layers over the last thirty-five years: the intra-agency dynamic that produced informational products; the USDA conservation-program structure, and the federal legislative branch in its policy-making dimension. In all, I interviewed over 40 experts, looked through nearly 800 speeches, reviewed 47 Congressional hearings, analyzed dozens of databases, and relied on hundreds of internal documents.

Conclusion. Yes, the National Resources Inventories have advanced conservation policy.

However, NRI influence has been directly unambiguous only once. NRI influence has mostly been through the RCA, and it has been greatest when support has been high at both agency and USDA levels, when participation from constituent USDA agencies and other federal agencies has been enthusiastic, when willingness to restructure programs according to actual findings has been ascendent, and when Congress members have been hearing about NRI results from many sources.

HAVE THE NATIONAL RESOURCES INVENTORIES ADVANCED
CONSERVATION POLICY?

By

Daria Alexia Karetnikov

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Advisory Committee:

Professor R.H. Sprinkle, M.D., Ph.D., Chair

Professor Mark Sagoff, Ph.D.

Professor Chris Foreman, Ph.D.

Professor Richard Weismiller, Ph.D.

Professor Lori Lynch, Ph.D.

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Dedication

To my family members, both human and canine

Acknowledgments

The practical origins of this dissertation are traced to my former colleagues at the University of Maryland's Conservation Biology and Sustainable Development Master's program. I am especially grateful to Peter Blank and Doug Gill for giving me the first orientation of agricultural-environmental policy and exposing me to the Conservation Effects Assessment Project (CEAP), and to Kari Cohen for putting me in touch with the CEAP team at Natural Resources Conservation Service (NRCS). The general idea for the dissertation was borne out of a long meeting at NRCS with Jeff Goebel, Bob Kellogg, and Daryl Lund. They welcomed me to the CEAP team and extended support throughout the project. They, and everyone on the CEAP team — but more broadly, everyone in the Resources Assessment Division and the Resources Inventory Division at NRCS — deserves a heartfelt thank you. Your patience with my questions and your willingness to help enhanced this work tremendously. A special thank you is due to Dean Oman for providing impromptu telephone support to walk me through GIS and to George Wallace for helping organize the data. And of course, Natural Resources Conservation Service made the work possible altogether by supporting it financially. Thank you, NRCS and the United States Department of Agriculture, for supporting me and thank you for your work.

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Just as the task was getting overwhelming, I was rescued by my advisor, Robert Hunt Sprinkle, M.D., Ph.D., who pushed me to refine the conceptual design and to stay focused. His wise counsel helped me navigate the research process and encouraged me to polish the results. The other members on my committee deserve special appreciation — each contributed to the work. I appreciate your involvement. Mark Sagoff, Ph.D. exposed me to Clifford Geertz’s concept of “thick description.” Chris Foreman, Ph.D. introduced me to literature on “historical institutionalism.” Lori Lynch, Ph.D. told me halfway through the work not to worry about the length, which eased my deep-seated worry about the rapidly growing file. Dick Weismiller, Ph.D. reminded me to be careful about technical details. I thank each one whole-heartedly for the contributions.

Beyond the practical conditions and the research design considerations, writing a large project like this required moral support as well. I thank my family — both in the United States and in Russia — for providing ample encouragement. My friends provided the much-needed (but perhaps too frequent) distractions. My closest friend, Stephen J. Scala, kept my spirits up with his usual humor and never doubted successful completion of this work.

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Visual abstract: frequency cloud

acres act administration agency agricultural although analysis appraisal areas
around assistance became benefits bill budget ceap changes committee commodity concerns
congress conservation crp data debate department
development different discussion early effects effort environmental epa erosion
established example farm farmers federal funding government groups
information interest issues land level major management members million
model money national needs nrCS nri number payments period planning point
policy pollution practices priorities process producers production
program projects provide public quality question rca received required research
resources results scs service soil sources states support technical total
toward types usda used water watershed wetlands wildlife work years

Acronyms

ACP	Agricultural Conservation Program, USDA conservation (and commodity) program
APEX	Agricultural Policy Environmental eXtender Model, model used for agricultural sector simulation
ARS	Agricultural Research Service, USDA research agency
ASCS	Agricultural Stabilization and Conservation Service, forebear to the FSA
BLM	Bureau of Land Management
CARD	Iowa University's Center for Agricultural and Rural Development
CDSI	Conservation Delivery Streamlining Initiative, a major NRCS initiative started in 2009 aimed at revamping its technical assistance delivery
CEAP	Conservation Effects Assessment Project
CEQ	Council on Environmental Quality
CNI	Conservation Needs Inventory, SCS information product
CRP	Conservation Reserve Program, USDA conservation program
CSREES	Cooperative State Research, Education, and Extension Service, USDA research agency from 1994 to 2008 (became NIFA)
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program, USDA conservation program
ERS	Economic Research Service, USDA economic research agency
FmHA	Farmers Home Administration, forebear to the FSA
FSA	Farm Service Agency, USDA agency (created in 1994 to take over several agencies)
GAO	Government Accountability Office
GPRA	Government Performance and Results Act, a 1993 act that mandated that federal agencies do strategic planning
HUC	Hydrologic Unit Code developed by the USGS to demarcate watersheds
NACD	National Association of Conservation Districts
NASS	National Agricultural Statistics Service, USDA research agency
NIFA	National Institute for Food and Agriculture, USDA research agency after 2008 (was CSREES)
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service, USDA conservation agency after 1994
NRI	National Resources Inventory, SCS/NRCS information product
OMB	Office of Management and Budget
RC&D	Resource Conservation & Development Program, USDA conservation program
RCA	Soil and Water Resources Conservation Act passed in 1977 (RCA Appraisal is the appraisal mandated by the Act, RCA Program is the long-term program mandated by the Act)
SCS	Soil Conservation Service, USDA conservation agency before 1994
SWAT	Soil and Water Assessment Tool, model that connects land uses in watersheds
SWCS	Soil and Water Conservation Society
TMDL	Total Maximum Daily Loads, water standards regulated by the EPA
USDI	U.S. Department of Interior
USGS	U.S. Geological Service
WHIP	Wildlife Habitat Incentives Program
WRP	Wetland Reserve Program, USDA conservation program

Chapter 1: Introduction to the problem to be studied

Problem overview

Conservation policy is at a crossroads again. The last major one was reached in the mid-1980s, when in a reversal of previous trends, environmental conservation in agricultural production became a serious part of the mission of the United States Department of Agriculture (USDA). Since then, USDA programs have served as the main policy vehicles for controlling environmental impacts related to agriculture. Recent developments portend changes to this arrangement.

To comply with an Executive Order that the Obama administration issued in May 2009,¹ the Environmental Protection Agency (EPA) was busy preparing plans to implement a regulatory scheme that relied on a cap-and-trade-like structure to control nutrient discharges into the Chesapeake Bay. The Bay has had notoriously bad water quality. The Chesapeake Bay Foundation rated its health at 31 points out of 100 in 2010 — just a three point increase over the previous year's figure and the first increase in 11 years despite significant attention and funding dedicated to clean-up efforts. The full 100 points correspond to the state of the bay in the settlers' time in the 1600s.² Many pointed to the agricultural sector as the main culprit and also

1. Executive Order 13508, The White House, "Executive Order Chesapeake Bay Protection and Restoration " , Web (May 12, 2009), http://www.whitehouse.gov/the_press_office/Executive-Order-Chesapeake-Bay-Protection-and-Restoration/ (accessed April 2, 2011).

2. Chesapeake Bay Foundation, "The State of the Bay Report 2000" (2000)., Chesapeake Bay Foundation, "2010 State of the Bay" (2010).

as the most cost-effective solution. After all, agricultural production took place on 25% of the area around the Bay and was the largest single contributor of pollutants into the Bay.³

The newly proposed regional program would become testing grounds for the EPA's regulatory prowess. The agency was prodded into action by countless litigation aimed at activating the agency's federal authority to compel states to enforce the Total Maximum Daily Loads (TMDL) requirements in cases where water pollution problems endured. Since 1972, the Clean Water Act's Section 303(d) had required the EPA to perform TMDL analyses whenever states could not fulfill their obligations, but because of cost concerns, uncertainty over the interpretation of this portion of the Act, and other political wrangling, no serious action had been taken by the EPA to regulate nonpoint water pollution in the Chesapeake Bay until the Executive Order.⁴

In contrast to the USDA's quasi-voluntary conservation programs, which provide financial incentives and technical assistance to entice farmers to perform mutually agreed-to conservation practices, the TMDL design relies on mandatory reductions for all sources of water pollution. The USDA's programs are quasi-voluntary since farmers are not compelled to participate. They are not strictly voluntary, however, because farmers often rely on USDA subsidies for subsistence and cannot afford not to comply with USDA requirements and forego the payments. In the zero-sum game with TMDLs, operators of the better-regulated point sources will be under enormous pressure to minimize their discharges if the operators of nonpoint sources cannot be held accountable. The idea is that the former will, in turn, exert strong

3. U.S. EPA, "Fact Sheet: Chesapeake Bay Water Quality" (October 19, 2009).

4. C Copeland, "Clean Water Act and Total Maximum Daily Loads (TMDLs) of Pollutants, CRS Report for Congress," *Retrieved 21st May* (2008).

political pressure on the states (in this case Virginia, Maryland, Pennsylvania, Delaware, West Virginia, New York, and the District of Columbia) to identify and compel the disparate parties behind nonpoint sources to come to the table and commit to bear their part of the burden.

The fate of the USDA's conservation programs in many respects depends on whether the TMDL approach is proven to be a successful strategy. Many USDA conservation specialists fear an irreversible deterioration in their relationship with the farmers if such strict, top-down regulations are adopted. By the same token, the TMDL's success in large part will depend on availability of fine-grain information on farmers' resource use and operational practices. Already some in the agri-industry community have sounded alarms about the discrepancy between USDA's and EPA's load estimates for the Bay in the separate reports each agency released.⁵ The hurriedly formed Agricultural Nutrient Policy Council with funding from the American Farm Bureau, the National Pork Producers Council, The Fertilizer Institute, and others paid for a much-circulated study highlighting the incongruities.⁶ The American Farm Bureau Federation along with the Pennsylvania Farm Bureau is now challenging in court the EPA's authority to impose regulations on the Chesapeake Bay.⁷

At the crux of the discrepancies underlie the use (and alleged abuse) of input data into computer models that connect them with the necessary hydrological, atmospheric, and biological

5. Agricultural Nutrient Policy Council, "Comparison of Draft Load Estimates Cultivated Cropland in the Chesapeake Bay Watershed" (December 8, 2010).

6. American Farm Bureau Federation, "The Voice of Agriculture - American Farm Bureau" , Web (December 9, 2010), <http://www.fb.org/index.php?fuseaction=newsroom.newsfocus&year=2010&file=nr1209.html> (accessed February 16, 2011).

7. Pennsylvania Farm Bureau, "PA Farm Bureau Joins AFBF in Lawsuit Against EPA Over TMDL' s for Chesapeake Bay Watershed" , Web (January 10, 2010), <http://www.pfb.com/media-center/news-releases/2011/chesapeake-lawsuit.html> (accessed February 10, 2011).

parameters derived experimentally. The input data drive these “processes” models and drive the results. The EPA’s Chesapeake Bay Watershed model and the USDA’s estimates for its newly released report on the Bay are based not only on different model components, but also on different basic datasets.⁸ Created for their own purposes one dataset is not superior over another — each has its positives and negatives depending on the intended use. Decisions at an agency level to use one over another, however, can have serious consequences in terms of distributing benefits or costs to the affected populations. This is clear to organized interests, and divisions are formed on each side.

Dealing with Acronyms

Acronyms are ubiquitous in conservation policy, and although I cannot avoid their use entirely, I try to use them sparingly and define them often in this work. The frequently used acronyms are listed on page 6. Whenever other useful acronyms make appearances throughout the storyline, I spell them out after each new use.

Lack of reliable and justifiable data needed to disaggregate nonpoint sources into individual contributions can sink the EPA’s ambitious new program. On the other hand, with sufficient resources such information is not out of reach. Its availability can alter the century-long dynamic between the federal government (through the USDA) and the agricultural sector. One way to assess the likelihood of this scenario is to examine the historical role of primary data in the evolution of federal conservation policy.

Like the current debate on controlling water quality, decisions made at the agency level regarding what type of information to measure and to bring to the fore may have affected the evolution of the USDA programs. One clear indication is that the inception of the USDA’s

8. U.S. EPA, "Chesapeake Bay Phase 5 Community Watershed Model in Preparation" (Chesapeake Bay Program Office, Annapolis, Maryland, December, 2010).; NRCS, CEAP, "Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region" (February, 2011).

conservation programs in the momentous 1985 Farm Bill coincided with an unprecedented effort by one of its agencies — the Soil Conservation Service or SCS (known as the Natural Resources Conservation Service or NRCS since 1994) — to collect and process primary data on agricultural land resources and to provide policy alternatives. I use the acronym NRCS from now on to refer to the agency regardless of the period discussed, although I make the point to use the acronym SCS if referring to the agency specifically before the reorganization in the 90s. Besides carrying out the National Resources Inventories (NRIs), NRCS also uses NRI results for three other major informational products: Resource Conservation Act appraisals (RCAs), National Conservation Programs (NCPs), and Conservation Effects Assessment Project (CEAP).

The intra-agency effort to collect and process information has had its ups and downs over the last 30 years. Techniques for collecting information have become less hands-on and more reliant on high-tech imagery; survey design has been modified to spread the workload more evenly; and primary information processing now involves more and more complex ecological and economic models.

The most significant changes, however, occurred in the way the agency treated and processed the results. As a result, inter-temporal comparisons are difficult, but possible along the same inquiry lines.

And by its nature, nationwide planning for conservation on private lands does not occur in isolation. The details of the policies affect many people's interests, and they want to make sure their voices are heard. The response is to organize and communicate their preference to the policymakers at all levels — to both the USDA officials and their elected officials. Historically, the most consistent division has been between the conservation community (represented by

groups such as the Soil and Water Conservation Society, Natural Resources Defense Council, Resources for the Future, The American Farmland Trust, Ducks Unlimited, The Audubon Society) and agricultural interests (represented by groups like the American Farm Bureau Federation, the National Farmers Union, or the National Cattlemen's Beef Association). The National Association of Conservation Districts (NACD) representing the interests of local conservation districts through which NRCS conservation programs are delivered, and many local interest organizations also actively participate in the debate. In fact, because the USDA programs are structured to respond to local needs, active participation from the public and special interests has long been a component of the Department's policymaking process.

So the NRCS's conservation planning effort also took on the task of soliciting and processing feedback and concerns coming from the outside. In designing policy alternatives, the agency's role was not only to provide data and to suggest internally-generated policy options but also to vet and clarify the policy preferences of others. Collecting information and politics became invariably intertwined.

Still, whether this information-gathering effort, based on the National Resources Inventories, has played an instrumental role in forming policy is my central question. There is some indication that it has. The details are less clear. How much of a role and when? How did it become influential (if at all)? How important was other information besides the NRIs and how important were other factors altogether? Policy literature suggests little predictability or linearity in how information is used to make policy decisions at the legislative or implementation levels. Yet surprisingly few researchers explore information's origins, its evolution and internal use — its handling and processing — by the very bureaucrats tasked with collecting it.

My study is designed to fill this gap, at least for conservation policy. The main question probes the agency channels used to create and disperse information. But ultimately, it asks whether information on natural resource conditions — an expensive commodity — seems to have been used to form, and to reform, conservation policy.

An affirmative answer to the main question could mean that the federal government allocated sufficient resources and effort to collecting information, that the agency succeeded in channeling the information to the top leaders in the department, and that in turn they conveyed the information to policymakers who considered it in choosing policy solutions. An affirmative answer could also mean that the federal government put forth the effort, but the policymakers were convinced not by the arguments made by the USDA top leadership but rather through other pressure points, like environmental or farmer groups or outside researchers armed with the information NRCS provided. On the other hand, a negative answer could mean a failure at any point — a breakdown of this information-collection effort at the agency or departmental level, the unwillingness of Congress to place weight on this information, or the influence of other types of arguments by interest groups. A negative answer may mean that chosen policy alternatives are not justified by information on actual agricultural resource concerns. Environmental groups may use alarmist rhetoric that does not reflect actual findings, or farmer organizations may present the issue in stark economic terms disregarding environmental impacts. In some cases, symbolism may be more important than information.

Overall, three threads emerge.

The first is the importance of internal factors in production of information. This fits into the overarching question, which concerns policy alternatives and availability and use of

information. I pursue specific questions regarding internal dynamics within NRCS responsible for producing and processing information and presenting policy alternatives over the course of the last thirty years. Did the USDA allocate money and staff time to this effort? Did the agency provide information to external users?

The second thread concerns the executive branch, and the broader milieu in which the USDA operates. Did NRCS reach out to other USDA agencies for collaboration and eventual use of the results? Did it reach out to other federal agencies, especially the EPA? Did some information receive less emphasis and other more? Since important implementation of policy happens at the agency level, I am also interested in whether information intersected with programs. In other words, did NRCS use the results in program implementation?

The third thread connects policymakers in the legislative branch with information on natural resources. My focus is on the House and Senate Agriculture Committees members. Did they receive information on natural resource concerns through USDA leadership? Did the policymakers receive it through independent research agencies? Did interested parties, such as environmental groups and farmer organizations, use this information to justify their support for or opposition against specific policy alternatives? Did the representatives of the organizations use other types of arguments, such as economic, social, or symbolic to defend their positions? Did policymakers choose policy alternatives that were defended with substantive arguments based on natural resource data? Finally, was money spent in places where data suggested the worst problems were located?

Genesis of modern agricultural conservation policies

The Food Security Act of 1985⁹ (or the 1985 Farm Bill as it is commonly known) for the first time charged the USDA to tackle environmental issues. Easement and cost-share programs aimed at controlling soil erosion had existed since 1936, when their creation became an urgent political necessity after the Supreme Court decision on *U.S. v Butler et al.* It struck down parts of the Agricultural Adjustment Act of 1933,¹⁰ an earlier Congressional attempt to help the agricultural sector by controlling production through several means, including a processing tax.¹¹ Farmers desperately needed help during the Great Depression era. Operators' income had declined by a third within the previous few years, and prices for commodities were collapsing in an era when nearly half of the population was rural¹² and agriculture employed a fifth of the population.¹³

Although the Supreme Court ruled processing taxes unconstitutional because their intent was to regulate agricultural production — an activity reserved for the states — rather than to raise revenue,¹⁴ other provisions of the Act were left untouched and became the forebears of modern agricultural economic policies. On the other hand, this Supreme Court decision expanded the previously narrow interpretation of “general welfare” in the Spending Clause, granting Congress broad powers to conduct national policy through taxing and spending.

9. Public Law 99-198.

10. Public Law 73-10.

11. ERS, "History of Agricultural Price-Support and Adjustment Programs, 1933-84: Background for 1985 Farm Legislation" (December, 1984).

12. Census Bureau, "Urban and Rural Population: 1900 to 1990" (October, 1995).

13. Dimitri, Carolyn; Effland, Anne; Conklin, Neilson, "The 20th Century Transformation of US Agriculture and Farm Policy" (USDA, ERS, June, 2005).

14. *U.S. v. Butler et al., Receivers of Hoosac Mills Corporation*, 297 U.S. 1(1936).

Subsequent Supreme Court decisions have upheld this interpretation, enabling Congress to attach conditions on federal money flowing to the states.¹⁵ Some argue that this challenges the federalist ideal set forth in the Constitution.¹⁶

The importance of the Supreme Court decision at the time, however, was that a different way to channel money to farmers had to be found. Soil conservation fit the mold since it did not tread on states' authority to regulate agriculture. Passed within three months of the court's decision, the Soil Conservation and Domestic Allotment Act of 1936¹⁷ established the first programs to pay farmers to use soil conserving practices. The practices were defined to be consistent with the goals of commodity policy. The Act also reoriented the Department's economic policy from price stability to income stability. Soil conservation programs were justified by "on-farm" benefits like enhancing crop yields and preserving crop productivity. After all, soil erosion degraded the land. The idea was that good land stewardship boosted long-term profitability.

In contrast, the 1985 Farm Bill addressed conservation in its own right, emphasizing soil erosion control, reversing USDA policies on draining wetlands, and requiring that lands with most pressing erosion problems are removed from production. Sedimentation deposits in the water became a more visible problem, as well. The new focus was not purely environmental, however. For example, sometimes environmental concerns took a back seat when implementing the details of the newly established Conservation Reserve Program (CRP). One participant

15. D Binder, "Spending Clause As a Positive Source of Environmental Protection: A Primer, the," *Chap. L. Rev.* 4 (2001): 147.

16. J C Eastman, "Restoring the General to the General Welfare Clause," *Chap. L. Rev.* 4 (2001): 63.

17. Public Law 74-46.

recalled that to decide how many acres to set aside the USDA used calculations based on optimizing the area needed to be removed from production in order to reduce surplus grain supplies and increase commodity prices in the face of plummeting farm incomes in the early 1980s.¹⁸ This strategy is not new and is rather understandable given the precipitous fall in commodity prices following the boom of the 1970s. Then, temporary access to the Soviet grain markets spurred demand, as a result hiking up prices. Secretary of Agriculture Earl Butz encouraged farmers to expand and use every available corner of agricultural land. Land previously conserved went back into production. Foreign demand was supposed to gobble up the extra harvest. But when the same political forces that opened the markets took them away, farmers ended up sitting on huge surpluses facing rock-bottom prices by the early 1980s. Such domino effects and policy interactions are commonplace in agricultural policies, and USDA programs often attempt to solve multiple problems at once. Farm income concerns (with help from farmer groups) tend to rise to the top of the agenda.

So a cross-compliance provision tying commodity payments to conservation practices for farmers of highly erodible lands was a surprising element of the 1985 Farm Bill. Besides general rhetoric on the problem of soil erosion, past programs made little progress toward actually addressing the problem.¹⁹ This time was different. For the first time, environmental concerns shaped agricultural policy in a serious way. Thus far, the agency primarily provided technical expertise to farmers interested in conservation. The Conservation Title in the 1985 Farm Bill effectively required many more farmers to become interested. The new programs fell to NRCS

18. Personal Interview, 13.

19. USDA, "A National Program for Soil and Water Conservation : 1982 final program report and environmental impact statement : Soil and Water Resources Conservation Act" (1982)., p. 18.

to administer, with the notable exception of the Conservation Reserve Program, which was and still is administered by the Farm Service Agency, the FSA. The FSA also administers USDA commodity programs. A stream of new environmental programs materialized in the last 30 years, many providing cost-share funds to implement conservation practices.²⁰

Moreover, the 1985 Farm Bill signaled a major shift in the Department's justifications for conservation policy — away from a reasoning that protecting soil will increase outputs and bolster “on-farm” benefits and toward an emphasis on environmental conservation and minimizing environmental externalities. The terms of the debate on conservation were no longer limited to questions of yield losses caused by soil erosion. Social and environmental impacts related to degradation of ground and surface water quality and destruction of wildlife habitats as a result of agricultural practices became salient topics of research within NRCS, and the agency's programs reflected that. In a speech to USDA employees in 1986, Secretary of Agriculture John Block himself warned of the changes afoot — that conservation had now become a major part of the department's mission.²¹ The shift meant an enormous increase in the workload for NRCS employees who now had to create over a million conservation plans for farmers with highly erodible lands, spreading over a hundred million acres. The shift also has had a profound effect on how NRCS communicated and interfaced with the farming community. Many employees in the county-based offices felt uncomfortable in their new secondary role as enforcers, preferring their old role — still primary but previously unambiguous — as amicable technical advisors.²²

20. A B Effland, "US Farm Policy: The First 200 Years," *Agricultural Outlook* (2000): 21-25.

21. Personal Interview, 5, 4.

22. U S GAO, "Agricultural Conservation: USDA Needs to Better Ensure Protection of Highly Erodible Cropland and Wetlands. Report to the Ranking Democratic Member, Committee on Agriculture, Nutrition, and Forestry, US Senate" (2003).

How much funding should be allocated between technical assistance and other programs continued to be an important question especially as the size and scope of conservation programs grew.

Successive farm bills in the 1990s and early 2000s expanded the number and size of conservation programs for the most part, although many cuts and changes took place as well. Whereas in 1985 the only land retirement program had been the Conservation Reserve Program (CRP), other programs, like the Wetland Reserve Program (WRP) and the Grassland Reserve Program (GRP), were added. After the mid-1990s and later, focus shifted from retiring over-worked land to conserving actively worked land through the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), and others. As of 2012, over a score of different programs operated at an annual cost exceeding \$5 billion.²³

Unlike the earlier programs, which focused almost exclusively on soil erosion, more recently established programs attempted to tackle a host of other issues such as water quality and wildlife habitat restoration. While the focus on water quality was not at all new, in the first half of the 20th century sedimentation was regarded as the main problem and other pollutants received little attention.²⁴

Other concerns: water

Historically the USDA has run projects related to water resources, especially related to drainage, irrigation, and flood protection, but little attention was paid to the environmental

23. Pavelis, George A; Helms, Douglas; Stalcup, Sam, "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010," *Historical Insights* (May, 2010).

24. C L Williams, "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture," *Environmental Affairs* 7 (1978): 365., p. 365.

consequences.²⁵ Draining wetlands and channeling rivers to benefit agricultural lands were popular strategies. Projects to build structural controls on waterways were undertaken across the country. Amendments to the original Watershed and Flood Control Act²⁶ expanded the projects' goals to include enhancement of watersheds for recreation purposes and to improve wildlife habitats.²⁷ The Department of Health, Education, and Welfare or HEW (now the Department of Health and Human Services) ran most of the Federal water quality programs until 1970. That is when the EPA was created and took over the coordination of water quality and many other environmental programs spread out between the USDA, the HEW, the DOI, and other agencies. Numerous administrative units such as councils, services, bureaus, boards, and commissions came together under one roof.²⁸ Since environmental problems spanned administrative boundaries, the arrangement was supposed to facilitate efficiency.

The agency owes its origins, anomalously, to a presidential executive order signed by Richard Nixon. Having aligned himself with corporate interests, he vetoed the initial version of the Clean Water Act, only to shift his position when sensing public sentiment for restorative and protective action. Nixon became convinced that a new agency was unavoidable and consolidated a suite of offices.²⁹ This presented considerable challenges since each one came with its own

25. Ibid., p. 384.

26. Original is Public Law 83-566; amended in 1972 as Public Law 92-419.

27. Bagley, George, "Conservation Viewpoint: Strengthening the Small Watershed Program," *Journal of Soil and Water Conservation* 30, no. 3 (1975): 110., p. 110.

28. B H Holmes, *History of Federal Water Resources Programs and Policies, 1961-1970* (Dept. of Agriculture, Economics, Statistics, and Cooperatives Service: for sale by the Supt. of Docs., US Govt. Print. Off., 1979)., p. 107; White House, The, "Reorganization Plan No. 3 of 1970 | EPA History | US EPA" , Web (July 9, 1970), <http://www.epa.gov/history/org/origins/reorg.htm> (accessed April 13, 2011).

29. The Guardian, "Origins of the EPA | EPA History | US EPA" , Web (1993), <http://www.epa.gov/history/publications/print/origins.htm> (accessed April 13, 2011).

culture and processes. Besides this, the more serious challenge for the EPA was, and remains, philosophical. The agency's strong regulatory mandate unleashed a debate over the proper balance between the reach of the federal government and the resultant public benefit.³⁰ Because tough regulations often create economic losers, most EPA-mandated environmental standards are fought out in protracted litigation battles.³¹ This is certainly the case with water quality standards.³²

The Clean Water Act³³ passed in 1972 authorized the new agency to regulate water pollution. At the time farmers were very concerned that the EPA would use its authority under Section 208 to impose controls on the agricultural sector.³⁴ Farmers were able to stave this off. So infamously, Congress exempted agricultural sources from most EPA regulations. The USDA never ceased playing a large role in agricultural water quality projects. As focus on agricultural pollution grew through the years, the two agencies collaborated fairly well together.

In 1980, through the Rural Clean Water Program, the USDA and the EPA funded 21 experimental watersheds to assess the impacts of conservation practices on water quality across different hydrologies and soil conditions. Many of the projects failed to produce meaningful results because of difficulties defining water quality, difficulties separating agricultural and

30. Wisman, Phil, "EPA History (1970-1985) | EPA History | US EPA" , Web (November, 1985), <http://www.epa.gov/history/topics/epa/15b.htm> (accessed April 13, 2011).; Dennis C. Williams, "EPA' s Formative Years, 1970-1973 | EPA History | US EPA," *The Guardian* (1993). <http://www.epa.gov/history/publications/print/formative.htm> (accessed April 13, 2011).

31. R O' Leary, *Environmental Change: Federal Courts and the EPA* (Temple Univ Pr, 1993).

32. U.S. EPA, "Section 303(d) Lists and TMDL Litigation: Challenges to EPA Establishment or Approval, February 2009" (February, 2009).

33. Public Law 92-500.

34. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture.", p. 366.

nonagricultural pollution sources, inadequacies in applications of conservation practices, and unrealistic expectations of immediate results.³⁵ The projects provided many lessons for future designs, however, and clear linkages have been established since. Now experimental data on which agricultural practices are least damaging are abundant. Data on how the different conservation practices interact at a watershed scale are much more scarce.

By the late 1980s, widespread concern over water pollution from agricultural sources resulted in amendments to the Clean Water Act, including Section 319, which requires states to submit cleanup plans and provides grant money to states and localities to implement nonpoint source pollution reductions in designated watersheds. The most popular solution states use to control agricultural water pollution is to subscribe to the USDA's voluntary programs. In 1988, the EPA and the USDA signed a memorandum of understanding to help facilitate the process.³⁶ Today the EPA's National Nonpoint Source Monitoring Program established by Section 319 and the USDA's Conservation Effects Assessment Program (CEAP) are the primary source of information on agricultural water pollution in specific watersheds.³⁷

The USDA programs remain to be the primary mechanism states use to control nonpoint source water pollution. The programs are voluntary and farmers who may be contributing the most to the problem may elect not to participate, so the question of effectiveness arises. One

35. Osmond, Deanna, "USDA Water Quality Projects and the National Institute of Food and Agriculture Conservation Effects Assessment Project Watershed Studies," *Journal of Soil and Water Conservation* 65, no. 6 (2010): 142A.

36. Sampson, Neil R, *With One Voice: The National Association of Conservation Districts* (Wheatmark, 2009)., p. 75.

37. Osmond, Deanna "USDA Water Quality Projects and the National Institute of Food and Agriculture Conservation Effects Assessment Project Watershed Studies."

argument is that a TMDL scheme could provide an impetus to push more farmers toward conservation.

While improving water quality has been the traditional justification for pushing tougher regulations on agricultural practices, it is not the only one. It is also not the only metric the USDA uses to assess and modify the effectiveness of conservation techniques. Establishing wildlife habitat is another major one.

Other concerns: wildlife habitat

Although its importance has increased in recent years, wildlife conservation is not a new issue in the mix. The small watershed program developed in the 1950s introduced wildlife habitat preservation and enhancement as one of the goals for the USDA's projects on private lands.³⁸ Nonetheless, flood prevention received much more attention (mostly because the federal government paid in full for flood prevention structures and only half the cost of other projects).³⁹ Other programs like the Resource Conservation and Development Program (RC&D) established in 1962 included wildlife conservation as one of the priorities. In the case of this program, however, all environmental priorities were secondary to rural economic development.⁴⁰ This program was discontinued in the recent very contentious appropriations bill for fiscal year 2011.⁴¹

The Water Bank Act of 1970⁴² first established payments to farmers to preserve wetlands, and in 1977 the US Army Corps of Engineers received jurisdictional authority over wetlands.⁴³ The 1985 Farm Bill put a stop to draining wetlands — a practice the USDA itself propagated during the most of the century. Subsequent farm bill programs put more and more emphasis on wildlife issues. This was partly because program analysts realized that ecological benefits accrue

38. Bagley, George "Conservation Viewpoint: Strengthening the Small Watershed Program."

39. Holmes *History of Federal Water Resources Programs and Policies, 1961-1970*.

40. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture.", p.394.

41. Whelan, Lora, "RC&D Funding Cut in Federal Budget," *The Quoddy Tides* (2011). <http://quoddytides.com/rcd4-22-11.html> (accessed May 31, 2011).

42. Public Law 91-559

43. Helms, Doug, "The Evolution of Conservation Payments to Farmers," *Compensating Landowners For Conserving Agricultural Land, Conference* (2003): p. 123. <http://aic.ucdavis.edu/research1/Conserv.ag.pdf>.

and looking at water and air quality and wildlife enhancement together provided better justification to continue programs than looking at soil erosion control on its own.⁴⁴ The agency's name change from Soil Conservation Service (SCS) to Natural Resources Conservation Service (NRCS) in 1994 signaled a more permanent commitment to issues other than soil erosion. Now, there are general programs like the Wildlife Habitat Incentive Program (WHIP) or the aforementioned Conservation Stewardship Program, as well as initiatives targeting specific at-risk species like the sage-grouse or the lesser prairie-chicken. Interestingly, to develop initiatives the agency's strategy is to look for species on the verge of being officially listed as endangered and develop strategies to restore their habitats, staving off an Endangered Species Act listing and all the associated expenses.⁴⁵

One telling sign of another shift at the department is the move away from easement programs. Within the last 15 years, USDA conservation budget went from being almost completely dominated by land retirement programs to allocating over a third of the resources toward better stewardship on lands under agricultural production — either used to grow crops or farmed animals. Yet in the late 1930s and 1940s at the inception of conservation policies, the USDA spent more funds in real terms on conservation, mostly in the form of financial assistance.⁴⁶

So the most important legacy of the 1985 reforms was not to be financial or simple. It was to be political and complex. First was the cross-compliance provision linking conservation

44. Personal Interview, 13.

45. C C Mann and M L Plummer, "Noah's Choice: The Future of Endangered Species" (1995).; Personal Interview, 4.

46. NRCS, "A Resources Conservation Act Report: Interim Appraisal and Analysis of Conservation Alternatives" (September, 2001).

to benefits from the USDA commodity programs. Second was a broadening of attention from erosion and sedimentation to water quality generally and to the preservation of ecosystems, especially wildlife habitats such as wetlands and grasslands. Third, and perhaps most important, was a cultural shift within the Department itself. Conservation had secured a spot, apparently a permanent one, on the agenda. This change did not occur instantaneously nor was it flawlessly completed, especially since goals for some USDA commodity programs continued to contradict conservation principles. Nonetheless, natural resource conservation made its way into the farm bills, into the USDA, and into the national policy debate.

Role of information

One factor that plausibly contributed to raising interest in the environmental impacts of agricultural practices was the increased availability of information about natural resource conditions on private lands — about 70% of the total surface area of the United States. The Rural Development Act of 1972⁴⁷ mandated that the USDA carry out inventories (which became the National Resource Inventories or the NRIs) at least every 5 years, and the Soil and Water Resources Conservation Act (RCA) of 1977⁴⁸ required the Secretary of Agriculture to conduct comprehensive appraisals based on the inventories and other pertinent sources and then submit to Congress a National Conservation Program. The Act was controversial at the time — President Gerald Ford vetoed it in 1976. During that year's presidential campaign, Jimmy Carter promised

47. Public Law 92-419.

48. Public Law 95-192.

to sign it if elected and did so in 1977.⁴⁹ The Act required the USDA to conduct a resource appraisal on “quality and quantity of soil, water, and related resources, including fish and wildlife habitats” conducted in concert with conservation districts, local government, and public participation. Appraisals became known by the Act’s acronym, RCA. Thus, RCA appraisals were to lead to “a national soil and water conservation program” developed in accordance with other interested parties. The resultant national program was to provide guidance to Congress on future actions.⁵⁰ The Act called for comprehensive appraisals and national program plans to be completed by 1979 and every five years thereafter. I should note that the national program has been known variably as the RCA Program, the National Program for Soil and Water Conservation or the RCA National Conservation Program (NCP) — terms that refer to a formalized long-term planning effort for the USDA conservation programs, and terms that I use interchangeably.

The Secretary delegated this work to the Soil Conservation Service (SCS), the predecessor to Natural Resources Conservation Service (NRCS). The first RCA appraisal was done in 1980 and a National Program for Soil and Water Conservation was released with much fanfare in the conservation community in 1982 based in large part on the 1977 NRI. The RCA and the National Conservation Program of 1980 and 1982 respectively were an impressive undertaking. In coordination with SCS, external organizations convened over 9,000 public meetings on the topic with over 160,000 people in attendance. During the 60-day review period for the RCA, SCS analyzed nearly 65,000 responses. The review period for the national plan

49. Schnepf, Max, "Norm Berg: A Calling for Conservation," *American Farmland Trust* (2007), http://www.farmlandinfo.org/documents/35044/norm_berg_profile.pdf.

50. House of Representatives, "Soil and Water Resources Conservation Act of 1977" (Report No. 95-344) (May 16, 1977).

resulted in over 83,000 responses from all possible organizations. The plan advocated for establishing two main priorities: (1) to reduce excessive soil erosion and (2) to conserve water used in agriculture as well as to control upstream flooding. It also suggested and tested policy strategies to achieve the goals.⁵¹

The final version of the 1985 Farm Bill radically changed the course of USDA conservation policies, as discussed above. It addressed soil erosion, did little on water quality, but took a step to conserve wildlife by reversing the USDA's long-standing policy of draining wetlands to clear land for production — a practice destructive to an ecologically important American habitat, one estimated in 1980 to have been reduced by 53% since the beginning of European settlement.⁵²

SCS released the results of the second appraisal and plan in the late 1980s. They were based on the 1982 NRI and supported the expansion of the new environmental focus. The 1982 NRI is still considered to be the most ambitious survey in the series. It relied on the expertise and time of soil conservationists across states and took two years to complete, sometimes engendering discontent from the local partners. Throughout the years the survey design has undergone significant adjustments to accommodate the needs of competing stakeholders and to balance information collection with other agency activities. Unlike the early surveys that were done primarily through physical visits to the site, the 1987 NRI and the NRIs of the 1990s increasingly utilized remote sensing technology. The modern NRIs rely on high-resolution

51. USDA "A National Program for Soil and Water Conservation : 1982 Final Program Report and Environmental Impact Statement : Soil and Water Resources Conservation Act."

52. Dahl, Thomas E, "Wetlands Losses in the United States -- 1780' s to 1980' s" , Web (July 16, 1997), <http://www.npwrc.usgs.gov/resource/wetlands/wetloss/index.htm> (accessed December 27, 2010).

imagery purchased for each sample point. The scope of the present-day NRI continues to impress. The stratified two-stage sample design included 70,000 primary sample units in 1977 and 300,000 sample segments with 800,000 sample points in 1997.⁵³

The NRIs are unique surveys. In brief, they are the primary source of information about non-federal lands, which constitute more than 70% of the nation's surface area, as mentioned. Their statistical design has been kept comparable over the last 25 years to allow for tracking land use trends. Results show that over 18% of the total surface area was used to grow crops in 2007 (a 15% drop from 1982); around 6% was in pastures (a 2% drop from 1982); just over 21% was rangeland (also a 2% drop from 1982); nearly 21% was forests (a .75% increase from 1982); and 1.7% of the total surface area was under contract with the CRP. Total rural area shrunk by 3.2% from 1982 to 2007, most of it lost to urban development.⁵⁴

The NRIs' original purpose was to examine types and trends in land uses, availability of productive lands, and soil conditions on those lands — variables necessary to determine soil erosion and future productivity potential. Additional elements on wildlife habitats, types of conservation practices (if any) used and participation in USDA programs expand the usefulness of the inventories. The RCA appraisals and the National Conservation Programs rely on the NRI data as one of the main sources, but since their scope is much broader, they incorporate data and analysis from other USDA agencies and from other external sources such as data from other federal agencies or other research. After all, the appraisals and national conservation plans attempt to deal with the entire suite of environmental concerns arising from agricultural

53. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory" (2009).

54. Ibid.

production. They look not only at soil erosion and availability of lucrative farmland, but also at water availability and quality in terms of several pollutants — nutrients, pesticides, biological agents, and sedimentation — and other natural resources such as fish and wildlife habitats.

While the first RCA appraisals and the RCA National Conservation Program of the early 1980s were massive undertakings and generated tens of thousands of responses, the second round scaled down the effort. There was no massive public outreach akin to the one in the late 1970s. Still over a thousand comments were received, generally in support of keeping soil erosion and water quality as the top priorities. The 1990 Farm Bill expanded conservation programs initiated in 1985 — it included further eligibility restrictions for farming on highly erodible lands, and it created the Wetland Reserve Program (WRP) to retire wetlands from agricultural production, although overall the bill contained few new provisions.

In the early 1990s the USDA underwent significant re-organization and consolidation. The Soil Conservation Service emerged as the Natural Resources Conservation Service. President Clinton's Reinventing Government initiative, which aspired to redesign the way the federal government operated, put an end to the larger environmental evaluations, effectively abandoning the RCA appraisals and the RCA National Conservation Program. Evaluations achieved through requirements in the Government Performance and Results Act of 1993⁵⁵ were expected to prove sufficient. So the formalized internal process of evaluating the results from the NRIs succeeded only twice. By the time the new century had begun, the scaffolding for analyzing and creating appraisals and then formulating nationwide soil and water conservation plans based on NRI results had been dismantled completely. A few smaller pamphlets on

55. Public Law 103-62.

specific issues came out, their titles alluding to RCA connections. But a National Conservation Program never materialized despite a considerable internal effort by NRCS in the mid-1990s. The RCA process was re-established in the 2008 Farm Bill and took place in 2011 and 2012.

The NRIs, on the other hand, continued along uninterrupted — first as usual every 5 years and then split up into smaller annual surveys compiled into 5-year reports starting in 2000.⁵⁶ The 2002 Farm Bill expanded conservation programs and created new ones and also stipulated renewed monitoring, reserving funds for the purpose. The leadership at NRCS took the opportunity to expand their evaluation efforts, creating the Conservation Effects Assessment Project (CEAP), which attempts to characterize the impacts of conservation practices on national, regional, and watershed levels. This venture involves multiple USDA agencies, notably NIFA and ARS, other Federal agencies such as the EPA, the USGS, and NOAA, as well as nonprofit organizations, colleges, and universities. Its primary purpose is to assess conservation benefits from the USDA's largest conservation programs: EQIP, CRP, WRP, and others.⁵⁷ CEAP utilizes not only the NRI data but draws on every available resource in an attempt to provide a complete picture of agricultural impacts on natural resources — including on wetlands, grazing lands, croplands and wildlife. It builds on the existing NRI data points, includes geospatial analysis, monitoring data, computer modeling, and information gathered and evaluated from outside sources, such as research centers and the non-profit sector. The results are starting to come in and are being used by NRCS to compile another official appraisal for Congress — the 2008 Farm Bill once again contained a mandate for the agency to revive the whole evaluation

56. Ibid.

57. CEAP NRCS, "Conservation Effects Assessment Project | Technical Resources | NRCS", Web (2010), <http://www.nrcs.usda.gov/technical/NRI/ceap/> (accessed December 29, 2010).

cycle, meaning the RCA appraisal and the National Conservation Program. In 2011, NRCS finalized the RCA and started the National Conservation Program process — just in time for the beginning of discussions for the 2012 (or perhaps 2013) Farm Bill.

One attribute of the NRIs, RCA appraisals, the RCA National Conservation Programs, and now CEAP is that they all rely on external data inputs, although to varying degrees. For example, the early NRIs depended heavily on the local soil conservationists' and on farmers' willingness to participate. Today an integral component of CEAP cropland assessments is the NRI-CEAP farmer survey.⁵⁸ The early RCAs and national plans relied on NRCS's other partners to gather feedback from all major stakeholders, including farmer and environmental groups and the general public. For example, the immense public outreach effort undertaken to support the first RCA was only possible because of the leadership on behalf of the National Association of Conservation Districts (NACD) — a nonprofit organization that represents conservation districts. The Soil and Water Conservation Society (SWCS) has historically been and continues to be NRCS's close collaborator. For instance, in 2006, NRCS tapped the organization to conduct a Blue Ribbon review panel on CEAP's goals and methodology.⁵⁹ The CEAP projects themselves involve many more partners and collaborators than even the appraisal effort. Currently, CEAP relies on 60 partner organizations, including non-profit organizations and universities.⁶⁰ The 2011 RCA effort likewise used outside organizations to help.

58. CEAP NRCS, "Farmer Surveys | Conservation Effects Assessment Project | Technical Resources | NRCS" , Web (2011), <http://www.nrcs.usda.gov/technical/nri/ceap/surveys.html> (accessed February 10, 2011).

59. L F Duriancik *and others*, "The First Five Years of the Conservation Effects Assessment Project," *Journal of Soil and Water Conservation* 63, no. 6 (2008): 185A.

60. NRCS "Conservation Effects Assessment Project | Technical Resources | NRCS."

Besides outside organizations, other federal agencies are involved in different capacities with the RCA appraisals, the RCA National Conservation Programs, and CEAP. Critical information comes from other USDA agencies like the ARS or the FSA; as well as the EPA, the USGS, and other federal sources when applicable. The CEAP steering committee includes representatives from the EPA, the USGS, BLM, NOAA, and the US Fish & Wildlife Service. In theory, this inter-agency collaboration should aid the usefulness and the reach of the results. The arrangement between the EPA and the USDA programs aimed at reducing agricultural pollution is being tested right now.

The Executive Order issued by President Obama in May 2009 requiring federal agencies to use all the tools at their disposal to recommend ways to protect the Chesapeake Bay may have launched conservation policy in a new direction.⁶¹ The EPA is using this opportunity to apply a regulatory approach to control nutrient and sediment pollution, as mentioned above. The proposal to put federal weight behind enforcing state-produced TMDLs limits in the Bay is being prepared to go into effect as soon as the many practical hurdles allow. Although the primary argument for TMDLs is that (if implemented correctly) it is a market-based approach, farmers perceive it to be a much more threatening and rigid design in contrast to the farmer-friendly programs run by the USDA. Nonetheless, solutions that invoke market mechanisms are popular in the current break-even political climate.

If a regulatory shift occurs, implications for conservation policy may be significant. The advances in introducing conservation practices to the agricultural community may be lost as emphasis shifts toward complying with the proscribed load specifications rather than on applying

61. White House "Executive Order Chesapeake Bay Protection and Restoration .", Executive Order 13508.

ecologically sound farming techniques. The role information plays will also shift. Perhaps the government will have to create networks of monitoring in watersheds measuring the level of effluence coming off specific farms. Setting up such a system (otherwise known as the transaction costs) may be much more expensive than the Administration wants to admit (or even calculate). Some analysts think that simply establishing tougher regulations will force most to participate, making intense monitoring unnecessary.⁶² The NRIs and CEAP provide one view of the complexities involved in attributing nonpoint source pollution to its source, including the need to account for variable geographical circumstances and weather fluctuations, differences in planting practices, contribution of other sources such as suburban lawn care practices and wildlife, as well as slow release of legacy elements deposited over the previous decades. In contrast, theoretically the USDA conservation programs work to recommend agricultural practices designed to address environmental problems at the local level. They also provide financial help to participate.

Current status of conservation programs

One drawback to choosing NRIs, RCA appraisals, National Conservation Programs, and CEAP as the starting point is that their reach is very broad. Especially the RCA appraisals, the RCA National Conservation Programs, and CEAP stretch far beyond soil conservation issues and deal with a host of agricultural-environmental issues including chemical discharges into streams and impacts on fish and wildlife habitats. Potentially, EPA policies on water pollution or pesticide regulation fall under the heading of “conservation policy.” Some NOAA, Department

62. Personal Interview, 7.

of Interior's Fish & Wildlife Service, and Army Corps of Engineers programs also deal with agricultural pollution.⁶³ Of course, the overlap between the USDA programs and EPA jurisdiction to protect water quality is an important theme in recent debates on conservation policy. Nonetheless, I limit my definition of "conservation policy" to programs run by the USDA that address some broad environmental resource concerns affected by agriculture. Since there are many such programs, I focus on the larger ones.

Agricultural production is expansive — there are around 885 million acres of working cropland, pastureland and rangeland (or around 45% of the total land area of the US). The rest of non-federally owned lands consists of forest and other non-rural land. Generally speaking, modern USDA conservation programs are voluntary and use eligibility for the popular price support payments to entice farmers to practice environmental conservation — *i.e.*, abide by better practices such as no-till farming, establishing buffer zones with native vegetation near watersheds, constructing terraces to control soil erosion, abiding by precise nutrient management and over 150 other ones.⁶⁴

Around 20 programs compose the USDA's conservation portfolio and can be split into five broad categories: land retirement programs (around 48% of the 2010 budget was spent on these); working-land programs that provide cost-share or payments for conservation assistance (with 30% of the 2010 budget); conservation technical assistance (with 17.5% of the total); agricultural land preservation and rural development programs (with around 3.4%); and

63. National Association of State Departments of Agriculture Research Foundation, "Federal Environmental Laws Affecting Agriculture" (2000).

64. These are listed in the NRCS's National Handbook of Conservation Practices - NRCS, "National Conservation Practice Standards - NHCP | NRCS" , Web (2010), <http://www.nrcs.usda.gov/technical/standards/nhcp.html> (accessed December 30, 2010).

watershed structural activities like flood prevention work (with 1.4% of the total).⁶⁵ The total funding for these programs went up to nearly \$6 billion in 2009, but came down to just over \$5 billion in 2010, representing about 4% of the USDA's program level total budget.⁶⁶ This relatively low funding level is due in part to budget deficit politics. Programs not funded through farm bills as mandatory have seen their budgets cut as appropriations committees move to reduce discretionary funding.⁶⁷ After all, discretionary funding is Congress's only chance to reduce the budget without negotiating new laws.

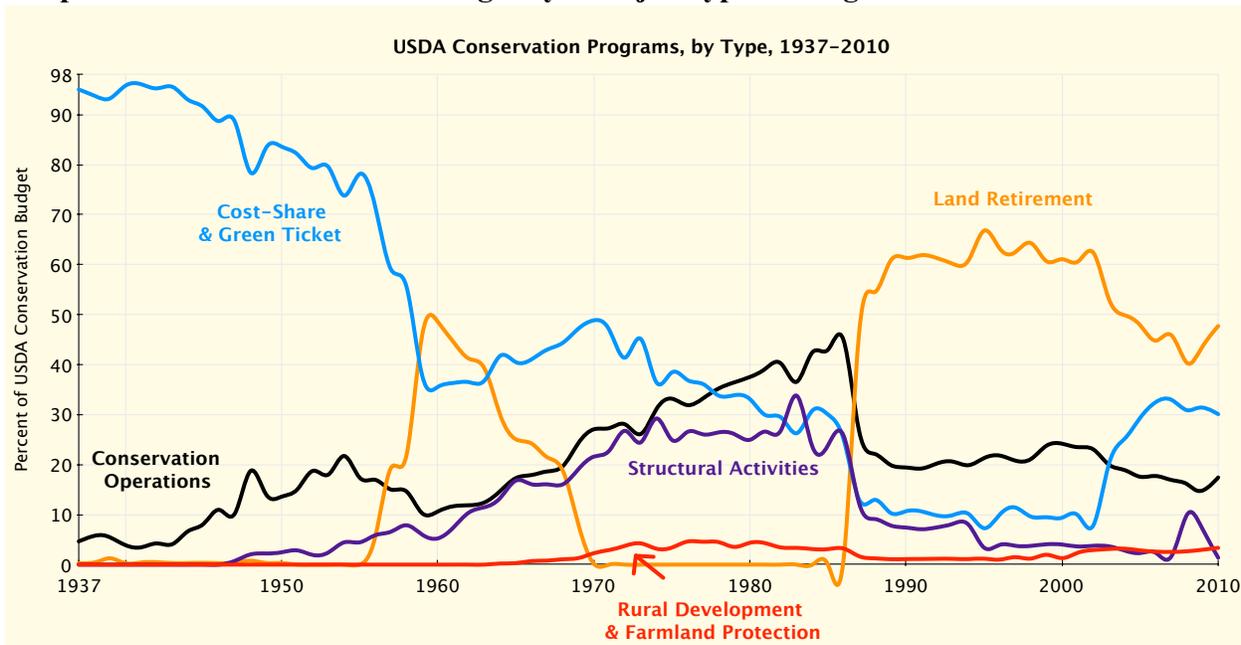
The changes in the USDA conservation programs are apparent from looking at the historical trends. During the early decades when conservation programs functioned as ersatz commodity payments, cost-share programs dominated the budget. The 1960s and 1970s signaled a change in broader USDA commodity policy with land retirement programs dropping to zero and structural activities like flood prevention and conservation technical assistance rising as a proportion of the budget. The graph below presents a long-term view of the programs. I should note that multiple data sources exist for USDA conservation program budget numbers because of differences in how the Department and agency have accounted for program spending. I use the latest data from the NRCS history office that provided real and nominal budget numbers for all USDA conservation programs from 1937 to 2010. I split the programs into categories for the purposes of this analysis. The details are described in Appendix B.

65. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

66. USDA, "USDA, FY2011: Budget Summary and Annual Performance Plan" (2010).

67. Stubbs, Megan, "Agricultural Conservation: A Guide to Programs," *CRS* (2010).

Graph 1. USDA Conservation Budget by a Major Type of Program.



Source : Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

The 1985 Farm Bill clearly changed the course of conservation policies. Since then, the best-funded programs have taken land out of production. These land-retirement programs include the CRP, the WRP, and other smaller programs. CRP is the older conservation program and is the largest since the Soil Bank program in the late 1950s and early 1960s. CRP annual rental payments reach around \$1.9 billion, although this program's cap for enrollment acreage has been reduced from nearly 40 million in the 1990s to 32 million in 2010 and is likely to fall farther with the next farm bill. The program's primary goal is to take environmentally sensitive land (in part as defined through NRI data) out of production for 10 to 15 years to restore natural cover, such as grasslands or forests, on those acres, at least for the period of the contract.

Throughout the program's lifespan demand for the funds outstripped supply — in a round of enrollments in 2010, nearly 500,000 acres were left unaccepted (but many more could have qualified given the environmental criteria but did not apply).⁶⁸ The states with the most acres enrolled were Texas, North Dakota, Montana, Kansas, and Colorado. In the 1985 Farm Bill only producers farming on highly erodible lands were eligible for enrollment (or around 100 million acres), the 1990 Farm Bill applied a less restrictive criteria opening the pool of eligible lands to 250 million acres.⁶⁹ In addition, the 1990 Farm Bill also established the first program oriented toward a more expansive definition of water quality through the reserve approach, the Water Quality Incentives Program, which was subsumed by the EQIP program in the next farm bill.⁷⁰ The WRP was also initiated in the 1990 Farm Bill and has had around 2 million acres in enrollment initially, although the 1996 Farm Bill increased the acreage cap to 3.04 million acres.⁷¹ The Grassland Reserve Program (GRP) was authorized in 2002. Congress authorized for nearly 2 million acres to be enrolled in it either through easements or in rental agreements.

The Environmental Quality Incentives Program or EQIP was established in 1996. It absorbed a few previous cost-share programs and became the largest working-land program, a category of funds growing in importance. It subsumed a few previous cost-share programs. In 2008, Congress shifted focus away from land retirement programs and toward working-land programs with 17% of the increase in conservation program funding channeled to EQIP and the

68. USDA, FSA, "The Conservation Reserve Program: 39th Signup Results" (September, 2010).

69. ERS, "ERS/USDA Briefing Room - Conservation Policy: Background" , Web (2010), <http://www.ers.usda.gov/Briefing/ConservationPolicy/background.htm> (accessed December 30, 2010).

70. Craig Cox, "US Agriculture Conservation Policy and Programs: History, Trends, and Implications," *US Agricultural Policy and the 2007 Farm Bill* (2007)., p. 118.

71. ERS "ERS/USDA Briefing Room - Conservation Policy: Background."

Conservation Stewardship Program (or CStP). In 2009, there were three times as many unfunded contract offers for EQIP as the ones that actually came through — 31,960 contracts were signed with 110,007 offers going unfunded. That year over \$1.3 billion was obligated in funds.⁷² Texas, California, Minnesota, Colorado, and Nebraska received the most funds. The program reserves 60% of the funds for livestock-related projects and limits the total size of payments to \$300,000 over a 6-year period. Producers can apply for cost-share payments to receive up to 75% of installation costs for conservation practices such as waste storage tanks, installing fencing, planting vegetation in filter strips and others. Incentive payments are also available to encourage the use of new management practices such as wildlife habitat preservation or integrated pest management.

The smallest component of the USDA conservation programs deal with farmland protection and rural development. They received about \$170 million in funding in 2010. States can compete for extra funds through developing initiatives around particular issues. Recent initiatives the Mississippi River Basin or the Great Lakes Restoration initiatives focus on polluted watersheds, while the Sage-Grouse and the Lesser Prairie-Chicken Initiatives focus on at-risk species. In that case, NRCS targets resources to help rebound a species on the verge of being listed as endangered under the Endangered Species Act. Such a listing triggers tougher regulations from the Fish & Wildlife Service. Farmers are skeptical of their regulations just as much as the EPA's, preferring to deal with NRCS and the USDA instead.⁷³

Two fairly recent additions to the NRCS programs are especially exciting to the

72. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

73. Personal Interview, 4.

environmental community.⁷⁴ The Conservation Stewardship Program established in 2008 and which first surfaced as the Conservation Security Program in the 2002 Farm Bill offers payments to farmers whose operations are at or above a certain conservation threshold. The program's budget was \$230 million in 2010. The idea of attaining a certain minimum conservation standard across the board is not new. Some European agricultural payments, for instance, are based on meeting just such a standard.⁷⁵ The second program is a subset of EQIP and is called Conservation Innovation Grants. The program solicits proposals and distributes grants to carry out new conservation strategies across a wide geographical area such as a watershed. Around \$18 million was distributed in grants in 2010, and the agency spent around \$25 million in 2011.⁷⁶

As discussed, besides the USDA, the EPA is a prominent player in agricultural pollution regulation. The 1987 amendments to the Clean Water Act established Section 319 through which the EPA provides grant money and technical assistance to selected watersheds. It spent over \$200 million in 2009 on 724 ongoing projects.⁷⁷ Nonetheless, the cleanup strategy is to use the USDA conservation programs and technical assistance for help. The two agencies work together to address local water pollution issues. So in turn, a farm located at an EPA-designated impaired

74. American Farmland Trust, "Agenda : National Agricultural Landscapes Forum | American Farmland Trust," *National Agricultural Landscapes Forum*, Web (April 8, 2011), <http://www.farmland.org/news/events/national-agricultural-landscapes-forum/agenda.asp> (accessed April 14, 2011).

75. K Baylis *and others*, "Agri-environmental Policies in the EU and United States: A Comparison," *Ecological Economics* 65, no. 4 (2008): doi:10.1016/j.ecolecon.2007.07.034.

76. NRCS, CCC, "Conservation Innovation Grants FY 2011: Announcement for Program Funding" (2011).

77. U.S. EPA, "Project Records, Section 319 Nonpoint Source Projects" , Web (2010), <http://iaspub.epa.gov/pls/grts/f?p=110:87:7150971181407295::NO::> (accessed December 30, 2010).; U.S. EPA, "Clean Water Act Section 319(h) Grant Funds History | Polluted Runoff | US EPA" , Web (2010), <http://water.epa.gov/polwaste/nps/319hhistory.cfm> (accessed December 30, 2010).

watershed (or a Section 303(d) watershed) has better chances to be selected for the EQIP program.⁷⁸

Besides these intersections between the EPA and the USDA programs, I will not conduct a thorough breakdown of EPA's regulations on other agricultural activities, such as livestock operations or pesticide registration. During its creation, the EPA took on the USDA's functions under the two acts that established the foundation for pesticide regulation — the Federal Insecticide, Fungicide, and Rodenticide Act and the Federal Food, Drug, and Cosmetic Act.⁷⁹ Nonetheless, these laws and their amendments, like the Food Quality Protection Act passed unanimously in both chambers in 1996,⁸⁰ designate a place for the USDA to monitor pesticide residue on foods, to gather data on pesticide use and to develop integrated pest management techniques.⁸¹ Despite this role, I leave policy debates on pesticide regulations out of my study to limit the boundaries of my research.

In general, the last 30 years saw a shift in resource priority areas. Whereas pre-1985 programs involved only soil and water resources (especially structural projects to control flooding), more recent programs aim at a wider scope of issues. NRCS now uses the acronym SWAPA+H to emphasize that its priorities include soil, water, air, plants, animals and humans (though +H was tagged on later, and now another letter and resource concern made its way in — E for energy). A recent conference held in 2011 to discuss RCA appraisal findings placed

78. NRCS, "Fiscal Year 2009 Allocation Formulas and Methodologies" (January, 2009).

79. Public Law 75-717.

80. Public Law 104-170.

81. U.S. EPA, "Food Quality Protection Act of 1996 FIFRA Amendments | Pesticides | US EPA" , Web (February 16, 2011), <http://www.epa.gov/opp00001/regulating/laws/fqpa/fqpaiffr.htm> (accessed April 13, 2011).

concerns about climate change and water security high on the agenda as well.⁸² This attention to a fuller range of issues bears out in that working-land program funds comprise an ever-growing portion of the total program budget. This is a hopeful sign given the history of land retirement programs. The 1960s Soil Bank program was similar in size to the CRP and relied on short-term contracts. All of its progress was for naught after commodity prices skyrocketed in the 1970s.⁸³ The modern CRP and other land retirement programs depend on how well the prices of the easement contracts can compete with local land prices.

Conservation policy and its development is made up of many pieces. Whether availability of information on specific environmental concerns influenced its course really probes at the dynamics at the agency level and at the policy process as a whole. In this case, NRCS went through a number of phases in its strategy to provide policymakers relevant information. Of course, they themselves are mired in information and in their own concerns and pressures. Before I present my methodology for answering the question — “Have the National Resource Inventories advanced conservation policy?” — I review previous empirical observations and theoretical research on two dimensions relevant here: how information, and especially information collected at the federal level, can affect policy, and how the policymaking process makes use of information. I then discuss the major debates specific to conservation policy. I close with an overview of the current trends in agriculture and conservation to put the policy discussion into context.

82. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust.", Day 1, Session 1.

83. Cox "US Agriculture Conservation Policy and Programs: History, Trends, and Implications.", p. 121.

Chapter 2: Current understanding of the problem to be studied

Accepted facts and theories

Previous studies provide ample evidence that scientific information can influence policy decisions; that it can come from a variety of sources; and that the popular image of scientists and researchers as disinterested providers of information fails in many cases.

Since the hotbed for environmental decision making is the EPA, many examples and observations come from studying the agency. One salient work is Mark Powell's *Science at EPA*. In his examination of scientific information in regulatory environments, Powell argues that science is used on every policy front, albeit in different ways depending on the actors involved.⁸⁴ Invariably, science and information make appearances in discussions at all policy stages. John Kingdon observed in his classic work that a problem rises to the top of Congressional agendas either through a dramatic event or through actual monitoring indicating a concern. In either case, new information initiates a policy response. Researchers and experts connect new data with policy alternatives and often involve themselves in implementing the resultant programs. So the reach of scientific expertise stretches from agenda-setting to guiding policy suggestions to final policy outcomes.⁸⁵

Besides "reality definition" or actual monitoring of environmental conditions, science is used knowingly to affect the policy process. In one example, Powell cites a legislative director

84. M R Powell, *Science at EPA: Information in the Regulatory Process* (Resources for the Future, 1999).

85. J W Kingdon, *Agendas, Alternatives, and Public Policies* (Longman Classics Edition) (Longman Publishing Group, 1984).

for the environmental group, the Natural Resources Defense Council, who broke down the group's strategy for propelling specific issues of interest onto the Congressional agenda during years of Democratic control in both chambers. The strategy consisted of mobilizing activist scientists to do media campaigns, putting pressure on Congress through public opinion.⁸⁶ Powell adds that especially in environmental policy, science is a favorite political weapon on all sides of a debate.⁸⁷

More scientific influence does not equal better results. This is a natural consequence where uncertainty, objectivity, and regulation intersect. Regulatory standards assign winners and losers, so much is at stake. Yet it is hard for the unorganized to be heard. In his eloquent analysis, Benveniste finds that experts cater to those in authority and have little incentive to pay attention to the beneficiaries of policies or outcomes. This is because incentives in research are designed to involve and benefit organizational needs. The citizen enjoys little sway.⁸⁸

In *Politicizing Science*, a number of authors charge scientists with undue involvement and influence in risk-assessment policies. Alleged misbehavior includes overstating carcinogenic effects of chemical pollutants and using inappropriate models to project climate change impacts. Personal impetus to find research dollars and secure access to policymakers can motivate researchers to put self-interest before objectivity.⁸⁹ Objectivity is hard to maintain. The proliferation of policy research institutions or think tanks that adhere to certain political principles is well established. One argument is that greater complexity in the political sphere

86. Powell *Science at EPA: Information in the Regulatory Process.*, p. 5.

87. *Ibid.*, p. 8.

88. G Benveniste, *The Politics of Expertise* (Boyd & Fraser Pub. Co., 1977)., p. 229.

89. M Gough, J Raisian and W O' Keefe, *Politicizing Science: The Alchemy of Policymaking* (Hoover Institution Press, 2003).

elevates the political stature of experts, some of whom begin to organize themselves along ideological lines.⁹⁰ Objectivity as a goal moves down the agenda. To promote their causes, some scientists may use alarmist rhetoric — a prevalent characteristic in so many environmental debates — which can succeed in raising an issue to the policy level, although might ultimately backfire as trust erodes.⁹¹ Media coverage can be very powerful in bringing certain issues to the public's attention but can often misread the crux of the story⁹² or fail to unravel prepackaged information provided to them.⁹³ Socio-political environs also matter. For example, cultural and political norms for dealing with scientific uncertainty differ from country to country depending on their evolved approaches to deal with scientific issues.⁹⁴ In the United States, for example, Jasanoff finds that the political system encourages prolonged debates and rule-making can be “needlessly cumbersome and protracted.”⁹⁵

The short review above suggests that the use of information depends on the evolved socio-political norms and other incentives. The quality of information and how it is communicated to policymakers, on the other hand, depends more on organizational incentives within research bodies and on the relationship between the scientific community and the policymakers. Often, this duality creates the need for two different strategies — one to deal with

90. J A Smith, *The Idea Brokers: Think Tanks and the Rise of the New Policy Elite* (Free Press, 1993).

91. A J Kellow, *Science and Public Policy: The Virtuous Corruption of Virtual Environmental Science* (Edward Elgar Publishing, 2007).

92. G E Likens, "The Role of Science in Decision Making: Does Evidence-based Science Drive Environmental Policy?," *Frontiers in Ecology and the Environment* 8, no. 6 (2010): 1-9.

93. D Nelkin, *Selling Science: How the Press Covers Science and Technology* (New York: Freeman, 1987).

94. S Jasanoff, *Risk Management and Political Culture: A Comparative Study of Science in the Policy Context* (Russell Sage Foundation, 1986).

95. *Ibid.*, p. 82.

internal issues and the other to present a front for external consumption. In his study of four prominent reports issued by the National Academies of Sciences, Hilgartner describes the two strategies using theater terminology. His idea draws on Erving Goffman's work that first used dramaturgical metaphor to describe how individuals cope with a need to act differently under different settings. After all, a successful play depends on how well the actors conceal backstage chaos from the audience and separate "back stage" from the "front stage." Similarly, at the Academies, backstage action was separated from the front through confidentiality and limited access to information. The front stage was carefully orchestrated through a structure that worked to minimize the appearance of dissent and to maximize unity.⁹⁶

This observation begs the larger question of what type of evidence is admitted, what is left out, and who is allowed to participate in the debates. The generally accepted view is that the interplay between political pressures on and considerations about the type of data that are collected and processed is considerable. More so, prevailing assumptions, political correctness, and other systemic drivers can limit the usefulness of data. This may be especially acute at federal research agencies.

For example, Krieger argues that until fairly recently, government statistics on public health were of limited usefulness since they ignored many socio-economic dimensions and so could not account for important environmental and occupational risk factors such as poverty or racism.⁹⁷ O'Neill uses the example of California's penal system in the 1970s to demonstrate how quantitative research was virtually eliminated because practitioners felt it undermined their

96. Hilgartner, Stephen, *Science on Stage: Expert Advice As Public Drama* (Stanford University Press, 2000).

97. N Krieger, "The Making of Public Health Data: Paradigms, Politics, and Policy," *Journal of public health policy* 13, no. 4 (1992): 412-427.

overall mission.⁹⁸ In this case, political forces pushed out information from participating in the decision-making process almost entirely.

Studies on federal organizations and their information processing reveal that intra-agency dynamics can influence policy outcomes more directly as well. Breslau finds that how program outcomes and program goals was evaluated in labor market interventions are primarily the result of definitional struggles among Department of Labor officers with different backgrounds rather than any other policy driver.⁹⁹ Studies on scientists in the EPA indicate that their role can be instrumental to policy (as in the case of lead standards in water) or peripheral (as in the case of ozone air pollution regulations in the 1990s).¹⁰⁰ The deciding factor, according to Powell's analysis of eight case, in setting the EPA's agenda was driven largely by previously set bureaucratic commitments, like pesticide re-registration deadlines. In some cases, analytical depth gets sacrificed. As a result, standards are designed according to inadequate data and simplistic modeling, and scientific research aimed at preparing for future needs gets ignored. Such developments can be traced to how funds are distributed between the EPA offices; how EPA internal agency norms and incentive structures favor the separation of policymakers and scientists; additional internal dynamics, and the inherent uncertainty of scientific decisions.¹⁰¹

Generally though, Workman, Jones, and Jochim note that information flow in the federal

98. K M O' Neill, "Organizational Change, Politics, and the Official Statistics of Punishment," in *Sociological Forum* (2003).

99. D Breslau, *In Search of the Unequivocal: The Political Economy of Measurement in US Labor Market Policy* (Praeger Publishers, 1998).

100. Powell *Science at EPA: Information in the Regulatory Process*.

101. *Ibid.*, p. 119.

dimension is often overlooked in studies on policymaking.¹⁰² This is surprising considering that every federal agency is engaged in some effort to collect statistical information and that most public agencies have scientific arms that work to inject scientific research into the operations of the agencies.

1. Federal government and information

Many federal agencies conduct nationwide surveys and inventories. The Bureau of Labor Statistics conducts monthly economic surveys that stream into every debate on economic policy; the Bureau of Transportation Statistics undertakes surveys that are used to plan future transit development and growth; the Department of Health and Human Services carries out regular surveys that influence the direction of our health policy. Around a third of federal assistance dollars and nearly 70% of all federal grant money is dispersed through the Census Bureau data,¹⁰³ despite questions about the validity of the surveys.¹⁰⁴ Federally generated statistical collection and analysis cost around \$5 billion annually (not including the decennial censuses, which add several billion to the total during those years). Two-thirds of the \$5 billion goes through the

102. S Workman, B D Jones and A E Jochim, "Information Processing and Policy Dynamics," *Policy Studies Journal* 37, no. 1 (2009): 75-92.

103. Reamer, Andrew and Carpenter, Rachel Blanchard, "Surveying for Dollars: The American Community Survey' s Role in Federal Funding - Brookings Institution" , Web (Brookings Institution, July 26, 2010), http://www.brookings.edu/reports/2010/0726_acs_reamer.aspx (accessed January 26, 2011).

104. M J Anderson and S E Fienberg, *Who Counts?* (Russell Sage Foundation, 1999).

Department of Health and Human Services, the Department of Commerce, and the Department of Labor.¹⁰⁵

Environmental indicators are collected by several agencies, including the USDA, the Department of Commerce, NOAA, the DOI, the EPA, and NASA. One of the longest-running programs is the USDA's Forest Inventory and Analysis done by the Forest Service. It has been in existence since 1928 when Congress wrote a monitoring program of the nation's forests into law.¹⁰⁶ The annual budget for this inventory is just over \$60 million.¹⁰⁷ Agencies like NOAA and the EPA monitor environmental pollution at pre-chosen sites at variable scales. For instance, the National Status and Trends Program run by NOAA collects information on toxic chemicals at around 300 coastal sites at a cost of less than \$1 million per year.¹⁰⁸ The EPA relies on a network of local and state agencies to gather information on air quality through its Air Quality System with a budget of \$34 million in 2003 for around 1,200 sites.¹⁰⁹ The EPA's Office of Research and Development also ran the discontinued Environmental Monitoring and Assessment Program dedicated to monitoring aquatic ecosystems at about \$40 million per year. For comparison, the NRI's annual budget is on the order of \$30 million and CEAP's is around \$5 to \$8 million.

As different as the surveys are, one common characteristic they surely share is an interesting story of origin. Ironing out the details of how to translate sometimes abstract

105. OMB, "Statistical Programs of the United States Government | the White House", Web (2010), http://www.whitehouse.gov/omb/regulatory_affairs/reports_previous_yrs/ (accessed January 26, 2011).

106. W B Smith, "Forest Inventory and Analysis: A National Inventory and Monitoring Program," *Environmental pollution (Barking, Essex : 1987)* 116 (2002): S233-S242.

107. USDA, Forest Service, "Forest Inventory and Analysis" (2010).

108. GAO, "Environmental Information: Status of Federal Data Programs that Support Ecological Indicators" (GAO, September, 2005).

109. Ibid.

concepts into numbers cannot help but enter political territory. Standard textbook methods for policy analysis begin with first defining the problem, followed by choosing a way to monitor it, then collect information and assess it before considering policy alternatives.¹¹⁰ In practice, these steps are non-sequential and are done within the confines of each agency's particular organizational structure, as so famously noted by Max Weber and others since him. This structure reflects the agency's history, culture, relationship with Congress, strength of outside interests, relationship with its constituency, and a host of situational factors.¹¹¹

Individuals behind the agencies drive many of these aspects, and, in turn, policy. Kingdon reports that political appointees in departments and bureaus exert considerable power in presenting policy alternatives and driving Executive and, ¹¹² as a result, Congressional agenda and that they are ubiquitous in policymaking.¹¹³

Some scholars have worked to incorporate information and information processing into bureaucratic theory. In his historical analysis of three agencies, Carpenter observes that bureaucracies have greater freedom to innovate on their own if they can demonstrate their unique value and capacity to analyze information, as well as administer existing programs and suggest new ones, and if they can demonstrate competence in achieving results to national problems.¹¹⁴

In a sense, capacity to collect relevant data can make or break an agency.

110. For example see C V Patton and D S Sawicki, *Basic Methods of Policy Analysis and Planning* (Prentice-Hall Englewood Cliffs, 1986), p. 53.

111. J Q Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It* (Basic Books, 1989).

112. M Weber, *The Theory of Social and Economic Organization* (translated by AM Henderson & Talcott Parsons) (Oxford, 1964).

113. Kingdon *Agendas, Alternatives, and Public Policies* (Longman Classics Edition).

114. D P Carpenter, *The Forging of Bureaucratic Autonomy: Reputations, Networks, and Policy Innovation in Executive Agencies, 1862-1928* (Princeton University Press, 2001).

Perhaps one reason is because policymakers crave information. Interviews with over 200 policymakers in the US conducted in the mid-1970s suggest that there is a great appetite for social science data among government executives, who utilize data to a surprisingly high degree. Around 50% of the data came from in-house research, 35% of the data came from outside sources which were funded by the agency, another 8% of the data came from another federal agency, and the rest from outside sources altogether.¹¹⁵ Information was scarce at the time, and demand for it was high; this was also the period when Congress mandated the NRIs and the RCAs.

Historically, the federal government in the United States has had a peculiar relationship with science — it first rejected the idea of government support to pursue scientific endeavors despite the urgent calls to do the opposite from such prominent figures as Thomas Jefferson and John Quincy Adams, then it slowly acquiesced to the idea as the economic justification to do scientific exploration became overwhelming, and then it finally embraced science as the final arbitrator in political debates.¹¹⁶ “Only if a nation can induce scientists to play an active role in government... can it enlarge its range of positive freedom, and renew its confidence that science can contribute progressively to the welfare of mankind” wrote the political scientist Don Price in 1965.¹¹⁷ This hope seems misplaced, since in practice scientific debates rarely produce

115. Caplan, Nathan, Morrison, Andrea and Stambaugh, Russell J, *The Use of Social Science Knowledge in Policy Decisions at the National Level: A Report to Respondents* (Ann Arbor, Michigan: Publications Office, Institute for Social Research, University of Michigan, 1975).

116. A H Dupree, *Science in the Federal Government: A History of Policies and Activities to 1940* (Ayer Co Pub, 1957).

117. D K Price, *The Scientific Estate* (Belknap Press, 1965)., p. 278.

consensus.¹¹⁸ Plus, scientific questions and policy questions are not the same. And even when scientific consensus exists, outcomes are far from certain.¹¹⁹

Yet studies on how knowledge is created, diffused and utilized often leave out institutional factors.¹²⁰ This is the extension of the complaint voiced by Workman and colleagues. The main point of their argument is that to understand policy change, “we will need to study both the sender of the information and the structures that increase or decrease information supply, and the receiver of the information and the structures that will use that information to prioritize problems and solutions.” That each case deserves special attention is a reasonable argument, especially given the unique histories and organizational structures of each federal department.

Meltsner’s classic work on information analysis in bureaucracies, *Policy Analysts in the Bureaucracy*, reaches a similar conclusion. At the time of his writing in 1976, the field of policy analysis was newly emerging. From his 116 interviews, Meltsner concluded that agency analysts are political actors. Although they may enjoy some independence in decision-making, they are still beholden to their clients and to the distinct organizational constraints. This comes at the expense of information on impacts of programs on citizens¹²¹ — the same observation that Benveniste made. Meltsner uncovered few overarching theoretical insights on policy analysis in bureaucracies, stating instead that each case is unique. He writes, “there are different types of

118. S Jasanoff, *The Fifth Branch: Scientific Advisors as Policymakers* (Cambridge: Harvard University Press, 1990), p. 250.

119. R V Pouyat and others, "The Role of Federal Agencies in the Application of Scientific Knowledge," *Frontiers in Ecology and the Environment* 8, no. 6 (2010): doi:10.1890/090180.

120. R F Rich, *The Knowledge Cycle* (Sage Publications, Inc, 1981), p. 185.

121. A J Meltsner, *Policy Analysts in the Bureaucracy* (University of California Press, 1976), p. 268.

analysts, different types of clients and uses of advice, different types of analytical advice and tasks, and different organizational situations in which various ingredients interact.”¹²² Just like in these studies, NRCS and its data-collecting efforts faced their own organizational environments and pressures.

Behind the historical policies for soil erosion control, behind the bills of the 70s that called for resource inventories and for national planning, and behind the subsequent farm bills that established programs and their assessments stood agency leaders, policymakers, and their partners. Their priorities shaped the details of the outcome. In case of NRCS, some agency leaders recognized the importance of collecting primary data, others sought to do away with the NRIs, others successfully, although temporarily, did away with the RCA process. Internal dynamics at NRCS are important in deciding what reaches the top leadership of the department and what information is presented to the policymakers. Whether programs and policies are affected by presence or absence of such information is a different, and a much more difficult question. USDA conservation policy is a composite of many complex factors with long historical roots.

Present-day NRCS structure and NRCS activities are the products of the agency’s past leaders. The first SCS chief (as the agency was known before 1994), Hugh H. Bennett, became a man of legendary proportions. He was instrumental in the agency’s founding. He conducted the first reconnaissance surveys on soil conditions. He fought for funding for demonstration projects to experiment with soil conservation methods and convinced President Franklin Roosevelt to allow for local oversight of conservation assistance by establishing county-level conservation

122. *Ibid.*, p. 265.

districts. NRCS still delivers its services through the conservation districts. Hugh Bennett lobbied tirelessly to elevate soil conservation (including for water quality reasons) to the top priority issue for agricultural conservation. The details of the legacy include in-fighting and political bargaining,¹²³ as well as hostile attitudes from other agencies at the Department of Agriculture.¹²⁴

Another wave of conservationist leaders at the SCS in the 1970s left their mark by starting the NRIs and incorporating broader issues like wetlands and wildlife habitat preservation into the inventories. The NRIs are still conducted based on the early designs. Conservation practices and land use trends are matched against the Soil Survey (another NRCS activity) records to estimate statewide and nationwide movements. Plus, before the recently expanded use of high-resolution imagery, some SCS conservationists relied on the long-standing relationships that they had with the farmers to collect the wide breadth of information requested in the NRIs.¹²⁵ So the NRIs built on the special relationship that the soil conservation districts have fostered throughout the years. The breakdown of the RCA assessment process in the mid-1990s can, in some ways, be attributed to forces endogenous to the agency. The recent revival of these products in the form of CEAP grew out of the 2002 Farm Bill and the current attempt to once again formalize the appraisal process was just recently written into law in 2008. Initial analysis suggests that agency leaders were instrumental in these developments.

123. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture."

124. S S Batie, "Soil Conservation in the 1980s: A Historical Perspective," *Agricultural History* 59, no. 2 (1985): 107-123.

125. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."; Personal Interview, 9, 10.

Another interesting feature of the particular structure of NRCS information products, especially RCAs and National Conservation Programs, is that they require collaboration across NRCS divisions, with other USDA agencies, other federal agencies, and other major stakeholder groups and have a much more nuanced relationship to the usual structure of localized conservation programs. For one, national planning is not a natural function of NRCS since most of its operations are done at the county level — at the soil conservation districts, the ones Hugh Bennett helped form.¹²⁶ So the RCA and national program efforts cause some uneasy feelings among the usual partners and clientele. Plus, turf battles between USDA agencies are not uncommon, which can complicate the collaborative ideal. For example, in the 1940s, the SCS and a predecessor to the Farm Service Agency (FSA) had a power contest over the control of conservation programs.¹²⁷ The turf battle re-emerged in the 1990s,¹²⁸ and may not be entirely over today.

On a different front, there is some (fairly vocal) discontent that NRCS is reluctant to share NRI information with other USDA agencies.¹²⁹ This reluctance has not always been there. In the 1990s, Congress expressed concern over the USDA's (and other agencies') use of data, culminating in the Data Quality Act of 2001,¹³⁰ which imposed stricter requirements on agencies

126. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture.", p. 371.

127. Ibid., p. 398.

128. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, pp. 132-133.

129. Hellerstein, Daniel, "Presentation: The Influence of Rising Commodity Prices on the Conservation Reserve Program, ERS" (May 18, 2011).

130. Public Law 106-554.

on how to clean and process data before their release to outside users.¹³¹ To apply these requirements to extensive NRI data would translate into a huge increase in workloads for the small staff busy responding to urgent data requests. As a result, it takes a long time to make data available to others, and sometimes the agency is reluctant to do so.

Finally, through the RCAs, national programs, and CEAP, NRCS engages in many external partnerships, sometimes more successfully than others. For example, the EPA is one of the agency's most important partners as well as the cause of some anxiety. The NRIs, RCAs, national plans and CEAP reach across NRCS deputy areas, across other federal agencies, and across other non-government players. This creates many entry points for information and many opportunities for policy influence.

CEAP is an especially interesting case. It harnesses research capacities across USDA agencies and across its non-governmental partners to evaluate large-scale impacts of conservation practices, and it encourages regular, monthly, participation from other federal agencies in the form of the CEAP Steering Committee. This collaborative approach is exactly the suggestions made by researchers analyzing two cases where scientific data failed to inform policy adequately — the EPA and acid rain, and the Forest Service and its new ecosystem management effort.¹³²

131. USDA, Office of the Chief Information Officer, "Guidelines for Quality of Information | Background" , Web (2011), http://www.ocio.usda.gov/qi_guide/background.html (accessed May 18, 2011).

132. Pouyat and others, "The Role of Federal Agencies in the Application of Scientific Knowledge."

One aspect of my research is the internal dynamics of the NRCS information collecting effort. Another is the evolution of USDA conservation programs with respect to new information.

The USDA in part uses NRI results in policy implementation to allocate financial assistance to states for most of the department's conservation programs. For instance, 30% of the weight used to allocate EQIP funds and the Grazing Land Conservation Initiative comes from NRI data on soil erosion and land use trends. A full third of the weight for the Wildlife Habitat Incentives Program (WHIP) is based on NRI data. Additional sources of data include Census of Agriculture, internal USDA studies, EPA data, and others.¹³³ The allocation formula for the USDA's most expensive conservation program, the CRP, uses the Environmental Benefits Index (EBI) to rank submitted applications. The EBI has undergone considerable revisions, and now relies on a configuration of estimated benefits from proposed practices falling into several categories including wildlife benefits, water and air quality benefits from soil erosion control, and cost-effectiveness. Extra weight is reserved for projects located in areas of special concern, often designed as such based on the NRI results. Both the EBI and state allocation formulas for programs have undergone significant changes over the years. Lack of transparency in their exact structures has been a point of criticism for the agency.

One unique aspect of environmental resource information and conservation policy in general is their historically tenuous relationship with the rest of agriculture. The historical mission of the Department has been to stabilize the agricultural economic sector. Farmers are the main clients. Trouble arises because agencies within the Department cater to farmers from

133. NRCS "Fiscal Year 2009 Allocation Formulas and Methodologies."

different angles. Some agencies are charged with researching how to increase yields, while other agencies buy up extra production to increase prices and farm income. Some programs like crop insurance or disaster payments increase area under production, while other programs seek to limit it.¹³⁴ Some programs pay farmers to establish conservation measures, while others encourage land to sit bare.

Farmers are savvy business people, so economic security is the driving factor for every policy related to agriculture. As mentioned above, the first soil surveys started out of fears that soil erosion threatened crop productivity, and the first conservation programs were crafted to inject financial help into the agricultural sector in light of an unfavorable Supreme Court decision in 1936 that declared other means to provide support to farmers unconstitutional. So payments went to encourage production of soil-conserving crops and to discourage production of soil-depleting crops. Conveniently, soil-depleting crops were defined to match seven crops with surplus production whose prices the USDA wanted to prop up.¹³⁵ The guise of environmental protection proved useful in managing the USDA's broader mission. But actual conservation lagged behind. Even with the Dust Bowl blowing away tons and tons of soil in the West, farmers were reluctant to support government interference directly.¹³⁶ For the first decades, the main mechanism to entice farmers to do actual conservation was through demonstration projects, which proved to have limited reach.

Likewise, the USDA's food aid and nutrition programs were offshoots from price support

134. Claassen, Roger, "Presentation at USDA: Are farm programs encouraging grassland-to-cropland conversion?" (April 20, 2011).

135. Helms, Doug "The Evolution of Conservation Payments to Farmers."

136. PBS, "Surviving the Dust Bowl: Program Transcript," *American Experience* (2007).

programs.¹³⁷ With time these programs came to dominate the USDA's budget. The changes in budget distribution have come quickly over the last decade. In 2001, commodity programs and rural development programs received around 30% and 11% of USDA's funds, respectively, while Food and Nutrition Service had about 33% of the funding in 2001. Only around 10% of the 2010 budget went to commodity payments, around 17% to rural development, and over 50% to food and nutrition assistance.¹³⁸ The proposed USDA budget for 2013's outlays dedicated 72% to nutrition programs and 16% to farm and commodity programs.¹³⁹ Sometimes NRCS and its partners like the National Association of Conservation Districts (NACD) had to fight to keep conservation on the Department's broader agenda in the face of unsympathetic executives and congressional policymakers.¹⁴⁰

The changes in budget allocations throughout the years are not surprising considering that less than 2% of the American population worked in agriculture in 2000,¹⁴¹ but almost 1 out of 4 Americans participated in one of USDA's 15 programs run by the Food & Nutrition Service in 2010. Conservation programs, on the other hand, have received around 3% of program level budget over the last decade.¹⁴²

Dollars across USDA research agencies spread out differently. Out of the \$1.4 billion

137. ERS "History of Agricultural Price-Support and Adjustment Programs, 1933-84: Background for 1985 Farm Legislation."

138. USDA budgets, using program level figures.

139. Trachtenberg Policy Forum, "2012 Trachtenberg Policy Forum, ' Shaping the Farm Bill for a Sustainable Future.' " (Expert Panel Discussion), Web (March 1, 2012), <http://2012policyforum.eventbrite.com/> (accessed March 1, 2012)., Kathleen Merrigan remarks.

140. For more see, Sampson, Neil R *With One Voice: The National Association of Conservation Districts*.

141. Dimitri, Carolyn; Effland, Anne; Conklin, Neilson "The 20th Century Transformation of US Agriculture and Farm Policy."

142. Includes programs run by the FSA and NRCS.

dedicated to research in fiscal year 2009, around a fifth of the total went to research projects on conservation — approximately the same percentage as in the early 1990s.¹⁴³

In the case of conservation policy, topics have received variable interest throughout the years. I already discussed that the initial focus on soil erosion came out of early work by NRCS scientists on soil surveys and relationship between soil and crop productivity. At the time, water quality was almost exclusively measured by level of sedimentation. Only fairly recently did nutrient water pollution become a salient topic, elevating the demand for information on the invisible chemicals leeching into the water. On the other hand, interest in impacts of pesticides peaked in the 1980s and 1990s, but it seemingly has died down since.¹⁴⁴ Although the USDA has collected statistics on pesticide use since the 1960s and the EPA collects pesticide industry sales data since the mid-1990s, there has been little federal work to quantify their effects until recently established USGS programs¹⁴⁵ and model estimates for CEAP studies.¹⁴⁶ The RCAs do incorporate information about pesticide use, but the USDA has no specific policy to regulate pesticides other than providing technical expertise for pest management and drainage activities.^{147,148}

143. USDA, NIFA, "USDA/CRIS - Funding Summaries" , Web (September, 2010), <http://cris.nifa.usda.gov/fsummaries.html> (accessed January 26, 2011).

144. Personal Interview, 7.

145. USGS, "USGS NAWQA: The Pesticide National Synthesis Project" , Web (June, 2009), <http://water.usgs.gov/nawqa/pnsp/> (accessed January 26, 2011).

146. USDS, NRCS, "Cropland Modeling Documentation | Conservation Effects Assessment Project | Technical Resources | NRCS" , Web (2010), <http://www.nrcs.usda.gov/technical/nri/ceap/umrbdocumentation/> (accessed January 26, 2011).

147. USDA, NRCS, "Water Quality Enhancement Activity - SQL03 - Drainage Water Management for Nutrient, Pathogen, or Pesticide Reduction" (December 4, 2008).

148. USDA, NRCS, "Water Quality Enhancement Activity - WQL13 - High Level Integrated Pest Management to Reduce Pesticide Environmental Risk" (December 4, 2008).

Other topics are under enormous political pressure to bend to specific requirements. In the search to justify funding, policymakers are particularly interested in translating complex studies on ecosystem impacts from different agricultural practices into straight-forward economic figures.¹⁴⁹ One reason is that all federal agencies are required to do a cost-benefit analysis of their programs pursuant of Executive Order 12866 issued in 1993.¹⁵⁰ The pressure to rank priorities sets up a comparative framework that necessitates conversion of disparate factors into similar units — with dollars being the most convenient.

Contentious decisions are inevitable when it comes to almost any scientific data, since science invariably involves uncertainty. For instance, to calculate tolerable soil erosion (which then determines how some of the money for programs is distributed), NRCS has used a number of techniques such as land classifications, the Universal Soil Loss Equation and “T” or the tolerance factor. Each was developed through much experimentation and diligent work, as well as political bickering over their outcomes.^{151,152} The simple realization that no better alternative may be available, and that Karl Popper, Bruno Latour,¹⁵³ and other classical scholars on science are correct in their contention that there is no objective information underscores the problems

149. Personal Interview, 4, 46.

150. Executive Order, 12866.

151. National Research Council, *Soil Conservation: Assessing the National Resources Inventory, Volume 1* (National Academy Press, 1986)., p. 34; K Cook, "Ah, for the Simple Life!," *Journal of Soil and Water Conservation* 37, no. 3 (1982): 154.; Personal Interview, 9.

152. W H Wischmeier, "Use and Misuse of the Universal Soil Loss Equation," *Journal of Soil and Water Conservation* 31, no. 1 (1976): 5-9.; W Puckett, "Moving Beyond T," *Journal of Soil and Water Conservation* 59, no. 2 (2004): 24A.

153. K R Popper, *Objective Knowledge: An Evolutionary Approach* (Clarendon Press Oxford, 1972).; B Latour and S Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton Univ Pr, 1986).; B Latour and C Porter, *Politics of Nature* (Harvard University Press, 2004).

faced by scientists in their dealings with policymakers and vice versa. Moreover, in the case of gathering statistical information, there is ample evidence that the political drive to reduce policy issues to simple figures can pervert the nature of issues.¹⁵⁴

Part of that drive comes from the executive branch that NRCS is a part of. In contrast to the bureaucratic longevity at the agency, changes in the administration can shake up the status quo. My research focuses on the executive agency's interaction with the legislative process. The top echelon of the USDA is represented in my study in an indirect way through information contained in their speeches, testimonies at hearings and official USDA statements and reports. I use the sources to understand how policymakers at the top interacted with NRCS information.

2. Information and policymaking

Scientific information is not necessarily welcomed in the political process. For example, a critical review of evidence-based policy process primarily in the United Kingdom, where “evidence-based” is the latest buzzword, suggests that within the complexities of political structures, there is little enthusiasm for any actual evidence.¹⁵⁵

This may be especially true in a system overloaded with information. Workman and colleagues argue that policymakers operate in an information-rich environment and selection and prioritization of information is what determines policy outcomes.¹⁵⁶ Similarly, in his examination

154. T M Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton Univ Pr, 1996).

155. Pawson, Ray, *Evidence-based Policy: A Realist Perspective* (SAGE Publications, 2006)., p. 167

156. This argument comes from some of the authors' earlier work, B Jones and F Baumgartner, *The Politics of Attention. How Government Prioritizes Attention* (Chicago: University of Chicago Press, 2005).

of four policy areas as diverse as school reform and health programs, Esterling finds that the main problem for Congress is choosing among competing well-informed groups offering multidimensional and evidence-rich arguments.¹⁵⁷ Yet it may be difficult to determine when a reliable estimate is offered. In some cases, the most prudent policy decision may be to ignore predictions derived from complicated models because of high uncertainty.¹⁵⁸ So among all of this information, trustworthy sources are hard to find.¹⁵⁹

To reduce some of the information asymmetry, Guston suggests that Congress relies on so-called “boundary organizations” to vet scientific information for reliability.¹⁶⁰ He specifically referred to health policy and to the Office of Research Integrity at the Department of Health and Human Services and the Office of Technology Transfer at the National Institutes of Health. Yet the Government Accountability Office (GAO), the Congressional Budget Office (CBO), or the Congressional Research Service (CRS) can play a similar role by providing a review layer between data processing and policymakers. The CRS operates under the auspices of the Library of Congress and responds to an enormous number of requests from legislators — 800,000 in 2004.¹⁶¹

Does this lead to more informed legislators? A series of interviews with Congressional

157. K M Esterling, *The Political Economy of Expertise: Information and Efficiency in American National Politics* (University of Michigan Press, 2004)., p. 230

158. D R Sarewitz, R A Pielke and R Byerly, *Prediction: Science, Decision Making, and the Future of Nature* (Island Pr, 2000)., p. 363

159. C H Weiss, *Organizations for Policy Analysis: Helping Government Think* (Sage Publications, Inc, 1992)., p. 10

160. D H Guston, *Between Politics and Science: Assuring the Integrity and Productivity of Research* (Cambridge Univ Pr, 2000).

161. Young, Stephen, "Guide to CRS Reports on the Web | LLRX.com" , Web (LLRX, September 16, 2006), <http://www.llrx.com/features/crsreports.htm> (accessed February 16, 2011).

committee staffers reveals that their primary use of information is to bolster the member's point and that information to the contrary is routinely ignored. Still, staffers also use information as a warning about which issues may gain saliency and as guidance for future policymaking. The study concludes that on its own information hardly stands a chance to influence the course of policy.¹⁶² There may be little connection between information and policy alternatives considered.

How information can induce policy changes is an important question. Jones and Baumgartner place information-processing at the center of policy change, arguing that their theory conforms to the available evidence more closely than the tradition hypothesis that policy change happens primary through the electoral process.¹⁶³ They extend their punctuated-equilibrium model of public policy developed in 1993¹⁶⁴ to include institutional considerations and changes in information availability. Their argument is that the best way for policymakers to incorporate new information is to weight it by importance and then aggregate some sort of an index.¹⁶⁵ This rarely happens, since an accurate weighting criterion is unlikely to be available, and since other events, such as intense media coverage of a corporate scandal or an epidemic of food poisoning or political group activities, can interfere and engender overreliance on a particular piece of information and suddenly create space on the policymakers' agenda to tackle issues like corporate reform and food safety. Forced by information intrusion, the status quo

162. C H Weiss, "Congressional Committees As Users of Analysis," *Journal of Policy Analysis and Management* 8, no. 3 (1989): 411-431.

163. Jones and Baumgartner, *The Politics of Attention. How Government Prioritizes Attention.*, pp. 84-5.

164. R Baumgartner Frank and D Jones Bryan, *Agendas and Instability in American Politics* (Chicago: University of Chicago Press, 2009).

165. Jones and Baumgartner, *The Politics of Attention. How Government Prioritizes Attention.*, p. 135

may be broken and major changes can take place.¹⁶⁶ The three issues that Jones and Baumgartner looked at in-depth in terms of policy responses to publicized information — economic policy, crime, and welfare — differ in their responsiveness to objective conditions. For example, perversely, government interest and resource flow to social welfare programs increased when objective conditions improved. When they deteriorated and were needed most, program money was not there.¹⁶⁷ This complexity makes projections on how information can impact policy difficult.

That an issue can burst onto the scene suddenly is the observation made by numerous studies on science and environmental policy, like the oft-cited example of Rachel Carson's *Silent Spring*. When the book was published in 1962 it almost instantly raised the public's awareness of the insecticide DDT, its purported adverse health and environmental impacts, and led to the chemicals' ban in the United States within 10 years. Other countries followed suit, but as critics argued banning DDT in developing countries took away the single best weapon against malaria, a disease estimated to kill many more than the projected losses from continued use of the chemical.¹⁶⁸ In other words, it is the political reality, strength of public attention, and the overall context of the situation that determine how Congress members weight information, not purely "rational" considerations. The overall result is that the policy process in any given policy area proceeds at a mostly stable pace, marked by sudden surges in activity.¹⁶⁹

166. Ibid., p. 55.

167. Ibid., p. 225.

168. Gough, Raisian and O' Keefe, *Politicizing Science: The Alchemy of Policymaking.*, "How Precaution Kills" by Roger Bate.

169. Ibid., p. 280; Jones and Baumgartner, *The Politics of Attention. How Government Prioritizes Attention.*

This seems to be true of conservation policy, as well, especially of the 1985 Farm Bill. A confluence of factors came together to enact the historic legislation. Analyses of changes in budget authority for the agricultural sector as a whole reveal punctuations in the late 1970s, early 1980s and mid-1980s, followed by a period of relative stability until another punctuation in the early 2000s.¹⁷⁰

A federal agency is not the only place that produces information or uses it to influence policy decisions, of course. Even if information bursts are responsible for instances of policy change, as Baumgartner and Jones argue, the source of this information could be an entirely different player in the policy process. And if a particular type of information is missing, many other bits of information compete to fill the niche.¹⁷¹

To measure the influence of information about natural resources on policymaking, one needs to consider other factors that drive agricultural policy. After all, most American land is privately owned. Agricultural uses — rangeland, pastureland and cropland (excluding private forests) — take up around 50% of all surface area in the US. This translates into many stakeholders and many potential points of influence on policy. However, land ownership is highly concentrated. According to the USDA's 1999 Economics and Land Ownership Survey and Census figures, just over 1% of the population owned around half of all the surface area in the US.

By such measures, agriculture and private land issues affect a small percentage of the American population. The 2000 Census counted around 3 million people as on-farm rural

170. Ibid., p. 103.

171. Likens "The Role of Science in Decision Making: Does Evidence-based Science Drive Environmental Policy?."

population, down by a million people from a decade before. Direct, on-farm activities involved less than 2% of the population work in agriculture, and the sector comprised less than 1% of the Gross Domestic Product.^{172,173} The portion of the GDP is hardly an adequate measure here, since agricultural products are used virtually in every industry. To correct for it, the Economic Research Service (ERS) uses a more encompassing term, “food and fiber system,” which includes foodservice, transportation, trade, services, textiles, food processing and food manufacturing industries. Defined this way agricultural industries supported around 17% of employment in 2001 and comprised around 12% of the total GDP.¹⁷⁴ So as farm products move up the marketing channels, the number of people involved in the sector rises quickly. This still does not adequately measure the reach of agriculture.

Just the geographical span of agriculture means that most communities have a direct connection to the sector. Every person, of course, has at least an some connection to agriculture by consuming agricultural products on a daily basis. Many organized interests arise. Environmental groups are concerned about the environmental externalities or off-farm impacts. Consumer groups are concerned about the safety of the products and nutritional guidelines. Social advocacy groups are concerned with continuing benefits for the quarter of all Americans who rely on some USDA food aid programs.

172. Dimitri, Carolyn; Efland, Anne; Conklin, Neilson "The 20th Century Transformation of US Agriculture and Farm Policy."; ERS data.

173. Gilbert, Jess; Wood, Spencer; Sharp, Gwen, "Who Owns the Land? Agricultural Land Ownership by Race/Ethnicity" (2002).; Census Bureau, "The 2011 Statistical Abstract: Historical Statistics" , Web (2011), http://www.census.gov/compendia/statab/hist_stats.html (accessed January 26, 2011).; NRCS, "2003 National Resources Inventory (NRI) | NRCS NCGC" , Web (2003), <http://www.nrcs.nrcs.usda.gov/products/nri/2003nri.html> (accessed February 16, 2011).

174. ERS, "Economics of the Food and Fiber System" (February, 2004).

Farmer groups are mobilized because they have been the primary beneficiaries of government policies and because they know they will be the first losers if policies change. The number of farms has declined steadily — by about 12% between 1980 and 2002. At the same time, fiscal strength of the agricultural sector strengthened. Financial output of the agricultural sector increased by nearly 50% between 1980 and 2002.¹⁷⁵ The last few years have seen a spurt in farm incomes.¹⁷⁶

Government policies affect many farmers. Through Freedom on Information Act (FOIA) requests, the Environmental Working Group estimates that around 63% of farms received commodity subsidies and/or conservation program payments in 2007 with over \$13 billion paid out that year. A 2001 GAO report found that half of all farms receive subsidies.¹⁷⁷ The Census of Agriculture reports lower figures, showing that only around 38% of all farms received some form of payment in 2007. Since the census is based on questionnaire results which can suffer from non-response or inaccurate response, the FOIA data are likely to be much more accurate. Just like any other industry, bottom-line concerns drive agriculture. Insofar as government subsidies contribute to the bottom-line, farmers are under some pressure to participate in conservation programs. This may be changing. Currently, prices for corn, wheat, and other agricultural products are at an all-time high, making some commodity support programs less relevant.

175. Census Bureau "The 2011 Statistical Abstract: Historical Statistics.", HS-44; NRCS "2003 National Resources Inventory (NRI) | NRCS NCGC."

176. ERS, "2012 Outlook Forum" (Annual Event), Web (USDA, February 24, 2012), <http://www.usda.gov/oce/forum/> (accessed March 1, 2012).

177. GAO, "Farm Programs: Information on the Recipients of Federal Programs" (June 15, 2001).

In order to isolate the impact of the NRIs, RCAs, and National Conservation Programs, I consider what types of arguments the policymakers heard and what other considerations may have driven their support or opposition. Overall, factors to consider include organized interests like environmental, farmers, and agribusiness groups, general public opinion, economic factors and the policymakers' personal interest in the issues. Rather than follow all of these threads from the origin and see whether they lead to conservation policy, I use available sources to analyze which arguments organized interests present. There is a risk that secrete or private conversations drive the actual outcome. Yet interests that have the most to lose tend to be the most vocal, since they have an incentive to make themselves heard. I describe the details of my methodology in the next chapter. Below I set up the theoretical framework behind drivers of policy in general, and agricultural and conservation policies in particular.

In the seminal work, *The Electoral Connection*, Mayhew argued that Congress members are singularly concerned with their re-election bids, where they are judged for their positions, not the actual outcomes of the enacted programs. This breeds deference to nationally organized groups and to groups with resources that track the behavior of individual Congress members.¹⁷⁸ Arnold extends this observation to the so-called attentive and inattentive publics that the legislators are aware of given a particular issue.¹⁷⁹ This dichotomy between attentive and inattentive publics bears out in practice, since attentive publics are more likely to actually influence a policy direction.¹⁸⁰ Arnold argues further that the way a legislator assesses proposed policy options depends on how coalition leaders package the issue, what the legislator calculates

178. D Mayhew, *The Electoral Connection* (New Haven, CT: Yale University Press, 1972).

179. R D Arnold, *The Logic of Congressional Action* (Yale University Press, 1992).

180. E S Adler and J S Lapinski, *The Macropolitics of Congress* (Princeton University Press, 2006)., Erikson, MacKuen, Stimson, "Public Opinion and Congressional Policy."

the voters will allow, and the legislator's own preference. Moreover, Mayhew's proposition that Congress members are rewarded for positions and not outcomes is true only when it comes to policies producing benefits. With programs that impose costs, groups are much more organized and calculations become more complex.¹⁸¹ These calculations require information, specifically information about the effects of policies.¹⁸² For congressional leaders, the effects that matter are those that citizens may incorporate into their voting decisions.¹⁸³

Studies on whether public opinion and organized interests actually influence Congressional decisions as suggested by political theory conclude, unsurprisingly, that it depends on the circumstances. Since electoral benefits are most important to Congress and they begin with the public, I discuss the purported impact of public opinion on policy outcomes first. For instance, a macro-analysis revealed that public preference does have an impact on broad liberal or conservative policy patterns after a considerable lag to allow electoral changes to settle.¹⁸⁴ Another study of over 350 cases of significant change in Americans' policy preferences confirm congruence between public opinion and policy outcomes after a one-year lag in about two-third of the cases examined between 1935 and 1979 (or perhaps more depending on how the data is parsed).¹⁸⁵ A follow-up study on the period between 1980 and 1993 found that policy corresponded to majority preference 55% of the time, a drop blamed on several factors including

181. Arnold *The Logic of Congressional Action*.

182. K Krehbiel, *Information and Legislative Organization* (University of Michigan Press, 1992), p.62

183. Arnold *The Logic of Congressional Action*.

184. Adler and Lapinski, *The Macropolitics of Congress.*, Erikson, MacKuen, Stimson, "Public Opinion and Congressional Policy."

185. B I Page and R Y Shapiro, "Effects of Public Opinion on Policy," *The American Political Science Review* (1983): 175-190.

a more divided Congress in the latter period and the changed nature of public expectations.¹⁸⁶ These figures may overstate the real impact of opinion on policy because researchers tend to focus on salient issues that are more likely to elicit a response from policymakers. A random drawing of 60 bills considered in the 101st Congress matched to public opinion polls indicates a much lower responsiveness.¹⁸⁷ The choice of issue is important then. Interestingly, policies related to energy and environment showed congruity with public opinion 72% of the time between 1960 and 1979 and 67% of the time between 1981 and 1993.¹⁸⁸

Public outreach was a substantial part of the first RCA, and public opinion was deemed important enough to commission a poll from Louis Harris and Associates. They polled over 7,000 people across all states and found that 30% of them were strong supporters of soil conservation, while 22% were weak supporters. On the other hand, 30% were described as weak opponents and 10% as strong opponents. But over 80% agreed that the federal government has a role in protecting natural resources under agricultural use.¹⁸⁹ Interestingly, about 75% of those polled endorsed the concept of cross-compliance or tying eligibility for other USDA programs to conservation. This option was one of the policy options proposed in the RCA itself, and it materialized in the 1985 Farm Bill. A Gallup survey conducted in 1994 and 1995 and commissioned by NRCS showed that around 50% of respondents considered the amount of

186. A D Monroe, "Public Opinion and Public Policy, 1980-1993," *Public Opinion Quarterly* 62, no. 1 (1998): 6..

187. P Burstein, "Why Estimates of the Impact of Public Opinion on Public Policy Are Too High: Empirical and Theoretical Implications," *Social Forces* 84, no. 4 (2006): 2273-2289.

188. Monroe "Public Opinion and Public Policy, 1980-1993."

189. Louis Harris and Associates, Inc., "A Survey of the Public' s Attitudes Toward Soil, Water, and Renewable REsources Conservation Policy" (March, 1980).

pesticides and fertilizer used on farms as a problem, and “agriculture in general” and “individual farmers” were viewed as the most polluting entities out of the options presented.¹⁹⁰

Regular Gallup polls on whether environmental issues should take priority over economic concerns indicate that during the mid-1980s¹⁹¹ and all of the 1990s, by a margin of 2 or 3 to 1 (from 2:1 to 3:1), most people chose environmental issues. In the 2000s, the margin starts dropping below 2 fairly rapidly and even dips into the negative territory in 2009 and 2010.¹⁹² While public opinion may be an indicator of the public’s priorities and the trends among the inattentive publics, agricultural policy options produce considerable benefits and costs and engender much interest from well-organized attentive publics.

The concern over the role organized interests play in policy and politics goes back to ancient Greek and Roman historians,¹⁹³ but as Truman argued in *The Governmental Process* their notoriety may be undeserved, especially given the ubiquity of groups and social order organizations in human societies.¹⁹⁴ The relationship between policymakers and interest groups is of mutual benefit.¹⁹⁵ Political organizations sprout up because complexity and the sheer

190. Larsen, Max; Colsher, Patricia, "National Survey of Attitudes Towards Agricultural Natural Resource Conservation. (SA Winter 1996 (v8n1))," *Sustainable Agriculture*, Web (University of California , 1996), <http://www.sarep.ucdavis.edu/NEWSLTR/v8n1/sa-9.htm> (accessed February 16, 2011).

191. Data is not available for any other year in the 1980s besides 1984.

192. Gallup, "Gallup Polls on the Environment" (2010).

193. E R A Seligman and A S Johnson, *Encyclopaedia of the Social Sciences* (Macmillan Co., 1957)., Volume 7; “Interests” by Robert M. MacIver.

194. D B Truman and Berkeley Institute of Governmental Studies University of California, *The Governmental Process: Political Interests and Public Opinion* (Knopf New York, 1951).

195. M T Hayes, *Lobbyists and Legislators: A Theory of Political Markets* (Rutgers University Press New Brunswick, NJ, 1981)., p. 162.

volume of issues call for division of labor,¹⁹⁶ and they are very good at staying away from each other's turf.¹⁹⁷ In other words, attentive publics have strong incentives to organize themselves to motivate political action and to let others do the same.

But policy changes do not necessarily follow. In a study of randomly drawn sample of 98 policy issues that involved major lobbying groups, Baumgartner and his team of colleagues attempt to quantify the influence of interest groups. The team concludes that status quo is a very powerful barrier to overcome for any interest group, and that the impact from deployed resources is fairly modest, despite the fact that most registered lobbyists represent business interests.¹⁹⁸ The explanation the authors provide is that most issues involve competing groups with similarly sized resources on each side.¹⁹⁹

The real weapon organized interests wield is information. Some scholars equate lobbying with providing information to policymakers, particularly on the political status of proposed policy options, how certain policy courses may impact the policymakers' career aspirations, and analytical information on the expected social, economic, or environmental impacts of a policy alternative.²⁰⁰ Empirical research on what types of activities interest groups engage in reveal that much of what they do deals with supplying and explaining information to policymakers. A study by Milbrath in the late 50s involved interviews with 101 lobbyists and thirty-eight policymakers

196. Truman and University of California, *The Governmental Process: Political Interests and Public Opinion.*, p. 502.

197. J Q Wilson, *Political Organizations* (Princeton Univ Pr, 1995)., p. 261.

198. F R Baumgartner and B L Leech, *Basic Interests: The Importance of Groups in Politics and in Political Science* (Princeton University Press, 1998).

199. F R Baumgartner and Berry, J M; Nojnacki, M; Kimball, DC; Leech, BL, *Lobbying and Policy Change: Who Wins, Who Loses, and Why* (University of Chicago Press, 2009).

200. A J Nownes, *Total Lobbying: What Lobbyists Want (and How They Try to Get It)* (Cambridge University Press, 2006)., p. 28.

from both chambers. He found little evidence for dirty tactics and that the most ubiquitous and tangible service lobbyists provide is information.²⁰¹

Lobbyists themselves seem to think so. Former Congressman Charles Stenholm from Texas, who was the ranking Democrat on the House Committee on Agriculture and who is now a senior policy consultant at Olsson Frank Weeda Terman Bode Matz PC (a large lobbying firm that spent over \$10 million lobbying the USDA from 2005 to 2010), said at a recent conference that he likes to think of himself as an educator, not as a lobbyist.²⁰² The influence of lobbyists is held at bay partially because there are so many other sources of information, including executive agencies.²⁰³

Other studies confirm these insights. A survey of 175 randomly selected lobbying organizations in Washington revealed that nearly every one engaged in presenting research results and testifying at hearings. Ninety-four percent of trade associations, and around 85% of corporations and unions sampled reported helping to draft legislation.²⁰⁴ Kersh followed representatives from primarily industry and corporate interests in healthcare, finding that providing and seeking information as well as researching and analyzing legislative information were the second and third most time-consuming activities for the lobbyists. Building relationships was considered the most time-consuming task. Across 54 issues under scrutiny,

201. L W Milbrath, *The Washington Lobbyists* (Greenwood Pub Group, 1976)., p. 308

202. American Farmland Trust, "Charles Stenholm : Blue Ribbon Panel | American Farmland Trust" , Web (2011), <http://www.farmland.org/news/events/national-agricultural-landscapes-forum/Blue-ribbon-panel/charles-stenholm.asp> (accessed April 20, 2011).; CQ Press, "Organizations Lobbying Department of Agriculture," *First Street* (April 14, 2011), <http://firststreet.cqpress.com/search/results.aspx>.

203. Milbrath *The Washington Lobbyists*., p. 310.

204. K L Schlozman and J T Tierney, *Organized Interests and American Democracy* (Harper & Row New York, 1986).

providing information to Congressional members and their staff was a key priority for 51 issues, and research and analysis of legislative information was a key activity for 52 issues. No other activity saw as much consistency across issues.²⁰⁵

Smith connects a lobbying group's ability to provide analysis and information on legislative issues *quickly* to actual influence on the legislative outcome. He uses the National Education Association's data on lobbying activities to demonstrate support for his hypothesis that lobbying organizations have little chance to preserve volatile support from Congressional members when the original committee proposal is exposed to weaker alternatives on the floor through amendments and motions. Normally, the association is able to convert resources into leverage by providing consistent information and analysis of policy positions. When new proposals cut short the time needed for analysis, the group's ability to maintain support for its preferred option diminishes greatly.²⁰⁶ This suggests that information can indeed help influence a policy outcome, but only within the context of a supporting coalition. Smith argues that stable coalitions are rare and therefore quick changes are possible as loosely formed coalitions dissolve in the face of alternative proposals.

This is very similar to Browne's observation of many specialized interest groups in agricultural policy forming ephemeral and varying networks in response to new proposals of the moment that may present a strategic opportunity to achieve the groups' self-interested, narrow

205. R Kersh, "The Well-Informed Lobbyist: Information and Interest Group Lobbying," *Interest Group Politics* 7 (2007).

206. R A Smith, "Advocacy, Interpretation, and Influence in the US Congress," *The American Political Science Review* 78, no. 1 (1984): 44-63.

agendas.²⁰⁷ Despite quick coalescence and dissolution of the network, for the most part, organizations can expect support from their regular backers.²⁰⁸ Hall and Deardorff use this observation to conceive a theory of lobbying as a subsidy for the expensive and time-consuming process of providing research, analysis and other expertise as well as “intelligence” information about other players’ likely next moves.²⁰⁹ Within the confines of this theory, subsidy means that the legislator will work to motivate potential allies to unite for the group’s cause. Given legislators’ limited resources coupled with interest in many different issues each with its own set of stakeholders and electoral outcomes, legislators and specialized interest groups form a synergistic role. One implications is that lobbyists will lobby their strongest supporters the most and will spend little if any resources to lobby members opposed to or on the fence about a policy proposal.²¹⁰ Hansen suggests that these relationships take years to seal, and recurrence of issues and collaborative opportunities are crucial in helping along the process. Lasting relationships with policymakers form with those groups that offer competitive advantage over their rivals — meaning that they provide information that is cheaper, more efficient, and more accurate in projecting voters’ responses to policy alternatives.²¹¹

Studies have also examined what types of information lobbyists employ in their tactics.

Using a database of 550 randomly chosen documents provided by healthcare lobbyists to

207. W P Browne, *Cultivating Congress: Constituents, Issues, and Interests in Agricultural Policymaking* (University Press of Kansas, 1995).

208. Smith "Advocacy, Interpretation, and Influence in the US Congress."

209. Also see J M Hansen, *Gaining Access: Congress and the Farm Lobby, 1919-1981* (University of Chicago Press, 1991).

210. R L Hall and A V Deardorff, "Lobbying As Legislative Subsidy," *American Political Science Review* 100, no. 01 (2006): 69-84.

211. Hansen *Gaining Access: Congress and the Farm Lobby, 1919-1981*.

policymakers, Kersh observes that the information interest groups provide is surprisingly unbiased and the substantive messages are consistent across groups and across political leanings. Lobbyists get information from many different sources, including media outlets, each other, and from public officials. They use government data and reports, think tank reports, or academic studies as primary sources.²¹² There seems to be little original research conducted besides member surveys for large groups, despite the fact that competitive advantage implies proprietary information. As Baumgartner and colleagues explicitly point out, information does not have to be costly. It can be publicly available information, but presented in a light relevant to the individual policymakers.²¹³

Arguments are meant to persuade the listener, and political scientists have carried out studies on which formulations of arguments are more likely to change the listener's opinion. For instance, using psychological research showing that most people are loss averse, Cobb and Kuklinski use randomized questionnaires to test their theory on hundreds of undergraduate students and their opinion on NAFTA and healthcare debates during Clinton's presidency. They find that arguments defended with more complex information that take a stance against the proposal were the most effective.²¹⁴

In their assessment of policy shifts away from the status quo, Baumgartner and his team deconstruct the types of arguments lobbyists use in their communications with policymakers.

212. Kersh "The Well-Informed Lobbyist: Information and Interest Group Lobbying.", p. 398-401.

213. Baumgartner and Berry, J M; Nojnacki, M; Kimball, DC; Leech, BL, *Lobbying and Policy Change: Who Wins, Who Loses, and Why.*, p. 124.

214. M D Cobb and J H Kuklinski, "Changing Minds: Political Arguments and Political Persuasion," *American Journal of Political Science* 41, no. 1 (1997): 88-121.

They range from problems with implementation, appeals to other goals, economic impact on some external group, basic misunderstanding of the problem, and others.²¹⁵ I build on this framework to classify the arguments used by interest groups in conservation policy, as I will describe in Chapter 3. Although I do not have access to data from lobbyists providing strategic “intelligence,” records showcasing their informational expertise are readily available through representatives’ testimonies at hearings, the organization’s declared official position to its constituency, as well as organization’s communications with the relevant government agencies.

Besides Congress, interest groups also have established relationships with federal agencies and the executive branch. In most cases, there is much built-in interaction between interested stakeholder groups and federal agencies.

Truman argues that government institutions “are centers of interest-based power.”²¹⁶ This is certainly observed in agricultural and conservation policy. Establishment of policy is done in collaboration with major farmer associations, agricultural business interests, and environmental groups. The USDA solicits comments from their representatives as well as from the public on policy proposals, and agency leaders and Congressional members meet with the representatives of organized interests on a regular basis to discuss their concerns. Alongside government officials, organized groups are frequent participants in Congressional hearings.

In many cases, groups have long histories with the agency or agencies that regulate their clients. For example, one of the most active lobbying organizations for conservation is the National Association of Conservation Districts (NACD), which was created to organize the

215. Baumgartner and Berry, J M; Nojnacki, M; Kimball, DC; Leech, BL, *Lobbying and Policy Change: Who Wins, Who Loses, and Why.*, p. 132.

216. Truman and University of California, *The Governmental Process: Political Interests and Public Opinion.*, p. 506.

conservation district structure created in the 1930s to emphasize local control over land use policies. The American Farm Bureau Federation, on the other hand, has enjoyed a close relationship with the Department of Agriculture, although its influence has waned in recent years as agricultural agenda broadened and other interests demanded access.^{217,218}

A count of registered groups and organizations lobbying Congress in some way on agricultural issues in the late 1970s uncovered 421 active organizations. According to the First Street™ database, which is assembled by CQ Press and brings together lobbying information for the professionals and contains over 2 million connections between organizations and Hill members, the Department of Agriculture currently has 1,295 organizations lobbying it.²¹⁹ But relatively few dedicate their efforts to conservation issues. Over a four-year period between 2004 and 2007, 49 firms lobbied NRCS.²²⁰

In the late 70s though, more than half of the lobbying groups were business and industry groups; around 16% were citizen and consumer groups; just over 3% were conservation and environmental groups; and major farm organizations like the American Farm Bureau Federation, National Farmers Union and the National Grange comprised just over 1%. Business lobbying groups included ones with names like Pickle Packers International Inc., the National Potato Council; Agri-businessmen, Inc., as well as many major companies. Environmental groups

217. Wilson *Political Organizations.*, p. 334.

218. Hansen *Gaining Access: Congress and the Farm Lobby, 1919-1981.*

219. CQ Press, "About First Street by CQ Press - Research the Connections Between Staffers, Lobbyists, and Members of Congress," *First Street*, Web (April 14, 2011), <http://firststreet.cqpress.com/content/about.aspx> (accessed April 14, 2011).; CQ Press "Organizations Lobbying Department of Agriculture."

220. CQ Press, "Firms Lobbying Natural Resources Conservation Services," *First Street* (April 14, 2011).

represented include Sierra Club, National Resource Defense Council, the National Audubon Society; the Environmental Defense Fund, and others.²²¹ Level of participation in the debates and influence in the outcome is not necessarily reflected by this distribution.

A long-time observer of agricultural interest groups, William Browne, reports that during this period the total number of active local and national agricultural groups was nearly 2,000, meaning that less than a quarter actually bothered to involve themselves in national policy matters.²²² A third of the groups who were nationally active in the 1980s farm bills sprung up just before the fight — within the span of ten years between 1969 and 1979. Large farm organizations reliant on membership that wielded considerable power in the earlier decades²²³ made space for smaller, much more specialized and active groups whose funding came not from mass membership but rather from other organizations in the form of grants or donations.²²⁴ Writing in 1988, Browne also observed the increase in the complexity of farm policy debates, and the transitory nature of some dissolved groups.²²⁵ The remaining and the newly formed groups formed powerful coalitions that were crucial in passing farm bill legislation of the 1970s and 1980s. By all accounts, to push through the historic 1985 Farm Bill, the American Farm Bureau Federation and the Farmer's Union joined forces with the National Audubon Society, the American Farmland Trust, the National Wildlife Federation and others.²²⁶ After conducting 130 interviews with representatives from a diverse array of agricultural groups, Browne concluded

221. H D Guither, *The Food Lobbyists* (Lexington, MA: Lexington Books, 1980)., my counts.

222. W P Browne, *Private Interests, Public Policy, and American Agriculture* (University Press of Kansas, 1988)., p. 18.

223. Hansen *Gaining Access: Congress and the Farm Lobby, 1919-1981*.

224. Browne *Private Interests, Public Policy, and American Agriculture*., p. 21.

225. *Ibid.*, p. 38.

226. Sampson, Neil R *With One Voice: The National Association of Conservation Districts*.

that there is little evidence to suggest dominance by any one player or group. Little direct influence on policymaking could be established.²²⁷ The role organizations actually played was primarily informational. Given limited resources, the group's strategic considerations dictated which policy issues deserved attention — *i.e.*, whether to invest resources into providing information on the issue.²²⁸ The recently expanded scope of agricultural policy and the necessary fragmentation within this scope along interest group's specializations may be one explanation for lack of a successful bid to overthrow the status quo in agricultural commodity prices.

Browne argues this in his examination of the 1985 Farm Bill. The intellectual elite put much effort into supporting a market-driven approach to agriculture, which became a popular argument during the Reagan years. Although many traditional interests faced their own difficulties at the time and the more radical farmer movements could not mount a national campaign, commodity groups succeeded in halting any major reform and secured continued subsidies. Instituting environmental measures was one of the only things agreed upon by most participants early in the process, not least because their design played into farm-income goals.²²⁹ Environmental groups played a big role in procuring this support.

The so-called Conservation Coalition formed in the early 1980s initially consisted of 8-10 national environmental groups. Soon the number doubled and in time for the 1985 Farm Bill there were 30 groups in the Coalition.^{230,231} The original members included the American

227. Browne *Private Interests, Public Policy, and American Agriculture.*, p. 208.

228. *Ibid.*, p.xi.

229. W P Browne, "Lobbyists, Private Interests and the 1985 Farm Bill," *Increasing Understanding of Public Problems and Policies* (1986): 477-509.

230. R Grossi, "Implementing CRP: A Conservation Organization View," *Journal of Soil and Water Conservation* 43, no. 1 (1988): 20.

231. Myers, Peter, "Conservation at the Crossroads" (Remarks by Deputy Secretary of

Farmland Trust, the American Forestry Association, the Audubon Society, Natural Resources Defense Council, the Environmental Policy Institute (later merged back into Friends of the Earth), and others. The Sierra Club and National Wildlife Federation also testified in support of the environmental provisions.²³² The environmental decade of the 1970s fostered the creation of a strong coalition with a strategic goal to push through the sodbuster, swampbuster, conservation reserve and compliance provisions. The 1981 Farm Bill gave authority to these provisions, but there was zero political will to take money out of current programs to fund them and no new money could be hoped for.²³³ Now, the environmental heavy-hitters were united to see change. The discussions generated through the RCA process in the early 1980s are often cited as an important focal point of influence. The National Conservation Program helped coordinate the many interests involved.

The main pushback came on the cross-compliance provision. The American Farm Bureau Federation cautioned strongly against such regulations. They supported targeting and tax credits for expenses related to conservation work.²³⁴ The National Farmers Union (NFU) lamented the proposed cuts to existing conservation programs, and rejected the establishment of a local conservation board. The NFU also opposed targeting since it would certainly mean decreased funding elsewhere.²³⁵ Some organizations have opposed any regulation on principle.

Agriculture to the Soil and Water Conservation Society in Kansas City, MO), NARA (November 2, 1987).

232. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 47.

233. *Ibid.*, p. 36.

234. USDA, "Report of the Public' s Comments on the RCA Draft Documents, January-March 1980" (September, 1980)., p.66.

235. *Ibid.*, p. 90.

In a 1995 survey, The Fertilizer Institute conveyed its opposition to using any idling program for supply control. The National Grain and Feed Association also expressed reservations about idling programs. On the other hand, most groups find some form of conservation assistance favorable and advocate for proposals advantageous to their members. Early on, the National Association of Wheat Growers found that its members like the CRP and most would re-enroll if offered. The organization supported targeting resources based not only on water quality, but also on wildlife benefits.²³⁶ Most organizations favored local control and opposed more bureaucratic layers to coordinate area-wide conservation plans.

Judging from several sources — accounts from observers, a survey of interest groups, and a list generated through the First Street™ database — around a dozen environmental organizations have been active in conservation policy over the last 15 years. I am excluding organizations primarily concerned with protecting prime quality farmland from development. They are the National Association of Conservation Districts, the American Farmland Trust, the Environmental Working Group, the Soil and Water Conservation Society, the Natural Resources Defense Council, National Fish and Wildlife Foundation, the National Audubon Society, Inc., the Environmental Defense Fund, Ducks Unlimited, The Nature Conservancy, Defenders of

236. J S Hughes, D L Hoag and T E Nipp, *The Conservation Reserve: A Survey of Research and Interest Groups* (Council for Agricultural Science and Technology, 1995).

Wildlife, Trout Unlimited, and Pheasants Forever, Inc.²³⁷ Their positions have not always aligned fostering power struggles among previous allies.

The proposition that policymakers work in an environment overloaded with information and therefore have developed a working relationship with specialized interest groups to provide them with information relevant to the policy proposals has empirical support, as the above review shows. But policymakers are driven by other factors besides general public opinion and interest group politics. The primary factor is re-election, so constituency matters. When weighting factors such as personal conviction, pressure from the constituency, information from interest groups, merits of legislation, policymakers are concerned with all of them, but above all wishes of the constituency.²³⁸ Personal feeling was the second most important reason. Both of these factors are very difficult to change through lobbying.²³⁹

Researchers have noted that in agricultural policy, House and Senate agriculture committee members seem to be driven much more by the desire to channel as much benefit to their own constituency rather than to set an equitable national policy. Browne wrote that “members of Congress respond first to their districts and to specific and familiar informants in or

237. CQ Press "Firms Lobbying Natural Resources Conservation Services."; Hughes, Hoag and Nipp, *The Conservation Reserve: A Survey of Research and Interest Groups.*, p. 5; Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*; American Farmland Trust, "National Agricultural Landscapes Forum Description | American Farmland Trust," *National Agricultural Landscapes Forum*, Web (April 8, 2011), <http://www.farmland.org/news/events/national-agricultural-landscapes-forum/description.asp> (accessed April 14, 2011).; The Horinko Group: Water Division, "The Next Farm Bill: New Opportunities for Environmental and Agricultural Sustainability, Summary and Synthesis of the Water Salon Series, Part IV" (March 15, 2011)., see list of participants.

238. Milbrath *The Washington Lobbyists.*, p. 334.

239. *Ibid.*, pp. 337-340.

from those geographic places.”²⁴⁰ In a classical study on agricultural politics in the late 1950s, through in-depth interviews and analysis of hearings and floor debates, Jones demonstrated that agricultural subcommittee members took up issues entirely consistent with the commodities grown in their districts. The members justified their votes in terms of constituency impacts. Jones concludes that when there is little estimated impact on the constituency, members are more likely to vote with the political party. Otherwise, the members will vote with their best guess of their particular constituency’s wishes.²⁴¹

Writing in the 1990s, Browne notes that congressional members are almost singularly interested in farm income related issues rather than any other aspect of agricultural policy.²⁴² He also re-affirms Jones’s observation that individual members can mobilize a lot of resources in introducing issues of interest. There is little rigid authoritative structure within the caucus or the subcommittees.²⁴³ In his work, Browne interviewed 113 randomly chosen members of “congressional enterprises” involved in agricultural issues and asked which issues occupied a significant portion of their time. Out of more than 250 issues, nearly 50% had to do with financial matters related to producers.²⁴⁴ Environmental matters consumed the second most time with around 18% of time spent on them.²⁴⁵ Congress members relied most on their constituency to set agenda priorities. They also relied on information from their constituents to determine

240. Browne *Cultivating Congress: Constituents, Issues, and Interests in Agricultural Policymaking.*, p. x.

241. C O Jones, "Representation in Congress: The Case of the House Agriculture Committee," *The American Political Science Review* 55, no. 2 (1961): 358-367.

242. Browne *Cultivating Congress: Constituents, Issues, and Interests in Agricultural Policymaking.*, p. 85.

243. *Ibid.*, p. 20.

244. *Ibid.*, p. 69.

245. *Ibid.*, p. 236, Table A.6.

their position, although organized interests also played a part. USDA information was ranked a far third, on par with information from other professionals.²⁴⁶

Yet it is not true that only a small portion of Congress deals with agriculture. Browne's study also showed that nearly 67% of the total number of Congressional members are involved in agricultural issues at least from time-to-time — some on standing and appropriations committees.²⁴⁷ Since every state has agricultural production every Senator takes a special interest. Still, conservation policy is primarily the purview of House and Senate Agriculture Committees, so it may be useful to see what patterns emerge in their composition. I use the dataset on congressional committee assignments hosted by Charles Stewart on his Congressional Data Page. The details are described in Appendix D.

From 1948 to 2010, 80% of seats on the House Agriculture Committee were filled by representatives from 23 states. Of course, a representative from each state accounts for a variable number of people. Taking into account the proportion of House seats represented by each state — weighted through time with the decennial census changes — some states are clearly much more represented on the Agriculture Committee than their counterparts. For instance, North Carolina's weighted representation for the years is 2.68% of the total number of seats, yet representatives from the Tar Heel State held 5.8% of the seats on the Agriculture committee — twice their nationwide proportion.

During critical years — when significant legislation on conservation policy passed, usually as part of the recurring farm bills — some states exhibit a clear staying power. For the purposes of this quick analysis, the years of interest are 1972, 1977, 1981, 1985, 1990, 1996,

246. *Ibid.*, p. 241, Table A.14.

247. *Ibid.*, p. 35.

2002, and 2008. For instance, several Midwestern and Southern states stand out in their consistent participation in the House Agriculture Committee. Iowa, Kansas, Kentucky, Georgia, Louisiana, North Carolina, Missouri, and Mississippi — all of these states had much higher rates of participation on the committee in these years than their proportional presence in the House of Representatives. In absolute terms, however, while these states had a consistent representation on the Committee, large states like California, Texas, and Illinois usually had dedicated seats on the Committee as well.

Leadership positions on the House Agriculture Committee have been concentrated among a few states throughout the years. For instance, from 1948 to 2010, around 27% of all senior seats were held by representatives from Texas; around 14% of senior positions were held by representatives from North Carolina and Virginia each; and over 10% went to Kansas representatives. Within the period of interest here, from 1977 to present, representatives from Texas held senior positions 40% of the time, Virginia representatives held senior positions over 17% of the time, and Illinois representatives had over 14% of the senior positions. Senate's leadership follows a different pattern — with senators from Indiana controlling the floor around 23% of the time between 95th Congress to now; Senators from Iowa had leadership positions almost 20% of the time, and senators from Georgia, North Carolina, and Vermont controlled over 14% of the leadership seats within that period. Besides the actual distribution of congressional seats, there is data on requests for House Committees.²⁴⁸ From 1977 to 1994 (the latest date for which data is available), representatives from California had the most requests to be placed on the Agriculture Committee, followed by representatives from Texas, Iowa, South Dakota,

248. Using data from Stewart, Charles, "Charles Stewart' s Congressional Data Page" , Web (2010), http://web.mit.edu/17.251/www/data_page.html (accessed February 6, 2011).

Georgia, and Missouri.²⁴⁹ So the debate plays out in the presence of relatively few policymakers. Still, there is little evidence that high activity on behalf of certain states skewed program funds along state lines.

My statistical tests on panel data across states and over the last 30-some years reveal that CRP land is more likely to be in states with erosion problems, albeit with an extremely small effect. Fixed-effects regressions run on panel data show some evidence that general government payments are concentrated in states with higher political representation on either chamber's agriculture committee (if production and incidence of prime farmlands are controlled-for). Appendix F shows the full results. Acres in agricultural production primarily have driven the distribution of funds. Whether this is the desired policy outcome is a matter of debate.

Debates

Almost any formulation of arguments about how to control environmental externalities or “off-farm” costs of agricultural production comes down to two competing viewpoints. The two competing policy strategies are alternatively termed “push” versus “pull,” compulsory versus voluntary, red ticket versus green ticket.²⁵⁰ The first policy strategy deals with agriculture much like typical regulations deal with many other industries — the government establishes a bottom line standard for industry behavior and penalizes those found in violation. A straightforward implication for conservation policy is to require basic conservation practices from all farmers. A

249. Frisch, Scott A; Kelly, Sean Q, "House Committee Request Data, 80th-103rd Congress," *Charles Stewart's congressional data page*, Web (2006), http://web.mit.edu/17.251/www/data_page.html (accessed February 17, 2011).

250. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 19, p. 35.

less stringent (and less work intensive) option is to monitor environmental standards and to allow farmers to design their own practices to arrive at those standards. This is the premise behind the EPA's TMDL plan.

The second or the "pull" approach views farming as a profession uniquely tied to cultivating the earth and caring for it over generations. Farmers want to do the right thing and only require the resources to do so. The way to help their efforts is to provide more money for conservation. Given fairly tight profit margins many farmers face, conservation can rarely happen without external support. Until 1985, conservation was purely voluntary. The cross-compliance provision in the 1985 Farm Bill added a strong incentive to entice farmers into conserving erodible lands and remaining wetlands — participate or lose other benefits. Since many farmers rely on government benefits, conservation became less of a voluntary activity. Still, this approach is more amicable to the farming community. The underlying issue at stake between the two approaches is who will pay for conservation, as a long-time participant in conservation policy R. Neil Sampson phrased it.²⁵¹ Other concerns that echo in this debate are state rights within the federalist framework and private land rights in particular.

Not surprisingly, a survey of around 12,000 farmers done in the late 1980s showed much less support for "push" policies. Such policies as direct regulation of farm practices and taxation received support from a third of the respondents. "Pull" policies received much more support. Nearly half thought cost-sharing to invest in conservation practices was the best response.²⁵²

For the USDA and NRCS, the most important commodity is the organizations' historical

251. *Ibid.*, p. 22.

252. H D Guither, "US Farmers' Preferences for Agricultural and Food Policy in the 1990s," *North central regional research publication*; 321 (1989).

relationship with farmers. NRCS employees stationed across the country in county offices have enjoyed a partnership-like relationship with farmers. Historically, farmers relied on the agency for technical expertise on how to pursue conservation projects. The 1985 Farm Bill and subsequent legislation brought much more workload for NRCS employees, who had to quickly process conservation plans for millions of acres, as well as cope with their agency's greater regulatory role. In some cases, the law required employees to make difficult determinations with costly consequences, such as whether a particular piece of land constituted an ephemeral wetland.²⁵³ In other cases, employees felt that the Department's insistence on a strict interpretation of highly erodible lands was ill conceived, such as in California where irrigation tended to overinflate how many acres fell into the highly erodible category and therefore subject to stricter regulations.²⁵⁴ These mandatory measures have already inflicted some damage on the relationship. For example, one long-time NRCS employee observed that in the late 1970s and early 1980s nearly all farmers used to give permission for NRCS staff to access their property to collect data for the NRI; now many more refuse.²⁵⁵

The stream of money in the form of added conservation programs introduced in the 90s also altered the interactions between the agency and farmers. There is much pent-up demand for the financial assistance programs. Most of the contact between NRCS employees and farmers is in the context of those program funds. Some NRCS employees see farmers as only interested in money, while some farmers see NRCS employees as paper-pushers. State and district conservationists trained to provide technical expertise out on the land find themselves managing

253. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 47.

254. Personal Interview, 9.

255. Personal Interview, 9.

programs in the office instead.²⁵⁶ On the other hand, managing financial assistance programs gives considerable leverage to NRCS staff in terms of working with farmers, and some wish that the largest financial assistance program — the CRP currently managed by the Farm Service Agency (FSA) — were transferred to NRCS.²⁵⁷ Despite these changes, most on-the-ground NRCS conservationists enjoy an amicable relationship with the farmers. Certainly, farmers themselves would much rather deal with NRCS than the EPA.²⁵⁸

Still, there is significant concern that the shift away from providing technical expertise and advanced technical solutions may be undermining the historical role NRCS carved out for itself. For example, during the agency's reorganization in the mid-1990s, NRCS saw a considerable downsizing of the National Technical Centers. A number of "Institutes" were created instead and then disbanded again several years later. Some of the technical centers came back in their place. The criticism is that reorganizations like these have reduced NRCS technological capabilities.²⁵⁹

Lagging behind on technological innovations in conservation is still a sore point for NRCS. In early April, 2011, as part of the ongoing RCA process, conservation leaders and producers gathered at a Washington, DC conference organized by NRCS, the American Farmland Trust, and the Farm Foundation to bring together information from 6 regional roundtables held the previous month and to begin discussing potential conservation provisions for the next farm bill. One complaint voiced again and again was how far behind NRCS lagged

256. Stubbs, Megan, "Technical Assistance for Agriculture Conservation" (November 29, 2010).

257. Statement from a state conservationist (45).

258. Personal Comment, Maryland farmers at a farm visit.

259. Personal Comment, 43.

on the latest conservation innovations such as precision-placement of chemicals or feed management innovations. Bruce Knight, former NRCS chief and currently a consultant, pointed out that quick technology transfer is made more difficult by bureaucratic layers inherent in having the State Technical Committee (established in the 1990 Farm Bill) involved.²⁶⁰ Local flexibility has its limitations was his point.

Mismatched expectations about the other's role can strain the relationship further. Farmers may perceive themselves wholly as clients anticipating that NRCS will accept their conservation projects at face value. This client-agent relationship conflicts with another perpetual subject of debate in conservation policy: targeting. Despite the clear logic behind the concept of concentrating funds where they are needed most, it has proven very difficult to implement. This is because true targeting necessitates taking away funding from some areas in favor of others. In so far as payments for conservation act as another pillar in farm-income support policies, plans to re-route these payments face stringent opposition. Practically, targeting implies shifting NRCS financial assistance out of areas deemed less endangered, as determined by the NRIs for instance. This worries supporters of conservation who see the need for such practices across the nation. They argue better-off acres are that precisely because of NRCS support of conservation practices. Because NRCS functions through county offices located in nearly every county, its flagship program — the Conservation Operations Program or technical assistance — continues to be available everywhere. The National Association of Conservation Districts (NACD) has played a crucial role in preserving the program, as mentioned before.²⁶¹

260. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust.", Day 1, 1st session and Q&A session, comments from Bruce Knight.

261. Sampson, Neil R *With One Voice: The National Association of Conservation Districts*.

Still, the concept of targeting is ubiquitous in conservation policy even if the word itself has been taboo in the agency until fairly recently.²⁶² A little bit of historical background helps put targeting in context.

One of the major problems with the old conservation programs established in the mid-1930s — like the Agricultural Conservation Program that worked with around 6.5 million farmers at its peak in 1943 but declined to 1 million contracts by 1980 or the far-reaching 1956 Great Plains Conservation Program that was designed to provide a stable source of income for farmers as well as to promote fish, wildlife, and recreational resources,²⁶³ is that they were offered contracts on a “first come, first served” basis, as the initial National Conservation Program frankly stated.²⁶⁴ Moreover, as discussed, the overt purpose of these programs was to provide income support to farmers, so limited environmental results had been achieved by the 1980s.²⁶⁵ The agency has long recognized that given limited funding, the only path to success is to channel funds to the most problematic areas. After all, widespread erosion that is most severe occurs on a relatively small portion of land. The 1982 NRI showed that erosion was not a concern on 74% of cultivated croplands and on 93% of pasturelands. Severe erosion — defined

262. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust.", comment from Otto Doering III.

263. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture.", p. 390.

264. USDA "A National Program for Soil and Water Conservation : 1982 Final Program Report and Environmental Impact Statement : Soil and Water Resources Conservation Act.", p. 1.

265. GAO, "To Protect Tomorrow' s Food Supply, Soil Conservation Needs Priority Attention," *US General Accounting Office, Washington, DC* (1977).

as soil eroding at twice the rate of natural regeneration — affected less than 13% of croplands and 3.3% of pasturelands.²⁶⁶

While the 1985 Farm Bill specifically targeted highly erodible lands, this criterion was applied fairly loosely. It did foster a debate on how to maximize environmental benefits with limited funding. In essence, the USDA started to build targeting into its programs. In the last few years, the concept has gained more and more acceptance. Deputy Under Secretary of Natural Resources and Environment Ann Mills announced in 2009 that one of the most substantial changes to USDA policies following President Obama's Executive Order on the Chesapeake Bay is the acceptance of policy to target watersheds with the highest pollution loadings.²⁶⁷

The Executive Order started the ongoing effort by the EPA to flex its regulatory muscle and to try “push” policies in the Bay. In pursuing the development of allowable daily nutrient standards or loads, the EPA's plan hinges on availability of information. Theoretically, once the loads are agreed upon, enforcing such a plan requires only water monitoring data. Putting aside the enormous (and prohibitive, at least with current technology) cost of actual monitoring, coming up with the initial allocations is difficult, considering the diversity and scope of agricultural production. To agree on a plan much more than environmental quality monitoring is needed — information about the farms themselves and their geophysical descriptions, a detailed catalogue of their practices (timing of seeding, tilling, nutrient and pesticide applications,

266. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

267. USDA, "Deputy Under Secretary Ann Mills on Release of Executive Order | NRCS" , Web (September 10, 2009), http://www.nrcs.usda.gov/feature/chesapeakebay/deputy_under_secretary_ann_mills_on_release_of_executive_order_september_10_2009.html (accessed February 16, 2011).

pesticide, etc.), hydrological pathways between these, climatic factors, and the effects of alternative practices, not to mention as much information about all the other sources of pollution. Currently, NRCS has over 150 possible structural and management conservation practices. Information on how to actually achieve the desired load goals on the ground is constantly evolving. To obtain all of it and relate relevant elements together is a complicated assignment. Parceling out the loads to each potential source involves a lot of uncertainty and cost. The details will likely be decided in court (like many EPA regulations). Whatever the outcome, once a watershed water quality goal is set and the loads are assigned to the acres, successful regulations will require at least some monitoring of farmers' behavior. This may be difficult to do given the scope of farming. How much oversight is needed is another point of debate.

There is some evidence that noncompliance is not a widespread problem and farmers got on board with new regulations quickly. For example, NRCS cites that by the early 1990s, 1.2 million producers or nearly 55% of total farms had conservation plans in place. Esseks summarizes that unpublished NRCS data in the mid-1990s finds noncompliance rates of between 2.5 to 5.5%. His survey found around 10% noncompliance. Farmers out of compliance generally thought there was a low likelihood of detection and penalty or they had little experience with other USDA programs.²⁶⁸ Anecdotal reports suggest that farmers have little interest in engaging with authorities. One EPA employee told a story of another EPA employee (from Region 3, the Mid-Atlantic Region that includes the Chesapeake Bay) casually driving around a farming community in an EPA-marked vehicle. Apparently, word spread very fast, and

268. J D Esseks, S E Kraft and E J Furlong, "Why Targets of Regulations Do Not Comply: The Case of Conservation Compliance in the Corn Belt," *Journal of Soil and Water Conservation* 52, no. 4 (1997): 259.

within days hundreds of chicken operators from the area streamed into the EPA office to apply for a pollution discharge permit.²⁶⁹ NRCS hardly wants to elicit that type of reaction to its employees. In fact, recently NRCS spot-checks to monitor implementation of conservation practices was reduced from 5% of acres to 1% (a point of criticism from some environmental groups).²⁷⁰

It should be noted that recently there has been a bit of warming in the relationship between the EPA and the farming community. In late 2007 the EPA formed an unprecedented advisory committee on agriculture whose members include producers, environmental and farmer groups, academics, and federal and state government representatives.²⁷¹ And while the EPA still reserves the right to perform the much-disliked “unannounced” inspections of farms affected by its permit requirements for point-source water discharges (mostly Confined Animal Feeding Operations or CAFOs), the agency usually coordinates such actions with the states and gives farmers several days’ notice.²⁷² Despite such attempts, most farmers are very skeptical of more restrictive government regulations, which, in their view, the EPA epitomizes.

NRCS understands this, and it understands that what is at stake in these debates is the federal government’s relationship with the farming community. If “push” strategies win the day, the good working partnership that the agency has nurtured with the farmers may be irreparably damaged. NRCS sees progress with USDA conservation programs; it wants to give them time to

269. Personal Interview, 6.

270. Personal comment at NRCS meeting, 4/20/2011.

271. US EPA, "EPA Announces First-Ever Agricultural Advisory Committee", Web (October 17, 2007), <http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/32ee72b0222889a085257377004c2c8a!OpenDocument> (accessed May 1, 2011).

272. Namayama, Granta Y, "Re: August 29, 2008 Letter Regarding Poultry Farm Inspections" (EPA, December 17, 2008).

develop. For nearly every program, the demand from farmers exceeds the available funds. But consistent funding, and especially guaranteed long-term funding, is difficult to secure on Capitol Hill.

For this entire 30 year period until today, a constant threat to eliminate conservation programs has hung over the debate on conservation policies. Budget problems are nothing new. Federal funding for conservation assistance started shrinking in the 1960s, leaving local and state sources to pick up the slack.²⁷³ With the economic boom of the 1970s, many conservation efforts were abandoned anyhow. Nearly every year during the 1980s, the Reagan administration proposed slashing the NRCS budget. The Congress interfered every time. During the 1990s, much focus went into reorganizing the Department. Several proposals suggested eliminating the agency entirely or to merge it with the newly designed Farm Service Agency.²⁷⁴ In 2001, a Republican-sponsored plan called for the agency's demise once again.²⁷⁵ When finally passed minutes before a government shut-down, the hotly debated appropriations bill to fund the federal government for the 2011 fiscal year eliminated one significant NRCS conservation program, the Rural Development and Conservation Program (RD&D) that provided coordination for local conservation projects.²⁷⁶ Despite the threats and some cuts, over the long-term conservation program budgets have been inching up. This is because groups focused on conservation have become very active participants in agricultural policy and farmers have also gotten on board.

273. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 11.

274. Ibid.

275. Personal Interview, 43.

276. Library of Congress: Thomas, "Bill Text - 112th Congress, H.R.1473.RDS: Department of Defense and Full-Year Continuing Appropriations Act, 2011" , Web (April 14, 2011), <http://thomas.loc.gov/cgi-bin/query/F?c112:4:./temp/~c112RJoIrb:e227897>: (accessed May 1, 2011).

Disagreements between the groups are common, however, primarily on which methods are the most appropriate to motivate progress. Once again, the schism is over “push” versus “pull” strategies.

Overall, current policies reflect a combination of the two strategies. The “push” components are fairly weak, however. Cross-compliance applies only to those farms using government payments and farming on highly erodible lands or affected by the wetland provisions. Plus, more and more politicians rally around eliminating agricultural subsidies. The 1996 Farm Bill even stipulated their gradual dissolution. Although this attempt was unsuccessful, there is a threat that another one is around the corner. Without subsidies, cross-compliance loses much of its value.²⁷⁷ Moreover, some experts maintain that compliance with conservation plans preoccupies little space in farmers’ busy lives. They face virtually no sanctions for violating the terms of their conservation agreements.²⁷⁸

The next omnibus farm bill is just around the corner and debate on the future of conservation programs has already begun.²⁷⁹ The expectation is that conservation will likely take a major hit in this political atmosphere of budget cuts. Specific suggestions include giving states more flexibility in administering programs and shifting funds between existing programs through block grants. There is a lot of enthusiasm for giving grants toward developing innovative conservation techniques, like the ongoing Conservation Innovation Grants program within

277. Similar argument is extended by Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 45.

278. Ibid., quoting Max Schnepf, p.124.

279. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust."

EQIP.²⁸⁰ Consolidation of the nearly 20 programs currently in existence is probably inevitable, as noted by Bill O’Conner — a lobbyist who is credited with actually pulling together all the moving pieces for several previous farm bills.²⁸¹ Environmental groups rejected this idea in the 2008 Farm Bill, but O’Conner warns that otherwise conservation funding would be eliminated altogether.

The EPA’s current actions on TMDLs in the Chesapeake Bay is a prominent feature of the discussion. Ecoservice trading, in general, is a popular concept. Recently the EPA has awarded \$3.7 million toward water quality trading projects across the country.²⁸² There is pressure on the USDA to participate.²⁸³ The updated version of the Department’s strategic plan includes market-based approaches as a core strategy.²⁸⁴ As a result of the 2008 Farm Bill, Secretary Vilsack established the Office of Ecosystem Services and Markets within USDA (later renamed Office of Environmental Markets) to comply with the Congressional requirement to facilitate development of “emerging environmental services markets.”²⁸⁵ One of the most ambitious such projects is

280. Stubbs, Megan "Agricultural Conservation: A Guide to Programs."; American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust."

281. American Farmland Trust, "National Agricultural Landscapes Forum: List of Panelists" (Washington, D.C., April 7, 2011).; Personal Interview, 7.

282. U.S. EPA, "Finalists for Funding | Water Quality Trading | US EPA" , Web (November 4, 2009), <http://www.epa.gov/owow/watershed/trading/twg/index.html> (accessed April 27, 2011).

283. NRCS, "USDA Roles in Market-Based Environmental Stewardship," *Departmental Regulation*, Web (December 20, 2006), <http://www.ocio.usda.gov/directives/doc/DR5600-003.htm> (accessed April 27, 2011).

284. NRCS, "Progress Report and Update to the FY 2005 Strategic Plan" (February 18, 2010).

285. USDA, Office of Communications, "Media Briefing with NRCS Chief Dave White: USDA Releases Study Showing Conservation Practices Protect Water Resources in the Chesapeake Bay Watershed," *Release No. 0128.11*, Web (March 16, 2011).

underway in the Ohio River Basin, even though its founders concede that despite scores of similar pilot projects, few (if any) have resulted in a practicable trading market.²⁸⁶

The main problem is that it is extremely costly to obtain accurate, real-time monitoring information. “If we wait to monitor, we will wait forever,” said Tom Hebert, a former USDA Deputy Under Secretary and now a lobbyist.²⁸⁷ Just-in-time information is especially scarce, so agencies resort to using the latest available. While many in the conservation community praised the technical quality of the CEAP report on the Chesapeake Bay, they also noted that the report’s baseline numbers from 2003-2006 were put together when corn prices were around \$3 per bushel and wheat prices around \$5 per bushel. Now, corn prices are nearing \$8 per bushel and wheat is closing in on \$9, implying a radically different land-use situation.²⁸⁸ Playing catchup to the economic conditions reduces usefulness of the data and models based on them. NRCS was working to re-run the models for the Chesapeake Bay report with more recent survey data in 2012. Getting updated information on a regular basis is costly and difficult.

Another frequent point of discussion is the impact different USDA programs have on each other. This was the first theme highlighted at the six roundtables conducted as part of the RCA process in early 2011.²⁸⁹ I described above how USDA policies inevitably reach into many

286. Electric Power Research Institute, "Ohio River Basin Trading Project: Frequently Asked Questions" (Palo Alto, California, November, 2009).

287. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust." Day 2, final Q&A session.

288. Ibid.; USDA Market News, "Wheat - Monthly Price - Commodity Prices," *IndexMundi*, Web (2011), <http://www.indexmundi.com/commodities/?commodity=wheat&months=360> (accessed April 14, 2011).; USDA Market News, "Maize (corn) - Monthly Price - Commodity Prices," *IndexMundi*, Web (2011), <http://www.indexmundi.com/commodities/?commodity=corn&months=360> (accessed April 14, 2011).

289. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust."

different aspects of agriculture. The current talk of the need to increase efficiencies in the way the Department operates and to coordinate its programs better is nothing new. Implementing actual change remains elusive.

It is well known that USDA commodity programs encourage production and therefore land conversion and so they run counter to conservation goals. For instance, a recent study by Roger Claassen from the ERS found that farm programs — crop insurance, disaster payments, and loan deficiency payments — skewed the macroeconomics of land use in the ecologically rich Prairie Pothole region in the Dakotas by encouraging production and therefore keeping more land in crops. Using the NRI data from 1997 to 2007, Claassen showed that without these programs and just based on the economic conditions, there would be 3% fewer cropland acres and 6% more in grasslands as expected revenue from production dropped.²⁹⁰ While the percentages seem small, they do show the potential of programs to encourage continued production.

However, the value of the crops determines most of the agricultural land use patterns. Crop prices have enjoyed a resurgence since 2007, providing an incentive to convert land to crop use that cannot be matched by federal conservation payments. Because data after 2007 is not available, a wide-scale conversion underway out of conservation easement programs may be underway (although such fears in the past mostly proved to be unfounded). The conservation policy community has always realized how fragile conservation gains are in light of economic factors. This concern has fed into the debate on whether to adopt “pull” or “push” policies.

Participants on either side of the debate share a common acknowledgement that

290. Claassen, Roger "Presentation at USDA: Are Farm Programs Encouraging Grassland-to-cropland Conversion?."

conservation management must be done at the watershed level, taking into account a fuller definition of landscape and ecosystems. Only half jokingly, at a conference conservation leaders lamented the existence of political boundaries based on counties and not on watersheds.²⁹¹ Interestingly, the original USDA guidance issued in 1936 on the creation of conservation districts suggested that they should be organized around watersheds. Instead, states aligned conservation districts with county boundaries — a decision that came to define how conservation is delivered.²⁹² Moving to planning at a watershed scale requires overcoming political inefficiencies. Plus, perpetual data problems stand in the way. Besides agricultural pollution, there are other diffuse sources of water contamination like wildlife and chemical applications to lawns. Accounting for these may be just as difficult as for agricultural discharges. High-tech solutions such as remote sensing at a fine resolution may be possible to detect terrestrial changes, but they are far from adequate for monitoring actual water quality.²⁹³

In the end, it is not easy to predict whether “push” or “pull” strategies will win the day, although my money is on the “pull.” It will be a difficult battle, especially with the temptation to continue economic support for the farming sector through conservation payments instead of commodity subsidies. After all, conservation payments do not count as subsidies under the World Trade Organization’s rules.²⁹⁴ Currently, over 30% of agricultural value is exported —

291. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust." Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture."

292. *Ibid.*, p. 378.

293. Discussion, CEAP Steering Committee Meeting, April 15, 2011.

294. ERS, "ERS/USDA Briefing Room - Farm and Commodity Policy: Government Payments and the Farm Sector" , Web (March 17, 2010), <http://www.ers.usda.gov/Briefing/FarmPolicy/gov-pay.htm> (accessed February 16, 2011).

double the percent exported in the 1980s.²⁹⁵ Given the ties between conservation programs and broader agricultural policies, other considerations may drive the outcome.

One interesting possibility is that the alternative that prevails will be the one that requires least compulsory action and least amount of information. Consumer pressure, but especially pressure from large buyers and retailers, to abide by certain environmentally friendly practices may be the strongest catalyst for action. Nutrition advocates lauded a recent announcement by Wal-Mart that it would reduce prices of fruits and vegetables as a major step toward progress in public health.²⁹⁶ The equivalent of half the US population shops every week at one of its stores.²⁹⁷ A similar demand to reform environmental practices would go a long way. Monitoring will still be needed, but producers will bear the cost as part of their business model. This would be the true market-based solution.

Trends

So far I have restricted discussion to the process by which information flows through the policymaking framework, in general and in agricultural and conservation policies specifically. I have avoided talking about the two factors most directly impacted, however. The first is farmers.

295. ERS, "ERS/USDA Data - Foreign Agricultural Trade of the United States (FATUS)" , Web (April 13, 2011), <http://www.ers.usda.gov/data/fatus/#fiscal> (accessed April 20, 2011).; ERS, "ERS/USDA Data - Farm Income - Data Files" , Web (February 14, 2011), <http://www.ers.usda.gov/data/FarmIncome/finfidmu.htm> (accessed April 20, 2011).

296. Wal-Mart Corporate, "Walmartstores.com: Walmart Launches Major Initiative to Make Food Healthier and Healthier Food More Affordable" , Web (January 20, 2011), <http://walmartstores.com/pressroom/news/10514.aspx> (accessed February 13, 2011).

297. Salisbury, Susan, "Walmart's Effort Will Ripple to South Florida Rivals, Experts Say" , Web (Palm Beach Post, February 13, 2011), <http://www.palmbeachpost.com/money/walmarts-effort-will-ripple-to-south-florida-rivals-1250379.html?printArticle=y> (accessed February 13, 2011).

What is the situation of the farmers and what do they think about conservation programs? And the second is the environment. What do we know about environmental impacts of agriculture?

[Here and following, the earlier year is used as the base year.]

1. Agricultural trends: who is farming

Over the last 30 years, the farming sector has undergone some changes, although much less significant than those it experienced in the first half of the 20th century. Acres in farms went down by 11% between 1980 and 2007. Number of farmers declined by 10% in this period, but by 67% between the peak in 1920 and 2007.²⁹⁸ Average size of a farm remained stable at around 420 acres. Trends in income have changed, however. Farm net income rose at around 1.7% per year between 1940 and 2000.²⁹⁹ Moreover, by the 1980s, after historical disparities farm income caught up to nonfarm income households.³⁰⁰ Gardner compared GINI coefficients of rural farm income distributions in 1950 and 1990, finding a shift toward a more equitable concentration of wealth.³⁰¹

Other changes tell of diminished importance of agriculture in the lives of farmers themselves. In 2002, 93% of farmers relied on an outside source of income, compared to 54% in 1974. Whereas around 16% of farm output was consumed on the farm in the early 1900s, less than 1% of farm output was consumed on the farm in the 1990s.³⁰² Exports have increased

298. Census, "The 2011 Statistical Abstract: Agriculture" , Web (2011), <http://www.census.gov/compendia/statab/cats/agriculture.html> (accessed February 3, 2011).

299. B L Gardner, *American Agriculture in the Twentieth Century: How It Flourished and What It Cost* (Harvard University Press, 2002)., p. 75.

300. Ibid., p. 89.

301. Ibid., p. 90.

302. Ibid., p. 76.

nearly every year since the 1980s.³⁰³ Real prices farmers pay for production inputs have been at an all-time low in the last 20 years.³⁰⁴ On the other hand, price for outputs have also decreased. Prices farmers faced on the market for some of their goods like rice, hay, or milk were lower in the 1980s and 90s than those farmers faced in the 1930s.³⁰⁵ Recent prices for commodities have enjoyed an upsurge. Taking inflation into account, corn prices were hovering at \$8 per bushel in the spring of 2011, about two and a half times more than the prices in the 2001. Wheat prices are nearing \$9 per bushel, almost double what they were ten years ago. Beef prices also improved since 2001 but not as dramatically. By then beef prices were 50% lower than what they were in 1981, just before the crash in the mid-80s. Within ten years by the end of 2011, beef prices more than doubled. And even though some consider that prices of certain commodities have reached a new higher plateau, they are still substantially lower than in the prosperous days of the late 1970s and the early 1980s.³⁰⁶

Overall though, the basic composition of what farms provide has not changed much over the course of the last century.³⁰⁷

What has changed between the 1980s and now the most is the makeup of farms.

303. Dimitri, Carolyn; Effland, Anne; Conklin, Neilson "The 20th Century Transformation of US Agriculture and Farm Policy."

304. Gardner *American Agriculture in the Twentieth Century: How It Flourished and What It Cost.*, p. 168.

305. Ibid., p. 138.

306. Bureau of Labor Statistics, "Inflation Calculator: Bureau of Labor Statistics" , Web (2011), http://www.bls.gov/data/inflation_calculator.htm (accessed April 24, 2011).; USDA Market News "Wheat - Monthly Price - Commodity Prices."; USDA Market News "Maize (corn) - Monthly Price - Commodity Prices."; Claassen, Roger "Presentation at USDA: Are Farm Programs Encouraging Grassland-to-cropland Conversion?."

307. Gardner *American Agriculture in the Twentieth Century: How It Flourished and What It Cost.*, p. 174.

Between 2002 and 1989, the number of very large farms making more than half a million in annual sales doubled to 64,000 or around 3% of the total. Very large farms' value of total production went up 1.5 times in that time to comprise 44% of the full amount.³⁰⁸ Yet there is little evidence behind quips that small farming is dying out represented by Michael Pollan's remark in a high-profile Newsweek article, where he said that "we have a system where wealthy farmers feed the poor crap and poor farmers feed the wealthy high-quality food."³⁰⁹ This does not seem to be true. One telling sign is to look at what different types of farms produce. Farms can be categorized by how much they generate in sales. It turns out that farmers with the lowest sales do not concentrate on producing crop commodities.

In 2002, half of the smallest farms with less than \$10,000 in sales produced cattle, 21% of them produced hay, and 9% other livestock. Around 8% produced "high value crops" defined as fruits, vegetables, nursery, and greenhouse crops. On the other hand, 13% of large farms with sales between a quarter to half million dollars produced these crops. Medium-sized farms focused on soybeans and corn. Out of the largest farms, 28% produced high value crops, and 46% of non-family farms of any size produced them — the most popular agricultural activity in both of these farm categories.³¹⁰ It should be noted that fruits, vegetables, nursery, and greenhouse crops do not receive subsidies like most other commodities. The only payments their

308. J M MacDonald, R Hoppe and D Banker, "The Evolution of Structural Change in the US Farm Sector," in *IATRC Summer Symposium, Adjusting to Domestic and International Agricultural Reform in Industrial Countries, June 6-7, 2004, Philadelphia, PA* (2004).

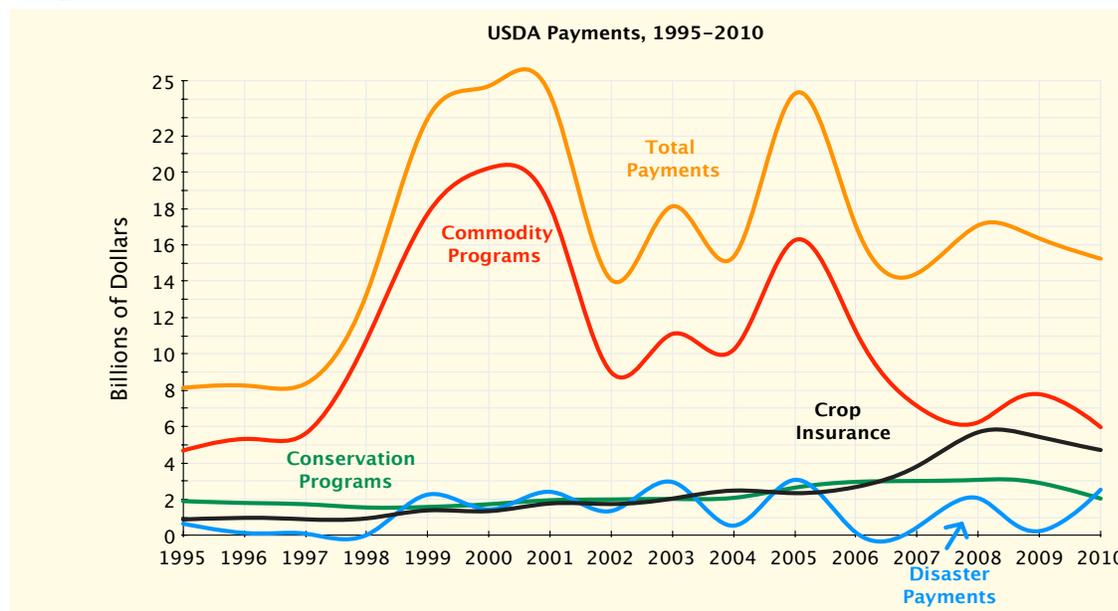
309. Miller, Lisa, "What Food Says About Class in America - Newsweek" , Web (Newsweek, November 22, 2010), <http://www.newsweek.com/2010/11/22/what-food-says-about-class-in-america.html> (accessed February 3, 2011).

310. MacDonald, Hoppe and Banker, "The Evolution of Structural Change in the US Farm Sector."

producers have received were around \$22 million in 2007 and 2008 as hurricane disaster payments and a few million every year in tree assistance programs.³¹¹ Small farmers tend to plant crops that qualify for government programs.

Despite an attempt in the 1996 Farm Bill to phase out subsidies, farm payments continue, albeit in a different composition. The most accurate data comes from Environmental Working Group's FOIA requests over the past 15 years. Cumulatively the government has paid out around \$250 billion within this time, with 13% going to conservation, around the same percentage to crop insurance, 7% in disaster payments, and the rest paid through one of the commodity programs.³¹² The graph below shows the trend for each type of payment.

Graph 2. Distribution of government payments in the agricultural sector between 1995 and 2009.



Source: Environmental Working Group, Farm Subsidy Database³¹³

311. Environmental Working Group, "EWG Farm Subsidy Database" , Web (2010), <http://farm.ewg.org/> (accessed February 3, 2011).

312. Ibid.

313. Ibid.

Following the recent price increases for many commodities, traditional subsidies that guarantee a bottom market price have become less relevant to farmers' planning. Instead, crop insurance (which farmers purchase based on their evaluation of the expected conditions at the beginning of the season) and disaster payments (which are paid out regardless of insurance coverage) are becoming more important methods to hedge economic risk in agricultural production. Since these programs reduce income uncertainty, they — just like other traditional commodity payments — actually encourage production. While countering efforts to bolster price by reducing production, these instruments do target an acknowledged goal: guaranteeing farmers' welfare.³¹⁴

The relative increase in farms' incomes can be attributed primarily to increases in yields and increases in other productive factors in agriculture. Farm productivity has been growing at a nearly 2% annual rate since after World War II through the rest of the 20th century, primarily because of technological advances that drastically reduced reliance on physical labor. Mechanization of agriculture was pretty much completed by the 1980s. It had offered eye-popping increases in labor productivity since the turn of the 20th century. For instance, labor needed to produce corn and cotton shrunk fiftyfold. To process 1,000 pounds of broiler chickens required 85 hours in the 1920s, and only 1 in the 1980s.³¹⁵ Innovations in seed also contributed to productivity growth, and farmers quickly caught on. By the 1960s, hybrid corn was ubiquitous.³¹⁶ Biotechnological genetic modifications offered further increases in yields in the

314. Dimitri, Carolyn; Effland, Anne; Conklin, Neilson "The 20th Century Transformation of US Agriculture and Farm Policy."

315. Gardner *American Agriculture in the Twentieth Century: How It Flourished and What It Cost.*, p. 18.

316. *Ibid.*, p. 19.

last decades of the 20th century.³¹⁷ After the 1930s to the close of the century, crop yield of major commodities grew at an annual rate of over 2%.³¹⁸ Use of chemical inputs also contributed to productivity growth.

Use of nitrogen increased fourfold between 1960 to 1980, although it has remained fairly steady since then, fluctuating around 12 million nutrient tons. Some of the initial increase had to do with falling prices for nitrogen during this period.³¹⁹ Use of phosphate went up 111% from 1960 to 1980, but has actually decreased around 22% from 1980 to 2008 to 4.2 million nutrient tons. Similarly, potash use went up 190% from 1960 to 1980, but decreased by 25% in the last three decades to 4.6 million tons.³²⁰ Use of pesticides followed a similar pattern. Between 1964 and 1982, total use of pesticides went up 166% to 570 million pounds of active ingredient applied annually. By 2004, pesticide use fell to around 500 million pounds. Herbicides comprised around 62% of the total. This information is for crops surveyed by the ERS.³²¹ Fuller data comes from the EPA which bases its estimates on market sales sources. They show that pesticide use in the agricultural sector has remained fairly steady since the early 1980s. The agency records show that the sector used over 900 million pounds of active ingredients of

317. ERS, "ERS/USDA Data - Farm Business and Household Survey Data - Customized Data Summaries From ARMS" , Web, <http://www.ers.usda.gov/Data/ARMS/> (accessed October 27, 2010).; Wiebe, Keith; Gollehon, Noel, "Agricultural Resources and Environmental Indicators, 2006 Edition," *ERS, Economic Information Bulletin Number 16* (2006).

318. Gardner *American Agriculture in the Twentieth Century: How It Flourished and What It Cost.*, p. 22.

319. *Ibid.*, p. 23.

320. ERS, "ERS/USDA Data - Fertilizer Use and Price" , Web (2010), <http://www.ers.usda.gov/Data/FertilizerUse/> (accessed February 3, 2011).

321. Wiebe, Keith; Gollehon, Noel "Agricultural Resources and Environmental Indicators, 2006 Edition."

pesticides in 2001 — about a 10% decrease from 1982 and comprises about three-quarters of total pesticide use.³²² Pesticide use in industry and home applications account for the rest.

Although many farmers receive government payments, which have been tied to conservation plans, it is very difficult to get accurate data about the practices they use because of the USDA's reluctance to step into a tougher monitoring role, as discussed above. Available information comes from surveys. The largest survey undertaken in 2004 reports that crop residue management is a regular practice on 62% of planted acreage, up nearly 20% from 1990. No-till was used on 22% of acreage, up 264% since 1990.³²³ Many experts argue that this increase is related directly to availability of technology. John Deere's no-till drills gave farmers an easy way to implement conservation tillage, and the trusted manufacturer's name helped the transition.³²⁴ The USDA's Agricultural Resources Management Surveys provide more information on the types of practices common in farming. By the late 1990s, crop rotation was used on 80% of corn acres, 84% of soybean acres, 57% of wheat acreage, and 27% of cotton. Soil tests for nitrogen were used on a quarter of corn and soybean acres, 30% of wheat acres, and 37% of cotton acres.³²⁵

In 2003, large family farms and very large family farms received 55% of the commodity program payments, whereas small farms received 10.5%. On the other hand, 54% of land

322. U.S. EPA, "2000-2001 Pesticide Market Estimates" , Web (2010), http://www.epa.gov/opp00001/pestsales/01pestsales/table_of_contents2001.htm (accessed January 27, 2011).

323. Wiebe, Keith; Gollehon, Noel "Agricultural Resources and Environmental Indicators, 2006 Edition.""

324. Osmond, Deanna, "Targeting Vulnerable Landscapes: Land Treatment and Modeling," in *2011 National Water Conference* (National Institute of Food and Agriculture, USDA).

325. Wiebe, Keith; Gollehon, Noel "Agricultural Resources and Environmental Indicators, 2006 Edition."

conserved under the CRP and the WRP programs was from small family farms and they received 54% of conservation payments. Large and very large family farms owned around 16% of land enrolled in the programs.³²⁶

Socio-economic changes underway in the sector may affect conservation participation. For example, American farmers are growing older, and fewer young people are interested in agriculture (although this may be changing considering the current prospering state of the sector, especially in comparison to the poor state of the general economy). The percentage of farm operators aged 65 or older is now 26%. Meanwhile, the percentage of farm operators under 35 is about 6%.³²⁷

Farmer age is one issue that circulates constantly. But given rising life expectancy the trend may not be as alarming. Consider this. The average age of a farmer in 1940 was 48 years old. At the same time, his (and it was overwhelmingly unlikely to be a her) average life expectancy was just over 60 years. So the average farmer had 13 years left until his (calculated through averages) demise. In 2007, the average age of a farmer was 57. But now around 14% of principal operators were women and life expectancy was now 13 additional years. Adjusting the average life expectancy for gender effects (since women's life expectancy was about 5 years more than men's in 2007), the average farmer now has 19 years of life left, statistically speaking. It is true that this number is down from 20 and 21 years in the 1980s and 1990s. And it could

326. ERS "ERS/USDA Data - Farm Business and Household Survey Data - Customized Data Summaries From ARMS."

327. Allen, Rich and Harris, Ginger, "Census of Agriculture - 2002 Census Publications - Demographics of U.S. Farm Operators", Web (February, 2005), http://www.agcensus.usda.gov/Publications/2002/Other_Analysis/index.asp (accessed April 27, 2011).

have been up to 23 and 24 years if as many women were farmers as men.³²⁸ This analysis ignores the issue of declining health in later years, but still it demonstrates that perhaps advancing age is not that serious an issue. Moreover, the recent prosperity of the agricultural sector, especially as compared to the stagnation pervading the rest of the economy, can do a lot to attract the younger populations. There is some evidence, for instance, that young people are buying up former CRP lands because other agricultural land is too expensive.³²⁹

How farmers view conservation may also relate to their relationship to the land. About 44% of farm operators consider their farm a residence, and nearly 20% consider themselves retired.³³⁰ Farmers' socioeconomic circumstances, such as level of education, age, availability of expert advice, level of reliance on farm income, and attachment to the farm affect the decision to enroll in a specific conservation program.³³¹ For example, retired farm operators accounted for around 30% of total acres enrolled in the CRP in 2001.³³²

328. NASS, "2007 Census of Agriculture: Women Farmers" (2008).; Korb, Penni, "Women Farmers in Transition," in *Structural and Financial Characteristics of U.S. Farms* (ERS, 2004).; L B Shrestha, "Life Expectancy in the United States," *CRS Report RL32792* (August 16, 2006).; U.S. Department of Health and Human Services, "National Vital Statistics Reports, Volume 59, Number 9" (National Center for Health Statistics, by Elizabeth Arias) (September 28, 2011).; USDA, "Census of Agriculture, 1940," *Chapter V. Work Off Farm, Age, and Years on Farm* (1940).; NASS, "What We Know About the Demographics of U.S. Farm Operators," *By Rich Allen and Ginger Harris for Agricultural Outlook Forum 2005* (February 25, 2005).

329. Polansek, Tom, "Analysis: Young U.S. Farmers Coax Crops From Conservation Lands," *Business & Financial News | Reuters.com* (2012).

330. Dayton Lambert *and others*, "Conservation-Compatible Practices and Programs: Who Participates?(Washington DC) US Department of Agriculture," *Economic Research Service, Economic Research Report 14* (2006).

331. *Ibid.*

332. P Sullivan *and others*, "The Conservation Reserve Program: Economic Implications for Rural America," *Washington, DC, Economic Research Service: US Department of Agriculture* (2004).

Another economic dimension is that around 40% of farm acres are rented, meaning that the owner is not the person operating the farm. Such conditions may impede long-term incentives to participate in conservation programs, and research from Iowa State found that these farms are less likely to participate in working-land programs.³³³

Farmer opinions on conservation programs are not surprising given the positive incentives. A 1986 survey of around 1,200 recently created clients of the CRP program revealed that most farmers planned to re-bid in the following sign-up. A quarter of non-bidders felt that the rental price — or the price the USDA was offering per acre — was too low. The next group did not bid because they calculated they could make more money by reverting the land back to production. Bidders and non-bidders alike united on some ideas for modifying the program: easing restrictions on grazing CRP land, ability to use CRP land to meet set-aside requirements of commodity programs, and basing rental rates on productivity and not on minimum bids.³³⁴ A survey of over 12,000 farmers across 21 states conducted in 1989 by University of Illinois researchers showed that 60% of the farmers favored the cross-compliance provision of the 1985 Act. Around the same percentage backed government regulations on water quality. Three-quarters supported the CRP, and around a third wanted to expand the program.³³⁵ Other surveys demonstrate that farmers tend to underestimate the extent of erosion on their lands.³³⁶ This may

333. Arbuckle, J. Gordon, "J. Gordon Arbuckle, Department of Sociology: Faculty and Staff at Iowa State University" , Web (2011), <http://www.soc.iastate.edu/staff/arbuckle.html> (accessed April 14, 2011)., speaking at National Agricultural Landscapes Forum in Washington, DC on April 7-8, 2011.

334. J D Esseks and S E Kraft, "Landowner Views of Obstacles to Wider Participation in the Conservation Reserve Program," *Journal of Soil and Water Conservation* 41, no. 6 (1986): 410.

335. Guither "US Farmers' Preferences for Agricultural and Food Policy in the 1990s."

336. Esseks, Kraft and Furlong, "Why Targets of Regulations Do Not Comply: The Case of Conservation Compliance in the Corn Belt."

mean that some see little reason why they should participate in the programs and perhaps resent any regulatory attempts to enforce such standards (like the cross-compliance provision in the 1985 Farm Bill).

On the other hand, interviews with “key informants” participating in small watershed studies that are part of CEAP and financed through USDA’s NIFA in 2010 demonstrated that people were most aware of water quality issues in areas where there was more intense regulatory focus on the issue like in case of a lawsuit. The interviewees were representatives from farms, extension offices, local and federal agencies, residents, businesses and other participants in small watershed studies that are part of CEAP and financed through USDA’s NIFA. The producers disliked requirements for buffers the most since they reduced farmable acres. They also disliked nutrient management practice standards because they could not see any physical benefit — unlike the sedimentation problem that was the focus of the 1980s programs. Farmers also worried that nutrient management decreased their yields. Many felt that time spent on conservation practices was time lost — it could be better spent making money.

Conservation tillage was the most popular adoption. It turns out it saves time and money and comes with reliable John Deere equipment. Farmers relied on each other more than outside experts in determining whether to adopt certain conservation measures. Most of them did not put much faith in extension services or NRCS officials. The most discomfoting finding for NRCS is that their staff was seen more and more as bureaucrats churning forms through the red tape system to process all the money for the programs. Producers perceived NRCS as losing its

traditional expertise of providing solid technical assistance.³³⁷ Dana Hoag from Colorado State University also talked to farmers about impediments to their adoption of conservation practices. Many felt that the official NRCS costs for structural additions were too high and even with cost-share did not make sense. Farmers thought that much cheaper versions were available, and it was bad business to waste money. Most shared the sentiment that without subsidies little conservation would be done.³³⁸

Interestingly, research on patterns of technology adoption has its roots in agriculture.³³⁹ Studies on how Iowan farmers adopted higher yielding hybrid corn in the 1930s showed that at the time farmers also preferred personal contact to other sources in the awareness stage. Face-to-face interaction with a salesperson was more important than exposure to the idea through mass media. During the trial period, information from the Extension Service and other agencies became more relevant.³⁴⁰

As discussed above, the most likely rate of noncompliance with conservation plans is around 10%. But besides noncompliance, the question of whether recommended (and applied) practices are effective in achieving conservation goals is still open. Assessing the effectiveness of practices currently in place is CEAP's goal. To assess the effectiveness, it is necessary to have

337. Osmond, Deanna, "NIFA-CEAP Key Informant Interviews: What We Learned," *CEAP Steering Committee Meeting, unpublished notes* (2010).

338. Hoag, Dana, "Adopting and Sustaining Conservation: Effective Outreach, presented at the National Water Program, USDA NIFA&Land Grant Colleges and Universities" (January 31, 2011).

339. J M Bohlen and G M Beal, "How Farm People Accept New Ideas," *North Central States Rural Sociology Committee Journal, Iowa State College* (1955).

340. Ibid.; B Ryan and N Gross, "Acceptance and Diffusion of Hybrid Corn Seed in Two Iowa Communities," *Acceptance and diffusion of hybrid corn seed in two Iowa communities.* , no. 372 (1950): 663-708.

baseline understanding of the impacts of modern agricultural practices on the environment. Most of them relate to increased mechanization of agriculture and increased reliance on chemical inputs. Some of the impacts of these inputs have been studied. There are numerous sources for more information.³⁴¹ A short list of adverse impacts from modern agricultural production includes potential human and wildlife health issues like cancer and reproductive disorders, primarily from chemical inputs,³⁴² stark reductions in wildlife biodiversity,³⁴³ not to mention soil erosion and contamination of surface and ground water from too much nutrient and synthetic chemicals inflows.

2. Environmental quality

Soil erosion was the main concern associated with agricultural production for a long time.

Rates of average soil erosion have decreased dramatically since the early 1980s. The 2007 NRI

341. For example, see N D Uri, *Agriculture and the Environment* (Nova Science Pub Inc, 2006).; W B Wheeler, *Pesticides in Agriculture and the Environment* (CRC, 2002).; T M Addiscott, "The Politics and Economics of Nitrate," *Nitrate, agriculture and the environment* (2004): 153-171.; B L Turner, A E Richardson and E J Mullaney, *Inositol Phosphates: Linking Agriculture and the Environment* (CABI, 2007).; R E Meiners and B Yandle, *Agricultural Policy and the Environment* (Rowman & Littlefield Pub Inc, 2003).; M Læg Reid, O C Bøckman and O Kaarstad, *Agriculture, Fertilizers and the Environment* (New York. CABI Publishing; Oslo, Norway: Norsk Hydro ASA, 1999).

342. E M Roberts *and others*, "Maternal Residence Near Agricultural Pesticide Applications and Autism Spectrum Disorders Among Children in the California Central Valley," *Environmental health perspectives* 115, no. 10 (2007): 1482.; D B Donald and A J Cessna, "Pesticides in Surface Drinking-water Supplies of the Northern Great Plains," *Environmental Health Perspectives* 115, no. 8 (2007): 1183.; D M Schreinemachers, "Cancer Mortality in Four Northern Wheat-producing States," *Environmental Health Perspectives* 108, no. 9 (2000): 873.; R Castorina *and others*, "Cumulative Organophosphate Pesticide Exposure and Risk Assessment Among Pregnant Women Living in An Agricultural Community: A Case Study From the CHAMACOS Cohort," *Environmental health perspectives* 111, no. 13 (2003): 1640.

343. S J Butler, J A Vickery and K Norris, "Farmland Biodiversity and the Footprint of Agriculture," *Science* 315, no. 5810 (2007): 381.

results show a decrease of 43% in million tons per year of water erosion on cropland, and a 45% reduction in wind erosion. Total cropland eroding at levels above soil tolerance levels dropped by 25%, although total highly erodible cropland decreased by just 8%.³⁴⁴ Recently, an Environmental Working Group study publicly criticized NRI's concept of "average" erosion. Using actual NRI points in Iowa, the group's collaborators calculated daily erosion through inputting precipitation data into a processes model. During heavy precipitation events, actual daily erosion can be many times higher than the average. Authors argue in fairly inflammatory terms that these are the numbers that really matter.³⁴⁵ That NRI is not representative of soil erosion is a fairly serious accusation, making Secretary of Agriculture Tom Vilsack uncomfortable when an interviewer asked about it during the Secretary's recent trip to Iowa.³⁴⁶ While maximum erosion rates should not be ignored, it is important to acknowledge that NRI is created specifically to analyze nationwide trend data and probably cannot be expected to fulfill other types of data needs. The important point — and as the EWG report concludes — is that conservation practices do work when applied, and the real question here is what practices are in use in Iowa. While CEAP is collecting that type of information for its regional studies, data for Iowa specifically is scarce. The results of the completed studies, however, suggest that a carefully applied suite — or combination — of practices is necessary to accomplish conservation goals reliably.

344. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

345. Cox, Craig, Hug, Andrew and Bruzelius, Nils, "Losing Ground" (April, 2011).

346. Iowa Public Television, "USDA Secretary Tom Vilsack Discusses FY11 and FY12 Budgets" , Web (April 21, 2011), http://www.iptv.org/iowapress/episode.cfm/3833/video/ip_20110422_3833 (accessed April 24, 2011).

Drainage of wetlands has been a long-standing USDA practice. It is estimated that around 40% of wetlands existing at the time of first European settlers had been drained by 1954.³⁴⁷ Estimates indicate that there was around 275 million acres of wetlands left in the 1980s when swampbuster provisions were adopted.³⁴⁸ The 2007 NRI showed that there are 160 million acres left now.³⁴⁹ Wetlands provide rich habitats to wildlife.³⁵⁰ They also can recycle harmful nutrients like nitrogen and phosphorous thereby improving water quality.^{351, 352} They teem with biodiversity.³⁵³

On the other hand, monocropping — virtually synonymous with modern agriculture — reduces biodiversity.³⁵⁴ Solid evidence indicates that the practice also contributes to higher incidence of plant diseases (combating these on a large scale requires chemical interventions).³⁵⁵ There is some concern that over reliance on herbicides will reduce genetic diversity in plants and make them more susceptible to disease. For instance, the spread of Southern corn leaf blight in 1970 which wiped out 15% of the nation's corn crop was aided by genetic uniformity of the

347. Dahl, Thomas E "Wetlands Losses in the United States -- 1780' s to 1980' s."

348. Ibid.

349. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

350. H A Czech and K C Parsons, "Agricultural Wetlands and Waterbirds: A Review," *Waterbirds* 25 (2002): 56-65.

351. D S Nichols, "Capacity of Natural Wetlands to Remove Nutrients From Wastewater," *Journal (Water Pollution Control Federation)* 55, no. 5 (1983): 495-505.

352. G Moshiri, "Constructed Wetlands for Water Quality Improvement," *Lewis Publishers. Boca Raton, Fla., U. S. A.* (1993).

353. D L Hey and N S Philippi, *A Case for Wetland Restoration* (John Wiley & Sons, 1999).

354. E D Schulze, H A Mooney and L F Huenneke, *Biodiversity and Ecosystem Function* (Springer-Verlag Berlin, 1993).

355. Y Zhu *and others*, "Genetic Diversity and Disease Control in Rice," *Nature* 406, no. 6797 (2000): 718-722.

crop.³⁵⁶ Now, farmers can buy nearly every single field crop variety with built-in herbicide tolerance, and researchers are developing varieties with insect resistance, virus/fungus resistance, resistance to cold, drought, frost, and salinity, as well as with traits that enhance yields, increase macro and micro nutrient content, and regulate ripening cycles. Since the development of the first bioengineered crops in the mid-1990s, their use has skyrocketed — with nearly 90% of soybean varieties grown being herbicide tolerant. Over 60% of all cotton grown in 2005 was herbicide-tolerant cotton and 26% of all corn. Bt corn constituted 35% of the total in 2005. Over 90 percent of acreage grown in each one of the three crops is treated with herbicides.³⁵⁷ Only 5 million acres of cropland, pastureland, and rangeland was under organic farming in 2010 — about half of a percent of total land area.³⁵⁸

Wildlife benefits have often not been the primary target of conservation programs, but have been the afterthought.³⁵⁹ Agriculture though has been the primary human-driven threat to terrestrial and aquatic habitats. Biologists indicate that any reduction in agricultural run-off is bound to have positive impacts on wildlife.³⁶⁰ Most USDA conservation programs are likely to benefit wildlife. About 75% of land idled with the CRP is converted to grasslands, a habitat conducive to birds and small mammals.³⁶¹

356. NRC, *Agricultural Crop Issues and Policies* (Washington, D.C.: National Academy Press, 1993).

357. Wiebe, Keith; Gollehon, Noel "Agricultural Resources and Environmental Indicators, 2006 Edition."

358. ERS, "United States Fact Sheet: US Agriculture, Organic Farming" , Web (December, 2010), <http://www.ers.usda.gov/statefacts/us.htm> (accessed February 4, 2011).

359. L W Burger Jr, "Creating Wildlife Habitat Through Federal Farm Programs: An Objective-driven Approach," *Wildlife Society Bulletin* 34, no. 4 (2006): 994-999.

360. J B Haufler, "Fish and Wildlife Response to Farm Bill Conservation Practices," *Wildlife Society Technical Review* (2007): 07-1., p. 10.

361. *Ibid.*, p. 28, p. 57.

Estimating the impacts on water quality was not undertaken until the 1980s. When the comptroller general Elmer Staats testified before a house committee on public works and transportation hearing in the summer of 1979, he lamented the scarce state of knowledge about the problem. The EPA's best estimate at the time was that nonpoint source pollution accounted for half of the total water pollution. The Council on Environmental Quality, the president's arm for coordinating environmental programs, reported that pollution levels stemming from agricultural sources, leakage from landfills and feedlots was at least 5 to 6 times worse than point sources. None of the states had any data on the extent of nonpoint source water pollution.³⁶² The situation on data has improved since the 1980s, and the results show no decline in water pollution. This is hardly surprising given that the amounts of nutrients and pesticides in use has held steady during this period.

A USGS study found that around 70% of cropland is located at watersheds with an elevated level of at least one of four common contaminants — nitrate, phosphorous, coliform bacteria, and sediment.³⁶³ The latest EPA report to Congress that summarizes state findings on water quality found around 44% of state-assessed rivers and streams to have impaired quality (around 16% of river and stream miles were assessed). Agricultural pollution was the most cited cause, directly attributable to 38% of the impaired miles. Out of 39% of assessed lakes, 64% were found to be in impaired conditions. The three most common causes of lake pollution were atmospheric deposition, unidentified causes, and agriculture identified as the primary polluter in

362. GAO, "The Impact of Nonpoint Source Pollution on Meeting National Water Quality Goals" (Statement of Elmer B. Staats, Comptroller General of the United States, July 17, 1979).

363. R A Smith, G E Schwarz and R B Alexander, "Regional Estimates of the Amount of US Agricultural Land Located in Watersheds with Poor Water Quality," *US Geological Survey open-file report (USA)* (1994).

16% of lake miles. Less than a third of assessed bay and estuary miles were classified as impaired.³⁶⁴ The first CEAP cropland study focused on the Upper Mississippi River Basin finding that over half of the acres in farms needs additional nutrient management practices to meet water quality standards.³⁶⁵ Other reports on large watersheds across the country like the Chesapeake Bay and the Great Lakes have come out in 2011.

CEAP studies show a lot of promise in evaluating agricultural pollution sources in watersheds. Like past NRCS informational efforts, they can slip into obscurity or can be used to strengthen conservation policy. The outcome depends in part on lessons learned through previous experience. With that motivation in mind, I ask whether the NRIs have advanced conservation policy over the last three decades.

364. U.S. EPA, Office of Water, "National Water Quality Inventory: Report to Congress, 2004 Reporting Cycle" (January, 2009).

365. NRCS, CEAP, "Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Upper Mississippi River Basin | Conservation Effects Assessment Project | Technical Resources | NRCS" , Web (June 16, 2010), <http://www.nrcs.usda.gov/technical/NRI/ceap/umrb/index.html> (accessed February 4, 2011).

Chapter 3: Methods

Introduction

The previous chapter shows that policymakers choose between policy alternatives based on the interaction of several factors including constituency wishes, personal preferences, and merits of the arguments presented by all different organized factions. Information is influential in this process, although how influential is far from clear. My research seeks to understand what impact information, and specifically federally collected information on natural resource conditions, has had on conservation policy over the last thirty years. Have the National Resource Inventories (NRIs) advanced conservation policy?

I anticipate that on its way to policymakers, federally collected information is modified through intra-agency dynamics. On the other hand, the discussion at the level where policy is designed involves many different types of information — information produced under the purview of the federal government, information produced by participants drawn to the debate for their own reasons (e.g. environmental groups, farmer or producer groups), plus information useful to political ambitions of the players at the top. So to answer the main question, I tie together three threads. The first deals with intra-agency factors, the second with the broader executive branch and the USDA conservation programs, and the third with legislative factors. I break down each thread into smaller, more manageable strands. The questions posed at the end of the first chapter's "Problem Overview" are the strands — they provide the analytical backbone.

Specifically, the guiding questions are: Did the USDA allocate money and staff time to

this effort? Did the agency provide information to external users? Did NRCS reach out to other USDA agencies for collaboration and eventual use of the results? Did it reach out to other federal agencies, especially the EPA? Did some information receive less emphasis and other more? Did NRCS use the results in program implementation? Did House and Senate Agriculture Committee members receive information collected by NRCS? Did they choose policy alternatives consistent with the NRIs and the RCAs? Finally, did money go to where the data indicated it should?

To follow developments within NRCS, I use some methods that are similar to the ones Powell employs in *Science at EPA*.³⁶⁶ My study takes a similar approach to deciphering internal dynamics within the context of NRCS. One difference is that Powell's work conceived of information originating outside the EPA. In contrast, my study considers information that originates at the agency level, where, in large part, organizational decisions within the agency determine how much emphasis information gathering and processing receives.

Plus, intra-agency forces have been instrumental in advocating that the requirement to collect information be put into law at least on three occasions — the 1977 law that established the NRIs, RCAs, and National Conservation Programs; the 2002 Farm Bill that started CEAP; and the 2008 Farm Bill that revitalized the RCAs and National Conservation Programs.³⁶⁷ So there is direct feedback from the policy sphere to information. Sheila Jasanoff termed this interaction “co-production.”³⁶⁸ My study considers such overlaps more explicitly than Powell.

Still, his research on internal decision-making inspired my methodology. Powell uses

366. Powell *Science at EPA: Information in the Regulatory Process.*, p. 14.

367. Interviews with NRCS staff.

368. S Jasanoff, *States of Knowledge: The Co-production of Science and Social Order* (Routledge, 2004).

scores of interviews to answer the questions of how information moves to the decision maker through the EPA's internal channels; how information may be altered along the way; how its integrity is assured, etc. In his words, the goal is "to map the origins, flow, and effect of scientific information relating to a particular decision."³⁶⁹ This is my goal as well. I likewise use interviews, as well as internal documents, research reports, and secondary literature to trace the internal dynamics within the organization and their impact on the eventual use of data in policy.

To be clear, I do not attempt to untangle the purported objectivity of data collected on agricultural-environmental issues. Rather, I follow the course of data inside a federal organization. I look for the pathways through which information reaches policymakers. I follow the agency within the broader bureaucratic and political structures that create the requirement for information, and create the conditions through which the results are moved up the organizational ladder to the top leadership in the executive branch, and then are communicated to the representatives in the legislative chambers.

I rely on John Stuart Mill's work on logic to test for a causal connection.³⁷⁰ First, I follow information as it is developed before entering the policy stream. Then I see how information and policymaking come together, and finally, I work to eliminate other plausible explanations — in this case, other types of information and other considerations that may have affected policy decisions.

Whether the choice of policy alternatives relates to inflow of information on natural resources is the issue here. One way to find out is to ask whether this information was evoked as

369. Powell *Science at EPA: Information in the Regulatory Process.*, p. 14.

370. Mill, John Stuart, *A System of Logic, Ratiocinative and Inductive: Being a Connected View of the Principles of Evidence and the Methods of Scientific Investigation* (London: John W. Parker, West Strand, 1843).

a crucial piece of evidence in arguments for selecting one program proposal over another.

Baumgartner and his colleagues did this in their interviews with more than 300 interest-group representatives and government employees on around 100 issues. Their method was to break down types of arguments into 14 categories — from implementation problems, to distribution of impacts, to symbolic references.³⁷¹ I use their framework (albeit a much simpler version) to look at the types of arguments all sides present to policymakers.

Accordingly, I review the testimonies of witnesses at publicly available hearings on conservation titles of omnibus farm bill proposals in 1981, 1985, 1990, 1996, 2002, and 2008. I classify the types of arguments witnesses made in their support or opposition for a given policy proposal and the type of evidence they utilized to justify why they took their positions. I split the arguments into economic, environmental, or bureaucratic categories and approximate the weight of each justification from weak to strong. The weakest variation would be a general proclamation of an overarching argument, such as “water quality is bad.” The second, stronger variation would contain a reference to a trend or a specific problem. This would include statements like: “water quality is especially bad around areas of agricultural production.” The third, still stronger variation would be a hard fact from any source. To follow the same example, this would include a statement like: “water quality is suffering from annual pesticide flows of X million tons to this area.” The fourth and strongest variation — the jackpot argument — would be an NRI fact or an attribution to another NRCS informational product. This does not imply superiority of NRI facts; it only reflects the focus of my study on NRCS informational products. Because in many cases arguments overlap across categories and presentations do not contain

371. Baumgartner and Berry, J M; Nojnacki, M; Kimball, DC; Leech, BL, *Lobbying and Policy Change: Who Wins, Who Loses, and Why.*, p. 132.

facts other than the group's opinion on the legislation and because many arguments defied classifications, I do not present a formal statistical analysis, but rather discuss the more general observations based on the emerging trends.

There are several assumptions and theorized outcomes that I expect to test as a result of the study. One is that during times of increased information availability (in the early 1980s, in this case), more information will be found in substantive arguments used to defend positions related to conservation issues. Another is that groups will choose information according to fit with their preferred policy position relative to the overall availability of information, resulting in consistency in types of arguments used across groups across time. The third is that during times when NRCS involves more external partners in developing its informational products, a greater range of groups will use its information.

To make the analysis more useful and to allow for some temporal comparison, I break the discussion of the thirty-five-plus years into three distinct periods. The first period runs up to 1985, when the 1985 Farm Bill passed with the first important Conservation Title. During this time, SCS produced a number of initial surveys, two official NRIs, the first RCA and the first National Conservation Program. The second period considers the immediate aftermath of the 1985 bill and lasts into the early 2000s through the reorganization of the agency in 1994 through the Clinton presidency and to the start of the Bush administration. This period saw two rounds of RCAs and one national program timed to correspond to the 1990 and 1996 Farm Bills. The third period goes from the turn of the century to the present, 2012. During this time, the effort to produce a fourth round of the RCA appraisal and National Conservation Program collapsed, and the NRIs underwent significant reorientation switching to an annual format. Conservation

Effects Assessment Project (CEAP) came out of the 2002 Farm Bill, beginning a systematic investigation of conservation programs and the 2008 Farm Bill revived the RCA and the National Conservation Program requirement. The latest RCA came out in 2011, and the National Conservation Program was slated to come out in late 2012. This period also saw the revitalization of the debate on expanding the EPA's authority to regulate nonpoint source pollution.

Description

To answer the questions posed above, I relied on several methods: personal interviews, reviews of archived federal agency materials like speeches and agency reports, analysis of testimonies at hearings, assessments of publicly available data sources and secondary literature. I conducted 45 interviews with 42 separate individuals — current and former NRCS staff, EPA employees, interest group representatives, and others involved in the development of conservation policy. All interviewees were guaranteed complete confidentiality. The questions differed person-to-person. The interviewee received and signed a “Consent to Participate in Interview” form that outlined these terms or agreed to the form verbally. The University of Maryland College Park Institutional Review Board has made a determination that this project “does not require further evaluation.” I also had a number of conversations with academic experts in agricultural-environmental policy and historians in the field. These conversations were informal and did not require consent forms. The table below summarizes my sources on the left side and the corresponding questions in the columns.

Table 1. Matrix of sources and their application in answering the sub-questions of interest.

Sources	Questions >>	Internal Dynamics							Policy sphere						
		Resources toward info products	Within NRCS programs	External partners			Subject matter	Top USDA	Outside users	USDA to Congress	Research agencies	Others?		Exogenous Factors	Outcomes analysis
				USDA agencies	Fed agencies: EPA	Research community						Env. Groups	Producer Groups		
Internal Documents															
	Budgets	X	X												
	Speeches	X	X				X	X							
	Agency (NRCS/USDA) reports		X				X								
	Other internal docs	X	X	X	X	X	X	X							
Interviews															
	NRCS employees*, current and former	X	X	X	X	X	X	X	X					X	
	USDA employees**			X			X	X						X	
	EPA employees				X		X							X	
	Congressional staff							X		X				X	
Data analysis and Research Reports															
	Data: Resource conditions													X	
	Data: Program and \$ flow													X	
	Reports: GAO, CRS, CBO									X				X	
Other Sources															
	Hearings transcripts									X		X	X	X	
	Public laws													X	
	Secondary literature	X			X	X	X	X	X			X	X	X	

Note: *NRCS employees include primarily employees at the Resources Assessment Division and the Resources Inventory Division; **USDA employees include primarily employees collaborating on NRI-related information products

Justification

Overall then to answer the question of whether the NRIs advanced conservation policy, I follow the three-pronged approach described above. I do not compare the development of conservation policy to any other policy nor to any specific theory on the general development of policy. Just like Meltzer recognized that information analysis in a bureaucracy is a different process in every setting defying theoretical platitudes,³⁷² I do not try to fit conservation policy into a theoretical framework. Rather my study is an in-depth assessment of the particular situation that evolved in conservation policy. Although an integral element of my analysis is the intra-organizational dynamics of information-processing, this study does not fall squarely under the heading of “historical institutionalism,” where scholars pit different institutional arrangements against each other to draw out broader inferences.³⁷³ I do, however, aspire to mirror certain elements common to the discipline, like attention to historical processes and to the interplay of exogenous factors.³⁷⁴ Adler’s concept of “history as a laboratory” offers a succinct metaphor.³⁷⁵ Unlike scholarship in American political development, however, I do not use history to test a specific theory. Nonetheless, previous work on the relationship between science and policy provides the logic behind my question and provides useful theoretical insights. My work’s main contribution is an attempt to draw out a causal relationship between information collected at the agency level to the policy outcomes at the legislative level within a span of thirty years.

372. Meltzer *Policy Analysts in the Bureaucracy*.

373. P Pierson and T Skocpol, "Historical Institutionalism in Contemporary Political Science," *Political science: The state of the discipline* (2002): 693-721.

374. Ibid.

375. Adler and Lapinski, *The Macropolitics of Congress.*, p. 252.

One apparent problem with this experimental design is that there is question of whether (to use statistics parlance) the dependent variable — policy alternatives chosen — also influenced the independent variable — availability of information. This is called recursivity and its presence is a serious offense for causal analysis.³⁷⁶ The 1977 Act established requirements for collection and processing of information on natural resources, which is clearly policy exerting its influence on availability of information. This is true, but the mandate was a one-time injection. The details that shaped which information was collected, how information was collected, how information was incorporated into programs, and how information was communicated were left to the USDA. Plus, because farm bills happen in intervals of 5 to 6 years, control over policy makings at the Congressional level changed hands from one cycle to the next. Tenure for bureaucratic employees tends to be much longer.³⁷⁷ For example, in the early years of conservation policy making, few policymakers remained in positions to affect policy by the time the 1981 and the 1985 Farm Bills were up for debate. Only 3 members of the 1977 Senate Agriculture Committee were still around in 1985. Thirteen out of 43 members on the 1985 House Agriculture Committee were on it in 1977.³⁷⁸

The information-gathering requirements in the 2002 and 2008 Farm Bills represent the need to have program effectiveness numbers to back up the rising expenditures on conservation programs. The requirements to provide Congress with information came from a push by external

376. Garson, G. David, "Regression: Statnotes, From North Carolina State University, Public Administration Program", Web (January 20, 2011), <http://faculty.chass.ncsu.edu/garson/PA765/regress.htm> (accessed February 10, 2011).

377. For a good review and consequences, see Carpenter *The Forging of Bureaucratic Autonomy: Reputations, Networks, and Policy Innovation in Executive Agencies, 1862-1928*.

378. Stewart, Charles "Charles Stewart' s Congressional Data Page." "Charles Stewart' s Congressional Data Page."

leaders, not necessarily from Congress itself. More so, funding for activities related to information comes from the discretionary portion of the budget, while most of the conservation programs have mandatory accounts.³⁷⁹ The discretionary programs are authorized at annual appropriations, while the mandatory programs are written into the farm bills, so the two accounts are handled at different times by different committees.³⁸⁰

Another argument to why this apparent violation of internal validity is inapplicable is that I am interested in chosen policy alternatives as demonstrated by actual programs. A statutory requirement to provide information is not a substitute for establishing programs. Separate from the information requirement, Congress will hear debate around different alternatives and act. The most serious threat to internal validity in this case is estimating the influence of external factors. Here I rely on those most interested in policy outcomes to provide the arguments for or against a proposed policy position. Unfortunately, public hearings provide only a glimpse of what goes on behind the scenes. The chairperson has control over the agenda and over the choice of witnesses.

Yet I am fairly confident that my research design adequately accounts for external factors given the evidence that most parties affected by agricultural production have seemingly found a way to participate in the debate on agricultural policy.³⁸¹ My research also shows a wide spectrum of groups with a wide range of opinions participating in any given debate. Of course,

379. Stubbs, Megan, (CRS, June 29, 2007).

380. ERS, "ERS/USDA Briefing Room - Conservation Policy: Background" , Web (2010), <http://www.ers.usda.gov/Briefing/ConservationPolicy/background.htm> (accessed December 30, 2010).

381. Browne *Cultivating Congress: Constituents, Issues, and Interests in Agricultural Policymaking.*, Guither *The Food Lobbyists.*, Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*

if there is a silent majority, it is the overwhelming majority of Americans who do not engage with agriculture directly and have little understanding of the complex workings of the system. They are certainly difficult to account for, but this may not be necessary, at least for the purposes of the study. Congressional members care about attentive publics much more, and attentive publics have organized into many niche groups vying for their attention and actively producing information to try to capture it, leaving a trail of what mattered to them.

It is also difficult to estimate the role of personal inclination, except through secondary literature and interviews. Although this method is imperfect, it does afford the only practicable way to include these parameters.

Despite the difficulties, my methodology fits the needs of the study. The methodological development of each of the two major dimensions — the intra-agency dimension working to collect information and the policymaking dimension — is fairly familiar and based on previous work, as discussed. I have not seen anyone connect the two dimensions, however. This is despite the fact that agricultural policy is a rigorously debated topic and that some of the earliest studies on technology diffusion involved the farming sector.³⁸² Research on conservation policy usually analyzes the effectiveness of a particular program or a novel policy suggestion. Excellent historical accounts of conservation policy exist, thanks in large part to the recently retired NRCS historian Doug Helms and his team. But, to my knowledge, no other study assesses natural resource information and conservation policy development together over a significant period of time. Connecting the two dimensions is a unique aspect to my approach.

Still, the results should not be over-interpreted, as there are six main weaknesses to this

382. Bohlen and Beal, "How Farm People Accept New Ideas."

study. The first one is that raw information does not equal one logical policy outcome. Policy alternatives rarely flow out of raw or analyzed data naturally. Rather specific policy alternatives are crafted by the agency and by other interested groups who then offer arguments to support their preferred alternative. My interest is in deciphering these justifications and in whether substantive data was used to back up the arguments. I do not speculate on which policy alternative most closely approximates data trends or which policy would be ideal. Instead, I connect federal and non-federal stakeholders to policy alternatives and analyze whether the argument for the chosen alternative enjoyed substantive support. I also do not comment on the effectiveness of chosen programs — in fact, this is exactly why CEAP exists. It is very difficult to estimate large-scale effects from adoption of conservation practices, mostly because of difficulties estimating who is implementing which practice and what kind of impacts that practice has within the unique geophysical, climatic, and land use parameters of the location. As discussed, this is at the crux of the current controversy with establishing the daily loads for the Chesapeake Bay. So I do not venture into this territory, preferring to stay focused on the alternatives chosen.

I am cognizant, however, that the types of alternatives derived and proposed accommodate the existing organizational framework and rarely defy culturally understood conventional roles of the organization. This point I assess in the final analysis of my results.

The second weakness is that presence of information does not equal influence. Just because some piece of information was used over and over again in arguments does not mean it had any causal influence. Although I attempt to control for external factors, it is impossible to account for all the complexities. After all, Mayhew pointed out that Congress truly consists of

535 individuals whose actions usually cannot be predicted from their party affiliation.³⁸³ Still, as mentioned above, usually only a handful of them are actually involved with crafting legislation, simplifying my analysis.

The third weakness is that I do not bring in the effects of mass media. Major newspapers like the *Washington Post*, the *New York Times*, the *Christian Science Monitor*, and others wrote about conservation and environmental impacts of agriculture. Although I am aware of their existence and potential impact, in the interest of limiting my scope, I do not analyze these data. I leave that task for a future project.

The fourth weakness relates to the type of information I analyze. “Information” is a very broad term and encompasses everything from a single data point to a final biophysical description of how that point relates to a larger system. I use the NRIs as the starting point precisely because the inventories are designed to collect primary data, which is in the rawest form. Escape from more complex layers is impossible, however. Even the NRIs utilize functional relationships to estimate erosion levels. The RCAs specifically use modeling techniques to relate data to policy alternatives, and CEAP uses extensive modeling to extrapolate available data to entire watersheds. The nearly 160 conservation practices that NRCS currently uses in conservation plans are based on experiments and pilot projects. Since my analysis revolves around conservation programs and does not look at implementation effectiveness, I avoid dealing directly with this last type of information and practical research in which the

383. Mayhew *The Electoral Connection*.

USDA engages. Others have written on the range of research the USDA conducts.³⁸⁴ My focus is only on the type of information NRCS produces that relates to national conservation planning.

The fifth weakness is of practical nature. NRCS has fairly limited record-keeping expertise, and although certain type of information from certain periods made its way to the archives and is well preserved, many other records either did not survive at all or cannot be retrieved in a practical matter. Items missing include agency correspondence, external agency records relevant to NRCS, detailed program data, etc. To overcome this difficulty, I use a variety of sources to complement each other. For instance, the archives are conspicuously missing NRCS speeches from the early and mid-1980s. To compensate for this gap, I used other communication materials like contributions to journals, testimonies, official USDA documents, interviews, and secondary literature to reconstruct the story. Newer records are even in worse shape, as few make it through the official records system to be archived. Perhaps archiving is thought of as old-fashioned with the internet. Yet internet links and pages get broken as pages are updated, burying the information into eternal obscurity. So while my preference in this research has been to rely on primary sources or at least to dig down as close to the original source as possible, this sometimes has been impossible.

The most conspicuous weakness in my design is that I do not review the appropriations hearings that actually funded the programs. Frequently bitter budget battles ensued and promised funds for programs never materialized. I do weave those narratives into the story,

384. See T S Harding, *Two Blades of Grass: A History of Scientific Development in the US Department of Agriculture* (Ayer Publishing, 1980).; V W Ruttan, *Agricultural Research Policy* (University Of Minnesota Press, 1982).; A C True, *Alfred True on Agricultural Experimentation and Research* (Arno Press, 1980).

however, relying on the work done by active participants in conservation policy over the last 30 years.

Overall, the research periods are discussed in three parts. The first part looks at the internal process of information gathering within NRCS — the inventories and the appraisals. The second part evaluates the course of USDA conservation programs and national conservation plans during the respective period and the broader operational scope within the executive branch that the Department found itself in. The final part looks at the Congressional side of the equation.

Chapter 4: Period 1, prelude to 1985

How did SCS start collecting resource inventories?

Before connecting the NRIs to the development of conservation policy, the question of how such information came about within SCS has to be answered. Toward that goal, the first narrative history I explore is the information collecting element within the agency. Specifically, I look at the history of the inventories within SCS and what information the agency deemed important to collect. At the end of the section, I tie in the history to two specific analytical questions I laid out at the beginning of this work. Answering them offers clues to the role the NRIs played in actual policymaking up to 1985. Namely, the two questions are: Did the SCS allocate money and staff time to this effort? And did the agency provide information to external users?

The history and analysis in this section came primarily from archival papers contained at the National Agricultural Library in Beltsville, Maryland and at the National Archives in College Park, Maryland, as well as from interviews, internal agency papers collected throughout my research, and valuable secondary sources. Many of the documents used were reports from various USDA agencies, speeches from USDA leaders, internal communications, and published articles. Much information came from inventories and appraisals themselves.

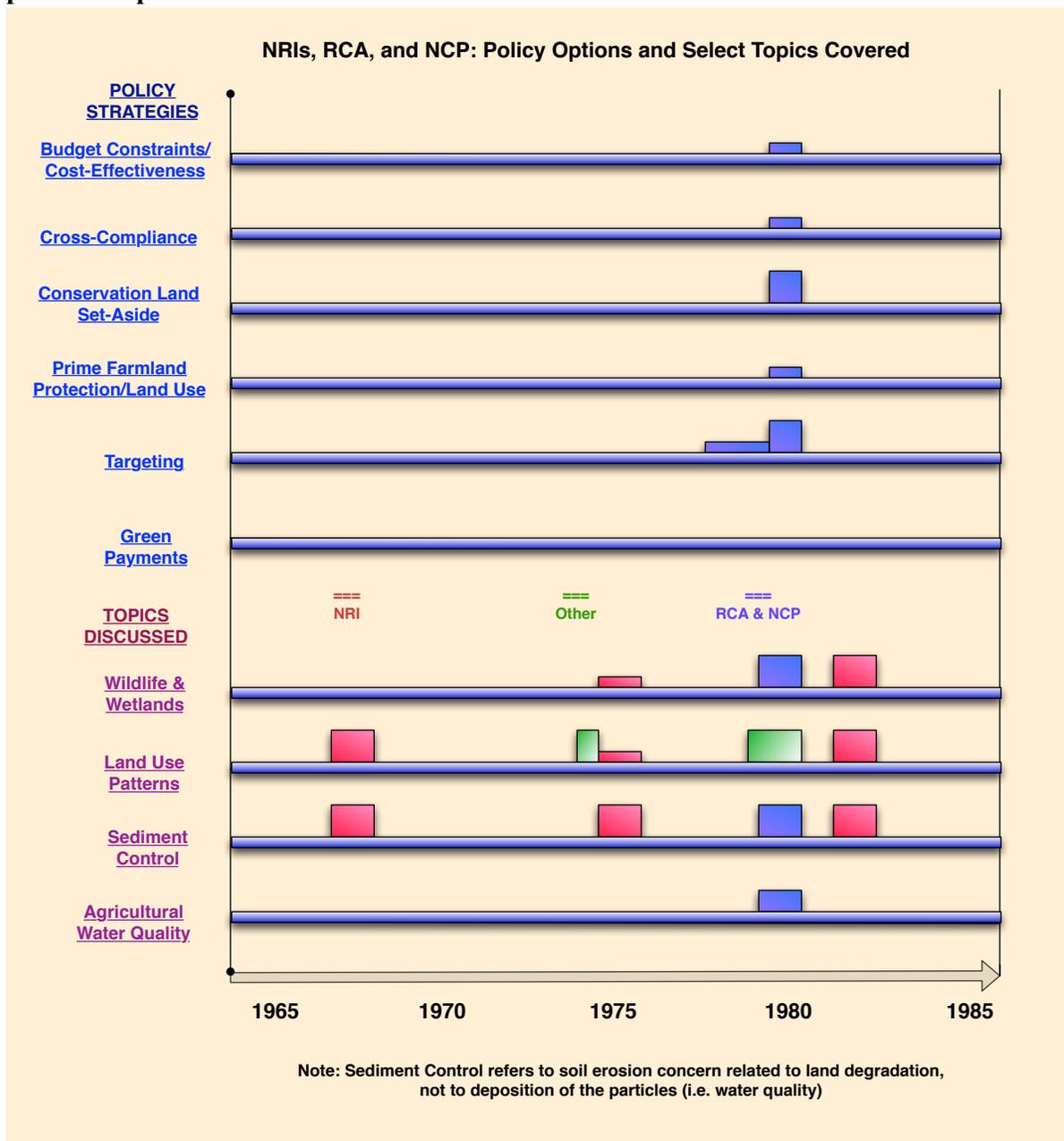
In short, the graph below illustrates the main results — the policy options and topics considered in SCS information products throughout this period. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones. The different colors indicate categories of information products. The NRIs are in red, the RCA appraisals and the RCA

National Conservation Program products are in blue, and other relevant information is in green.

In this period, the green corresponds to the 1975 Potential Cropland Survey and the 1980

National Agricultural Lands Study. Note that the sediment category is distinct from soil erosion, which is a more encompassing term. Sediment refers to land degradation without regard for its associated effects on nutrient run-off.

Graph 3. Major policy considerations and topics addressed by NRI and NRI-related products up to 1985.



1. Inventories through the late-1970s

Although in his famous 1928 circular Hugh H. Bennett provocatively called soil erosion a national menace estimating that at a minimum 126 billion pounds of “plant-food material” was lost to erosion every year, he had limited sources to work with to produce the number.³⁸⁵ He had information from local agricultural experimentation stations and proliferating soil surveys, but not enough to form a larger picture. The first nationwide survey of soil conditions was conducted by 115 “trained soil-erosion specialists” over a 2-months period in 1934, when the agency was still at the Department of Interior. Reportedly, field workers drove 200 to 300 miles per day to cover all counties in the nation.³⁸⁶ The completed survey of over 1.9 billion acres found nearly half of them affected by water erosion and a sixth by wind erosion.

In the brochure based on the survey, Bennett expressed concern that nutrients lost along with the soil particles — nitrogen, phosphorous, potassium, calcium, magnesium, sulphur — could not be replenished. In his 1928 work, Bennett applied the cheapest cost of fertilizer to infer the economic cost of the loss at \$2 billion (although the cost of fertilizer remained more or less the same over the years, farmers, in real terms, spent five times more on fertilizer in 2000s). Interestingly, the brochure also stated that the purpose of the “reconnaissance survey” was to design “a national program of soil and moisture conservation.”³⁸⁷ Bennett recognized early the need to build a national planning program based on primary information.

Nearly a quarter of a century passed before another field soil survey was conducted,

385. H H Bennett and W R Chapline, "Soil Erosion a National Menace," *USDA* (1928).

386. Schmude, Keith O., "Development of Nationwide Resources Inventories in the United States: Draft," *SCS draft document* (December, 1988).

387. Soil Conservation Service, *Soil Erosion : A Critical Problem in American Agriculture* (G.P.O., 1935).

although SCS did issue a report on soil erosion in 1945 summarizing data from other sources. This Soil and Water Conservation Needs Inventory (CNI) used the US Census Reports on Agriculture, records from soil conservation districts and conservation demonstration projects, information from state and local agencies and conservation technicians to provide a state-by-state look at erosion. The introduction to the final report clarified that such basic information was essential to decide how to prioritize work. The agency faced growing demand for technical assistance, and it needed a way to better channel its limited resources.³⁸⁸ Using information to prioritize work remained an important theme in conservation policy.

The 1945 inventory used an 8-category land classification scheme (an update on an earlier 5-category scheme) based on how suitable the land was to specific uses. For example, the first three classes described land used for cultivation, but classes II and III required more conservation to sustain the land. At the time, nearly two-thirds of the land classified as Class IV and suitable only for occasional cultivation were being farmed. A fifth of the land classified as Class VIII or not suitable for cultivation at all was in farms, according to the inventory. The 1945 inventory for the first time juxtaposed land use and conservation needs with the capacity of the land to support them.³⁸⁹ The agency considered land classification to be the primary step in

388. Harlow, Jerry T, *History of Soil Conservation Service National Resource Inventories* (NRCS, June 22, 1994).

389. Schmude, Keith O. "Development of Nationwide Resources Inventories in the United States: Draft."

developing an inventory. By 1949, it had about 700 soil scientists doing the actual work of classification.³⁹⁰

Another important feature of the 1945 CNI was that SCS estimated the cost of applying needed conservation practices to the land. Specifically, the survey estimated how many acres required one of the available 54 conservation treatments, and how many labor, motor equipment and horse equipment years it would take to apply the treatment.³⁹¹ This feature reflected the agency's concern of the costs involved in actually treating the land that it would accrue in the face of rapidly rising demand. In the 1930s and 1940s, the agency recognized that to collect nationwide information on the conditions of agricultural lands it had to invest its own resources. The 1945 CNI represented the first major attempt to put conservation into the national perspective. So by the end of Hugh Bennett's career when he stated in 1952 that "nearly a fifth of the original area of tillable land" had become unusable because of erosion, he had much more research to back up the claim than a quarter of a century earlier.³⁹²

The Eisenhower administration brought with itself rumors of reorganization. Indeed, the USDA did reorganize in 1953, but fears that SCS would be combined with the Extension Service proved to be unfounded. The inventories were conducted in the Technical Services administrative area, and now additional experts from agronomy, biology, and forestry were added

390. Hockensmith, R.D., "Land Inventory Basic to a Soil Conservation Program" (United Nations Scientific Conference on the Conservation and Utilization of Resources held at Lake Success, N.Y.) (Soil Conservation Surveys Division, Soil Conservation Service, August 17, 1949).

391. Soil Conservation Service, *Soil and Water Conservation Needs Estimates for the United States, by States* (1945).

392. Bennett, Hugh H, "Soil Conservation in the Americas" (Talk B HH. Bennett, Special Assistant to the Secretary of Agriculture, at the First Inter-American Commerce and Industry Conference at Houston, Texas) (April 24, 1952).

to it.³⁹³ All soil conservation research other than that related to the national soil inventory was transferred to the newly created Agricultural Research Service.

In 1956, the Secretary of Agriculture Ezra Benson issued a memorandum establishing the “National Inventory of Soil and Water Conservation Needs,” reviving the field component of the inventories. The directive specifically excluded federal lands. The primary stated purpose was to inventory land use, soil conditions, conservation needs, and to identify lands in need of treatment for each county. The secondary purpose was to assess conservation needs of small watersheds as required by the Watershed Protection and Flood Prevention Act of 1954 otherwise known as Public Law 566 (discussed further in the next section). The inventory design followed a stratified, systematic random sample, dividing the country into blocks of about 100 acres. Other sources describe the sampling procedure in more detail.³⁹⁴ Once again, land capability classes were used as the primary breakdown figure.³⁹⁵

This was the first statistical inventory. The Secretary pulled together heads from eight USDA agencies involved in conservation to form the Conservation Needs Inventory Commission, which was led by SCS. True to the nature of SCS work, local state and county Soil and Water Conservation Needs Committees coordinated the actual work. The first round took 3 years to complete and involved more than 30,000 people. Aerial photographs helped reduce the number of field visits. The work resulted in county-level reports supplemented by summary

393. Salter, Robert, "Additional Information Regarding the Proposals for Reorganizing the Department," in (Washington, D.C., October 27, 1953).

394. Schmude, Keith O. "Development of Nationwide Resources Inventories in the United States: Draft."; Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

395. J W Birch, "A Note on the United States' National Inventory of Soil and Water Conservation Needs," *Geographical Journal* 130, no. 4 (1964): 531-534.

bulletins. The main nationwide report from the 1958 Conservation Needs Inventory (CNI) projected changes in land use to 1975, predicting population growth and conversions of millions of acres of land from one agricultural use to another. [The population projections proved to be remarkably close, while acreage conversions less so.]³⁹⁶ The inventory concluded that about two-thirds of land in crop production required some conservation measures. Erosion was the primary concern on 53% of the lands assessed, followed by excess water and unfavorable soil. Around 75% of all pasture and rangeland required conservation treatment with overgrazing threatening most acres, followed by fire and erosion. The inventory further found that two-thirds of the nation's watersheds required community action for effective clean-up.³⁹⁷

Conservation needs were highest in Florida with 77% of the acres requiring treatment, followed by Michigan with 75%, and then Washington, North Carolina, Kansas, Pennsylvania, and Colorado with about 70% of the acres needing conservation. Erosion affected 82% of agricultural lands in Pennsylvania, 79% in Kansas, 76% in Washington, and over 70% in West Virginia, Nebraska, Alabama, and Virginia. It was lowest in Florida, Louisiana, Nevada, and Michigan.³⁹⁸

In 1964, John Baker, the Assistant Secretary of Agriculture for Rural Development and Conservation, directed the agency to update the 1958 CNI. The resultant 1967 Conservation

396. Census Bureau "The 2011 Statistical Abstract: Historical Statistics."; SCS, Iowa State University, "Basic Statistics: 1977 National Resources Inventory" (Statistical Bulletin Number 686) (USDA, December, 1982).

397. SCS, "Agricultural Land Resources: Capabilities, Uses, Conservation Needs," in *USDA, SCS* (May, 1962).

398. Conservation Needs Inventory Committee, USDA, "Basic Statistics of the National Inventory of Soil and Water Conservation Needs" (Results from the 1958 Survey) (August, 1962).

Needs Inventory was finalized in 1968 and followed a very similar structure to its predecessor: land capability and land use were the top subjects, estimates of conservation needs were based on adding up counties' numbers, and small watershed project needs was the final element. The 1967 inventory also used the previous survey's sample areas, which enabled analysts to detect reliable trends. Establishing trends became a major, if a somewhat elusive, goal for future inventories. Once again, SCS led the effort, but was joined by eight USDA agencies, and — in a change from before — by the Department of Interior's Bureau of Indian Affairs. Just like during the 1958 CNI, states and counties formed Conservation Needs Inventory committees with SCS employees serving as chairmen to carry out the 1967 CNI.³⁹⁹

The results from the 1967 inventory were similar to those from 1958 — there was a fairly small shift in land use with cropland shrinking by 11 million acres and forests growing by 12 million acres. Now 36% of cropland was adequately treated, as opposed to 31% nine years earlier. The trend was opposite for forest lands with about 20 million acres moving into the “inadequately treated” category. Rate of erosion was highest in Alabama with 20.8 tons per hectare per year on average, followed by Nebraska, Maine, Montana, New Mexico, and Kansas. In total over 2.3 billion tons of soil was lost on an annual basis.⁴⁰⁰

The data from the inventories was also fed into the river basin surveys established by the Water Resources Planning Act of 1965. The USDA juxtaposed data from the 1958 and 1967 inventories with the same river basin delineation that the Water Resources Council (also established by the 1965 Act) proposed. The resultant “Atlas of River Basins” was a massive and

399. Schmude, Keith O. "Development of Nationwide Resources Inventories in the United States: Draft."

400. Dideriksen, Raymond I, "Resource Inventory - Sheet, Rill and Wind Erosion," *Transactions of the ASAE* 24, no. 5 (1981): pp. 1246-1252.

costly document.⁴⁰¹ But it was the first such effort to map river basins. The 1970 Atlas contained 82 large colored maps.⁴⁰² The agency invested over \$10 million into the river basin surveys and investigations in fiscal year 1972 — or about 3% of its \$342 million budget.⁴⁰³

Plus, in response to requests about soil and water resources, SCS managed to incorporate its soil classification data with the results of the 1967 Conservation Needs Inventory. This established a link between the inventories and the soil survey — a foundational activity for the agency.⁴⁰⁴

In late August 1969, Norman Berg, then the Associate Administrator of SCS, told the members of the Northern Great Plains Soil and Water Conservation Districts in Kansas that in the face of shortages of technical services providers and increased demand, SCS will need a “better inventory of our natural resources,” as well as to identify the location of sediment sources, the location of best agricultural lands, the location of recreational and wildlife opportunities, and the scope of agricultural pollution.⁴⁰⁵ Interestingly, in a very similar speech to

401. Berg, Norman, "Water Action for the 1970s" (Speech at the 11th Annual Watershed Workshop, Lincoln, Nebraska) (February 26, 1970).

402. Soil Conservation Service, "River Basins of the United States" (Atlas of River Basins) (1970).

403. Berg, Norman, "Current Developments Affecting Cartographic Operations" (National Cartographic Meeting) (Soil Conservation Service, September 20, 1971).

404. Schmude, Keith O. "Development of Nationwide Resources Inventories in the United States: Draft."

405. Berg, Norman, "Manpower Needs of the District" (Talk by Norman A Berg at the Northern Great Plains area Soil and Water Conservation Districts meeting) (Wichita, Kansas, August 28, 1969).

a similar audience in Minnesota just two weeks prior, Berg did not mention the inventory.⁴⁰⁶

Someone must have reminded him of its existence.

In 1970, the Secretary of Agriculture Clifford Hardin announced that future USDA programs “will recognize the relationship between soil erosion and water quality.”⁴⁰⁷ This effectively expanded the role of SCS. Among its employees and conservationists in the field, SCS had already stepped up to the call to include a more comprehensive set of environmental goals in the agency’s conservation practices, such as recreational development, solid waste disposal, and water pollution control through sediment reductions.⁴⁰⁸ Another goal was to develop resource information — placing the nascent information collection effort at the same level as other fundamental agency goals. This was not surprising, since an earlier session with state conservationists designed to brainstorm ideas for the new decade showed that their major priority was to strengthen inventory capacity. They demanded better, faster data on a broader range of resource conditions and problems.⁴⁰⁹ By the early 1970s, the demand for cartographic and remote sensing services within SCS increased dramatically.⁴¹⁰

At the end of 1971 Norman Berg announced to those gathered at the 25th Annual Meeting of the Connecticut Association of Soil and Water Conservation Districts that SCS was in

406. Berg, Norman, "Manpower Needs of the District" (Talk by Norman A Berg at the Upper Mississippi Soil and Water Conservation District meeting) (Duluth, Minnesota, August 28, 1969).

407. Berg, Norman, "Service Leadership in Program Planning" (Speech at a Professional Development Program for Soil Conservation Service Employees), NARA (University of Oklahoma: Norman, Oklahoma, February 19, 1970).

408. See speeches by Norman Berg as the Associate Administrator of SCS in the 1970s.

409. Berg, Norman, "The District Conservationist in the 70s" (Speech at a Conference of District Conservationists and Area Conservationists), NARA (Continental Divide, New Mexico, January 29, 1970).

410. Berg, Norman "Current Developments Affecting Cartographic Operations."

the process of developing a long-range plan. The first agenda item in the plan was to broaden “activities in monitoring and inventorying soil and water resources.”⁴¹¹ At the time the Hill was abuzz with talk of a national land use bill, and Berg made the point that a national inventory of available resources was a necessary step to move in that direction.⁴¹² Norman Berg’s speeches from the period made it clear that the inventories were envisioned to support national land use planning activities.⁴¹³ Plus, the SCS Framework Plan from 1971 (which if produced today, would have been called a strategic plan) called for the identification of “quality standards” which could be used to evaluate the agency’s progress. The hard part was delineating what these standards should look like. The initial attempt to introduce this system in 8 states revealed it to be highly subjective and too complicated to use on a national scale. Instead the agency sought a simpler, more standardized alternative and tapped its Land Use Treatment committee to design a way forward. The committee suggested that a national inventory of land use and current treatment applied had to be the initial move.⁴¹⁴

Inventories first became a regulatory requirement with the passage of the Rural Development Act of 1972.⁴¹⁵ By requesting that the inventory was done every 5 years, the Chair of the Senate’s Committee on Agriculture and Forestry, Senator Herman Talmadge, a Democrat

411. Berg, Norman, "New Needs, New Efforts in New England" (25th Annual Meeting of the Connecticut Association of Soil and Water Conservation Districts, Vernon Congressional Church) (Soil Conservation Service, November 15, 1971).

412. Ibid.

413. Especially in Berg, Norman, "A Framework for the Future" (South Central Area meeting of the National Association of Conservation Districts, Houston, Texas), NARA (Soil Conservation Service, July 1, 1972).

414. Davis, R.M., "New Techniques for Measuring Land Treatment" (22nd National Watershed Congress), NARA (Soil Conservation Service, June 2, 1975).

415. Public Law 92-419.

from Georgia, noted that the intent was to use the data for nationwide planning. The elements of the inventory were defined fairly loosely — anything that related to erosion, land use changes, and damages from “improper use of soil, water, and related resources” should be in the inventory. One explicit purpose was to identify so-called “prime agricultural lands” with the goal of keeping them in agriculture. This guaranteed that future inventories would include the additional metric. Another requirement was to repeat the inventory at 5-year intervals in order to provide monitoring.⁴¹⁶ In 1973, the SCS Administrator (in the early 1980s, the Administrator position became a politically appointed position and the title was changed to “Chief”), Kenneth Grant, reorganized one of the four main deputy divisions — the Deputy Administrator for Soil Survey. In response to the Rural Development Act, Grant formed Resource Inventories and Monitoring Division. For the first time the name Resources Analysis Division appeared. Then, however, its responsibilities mostly revolved around records keeping and retrieval (later it would be combined with the formal appraisal functions).⁴¹⁷

The creation of the division reflected an increasing concern in the agency itself over the need to quantify the scope of agricultural pollution and highlighted the importance of support from key SCS allies. For instance, the National Association of Soil Conservation Districts (NACD) had rallied its troops in the late 1950s and early 1960s to convince Congress to appropriate more funds to soil and water conservation research — a parallel issue to collecting primary information. The organization lobbied Congress to put at least \$25 million toward

416. Committee on Agriculture and Forestry, U.S. Senate, "The Rural Development Act of 1972: Analysis and Explanation," in *Committee Print* (October 3, 1972).

417. Grant, Kenneth, "Restructuring Soil Survey Group" (Memo to Robert Long, Assistant Secretary for Conservation, Research, and Education) (Administrator, Soil Conservation Service, April 10, 1973).

research over a 10-year-period.⁴¹⁸ Within SCS, top officials participated on major initiatives related to quantifying pollution, not least of which was Norman Berg's co-chairmanship of the International Reference Group on Great Lakes Pollution from Land Use Activities. This was a joint effort with Canada spurred by the Canada-United States Agreement on Great Lakes Water Quality signed in 1972. The final 1978 report concluded that the Lakes were suffering not only from sediment, but from phosphorous pollution, past pesticide use and industrial chemicals.⁴¹⁹ The report was an early example of agricultural pollutants (*i.e.*, beyond sedimentation) like nitrogen, phosphorous and pesticides explicitly considered in a watershed.

The Rural Development Act of 1972 prompted the establishment of a top-level committee co-chaired by a biologist and a soil scientist, both from SCS, to decide how to actually carry out the inventory — *i.e.*, what should be measured and how to do it.⁴²⁰ Deciding how to parcel out, classify, categorize, and measure different natural resources proved to be a complicated assignment. By the mid-1970s, SCS and the USDA identified 15 data categories (with many subcategories) to include in the inventory.⁴²¹

418. National Association of Soil and Conservation Districts, Research Committee, "A National Plan for Meeting Soil and Water Conservation Research Needs Including a Summary of the USDA Study "Facility Needs, Soil and Water Conservation Research"" (1960).

419. International Reference Group on Great Lakes Pollution from Land Use Activities, "Final Report: Environmental Management Strategy for the Great Lakes System," *International Joint Commission* (Windsor, Ontario, July, 1978).

420. Berg, Norman, "The Job of the State Resource Conservationist" (Talk at South Region State Resource Conservationists Workshop, Forth Worth, Texas), NARA (Soil Conservation Service, January 30, 1973).

421. Davis, R.M., "Concerns, Involvement and Needs of the Soil Conservation Service with Wetland Classification" (Second Wetlands Classification Workshop, University of Maryland, College Park, MD), NARA (Soil Conservation Service, July 21, 1975).

It was not until 1974, however, that money was budgeted for the purpose of actually carrying out the inventory. SCS leadership had to justify to the appropriations committees to shift \$8 million out of the conservation operations account — always a priority that never had enough resources and had many supporters lobbying to keep every penny — and spend it on monitoring. Since the inventory was to be done every 5 years, this investment would have to be continuous. But the agency leadership had been calling for a data-collecting effort for a while and following through required taking a hit on basic operations.⁴²² Actual appropriations for the inventory proved to be less. Land inventory and monitoring received \$2.6 million in 1977.⁴²³ Clear congressional intent from the agriculture committees and strong support from the USDA proved insufficient to secure reasonable funds during appropriations. The inventory fared better in the following years when its funding increased to \$6.7 million in 1978, and \$12.6 million in 1979.⁴²⁴

In the mid-1970s an inventory of natural resources was not the top priority, however. The wording of the Rural Development Act illustrated the ongoing concerns in the country over the conversion of agricultural lands to other uses, especially for urban and suburban development. The Act stated that the purpose of the inventories was to provide guidance for “a balanced rural-urban growth,” and to enumerate “prime agricultural producing areas” with the goal of shielding them from conversion.

422. Berg, Norman "The Job of the State Resource Conservationist."

423. Berg, Norman, "Manpower and Money for 1977" (31st Annual NACD Convention, Atlanta, GA), NARA (Soil Conservation Service, February 6, 1977).

424. NRCS, "Inventory and Monitoring History of Funding: 1977 to 2002" (Internal document), Carla Kertis (2002).

Since the end of the Korean War, changing demographics was the major topic of conversation. Rapid migration out of rural areas, partially fueled by growth of urban and suburban areas that were built on previously agricultural lands honed the political discussion on the question of creating a national land use policy. SCS recognized that such a conversation demanded facts about land use and land conversion trends.⁴²⁵

The result was a special study — the Potential Cropland Study. The study took on two objectives. One was to fill in a data gap for a project of particular interest and the other was to test the waters before undertaking the full inventory. Using a subsample from the 1967 CNI, SCS conducted the study in 1975 specifically to address the question of agricultural land loss. The findings indicated that about 30.5 million acres of cropland had been lost in the course of 7 years since 1967. Overall, however, the study showed land converted both into and out of cropland, indicating that SCS resources may have been wasted on those acres that received conservation treatment and then were converted out of production. The survey also tested wetland conversion, indicating that more acres were becoming wetlands than the reverse.⁴²⁶

SCS was not the only USDA agency providing information for this debate. The Economic Research Service (ERS) had its 1962 edition of the “Land and Water Resources — a Policy Guide” urgently updated in 1974 to provide information for the ongoing discussion in Congress.⁴²⁷ It was a short, but comprehensive overview of current land and water resources and

425. Berg, Norman, "Resources in Conflict: Land and People" (Presentation at a National Resources Day Program, Trenton, New Jersey), NARA (Soil Conservation Service, January 28, 1974).

426. R I Dideriksen, A R Hidlebaugh and K O Schmude, *Potential cropland study* (Statistical Bulletin No. 578) (Dept. of Agriculture, Soil Conservation Service, 1977).

427. Berg, Norman, "Land Use and Rural America" (Meeting of the Economics Group Luncheon, USDA), NARA (Soil Conservation Service, March 4, 1974).

projected land requirements to the year 2000. The overall theme was changes and trends in land use. The data sources included the inventories SCS undertook, as well as ERS own research, Forest Service data, and other USDA information.⁴²⁸ This example was typical of many ERS studies and studies from other USDA agencies, where basic inventory data were combined with additional (and frequently original) research. The inventories formed the building blocks for connecting results to other queries of interest and extrapolating results to the national level.

While SCS was busy with the cropland inventory, the Forest Service received guidance to conduct its own national inventory. The Forest and Rangeland Renewable Resources Planning Act of 1974⁴²⁹ required the Forest Service to do not only an inventory of present and future uses of renewable forest resources, but also to do an assessment of related programs and policy considerations.⁴³⁰ This prompted the two agencies to work more closely together. An agreement signed between the Forest Service and SCS called for collaboration in making the inventories and in sharing data.⁴³¹

After completing the Potential Cropland Survey, SCS turned to continuing work on the congressionally mandated inventory. The 1977 National Resources Inventory used 70,000 primary sampling units to gather data on 30 different items, including soil capability, land use, estimated conservation treatment needs, potential cropland, prime farmland, and wetlands. Measuring prime farmland acres figured into the survey prominently, reflecting the issue's

428. Economic Research Service, USDA, "Our Land and Water Resources: Current and Prospective Supplies and Uses" (Misc. Publication No. 1290) (USDA, May, 1974).

429. Public Law 93-378.

430. CRS, "Forest and Rangeland Renewable Resource Planning Act of 1974" (Public Law 93-378) (Washington, D.C., August 17, 1974).

431. Davis, R.M., "Toward More Interagency Cooperation" (Forest Service's Regional Foresters and Directors Meeting, Denver, Colorado), NARA (Soil Conservation Service, July 15, 1976).

pervasiveness in policy discussions at the time. The 1977 NRI used the Universal Soil Loss Equation (USLE) and Wind Erosion Equation (WEE) to calculate water and wind erosion. Although scientists argued about the exact relationships between the various elements (like rainfall and runoff, length and steepness of slope, presence of cover), these physical phenomena models drove the final estimates of erosion. For the first time, manual checking of data for consistency was supplemented with a computer system — the Erosion Inventory Quality Control Evaluation Plan.⁴³²

About the same percentage of assessed acres required conservation treatment in 1977 and in the 1958 CNI. Tennessee, Missouri, Mississippi, Iowa, Alabama, Kentucky, and North Carolina had the highest rates of erosion.⁴³³ Only a small proportion of the land was found responsible for most of the erosion. Considering that the USDA had conservation programs across the nation, the question of whether funds were spent strategically became more prominent.

The agency began experimenting with drawing smaller samples from the NRI sample pool to conduct in-depth examinations of particular issues. The NRI “Phase II” project carried out in 1978 and 1979 looked at more detailed causes of erosion than considered in the original.⁴³⁴

While the scope of the 1977 NRI was impressive, the turning point for using such results to make policy came when the Soil and Water Resources Conservation Act (RCA) was passed at the end of 1977.⁴³⁵ It required the Secretary of Agriculture to conduct a regular and continuous

432. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

433. SCS, Iowa State University "Basic Statistics: 1977 National Resources Inventory."

434. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

435. Public Law 95-192.

appraisal of soil, water, and related resources and to develop a national program on the needs of resources and how to conserve them. This was a companion bill to the Forest and Rangeland Resources Act in 1974. One then-employee remembered that the SCS leaders pushed Congressional members for a similar act to address resource planning on non-federal, private lands.⁴³⁶ The RCA set the delivery date for the first report for 1980, and subsequent reports were due every 5 years (annual program evaluations were to accompany annual budget requests starting with fiscal year 1982).⁴³⁷ SCS was to take the lead on conducting the appraisal, but an interagency RCA Coordinating Committee pulled together nine USDA agencies and two White House offices, the Office of Management and Budget and the Council of Environmental Quality, to oversee the activities. Although the agency developed and executed the 1977 NRI before the RCA appraisals were mandated, the 1980 RCA heavily relied on the NRI results.

Before describing the massive effort that the passage of the act engendered, it is worth noting that the issue of protecting prime farmland from urban-suburban conversion did not diminish. In the summer of 1979, the USDA and the Council on Environmental Quality co-sponsored a study on prime farmlands. This was a collaborate effort between the Council, nine executive departments, the EPA, and the Water Resources Council. The resultant National Agricultural Lands Study (NALS) came out in January 1981. It included a large public participation component with 1,200 people participating in 17 workshops across the nation. The cost of the study is hard to pinpoint. No explicit budgetary records remained, but a legislative hearing held in the House on a bill proposing the study recommended specific appropriations.

436. Personal Interview, 15.

437. CRS, "S. 106: Soil and Water Resources Conservation Act: Bill Summary & Status - 95th Congress (1977 - 1978)," *THOMAS* (CRS Summary), Web (1978), <http://thomas.loc.gov/cgi-bin/bdquery/z?d095:SN00106:@@@D&summ1&> (accessed October 31, 2011).

Since this bill became the prototype for the study, the numbers may be close to the actual figures.⁴³⁸ For the fiscal year 1979, \$15 million was suggested. The following year, \$25 million would be spent, \$20 million in fiscal year 1981, and then the study would phase out with \$500,000 in 1982.⁴³⁹

The primary goal of the study was to determine “the nature, rate, extent, and causes of conversion of agricultural land to nonagricultural uses,” to assess the consequences and current approaches used to stymie the trend, and to recommend further policy action.⁴⁴⁰ The committee first assessed the agricultural base using the 1977 NRI and then modeled the relative strengths of economic, social, and local factors likely to favor conversion. Annual conversions totaled 1 million prime agricultural acres plus 3 million other acres; anticipated conversions totaled 18 million prime agricultural acres still in crops.⁴⁴¹

The National Agricultural Lands Study (NALS) came under considerable criticism for its wanton use of data. Researchers attacked the statistical validity and use of the 1977 NRI data and the 1975 Potential Cropland Study for current information and connecting them for trend analysis with the 1958 and 1967 CNI results in order to estimate conversion rates.⁴⁴² The main critique was that researchers drew conclusions from data collected for a different purpose. The

438. Fischel, William A, "The Urbanization of Agricultural Land: A Review of the National Agricultural Lands Study," *Land Economics* 58, no. 2 (1982).

439. Committee on Agriculture, Subcommittee on Family Farms, Rural Development, and Special Studies, "Agricultural Land Protection Act of 1979" (Hearings - Published), Lexis Nexis (May 17, 1979).

440. National Agricultural Lands Study, *National Agricultural Lands Study: Final Report 1981* (National Agricultural Lands Study, 1981).

441. Ibid.

442. Julian L. Simon and S Sudman, "How Much Farmland Is Being Converted to Urban Use?," *International Regional Science Review* 7, no. 3 (1982): 257.; P M Raup, "An Agricultural Critique of the National Agricultural Lands Study," *Land Economics* 58, no. 2 (1982): 260-274.

agency responded that indeed validations had been made. But it conceded the point that diagnosing conversion trends was not the primary purpose of the older studies nor would it be for the in-the-works 1982 NRI.⁴⁴³ Perhaps most damaging was the criticism by some observers that NALS was a political exercise. The charge was that the more environmentally minded members of the interagency group (SCS and the Council on Environmental Quality) steered the results to appear alarming.⁴⁴⁴ Many other measures of agricultural welfare pointed to no urgent problem with loss of prime farmlands.⁴⁴⁵ This entanglement could have seriously impacted the agency's reputation at a moment when one of its major accomplishments was about to unroll.

2. The 1980 RCA

The NRI itself, however, got high marks from the National Research Council for having a solid sample design, a statistically sound sample selection process, and generating reliable estimates of enduring soil erosion. The Council noted that the 1977 NRI results were most useful for national-level evaluations, while future inventories would be more precise for state-level analysis.⁴⁴⁶ The 1977 NRI data formed the basis for the 1980 RCA appraisal.

The RCA appraisal became the first significant step by the USDA to develop a national long-term plan on conservation policy. The previous mechanism was the SCS's Framework Plan

443. SCS, "Comments on "How Much Farmland Is Being Converted to Urban Use? An Analysis of Soil Conservation Service Estimates", " *Internal SCS documents*, JG papers (1982).

444. Fischel, William A "The Urbanization of Agricultural Land: A Review of the National Agricultural Lands Study."

445. Simon, Julian L., "U.S. Farmlands: The False Crisis" (Heritage Foundation, September, 1983).

446. National Research Council Board on Agriculture and Renewable Resources, "Review of the National Resources Inventory Methods and Procedures" (Report by the Task Force on the National Resources Inventory), JG papers (National Academy Press, 1982).

created in 1971. It was designed with the idea that state conservationists would use the provided template to develop “an SCS program plan for the state.”⁴⁴⁷ The National Headquarters would take that information and use “programming models” to assess the progress the programs were making. The template began with measuring social and economic needs and called to “present supply and conditions of soil, water, and related resources.”⁴⁴⁸ The logic behind the RCA was somewhat similar to the Framework Plan in terms of assessing conditions of natural resources and supporting the states’ lead to conduct the inventories. But the scale of the effort was drastically different.

First of all, the outcome of the RCA effort was to be made into a plan to design future National Conservation Programs. With the 1977 NRI results good data were available on which to base model calculations and projections of effects. Secondly, there was much internal and external pressure to base and justify program decisions on information. In the 60s and the 70s, the agency acutely felt the dearth of accurate nationwide information on resource conditions to explain growing expenses (this is explored further in part 2 of this chapter). With ballooning federal deficits (mostly brought on by the Vietnam War), leadership in the White House was keen on cutting any federal program.

SCS anticipated serious implications of a large-scale appraisal on its future budget. After all, the Forest and Rangeland Renewable Resource Planning Act of 1974 established regular inventories and assessments for renewable resources under the purview of the Forest Service —

447. Cambell, Floyd, "Soil and Water Conservation for a Better America," *Proceedings: SCS Professional Employees Conference, Denver, Colorado* ("A Framework Plan" notes and framework slides presented by Floyd Cambell, Director, Program Planning Division, SCS), NAL (Soil Conservation Service, January 25, 1972).

448. *Ibid.*

i.e., federal lands. The Act called for the Forest Service to submit specific locations of problematic areas to Congress with its annual budget appropriations requests. In this way, the level of need would dictate the level of appropriations.⁴⁴⁹ SCS recognized that the level of need for conservation — if it could be identified on non-federal lands — likely justified higher budgets.⁴⁵⁰

According to a then-top SCS official, a parallel dynamic was underway. During the Ford, Carter, and Reagan administrations, one regular practice was for the Office of Management and Budget (OMB) to slash government agencies' budget requests. In Congressional hearings interest groups would succeed in restoring the President's budget to the requested levels. As a result, the President could put the blame for refusing to curb spending on Congress.

Congressional leaders needed information to defend their positions.⁴⁵¹ Budget requests and budget authorizations for the period show that back-and-forth pattern with a significant discrepancy every year between the budgets requested by the Administration and those finalized by Congress.^{452,453}

There was close coordination between Congress and the USDA in formulating the (eventual) Soil and Water Resources Conservation Act, which mandated the RCA cycle. One example is correspondence from 1976 between the leadership of the Senate's Committee on

449. CRS "Forest and Rangeland Renewable Resource Planning Act of 1974."

450. Personal Interview, 15.

451. Williams, Kenneth, "Personal Papers of Kenneth L Williams: 1976 to 1983" (Related to the Soil and Water Resources Act of 1977 (RCA)), NRCS Historians (1983).

452. Soil Conservation Service, "The SCS Budget "Roller Coaster"" (President's Budget vs. Congressional Authorization), Ken William's papers (1983).

453. Zinn, Jeffrey, "RCA — the Administration's Strategy for Addressing Soil and Water Conservation During the Next Five Years" (CRS, February 28, 1983).

Agriculture and Forestry (renamed shortly thereafter the Committee on Agriculture, Nutrition, and Forestry) and the Secretary of Agriculture, John Knebel. Senators Herman Talmadge and Bob Dole expressed their desire to evaluate programs from a longer term perspective and asked the USDA for its input on how to phrase legislation.⁴⁵⁴

Congress started debate on requiring appraisals for USDA conservation programs right after doing the same for the Forest Service.⁴⁵⁵ An initial version of the Act passed in 1976 but was vetoed by President Ford (apparently at the urging of the OMB).⁴⁵⁶ The same day, presidential candidate Jimmy Carter declared that he would sign the bill if Congress were to present it again. By the end of 1977, RCA became law. It required the Secretary of Agriculture to conduct a regular appraisal of the nation's water, soil and related natural resources from every possible perspective and to propose a long-term national program to meet the remaining conservation needs.

Initially the new Secretary Bob Bergland thought the RCA requirements could be easily met with resources already in hand. The 1977 NRI data were starting to come in, and SCS staff was processing them. In mid-summer of 1978, however, the OMB asked for an update on the progress of the RCA effort, expressing concern that it was not extensive enough. The OMB asserted that Congress would treat RCA reports on par with budget requests, and a much more comprehensive assessment of all USDA conservation programs (not just SCS) needed to be done. Secretary Bergland turned to staff economists to reevaluate the course of action for the

454. Dole, Bob; Talmadge, Herman, "To the Honorable John A. Knebel: Oversight of Programs" (Committee on Agriculture and Forestry, December 1, 1976).

455. Subcommittee on Environment, Soil Conservation, and Forestry, "Hearing: Land and Water Resource Conservation Act of 1975" , Lexis Nexis (CRS, November 10, 1975).

456. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

RCA. By the end of October, he issued a memorandum establishing the RCA Coordinating Committee. The Secretary gave little direction to the Committee, but for the membership. It consisted of nine USDA agencies. Everyone understood that the RCA Act concerned primarily SCS and its programs, so the agency received leadership over the project.⁴⁵⁷ The Council on Environmental Quality and the Office of Management and Budget were also invited to participate. The OMB dedicated two people to the group. According to the soon-to-be chair of the RCA Coordinating Committee, Kenneth Williams, the primary goal of the OMB was to stall or even break down the process.⁴⁵⁸ Williams left his impressions along with some relevant documents from the period to the SCS's history department. In his records, he recalled that many meetings deteriorated into defensive turf contests between agency leaders determined to protect or enhance their respective pieces of the pie. One stalling tactic was to continue bringing up issues resolved at previous meetings over and over again.⁴⁵⁹

The Coordinating Committee, however, consisted of an ad hoc team of people pulled from different departments to participate in the project. The allegiance of each person was to the home office.⁴⁶⁰ They were on temporary detail. The bigger picture could easily get lost.

Still, the RCA report made use of every available piece of information to assess every possible resource concern. The 1977 NRI served as the basis for current data on land use, soil erosion estimates, extent of wetlands; EPA data was used for fish habitat information and certain water use information; Water Resources Council assessments of water were used for water data;

457. Ibid.

458. Ibid.

459. Ibid.

460. Personal Correspondence, 47.

survey data was used to assess recreational opportunities. Research librarians went through 1.5 million technical publications and studies to come up with 400 support documents for the scientific reviews used in the RCA. The appraisal considered soil erosion first and broke down water quality into pollution from infectious agents, nutrients, dissolved solids, suspended solids, and pesticides.⁴⁶¹ The results indicated that about 67% of prime farmlands were being farmed, about a quarter of cropland suffered from water erosion at more than 5 tons per acre per year (SCS-designated tolerance limit), agricultural purposes used 83% of annual water consumption, 12% of non-federal acres were in flood-prone areas, and that agriculture was the primary source of nonpoint water pollution. Plus, the appraisal pointed out that 23% of cropland on which erosion was higher than the tolerance level was responsible for 73% of all cropland water erosion.⁴⁶²

The fundamental purpose of the RCA process, however, was the development of a National Conservation Program to plan for the next 50 years. Based on the results of the appraisal, the USDA was to project long-term national needs, identify resource priorities, and propose future activities to support those goals.

In pursuit of developing such planning, the Department included public participation as a major component. One SCS employee recalled that this was partially the result of a court case in which SCS was reprimanded for making decisions without public input.⁴⁶³ Agency leaders promised to reform and expressed that public input will be crucial to its future decision-making

461. USDA, "1980: Appraisal, Part I," *Soil, Water, and Related Resources in the United States: Status, Condition, and Trends* (Soil and Water Resources Conservation Act) (March, 1981).

462. Ibid.

463. Personal Interview, 15.

process.⁴⁶⁴ During the summer and fall of 1978, nearly 9,000 public meetings were held at almost every local conservation district. Local communities in states were given 13 national resource issues to prioritize. The results showed that soil erosion was the first priority for most states, followed by food and fiber production, land use, water supply, and water quality. In another effort to engage the public, the draft RCA reports were put out for public comments in 18 regional meetings held by the USDA in the winter of 1980. More than 64,000 responses containing over 1.5 million comments were evaluated.⁴⁶⁵ Once the chosen alternatives were worked out, they were submitted for public review. People from the South responded at a much higher rate than from elsewhere. A third of responses from the final batch came from five states — Oklahoma, Texas, California, Tennessee, and Kentucky.⁴⁶⁶

Needless to say, the RCA effort demanded a lot of staff time. The burden placed on the USDA personnel who actually collected the information for the NRI and the RCA was felt across conservation districts and they made it known.⁴⁶⁷

Another component of the RCA effort was a public opinion survey done by the Louis Harris and Associates firm in late 1979. The in-person survey of 7,010 people revealed widespread support for conservation. Three-quarters of those surveyed felt that costs should not

464. Berg, Norman, "Meeting Our Natural Resource Responsibilities" (Annual meeting of the Alabama Association of Soil and Water Conservation District Supervisors, Huntsville, Alabama), NARA (Soil Conservation Service, December 6, 1976).

465. USDA "Report of the Public's Comments on the RCA Draft Documents, January-March 1980."

466. Zinn, Jeffrey "RCA — the Administration's Strategy for Addressing Soil and Water Conservation During the Next Five Years."

467. USDA, SCS, "The National Program for Soil and Water Conservation" (1982 Final Program Report and Environmental Impact Statement) (1982), p. 106 (Soil Conservation Society of America comments on the RCA National Program).

preclude necessary conservation work.⁴⁶⁸ Yet some at SCS were reluctant to initiate the survey for the fear of what results may bring. Still, other SCS leaders — most prominently, Norm Berg — trusted that the survey results would be promising. The extent of public support for conservation surprised even the most optimistic participants. The public was concerned about the state of land degradation and assigned responsibility to the federal government to remedy the situation. The results of the survey validated the work of the RCA Coordinating Committee.⁴⁶⁹

By the end of the Carter administration, SCS leaders realized that the RCA process was in trouble. Although the appraisal showed that action was needed, attempts at weighting different policy alternatives for the RCA Conservation Program stalled. Political in-fighting took over team discussions. In an attempt to save the process, SCS officials decided to reorganize the agency in early 1980, creating an additional deputy chief office for Planning and Evaluation. The Deputy Chief area also received an Evaluation and Analysis Division responsible for planning the RCA process, as well as the Program Integration and Budget Formulation Divisions. This arrangement was supposed to ensure that future program budgets and future programs would be based on the results of the RCA appraisal and the National Conservation Program.^{470,471}

The RCA process had its ups and downs. As the 1980 election approached with its outcome far from certain, some USDA officials opted to seek safer ground in the private sector.

468. USDA, "1980: Appraisal, Part II," *Soil, Water, and Related Resources in the United States: Status, Condition, and Trends* (Soil and Water Resources Conservation Act) (August, 1981).

469. Personal Interview, 15, 16.

470. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

471. Helms, Doug, "SCS/NRCS Organizational Charts" , NRCS History Office (Natural Resources Conservation Service, 2011).

The resignation of the Assistant Secretary for Natural Resources and the Environment left a power vacuum in terms of directing the RCA effort. This created additional delays, on top of the ones created by the inefficiencies on the RCA Coordinating Committee. The replacement Assistant Secretary was a member of the RCA team, and shortly after his appointment and upon his advice, Secretary Bergland discharged the Coordinating Committee, leaving the task of completing the RCA to SCS staff. This excluded the OMB personnel from participation in future discussions, and caused some celebration among the SCS staff.⁴⁷² But these organizational mishaps caused delays, frustrating some members of Congress. Kenneth Williams credits Secretary Block for providing leadership and directing resources toward completing the RCA.⁴⁷³

The RCA National Conservation Program, published in September, 1982 formulated several strategies for future programs. Congress received it from the President in December. The following section on SCS programs (in the “Arrival of the RCA National Conservation Program” part) picks up the story from here since the resultant National Resource Conservation Program ties in with the USDA conservation programs.

After the completion of the RCA appraisal it was time to get ready for the following round. Congress mandated that the process be repeated every 5 years. The deadline for the next one was already fast approaching. One of the kickoff events was a Second National Futures Conference planned for late 1982 in Washington, DC. The idea was to bring together hundreds of scientists to develop ideas for the next round. At the event, Kenneth Williams shared his experience with the first RCA process, emphasizing that the OMB complicated the effort,

472. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

473. Ibid., packet #7.

especially by requiring that every program alternative be subjected to a cost-effectiveness analysis.⁴⁷⁴

3. 1982 NRI

The Resource Inventory and Monitoring Division brainstormed, designed, and carried out the details of the 1977 NRI before the passage of the RCA Act. The 1980 RCA process heavily relied on the 1977 data, but the appraisal recognized over 100 other data points a future inventory should include (such as data on prime farmlands, a hot debate topic in Congress at the time). With the support of the Department and other key agencies, the 1982 NRI had double the number of question items than the previous one. Moreover, the number of sample units went up nearly five times from 70,000 to 320,000 to achieve multi-county reliability and additional sampling units were added to provide reliability for some (240) counties, at the request of many states.⁴⁷⁵ States have been asking for county-level reliable data for many years by this point. Already in the 1956 Secretary's Memorandum that established the very first inventories, Secretary Benson called for county-level reliability.⁴⁷⁶ Accomplishing this goal proved to be much more difficult than anticipated.

The Department allocated \$19 million to carrying out the 1982 NRI.⁴⁷⁷ The ambitions of the survey stretched these resources thin. Data-collecting activities in the field began in 1981

474. Ibid., packet #7.

475. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

476. Benson, Ezra Taft, "A Dynamic National Program for Soil and Water Conservation" (Address at the eighth annual convention of the National Association of Soil Conservation Districts), NARA (Office of the Secretary, USDA, February 23, 1954).

477. NRCS "Inventory and Monitoring History of Funding: 1977 to 2002."

and went on until 1983. The data were collected with worksheets and corrected by hand. Much of this workload fell to conservationists in the field, and there was palpable dissatisfaction with the arrangement. Many felt that the inventory detracted from traditional conservation work. The Resource Inventory Division had to explain the NRI's importance to Congress and the field staff. Plus, staff processing the data found themselves swamped with requests for final results. The 1985 RCA Appraisal was already in the works, and the 1985 Farm Bill was under development. SCS was under a lot of pressure to improve efficiency of the inventory process for the next round.⁴⁷⁸

The 1982 NRI considered 22 major data elements encompassing topics from prime farmland to irrigation, from range and pastureland conditions to wildlife habitats like wetlands and land capability classes. Land use and conservation treatment needs remained the principal components.⁴⁷⁹ Much discussion went into finalizing which exact data elements should be collected.⁴⁸⁰ The results indicated that 58% of cropland needed conservation treatment. The states most affected by erosion were Texas, New Mexico, Colorado, Iowa, Missouri, Tennessee, and Washington.⁴⁸¹

The 1982 NRI was the most ambitious national inventory that SCS was to undertake; nothing has surpassed it, even up to the present, 2012. Still, the margin of error for county-level statistics was several times greater than reliability for Major Land Resource Areas (SCS multi-

478. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

479. Goebel, Jeffery; Schmude, Keith, "Planning the SCS National Resources Inventory" (Paper presented at the Arid Land Resource Inventories' Workshop), JG papers (December 1, 1980).

480. USDA, Forest Service, "An Information Needs Assessment for Inventorying Vegetation for Wildlife Habitat Assessment" , JG papers (Soil Conservation Service, April, 1981).

481. SCS, Iowa State University Statistical Laboratory, "Basic Statistics: 1982 National Resources Inventory" (Statistical Bulletin Number 756), NAL archives (1983).

county designations). For instance, while margin of error for pastureland acreage in the entire country was 0.67%, it was 3% for the state of Iowa, but nearly 30% for a specific county. For the Major Land Resource Area in which the county was located, margin of error was 5%.⁴⁸² This highlighted the difficulty of getting accurate fine-scale information.

In early 1983, SCS underwent reorganization. Some of the RCA integration components were eliminated. The Public Participation Coordinator was no longer a position, and the Program Integration Division created in the 1980 reorganization and designed to incorporate RCA information into USDA programs was cut. The Land Use Division, also created in 1980, persisted through the mid-1980s. It was cut in 1987. In 1984, two deputy chief offices were eliminated, in the process bringing together the Appraisal & Program Development Division (where the RCA carried on), and the Resources Inventory Division (where the NRIs were designed) under the same roof of the Deputy Chief for Assessment & Planning.⁴⁸³

Analysis

The historical background of the inventories by itself does not reveal their impact on the policy process. For the inventories to be relevant in policy, the agency has to prioritize them internally. Plus, the probability of the inventories' relevance increases if other, external users have access to the data. So to bring the discussion back to the focusing questions shows that

482. Soil Conservation Service; Statistical Laboratory, Iowa State University, "National Resources Inventory: A Guide for Users of 1982 NRI Data Files" (Draft), JG papers (October, 1984).

483. Helms, Doug "SCS/NRCS Organizational Charts."

SCS did spend significant amounts of resources on data collection during this period, and that information was fairly freely shared with researchers and other interested users.

1. Did SCS allocate money and staff time to producing information?

The answer to this question is yes, although the exact figure for each is uncertain. It is not easy to track down exact budget information for early SCS information-collecting activities. The inventories and the RCAs were funded under the general "Conservation Operations" line, which was often presented as an aggregate in budgets.

One source for specific information is the RCA itself. The "Inventory and Monitoring" portion, which includes the NRI, went from about \$3 million in 1977 to \$7.2 million in 1978, \$12.6 million in 1979 and 1980 and to nearly \$15 million in 1981 (in constant 1979 dollars). The "Resource Appraisal and Program Development," which includes the RCA effort was funded at \$5.7 million in 1978, \$6.3 million in 1979, \$4 million in 1980, and about \$5 million in 1981.⁴⁸⁴ A much larger number, up to \$17 million annually was discussed at the 1976 hearings on the RCA.⁴⁸⁵ The actual figure is somewhere in between, since another SCS reference indicated that in 1979, SCS provided about \$6.4 million in RCA grants to assist State

484. USDA "1980: Appraisal, Part II.", p. 268.

485. U.S. Government Printing Office, "Resource Conservation" (Hearings before the Subcommittee on Conservation and Credit, 94th Congress, Second Session on H.R. 14912 and S. 2081: Committee on Agriculture, U.S. House of Representatives) (August, 1976).

Conservation agencies in developing state multi-year conservation program plans.⁴⁸⁶ In 1983, resource appraisal and program development (or RCA activities) received \$6 million.⁴⁸⁷

Other sources for the NRI budget list that \$17 million had been spent on the inventory in 1981, nearly \$16 million in 1982, \$19.5 million in 1983, and under \$15 million in 1984 and 1985.^{488,489} These information-gathering and processing activities constituted about 2% of the funds spent on all USDA conservation programs.⁴⁹⁰

Generally speaking, the agency was ready to dedicate sufficient staff and resources toward its information collecting activities. While many made the case that the inventories and the RCAs took away time and resources from on-the-ground conservation, SCS was able to fend off the critics and justify the expenditure. One participant in the RCA process commented that money seemed to flow freely for the RCA process and was available to fund emerging ideas, like the Louis Harris poll.⁴⁹¹ Another recalled not having a dedicated budget for the RCA process at all, but money being pulled for the purpose as necessary.⁴⁹²

One participant described that he felt that while on the surface much of the RCA budget went to states to do RCA-related studies, it was really a “political ploy” to provide more funding

486. Soil Conservation Service, USDA, *A National Program for Soil and Water Conservation: The 1988-97 Update* (USDA, January, 1989).

487. USDA, "Annual RCA Progress Report: National Program for Soil and Water Conservation, Fiscal Year Ending September 30, 1984" (April 19, 1985), p. 46.

488. Soil Conservation Service, USDA *A National Program for Soil and Water Conservation: The 1988-97 Update*.

489. USDA "Annual RCA Progress Report: National Program for Soil and Water Conservation, Fiscal Year Ending September 30, 1984.", p. 46.

490. *Ibid.*, p. 46.

491. Personal Interview, 15.

492. Personal Interview, 16.

to the states.⁴⁹³ If accurate, it might have been a missed opportunity for research, but it did reflect the general support that the RCA effort enjoyed during this period.

Budget and staff figures dedicated to the effort are stand-ins for the real question of whether the NRIs, the RCA, and the NCP were supported at the top SCS level and the top USDA level. In this time period, the support from both levels was solid. Despite the practical difficulties of pulling a team together and agreeing on the particulars of the documents, the RCA project as a whole enjoyed full backing from the Department and promotion of the products in Congress. By many accounts, Norman Berg prioritized the effort and committed the entire agency to it. State conservationists put everything else on hold to do the RCA for their state.

2. Did the agency provide information to external users and to other agencies?

The answer to this question is a more reserved yes. At first, the agency was fairly liberal in providing its data to other users. SCS recognized that its data were unique and most useful if analyzed. Outside observers also encouraged openness. The National Research Council suggested that SCS take the responsibility for cleaning and housing the data, but it should be free to share the resource.⁴⁹⁴ There is no evidence that the agency did anything other than that in this period, but it did get a lesson in coordinating data use among USDA agencies. At the height of interest in land use changes in the late 1970s, the ERS requested and received the 1977 NRI data to conduct a further analysis on ownership trends at specific sampling units. Because of the differences in data definitions between the ERS and SCS datasets, the outcome was two

493. Personal Interview, 32.

494. Board on Agriculture and Renewable Resources "Review of the National Resources Inventory Methods and Procedures."

seemingly separate data files on the same issue.⁴⁹⁵ The leadership was more than annoyed. This taught SCS to be careful about giving away raw data and walking away from the follow-through process.

Still, the NRI data were used for many different purposes in the 1980s: to monitor changes in resource conditions in terms of land cover, land capability classes, or erosion and to inform national policy formulation of the 1985 Farm Bill and the debate on preserving agricultural lands and designing land use policies. Specifically, several other federal agencies were using the NRI data. The ARS used them to develop computer models like its Erosion Productivity Impact Calculator (EPIC) which would be used in the second RCA appraisal; the ERS used NRI data for multiple publications; the Forest Service used NRI data to plan its renewable resource activities. Research centers used NRI data as well. The American Farmland Trust used the data to do soil conservation analyses and to prepare for farm bill debates; the Conservation Foundation analyzed the data with an eye toward land use regulation; Resources for the Future used the data to model off-site damages. Some states moved to incorporate NRI data into their own local databases. Minnesota, North Carolina, California, Texas, and Vermont were especially active in doing so.⁴⁹⁶

Information-gathering activities at SCS gathered momentum in the 1970s and early 1980s. Whether their results were incorporated into USDA conservation programs is a different question. The next section explores these programs and the contribution of data availability to their development.

495. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

496. Soil Conservation Service, "Use of National Resources Inventory Data" (Internal document of NRI use), JG papers (1987).

How did the USDA conservation programs develop until 1985?

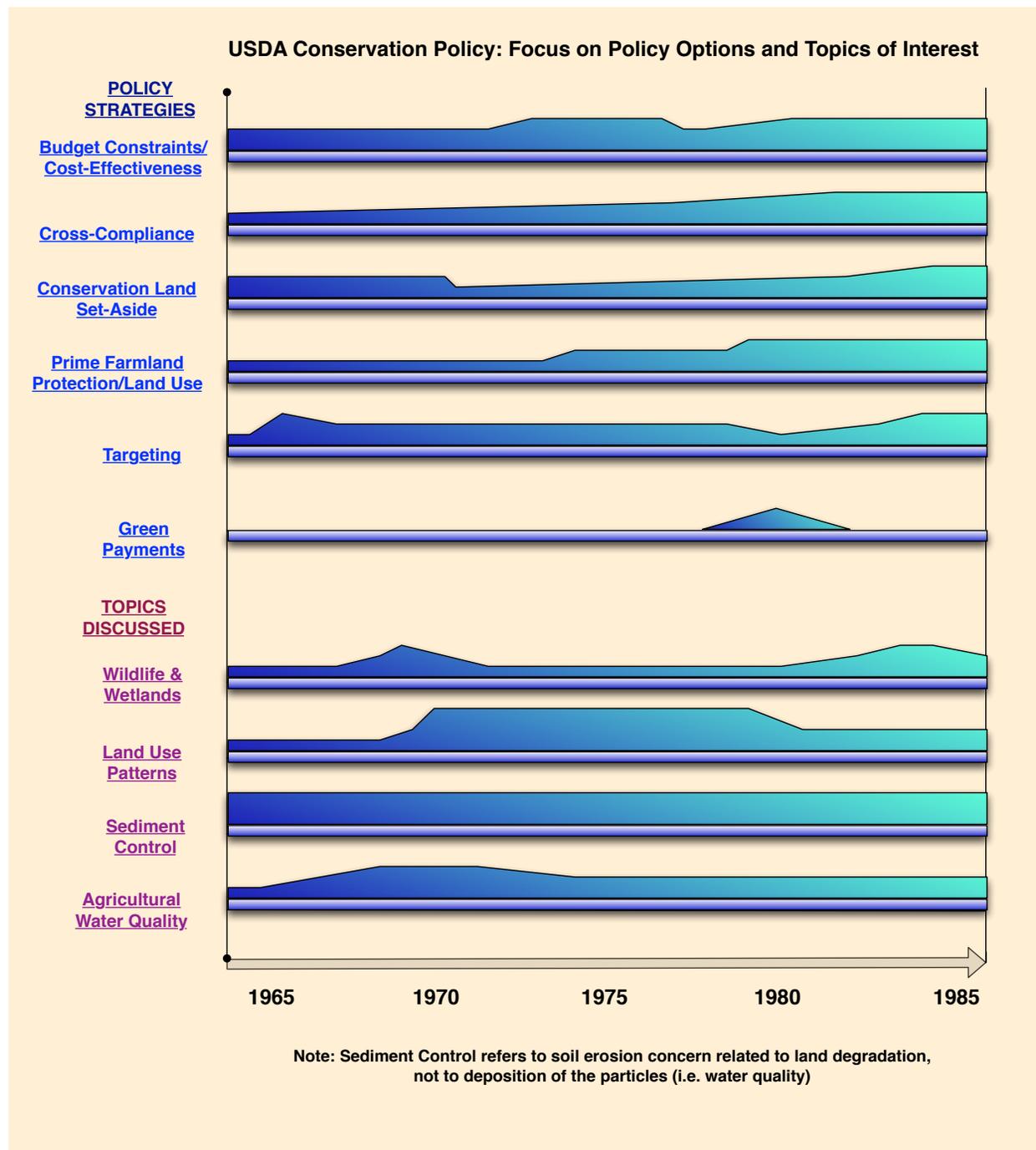
The second narrative in the story concerns the broader atmosphere in which the USDA and SCS found themselves. Part of the executive branch, changes in administrations promise changes and experiments at the Department. Ideas, goals, proposals shift. Agencies have to adjust their priorities in light of the ones imposed by new political leaders. This section describes USDA conservation programs up to 1985 and how emphasis on different program goals shifted over time. Again, the historical background provides the context but not the answer to whether the NRIs impacted specific policies or programs. The answer to that question becomes closer at the final analysis, which brings the discussion back to three fundamental questions for this section. Did SCS reach out to other USDA agencies, and other federal agencies, for collaboration and eventual use of the results? Did SCS use the results in program implementation? And finally, did some types of information receive more emphasis and others less?

This section relies especially heavily on archival materials, in particular speeches made by USDA and SCS leaders. I reviewed nearly 200 speeches from as early as 1951 to the late 1970s (latest date available for this period). Appendix A lists them. Program data came from the USDA history office, although I accrued the data into my own categories for analysis and presentation. Appendix B describes the procedure.

The visual summary below traces the level of interest at the USDA in policy alternatives and conservation topics. The top rows correspond to the various policy alternatives that the USDA considered, while the bottom rows look at how specific conservation topics fared in the

organization. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones. Soil erosion is not included as such because later it became a defining concept for estimating water quality effects as well as sediment loss. To differentiate between the two concepts, I look at sediment loss separate from water quality. Initially, most of the emphasis was on preventing sediment loss to reduce productivity impacts without realizing the related water quality impacts.

Graph 4. Policy alternatives and conservation topics of interest receiving differing levels of attention at the USDA.



1. USDA conservation programs

In his speech to the eighth annual convention of the National Association of Soil Conservation Districts in New Orleans on a chilly February day in 1954, Secretary of Agriculture Ezra Taft Benson made the point that out of the total annual appropriations for the Department in 1954, about half or \$352 million went to “conservation and development of land, water and forest resources.”⁴⁹⁷ This was true on paper, but less so in implementation. The Agricultural Conservation Program (ACP) received about 55% of the total. The ACP traced its roots to 1936 and the incipient acts that established the Soil Conservation Service as an agency. As stated in the introduction, to go around the Supreme Court’s invalidation of the original attempt to provide financial support to farmers through producer taxes, Congress authorized payments to farmers to curb production of the so-called “soil-depleting crops,” which the USDA defined as the crops in surplus supply. From that perspective, the ACP was more of a commodity program. Still, through the program, the USDA could make additional payments to encourage soil conservation practices. While the ACP was carried out by another USDA agency — variably known as the Agricultural Adjustment Administration, Commodity Stabilization Service, the Agricultural Conservation Program Service, and finally the Agricultural Stabilization and Conservation Service (ASCS) by 1961 — SCS provided all technical assistance for the actual application of conservation practices to interested farmers. Assistance was provided when farmers reached out to the agency for help. Often the farmer was referred to SCS by the ASCS. Because of the split

497. Benson, Ezra Taft "A Dynamic National Program for Soil and Water Conservation."

in the management of the program, disagreements over proper compensation from one agency to the other arose fairly quickly, especially as the SCS workload increased.⁴⁹⁸

Differences over the administration of the ACP persisted, not least because of the amount of money involved. Out of all USDA conservation programs it received 77% of the funds between 1936 to 1960, nearly all of it spent as payments to farmers. But this changed as the USDA grew and acquired new responsibilities. The program received 38% of the funds between 1961 and 1970 and 29% between 1971 and 1985.⁴⁹⁹ In contrast, Conservation Operations — SCS's flagship technical assistance program received 10% of conservation funds between 1936 to 1960. The proportion increased to about 17% between 1961 to 1970 and 35% between 1971 and 1985.⁵⁰⁰

The much-circulated and oft-cited 1977 GAO report contended that less than half of the money dedicated through the ACP flowed to conservation measures. Most of it was simply channeled to benefit farmers financially without achieving soil conservation.⁵⁰¹

Yet characterizing the ACP as a purely production control method is inaccurate. Several attempts had been made to shift it back to conservation. A 1943 appropriations bill rider explicitly declared the focus of the program to be conservation and stopped federal funds from going to crop diversion programs or to increase production. The amount of money going specifically to conservation practices in 1943 was nearly 50% of the total budget — in contrast

498. Simms, Denton Harper, *The Soil Conservation Service* (New York, NY: Praeger Publishers, 1970), p. 99.

499. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

500. Ibid.

501. GAO "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention."

to about 15% in the late 1930s.⁵⁰² By the late 1960s, conservation practices that aided wildlife habitats became eligible, and in the early 1970s, the program was re-oriented to focus on pollution abatement.⁵⁰³ But attempts to invest in long-term conservation measures proved to be moot when Congress took away the USDA's power to specify which conservation practices were eligible for cost-sharing. By giving this power to local and state governments, Congress ensured that the practices most beneficial (usually those most profitable) to landowners would continue to be eligible. Farmers saw little reason to invest in long-term contracts when they could receive the same compensation for short-term commitments.⁵⁰⁴ Plus, beneficiaries had no contractual obligation to continue conservation practices after the initial installation through the ACP. Conservation benefits were fleeting.⁵⁰⁵ Nonetheless, conservation assistance was available nearly everywhere, thanks to the creation of conservation districts.

The core program for SCS, the Conservation Operations Program functioned through such conservation districts, whose borders usually coincided with county lines. Through the encouragement of SCS leaders and the executive branch starting in the late 1930s, states established these districts in nearly every county over the course of two decades. By 1975, 44% of farms located within conservation district boundaries received technical planning assistance from SCS.⁵⁰⁶ By that point 600 million acres of private land received conservation planning and

502. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture."

503. Ibid.

504. GAO "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention."

505. Personal Interview, 42.

506. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture.", p. 381.

action, as agency leaders would often repeat.⁵⁰⁷ Yet critics pointed out that written plans often remained on the shelves and little implementation actually took place. In the above-mentioned 1977 GAO report, GAO investigators wrote that they found no difference in soil erosion between the farms they visited with prepared conservation plans and those without them; soil erosion was equally bad on both. Plus, the report asserted that the agency worked only with farmers who reached out to the agency themselves. The staff did not approach farmers proactively, nor did they ensure that participants actually executed accepted plans.⁵⁰⁸

Still, conservation planning evolved considerably in the 1950s and 1960s. One sign was the expanding definition of conservation to include parameters other than soil erosion. For example, starting from 1963, budget appropriations bills for the Department included language prohibiting the use of ACP funds to assist in draining certain types of wetlands.⁵⁰⁹ Previously, helping farmers clear land for production by draining wetlands had been a major SCS activity. Interest in protecting wetlands was growing, however. The Water Bank Program established at the close of 1970 was specifically aimed at preserving wetlands. Interestingly, SCS technicians could still assist farmers in draining them until May 1975, when an Administrator's Memorandum put an end to the practice.⁵¹⁰ Either way, the Water Bank Program was not funded

507. Davis, R.M., "Voluntary Action in Soil and Water Conservation" (EXAD Seminar, Reston, Virginia), NARA (Soil Conservation Service, November 17, 1975).

508. GAO "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention."

509. Davis, R.M. "Concerns, Involvement and Needs of the Soil Conservation Service with Wetland Classification."

510. Davis, R.M., "SCS Programs: Where We Are and Where We're Heading" (NACD Southeast Regional Meeting, Biloxi, Mississippi), NARA (Soil Conservation Service, July 22, 1975).

until 1983 and then constituted only a tiny fraction of the agency's program funds, getting around \$25 million from 1983 to 1985.⁵¹¹

President Eisenhower took conservation seriously and spent time on it in his State of the Union address in 1954, underscoring the role of farmers and tying agricultural conservation to flood prevention work.⁵¹² By the end of the 1950s, the SCS budget was nearly \$800 million, a level not seen again until 1980.⁵¹³ President Eisenhower expanded SCS conservation programs. In 1956 he conveyed to Congress the USDA's recommendation to establish the Great Plains Conservation Program, based on the advice of the Great Plains Agricultural Council.⁵¹⁴ Congress authorized this voluntary program in 1956 for 15 years, and then extended it in 1969 until the end of 1981.⁵¹⁵ It continued to extend it, again and again. This program's suite of eligible practices came to include ones little related to conservation. Similar to the problem with the ACP technical assistance, through the Great Plains program funds, the USDA allowed installation of production-oriented practices at the expense of ones aimed at conservation.⁵¹⁶

By the late 1960s, demand for the Great Plains Conservation Program's funds outstripped supply. The program applied only to certain areas in 10 states and 420 counties, where the CNI was used to identify eligible acres. By 1969, over 55 million acres were enrolled and \$108

511. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

512. Benson, Ezra Taft "A Dynamic National Program for Soil and Water Conservation."

513. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

514. Berg, Norman, "Statement of Norman A. Berg, Associate Administrator, Soil Conservation Service, Department of Agriculture" (Before the Subcommittee on Conservation and Credit of the House Agriculture Committee on H.R. 561 and Related Bills), NARA (April 17, 1969).

515. Simms, Denton Harper *The Soil Conservation Service.*, p. 43.

516. GAO "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention."

million were obligated for the cost-sharing provision.⁵¹⁷ By the early 1970s, the Great Plains Conservation Program was funded at around \$20 million — less than 6% of the 1972 budget.⁵¹⁸ The program kept growing, spending \$300 million between 1970 and 1985, about 3% of total USDA conservation dollars.⁵¹⁹ Particular benefits of the Great Plains Program were longer-range contracting and a requirement that farms and ranches be enrolled in their entirety rather than having only their “problematic” portions entered.⁵²⁰

Despite this infusion of funds through new programs, states generated little data on where the most pressing conservation problems were. At the very end of 1969, Norman Berg noted that the main recommendation state conservationists made to the agency was to speed up its inventory data capabilities — including the national soil survey, river basin surveys for water quality monitoring, and comprehensive surveys of erosion, sedimentation, pollution sources, and other resource concerns. He reiterated that planning should be done on the neighborhood level.⁵²¹ This became a more common sentiment in conservation. The USDA agreed in the early 1950s with the Secretary declaring that soil and conservation planning should proceed on a watershed scale.⁵²² (At a forum in 2011, conservation leaders once again lamented the need for a watershed perspective, half-jokingly cursing the existence of county political boundaries rather

517. Berg, Norman "Statement of Norman A. Berg, Associate Administrator, Soil Conservation Service, Department of Agriculture."

518. Berg, Norman "Current Developments Affecting Cartographic Operations."

519. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

520. Personal Interview, 42.

521. Berg, Norman, "Teamwork for Tomorrow," *Annual meeting of Utah Association of Soil Conservation District Supervisors, Salt Lake City, UT* (Soil Conservation Services, December 10, 1969).

522. Benson, Ezra Taft "A Dynamic National Program for Soil and Water Conservation."

than ones based on natural watershed boundaries.)⁵²³ But the concept of watershed planning often excluded environmental goals. Characteristically, the Watershed Protection and Flood Prevention Act,⁵²⁴ passed in 1954, focused mainly on infrastructure rather than conservation.⁵²⁵

Watershed and river-basin planning got a boost in 1965 with passage of the Water Resources Planning Act.⁵²⁶ It established programs to support river-basin planning — and started the clock on the several river basin surveys undertaken by the USDA. More importantly, the Act created the Water Resources Council as a sub-cabinet committee.⁵²⁷ The goal was to coordinate Federal water programs across various agencies administering them and to review local river basin plans and regional plans. The Secretary of Agriculture was one of the four original departmental members.⁵²⁸

This was hardly a surprising turn of events. President Truman's Water Resources Policy Commission recommended such an approach in the early 1950s,⁵²⁹ and so did Eisenhower's Presidential Advisory Committee on Water Resources Policy (which consisted of the Secretaries of Agriculture, Interior, and Defense) in 1955. Eisenhower's Committee suggested centralizing comprehensive long-term strategies and establishing an Interagency Committee on Water

523. American Farmland Trust "National Agricultural Landscapes Forum Description | American Farmland Trust."

524. Public Law 83-566.

525. Public Law 83-566; Holmes *History of Federal Water Resources Programs and Policies, 1961-1970.*, p. 20.

526. Public Law 89-80.

527. Public Law 89-90.

528. H S Hughes and Library of Congress Congressional Research Service, "Brief History of the US Water Resources Council [1965-1984]," in (1987).

529. J Ferrell, "Big Dam Era--a Legislative History of the Pick-sloan Missouri River Basin Program," *US Army Corps of Engineers, Omaha, NE* (1993): 228., p.101.

Planning to devise them.⁵³⁰ After three years of study, the Senate Select Committee on National Water Resources took a similar interagency perspective.⁵³¹ The approach in the 1965 Act had been in the making for years.

By the early 1970s, watershed operations constituted the largest portions of SCS's budget (after the traditional conservation operations) with over \$100 million obligated toward it in 1972.⁵³² Attention to this issue kept growing and in between 1971 and 1985, nearly 23% of total USDA conservation dollars went to the Watershed and Flood Prevention Operations program — or nearly \$2.4 billion.⁵³³ The 1967 CNI dedicated much space to flood prevention measures, as did the Water Resources Council's first nationwide report which estimated that nationwide flood losses would increase 3-fold by 2020 with most of the impacted areas located in SCS jurisdiction.⁵³⁴

The small watershed program pushed SCS to evaluate impacts of conservation measures at a watershed level. The agency formed a national committee in 1973 to help come up with a research strategy. The committee recommended a broader definition of land and water resources and that a basic inventory should constitute the building blocks of any management plan.⁵³⁵

The 1962 Farm Bill⁵³⁶ established a new environmental program — the Resource Conservation and Development Program (RC&D). The locally designated multi-county RC&D

530. B H Holmes, *A History of Federal Water Resources Programs, 1800-1960* (US Dept. of Agriculture, Economic Research Service, 1972)., p. 50.

531. Hughes and Service, "Brief History of the US Water Resources Council [1965-1984]."

532. Berg, Norman "Current Developments Affecting Cartographic Operations."

533. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

534. Holmes *History of Federal Water Resources Programs and Policies, 1961-1970.*, p. 165.

535. Davis, R.M. "New Techniques for Measuring Land Treatment."

536. Food and Agriculture Act of 1962, Public Law 87-703.

councils could receive guidance, technical expertise and financial assistance funds to undertake conservation, wildlife, recreation, or rural development projects. Between 1970 and 1985, USDA spent nearly \$400 million on this undertaking. This program's primary goal, however, was to revitalize rural areas economically. Conservation assumed a much lower position.⁵³⁷

Another interesting development was the establishment of the Soil Bank program, which became the prototype for the future Conservation Reserve Program. In fact, one of the two parts in the Soil Bank Program was already called the Conservation Reserve Program (the other was the Acreage Reserve Program). The Conservation Reserve Program focused on retiring cropland acres long-term into pasture, rangeland, or forest uses. This proved to be popular with farmers who sought extra income to their off-farm salaries or to their retirement payments. But the Acreage Reserve Program was much more popular at the beginning because, on average, it paid nearly twice as much per acre as the Conservation Reserve Program.⁵³⁸

The primary goal of the Soil Bank program remained to be surplus control, and as such, the program was cost-ineffective. The Kennedy administration discontinued it in favor of other commodity policy tools.⁵³⁹ By the time the final payments went out in 1973, around \$2.6 billion had been paid from 1956 to 1973 (or 24% of total USDA conservation program funds spent in that period) to retire about 30 million acres from production.^{540,541} When the Soil Bank program

537. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture."

538. Helms, Douglas, "Soil Bank Program" (Briefing paper for Peter Myers, Chief, SCS), NAL (Historian, SCS, January 13, 1984).

539. Ibid.

540. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

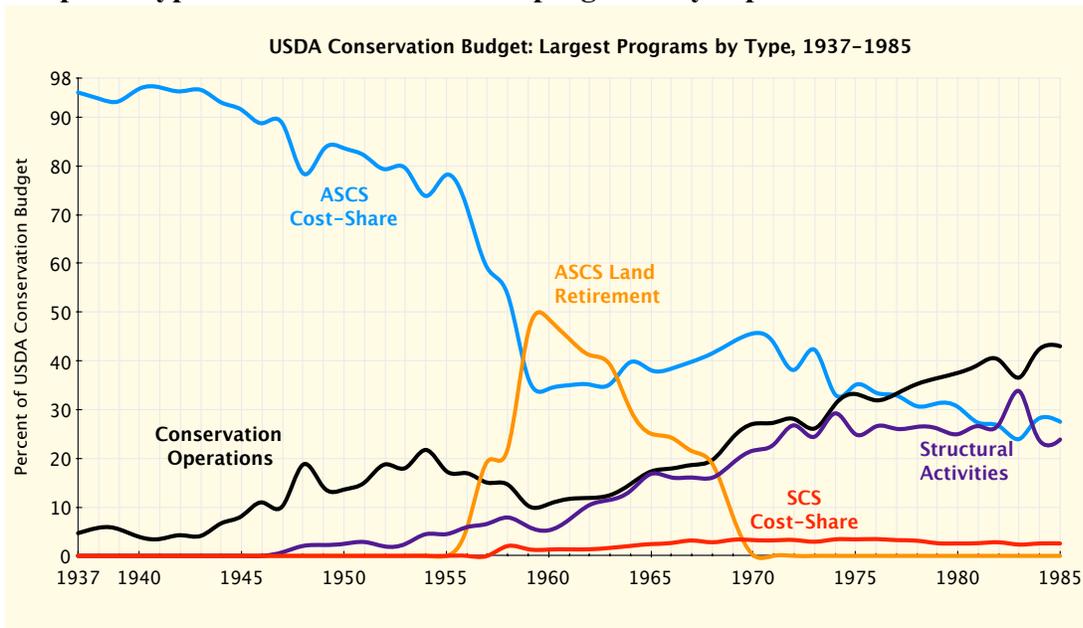
541. USDA "1980: Appraisal, Part II."

was kicking off in the late 1950s, USDA leaders described it plainly as a production adjustment program. But during this period, it also became the testing grounds for taking bids and prioritizing contracts. Participation rates were adjusted by offering more enticing rental rates, and when overwhelmed with the response, the agency set priorities on how to accept bids. The system favored farmers who already had land in the Soil Bank and those who offered land below the established rate.⁵⁴²

The graph below shows the evolution of the USDA conservation programs by type from 1937 to 1985. Appendix B describes which programs fall into which categories. Note that the USDA broader agricultural policy was responsible for much of the trends seen on the graph. Within the scope of SCS, conservation operations and programs dedicated to structural watershed planning (or flood protection) dominated the budget. Only a small portion went to SCS cost-share programs, or rural development programs such as the RC&D (not on the graph).

542. United States Department of Agriculture, "A Report of Proceedings" (Meeting of USDA Soil and Water Conservation Advisory Committee), NARA (December 18, 1958).

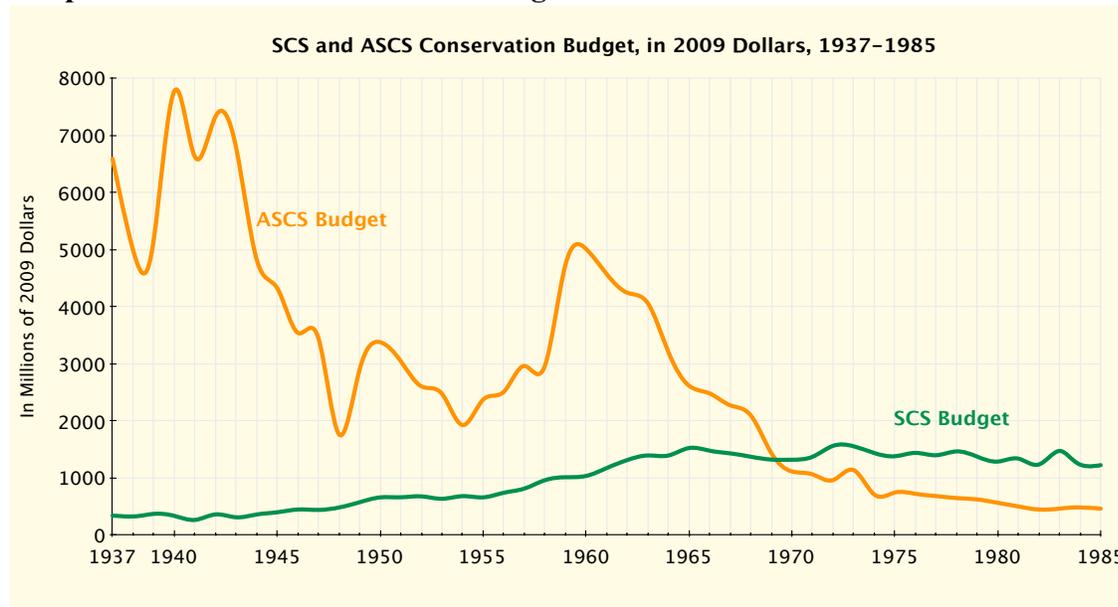
Graph 5. Types of USDA conservation programs by expenditures.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

The graph below shows the broad budget trends for SCS and ASCS in real 2009 dollars. Once again, while the SCS funding shows a continuous upward trend in funding throughout the years, the ASCS budget fluctuations demonstrate attempts to guide commodity policy through conservation.

Graph 6. The USDA conservation budget in nominal 2009 dollars.



Source: Ibid.

Despite the slight increases in the number of conservation programs and SCS funding in the 1960s and 1970s, SCS had little opportunity to do long-term planning. As mentioned before, the agency came out with its first strategic plan in 1971 to look ahead for the next 5 years. The resultant “A Framework Plan: Soil and Water Conservation for a Better America” declared that the mission of SCS was “to assist in the conservation, development, and productive use of the nation’s soil, water, and related resources so that all Americans may enjoy: quality in the Natural Resource Base for Sustained Use; Quality in the Environment to Provide Attractive, Convenient, and Satisfying Places to Live, Work, and Play; and Quality in the Standard of Living Based on Community Improvement and Adequate Income.”⁵⁴³ Monitoring of progress was based on measuring the disconnect between current resource conditions and the quality that could be achieved. The desirable quality would be determined through identifying benefits derived from

543. USDA, SCS, “A Framework Plan - Soil and Water Conservation for a Better American” (October, 1971).

natural resources. Additionally, the Framework Plan promised to “devise methods for monitoring resource conditions,” and “update and publish periodically the results of monitoring resource conditions.”⁵⁴⁴ Although the developers of the Plan recognized that when done on a statistical basis such information could be used to monitor nationwide trends, they predicted that the results would be used either at the field level to help plan conservation with the individual producer or for planning through the regional planning structures.⁵⁴⁵

There was no mention of national planning. The agency did not have official authority to carry out a long-term program, the SCS Deputy Administrator told Congress at a hearing in 1976 on the future RCA Act.⁵⁴⁶

2. SCS in the executive arena

All of the changes to the programs and adjustments to SCS duties went on parallel to the changes and developments in the executive branch. Presidents since Truman have paid special attention to the problem of water pollution and have been interested in environmental actions and proposals circulated on how to strengthen environmental protection. At the time no centralized agency existed for that specific purpose, rather different agencies had authority over pieces of environmental protection laws, sometimes not completely connected to their primary mission. For instance, the Department of Health, Education and Labor administered air pollution

544. Cambell, Floyd "Soil and Water Conservation for a Better America."

545. Gray, Roy M., "Planning and Programming in the Soil Conservation Service" (Prepared for Seminar #3 of an evening series on Technology Assessment Methodology) (May 18, 1972).

546. U.S. Government Printing Office "Resource Conservation.", p. 48.

standards and solid waste management guidelines. Many proposals circulated throughout the years to unite environmental functions under one roof within a new environmental agency.

The Nixon administration was the one to undertake substantial reorganization of federal environmental policy. The first fundamental change came with the passage of the National Environmental Protection Act in 1969.⁵⁴⁷ Passed with nearly unanimous agreement in both chambers and promptly signed by President Nixon, the Act required federal agencies to conduct environmental impact assessments of proposed projects. It also created the Council on Environmental Quality within the Executive Office of the President.⁵⁴⁸ The second major change came with little participation from Congress. Following the recommendation of the President's Advisory Council on Executive Reorganization, President Nixon issued a plan to create a new agency to oversee the various pollution control programs.⁵⁴⁹ The Environmental Protection Agency brought together under one umbrella programs related to water, air, solid wastes, pesticides, and radiation. Further environmental legislation followed to give the new agency additional credence.

Some proposals suggested transferring many of the USDA's conservation functions there. One proposal discussed in the Senate in 1967 would have put the entire Forest Service and SCS programs that dealt with flood prevention under the new agency. The USDA vigorously opposed

547. Public Law 91-190.

548. L G Luther and Library of Congress Congressional Research Service, "The National Environmental Policy Act: Background and Implementation," in (2005).

549. Holmes *History of Federal Water Resources Programs and Policies, 1961-1970.*, p. 107.

such a prospect.⁵⁵⁰ The Department had very strong support from its allies in this.⁵⁵¹ Other proposals split SCS water activities from the rest and transferred them to different departments. Another proposal for a USDA reorganization in the early 1970s called for shedding so-called “peripheral activities” other than serving the economic needs of the farmer, meaning SCS would be eliminated altogether.⁵⁵² SCS remained intact through the ensuing re-organization.

Nonetheless, the establishment of the EPA and the passage of the Clean Water Act portended changes in how nonpoint source pollution would be regulated. In the early and mid-1970s, the newly created agency was in the process of designing standards to address it — in cooperation with the USDA and other federal agencies.⁵⁵³ The EPA and SCS collaborated on a number of related task forces, including monitoring water quality from nonpoint source pollution.⁵⁵⁴ Plus, SCS issued a number of guidelines on how to analyze and interpret environmental resource information, especially water quality evaluations.⁵⁵⁵ But neither agency was the lead in appraising the status of waters on a national scale.

550. U.S. Senate, "Redesignate the Department of the Interior As the Department of Natural Resources," *Hearings before the Subcommittee on Executive Reorganization of the Committee on Government Operations* (Ninetieth Congress: First Session on S.886), Lexis Nexis (October 17, 1967).

551. USDA, "A Report of Proceedings" (Meeting of Public Advisory Committee on Soil and Water Conservation to the U.S. Department of Agriculture), NARA (October 11, 1967).

552. Berg, Norman, "USDA Changes in 1972" (Internal remarks at SCS workshop), NARA (Soil Conservation Service, January 5, 1972).

553. Berg, Norman "Resources in Conflict: Land and People."

554. Davis, R. M., "Soil Conservation: Pollution Control" (Agriculture and Clean Water Conference of the Midwest Research Institute, Kansas City), NARA (Soil Conservation Service, April 3, 1975).

555. Berg, Norman, "SCS Mission, Responsibilities, and Commitments to the 208 Program & the USDA" (Section 208 Workshop, Sacramento Inn, Sacramento, CA), NARA (Soil Conservation Service, December 14, 1976).

The Water Resources Council was the first government body to do a full national water assessment. The Council had considerable pull as its members included five department-level Secretaries (Interior; Agriculture; Health, Education, and Welfare; Army Corps of Engineers; Transportation), the Chairman of the Federal Power Commission, and multiple observing members across other agencies. After the creation of the EPA, its Administrator was named an associate member.⁵⁵⁶ The Council undertook two major assessments of the nation's waters — one in 1968 and another in 1975. For the 1975 National Water Assessment, the Council initiated the development of an agricultural resources assessment model with Iowa State University's Center for Agricultural and Rural Development (CARD).⁵⁵⁷ This became the predecessor to more complex processes models used later to develop the RCA Program.

Overall, in the 1960s and 1970s water-related issues became primarily a matter of flood prevention measures for SCS, and as the EPA emerged to take on water quality, the USDA took its vision for SCS elsewhere. Migration out of agricultural lands threatened to shrink the Department's constituency. Controlling production seemed less of a problem than keeping people farming. Loss of rural and agricultural lands became the USDA's main preoccupation.

Demographic shifts were not the only reason to assess the nation's agricultural resources. In part the creation of the United States Agency for International Development in 1961 fueled the Department's renewed involvement in international assistance. Stark examples of starvation in other countries brought the question of similar events happening here. The USDA's own estimates showed that to meet global food supply by the 2000 much more agricultural output will

556. Hughes and Service, "Brief History of the US Water Resources Council [1965-1984]."

557. Berg, Norman, "Potential for All-Out Production and the Resulting Critical Problems" (Annual meeting of the Great Plains Agricultural Council, Bismarck, North Dakota), NARA (Soil Conservation Service, July 31, 1975).

be required.⁵⁵⁸ At the same time, American rural population was diminishing and agriculture seemingly shrinking. In 1970 Secretary of Agriculture Clifford Hardin declared his intention to reverse the migration to urban centers by improving conditions in rural regions.⁵⁵⁹

Rapid population growth, movement of people, and infrastructure changes needed to meet new demands were recurring themes in the 1960s and 1970s for the agency. As demographics shifted, SCS started offering its conservation expertise to clients outside its traditional base of farmers. The agency actively reached out to “state and municipal land operators, school districts, land developers, suburban communities, and many people who have country homes where farming is not the principal livelihood.”⁵⁶⁰ In 1973 Secretary Earl Butz issued a memorandum setting preservation of prime agricultural lands as a major policy goal.⁵⁶¹ It also put forth the requirement to collect inventories and projections for the nation, just as Congress declared in the 1972 RCA Act.⁵⁶² Another theme was the possibility — and one that seemed imminent at times⁵⁶³ — that Congress would pass national land use regulations and what that would mean for SCS. This was a reasonable expectation, as Congress members held many hearings and introduced multiple bills to address land use. The agency leaders looked forward to

558. L R Brown, *Man, Land & Food* (USDA, Economic Research Service, Regional Analysis Division, 1963). in W D Rasmussen and G L Baker, *The Department of Agriculture* (Praeger, 1972), p. 171.

559. Berg, Norman "Water Action for the 1970s."

560. Berg, Norman "New Needs, New Efforts in New England."

561. Berg, Norman, "Communicating Changes in SCS and Districts" (Annual meeting of the Louisiana Association of Conservation District Supervisors, Shreveport, LA and at the annual convention of the Arizona Association of Conservation Districts), NARA (Soil Conservation Service, January, 1974).

562. Berg, Norman, "Establishing National Priorities for Land Use" (USDA Executive Workshop in Agri-Dynamics, Frederick, Maryland), NARA (Soil Conservation Service, May 14, 1974).

563. Berg, Norman, "Greeting From the Washington, DC Chapter" (All-Ohio Chapter, Soil Conservation Society of America, Columbus, Ohio) (January 17, 1972).

greater leverage in land planning decisions. Yet many of the USDA allies urged the Department to come out strongly against a national policy on the grounds that such a policy threatened private property rights. The Department itself tried to stay out of the debate publicly, as it became aware of the sensitivities involved.⁵⁶⁴

But SCS recognized the opportunity that national land use policy presented for conservation. A disjointed, entirely local planning approach could hardly take into account conservation goals on a bigger scale. The agency held a National Land Use Policy Conference in Iowa in 1972, and it motivated the creation of a Model State Act for Soil Erosion and Sediment Control (which was inspired by the Model State Enabling Act of 1937 that H.H. Bennet used to create conservation districts) to go hand-in-hand with potential state-level land planning policies.⁵⁶⁵ And although officially and publicly, the USDA did not want to take sides, internally, the Department was very aware of the ongoing debate. Another Secretary's Memorandum⁵⁶⁶ set up a USDA Committee on Planning and Policy for Land Use and Land Conservation to make sure the Department had a coordinated policy position.⁵⁶⁷ This effort revealed much confusion

564. Berg, Norman, "Land Use Planning: Why Should We Be Concerned?" (Annual Agricultural Faculty Conference, Auburn University, Auburn, Alabama), NARA (Soil Conservation Service, December 12, 1974).

565. Berg, Norman, "An Answer to Sediment Pollution" (Remarks at Sedimentation Control Institute, Charleston, West Virginia) (December 12, 1972).; Berg, Norman, "U.S. Land and Water Policy Issues" (Speech at annual meeting of the Colorado Association of Soil Conservation Districts, Denver, Colorado), NARA (January 5, 1973).

566. No. 1807, March 26, 1973.

567. Berg, Norman "Land Use and Rural America."

over the issue at the state level.⁵⁶⁸ By 1980, SCS had an office of Land Use under the Deputy Chief for State and Local Operations.⁵⁶⁹

In 1975, SCS convened a Seminar on the Retention of Prime Lands.⁵⁷⁰ The seminar recommended that a national land use policy is developed to ensure that national food demands are met. All of this attention meant that data on land use patterns was in extremely high demand. The Potential Cropland Study in 1975, and then the National Agricultural Lands Study finalized in 1981 were the result of this heightened interest.

As the studies were being conceived, agency leaders recognized that collecting systematic data on resource conditions invariably meant categorizing lands and prioritizing work. They also realized that prioritizing work meant changes to the programs and potential shifts of resources.⁵⁷¹ Any shift in resource distributions tends to upset the established balance of different interests. This proved to be a crucial point in the development of conservation policy.

The 1970s ushered in a new era in the USDA strategy for its main programs designed to sustain farmers' incomes. The strategy consisted of aggressively pursuing foreign markets and encouraging the farmers to produce copiously. So rather than fighting against crop surpluses and the disastrous effects those had on lowering prices and on the producers' bottom-line, as had

568. Berg, Norman, "USDA and Land Use" (Luncheon meeting of the Washington DC Chapter of the Soil Conservation Society of America, Washington DC), NARA (Soil Conservation Service, May 16, 1975).

569. Helms, Doug "SCS/NRCS Organizational Charts."

570. Berg, Norman, "Land Use and Us" (Land Use Conference-Geography and Planning at Indiana State University), NARA (Soil Conservation Service, March 20, 1975).

571. Austin, William, "Resource Analysis As a Basis for Establishing Priorities of Work and Evaluating Work Performance in Areas and Field Offices" (South Region State Resource Conservationists Workshop in Fort Worth, Texas), NARA (Soil Conservation Service, January 30, 1973).

been the USDA's game plan in the past, expanded production was encouraged. Foreign demand seemed endless.⁵⁷² Set-aside restrictions were eased in 1973 and discontinued in 1974.⁵⁷³ This encouraged the release of millions of acres that previously were set aside for conservation back into production. Dubbed the "Produce More, Protect More" campaign, SCS launched its response to protect conservation efforts. But actual production was disappointing with punishing droughts in the southern plains and the Corn Belt and massive flooding in the north and the midwest during the 1973-1974 season.⁵⁷⁴ Fewer than the expected number of acres were released into production as a result of crop failures. Still, erosion problems worsened.⁵⁷⁵ Then with favorable weather in 1975, exports grew by 50 percent.⁵⁷⁶ By 1977, the Secretary of Agriculture developed farm program proposals for each commodity based on projected exports.⁵⁷⁷ Times were not all optimistic, however. The energy crisis was unfolding as well, with shortages interrupting work and inflation and higher prices affecting most agricultural inputs and other goods.⁵⁷⁸ The urgent necessity to develop domestic energy sources underscored the need for a coordinated land use policy.

572. P R Crosson, "Environmental Considerations in Expanding Agricultural Production," *Journal of Soil and Water Conservation* 30, no. 1 (1975).

573. Berg, Norman "Potential for All-Out Production and the Resulting Critical Problems."

574. Berg, Norman, "ARS Senior Staff Conference" , NARA (Soil Conservation Service, October 23, 1974).

575. Berg, Norman "Potential for All-Out Production and the Resulting Critical Problems."

576. Berg, Norman, "Land Management and Rural America" (Land use conference sponsored by the Center for Science, Technological Political Thought, Denver Marriott Hotel, Denver, CO), NARA (Soil Conservation Service, May 19, 1975).

577. Committee on Agriculture, Nutrition, and Forestry United States Senate, "Soil Conservation" (Hearings before the Subcommittee on Environment, Soil Conservation, and Forestry, 95th Congress) (Government Printing Office, April 11, 1977).

578. Berg, Norman, "Priorities in Soil and Water Conservation" (Meeting of all SCS employees in the State of Washington, Pasco, Washington), NARA (Soil Conservation Service, October 29, 1974).

But in a 1975 letter to the White House Secretary Butz voiced concern about the ability of the federal government to coordinate state-level policy, which was as far as a federal bill could have gone since stated (and have) the ultimate jurisdiction over land use policy. In March of that year, SCS and other executive branch officials testified before the House Subcommittee on Energy and the Environment about their opposition to the latest national land use bill. Instead they encouraged states to develop their own guidelines. President Ford decided to postpone land-use legislation on fiscal grounds. Nonetheless, the level of public interest was such that the Chairman of the Subcommittee predicted that the President would get a bill from Congress shortly.⁵⁷⁹ But political consensus was breaking down, and stark opposition to such a bill from rural areas became the major sticking point.⁵⁸⁰

As the prospects for a national land-use bill grew dimmer, SCS attention shifted to the land-use issue it considered most pressing — preservation of prime agricultural lands.⁵⁸¹ Its conference on the subject yielded specific recommendations adopted by the USDA, including developing a policy for retaining “prime and related land for agricultural use,” and creating a national organization for soil parallel to the Water Resources Council.⁵⁸² The Department also asked that the Council on Environmental Quality regard prime agricultural lands an essential

579. Berg, Norman, "What a Land Use Plan Should Be From a Rural Viewpoint" (Panel discussion of the annual meeting of the American Society for Public Administration, Chicago, Illinois), NARA (Soil Conservation Service, April 4, 1975).

580. Berg, Norman, "Land Use Planning: You Can't Get There From Here" (Annual meeting of the Louisiana Chapter of the Soil Conservation Society of America, Alexandria, LA), NARA (May 2, 1975).

581. Berg, Norman, "Brookings Agricultural Round Table Seminar" (Brookings Agricultural Round Table Seminar, Washington DC), NARA (Soil Conservation Service, September 9, 1975).

582. Ibid.

national resource, which would have to be protected.⁵⁸³ The Council responded by issuing a memorandum to the heads of all federal agencies asking them to consider how federal programs could impact conversion of agricultural lands.⁵⁸⁴

Some were skeptical, however, that loss of farmland was actually a problem (as was mentioned above). A *Washington Post* article declared that it was not a critical issue.⁵⁸⁵ The Potential Cropland Study showed that around 65% of the nation's prime farmland was not being farmed. A quarter of the total land could be put into production rapidly.⁵⁸⁶ The SCS Administrator, Mel R. Davis, acknowledged that the numbers supported the view that there was adequate number of prime farmland acres. But he also said that the "stakes are too high to take chances."⁵⁸⁷ The National Agricultural Lands Study went ahead with its work to re-calculate the numbers.

The agency was also under considerable criticism that while conservation plans had been written, many practices were not actually implemented. The USDA had long been rebuked for poor coordination between its conservation programs and other goals, as well as the impermanent nature of many conservation practices. One persistent critic from the inside had been the USDA's Public Advisory Committee on Soil and Water Conservation which began

583. Berg, Norman, "USDA Views on Farmland Retention" (Metropolitan Washington Council of Governments Conference on Farmland Preservation at the University of Maryland), NARA (Soil Conservation Service, June 17, 1976).

584. National Agricultural Lands Study *National Agricultural Lands Study: Final Report 1981*.

585. Berg, Norman, "Putting First Things First: A National Perspective on Land Use" (Annual meeting of the Mississippi Association of Soil and Water Conservation District Commissioners), NARA (Soil Conservation Service, December 10, 1975).

586. Berg, Norman "Meeting Our Natural Resource Responsibilities."

587. Davis, R.M., "Conservation 1976" (Annual meeting of the Alabama Association of Soil and Water Conservation Districts, Mobile, Alabama), NARA (Soil Conservation Service, December 8, 1975).

meeting in the mid-1950s. It contended that the Department failed to give due consideration to the interplay between sedimentation control and water pollution.⁵⁸⁸

Later the results from the 1967 CNI indicated the need to prioritize conservation efforts to those areas most responsible for erosion problems. But to justify new actions, the agency needed measurable and continuous outcomes.⁵⁸⁹ Added pressure to get involved in water quality issues came when court decisions required the EPA to push the states to develop so-called Section 208 plans to deal with water quality issues not just for the urban areas but for entire states. Environmentalists pointed out in court that the original requirement for a water quality plan only included 5% of the nation's water area.⁵⁹⁰ Focusing on the entire state could alleviate some of the problem. The court decision meant that nonpoint source pollution and agricultural lands could not be excluded from the requirement, implying close USDA involvement.⁵⁹¹ And the USDA did get involved. The Department established two internal committees — one to coordinate the USDA's activities on Section 208 plans, and the other to review drafts of the guidance materials produced by the EPA.⁵⁹² The EPA pledged to work together with SCS and the farming community to implement new regulations. It understood the costs involved.⁵⁹³

588. United States Department of Agriculture "A Report of Proceedings."

589. Berg, Norman "Meeting Our Natural Resource Responsibilities."

590. Natural Resources Defense Council, Inc. v. Douglas M. Costle, Administrator, Environmental Protection Agency 564 F.2d 573 (1977).

591. Berg, Norman "SCS Mission, Responsibilities, and Commitments to the 208 Program & the USDA."

592. Davis, R.M., "What's Up in SCS" (NACD South Central REgional Meeting, San Antonio, Texas), NARA (Soil Conservation Service, July 27, 1976).

593. R E Train, "EPA and Agriculture: Establishing a Partnership," *Journal of Soil and Water Conservation* 30, no. 1 (1975).

As information started coming in about the widespread nature of erosion with the 1967 CNI, the USDA conservation programs came under attack for their ineffectiveness. Jousting interests encouraged SCS to take a new approach and to create programs based on “a mixture of incentives containing about ten parts volunteerism, five parts economic incentives, and one part legal.” Using legal means that required tough enforcement would be new territory for SCS, as Norman Berg pointed out at the end of 1976.⁵⁹⁴ USDA leaders recoiled at the idea of establishing mandatory requirements for conservation for “rules, regulations, red-tape and reports” clash with “our enterprise system of self-determination.”⁵⁹⁵ Nonetheless, Secretary Butz recognized that without progress, “somebody is going to try to make soil conservation a mandatory thing.”⁵⁹⁶ The 1977 GAO report brought the issue to the fore.⁵⁹⁷ In its assessment of the ongoing conservation programs, the fundamental message was that inefficiencies persisted because conservation was not occurring where it was needed most.⁵⁹⁸ By the time the first RCA arrived, this was accepted canon. Plus, the direction from the executive branch to increase production to maintain farmers’ income at the expense of conservation was being questioned. The National Corn Growers Association, for instance, related to Congress that it could accept a reduction of about 20% in corn acreage to maintain its long-term needs for soil conservation.⁵⁹⁹

594. Berg, Norman "SCS Mission, Responsibilities, and Commitments to the 208 Program & the USDA."

595. Davis, R.M. "Voluntary Action in Soil and Water Conservation."

596. Davis, R.M., "What's Ahead for SCS" (SCS District Conservationists; Conference, Jackson's Mill, West Virginia), NARA (Soil Conservation Service, November 21, 1975).

597. GAO "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention."

598. Ibid.

599. United States Senate "Soil Conservation.", p. 30.

The divide between production and conservation was narrowing. At the same time, the Carter administration sought to reform its water pollution abatement strategy. The Water Resources Council, for instance, found itself having to justify individual projects.⁶⁰⁰ In just a few years, the Reagan administration abolished the Council altogether. The 1977 amendments to the Clean Water Act prompted further collaboration between the EPA and SCS in controlling nonpoint source pollution, but actual programs to do that were few. The RCA appraisal confirmed the persistence of environmental degradation on private lands, and the inadequacy of the current programs to deal with it. The RCA Program came along in this uncertain environment with the goal of reorienting USDA conservation programs to be more effective.

3. Arrival of the RCA National Conservation Program

Among the most important aspects of the RCA process was its culmination in a long-range National Conservation Program within the USDA. Congressional intent in this regard was clear. So while the appraisal was a synthesis of the 1977 NRI results and other data, the main task for the RCA Coordinating Committee was to suggest long-term, up to year 2030, alternatives to the status quo. And although the RCA process was directed out of the National Headquarters in Washington, states received grants to develop their own conservation plans as well. Forty-four States and Puerto Rico completed such plans.⁶⁰¹ Coming up with a national strategy for future conservation programs required a different approach. Specific policy

600. Hughes and Service, "Brief History of the US Water Resources Council [1965-1984]."

601. Soil Conservation Service, *USDA A National Program for Soil and Water Conservation: The 1988-97 Update*.

alternatives had to be suggested, vetted, evaluated, submitted for approval, revised, and authorized.

From the papers of Kenneth Williams, it is clear that the initial steps involved many sources of inspiration. One of the most significant was the modeling framework created by the Resources for the Future. The computer model related all available point and nonpoint sources of water pollution for 500 watersheds on a national scale. Any data source, like the Census of Agriculture or the NRI, could provide input parameters, and the model could be calibrated with observational data.⁶⁰² Importantly, this National Water Quality Model could incorporate outputs from the National Agricultural Linear Programming Model developed at Iowa State University by the Center for Agricultural and Rural Development (CARD). The CARD model tied in economic factors for the agricultural sector to simulate how production levels would respond to varying scenarios. In turn, the results from the National Water Quality Model could be fed into the Water Priority Model, a USDA product, to rank areas with the greatest potential for upcoming problems based on social and environmental factors, such as types of pollutants present, extent of pollution, and density of population. Finally, a soil erosion factor that connected the effects of erosion to productivity was added. The RCA Yield/Soil Loss Simulator connected crop yields to soil conditions. The RCA team developed this connector.⁶⁰³ Linking the three components together allowed for testing many possible policy scenarios. Some ideas for policy alternatives came from environmental groups, like the Natural Resources Defense

602. Gianessi, Leonard, "To: Mack Gray, Economics Division Director, SCS," *Resources for the Future* (From Leonard Gianessi), NRCS Historians (February 28, 1979).

603. USDA "1980: Appraisal, Part II.", p. 3, p. 33.

Council, Inc. who proposed the establishment of local conservation boards, to consider tax credits, and take land out of production.⁶⁰⁴

Yet deciding which scenarios should be tested and which results should be revealed was far from straightforward. As described above, the RCA Coordinating Committee consisted of representatives from nine USDA agencies and two people from the OMB. It appears that the OMB perceived the RCA effort as a self-serving bureaucratic exercise. According to SCS insiders, the OMB seemed to object to the concept of long-range planning. One explanation was that long-range planning implied long-range budget commitments, obviating the need for annual budget justification and, thus, costing the OMB a great source of its power.⁶⁰⁵

A less cynical explanation considered the experience the OMB had with the Forest Service's parallel planning effort just a couple of years prior to the commencement of the RCA process. Congress required the Forest Service to come up with a plan very quickly, translating into little time for USDA or OMB involvement. When President Ford submitted the plan, put together by the Forest Service staff, to Congress, he added that funding for it would be subject to annual budget reviews. Congress responded by appropriating money to the Forest Service based directly on the plan, rather than on the President's budget which called for fiscal restraint. The

604. Natural Resources Defense Council, Inc, "A Proposal for Conservation Delivery Involving Testing of Cross-compliance" (Transmitted by Tom Barlow to Norman Berg) (May, 1981).; Barlow, Tom, "New Conservation Strategies to Reduce Topsoil Losses on Farms," *Natural Resources Defense Council, Inc.* (An address to the Symposium of the Wildlife Society in Milwaukee, Wisconsin) (May 6, 1981).; Barlow, Tom, "New Roads to Conservation Achievement" (A Speech to the National Association of Conservation Districts) (Natural Resources Defense Council, Inc., August 13, 1981).

605. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

control of the budget process was instantly diminished. The OMB did not want a repeat of this scenario with the RCA.⁶⁰⁶

According to one SCS official, it was true, that the SCS leadership watched closely the Forest Service experience and “were very jealous” at the resultant budget increases. Unlike the Smokey Bear they felt SCS had no similar political clout. The OMB was on the lookout for budget cuts, and “emotional fiction” of what conservation was accomplishing no longer sufficed. Through his political ties, Norman Berg was able to get the ball rolling in Congress to pass the RCA bill.⁶⁰⁷ The OMB did not like the potential outcome and wanted to impede any action that could result in budget increases.

Kenneth Williams remembers one phone call from an OMB employee (after the dissolution of the RCA Coordinating Committee) demanding that the scenario with upward projections for program spending be deleted from final consideration. The RCA Program evaluated a status quo scenario, a scenario with lower funding, and a scenario with higher funding. The OMB suggestion would have automatically lowered all estimates by \$200 million.⁶⁰⁸ Williams refused to abide by OMB orders, left frustrated that the OMB employee seemingly wanted anonymity to avoid a paper trail of the request.⁶⁰⁹

606. SCS internal document, "Internal Review of "Evaluating the Evaluators: RCA in Retrospect"" (Comments to Chief Myers), By Bill Gardner in Kenneth William' s papers (October 14, 1982).

607. Personal Interview, 28.

608. Williams, Kenneth, "APPR Program Development - RCA - Status of Office of Management and Budget Review of Final Program" (Communication to Peter C. Myers, SCS Chief), Kenneth William' s papers (July 13, 1982).

609. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

The RCA team was also aware that the OMB had interfered in the long-range planning process undertaken by the Forest Service just a couple of years earlier. The OMB bounded proposed policy alternatives to its own maximum and minimum, upsetting Congressional members who felt that this was too intrusive.⁶¹⁰

But even without the complications with the OMB, the development of a long-term national program was fraught with uncertainty and much debate. One simplistic suggestion was to short-circuit the entire process of designing and testing policy alternatives and to advise that long-term food security up to 2030 could be guaranteed if the agency's budget tripled and its staff doubled. But Norman Berg, who was the agency's chief at this point, and Secretary Bergland sided with internal critics of this approach.⁶¹¹ A much more complicated and thorough analysis ensued. Then Ronald Reagan was elected president in November 1980, promising changes to the RCA process.

Reagan nominated John Block to be the new Secretary of Agriculture. Secretary Block had ample experience with the RCA appraisal, as he had directed Illinois' efforts to compile data for the NRI. Appointment of a political figure (rather than a technical expert) to the position of Deputy Assistant Secretary for Natural Resources and the Environment benefited the RCA process. Richard Siegel came with many political connections, and his advocacy on behalf of the RCA Program brought the final product to the attention of Congress.⁶¹² Another change came when the SCS Administrator position, traditionally held by a technical expert, switched to

610. Williams, Kenneth, "RCA Program Issues As of April 7, 1981" (Internal Document), Kenneth William' s papers (April 7, 1981).

611. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

612. Ibid.

become another political appointment. Peter Myers took over as the Chief of SCS. Once again, this benefited the RCA process as he also had many political connections.⁶¹³

Another significant modification to the development of the RCA Program introduced by the Reagan administration was a requirement to consider cost-effectiveness for the final recommendations.⁶¹⁴ “Careful economic analysis” was the first recommendation the Cabinet Council on Food and Agriculture (CCF&A) issued to the USDA. The CCF&A was the mechanism that President Reagan used to apprise the heads of other federal agencies — those potentially impacted by the direction of the RCA Program — about the alternatives the USDA considered for its RCA Program. The Council consisted of representatives from the Council on Economic Affairs, US Army Corps of Engineers, the Environmental Protection Agency, Department of the Treasury, Council on Environmental Quality, Office of Management and Budget, and Office of Planning and Development. In a memorandum to the USDA, the Council stated that while targeting was a desirable goal, it may be infeasible because of political reasons. In any case, no additional funds would be available for further SCS programs. The Council was skeptical of using tax incentives to provide bonus grants to states to spend on conservation. The memorandum phrased the issue plainly that such grants “[were] viewed as federal spending to encourage states to enact policy power controls over privately owned land.” The President was in direct opposition to such an outcome. He supported requiring conservation plans from recipients of Farmers Home Administration (FmHA) loans, on the other hand. The USDA

613. *Ibid.*, Packet #7.

614. *Ibid.*, Packet #2.

responded that there were only about 20,000 annual new borrowers of FmHA loans, too few to make a difference in soil erosion rates.⁶¹⁵

In the fall of 1982, the RCA Program, now titled “A National Program for Soil and Water Conservation,” or the National Conservation Program, finally had the President’s approval and the Department was developing a Statement of Policy to go along with its unveiling. One change that the President requested was to remove a grants program as a policy option to retain prime farmlands from conversion to urban uses. The President opposed it because such action hindered the free market.⁶¹⁶ The final document contained several policy changes and, for the first time, established national priorities for the USDA conservation programs. It intended to provide guidance to the Department for the five years between 1983 and 1987. It also critiqued the present state of the USDA conservation programs. All the models were run for the next 50 years, in line with the long-term projections Congress ordered. Although the RCA process had a lot of supporters, SCS still could not go ahead with an analysis of the upper spending boundary as it wanted.⁶¹⁷

When the RCA National Conservation Program came out, there was confusion about how to respond. The leaders within SCS did not initially know what to do with the results, and others were also caught off-guard.

The national priorities listed in the National Conservation Program were: to reduce soil erosion, conserve water in terms of improved irrigation efficiency and management, reduce flood

615. McClaughry, John, "The White House: Memorandum" (From: John McClaughry, Executive Secretary of the CCF&A To: John Crowell Jr., Assistant Secretary of Agriculture), Kenneth William' s papers (August 31, 1981).

616. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

617. Personal Interview, 28.

damages, improve range conditions, and improve water quality. Moreover, several national resource concerns were identified, including range, pasture, and forest land improvement; urban conservation; plus, fish and wildlife habitat improvement and better management of organic waste management.⁶¹⁸ The document called for a “redirection of USDA programs,” including targeting areas with the worst problems. The reasoning behind the proposal was straightforward. In the time of limited resources and looming budget cuts, the cost-effective use of resources was to channel help to the areas most in trouble. This suggestion caused much controversy, as the traditional ally of SCS, the National Association of Conservation Districts (NACD) voiced active opposition to the plan.

R. Neil Sampson, the Executive Vice President of NACD, testified before a House agricultural subcommittee overseeing the RCA process that conservation districts felt threatened that the RCA Program established a top-down approach. Focusing on national priorities may ignore much more pressing issues on the ground. Rather the Department should promote “sustainable agriculture.” Sampson further pointed out that the RCA process revealed that inadequate funding was the major flaw of existing programs. The preferred alternative for the RCA Program unnecessarily created a new framework and a new federalist bureaucratic layer.⁶¹⁹ Further support of existing programs was the answer.

On the one hand, the NACD criticism of the proposed program was unexpected because the NACD had supported the RCA effort from the beginning and strongly encouraged SCS to

618. USDA, SCS "The National Program for Soil and Water Conservation."

619. Sampson, Neil, "Statement of Neil Sampson, Executive Vice President, NACD to the Subcommittee on Department Operations, Research, and Forestry Agriculture, House Committee on Agriculture" (On Conservation Programs for a Sustainable Agriculture), Kenneth William's papers (April 22, 1981).

present specific goals for soil and water conservation.⁶²⁰ On the other hand, the reaction was not surprising since the NACD represented all conservation districts, many of whom would lose out if targeting were implemented. So instead, the RCA National Conservation Program suggested a gradual transition. Each year, the USDA would divert an additional 5 percent of its financial and technical funds for conservation programs to targeted areas. An NACD official summarized the organization's position on targeting at a 1983 hearing: "nontargeted counties worry about losing their already insufficient technical help and cost-share moneys, and justifiably so if targeted moneys are to come out of existing funds."⁶²¹ Gradual transition did not appease the NACD. And organizations like the National Farmers Union, the Soil Conservation Society of America, and the National Cattlemen's Association also went on record opposing targeting of existing funds.⁶²² As a result, another provision was added to the plan. Base-line assistance would be provided to all areas.

Other policy recommendations came from different sources. SCS put forth a lot of effort to solicit comments from the public, and especially its constituent organizations, encompassing environmental groups, state and local agencies, producers, and many others. Top USDA officials were involved in brainstorming which policy alternatives could pass. At one briefing with Secretary Block and his staff, the Assistant Secretary made the case to consider tax incentives

620. National Association of Conservation Districts, "A Resources Agenda for the 80s" (A policy position of the National Association of Conservation Districts: working draft), Kenneth William's papers (December 18, 1978).

621. U.S. Government Printing Office, "Miscellaneous Conservation" (Hearings before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture: House of Representatives, 98th Congress, May and September 1983; Hearings on H.R. 568; H.R. 2714; H.R. 2928; H.R. 3457; H.R. 3903; H.R. 3906) (1984)., p. 50.

622. USDA, SCS "The National Program for Soil and Water Conservation."

and positive incentives like the “green ticket” option, but to hold off on requesting large funding increases. Secretary Block emphasized the need to promote conservation tillage as one of the most cost-effective conservation practices and that states should take initiative and leadership. Yet he hesitated to endorse cross-compliance recognizing the presence of strong opposition to the idea. Norman Berg brought up targeting as an idea to include.⁶²³ Another idea that came up was for a “red ticket” or a system that penalized poor management. It was never taken seriously, although the OMB got excited about the prospect of a positive financial inflow.⁶²⁴ In the fall of 1981, the agency sent out a questionnaire soliciting responses on the proposed alternatives.

After the nearly 65,000 comments were analyzed, several changes were made to the program. One of the most important was the addition of programs aimed at rangeland and pastureland resources. The cattle ranchers’ associations strongly supported these. The agency also omitted plans to form local, state, and federal oversight conservation boards, responding to the comments that this only served to add unnecessary bureaucratic layers.⁶²⁵ Most support was voiced for proposals to focus implementation of cost-effective conservation measures; to establish clear priorities; to streamline the USDA farm programs, and to expand the use of long-term agreements.⁶²⁶ Providing tax incentives for conservation activities likewise received support from the public, but the OMB scrapped any such reference from the final RCA

623. Williams, Kenneth, "RCA Status Report and Briefing Session with Secretary John R. Block and Selected Staff Officers" (Notes of the Session: Internal Document), Kenneth William's papers (June 15, 1981).

624. Personal Interview, 28.

625. USDA, SCS "The National Program for Soil and Water Conservation.", p. 45.

626. Ibid., p. 44.

Program.⁶²⁷ On the other hand, the National Conservation Program recommended providing federal grants to states, in opposition to the views expressed early by President Reagan.⁶²⁸ Rather than ask for direct increases in funding, the Program aimed to make existing programs more effective.⁶²⁹ The broad span of conservation objectives, priorities, and concerns reflected a concession to the overwhelming number of requests from each constituency group (range management, urban and suburban interests, wildlife associations) asking not to be forgotten.

Another aspect of the National Conservation Program that received much attention was the proposal to restrict eligibility for USDA loans that many farmers used to stay afloat. Only farms with a conservation plan could apply for them. The American Farm Bureau strongly rejected this suggestion.⁶³⁰ The RCA Program also called for all USDA programs to be made consistent with conservation objectives. Plus, it encouraged the use of long-term agreements, as well as cost-effective practices like conservation tillage. More research into effective conservation would be done through pilot projects. State and local leadership and coordination was emphasized. The Department also committed to regularly evaluate progress of the new programs and to improve its capacity to analyze data.⁶³¹ Comments from the interest groups revealed deep divisions among the members. Some, like the Texas and Southwestern Cattle Raisers Association, accused SCS of overstepping the boundaries Congress outlined in the Soil and Water Resources

627. Williams, Kenneth "APPR Program Development - RCA - Status of Office of Management and Budget Review of Final Program."

628. McLaughry, John "The White House: Memorandum."

629. Williams, Kenneth L, "Let' s Focus on the Substance of the RCA Program" (Presentation at the National Soil Conservation Service Conference, Huntington, West Virginia), Kenneth William' s papers (September 26, 1982).

630. USDA, SCS "The National Program for Soil and Water Conservation.", p. 66.

631. Ibid.

Conservation Act (the RCA Act). Others, like the Wildlife Management Institute, reproached the agency of falling far short of the ambitions set forth in the Act.⁶³²

Some observers report that the NACD and other environmental groups expected to see a much more ambitious and expensive program. Other groups wanted more say in the results that the open-ended public discussion process implied.⁶³³ Kenneth Williams described his disappointment to see national priorities disregarded in attempts by the groups to enhance their own budgets. He contended that the critics failed to see the bigger picture and the opportunity for conservation.⁶³⁴ The NACD Executive Vice President, R. Neil Sampson did not mince words when expressing his opinion of the RCA Program, “the final program may well be the most disappointing aspect of that whole process... It proposed two funding levels, not enough, and way less... I think it a very poor expression of long-term policy and I was personally disappointed in it.”⁶³⁵

Still, the agency began implementing the program in 1983 and reported benefits to its performance in the 1984 Program Evaluation Report.⁶³⁶ Notably, the USDA took up only certain aspects of the proposed RCA Program. The Reagan administration did not seek any increases for conservation programs.⁶³⁷

Secretary Block reported to Congress that since the completion of the RCA Program report in 1982, the Department had redirected all of its programs toward “(1) targeting of technical and

632. Ibid., p.108 and p. 111.

633. Personal Interview, 27.

634. Williams, Kenneth L "Let' s Focus on the Substance of the RCA Program."

635. U.S. Government Printing Office "Miscellaneous Conservation.", p. 61.

636. USDA "Annual RCA Progress Report: National Program for Soil and Water Conservation, Fiscal Year Ending September 30, 1984."

637. U.S. Government Printing Office "Miscellaneous Conservation.", p. 62.

financial resources to critical resource problem areas, and (2) focusing on priority problems at all organizational levels.” Plus, the programs had been reoriented toward water conservation, the second priority identified in the National Conservation Program.⁶³⁸ The Department was closely monitoring the changes. Secretary Block pointed to multiple improvements in just a course of two years: 44 states reported reduced soil erosion and improved water management, especially with regard to irrigation; soil erosion control in targeted areas was 30% better than in non-targeted areas. Perhaps most significantly, SCS revised its financial allocation procedure to account for the differences in states’ soil and water conditions by incorporating the 1977 NRI data into the decision. Twenty-one states received more money for technical assistance based on the outcome. And in two years, states have upped their contributions to conservation programs by 27%.⁶³⁹

The targeting schedule, however, showed that only some SCS funds had been redirected (from 5% of total funds targeted in 1983 to 10% in 1984 and 1985). The percentage of targeted funds for the Agricultural Conservation Program, the largest conservation program, stayed stable at 10% from 1983 to 1985. The stated goal was to increase that to 20% in 1986 and to 25% in 1987.⁶⁴⁰

638. USDA "Annual RCA Progress Report: National Program for Soil and Water Conservation, Fiscal Year Ending September 30, 1984."

639. Ibid.

640. Ibid., p. 28.

The National Conservation Program did not prompt the Reagan administration to request additional funding for conservation. Once again, the Administration's budget requests were consistently lower than what Congress felt necessary and what it appropriated.⁶⁴¹

But the RCA Program did succeed in putting conservation on top of the Congressional agenda. Congress members introduced several bills strengthening conservation programs by either endorsing alternatives laid out by the Program or by presenting new strategies aimed at more effective conservation. Critics of the RCA Program made amends to ensure a seat at the table for the discussion. The NACD, for example, while still outraged at the low budgets proposed by the Administration, embraced cross-compliance as its official position.⁶⁴² Secretary Block announced to USDA employees that conservation would be an integral part of the Department's mission and programs.⁶⁴³ Plus, an earlier court decision by the Iowa Supreme Court upheld that a soil conservation district can compel landowners to apply soil conservation measures, opening up the possibility of tougher enforcement.⁶⁴⁴ This forced a re-evaluation of the traditionally voluntary approaches to soil conservation. Changes in the policy direction on conservation were in the air.

4. Analysis

Given this historical background, I turn to the three guiding questions for this section.

641. Zinn, Jeffrey "RCA — the Administration's Strategy for Addressing Soil and Water Conservation During the Next Five Years."

642. Siegel, Richard, "Unease in the Conservation Community" (A Report on the Annual Convention of the National Association of Conservation Districts in New Orleans, February 7-9; To: John Block) (February 17, 1983).

643. Personal Interview, 5.

644. Woodbury County Soil Conservation District V. Ortner, 279 N.W.2d 276 (1979).

Their answers help chip away at the main question of whether the NRIs and the RCAs have advanced conservation policy.

1. Did SCS reach out to other USDA agencies and to other federal agencies?

The answer to this question is mostly.

SCS information gathering efforts in this period involved a great degree of input from other USDA agencies and other federal agencies. As discussed, most of the time, an interagency council was established to decide on the specifics — which information to collect or how to develop a program. The degree of cooperation and understanding varied, however. While problems existed (such as with the OMB), they seem to have been the exception, rather than the rule. The inventories required less participation from outside agencies, but good cooperation was still the norm. The RCA process had active participation from agencies both inside and outside the USDA. Some outside agencies had a direct seat at the table, at least before the dissolution of the RCA Coordinating Committee. Other agencies participated through President Reagan's Cabinet Council on Food and Agriculture. The USDA agency heads participated through an Interagency RCA Liaison Committee, which consisted of representatives from the ASCS, FmHA, Extension Service, ARS, ERS, OBPA (Office of Budget and Planning Activities), and Forest Service.⁶⁴⁵ This relationship did not result in any consolidation of different conservation-related programs, as was proposed earlier in the RCA process.⁶⁴⁶

645. SCS, "Followup Questions on RCA" (Internal Document), Kenneth William's papers (May 13, 1982).

646. Leman, Christopher, "Evaluating the Evaluators: RCA in Retrospect" (An expansion of 1981 Congressional testimony) (October, 1982).

With the passage of the Clean Water Act and its subsequent amendments, SCS developed a relationship with the EPA for the purpose of regulating nonpoint water pollution through Section 208. From the beginning, the agricultural community came out strongly against any regulations which could be enforced by the EPA. The regulations never materialized, and instead, the two agencies developed a partnership to address the problem through SCS conservation operations. Still, the USDA would have preferred to have full authority over rural water quality programs, as evidenced by the testimony of the SCS Administrator in a 1977 hearing on the RCA. The Administrator argued that the EPA did not have the extensive technical expertise and network to take over soil and water conservation fully.⁶⁴⁷ Although such disagreements were common in public settings, the two agencies worked together well on Section 208 issues. Addressing nonpoint pollution through SCS-prescribed conservation measures seemed to be the only practical solution.

The situation was more complex between SCS and the Reagan administration. Evidence shows that the Administration saw little value in conservation and that the OMB saw conservation programs wasted money during a time when federal deficits were mounting. The Administration repeatedly proposed eliminating SCS. The RCA appraisal provided evidence to Congress that soil erosion was not a problem of the past, thereby justifying continued expenditures and the need for continued SCS technical work. A top SCS official involved with the RCA Program credited the RCA process with saving the agency all together.⁶⁴⁸ This interpretation may be somewhat a stretch, but the evidence points to a tense relationship between

647. U.S. Government Printing Office, "National Agricultural Land Policy Act" (Hearings before the Subcommittee on Family Farms, Rural Development, and Special Studies of the Committee on Agriculture, House of Representatives), Web (June, 1977)., p. 28.

648. Personal Interview, 16.

the OMB and SCS in the last several years of the period in question. Nonetheless, SCS total budget spiked 19% between 1982 and 1983, exactly after the RCA Program came out.⁶⁴⁹

2. Did SCS use the results in the implementation of conservation programs?

The answer to this question is no for most of the period under consideration with some changes in the last two years.

During most of the period discussed there was no evidence that the information collected by the NRIs or the RCAs actually influenced funding decisions for SCS programs. The National Headquarters allocated funds to the states based on their requests in previous years. For the Conservation Operations Program, funding was fixed by the expenditures already in place. Paying for offices in nearly every county and for personnel at each one was the baseline. Cost-share programs like the Great Plains Conservation Program had tight requirements for eligibility, but within that pool, allocation was done on a first-come, first-serve basis. At the National Headquarters level, deputy chiefs competed with each other for the remainder of the Conservation Operations funds. Whoever could justify their ideas in terms judged best to advance the agency's mission got the money. No systematic data were considered.⁶⁵⁰

This changed in part with the RCA National Program for Soil and Water Conservation. From 1983 on, the state-level allocation procedure included the 1977 NRI results to distribute conservation resources according to the states' needs. The Agricultural Stabilization and Conservation Service (ASCS) that ran the largest USDA cost-share conservation program, the

649. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

650. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

popular Agricultural Conservation Program, made plans to incorporate the 1982 NRI data into its decisions on prioritizing applications for funds.⁶⁵¹ At the end, however, SCS programs were not targeted toward the problem areas. The Chairman of the Appropriations Committee, Jamie Whitten (D-MS) prevented this, arguing that baseline conservation was needed everywhere. So although the agency started to develop implementation plans, because of Congressional interference, it did not carry them out.⁶⁵²

But the USDA agricultural policy continued as usual with conservation being a low priority relative to its other goals. The payment-in-kind (PIK) experiment in the early 1980s that set aside over 80 million acres but produced few conservation benefits pointed to the failure of the USDA to integrate conservation into its broader mission as laid out in the RCA Program.

3. Did some information receive less emphasis and others more?

The answer to this question is a nuanced yes. While soil conservation was the main focus for SCS during this period, the trend was clearly toward expanding the definition of conservation. Soil and water quality became interlinked officially. Wildlife space and preservation of wetlands became more frequent topics. The agency also started making a strong (and frequently invoked) case for conservation as a source of recreational opportunities to enhance Americans' increasing leisure time.⁶⁵³ Another piece of evidence that the concept of conservation within the USDA was expanding is that the Department's definition of soil erosion tolerance no longer relied only on calculations of productivity losses to the farmer, but also

⁶⁵¹. USDA "Annual RCA Progress Report: National Program for Soil and Water Conservation, Fiscal Year Ending September 30, 1984."

⁶⁵². Personal Comment, 28.

⁶⁵³. For example, see Berg, Norman "Resources in Conflict: Land and People."

included off-farm costs.⁶⁵⁴ While this may reflect the broader scope of conservation, the expanded definition is also attributable to the fact that economists found only small overall effects from erosion on actual short-term yields and reasoned that if a problem for productivity did exist farmers would eventually internalize the costs, thereby taking on the responsibility for erosion control themselves.⁶⁵⁵ Policy making required presence of off-farm impacts.

Flood concerns and flood-plain management remained some of the most visible and expensive SCS activities. Yet, judging from changes to water pollution policies, there was increased awareness that flood control was distinct, if not directly counter, to achieving water quality goals.⁶⁵⁶

Early on, the Department as a whole was concerned not only with information about soil erosion and general water quality, but also with the effects of pesticides. For instance, until it was discontinued for budgetary reasons, for the latter part of the 1960s the National Agricultural Library published a comprehensive Pesticides Documentation Bulletin with up-to-date information on pesticide toxicology.⁶⁵⁷ The prevalence of pesticide use was not available, however. Although at its inception the EPA took over the USDA's responsibilities for pesticides at its inception, keeping track of agricultural practices — including pesticide use — was done by the USDA. The 1980 RCA looked at pesticides as one source of water pollution. Plus, the Water

654. W C Moldenhauer and C A Onstad, "Achieving Specified Soil Loss Levels," *Journal of Soil and Water Conservation* 30, no. 4 (1975).

655. P R Crosson and A T Stout, "Productivity Effects of Cropland Erosion in the United States" (1983), p. 66.

656. Holmes *History of Federal Water Resources Programs and Policies, 1961-1970.*, p. 108.

657. National Agricultural Library, *Pesticides Documentation Bulletin: Numbers 1-22* (National Agricultural Library, US Dept. of Agriculture., 1965).

Priority Model used in the RCA appraisal ranked toxic substances the highest, followed by organic wastes, nutrients, dissolved solids, and sediment as the lowest priority pollutant.⁶⁵⁸

Still, the RCA Program mostly focused on easily measurable parameters like soil erosion and water management. Critics pointed out that the National Conservation Program left out variables less pliable to data collection, like fish and wildlife habitat. Water quality shifted down the priority list as well.⁶⁵⁹

The push to include wildlife protection into the definition of conservation came in the 1960s and 1970s. SCS records reflect this change, with the number of acres receiving wildlife development increasing very rapidly from 1963 to 1974.⁶⁶⁰ The Wildlife Institute questioned many of these statistics, however. For instance, SCS annual report stated that 9.5 million acres were improved for wildlife benefits in 1973, but ASCS records showed cost-sharing on fewer than 20,000 acres.⁶⁶¹ Considering that the number of acres with wildlife conservation jumped 12.5 times from 1968 to 1969, an accounting or an attributional change may have been responsible for the increase. More concrete changes for wildlife preservation began in the 1985 Farm Bill.

The emphasis on different subject matters shifted according to the political currents. The discussion on establishing a national land use bill and the need to protect prime agricultural farmlands from urban development propelled information on land use changes to the forefront. The national inventory on natural resources mandated by Congress in 1972 was held off until

658. USDA "1980: Appraisal, Part II.", p. 43.

659. Leman, Christopher "Evaluating the Evaluators: RCA in Retrospect."

660. Soil Conservation Service, "Administrator' s Report" (Records of the Soil Conservation Service) (NARA, 114-170-51-24; Box 12, 1974).

661. U.S. Government Printing Office "Resource Conservation.", p. 64.

1977 as SCS moved to conduct the 1975 Potential Cropland Study to inject information into the ongoing debate. Considerable resources were spent on the National Agricultural Lands Study just a few years later — a politically motivated effort by most accounts. Some argue that it was protection of prime farmlands that propelled conservation to the national arena.⁶⁶²

And relative to the USDA's concerns for setting agricultural policy, conservation goals remained low on the list. SCS's mission statement in the 1970s included aiding in the conservation of the nation's soil, water, and related resources, as well as in the development and productive use of those resources.

Fundamentally though, conservation can include or exclude many different ecological elements. Exact needs vary depending on the location and the use. Secretary of Agriculture Charles Brannan expressed this eloquently when he issued a memorandum in 1951 outlining each agency's responsibilities. In a nod to Karl Marx's revolutionary phrase, he defined conservation as using "each acre of land within its capabilities and treat[ing] it according to its needs."⁶⁶³ Some version of this phrase had been in use to describe the mission of the agency since its founding.⁶⁶⁴ While this statement highlighted the local nature of conservation, it did little to delineate the exact parameters of what conservation should encompass, leaving that task to the individuals in charge.

662. Personal Interview, 41.

663. Davis, R. M., "Conservation As National Defense - the Professionals' Responsibility" (OPEDA meeting), NARA (Soil Conservation Service, May 15, 1975).

664. Personal Comment, NRCS Historian Office.

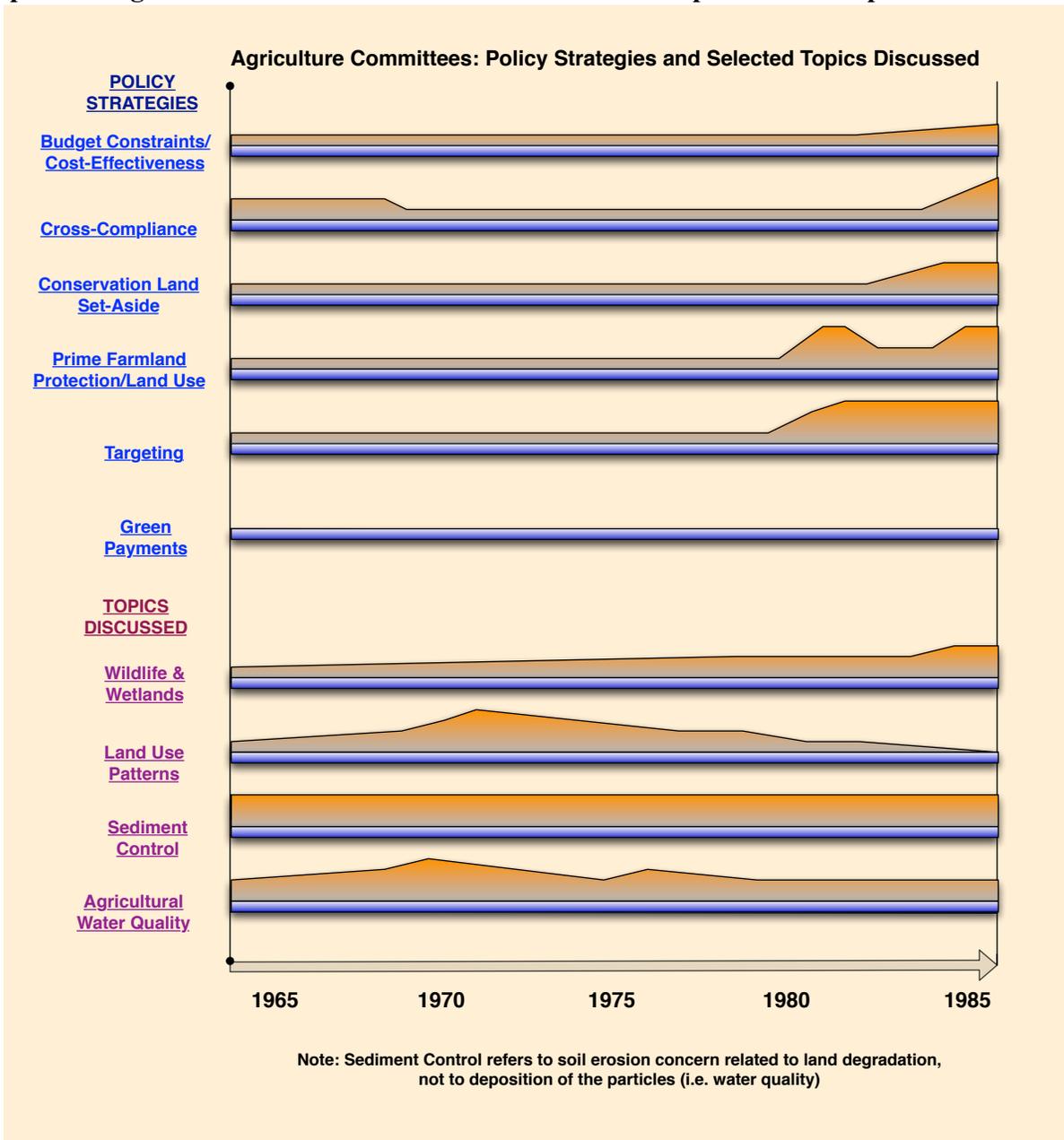
How did Congress impact USDA conservation policy up to 1985?

The final narrative considers how the legislative branch shaped USDA conservation policy up to 1985. Although the USDA is in the executive branch, its operations are under Congressional oversight and subject to program direction and budget appropriations from Congress (as with other federal agencies). In one respect Congress provides a balance between the agency's long view of its mission and the executive drive for immediate results. On the other hand, this potentially constraints the flexibility of the agency and reliance on the agency's expertise. In this section I provide the background of the congressional debate on the USDA conservation policies. At the conclusion of the section, I consider how the NRIs and RCAs fit into the debate and whether their presence may have impacted the course of conservation policy. To do that, I look at two questions. First, did House and Senate Agriculture Committee members receive information collected by SCS? And, second, did Congress choose policy alternatives consistent with the NRIs and the RCAs?

The published hearings on conservation issues provided the main source for this section. I reviewed thousands of pages of public hearings on proposed conservation programs in the Farm Bill discussions. Specifically, I reviewed 3 hearings from the 1977 Farm Bill, 3 hearings from 1981, and 7 hearings from 1985, totaling over four thousand pages of testimonies and position statements. Appendix C lists the details of the hearings. I also classified 132 distinct arguments from witnesses (many more arguments defied classification but supplied valuable background information). Finally, I used data from the Policy Agenda Project at the University of Texas at Austin to describe the larger context for policy development. Appendix D describes these data sets, as well as my analytical procedure.

The figure below presents a visual representation of the main results. It shows how Congressional interest in certain conservation topics and policy solutions waxed and waned over the years. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones.

Graph 7. Congressional discussion on selected conservation policies and topics.



1. Environmental era

The late 1960s and the 1970s was an era of heightened public awareness of environmental problems. The regular Gallup polls showed environment as a top agenda item during the 1970s for a larger proportion of individuals than ever before, although the interest fell off by the 1980s.⁶⁶⁵

In response Congress members introduced 150 bills dealing with environmental protection in 1969. As already mentioned, on the first day of 1970, President Nixon signed the National Environmental Policy Act, which established the Council on Environmental Quality and required environmental impact statements for federal projects. Later in the year he created the Environmental Protection Agency to oversee environmental programs. In many ways, environmental issues have been at the top of the agenda for administrations since the 1950s, and the late 1960s and early 1970s reaped the benefits of those efforts. A slew of bedrock environmental laws passed in quick succession — the Clean Air Act in 1970, the Clean Water Act in 1972, the Endangered Species Act in 1973, the Resource Conservation and Recovery Act in 1976, Clean Water Act amendments in 1977 and others. Some of this history is described in the previous section, and more detailed history is described in other sources. Although most of this legislation affected primarily the EPA, the Clean Water Act and the Endangered Species Act grew to have an impact on SCS and its operations as well. Much debate arose over whether agricultural-environmental issues should stay under the USDA's jurisdiction or be moved to the EPA. Agricultural interests clearly preferred that the USDA continue to work on nonpoint source

665. Feeley, T. Jens, Bryan D. Jones, Heather Larsen, "Public Agendas: Annualized Most Important Problem Polling Data, 1939-2001; Computer File. (Portions of This Data Originally Compiled by the Gallup Organization)" (Seattle, Washington: University of Washington, 2001).

water pollution, recognizing early on that the new agency's approach would likely not be as favorable.⁶⁶⁶

In the larger agricultural policy context, the traditional USDA support payments in place since the 1930s and continued through the Kennedy and Johnson administrations were in jeopardy with the election of Richard Nixon. The general USDA policy had been to control excess supply and to supplement farmers' income with direct payments. A major sign of change came with the passage of the 1970 Farm Bill (the Agricultural Act of 1970)⁶⁶⁷ which included a set-aside program inserted by the Republican members. The set-aside program allowed farmers more flexibility in planting what they wanted as long as some acreage was removed from production. Plus, other Congressional members from non-agricultural districts put in limits on total payments any one farmer could receive. The Nixon administration set out to eliminate direct payments to farmers. It argued that the expanding export markets from warmed relations with the Soviet Union and developing nations and price-support loans were sufficient to ensure adequate income for the agricultural sector.⁶⁶⁸ The American Farm Bureau Federation advocated for the Nixon plan, while the Democratic Congressional members focused on continuing long-existing support structures.

Besides economic issues, Congress had a host of other concerns — a persistent one was the rapid urbanization of the United States and the need for a coordinated land use policy to ensure projects of national interest or value were protected. The era saw a number of national

666. Williams "Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture."

667. Public Law 91-524.

668. Congressional Quarterly, *Farm Policy: The Politics of Soil, Surpluses, and Subsidies* (Cq Pr, 1984).

land-use policy bills (the first one in 1970) and some believed that “legislation providing for national land use policy [was] imminent.”⁶⁶⁹ Although at first much of the discussion excluded the USDA and participants in private land policy, soon the Department, SCS, environmental groups, and others started taking a more keen interest. Some made the argument to support national land use policy in order to promote national agricultural goals of all sorts — from preserving capacity to feed the world to planning for priority conservation projects. Many hearings were held. Groups expressed varying levels of support for the idea. Most farm groups, for example, came out against the idea, rejecting it primarily because it curtailed private land rights.⁶⁷⁰ One result of the debate was the Rural Development Act of 1972 (the same act that authorized for systematic surveys of natural resources or what became the NRIs) which came out of concern that rural places were deteriorating as a result of population shifts. Several Congressional members took a keen interest in agricultural land protection. Nine bills were introduced in the 95th Congress alone to establish a national agricultural land use policy.⁶⁷¹

One of the most persistent supporters of farmland protection was Republican Representative James Jeffords from Vermont, who introduced bill after bill on the subject for several years. While the concept had broad support among House Agriculture Committee members, it came to a halt in the Senate after key interest groups like the Farm Bureau, the Homebuilders Association, the National Association of Realtors, and other large players

669. Berg, Norman "New Needs, New Efforts in New England."; Berg, Norman "Greeting From the Washington, DC Chapter."

670. Committee on Agriculture, Subcommittee on Family Farms, Rural Development, and Special Studies "Agricultural Land Protection Act of 1979."

671. R W Dunford, "The Evolution of Federal Farmland Protection Policy," *Journal of Soil and Water Conservation (USA)* (1982).

objected. Their primary concern was that some of the provisions were a slippery slope to a federal land use policy.⁶⁷² Part of the debate hinged on the acceptance of the figures from the 1975 Potential Cropland Study. Those opposing the bill disputed the accuracy of the result — that 3 million acres were lost annually (2 million to urbanization and 1 million to water development projects). They successfully reframed the debate into one of technical nature.⁶⁷³ This bought time and other issues — like slumping prices — started to dominate the agricultural policy agenda. Nonetheless, Representative Jeffords succeeded in engendering a study on the issue of loss of prime farmland. His legislative assistant went on to lead the National Agricultural Lands Study (NALS). Some charged that the study seemingly massaged the language to make loss of agricultural lands appear a more urgent problem (described in Section A of this chapter).⁶⁷⁴ Only with the 1982 NRI did first reliable figures originate and reliable trends did not start until the 1987 NRI.

Despite another attempt at providing numbers with NALS, the realistic probability for passing a comprehensive farmland protection bill (as proposed in the Jeffords bill circulating the House floor) fell close to zero already in 1977 after a Sierra Club spokesperson specifically suggested that since Congress and the Carter administration were stalling on developing a comprehensive national land use bill, a successful bill to protect agricultural land (“with many people feeling an affinity for farmland”) could be the the first step toward that eventual goal.⁶⁷⁵

672. Ibid.

673. T Lehman, "Public Values, Private Lands: Origins and Ironies of Farmland Preservation in Congress," *Agricultural History* 66, no. 2 (1992): 257-272.

674. Fischel, William A "The Urbanization of Agricultural Land: A Review of the National Agricultural Lands Study."

675. U.S. Government Printing Office, "Protection and Enhancement of Soil and Water Resources" (Hearings before the Subcommittee on Environment, Soil Conservation, and Forestry

The statement had a chilling effect on the members present in the room and the Jeffords bill never shook off the stigma that farmland protection was a ploy to get national planning. After many years of expiring in the House Agriculture Committee, the bill (now with 80 co-sponsors) finally made it to the floor of the full chamber in 1980. With the Farm Bureau vocally opposing the bill, however, it was primarily the members from the urban regions who voted for it falling short of majority.⁶⁷⁶ Rising prominence of other issues was another reason support for agricultural land use policies lost steam.

a) Interference from other corners

A few years earlier, the Nixon administration embarked on reforming agricultural commodity policy. The 1973 Farm Bill (the Agriculture and Consumer Protection Act)⁶⁷⁷ dropped the regular support prices for the various commodities and replaced them with lower “target prices,” as the Nixon administration wanted to do. The farmers would only be reimbursed if the prices fell below those levels. To retain the same income with lower prices, farmers converted more available land to production.⁶⁷⁸ Secretary Earl Butz worked to develop networks for exporting and to open international markets, efforts that at first provided ample demand for the production, sending prices for agricultural commodities upward. But guaranteeing demand from volatile export markets proved to be difficult. The boom from 1972

of the Committee on Agriculture, Nutrition, and Forestry: United States Senate, 95th Congress, August 2 and 4, 1977) (August, 1977)., p. 110, as alerted to by Lehman "Public Values, Private Lands: Origins and Ironies of Farmland Preservation in Congress."

676. Library of Congress, "Bill Summary and Status: 96th Congress, H.R. 2551" (THOMAS database) (February, 1980)., Lehman "Public Values, Private Lands: Origins and Ironies of Farmland Preservation in Congress."

677. Public Law 93-86.

678. Congressional Quarterly *Farm Policy: The Politics of Soil, Surpluses, and Subsidies*.

to 1975 could not be sustained, upsetting farmers across the board. The most visible symbol of discontent — American Agriculture Movement — was born in 1977. Within a year thousands of farmers from the movement drove their tractors to Washington to express dissatisfaction with policy. Politics continued to interfere even with the initial strategy to enhance farmer incomes through exports. The Carter administration, which had strong support from the farming community, imposed a grain embargo against the Soviet Union in response to its geopolitical expansionary activities. Although this action had support from the Republican Congress members who wanted to slow price inflation at home, Ronald Reagan campaigned against the embargo, securing the support of the farmers for his 1980 election.⁶⁷⁹

Conservation as a topic also received attention. In fact, SCS had enjoyed a favorable relationship with both parties in Congress throughout most of its history. Over the years, Congressional members had supported many conservation ideas, provided ideas for conservation programs, and protected SCS funding.⁶⁸⁰ And as funding rose pressure mounted to provide evidence of positive results.

The Rural Development Act of 1972 set the stage for collecting much needed information on resource conditions (the NRIs). The Act was primarily dedicated to providing funds for rural development and was meant to complement a provision in the 1970 Farm Bill to dedicate more attention to rural development issues. Under the leadership of Hubert Humphrey, a Democrat from Minnesota, Senate held 7 regional hearings and 10 days of hearings on the Hill to debate the 1972 Act. The resultant bill was passed unanimously in the Senate, although it faced some

679. Ibid.

680. Simms, Denton Harper *The Soil Conservation Service*.

opposition in the House.⁶⁸¹ Requesting more funds remained a controversial topic as the Ford administration moved to cut the budget deficit. How agencies spent their money was scrutinized more than ever. SCS did not have much credible evidence to defend its work.⁶⁸²

A hearing in August 1976 before the Subcommittee on Conservation and Credit in the House on the eventual Soil and Water Resources Conservation Act to require SCS to conduct regular appraisals of natural resources on private lands and to develop a long-range strategy plan pinned the Administration's position against that of Congress. The USDA and SCS officials presented the case that SCS already did what the bill proposed and that the bill would undermine the President's and Secretary's flexibility in requesting annual budget appropriations. Plus, it was a shame to take away funding from the traditional conservation programs to spend on monitoring.⁶⁸³ More so, in previous correspondence, a USDA Under Secretary claimed that the Act would be unconstitutional as written since separation of powers was not respected.⁶⁸⁴

Congress members responded that the expenditure of over half a billion dollars on conservation measures required justification. A Democratic representative from Kentucky, John Breckinridge, made the point that such an appraisal would show skeptics that much more conservation needed to be done. He also quipped that the OMB seemed to think "that the job of the Soil Conservation Service was — believe it or not — completed with the end of the dust-bowl [sic]," and that the OMB only understood annual budgeting and not long-term planning.⁶⁸⁵

681. Committee on Agriculture and Forestry, United States Senate, "The Rural Development Act of 1972: Analysis and Explanation, P.L. 92-419" , Lexis Nexis (October 3, 1972).

682. Personal Interview, 28.

683. U.S. Government Printing Office "Resource Conservation.", p. 11.

684. Ibid., p. 16.

685. Ibid., p. 16.

Kiki de la Garza, a Democrat from Texas, asked Victor Barry, the SCS Deputy Administrator, straight out whether the OMB prepared his testimony, thereby preventing SCS to argue for higher budgets. Barry replied in the affirmative.⁶⁸⁶ “If we didn’t have something called OMB, we would have such a beautiful relationship with you [SCS],” replied the Representative.⁶⁸⁷ In general, House members expressed frustration that farmers were plowing up their land at the expense of long-term sustainability enticed by the high commodity prices.⁶⁸⁸ Conservation was losing to economics, but the extent of the loss was unknown.

Congress demanded answers. Senator Herman Talmadge (D-GA), the Chair of the Agriculture Committee sent a letter to the USDA asking 85 questions on the status of conservation. Answering the questions required doing a full assessment of resource appraisals. A major effort was unleashed to do the task, with an external observer hired to give legitimacy to the process.⁶⁸⁹ Despite any protestations from the very top of the Administration, Senate wanted to institutionalize the process.

Senate Agriculture Committee quickly passed legislation to require SCS to make resource appraisals and to make long-term conservation plans in 1976. This happened without any public hearings, at least not to the knowledge of the Independent Cattlemen’s Association of Texas, an organization keenly following the course of land-use legislation. In contrast, the House version tamed any wording that might suggest that the results of the appraisals would be used in land use regulation, a move that secured the support of the industry.⁶⁹⁰ Overall, environmental groups and

686. *Ibid.*, p. 46.

687. *Ibid.*, p. 47.

688. *Ibid.*, p. 45.

689. Personal Interview, 27.

690. *Ibid.*

farmer and producer organizations came out in support of creating a long-range conservation program. Interestingly, all sides — environmental groups like the National Association of Conservation Districts and the Wildlife Management Institute, as well as farmer groups like the National Farmers Union — used data from the 1958 and the 1967 CNIs to demonstrate a worsening problem for soil erosion. Finally, both Chambers agreed on and passed a united version. President Ford responded by vetoing the bill.

Congress took up the issue again in 1977 with another set of hearings. Senator Dick Clark from Iowa announced that he was adding another cost-share program to the tune of \$1 billion a year to give to states to develop plans to comply with the tightening EPA water quality standards. While this provision didn't pass, the hearings were characterized by much support for increased funding for conservation. The \$2,500 dollar limit on cost-share expenses was questioned multiple times, and one after another, witnesses expressed their support for increased conservation funding.⁶⁹¹

Senator Clark noted that within the span of the several hearings Congress held on the topic he has seen an outpouring of support for greater emphasis on conservation. Yet from his perspective, he saw little interest in the topic among the House and Senate Agriculture Committee members themselves.⁶⁹² At the same time, the Public Works committees responsible for overseeing the EPA's new programs expected states to come up with water quality plans, including plans for dealing with nonpoint source pollution from agriculture. Agriculture committees recognized the burden that mandatory compliance would place on farmers who voiced strong opposition to the idea from the start. A representative from the Iowa Farm Bureau

691. United States Senate "Soil Conservation."

692. *Ibid.*, p. 34.

stated outright that “I would throw up my hands in horror, if the EPA were to administer such a program.”⁶⁹³ The looming deadline for the first round of Section 208 plans (described in the previous section) forced the issue to the fore on whether the USDA or the EPA should have the ultimate authority over agricultural pollution. The question of how to establish a national conservation policy played out in the hearings.

The eventual version of the Soil and Water Resources Conservation Act was supported widely in the Agriculture Committees and became law in November 1977, signed by President Carter (who campaigned on the issue). The issue of preserving agricultural farmland remained salient during the Congressional hearings on the Act. Most participants expressed concern at the rate of loss of prime agricultural farmlands, although many conceded that few data points existed to know the exact extent of the problem or which policy interventions may be most effective.

The passage of the Soil and Water Resources Conservation Act and the subsequent RCA process stimulated much discussion on how to proceed with conservation programs. A quick opportunity to affect the policy process came in 1980. The provisions of the 1977 Farm Bill were set to end by December 31st of that year. President Carter instructed the USDA to begin work on the titles for the replacement farm bill. He wanted a “Conservation Title” to be included, and for the RCA team leadership to contribute to it. Another piece of direction was to curb the outsized agricultural subsidies, especially milk and tobacco payments. The USDA’s initial Conservation Title came out of the RCA process, according to then-participants.⁶⁹⁴ In late 1980, President Carter endorsed the draft version of the Title.

The election of Ronald Reagan brought a new team to the USDA. Plus, Republicans now

693. U.S. Government Printing Office "National Agricultural Land Policy Act.", p. 60.

694. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983."

also controlled the Senate, meaning that committee chairmanship switched from senior Democrats to senior Republicans. President Reagan made few changes to the USDA's Farm Bill draft before submitting it to Congress for review. Secretary Block's first endeavor was to meet with the new Chairman of the Senate Committee on Agriculture, Republican Jesse Helms from North Carolina, to talk about the bill. Chairman Helms rejected the notion that tobacco subsidies would be cut, and senators from Vermont and New York objected to the reductions in dairy subsidies. Before long, subsidies were restored to above their original levels.⁶⁹⁵ Secretary Block's submission of the 1981 Farm Bill had no conservation title in the end.⁶⁹⁶

But conservation ultimately survived the process and Congressional members of the Agriculture Committees offered several bills to add specific conservation programs. SCS wanted to make sure that the RCA process would be used to inform policy. At one hearing on continuing the Rural Development and Conservation Program (RC&D) in 1980, Norman Berg in his capacity as the Chief of SCS testified that he expected SCS officials to be on the Hill much more frequently once the results from the RCA Program emerged.⁶⁹⁷

At the same time, processing the data from the National Agricultural Lands Study (NALS) was nearing completion. During the hearings on establishing a conservation title in the 1981 Farm Bill, conservation of prime agricultural land continued to be in the spotlight. In his tireless effort to address the issue, Representative Jeffords collected signatures from 100

695. Ibid.

696. U.S. Government Printing Office "Miscellaneous Conservation.", p. 352.

697. U.S. Government Printing Office, "Resource Conservation and Development Act" (Hearing before the Subcommittee on Environment, Soil Conservation, and Forestry of the Committee on Agriculture, Nutrition, and Forestry: United States Senate, 96th Congress, Second Session on S. 1942) (July 29, 1980)., p. 18.

members of Congress on a resolution to tackle the issue.⁶⁹⁸ The NALS director testified that the study found an “acceleration of conversion of agricultural land to nonagricultural uses” and urged Congress to consider financial incentives, “incentives to deflect development away from better agricultural land.”⁶⁹⁹ But the reliability of data was called into question. Representative Jeffords remarked that he was aware of a disconnect between the Agricultural Census numbers and the NRI results, which variously showed an increase or a decrease of millions of acres in farms.⁷⁰⁰ Both estimates were fairly accurate at the national level with a reasonable margin of error. Unfortunately, the argument hinged on that margin.

Debate on the conservation title continued and pieces started to fall together. The Resource Conservation & Development Program received wide support. Representative Ed Jenkins (D-GA) got 40 Congressional members to co-sponsor his version of the bill, and he was confident he could get 150 more since everyone could get behind it regardless of political ideology.⁷⁰¹ The program proved to be very popular in rural areas as Delegates heard over and over again. The Great Plains Conservation Program also enjoyed wide support.

Congress members and witnesses alike acknowledged that the current policy direction to produce as much as possible for export did not align with conservation goals. Thomas Barlow from the Natural Resources Defense Council stated that the “belief that more production means

698. U.S. Government Printing Office, "General Farm Bill of 1981 (Conservation, Credit, Rural Development)" (Hearings before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture: House of Representatives, 96th Congress, First Session on H.R. 1113, H.R. 1723, H.R. 2262, H.R. 2455, and H.R. 2994, Part 6) (March, 1981)., p. 2.

699. *Ibid.*, p. 8.

700. *Ibid.*, p. 18.

701. *Ibid.*, p. 26.

more income which then means more conservation” was a fallacy.⁷⁰² Conservation required policy interventions, many of which were the same ideas discussed in the RCA National Conservation Program. Cross-compliance received support from environmental groups, while the National Association of Conservation Districts (NACD) reminded Congress that while targeting may be a good concept, all areas should be covered by some baseline assistance. Representative Jeffords pointed out that expenditures were being reduced across the board, and new money for programs would be difficult to find. Hard numbers on results were needed.

The RCA was mentioned many times in testimonies since it got to the core of assessing conservation programs. Yet the process revealed many gaps in the data and highlighted the difficulty of quantifying preventive programs. R. Neil Sampson of the NACD stated plainly, “[g]etting hard data is very difficult. It is like asking yourself how many toothaches you did not get because you went to the dentist last year.”⁷⁰³ Other analysts recalled that participants knew not to trust the existing sources since statistically valid results were still unavailable, although the 1977 NRI data were an improvement.⁷⁰⁴

The National Grange and the American Farmers Union came out for more funding for conservation and for farmland protection. The idea of tax credits for investments in conservation measures received support from all sides. The Farm Bureau favored such an approach over

702. Ibid., p. 44.

703. Ibid., p. 54.

704. Personal Interview, 41, 27.

additional federal cost-share projects (the Bureau usually preferred as little federal oversight as possible). Other witnesses supported increased funding for all USDA conservation programs.⁷⁰⁵

The Agriculture and Food Act of 1981⁷⁰⁶ passed in both chambers by a safe margin in the fall of 1981. Title XV in the Farm Bill had the first conservation title in the history of farm bills. It included a Special Areas Conservation Program to allow for targeting of funds and matching grants for conservation measures, authorizing conservation loan programs. It also contained a Farmland Protection Policy Act (introduced by Representative Jeffords) requiring the USDA to suggest a policy for farmland protection within a year and to continue collecting information on the subject. This was a weak cousin of the original Jeffords bill now stripped of all of its teeth and for many years not implemented in any serious capacity.⁷⁰⁷

The commodity programs underwent a significant change with the 1981 Farm Bill. Congress was forced to design a bill with payments that fit within a prescribed budget cap, pitting commodity groups against each other in an effort to get their share of the pie.⁷⁰⁸ The bill came at a time of falling farm incomes and uncertainty over export opportunities. President Carter cut off the grain exports to the Soviet Union when it invaded Afghanistan, although the USDA softened the blow by purchasing the grain instead itself and raising loan prices on major commodities. The commodity titles in the 1981 Farm Bill (opposed by every large farm group

705. U.S. Government Printing Office, "General Farm Bill of 1981" (Hearings before the Committee on Agriculture house of Representatives, 97th Congress, First Session, April, 1981, Part 9) (April, 1981).

706. Public Law 97-98.

707. Lehman "Public Values, Private Lands: Origins and Ironies of Farmland Preservation in Congress."

708. Congressional Quarterly *Farm Policy: The Politics of Soil, Surpluses, and Subsidies.*, p. 147.

other than the American Farm Bureau) promised austerity for future payments as Congress passed a measure aimed at reducing budgets and so the size of farmer payments.⁷⁰⁹

Circumstances, however, intervened. Favorable weather helped produce record yields for wheat, corn, and other commodities. Rising interest rates (which some analysts attributed to the rising national deficit) pushed up production costs. At the same time, exports fell as the dollar strengthened, translating into domestic commodity markets flooded with oversupply and squeezed by the production costs. Prices dropped. Farm income followed suit, dropping to the lowest level since the Great Depression. Target prices for commodities were triggered and billions of dollars poured into the farming sector in subsidies.

Despite low prices, farmers continued to plant widely in 1982, and the USDA moved to enact an aggressive payment-in-kind program that rewarded farmers for keeping fields idle. The acres were chosen based on the lowest bid.⁷¹⁰ Such a program existed in the 1960s, but this time many more crops were eligible and payments were higher, ensuring enthusiastic participation and massive expenses for the federal government. In 1983 the cost reached \$9 billion.⁷¹¹ The USDA total budget went up two and a half times from 1981 to 1983.⁷¹² What started as an attempt to reduce the burden of agricultural subsidies on the federal budget ended up as one of the most expensive periods. The dramatic changes in commodity prices and commodity policy during this time drove the discussion of most agricultural issues, including conservation. And

709. ERS "History of Agricultural Price-Support and Adjustment Programs, 1933-84: Background for 1985 Farm Legislation."

710. U.S. Government Printing Office "Miscellaneous Conservation.", p. 69.

711. ERS "History of Agricultural Price-Support and Adjustment Programs, 1933-84: Background for 1985 Farm Legislation."

712. Office of Management and Budget, "Historical Tables: Budget of the U.S. Government" (2010), <http://www.gpoaccess.gov/usbudget/fy11/pdf/hist.pdf>.

although the conservation title was on the books and the RCA Program completed, the Reagan administration moved slowly to implement changes. Most telling is that the Administration consistently asked for funding levels below those suggested in the RCA.

2. 1985 Farm Bill

In a 1983 hearing on conservation, Representative Ed Jones (D-TN), the Chairman of the Subcommittee on Conservation, Credit, and Rural Development sounded frustrated in his opening statement that one of the discussion points was “the administration’s failure to implement the conservation title of the 1981 farm bill.”⁷¹³ USDA officials responded that the Department had moved to implement those changes that did not require new funding.⁷¹⁴ And everyone was keenly aware that the Administration’s focus was on cutting Federal expenditures and asking for new money went nowhere. The actual policy proposals under discussion would either shift existing funding for programs to make them more efficient or introduce restrictions on funds going to farmers. Many of the proposals were based on those in the RCA Program, and some of these had already been introduced for inclusion in the 1981 Farm Bill but were cut in conference. The proposals on the table again included cross-compliance, eliminating subsidies for destructive activities (like converting grasslands or farming on highly erodible lands without applying conservation measures), and encouraging cost-effective conservation practices.⁷¹⁵

These suggestions were not new, and often the actual details dulled any potential significant impact on the producer. Representative Cooper Evans (R-IA) who introduced the

713. U.S. Government Printing Office "Miscellaneous Conservation."

714. Ibid., p. 23.

715. Ibid., p. 1-8.

cross-compliance feature argued that his bill offered “a variety of incentives and ... a variety of rather mild penalties...” He concluded, “I don’t think the farmers out there are ready for severe cross compliance requirements.”⁷¹⁶ But the Representatives recognized the discrepancy between the commodity policy that encouraged more and more production and conservation goals. “Conservation farmers once again received worst treatment than their neighbors who had been growing wall-to-wall cash grain crops,” lamented the Vice President of NACD.⁷¹⁷

More specifically, the agricultural set-aside program relied on historical production acreage to calculate each farmer’s required reduction in acreage. The more farmers produced, the less they would be required to set aside. The incentive never to reduce production was built into the commodity programs. One alternative was to create a set-aside program specifically for conservation purposes. The acres set aside through the program would be counted toward the total number the farmer would otherwise have to pull out of production.⁷¹⁸

Many elements of the future conservation policy began to coalesce in the few years before the 1985 Farm Bill. Senator Bill Armstrong (a Republican on the Senate Energy and Natural Resources committee) and Representative Hank Brown (a Republican on the House Natural Resources committee), both from Colorado, introduced a bill to make those farmers who worked highly erodible farmlands ineligible for commodity supports and other government payments. This provision, known as cross-compliance (and a related term “sodbuster” that referred to penalties for breaking out highly erodible lands), received a great deal of support from environmental groups like the National Audubon Society, the Conservation Foundation, the

716. Ibid., p. 21.

717. Ibid., p. 51.

718. Ibid., p. 51-52.

Sierra Club, the Soil Conservation Society of America, and the American Farmland Trust. The Rocky Mountain Farmers Union, the Society for Range Management likewise supported sodbuster penalties and increased funding for conservation.⁷¹⁹ The National Cattlemen's Association was skeptical of the concept of cross-compliance, but favored additional money for conservation.

Two bills sponsored by Representative Cooper Evans from Iowa offered tax incentives for implementing conservation practices (although such financial matters would have to be handled through the Committee on Ways and Means). Another bill, H.R. 3457 combined the cross-compliance idea with a Conservation Reserve Program (CRP), similar to the expired Soil Bank. Senator Sam Nunn, a Democrat from Georgia, worked in his chamber to re-establish a reserve program.⁷²⁰ The USDA did not support the creation of the CRP initially. The National Farmers Organization also opposed such a reserve out of budgetary concerns. The National Pork Producers Council opposed the CRP arguing that it would interfere with free market processes.⁷²¹

But the idea received support from Representative Ed Jones, the Chairman of the House Subcommittee on Conservation. His staff worked with the NACD to draft legislation language for a program that focused on placing highly erodible acres into a conservation reserve.⁷²²

719. *Ibid.*, p. 72.

720. U.S. Government Printing Office, "Oversight of Conservation Programs," (Hearing before the Subcommittee on Conservation and Forestry of the Committee on Agriculture, Nutrition, and Forestry, United States Senate, One Hundredth Congress), Web (U.S. G.P.O., March 24, 1988), p. 17.

721. U.S. Government Printing Office, "General Farm Bill of 1985" (Hearings before the Committee on Agriculture, House of Representatives; 99th Congress, 1st Session, Part 1, March-May 1985) (1985), p. 587.

722. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 43.

Interestingly, in introducing their bills most legislators pointed out that their suggestion did not regulate land use in any way. The fallout from private land holders during the debate just a few short years ago on establishing national land use policy was still palpable. The American Farmland Trust once again voiced its concern that the USDA was making zero progress toward implementing the Farmland Protection Policy Act included in the Conservation Title of the 1981 Farm Bill, but the issue seemed much farther from Congress members' minds than during the late 1970s.

Legislative action on cross-compliance was seen as necessary, since it would be difficult for the USDA to implement it through administrative means because of political reasons.⁷²³ Plus, the National Cattlemen's Association secured a legal memorandum from the National Agriculture Legal Fund, Inc., questioning the unilateral authority of the USDA to carry out cross-compliance.⁷²⁴ The Association declared its formal opposition to the concept. The Farm Bureau followed suit.⁷²⁵

On the other side, the Soil Conservation Society (founded by the legendary H. H. Bennett) represented by Norman Berg, who had recently retired from SCS to make room for a chief who was now politically appointed, suggested that cross-compliance should be extended not only to farmers with the Farmers Home Administration's loans, but also for users of crop insurance.⁷²⁶ USDA officials supported cross-compliance with Farmers Home loans and crop

723. U.S. Government Printing Office "Miscellaneous Conservation.", p. 58.

724. Ibid., p. 73.

725. U.S. Government Printing Office, "Long-term Farm Policy to Succeed the Agriculture and Food Act of 1981" (Hearings Before the Committee on Agriculture, House of Representatives, 98th Congress, 2nd Session, February 28 and 29, 1984, Part 1) (February, 1984)., p. 324.

726. U.S. Government Printing Office. "Miscellaneous Conservation"., p. 325.

insurance. But they were reluctant to endorse more severe integration of commodity programs and conservation, and preferred to move slowly on any changes to the eligibility criteria for commodity programs.⁷²⁷

In an unexpected move, the NACD came out for requiring a minimal level of conservation practices for recipients of federal subsidies. The NACD representative testified that this issue proved to be divisive, but the concern that voluntary measures may not be sufficient to tackle erosion prevailed.⁷²⁸ It also did not go unnoticed that the switch to the PIK (payment-in-kind) program ended up costing many billions in 1983, just when the Reagan administration asked for much less money for conservation — less than the low bound the RCA Program envisioned.⁷²⁹

The concept of cross-compliance had been around for a few years by that point. A few environmental groups tried to float the idea out for the 1981 Farm Bill. Young representatives from the groups — or the “Three Musketeers” as they became known — went Congress member to Congress member introducing the concept, only to find resistance. Farm subsidies were seen as entitlements, so asking for something in return went beyond the possibility spectrum.⁷³⁰ Several years and one RCA later, the concept was less reviled.

The CRP and other policy tools began to take more concrete shape in 1984. During the hearings on the 1985 Farm Bill, support for conservation was nearly unanimous. The USDA expressed its preference to continue attaching a conservation title to the omnibus Farm Bill

727. U.S. Government Printing Office "Miscellaneous Conservation.", p. 347, p. 410.

728. Ibid., p. 48.

729. Ibid., p. 63.

730. Personal Interview, 33.

(although it opposed this for the 1981 Farm Bill) rather than having separate bills, so conservation policy was debated alongside commodity programs.⁷³¹ The former Secretary of Agriculture, Bob Bergland (now representing a rural development non-profit), suggested a targeted approach to the CRP with a bidding process to select the acres. Such a program could also help with the surpluses.⁷³² Farm incomes kept falling in 1984 despite the infusion of federal funds. And another disastrous surplus crop was expected.⁷³³ By the end of 1985, the USDA had 4 billion bushels of corn and 2 billion bushels of wheat in storage.⁷³⁴

What united many participants in the debate was their dissatisfaction with the PIK program. Cattle producers complained that it drove up their production costs, and the president of The Fertilizer Institute announced that PIK cost the industry \$2 billion in foregone sales. Both groups promised to become more active in actual development of policy on the Hill. And most industry participants came out in support of conservation initiatives. The sudden idling of 80-some million acres without any conservation forethought troubled environmentalists and producers alike.⁷³⁵

To make such idling more consistent with conservation objectives, the NACD proposed that any time the Federal government paid farmers to pull land out of production, the farmer

731. Ibid.

732. U.S. Government Printing Office "Long-term Farm Policy to Succeed the Agriculture and Food Act of 1981.", p. 41.

733. Ibid.

734. U.S. Government Printing Office, "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program" (Hearing Before the Subcommittee on Environment, Credit, and Rural Development; House of Representatives), Web (August 2, 1994), p. 8.

735. U.S. Government Printing Office "Long-term Farm Policy to Succeed the Agriculture and Food Act of 1981."

should be required to apply cover crops, crop residues, or another conservation practice deemed appropriate for the local situation to limit environmental damages.⁷³⁶ The Fertilizer Institute agreed that such surplus-control acreage reserve programs should be connected to conservation.⁷³⁷ The American Agriculture Movement, Inc. — in its heyday responsible for bringing thousands of farmers in their tractors to Washington to demand relief during the economic downturn of the late 1970s — also supported a reserve program similar to the Soil Bank with 5 to 10-year contracts.⁷³⁸

State-level departments of agriculture wrote Congress to express their support for expanded conservation policies and long-term conservation programs. They saw firsthand how producers abandoned conservation practices to take advantage of rising prices in the late 1970s and then idled millions of acres of bare land for the PIK program in the early 1980s.⁷³⁹ By 1985, the American Farm Bureau Federation offered its support for the CRP and limited cross-compliance.⁷⁴⁰ The working figure for the size of a reserve program was 30 to 40 million acres in 1984.⁷⁴¹ In 1985 hearings, the figure increased to 45 to 50 million acres.⁷⁴² The Farm Bureau estimated the cost of \$2.5 billion at around \$40 per acre for a 15 million acre reserve for 4 years

736. *Ibid.*, p. 264.

737. *Ibid.*, p. 439.

738. *Ibid.*, p. 466.

739. *Ibid.*

740. U.S. Government Printing Office "General Farm Bill of 1985.", p. 395.

741. *Ibid.*, p. 429.

742. U.S. Government Printing Office, "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs)" (Hearings before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture: House of Representatives, 99th Congress, March-May, 1985: Part 2) (1985)., p. 740.

(considering a \$70 initial establishment allowance and withdrawal of a quarter of participants in the later years).⁷⁴³

The Administration's proposed Farm Bill included only a cross-compliance provision.⁷⁴⁴ One analyst plainly stated that Secretary Block and other top officials at the USDA favored the creation of a reserve, but could not say so on the record because of OMB opposition to the costly program.⁷⁴⁵ President Reagan's recommended budget for fiscal year 1986 cut funding for USDA conservation programs by two-thirds, leaving about a third of technical staff in conservation districts.⁷⁴⁶

Another issue that the environmental groups brought up was the preservation of wetlands. Sierra Club testified to the need to include a measure on wetlands.⁷⁴⁷ The National Audubon Society, the Sierra Club, and the National Wildlife Federation moved to propose a swampbuster provision to prohibit conversion of wetlands.⁷⁴⁸ These and many other environmental and conservation organizations united as the "Conservation Coalition" to present consistent testimony to Congress.⁷⁴⁹ The House Subcommittee members proved receptive to the idea.⁷⁵⁰ Representative Tom Daschle from South Dakota introduced a bill with the swampbuster

743. Ibid., p. 751.

744. Ibid., p. 662; Library of Congress, "Bill Summary & Status - 99th Congress (1985 - 1986) - H.R.1420: CRS Summary, THOMAS" , Web (2011), <http://thomas.loc.gov/cgi-bin/bdquery/z?d099:HR01420:@@@D&summ2=m&> (accessed November 21, 2011).

745. U.S. Government Printing Office "General Farm Bill of 1985.", p. 435.

746. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 994.

747. U.S. Government Printing Office "General Farm Bill of 1985.", p. 1002.

748. Sampson, Neil R *With One Voice: The National Association of Conservation Districts.*, p. 46.

749. Ibid., p. 48.

750. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 736.

provision to apply to future conversions (and not to past conversions).⁷⁵¹ Chairman Ed Jones wondered whether it was too much to include wetlands in this fight and whether enough data were available to proceed with a concrete policy.⁷⁵²

The environmental groups also brought up the idea of synchronizing the Small Watershed Program run by SCS with conservation objectives and prohibit channelization, wetland drainage, and other ecologically destructive practices.⁷⁵³ These activities had been frequent topics of disputes in court with environmentalists challenging SCS decisions usually on the basis of lacking an Environmental Impact Statement for the specific project.⁷⁵⁴

While the momentum helped pass many of the ambitious initiatives, other proposals fell by the wayside. For example, Representative Webb Franklin, a Republican from Mississippi, proposed a very long-term government easement program for marginal lands. Farmers would relinquish their marginal lands or lands suitable for wildlife habitat to the USDA for not less than 50 years (for the USDA to apply any conservation practice it wished) and in return the government would write down their debt for the land value of the relinquished land.⁷⁵⁵ Despite the interest from the subcommittee, this provision did not move forward. Still, the final Conservation Title was strong.

751. U.S. Government Printing Office, "Conservation, Wetlands, and Farm Policy" (Hearing before the Committee on Agriculture, Nutrition, and Forestry, United States Senate), Web (Washington, March 14, 1994)., p. 29.

752. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 995.

753. *Ibid.*, p. 793.

754. SCS, "Cases Challenging Soil Conservation Service Activities on Environmental Grounds" (Internal Paper) (April 1, 1974).

755. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 27.

Many attributed the successful passage of the Conservation Title in the 1985 Farm Bill to the collaboration between different constituency groups. This appears to have been accurate. Strengthening conservation programs received support from farmers, the agricultural-financial sector, fertilizer groups, in addition to the expected support from environmental and wildlife organizations. Not only outside groups, but strong leaders with the USDA and NRCS worked to promote the RCA program and conservation.⁷⁵⁶

The reach of the Congressional support was reflected in the number of Congressional endorsements of individual conservation bills that eventually fused into the Conservation Title in 1985. For instance, Senator Armstrong's version in 1984 had 31 additional co-sponsors. The corresponding bill in the House had 34 co-sponsors.⁷⁵⁷ This particular bill died in conference after the Administration and the Senate Agriculture Committee failed to agree on the size of the conservation reserve.⁷⁵⁸ Still, the extent of congressional support was impressive. In total, there were over a dozen bills on conservation introduced during the 99th Congress alone.⁷⁵⁹ Moreover, other members of Congress not on either Chamber's Agriculture Committees but interested in farm policy formed a "Congressional Ag Forum." Conservation measures received support among the participants as well.⁷⁶⁰

756. Personal Interview, 28.

757. Library of Congress, "THOMAS Database: Legislation History" , Web (2011), <http://thomas.loc.gov/home/thomas.php#> (accessed November 21, 2011).

758. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 655.

759. C Carroll, "Soil Conservation: Proposed Legislation in the 1985 Congress," *SDL Rev.* 31 (1985): 453.

760. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 662.

The final Conservation Title in 1985 included: a cross-compliance provision which made farmers whose farms were on highly erodible lands ineligible for price support programs, crop insurance programs, disaster payments, loans from the Farmers Home Administration, and other support unless the farmer was applying an approved conservation plan; another provision with the same restrictions to apply to farmers producing on converted wetlands (swampbuster); a Conservation Reserve Program under which owners of highly erodible lands could enter into 10- to 15-year contracts to take land out of agriculture and to apply vegetative cover to it; and smaller provisions.⁷⁶¹

The swampbuster provision was an unexpected surprise in the final bill. Environmental groups could not agree whether introducing it would pay off or would push the whole deal over the precipice. Finally they agreed to risk it and pull back at first sign of trouble.⁷⁶² This proved to be unnecessary.

One staffer who worked on the 1985 Farm Bill remembered walking home with colleagues from the Hill late at night after a hard-fought session on getting cross-compliance into the bill. The group discussed with relief that at least there was no chance for a repeat fight with the swampbuster provision since there was no way it would be on the table. When they came back for more negotiations early next morning, the swampbuster provision reappeared. It was Senator Bob Kasten (D-WI) on the Appropriations Committee and his staff whose tenaciousness prevailed.⁷⁶³

761. U.S. Government Printing Office, "Food Security Act of 1985" (Conference Report to Accompany H.R. 2100, Report 99-447) (December 17, 1985).

762. Personal Interview, 27.

763. Personal Interview, 28.

The provisions did not kick in retroactively. Farmers affected by cross-compliance had until 1990 to start implementing a conservation plan and until 1995 to fully comply with such plan. This meant an enormous increase in the workload for the SCS technical personnel. Hundreds of thousands of conservation plans had to be written in a hurry.

Highly erodible lands were those lands that fell into land classes IV, VI, VII, or VIII or those lands with a soil loss rate higher than the tolerance level or the "T" factor. This was a point of contention between the USDA which preferred using land classes and the environmental groups who made the case for a more nuanced tolerance level approach.⁷⁶⁴ The Farm Bureau also preferred using the "T" factor.⁷⁶⁵ SCS already used the "T" factor concept in the RCA appraisal.

The bill was a compromise on all sides. Farmers who were already cultivating crops on erodible lands were not disqualified from benefits. They just had to develop conservation plans within the next five years. They had an additional five years to comply. Congress mandated that the CRP acreage were increased rapidly to 40 million acres by 1990 with limited flexibility on yearly enrollments to adjust for varying economic conditions. By writing into law the speed of enrollment, Congress checked the Reagan administration's attempt to limit the size of the reserve and the corresponding expenditure. After all, how much such a reserve could cost was anyone's guess.

The Conservation Title further specified that no more than 25% of any one county's land could be enrolled into the conservation reserve, in response to the warnings from USDA

764. U.S. Government Printing Office "General Farm Bill of 1985 (Conservation, Credit, and Rural Development Programs).", p. 743.

765. *Ibid.*, p. 745.

economists of a potential negative economic impact on the local economy in rural counties where the agricultural sector could be significantly reduced in favor of set-aside conservation. An eighth of the CRP land could be planted with trees (to the “extent practicable”), and all of the CRP land would have to be under an appropriate conservation plan with cost-share provided by the USDA. SCS remained mostly a technical agency. Other USDA agencies retained primary duties over financial assistance for conservation programs or conservation enforcement disputes. The Agricultural Stabilization and Conservation Service (ASCS) continued to oversee financial assistance for conservation programs like the Agricultural Conservation Program (ACP), Emergency Conservation Programs and other smaller programs, and to handle enforcement violations.⁷⁶⁶ It also took over administration for the CRP. SCS continued to administer the popular cost-share Great Plains Conservation Program as well as provided technical assistance on conservation for all USDA conservation initiatives.

Additionally, the 1985 Farm Bill pushed the deadline for the next RCA appraisal and a National Conservation Program until the late 1980s. Despite earlier dissatisfaction with how the RCA Program played out, the NACD argued for strong Congressional support of continuing the process and extending it to 2005.⁷⁶⁷ This did not happen. Implementation of the Farmland Protection Policy Act was also postponed until 1987.⁷⁶⁸

When President Reagan signed the Farm Bill just days before Christmas of 1985, many environmentalists hailed the Conservation Title as one of the most significant accomplishments

766. *Ibid.*, p. 733.

767. U.S. Government Printing Office, "Reauthorization of the Agriculture and Food Act of 1981" (Hearings before the Committee on Agriculture, Nutrition, and Forestry: United States Senate, 99th Congress, Part II) (April 15, 1985), p. 260.

768. U.S. Government Printing Office "Food Security Act of 1985."

in conservation policy since the creation of SCS in the 1930s. But from bitter past experience, they also realized that the success of programs depended on their actual implementation, which was uncertain.

3. Analysis

While the hearings and other sources provide an overview of the issues before the Agriculture Committees, they do not address the question of how NRIs and RCAs may have affected policy. To get closer to that answer, I consider the two specific questions that tie the hearings and arguments presented to the SCS information products.

1. Did the House and Senate Agriculture Committee members receive information collected by NRCS?

The answer to this question is a strong yes, based on my assessment of the publicly available hearings and interviews with the participants. Congressional members themselves sought information and mandated its collection. SCS leaders regularly talked about the inventories and their results starting with the earliest surveys. When the RCA appraisal and the RCA Program were in the works, Congress heard about their progress from USDA and SCS officials on a regular basis and became impatient with delays. Once the results became public, other groups brought up the conclusions derived from the appraisal and the National Conservation Program. The program became the baseline for discussions on structuring the conservation titles in 1981 and 1985. The agency's annual Green Sheets describing each

program and its budget mentioned prominently the RCA process and the RCA results showing gaps in conservation.

Several consistent themes emerged from analysis of the types of arguments different players used to justify their positions. Many used strong evidence to back their positions. Economic analyses, environmental data, and world population trends were regularly invoked to support different positions from all sides. Generally speaking, the environmental groups and SCS officials more often invoked the NRI. But they used it to provide not only an argument based on the environmental picture, but also on economic and productivity grounds. Farmer groups mentioned the NRIs primarily in the context of economics. Still, environmental groups made more frequent use of NRI and RCA information, especially as the debate on the 1985 Conservation Title heated up. The NRIs and the RCA were not the only pieces of information frequently brought up. For example, the EPA's five-year study on the Chesapeake Bay also received attention, as did government reports evaluating individual agricultural and conservation programs of the USDA.

Other arguments contained few surprises. Most testimonies expressed support for SCS and its work, and groups from all corners wanted to see more dollars dedicated toward the agency's programs. One observation about the hearings is that farmer groups were more likely to advise the agriculture committees on the course of action to take without providing justifications. Since written testimonies could contain them, the presenters did not spend the allotted time on this. Representatives of environmental and public interest groups worked harder to incorporate factual information into their testimonies. One exception to this was the issue of

retaining agricultural prime farmlands. Although advocates referred to the results from NALS, more often they simply stated their concern over the issue without going further.

This analysis is far from exhaustive, since many hearings were not published and many arguments eluded classification. The increase in the use of available information comes through, however. The NRI results and the RCA appraisal provided ammunition to proponents of conservation.

Taking a step back, however, reveals a more complicated picture. Using a database of the topics on which published and unpublished hearings took place, conservation and environmental issues took up little space relative to other topics. [Appendix E describes the data; Appendix F describes my analysis.] For example, House and Senate Agriculture Committee members heard debates on a spectrum of topics, with conservation issues occupying but a small portion of the total. Discussions on government subsidies dominated the agenda with the agriculture committees holding a quarter of the total hearings on the topic between 1963 and 1968. Agricultural marketing, agricultural trade, and general agricultural items made up over another quarter of the hearings in that period. Land and water conservation was the subject of 1.23% of the total hearings the two committees held. Public lands and forest management consumed around 2% of the hearings. Between 1969 and 1974, the percentage of hearings dedicated to public lands went up to 8.27%. Land and water conservation remained a low priority with less than 1% of hearings dedicated to it. In the latter half of the 1970s, land and water conservation went up to be nearly 3% of the hearings. This stayed about the same during the first half of the 1980s. Agricultural subsidies, trade, marketing, and food stamps were the more prominent topics.

Taking another step back shows that the two agriculture committees held fewer than 5% of the total number of hearings in the 1960s. The issue of government operations dominated the debate in about a quarter of the hearings. Defense and public land and water management were the topics of about 11% of the total hearings. The environment received attention at around 2.5% of the hearings. Between 1969 and 1974, the environment as a topic was discussed at 4.6% of the hearings. Public lands and water management was the main topic at 9% of the hearings. From 1975 to the mid-1980s, the proportion of the hearings dedicated to the environment stayed constant.⁷⁶⁹

2. Did policymakers choose policy alternatives consistent with NRI/RCA recommendations?

The answer to this question is yes. Congress built the 1981 Conservation Title in part based on the results coming from the RCA appraisal. During the debate on the 1985 Conservation Title, additional data from the 1982 NRI provided more impetus to reform USDA conservation programs. The finished RCA National Conservation Program gave credence to the idea that the public supported more emphasis on conservation. It also showed how it could be achieved and provided a platform for the discussion.

⁷⁶⁹ Baumgartner, Frank; and Jones, Bryan, "Policy Agendas Project" (Congressional Hearings), Web (2011), <http://www.policyagendas.org/> (accessed December 5, 2011).

Congress was keenly interested in the process and the outcomes. They trusted the RCA to outline an accurate depiction, despite the Reagan administration's efforts to frame the issue. As one SCS official recalled, she noticed an RCA brochure on Representative Berkley Bedell's (D-IA) desk. When asked about it, he responded that this was a reminder to make sure to appropriate enough money for the effort.⁷⁷⁰

Concluding remarks

Before turning to the overarching question, one final issue has to be addressed — namely, did USDA conservation program money go to where data indicated it was most needed? Given that during this period there was little effort to channel the money according to the severity of the need, the answer is unsurprising. Lack of data precludes a more definitive answer (or more sophisticated statistical testing), but pair-wise correlation analyses between state-level expenditures and inventory data reveal certain relationships. [Appendix E describes the data; Appendix F gives the full results.] For example, during the 1950s, the Agricultural Conservation Program money and the expenditures on the SCS Conservation Operations Programs correlated most closely with the acres of cropland in the state and the representation of the state on the House Agriculture Committee and the House Appropriations committee in some cases (although representatives from large agricultural states tended to vie for the membership).

A simple regression for 1983 (see Appendix F, Table 5) shows that membership on the committees did not drive outcomes. Water erosion rates and prime farmland acreage in states, on

⁷⁷⁰. Personal Interview, 15.

the other hand, showed significant positive impact on conservation operations funding, even after controlling for the total acreage of working lands (i.e. cropland, pastureland, and rangeland).

Finally, the answer to the overriding question of whether the National Resources Inventories (and other products derived from it) advanced conservation policy during this period is yes.

This period saw the beginning of a major data-collecting effort at SCS. The first RCA appraisal was completed and the first modern NRI took place in 1982. Significant innovation in employing satellite data and in calculating soil erosion made regular updates feasible and results more reliable. The RCA National Conservation Program made use of computer models to evaluate competing proposals, enabling additional layers of interest to be overlaid with primary inventory data.

The results showed minimal progress on conservation and the concentrated nature of erosion problems. By the end of 1985, the stage was set to take conservation seriously. The RCA appraisal and the NRI figured prominently in the debate. For some policymakers the RCA was a reminder that the budget fight had to continue, as one participant recalled from a conversation with the Representative.⁷⁷¹

Despite this example of data informing policy, it should be reiterated that all participants recognized that the development of the National Conservation Program was a political process.⁷⁷² While the RCA team consulted the 1977 NRI data to suggest a combination of initial policy alternatives, political considerations impacted the final alternatives chosen. For example,

771. Personal Interview, 15.

772. SCS internal document "Internal Review of "Evaluating the Evaluators: RCA in Retrospect"."

although the RCA appraisal found improved conditions on privately owned rangelands, their omission from the original National Conservation Program proposal caused a stark reaction from rangeland operators. The final report included rangeland. The data did not support nationwide conclusions about irrigation trends because data were only collected for seventeen Western States, yet public comments indicated that water management was a national concern. The issue was promoted to be one of the high priorities. Other issues were off the table.

The broader USDA strategy to manage commodities through encouraging exports and increased production was hardly questioned. Its popularity in Congress and with successive executive administrations and producers prevented much inquiry into conservation effects of such standard practices. In large part, the final national program was based on an economic efficiency criteria. Political sensitivities around the final report were high. Although the final NCP report was finalized by September 1982, the Administration did not release it until the very end of 1982 as it considered the policy implications.⁷⁷³

The politicization of the report did not end with its public release. By the time the USDA officials were explaining the results to the House Subcommittee on Conservation, Credit, and Rural Development in 1983, water quality as a goal was downgraded from being one of the primary objectives to a lower level designation as one of the national priorities.⁷⁷⁴ So while overall the NRIs did provide background information for policy decisions, unsurprisingly, politics remained an important driver for shaping the outcomes.

773. Williams, Kenneth, "An Insider's View of the RCA Process" (Remarks by Kenneth Williams, Deputy Chief for Planning and Evaluation at the RCA Symposium on Future Agricultural Technology and Resource Conservation in Washington, DC), Kenneth William's papers (December 7, 1982).

774. U.S. Government Printing Office "Miscellaneous Conservation.", p. 26.

Chapter 5: Period 2, 1985 up to 2001

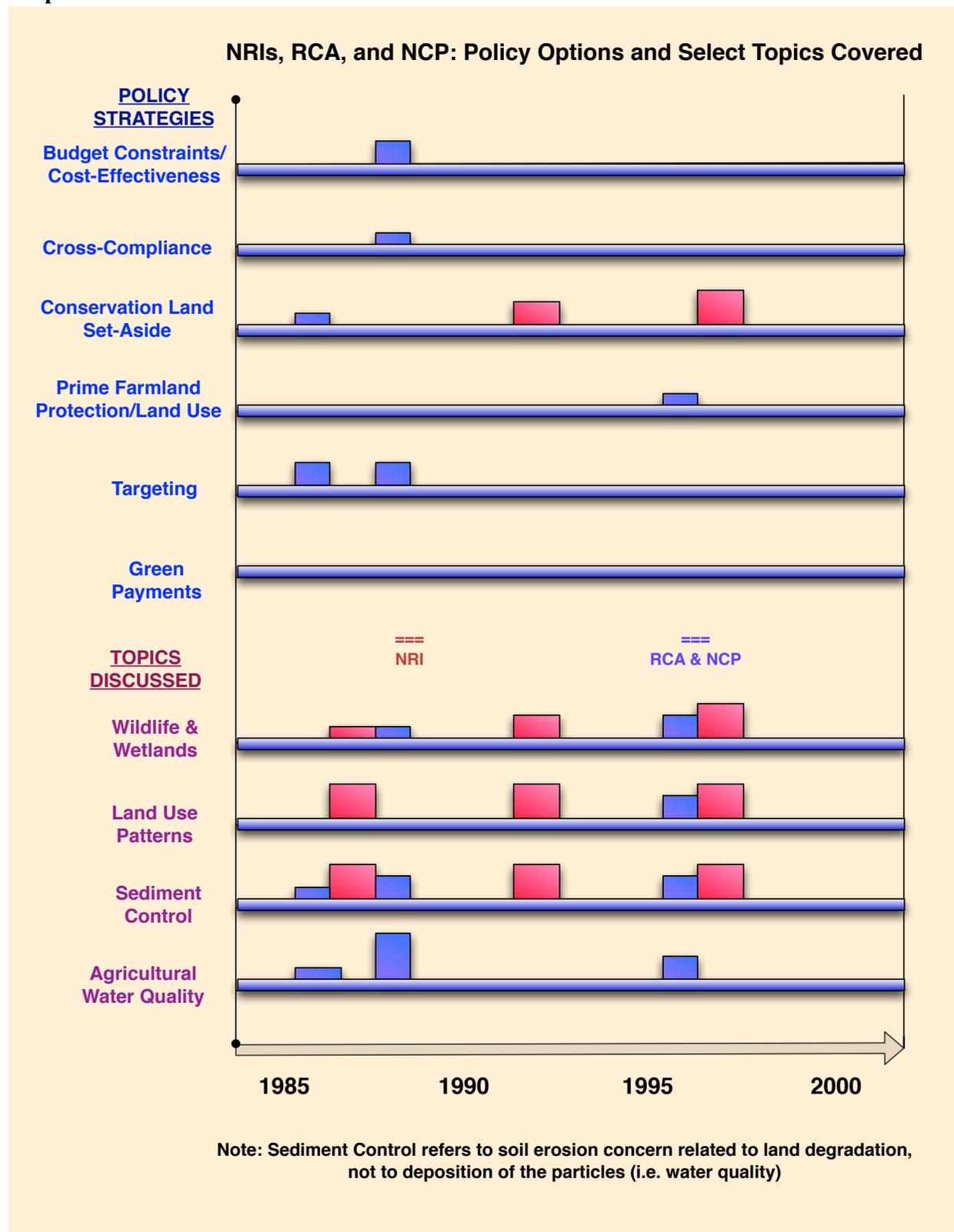
How did SCS gather information from 1985 to the early 2000s?

The framework of this chapter is similar to the previous one. The first narrative that I consider is the information collecting element within SCS. At the end of this section, I go back to two specific questions I laid out at the beginning of this work. Did the SCS allocate money and staff time to this effort? And did the agency provide information to external users?

Information in this section is based on archived materials and internal documents. Just like the previous section, I looked through hundreds of records. Additional information also came from the interviews conducted with current and retired agency officials.

The main findings of the chapter and what type of information was actually collected is summarized in the graph below. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones. The different colors indicate categories of information products. The NRIs are in red and the RCA appraisals and the RCA National Conservation Program products are in blue. Note that the sediment category is distinct from soil erosion, which is a more encompassing term. Sediment refers to land degradation without regard for its associated effects on nutrient run-off.

Graph 8. Major policy considerations and topics addressed by NRI and NRI-related products from 1985 to 2001.



1. Mid-1980s reorganizations and the 1987 NRI

The Conservation Title in the 1985 Farm Bill propelled conservation to the top of the agenda for the USDA. By some accounts, even SCS leaders were taken aback by the scope of the outlined programs after reviewing the details of the bill. In a sequence of speeches in 1986, Secretary Block announced to USDA employees across different agencies that conservation was now a component of all USDA programs. Other changes were already underway. Just two years before, Pete Myers, the Chief of SCS, left to pursue a successful career closer to the very top of the Department.⁷⁷⁵ In his stead, the Secretary appointed Wilson Scaling, a cattle rancher from Texas.

Right before Chief Myers left in 1984, SCS was reorganized. The number of deputy chief areas was reduced from 6 to 4 by combining the office of the Natural Resource Assessments with the office of Planning and Evaluation to shape the Deputy Chief for Assessment and Planning area, and by adjoining state and local operations into a Deputy Chief for Programs area. The divisions within the area included the Appraisal & Program Development Division — the office responsible for the RCA appraisals and the RCA National Conservation Program combined with program development. This was also the same area with the Resources Inventory Division, home of the NRI, and the Evaluation & Analysis Division which supported the NRI analysis effort. The Budget Planning & Analysis Division was also under the same roof. This arrangement did not last long. By the end of August in 1987, another reorganization pulled Budget Planning & Analysis out and combined it with a newly created Strategic Planning & Policy Analysis division to establish an Assistant to the Chief Strategic

⁷⁷⁵. Personal Interview, 5.

Planning & Budget Analysis office, bringing the RCA appraisal with it. The Resources Inventory Division and the rest of the divisions were reassigned to the Deputy Chief for Technology area.⁷⁷⁶ The RCA functions were separated from the NRI area.

Following the enormous undertaking that was the 1982 NRI and the complaints of the burden on the field staff's time, the 1987 NRI had to be streamlined. Advances in remote sensing technology offered such an opportunity, and a Remote Sensing Pilot Project was underway in 1985 to determine its feasibility for collecting NRI data. The goal was to reduce the time SCS field staff spent on collecting data for the NRI by half.⁷⁷⁷ The fundamental major components had to remain stable, however, to make data useful for policy analysis. These included soil type and soil erosion, presence of cover and land use, potential cropland conversion, land and conservation treatment needs, and vegetative conditions including wetlands and pasture. Yet SCS staff acknowledged that important issues, such as water quality, off-site erosion impacts and waste disposal, remained outside the scope of the inventory, but needed to be addressed on a national scale through different means. The Remote Sensing Pilot Project was completed with just 25% of the allocated funds.⁷⁷⁸

In 1985, President Reagan announced his plans to improve efficiency and productivity within the Federal sector which made up a quarter of the GDP at the time. With the announcement of the Productivity Improvement Program, the Administration set a goal to improve productivity within government agencies by 20% within 7 years. The President

776. Helms, Doug "SCS/NRCS Organizational Charts."

777. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

778. SCS, "Outline for 1987 National Resources Inventory" (Internal document), JG papers (July 15, 1985).

emphasized the need to conduct systematic assessment of practices and focus on results.⁷⁷⁹ The OMB chose the National Resource Inventories as one of the case studies, resulting in significant adjustments in operational procedures for the 1987 NRI.⁷⁸⁰ Cost efficiency dominated the debate on how to proceed, and some advocated foregoing the 1987 round and doing a 10-year update in 1992. The frequency of the RCA appraisals were re-set to 10-year periods, which gave a reason to save money on the 1987 NRI. The most expensive option considered proposed another Major Land Resource Area-level inventory of 320,000 primary sample units (PSUs) to parallel the 1982 results. The estimated cost of \$27-30 million was prohibitive, and agency leaders settled on conducting a state-level inventory of 90,000 PSUs at cost of \$12 million.⁷⁸¹ The total budget for Inventory and Monitoring included an additional \$5 million from a different line item.⁷⁸² Still, the results were made compatible with the 1982 data points after the 1982 definitions were re-formulated to fit with the 1987 definitions (for example because of an updated parameter in the Universal Soil Loss Equation soil erosion values were revised). About a third of the sample data were identified through remote sensing photographs.⁷⁸³

The presentation of the final results for the 1987 NRI made clear that the efforts made since the passage of the 1985 Farm Bill would not be reflected. A statistically reliable trend could be determined from 1982 to 1987, but the 1977 NRI results were not compatible for a

779. U.S Government Printing Office, "The Productivity Improvement Program: Message From the President of the United States" (Transmitting a Program to Improve Productivity within the Federal Government) (July 31, 1985).

780. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

781. SCS "Outline for 1987 National Resources Inventory."

782. SCS, "Resources Inventory Division: Collects and Interprets Resource Data" (June, 1990).

783. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

longer trendline, disappointing researchers.⁷⁸⁴ On the other hand, the RID team worked to make data available to interested individuals through an arrangement with the Iowa State University Statistical Laboratory.

The results showed that out of 1982 cropland acres, around 16.1 million acres were converted to other uses in 1987 — into primarily rangeland or pastureland with less than 7% developed. On the other hand, around 17.5 million acres of cropland were created out of acres previously used for pastureland, rangeland, or forest land.⁷⁸⁵

Erosion numbers got better for most states. For example, Missouri had the highest total water erosion average at 9.7 tons per acre per year in 1982. In 1987 the number was down to 7.4. The states with the worst erosion were in the Midwest and the Southeast — Tennessee, Mississippi, Iowa, Kentucky, Alabama, Georgia — were on the list, although the measured rates fell within the the five years.⁷⁸⁶

2. Second RCA, 1989

The 1987 reorganization elevated strategic planning to a new height when the SCS chief, Wilson Scaling, created the Assistant to the Chief Strategic Planning & Budget Analysis office, the only Assistant-level office besides Congressional & Public Liaison Staff within SCS at the time. The organizational shifts during the mid-1980s reflected the changing status of planning within the agency spurred by the RCA process. The 1985 Farm Bill pushed the deadline back for

784. Personal Interview, 11.

785. SCS, Iowa State University Statistical Laboratory, "Summary Report: 1987 National Resources Inventory" (Statistical Bulletin Number 790) (December, 1989).

786. Ibid.

the next appraisal to the end of 1987, and the frequency of conducting appraisals generally was changed from every 5 years to every 10 years. The next RCA appraisal was due in 1995 and then in 2005.

The process to update the 1980 RCA was already ongoing. After all, preparations for the 1985 RCA started 6 years before the due date. Eight SCS staffers were assigned to the group in 1979.⁷⁸⁷ In late 1986, the RCA II was ready to come out. Chief Scaling encouraged state conservationists to get to know the RCA process and the National Conservation Program and to submit comments during the public review period. He said that the documents would shape SCS future.⁷⁸⁸ Plus, the agency felt that the second RCA appraisal was a chance to elevate resource concerns that did not make it to the top of the first appraisal and the first national plan. These were water quality, off-site effects of erosion, and rural development.⁷⁸⁹

The actual publication of the second RCA appraisal was postponed until 1989. One of the reasons was that the USDA was coordinating the effort with SCS leadership between all affected USDA agencies and it was taking longer than anticipated.⁷⁹⁰ In many ways, the second RCA appraisal process was more organized than the first, where most staff were pulled from different locations to work on the appraisal on a temporary basis. Now, SCS had a permanent staff and resources to allocate to special studies. Researchers, conservation districts and states received funds to do pilot studies on various technical aspects of conservation, like finding

787. Williams, Kenneth "Personal Papers of Kenneth L Williams: 1976 to 1983.", Packet #4.

788. Scaling, Wilson, "Standing Tall Together" (Chief's Message to State Conservationists), NARA (September 22, 1986).

789. Scaling, Wilson, "Remarks to the Missouri ASCS State Committee and District Directors, Stockton, Missouri", NARA (July 14, 1987).

790. Personal Interview, 16.

grazing systems with minimum environmental impacts or estimating impacts of growing grasslands in conjunction with cotton.^{791, 792}

The conservation districts were still reeling from the aftermath of targeting, which triggered adjustments to the state and district allocation formulas and, therefore, loss of funding in some cases. The USDA and SCS wanted to make sure they were on board with the direction of the appraisal and the follow-up program. Plus, the late 1980s saw a resurgence in water quality as a top agenda issue ensuring the need for closer cooperation between the EPA and SCS. And cooperation was, for the most part, achieved. The EPA participated in funding decisions for RCA special studies. USDA internal agencies like the Extension Service, ARS, ASCS and others chipped in funds for the RCA effort.⁷⁹³ The OMB was not as actively involved and let the process take its course.

Perhaps because of this streamlining, the second RCA was less sweeping than its 1980 predecessor. Both started with a review of land use trends and extent of soil erosion, water management and water quality. The 1989 appraisal had no extensive public comments components besides internal revisions. It also did not include a review of the newly instituted programs. In fact, the authors stated in the very first page of the appraisal that it did not include analysis of the 1985 Farm Bill's conservation title.⁷⁹⁴

791. Blackburn, W. H., Knight, R. W., Thuron, W. L., Warren, S. D., Mings, T., Taylor, C. A., Heitschmidt, R. K., and Garza, N. E, "Livestock Grazing Systems As a Tool for Increasing On-site Water and Decreasing Erosion," *Technical Report* (1985).

792. Sajjadi, A; Zartman, R.E., "Wind Stripcropping Using Weeping Lovegrass in the Southern High Plains," *Journal of Soil and Water Conservation* 45, no. 3 (1990): 397-399. <http://www.jswnonline.org/content/45/3/397.abstract> (accessed January 18, 2012).

793. Personal Interview, 16.

794. USDA, "The Second RCA Appraisal: Soil, Water, and Related Resources on Nonfederal Land in the United States" (Analysis of Condition and Trends) (June, 1989)., p. iii.

The projections for 2030 included primarily economic parameters found that the US had enough cropland to meet even the highest projected scenario for crop demand and that the number of irrigated acres would decline. Once again, Resources for the Future modeling team helped develop a Water Network Model to estimate point and nonpoint pollution in major waterbodies across the nation. The CARD linear programming model was used for production optimization analysis. The Erosion-Productivity Impact Calculator (EPIC) developed by the ARS was used to calculate the impact of erosion on productivity. It became fully operational in May 1985 and replaced the Yield Soil Loss Simulator from the 1980 RCA.⁷⁹⁵

The second RCA appraisal did not contain hints of policy recommendations, and it fit less naturally into program planning since the updated National Conservation Program was published a year earlier in 1988. It will be described in the next section on USDA conservation programs. The second RCA appraisal did not contain much new information and lagged behind important developments such as the 1987 NRI and the conservation programs coming out of the 1985 Farm Bill.

3. 1992 NRI

The budget for Inventory and Monitoring remained stable in the late 1980s. After the completion of the 1987 NRI, the baseline cost went down to \$8.5 million in 1988, 1989, and 1990. But this was augmented by additional money through a different line item in the budget.⁷⁹⁶ It did not rise for the 1992 NRI. In fact, the baseline stayed at \$8.5 until 1995, when it dropped

⁷⁹⁵. Ibid.

⁷⁹⁶. SCS "Resources Inventory Division: Collects and Interprets Resource Data."

to under \$8 million.⁷⁹⁷ Although additional funds were found, SCS had to make due with a fairly small budget. The demand was to reorganize the NRI process to make it more efficient and also to relieve burden on SCS field employees, whose numbers dwindled by about a quarter due to budget cuts. Plus, the NRI had to be made more efficient as part of the OMB's Productivity Improvement Program.

The Resources Inventory Division (RID) created a workgroup across SCS offices with individuals who used NRI data. The workgroup recommended collecting data continuously rather than in spurts, collect only the data necessary for the NRI objectives, use remote sensing and computer capabilities to make the work more efficient, and use trained personnel to collect the data rather than SCS field staff.⁷⁹⁸

One of the problems that had come up with the quality of the NRI data was that for the technical staff in the district offices collecting the data — finding the sample site and gathering a slew of information — was not a desirable fate relative to their other field duties. As a result, sometimes the job fell to the least qualified (or the newest) employee who saw little value in the effort and whose results were of questionable accuracy. The statisticians spent considerable time correcting for such problems.⁷⁹⁹ It made sense to have assigned positions dedicated to collecting the data.

Shortly after the workgroup presented its recommendations, the agency made a number of changes to the NRI process. First, it hired state-level resource inventory specialists to compile the 1992 NRI data. It also started to use remote sensing technology. Definitions were made

797. NRCS "Inventory and Monitoring History of Funding: 1977 to 2002."

798. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

799. Personal Interview, 35, 9.

interchangeable with those used by the Census of Agriculture, the Forest Service, USGS, NASS, and Fish & Wildlife Service. The new system enabled quick processing of the results with the shortest turn around ever of 12 months.⁸⁰⁰ The changes made to streamline the NRI resulted in a savings of \$105 million compared to the 1982 NRI according to an internal SCS report.⁸⁰¹ Most of the savings came from using remote sensing images to identify land use rather than in-person visits. Only a quarter of the sample field sites was visited for the 1992 NRI as compared to the 1982 NRI.⁸⁰²

Similar parameters were collected for the 1992 NRI as for the 1987 NRI with the addition of estimates of acres in the Conservation Reserve Program, wildlife habitat diversity, wetland classification, and type of conservation tillage. Cropland erosion went down on average by nearly a third to 2.13 billion tons per year.⁸⁰³ While wetland acres continued to be lost, the rate slowed down significantly with 13 times fewer acres lost between 1982 and 1992 than between 1954 and 1974.^{804,805}

One trend the 1992 NRI found was a 9% decrease (or 39 million acres) in cropland from 1982 to 1992, and an 18% increase (or 14 million acres) in developed land. But over 80% of the decreased acreage in cropland (or 32 million acres) were put in the Conservation Reserve Program. Out of the remaining acres, 3 million were converted to pastureland or forests, and 4

800. Ibid.

801. NRCS, "Resources Inventory Business Area Analysis" (May, 1995).

802. Goebel, Jeff; Mausbach, Maurice; Karlen, Douglas, "Using the National Resources Inventory As a Framework to Assess Soil Erosion, Soil Conservation, and Soil Quality" (Symposium, "Statistics Connected with Environment Related Agriculture Problems") (July 3, 1997).

803. NRCS, "Summary Report: 1992 National Resources Inventory" (July, 1994).

804. Ibid.

805. SCS, "NRI Issue: 1992 National Resources Inventory (NRI) Fact Sheet" (March, 1994).

million went to developed lands (all of it considered prime agricultural lands). The rest of the increase in developed lands came mostly from forests (5.4 million acres). All types of erosion — sheet, rill, and wind erosion — went down by 25% on average (as measured in tons per acre per year), with most progress seen on highly erodible lands.⁸⁰⁶ By 1992, no state had average erosion levels higher than 7 tons per acre per year.

The fall in the erosion rates on CRP acres was even more dramatic. Only one state had erosion levels higher than 3 tons per acre per year in 1992 — North Carolina with 3.3.⁸⁰⁷

4. 1994 reorganization

In 1992, Secretary of Agriculture Edward Madigan (who was previously a Republican Representative from Illinois with membership on the Agriculture Committee) proposed reorganizing the USDA by combining field offices and functions of USDA commodity programs. The Department had sprawled into 42 agencies and employed 110,000 people scattered across 14,000 field offices.⁸⁰⁸ The Secretary had a personal interest in management and moved to coordinate data sharing across agencies when he was confirmed just a year earlier. He also put together a team with OMB and USDA staff tasked with examining the structure of the USDA

806. NRCS, "Highlights From the 1992 NRI" (June, 1994).

807. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

808. Committee on Agriculture, House of Representatives, "Department of Agriculture Reorganization Act: Supplemental Report to Accompany H.R. 3171" (Dissenting Views), Lexis Nexis (September 21, 1994).

field offices, their workload and overhead costs.⁸⁰⁹ Representative Dan Glickman, a Democrat from Kansas, suggested uniting various farm programs into one agency.⁸¹⁰

The election of Bill Clinton in 1992 sped up the changes. Likewise, the new administration argued that billions of dollars could be saved through a major consolidation.⁸¹¹ In the spring of 1993, Clinton announced a launch to “reinvent” the federal government. In response, Secretary Mike Espy put together a 25-person team of USDA employees to assess possible reorganization strategies at the Department.⁸¹² Congress contributed its weight a year later to shape the USDA’s actual reorganization.

The resultant bill combined another long-sought reform regarding commodities. The Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994, H.R. 4217,⁸¹³ tried to save money on commodity payments by expanding the crop insurance programs at the USDA and enticing more producers to get insurance. The reorganization portion of the act established a Farm Service Agency (FSA) responsible for price and income support programs, production control programs, the insurance programs, farmer loan programs, and the

809. U.S. Government Printing Offices, "Reorganization of the Department of Agriculture (Secretary Edward Madigan)" (Hearing before the Committee on Agriculture, House of Representatives: 102nd Congress, 2nd Session) (June 23, 1992).

810. *Ibid.*, p. 17.

811. Committee on Agriculture, House of Representatives "Department of Agriculture Reorganization Act: Supplemental Report to Accompany H.R. 3171."

812. USDA, "Department of Agriculture: Recommendations and Actions" (Agency Reinvention Activities), Web (1993), <http://govinfo.library.unt.edu/npr/library/reports/agact.html> (accessed January 3, 2012).

813. Public Law 103-354.

conservation programs run by the Agricultural Stabilization and Conservation Service (ASCS).⁸¹⁴

The question came up of whether to fold SCS into the mix.

Representative Kika de la Garza, a Democrat from Texas, (who was the majority leader on the House Agriculture Committee during the time when Madigan was the minority leader of the same committee) along with many of his colleagues wanted to do just that when he argued against passing the bill. He reasoned that the proposal was set up to fail since the FSA consolidation did not include the SCS, an agency with much interaction with farmers.⁸¹⁵

Representative Glickman disagreed, preferring to keep SCS and the Forest Service with their own subcabinet leader. The Democrat reasoned that in the light of “the environmental skirmishes the Agriculture Department gets into with EPA, the Interior Department, and others, it’s better to have SCS led by an Assistant Secretary, who will, no doubt, carry a lot of weight at any negotiating table.”⁸¹⁶ The USDA proposal shifted the ASCS cost-share programs to SCS.⁸¹⁷ The final bill concurred and the Wetland Reserve, Water Bank, Colorado River Basin Salinity Control, and Forestry Incentives programs became part of the NRCS program portfolio.⁸¹⁸ The Conservation Reserve Program stayed under the Farm Service Agency’s jurisdiction. The Soil

814. ProQuest Congressional, "H.R. 4217: Full Text of Bill" (1994).; Espy, Mike; USDA, "Reorganization of the Department of Agriculture" (Secretary's Memorandum 1010-1) (Secretary of Agriculture, October 20, 1994).

815. Committee on Agriculture, House of Representatives "Department of Agriculture Reorganization Act: Supplemental Report to Accompany H.R. 3171."

816. U.S. Government Printing Office, "Review a Proposal for Reorganization of the U.S. Department of Agriculture (Secretary Mike Espy)" (Hearing before the Committee on Agriculture, House of Representatives: 103rd Congress, First Session) (September 29, 1993)., p. 11.

817. Ibid.

818. Espy, Mike; USDA "Reorganization of the Department of Agriculture."

Conservation Service was re-named the Natural Resources Conservation Service (NRCS) to convey the agency's expanded mission.

Vice President Al Gore took over the reigns of the National Performance Review (NPR), which became later known as the National Partnership for Reinventing Government. An ambitious report titled "Creating A Government That Works Better & Costs Less" suggested many general and Department-specific ways to improve efficiencies. One such recommendation was to introduce outcome-based management to the public sector. The OMB would monitor how agencies measured their goals and their progress. Progress reports would be submitted together with annual budget requests starting in 1996.⁸¹⁹ In response, each agency organized its own "Reinvention Team" to review the internal processes.⁸²⁰ NRCS was no exception. It identified "NPR Coordinators" in every state to solicit ideas for improvements from internal staff.⁸²¹

5. Third RCA, "A Geography of Hope"

So when Paul Johnson was first appointed Chief of NRCS in 1994, he was plunged into the ongoing reorganization efforts. Within a year he reorganized NRCS again, establishing a Deputy Chief for Soil Science & Resource Assessment, where the Natural Resource Inventory Division conducted the NRI. Another deputy chief area for Management & Strategic Planning

819. Vice President Al Gore, "Creating a Government that Works Better & Costs Less" (Report of the National Performance Review, September 7, 1993).

820. National Performance Review, "The National Performance Review" (Later the National Partnership for Reinventing Government), Web (1993), <http://govinfo.library.unt.edu/npr/library/status/ex.sum.html> (accessed January 3, 2012).

821. USDA, "Team USDA Reinvention Summary" (September, 1994).

was established with a Quality Management & Program Evaluation Division responsible for evaluating programs.⁸²² Another reorganization came in 1997, when Chief Johnson again put the resource inventory work and resource assessment together. The newly established Deputy Chief for Soil Survey and Resource Assessment contained the Resource Inventory Division and Resource Assessment & Strategic Planning Division.⁸²³ The first time “Resource Assessment” was its own division since the early 1980s.

Between the two reorganizations, NRCS managed to release the third RCA appraisal. The final version of the appraisal turned out to be a much different document than the previous two RCA appraisals. Yet nothing of sort was evident in 1991 when the draft of the work plan for the third RCA appraisal came out. It promised to be a sweeping venture, much in the spirit of the 1980 RCA. The Strategic Planning and Policy Analysis staff (who had its own deputy chief area before the yet another reorganization in 1995) took control of the project.

The exhaustive work plan sent to participating agencies called for feedback on carrying out the proposed 29 resource areas to explore in the next RCA. The envisioned timeline was to produce a comprehensive RCA appraisal within a couple of years to provide data for the next farm bill (presumed to happen in 1995) and then to produce the RCA National Conservation Program for 1998 to 2007.⁸²⁴ The relevant USDA agencies would form an advisory group named the RCA Interagency Liaison Committee. Other federal agencies were to participate through liaisons as well. A public input meeting was scheduled for March 1992. The appraisal would be circulated among “conservation interest groups interested individuals, commodity groups,

822. Helms, Doug "SCS/NRCS Organizational Charts."

823. Ibid.

824. USDA, "Third RCA Appraisal: Plan of Work for An Integrated Conservation, Commodity, and Environmental Analysis" (Draft) (October, 1991).

agribusiness, and USDA field offices for review and comment.” Another component included a sophisticated modeling structure promised to assess “the interactive effects of commodity, conservation, and environmental regulations and policies and trade policies.” Moreover, the models calculated the outcomes of such policies in terms of “returns to the producer, natural resources and environment, consumer prices, and rural economies.”

The initial scope of the appraisal effort was grand. Together 25 teams collaborated on producing over 30 papers with nearly 20 federal agencies participating in some way. The first public meetings were held in 1993 with more meetings and multiple symposia on specific topics held in the next two years.⁸²⁵ The results indicated that the public supported further regulations whenever voluntary measures did not work. On the other hand, farmers themselves felt that NRCS was unlikely to notice violations of the cross-compliance requirements. The accepted figure was that around 10 to 15% of farmers did not comply.⁸²⁶

During the course of three years between 1994 and 1996, the RCA team put together multiple publications. The long-format working papers dealt in-depth with topics like transformation of various nutrients in agricultural systems, development of conservation state laws, the impact of social dimensions on agricultural natural resources, trends in financing of biotechnology, and others. Thirteen short issue briefs were published not only on soil erosion

825. NRCS, "What Is RCA: RCA Issue Brief #1" (September, 1995), http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?&cid=nrcs143_014213.

826. RCA, USDA, "RCA III: Symposium on Influence of Social Trends on Agricultural Natural Resources" (RCA Working Papers), NAL (August, 1997).

and water quality, but also on biofuels, wetlands, climate change impacts, and important archeological sites.⁸²⁷ Some noted that the detail-oriented approach lacked vision.⁸²⁸

At the same time, with the Administration's ongoing "reinventing government" push, NRCS Chief Paul Johnson was undertaking a serious effort to gauge how a shake-up of the Department's natural resources programs could work. He set up multiple teams to probe every avenue. One branch, the Reinvention Forum Group held 351 forums with over 18,000 people — NRCS employees, "customers" and partners.⁸²⁹ A survey of the participants also asked which natural resource issues will be most pertinent for them in the next decade. Water quality was brought up as the most important issue 60% of the time. Soil erosion came in second with 45%, followed by agricultural sustainability with 41% and land conversion with 37%. Only in the Western states was water availability cited as a major issue.⁸³⁰

In a way, the "Reinvention Forums" stood in for the public component of the RCA appraisal. The working papers and the issue briefs formed the backbone of the RCA appraisal chapters. The next step required a consolidation of all the disparate elements into one report and the development of the RCA National Conservation Program. This never materialized. As time ticked away, and the appraisal process got more unwieldy, the NRCS leadership decided that a flagship document was needed instead. The chief pulled together several top advisers who decided to scrap the RCA working papers' projects and put together a plan. They created an

827. NRCS, "RCA Publication Archive: RCA Issue Briefs and Working Papers" , Web (1996), http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?&cid=nrcs143_014197 (accessed January 3, 2012).

828. Personal Interview, 7.

829. National Performance Review, "Reinvention Roundtable: Helping Federal Workers Create a Government That Works Better and Costs Less" (Vice President of the United States, 1995).

830. NRCS "What Is RCA: RCA Issue Brief #1."

“organic” document, in the words of one participant.⁸³¹ The USDA wanted little to do with the document, and at the very end of 1996, Chief Johnson went ahead with the publication of “America’s Private Land: A Geography of Hope.” Secretary Dan Glickman was initially reluctant to endorse the document, as evidenced from the first issue. According to an NRCS employee, positive reaction to the document outside of the agency prompted the Secretary to take a second look and write an official introductory note for future printings.⁸³²

In traditional RCA fashion, much of the document was spent on reviewing the agricultural effects on the environment: land use trends and soil erosion effects on productivity using NRI data; water quality information and estimated emissions of nitrogen, phosphorous, and pesticides using the EPA and Agricultural Census data; water consumption trends through a USDA model; and wildlife benefits through analyses of numbers on wetlands and habitat areas preserved.⁸³³

The document lacked any review of alternative policy strategies, or the National Conservation Program portion of the RCA process. By the time the “Geography of Hope” materialized, there was little institutional memory of how to create a national program. Congress did not ask for it, nor did the USDA want to go through the process.⁸³⁴ Another reason was that the Clinton administration’s efforts to reform government agencies and to introduce strategic performance measures overtook the agenda. Since this portion of the story is relevant to

831. Personal Interview, 30.

832. Personal Interview, 28.

833. NRCS, "America's Private Land, A Geography of Hope" (Washington, DC: USDA, December, 1996).

834. Personal Interview, 30.

programs, I discuss it in the following section on the development of the USDA conservation programs.

6. 1997 NRI

Following the efficiencies achieved with the 1992 NRI, the agency worked to identify other opportunities to increase efficiency through automation for the 1997 NRI.⁸³⁵ A major concern was coordination since currently materials circulated through disparate state, area, and field offices. Plus, the mid-1990s reorganization threatened to shut down the National Technical Centers, which were the primary organizational points for actual data collecting. Only a few of the needed area resource inventory specialists were hired, and half of the state resource inventory specialist positions were lost in the reorganization. As a result, the 1997 NRI was a year behind schedule in 1995. To remedy the situation, the agency put forth a plan to restructure NRI data collection under one umbrella — to create resource inventory data collection teams supported by labs employing remote sensing.⁸³⁶

But streamlining and reorganization demanded a more comprehensive approach — fundamental changes had to be made to how data was handled at the agency level. In April of 1994, President Clinton issued Executive Order 12906. Based on the recommendations from the National Performance Review process spearheaded by Vice President Al Gore, the Executive Order sought to create a “coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data in such areas as transportation, community

835. NRCS "Resources Inventory Business Area Analysis."

836. Ibid.

development, agriculture, emergency response, environmental management, and information technology.”⁸³⁷

Many factors came together to necessitate a revamping of how NRCS used and processed data. They included a “move to spatial data management, executive order 12906, CIO legislation, federal mandate to provide open access to data, holistic planning, wide area planning, users demands for data, congressional requirements to eliminate duplication of efforts, NPR, Field Service Center, data sharing, partnerships,…”⁸³⁸ CIO legislation referred to the establishment of Chief Information Officers for the federal agencies by Executive Order 13011, which was then backed by the Clinger-Cohen Act of 1996.⁸³⁹ A major multidisciplinary team was put together to synchronize agency’s data collection and management to users’ needs. The team was primarily led by the Deputy Chief for Soil Science and Resources Assessment (home of the NRIs and the RCAs) and consisted of many people who were involved in the third RCA effort.⁸⁴⁰

In addition, Chief Paul Johnson called for a “Blue Ribbon Panel on Natural Resource Inventory and Performance Measurement” to examine how information was used within the agency and whether improvements were needed. The resultant recommendations charged NRCS with figuring out exactly what the objective goals of its mission were and how specific data could be used to measure progress toward achieving them. After all, many different users

837. The White House, "Executive Order 12906 of April 11, 1994" (Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure) (Federal Register, Vol. 56, No. 71, April 13, 1994).

838. NRCS, "Agency Data Management Plan: Quality Improvement Team Charter" (Draft), Jeff s papers (May 22, 1996).

839. Public Law 104-016.

840. Ibid.

demanded different types of data whose needs were not taken into account when creating the surveys. The panel put NRI data at the center of the NRCS assessment efforts.⁸⁴¹

The NRIs in the late 1990s incorporated many of the suggestions brought forth internally in the previous years and those made by the Blue Ribbon Panel. Going back to the NRI's origins, the major 5-year data-collecting effort was complemented by special studies. The 1995 interim NRI took a closer look at soil erosion sources, while the 1996 interim NRI evaluated the impact of commodity programs and high commodity prices on conservation for the 1996 Farm Bill debate. Surveys in 1996, 1997, and 1998 started looking at conservation practices' effects. The special small surveys selected a few thousand points from the NRI and investigated custom-made variables for quick results.⁸⁴² Data collection for the 1997 NRI was done in teams who used photo interpretation to identify trends. Each team had responsibility for multiple states.⁸⁴³

After hitting a low point in its budget in 1996, the NRI received a boost in 1997 with over \$22 million appropriated to it. The amount went up to \$24 million in 1998 and remained at just a bit below that level in 1999 and 2000.⁸⁴⁴

The NRI results indicated further drops in erosion for most states. Now only Alabama had total erosion rates higher than 6 tons per acre per year. Three other states — Tennessee,

841. USDA, "Data Rich and Information Poor" (A report to the Chief of the Natural Resources Conservation Service by the Blue Ribbon Panel on Natural Resource Inventory and Performance Measurement) (November, 1995).

842. Nusser, Sarah; Goebel, Jeffrey; Thomspson, Dean, "Recent Developments in the NRI Survey Program" (Powerpoint Presentation) (Iowa State University; NRCS, April 24, 1999).

843. Goebel, Jeff; Mausbach, Maurice; Karlen, Douglas "Using the National Resources Inventory As a Framework to Assess Soil Erosion, Soil Conservation, and Soil Quality."

844. NRCS "Inventory and Monitoring History of Funding: 1977 to 2002."

Georgia, Mississippi — had average erosion just above 5 tons. The rest of the states' erosion levels were below 5.⁸⁴⁵

Some NRI results were controversial like in New Jersey, where the 1997 NRI found the fastest conversion rate of prime agricultural farmlands. A heated political debate unfolded. The American Farm Bureau fiercely protected the right of the landowners to sell their land to whomever they pleased, including to developers. At the same time, preservationists argued that this stance jeopardized long-term agricultural interests of the region.⁸⁴⁶

7. Analysis

Given the historical picture of the NRIs and the RCAs during this period, the guiding questions put forth at the beginning of the chapter can be answered. SCS/NRCS allocated sufficient funding toward the effort, although the support from the top was variable. Collaboration with external users went along fairly smoothly. More detailed answers are below.

1. Did the SCS allocate money and staff time to this effort?

The answer to this question is yes, it did, although less so than in the past. The NRI budget went down from \$14.6 million to \$8.5 million in 1988 and through 1994. The NRI budget dipped slightly in 1996 to \$7.3 million and then re-bounced to \$22.4 million and was over

845. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

846. Personal Interview, 14.

\$23 million by 2000.⁸⁴⁷ The RCA budget is harder to track down, but in the early 1990s it was ample.

The third RCA process had multiple teams working on individual projects and they had money to spend on special research projects. Plus, the RCA process was more stable than in the past. The dedicated strategic analysis office carried it out in the mid-1990s. Unlike the ad hoc teams put together for the first RCA, the second two had more organizational permanency.⁸⁴⁸

Funding levels reveal only half of the story, however. The more complicated portion is whether the information-gathering efforts were supported at the top echelons of the organization. Signs of solid support are mixed. Even the NRI came under fire during the late 1980s period with some arguing for its dissolution.⁸⁴⁹

The second RCA received considerable support and publicity from the top, while the full-scale third RCA effort was dismissed as too convoluted and aimless. The resulting "Geography of Hope" had very broad and strong support across the top level at the agency, although at first NRCS Chief Paul Johnson had to release it without USDA support.⁸⁵⁰

But the document bore only slight resemblance to what an RCA-mandated National Conservation Program would have been. In this case, the influence of the RCA was limited not because of the lack of powerful friends, but because of its fairly limited scope. It does not appear that the shift toward working lands in the 1996 Farm Bill was directly related to the document.

847. NRCS "Inventory and Monitoring History of Funding: 1977 to 2002."

848. Personal Interview, 16.

849. Scaling, Wilson, "Talking Points for Texas and Southwestern Cattle Raisers Association in San Antonio, Texas", NARA (March 17, 1986).

850. Personal Interview, 28.

2. Did the agency provide information to external users and to other agencies?

The answer to this question is yes. SCS/NRCS did provide information to external users for most of the period under discussion. SCS staff involved with the 1982 NRI were keenly aware that the NRI data points presented a unique resource to the research community. They provided computer-accessible data to interested parties, including internal USDA agencies like the ARS, ERS, Forest Service, as well as the Oak Ridge National Laboratory for studies on effects of acid precipitation, the Office of Surface Mining for research on effects of mining on prime farmland development, the Department of State for use in an educational seminar, state and local governments for various local needs, and to non-profit groups to study the impacts of policy interventions. The American Farmland Trust and the National Wildlife Federation used the data to do analyses of proposed legislative alternatives, and the Conservation Foundation and Resources for the Future investigated further the magnitude of off-size impacts.⁸⁵¹

The 1992 NRI results were also made available to interested users.⁸⁵² By this point, the NRI team was aware that data use was not optimal. A 1991 survey of about 300 users (primarily SCS field staff, local or state governments, interest groups) of NRI data revealed that half of the respondents got the data from NRI publications as a hardcopy, while a third talked to the professionals at the National Headquarters to get results of interest. Many users relied on data frequently, every 3 to 4 days. The most common use was for resource management (such as following trends in natural resource conditions), while program management came in second.

851. SCS "Outline for 1987 National Resources Inventory."

852. Harlow, Jerry T *History of Soil Conservation Service National Resource Inventories*.

Respondents welcomed further assistance with the NRI data, supporting the development of a user guide and data access training.⁸⁵³

But issues with keeping the location and identity of sampling units private arose in the early 1990s. The policy on handling NRI data developed in 1982 made sample site location available to non-SCS personnel only after a requesting individual signed an agreement to preserve confidentiality. Plus, no other locational information was disclosed besides general geo-codes such as the state, county name, and an 8-digit USGS hydrologic unit code (HUC).⁸⁵⁴ Before 1997, anyone who asked for a copy of the data could receive it.⁸⁵⁵

The emphasis on user friendliness for the NRI data did not last. Attached to an appropriations bill for 2001 Section 515 of the Consolidated Appropriations Act (known as the Data Quality Act) directed the OMB to develop guidelines for government agencies on making data available to the public.⁸⁵⁶ The ensuing requirements asked the agencies to spend considerable resources on sanitizing the data before releasing them to the public. Many agencies, including NRCS, have responded by clamping down on the data and not releasing them altogether.⁸⁵⁷

A more internal problem that became apparent during this period was the inadequacy of using NRI data to evaluate specific programs. While useful for “broad comparisons and

853. SCS, "Resource Inventory Division, Quality Action Team: Customer Survey Report" (1992).

854. Goebel, Jeffery J.; Fuller, Wayne A.; Shafer, Bernie A.; Maizel, Margaret S., "Preserving the Confidentiality and Integrity of the Location and Identity of Sampling Units Used for the National Resources Inventory" (Draft) (NRCS, March, 1991).

855. Personal Interview, 10.

856. 106th Congress, "Public Law 106-554: An Act," *114 Stat.* 2763 (December 21, 2000).

857. Personal Comment, 10.

presentations to overview resource conditions,” they lacked the specificity required to make conclusions about program performance, as the analysts found out when they tried to apply the NRI data to evaluate the Great Plains Conservation Program in 1987.⁸⁵⁸ The mid-1990s Blue Ribbon report echoed the concern that the NRI data might not have been meeting the users’ actual needs. The authors wrote, “we could not determine the arguments that led the agency from [Congress’s] broad mandate to the specifics of sample design or choice of variables.” Moreover, the mandate itself “may also have little to do with the actual uses of NRI data and data’s value to a wider use community.”⁸⁵⁹ So while the NRI process had been preserved from the early 1980s to the late 1990s, its usefulness for evaluating programs — an urgent necessity — was being questioned.

The Blue Ribbon panel also recognized that NRCS tried to serve three types of clients with the same data — local users, policy analysts, and USDA internal users.⁸⁶⁰ The lack of focus rendered the data less than ideal.

How did the USDA conservation programs develop from 1985 to 2001?

Following the structure of the previous chapter, the second narrative in the story looks at the the USDA programs and how information may have been used in program implementation. Once more, the historical context of the programs provides the background. To get closer at the main problem, I come back to the guiding questions set for this section. Namely, did NRCS

858. SCS, "Great Plains Conservation Program Evaluation," *Part II: Background and Summary Statistics* (USDA, July, 1987).

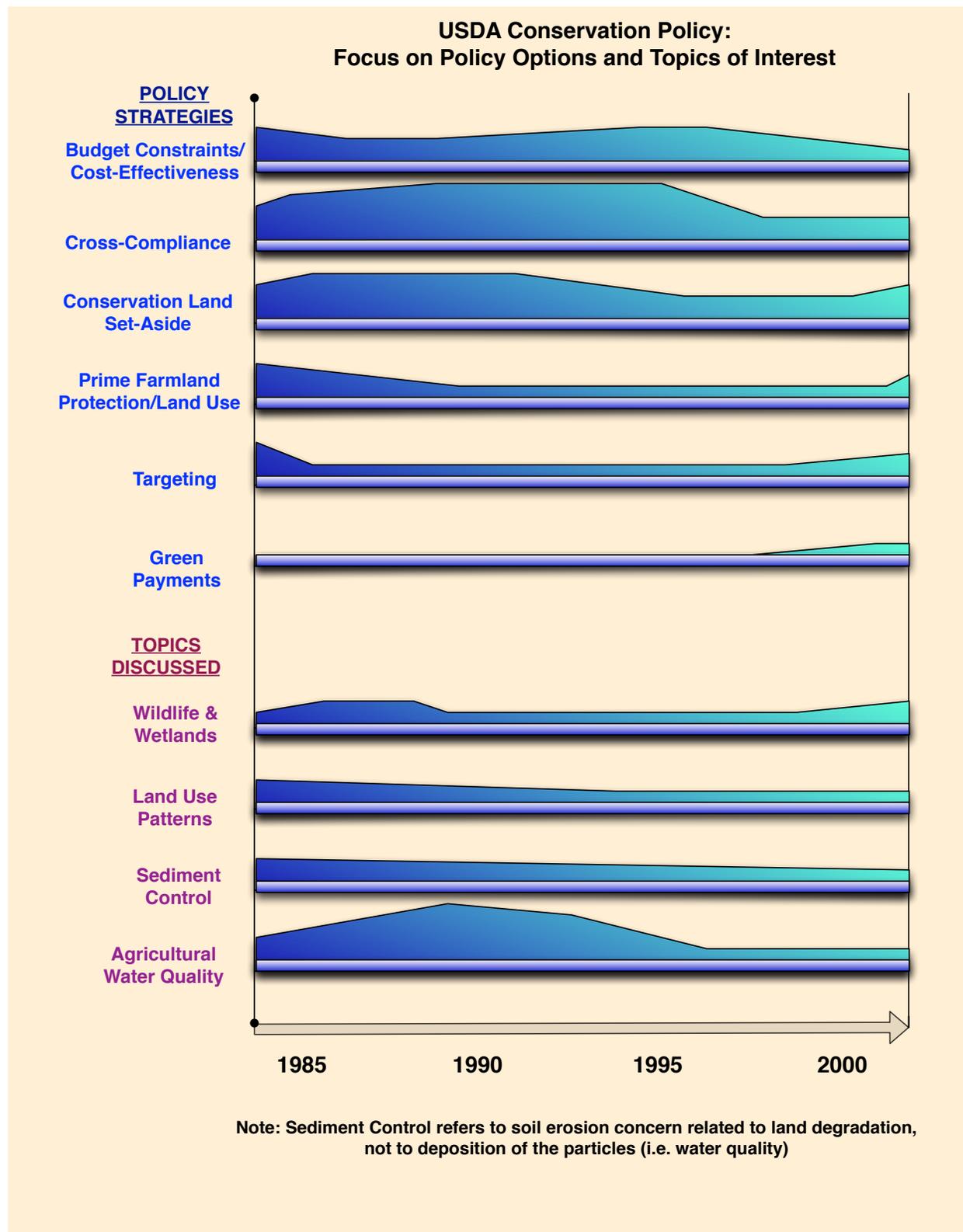
859. USDA "Data Rich and Information Poor."

860. Ibid.

reach out to other USDA agencies, and other federal agencies, for collaboration and eventual use of the results? Did NRCS use the results in program implementation? And finally, did some types of information receive more emphasis and others less?

I drew much of the material from this section from interviews, agency documents, and especially from archival speeches. I reviewed nearly 150 speeches made by NRCS personnel. Appendix A contains the details. For program funding analysis, I used the data compiled by the USDA history office. Appendix B describes the categories I used. The figure below looks at how interested the agency was in highlighting certain policy alternatives and resource priorities. The top rows correspond to the various policy alternatives that the USDA considered, while the bottom rows look at how specific conservation topics fared in the organization. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones.

Graph 9. Policy alternatives and conservation topics of interest receiving differing levels of attention at the USDA from 1985 to 2001.



1. The Second Half of the 1980s (and CRP sign-ups)

Perhaps highlighting the importance of the 1980 RCA and the 1982 RCA National Conservation Program, SCS began to implement serious changes to its structure and program administration before the passage of the 1985 Farm Bill. In the 1984 reorganization of SCS, a new Deputy Chief for Programs area was formed from the office of State and Local Operations and Natural Resource Projects.⁸⁶¹ Program management became consolidated under one roof. The agency was getting ready for changes portending in the 1985 Farm Bill. Agency leaders knew that the new allocation formula that included targeting reduced the amount of money many states would receive in conservation operations. Yet other changes like the new Conservation Reserve Program — which would be run by the ASCS — offered assistance in a different way. NRI numbers provided data to justify the outcomes for soil erosion improvements and land use trends, and the agency invoked them frequently.⁸⁶²

Numbers for program effects were largely unavailable, however. One exception was the Conservation Technology Information Center's survey of tillage practices which started coming out in 1983.⁸⁶³ The survey was funded by the USDA. And while the regular survey showed more and more widespread use of conservation tillage, at the time little evidence could connect it with the efforts of SCS conservationists on the ground.

861. Helms, Doug "SCS/NRCS Organizational Charts."

862. Scaling, Wilson, "NACD Regional Speeches by Wilson Scaling in 1985" (Speeches in Minnesota, New Jersey, Delaware, Utah, Arizona, New Mexico, Colorado, Mississippi), NARA (1985).

863. Uri, Noel, *Conservation Tillage in U.S. Agriculture: Environmental, Economic, and Policy Issues* (Binghamton, NY: Food Products Press, The Haworth Press, Inc., 1999).

Just a few short months before the passage of the 1985 Farm Bill, USDA leaders put forth a plan to implement the impending Conservation Reserve Program (CRP), what would soon become the largest and most expensive USDA conservation program (other than the commodity-driven ACP, both run by ASCS). The sign-up period for the Conservation Reserve Program would be short in the first year, perhaps just 10 days; the final responsibility to determine eligibility would rest with SCS, although ASCS would design the bidding system based on a criteria to minimize costs and ensure county-level and individual restrictions on participation as well as compliance; SCS would develop the conservation plan for vegetative cover; state forestry agency would develop tree planting plans; conservation districts would have the final approval stamp.⁸⁶⁴ Chief Scaling insisted that SCS had no intention of becoming a regulatory agency; SCS conservationists wanted the landowners to see them as “their partners, not as big brother.”⁸⁶⁵

While the Conservation Reserve Program’s primary aim was to reduce soil erosion, SCS leaders acknowledged right away that its secondary aims were “to improve fish and wildlife habitat, improve water quality, provide some income support for land owners, and reduce production of some surplus commodities.”⁸⁶⁶ This was in contrast to the Soil Bank’s Conservation Reserve Program of the 1950s when wildlife was a much lower concern.

The first sign-up lasted two weeks in the beginning of March 1986, and the second one was planned for the summer. The initial goal was to retire 5 million acres in FY1986. The

864. USDA, "USDA' s Preliminary Proposals for Implementing a Conservation Reserve" , NARA (October, 1985).

865. Scaling, Wilson, "Remarks at the Annual Convention of National Association of State Departments of Agriculture, Atlantic City, NJ" , NARA (October 28, 1985).

866. Scaling, Wilson "Talking Points for Texas and Southwestern Cattle Raisers Association in San Antonio, Texas."

ASCS fell short 1.2 million acres primarily because the program arrived after farmers made year-long commitments. The following year, a much larger sign-up was expected (as a bonus the agency boosted rental prices for corn producers).⁸⁶⁷ By the end of 1987, almost 23 million acres were enrolled in the reserve.⁸⁶⁸ By the end of 1990, nearly 34 million acres had been enrolled.⁸⁶⁹ The popularity of the program was soaring, as the ASCS relaxed standards for eligibility.⁸⁷⁰ For example, one sign-up in 1990 attracted 4.5 million acres into the bid pool. Around 832,000 acres were expected into the CRP (less than 20% acceptance rate).⁸⁷¹

Overall, the USDA had considerable leeway in implementing the CRP, including key decisions like exactly who was eligible, since it was contingent on the definition of highly erodible cropland and how the bid would be weighted. Adopting the eligibility threshold at 3T (meaning 3 times the tolerable limit set by SCS) placed 69 million acres under the requirement. Using $EI \geq 8$ (or Erodibility Index of greater than 8) put 118 million acres in the bidding pool.⁸⁷² Apparently, the decision was also driven by geopolitical considerations. Although defining more

867. Scaling, Wilson, "Conserving Soil Creatively" (Remarks at the Southeastern Regional Meeting, National Association of Conservation Districts, Jackson, Mississippi), NARA (July 21, 1986).

868. Scaling, Wilson, "1987 Chief's Message: Taking Hold of Our Future" (Remarks at the 1987 SCS National State Conservationists' Convention, Portland, Maine), NARA (September 28, 1987).

869. Farm Service Agency, "The Conservation Reserve Program," *PA-1603* (USDA, June, 1999).

870. Osborn, Tim; Llacuna, Felix; Linsenbigler, Michael, "The Conservation Reserve Program: Enrollment Statistics for Signup Periods 1-12 and Fiscal Years 1986-93" (Statistical Bulletin Number 925) (ERS, November, 1995).

871. Personal Interview, 13.

872. Dicks, Michael; Reichelderfer, Katherine; Boggess, William, "Implementing the Conservation Reserve Program" , NAL (Economic Research Service, USDA, January, 1987).

land as highly erodible opened the program to more farmers, USDA leaders did not want to give an impression to the Soviet Union that it had a resource vulnerability.⁸⁷³

At the end, the official line was to define highly erodible land through the Erodibility Index and 101 million acres were eligible.⁸⁷⁴ ASCS relaxed those standards as needed to meet the actual enrollment requirements sign-up to sign-up.⁸⁷⁵

Initially, the ASCS did not know whether the farmers would be interested. Based on the experience with the PIK program and the resultant set-asides, the agency analysts estimated that farmers could offer up anywhere from 1 million acres to 50 million acres, depending on the definition adopted and rates offered. How to structure the bidding process and how to set the price were questions heretofore explored only within the context of the Soil Bank — an entirely different program. Each sign-up (and there would be multiple each year until 1991) was an experiment. After all, land prices were not fixed and varied across the country based on location, topography, potential use, etc. The ASCS needed reliable regional data to adjust bids geographically and to prioritize bids. In the first years of the CRP, such data were not available.⁸⁷⁶

Instead, ASCS analysts (some with real estate experience) took a more hands-on position. To estimate the expected (and acceptable) bid, they negotiated prices with the states' USDA offices. Eventually, 100 potential geographically-adjusted pools for bidding were created. At the

873. Personal Interview, 28.

874. USDA, "Highly Erodible Land and Wetland Conservation: Rules and REgulations" (52 FR 35194-01, 1987 WL 140302 (F.R.)) (September 17, 1987).

875. Osborn, Tim; Llacuna, Felix; Linsenbigler, Michael "The Conservation Reserve Program: Enrollment Statistics for Signup Periods 1-12 and Fiscal Years 1986-93."

876. Personal Interview, 13.

time, the program was driven by acreage goals and total cost was less of an issue.⁸⁷⁷ Regional variance in land prices drove the going pay rate. For instance, the rate scale differed from \$9 to \$107 per acre depending on whether the land was in Arizona or Massachusetts.⁸⁷⁸ Later the ASCS realized this early approach overestimated the actual land values.⁸⁷⁹ The costs were mounting. In total, around \$4.75 billion was spent on CRP within the first five years of the program.⁸⁸⁰ By the end of the 1990 crop year, 34 million acres were in the reserve, still shy of the goal set in the 1985 Farm Bill of retiring at least 40 million acres.

Although its cost-based system considered sophisticated parameters like tax burden and long-term maintenance costs, the ASCS received substantial criticism over this “black box” process.⁸⁸¹ As the 1990 Farm Bill elevated wildlife and water quality issues into the program selection process, agency analysts developed a more complex ranking system to evaluate prospective bids. The resultant (although evolving) Environmental Benefits Index (EBI) became the official criteria. Practically speaking, however, at that time most bids were accepted to fulfill the requirement mandated by Congress.⁸⁸²

The GAO objected to the cost of the program in a 1989 report,⁸⁸³ yet the cost may have been reasonable considering the lofty acreage goal. Since no more than 25% of any county’s

877. Personal Interview, 13.

878. Farm Service Agency "The Conservation Reserve Program."

879. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 21.

880. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

881. Personal Interview, 13.

882. Personal Interview, 13.

883. United States General Accounting Office, *Farm Programs: Conservation Reserve Program Could Be Less Costly and More Effective* (November, 1989).

cropland could be enrolled in the CRP, 69 million acres were deemed eligible out of the initial 101 million.⁸⁸⁴ This meant that to reach the enrollment goal of 45 million acres, the ASCS needed to enroll 65% of all available land. Congress insisted that the USDA had to meet at least the 40 million acre goal.⁸⁸⁵ This was an ambitious, if not a completely unreasonable, aim.⁸⁸⁶ Especially since Congress put into the 1988 Appropriations Act that the USDA cannot pay more than the prevailing rental rate for land.⁸⁸⁷ So enticing prospective bidders could have become more difficult. Nonetheless, the CRP enjoyed wide popularity and strong Congressional support despite the Administration's concerns with the cost.

The rest of conservation programs, however, faced a more uncertain future. The Reagan administration moved to eliminate most of SCS programs including the Great Plains Conservation Program, Resource Conservation & Development program, river basin surveys, and watershed planning and operations in FY 1987. It also proposed eliminating the Resource Appraisal & Program Development office and the Inventory and Monitoring division responsible for the NRI.⁸⁸⁸ All told, President Reagan proposed a \$350 million budget for the remainder of the programs (Conservation Technical Assistance, Soil Survey, Snow Survey, and Plant Materials

884. Osborn, Tim; Llacuna, Felix; Linsenbigler, Michael "The Conservation Reserve Program: Enrollment Statistics for Signup Periods 1-12 and Fiscal Years 1986-93."

885. U.S. Government Printing Office, "Formulation of the 1990 Farm Bill (Conservation Title)" (Hearing before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture, House of Representatives) (March 8, 1990)., p. 10.

886. Personal Interview, 13.

887. Ibid., p. 10., U.S. House of Representatives, "Rural Development, Agriculture, and Related Agencies Appropriations Bill, 1991" (Report (to accompany H.R. 2883)), Web (July 13, 1989).

888. Scaling, Wilson "Talking Points for Texas and Southwestern Cattle Raisers Association in San Antonio, Texas."

Centers), and \$450 million for SCS altogether, about 75% of the 1986 budget.⁸⁸⁹ Congressional leaders fought back to keep money in conservation, despite the mounting pressure to eliminate budget deficits. The fundamental changes begun with the 1985 Farm Bill demanded more funds.

After all, the cross-compliance provision meant that SCS staff in county offices would be responsible for developing around a million conservation plans on an estimated 120 million acres by the end of 1989 — or two plans every week per field office.⁸⁹⁰ Some of the language in the provisions called for “reasonable judgement,” leaving the agency staff to work out the details of what it meant and what would stand up in court.⁸⁹¹ The workload was not evenly distributed throughout the districts, and SCS and the conservation districts worked to temporarily reassign staff within states to meet the need (as discussed later in more detail). In response, Congress passed a bill in 1987 providing a \$20 million supplement to support SCS in meeting its farm bill obligations. The agency used the money to reduce the workload in 15 states that experienced an especial shortage of staff.⁸⁹² In 1988, Congress responded again with \$45 million.⁸⁹³

Congress members understood that SCS was in an uncomfortable position. Agency leaders could hardly disagree publicly with the OMB budget and the proposed cuts. When a representative from Minnesota asked Chief Scaling outright about the internal disagreements at

889. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

890. Scaling, Wilson "Standing Tall Together."

891. Ibid.

892. Scaling, Wilson "Remarks to the Missouri ASCS State Committee and District Directors, Stockton, Missouri."

893. Scaling, Wilson, "Remarks to Mississippi SCS Retirees in Jackson, Mississippi" , NARA (January 14, 1988).

an oversight hearing, the chief's awkward laughter was the only confirmatory sign.⁸⁹⁴ The chief did not enjoy popularity among SCS staff. Some suspected that he was brought in to dismantle the agency or at least large parts of it by making changes to the budget structure.⁸⁹⁵

While clearly this did not happen, pressure to reign in budgets was constant. Congress endorsed Reagan's efforts to reduce deficits by passing two bills mandating a schedule for achieving a balanced budget, while at the same time resisting cuts to most programs during the actual appropriations process.⁸⁹⁶ This ensured that uncertainty over budgets persisted throughout the late 1980s. But the final budgets for SCS and other USDA conservation programs did not suffer.

In fact, the budget for conservation programs across the USDA nearly doubled from 1986 to 1987 — the largest increase in the history of the Department. The budget went up by a third from 1987 to 1988. Nearly all of the growth went to the newly formed CRP administered through the ASCS. SCS budget grew at a slower but healthy rate of around 5% a year on average from 1987 to 1990. By then it reached \$720 million, or less than a third of the total USDA conservation budget. CRP alone cost more than the entire SCS budget in 1987. It was twice the SCS budget by 1989 and 1990.⁸⁹⁷

894. U.S. Government Printing Office, "Overview of the Agencies and Programs Under the Jurisdiction of the Subcommittee on Conservation, Credit, and Rural Development" (Hearings before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture, House of Representatives) (March, 1987), p. 73.

895. Personal Interview, 10.

896. Committee on the Budget, United States Senate, "Congressional Budget and Impoundment Control Act of 1974, As Amended" (Committee Print), Lexis Nexis (January, 1988).

897. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

Within SCS, the Conservation Operations Program (that provides technical assistance to landowners to apply specific conservation practices) used up two-thirds of the SCS funding from 1987 to 1993, the largest proportion since 1960. It underwent significant changes as well. In 1989, three crucial practice standards were added to the National Handbook of Conservation Practices: nutrient management, pest management, wetland development or restoration. The first hinged on minimizing nutrients flow into surface and groundwater, the second advised the use of “mechanical cultivation and biological controls,” and the third prioritized wildlife benefits.⁸⁹⁸

Surface water and ground water quality started receiving more emphasis in 1987 as described below, and watershed projects became de-emphasized. The Administration proposed to cut out funding for them altogether in 1988.⁸⁹⁹ In the end, structural activities like Watershed and Flood Prevention Operations and Watershed Planning took up the second largest, but increasingly shrinking, share of the budget. While in 1986 around 38% of the funds was dedicated to them, by 1990 just a quarter of the money was going to them. Still, this shift was largely a function of the total budget increase rather than a reduction in budgets dedicated to structural watershed improvements.⁹⁰⁰

During the first few years of the new cross-compliance programs, the USDA introduced and revised rules, tweaking some to make them more palatable to farmers and to reduce the potential burden on them and SCS staff. For instance, after a USDA interim rule announced in

898. Shaw, Robert, Deputy Chief for Technology, "National Handbook of Conservation Practices, Notices 111" , NAL (SCS, September 13, 1989).

899. Scaling, Wilson, "Remarks at Land Improvement Contractors of America, Annual Convention in Las Vegas, Nevada" (February 14, 1987).

900. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

June 1986 that the goal will be to employ conservation measures to reach the “T” level, farmers bitterly complained that on many lands this was not economically feasible.⁹⁰¹ So within two years, the USDA decided to base standards on implementing best management practices or according to the alternative conservation systems contained in the SCS Field Office Technical Guide.⁹⁰² This meant that the soil-loss tolerance standard “T” was no longer the required goal but that applying the proscribed standards alone was sufficient to be compliant.⁹⁰³ The SCS officials admitted that this change was because the standard was deemed unattainable.⁹⁰⁴ So while the requirement for eligibility was based on the extent of soil erosion on the land, measured reduction in erosion was not the ultimate end. Members of the Conservation Coalition (or environmental and conservation groups) vehemently opposed this decision, but had no choice but to yield to the USDA.⁹⁰⁵

The question of who had to comply with the cross-compliance law stirred controversy. Conservation professionals complained that the erosion calculations based on the Universal Soil Loss Equation (USLE) were not suitable for every case. Some felt that conservation plans were written unnecessarily in those cases — that the problem of soil erosion was overestimated and

901. U.S. Government Printing Office, "Implementation of Soil Conservation Title XII of the Food Security Act of 1985," *Hearing before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture, House of Representatives*, Web (August 9, 1988)., see farmers' testimonies.

902. Scaling, Wilson, "Remarks to Soil and Water Conservation District Commissioners, Area I, in Cleveland, Mississippi" (June 23, 1987).

903. Scaling, Wilson "Remarks to the Missouri ASCS State Committee and District Directors, Stockton, Missouri."

904. U.S. Government Printing Office, "Formulation of the 1995 Farm Bill" (Hearings before the Subcommittee on Resource Conservation, Research, and Forestry, House of Representatives), Web (Washington, April, 1995)., p. 486.

905. U.S. Government Printing Office "Oversight of Conservation Programs.", p. 353.

the landowners did not especially need a soil conservation plan.⁹⁰⁶ The agency started reworking the USLE and the Wind Erosion Equation to deal with the problems. The development of the CREAMS model in 1987 (standing for Chemicals, Runoff, and Erosion from Agricultural Management Systems) allowed estimates of alternative management practices.⁹⁰⁷ Theoretically, such models could be used to backtrack from a given standard (let's say the "T" level) and recommend a suite a practices to achieve the standard. The National Technical Centers scattered across the country had the responsibility to review and update the specifications for technical assistance, but balancing local variability with national standards was not easy.⁹⁰⁸

With the swampbuster provision identification of wetlands became another contentious issue. Questions of duration and frequency of flooding, extent of soil saturation, and presence of hydrophytic vegetation decided whether a land owner would be subject to swampbuster. The USDA received over 2,600 letters from all types of constituencies regarding its interim rule on delineating wetlands, which underwent a 12-week pilot test in six states. Many of the comments proposed clarifying definitions and relaxing the requirements.⁹⁰⁹ About 5 million acres were estimated to be affected by swampbuster.⁹¹⁰

The essential difficulty with applying the swampbuster provision in the field was the inherent variability of wetlands and therefore uncertainty for farmers who wanted straightforward answers and lasting decisions. As one analyst recalled, when the 1985 Farm Bill

906. Personal Interview, 9.

907. Shaw, Robert R., "Catchment and River Basin Planning: The Role of the U.S. Soil Conservation Service" (Speech by the Deputy Chief for Technology, SCS at the annual Soil Conservation conference, NSW in Australia) (July 7, 1987).

908. Scaling, Wilson "1987 Chief's Message: Taking Hold of Our Future."

909. USDA "Highly Erodible Land and Wetland Conservation: Rules and REgulations."

910. Myers, Peter "Conservation at the Crossroads."

passed, SCS had fewer than thirty biologists on its staff, and only one of them was a wetlands expert (albeit a very good one). SCS organized two-week training sessions for its field people to catch up. But such a course may have been inadequate. Wetlands are notoriously difficult to draw a boundary around. The same analyst also recalled that during a formal visit to the field with a group of experts charged with delineating a particular wetland for demonstration purposes, the experts got into a physical altercation over the parameters.⁹¹¹ Defining wetlands on paper was much easier than doing so in the field. SCS had little choice but to relax the standards. Plus, during the second half of the 1980s, Congress heard over and over again from its outraged constituents who feared that the current definition could place their agricultural fields in that category simply after a series of abnormally strong rainfalls. "If environmentalists were looking at my operation, we had about 800 acres that looked like swampland for about 3 weeks, then we had a violation of terraces and waterways, because 18 1/2 inches of rain in 6 1/2 days absolutely did the number on our terraces and waterways," testified one farmer from Nebraska.⁹¹²

Exemptions to the regulations, however, opened the door for continued drainage of wetlands. An Environmental Law Institute investigation found that the ASCS granted 78% of requests seeking exemptions. The Institute argued that the appeal process heavily favored producers since they were the only parties allowed to question a decision, leaving environmentalists no recourse.⁹¹³ The USDA's processes did favor producers, consistent with its

911. Personal Interview, 27.

912. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title)," p. 42.

913. Environmental Law Institute, "Implementation of the "Swampbuster" Provisions of the Food Security Act of 1985" (Washington, D.C., 1990).

historical mission. The ASCS withheld \$7.3 million in benefits between 1985 and 1992, but that was a very small portion of the total payments distributed during this time.⁹¹⁴ By 1990, the ASCS denied benefits to over 500 producers because of sodbuster violations.⁹¹⁵ Plus, by 1988 ASCS had delineated about 4% of the total wetlands, leaving policymakers to wonder how the swampbuster provision would be enforced.⁹¹⁶ The USDA had to balance the competing conservation interests introduced in the 1981 and 1985 Farm Bills, while staying true to its traditional role of serving farmers.

The final rule on classifying highly erodible soils made some concessions (such as dropping the “T” goal in favor of a more inclusive Erodibility Index measure which the farmers liked⁹¹⁷), but retained most of the unpopular elements, including disqualifying all of the farmers’ acres from USDA commodity benefits when a violation on one unit was found. The conservation plans on highly erodible soils had to be operational by January 1, 1995 for the producer to retain USDA benefits.⁹¹⁸ The “T” issue came up again at the hearings for the 1990 Farm Bill, where the USDA proposed requiring that attainment level on land exiting the CRP.⁹¹⁹

Another important consequence of the 1985 Farm Bill was that SCS inevitably acquired a regulatory role, and producers’ view SCS of the agency started shifting. Chief Scaling predicted

914. Anderson, Margot, "Agricultural Resources and Environmental Indicators" (Agriculture Handbook No. AH705) (ERS/USDA, 1994)., Section 6.3

915. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 4.

916. U.S. Government Printing Office "Oversight of Conservation Programs.", p. 231.

917. M W Burch, "Applying a Soil Loss Standard on the Farm," *Journal of Soil and Water Conservation* 43, no. 1 (1988): 38-39.

918. USDA "Highly Erodible Land and Wetland Conservation: Rules and REgulations."

919. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 4.

that the agency's involvement in water quality might exacerbate this trend.⁹²⁰ He did not view this development favorably, since he thought it undermined private property rights and, in his view, "private property rights are what made this nation the greatest in the world."⁹²¹ When James Moseley became the Assistant Secretary for Natural Resources and Environment (USDA-level oversight position for SCS and the Forest Service) in the summer of 1990, his first order of business was to fire Scaling.⁹²²

Perhaps the most significant change for SCS itself, however, was the enormous workload influx that was not distributed evenly across county field offices. Nearly twenty percent of the workload in 1988, for example, fell on just two states — Iowa and Texas. Along with Kansas, Montana, Missouri, Nebraska, and Illinois, the seven states were responsible for nearly 50% of the total staff years required to meet the farm bill requirements.⁹²³ Those seven states were home to less than a quarter of the nation's conservation districts. While the size of the agricultural economy mattered how work was distributed, the extent of erosion was more pressing. The agency continued to struggle with the realities of targeting. Traditionally, SCS worked hard to reach all locations. Targeting necessarily meant rebalancing the scales. Some felt that the conservation programs were skewed to help the Midwestern and Great Plains states while ignoring others.⁹²⁴ In fact, the USDA was tinkering with the CRP allocation formula to entice

920. Scaling, Wilson, "Remarks to the State President's Meeting at the 42nd National Convention of the National Association of Conservation Districts in Little Rock, Arkansas" , NARA (February 2, 1988).

921. "Washington: What's New," *Progressive Farmer* (1990).

922. Ibid.

923. Scaling, Wilson, "Money and Staffing Outlook for the Soil Conservation Service" (Remarks by Wilson Scaling to the District Operations Forum, 42nd National Convention of the National Association of Conservation Districts, Little Rock, Arkansas), NARA (SCS, February 1, 1988).

924. Personal Interview, 9.

participation from different regions.⁹²⁵ Increased emphasis on both the budget and the effectiveness of the programs translated into more attention to measuring the outcomes.

For example, the Great Plains Conservation Program (GPCP) received much more scrutiny in the mid-1980s with SCS establishing a task force to review its progress. It got just over \$100 million between 1986 and 1990.⁹²⁶

The program was mostly aimed at rangeland operators, but it also attracted many crop and livestock joint operations. Over 35 million acres in the Great Plains region (home to 420 million acres of private lands) have had or still had contracts with the GPCP between 1981 and 1985.⁹²⁷ One poignant observation that the analysts made was that only a small portion of the GPCP contracts targeted for soil and water conservation aligned with the districts, meaning that an exclusive reliance on targeting could not achieve all goals for conservation. The report used 1982 and prior NRI information to calculate that total erosion for land in the GPCP was 30% less than land not under those contracts. Other impacts like the magnitude of off-farm effects defied measurement because of lack of data.⁹²⁸

This was a similar complaint voiced by the GAO in its evaluations of USDA conservation programs. No clear data connected the investment of the funds and beneficial (or otherwise)

925. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 9.

926. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

927. SCS, "Great Plains Conservation Program Evaluation" (Part II: Background and Summary Statistics) (USDA, July, 1987).

928. Ibid.; SCS "Great Plains Conservation Program Evaluation."

outcomes. And despite the potential for financial gain, many farmers remained skeptical of the new programs.⁹²⁹

The SCS field staff was overwhelmed with work and the complexities of the task at hand. One complexity was that the conservation plans were agreed upon with the owner, necessitating the difficult task of figuring out and keeping track of complex partnership and ownership structures inherent to modern farms.⁹³⁰

The Resource Conservation & Development (RC&D), which operated through locally established councils, got \$127 million over the same period. RC&D was consistently on the chopping block during the Reagan administration, yet evaluations of the programs revealed that the councils were generally satisfied with progress toward established goals and that their accomplishments were limited by lack of funding and funding uncertainty.⁹³¹ The Agricultural Conservation Program under the ASCS continued along. It received about 10% of the total USDA conservation program funds from 1986 to 1990.⁹³²

In combination, the different programs started to address conservation issues brought out in the 1985 Farm Bill, which was primarily soil erosion. But the focus of conservation was shifting. Water quality was propelled to the top of the agenda in the 1980s.

929. C Durban, "Conservation Planning: A Local Perspective," *Journal of Soil and Water Conservation* 43, no. 1 (1988): 44-47.

930. Personal Interview, 9.

931. Post, David J; Robertson, Thyrele, "Strategic Planning and Policy Analysis Staff Report," *RC&D Council Evaluation Worksheet Results* (USDA/SCS, November, 1987).

932. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

2. Water quality in the late 1980s

The change came with the Water Quality Act of 1987, passed by Congress to address the persistent problem of nonpoint source water pollution. As concentrated or point sources tightened their emissions (because of regulations passed in the 1970s), the contribution of nonpoint sources to the problem became more apparent.⁹³³ The 1987 Act added Section 319 to the Clean Water Act to require states to do assessment reports for nonpoint source pollution and develop action plans. The law set aside \$400 million over the next four years to help states implement their nonpoint source pollution responsibilities. The first step began with identifying and assessing the bodies of water in need of treatment. The states were given 18 months to carry out the inventories.⁹³⁴ The maps originated with the local SCS conservationists who passed them up to the states. One conservationist reported that the prevailing rumor among states was that the more waterways listed the more federal money would be allotted. This did not materialize, however, as little money made it to the states.⁹³⁵

Still, the 1987 amendments sparked another wave of water quality assessments. The intra-agency Water Resources Council created in 1965 was de-funded by the Reagan administration in the early 1980s, so other agencies had to take over its responsibilities. Besides overseeing the state-level assessments part of Congressional mandates, the EPA's Office of Research and Development began its Environmental Monitoring and Assessment Program in 1990 (and phased out in 2006) to collect detailed statistically-reliable data on conditions and

933. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title)", p. 5.

934. C F Myers, "A New Nonpoint-source Water Pollution Control Challenge," *Journal of Soil and Water Conservation* 42, no. 4 (1987): 222-222.

935. Personal Interview, 9.

trends of surface waters, wetlands, forests, estuaries, agroecosystems, and other landscapes.⁹³⁶

This was a sweeping attempt at integrating complex survey designs complemented by pilot studies for multiple ecological dimensions.⁹³⁷

At around the same time, the USGS launched intense monitoring of water quality when Congress appropriated funds toward the National Water-Quality Assessment Program in 1991. A staggered schedule allowed the USGS to sample 60 major watershed systems and to focus on specific contaminants. The results from the 1999 report indicated that agricultural contaminants have increased over time in many systems, that their concentrations varied seasonally and that they tended to persist over time with heaviest-used chemicals of the past still detectable years later.⁹³⁸

But the USGS had been monitoring water contamination for many years before the 1991 program (from 1979, in fact).⁹³⁹ In conjunction with the EPA data from state water agencies, the USGS data provided the USDA an overview of the extent of the problem, initiating the launching of a Department-wide nonpoint water quality policy at the end of 1986.^{940,941} The resultant Department-wide nonpoint water quality policy yielded decisions on water quality standards to

936. Office of Research and Development, EPA, "Environmental Monitoring and Assessment Project" (2000).

937. National Research Council, *Review of EPA's Environmental Monitoring and Assessment Program: Overall Evaluation* (National Academy Press, 1995).

938. U.S. Geological Survey, *The Quality of Our Nation's Waters: Nutrients and Pesticides* (U.S. Geological Survey Circular 1225, 1999).

939. Mueller, D.K; Helsel, D.R., "Nutrients in the Nation's Waters - Too Much of A Good Thing?," *U.S. Geological Survey Circular 1136* (NAWQA Program), Web (USGS, 1996), <http://pubs.usgs.gov/circ/circ1136/circ1136.html> (accessed January 28, 2012).

940. Scaling, Wilson "Standing Tall Together."

941. Scaling, Wilson "Remarks to Soil and Water Conservation District Commissioners, Area I, in Cleveland, Mississippi."

state and local governments, emphasized voluntary action, promised to restructure SCS technical assistance to include water quality and to support research into locating sources of pollutants and calculating off-site impacts.⁹⁴²

When President Bush included a new water quality initiative in his 1990 budget request with a proposed \$41.2 million injection to the USDA's budget devoted to water quality enhancement, the USDA's Water Quality Initiative was started. The overriding objective of the Initiative was to transfer latest research results to the farmers and ranchers (through, among other things, demonstration projects which, 50 years earlier, Hugh Hammond Bennett initially embraced but then deemed insufficient).⁹⁴³ The Working Group on Water Quality (one of five topical working groups established at the top level) coordinated the input and participation from other federal and state departments and evaluated current programs for their efficacy in enhancing water quality. Results were mixed. One evaluation of 16 USDA water quality projects found that attributing changes in water quality to specific practices was difficult because designs of research studies lacked attention to this goal, plus the volatility in weather conditions and short lives of the projects made any correlations difficult to ascertain.⁹⁴⁴

And closer collaboration between the EPA and the USDA became necessary anyhow to carry out the policy and to address the mandate introduced by the Water Quality Act of 1987. To

942. Scaling, Wilson, "Remarks to Great Lakes Commission at the 1988 Semiannual Meeting in Washington, DC" , NARA (March 18, 1988).

943. USDA, "Water Quality Program Plan to Support the President' s Water Quality Initiative" (USDA and Cooperating State Agencies, July, 1989).

944. SCS, "Physical Impacts of Selected USDA Water Quality Projects" (Interim Assessment) (October, 1993).

support the work, SCS assigned specialists to the EPA's regional offices.⁹⁴⁵ Moreover, by all accounts the Act induced greater collaboration between the USGS, the EPA, NOAA, and the USDA.⁹⁴⁶ Coordination with other interested groups was done through the Water Quality 2000 effort, which involved 80 public, private, and nonprofit organizations.⁹⁴⁷ International collaboration was also renewed, as the United States updated its agreement with Canada in 1987 to improve water quality in the Great Lakes.⁹⁴⁸ All sources of contamination — not just nitrogen and phosphorous — were under scrutiny. Pesticides received much more attention than ever before. But besides gross numbers on millions of tons of pesticides used, little detailed information was available.

Just days before the 1988 election, President Reagan signed amendments to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). The amendments stipulated that the EPA keep closer records of pesticides' active ingredients.⁹⁴⁹ This did nothing to diminish the widespread use of pesticides.

The spike in water quality activities in the agencies highlighted the reliance on monitoring efforts at the USGS and the EPA, but gathering reliable nationwide data necessary to

945. Scaling, Wilson "Remarks to Great Lakes Commission at the 1988 Semiannual Meeting in Washington, DC."

946. U.S. Government Printing Office, "Formulation of the 1990 Farm Bill (Water Quality and Environmental Proposals)" (Joint Hearing before the Subcommittee on Department Operations, Research, and Foreign Agriculture and the Subcommittee on Conservation, Credit, and Rural Development) (March, 1990).

947. Water Quality 2000, "A National Water Agenda for the 21st Century" (Final Report) (1992).

948. International Joint Commission, Canada & United States, "International Joint Commission - the Great Lakes Water Quality Agreement Review" , Web (2011), <http://www.ijc.org/en/activities/consultations/glwqa/agreement.php> (accessed December 23, 2011).

949. U.S. EPA, "FIFRA Amendments of 1988 ," *EPA Press Release*, Web (October 26, 1988), <http://www.epa.gov/aboutepa/history/topics/fifra/01.html> (accessed February 3, 2012).

direct federal policy remained problematic. State-level reports cleared through the EPA lacked consistency as states put varying emphasis on assessing waters and designating supporting recreational categories when submitting their documents.⁹⁵⁰ Besides that, many questions on *which* data to collect remained open. One SCS report gave examples of such questions: “when to measure: periodically; during a storm’s first minutes or at a later point; during the planting season, or sometime after?; where to measure: along the bank or mid-stream; just below the water’s surface or on the streambed?; [which] source of pollutant to measure: [which] field; sublateral flow from shallow ground water and urban runoff; or some other source?”⁹⁵¹

Moreover, collecting sampling data in the watershed itself revealed little information about the underlying source of the contaminants — a critical data element in designing policy. To get at that information another element was needed, namely, geographical data on where the inputs could have originated. Understanding how on-the-ground practices interacted with the local geomorphological factors was key to predicting the *potential* contribution of that practice. This was another major objective of the USDA’s Water Quality Initiative. The first part of the objective was to “determine the precise relationship between agricultural activities and ground water quality” through research. The second part was to “develop comprehensive, consistent, and periodic national data on agricultural chemicals, related farm practices, and links with the physical environment” through surveys.⁹⁵² The goal was to connect locational and temporal data with input parameters.

950. NRCS, *Water Quality and Agriculture: Status, Conditions, and Trends* (USDA, July, 1997), p. 69.

951. *Ibid.*

952. R L Kellogg, M S Maizel and D W Goss, "Agricultural Chemical Use and Ground Water Quality: Where Are the Potential Problem Areas?" (SCS/USDA, 1992).

To get closer to the goal, the USDA's ERS began to administer the Cropping Practices Survey in 1989, for the first time gathering detailed information on the farmers' use of fertilizers and chemicals and different types of cropping practices (although gross level data was collected from 1964).⁹⁵³ The survey was folded into a broader survey structure named the Agricultural Resources Management Survey in 1996 and the NASS began administering it with ERS funding and guidance.⁹⁵⁴ In 2012, it still provided invaluable data on detailed production practices of farmers growing specific crops. The NRI data were used to link such practices data to localized sample sites revealing where potential problems were likely to occur.⁹⁵⁵ The researchers made use of the GLEAMS (Groundwater Loading Effects of Agricultural Management Systems) transport and fate model developed in the late 1980s.⁹⁵⁶

Despite — or perhaps because of — the number of different monitoring and research initiatives, getting useful results proved elusive. As one witness at a Senate hearing on water quality said, "EPA is involved. USDA is involved. USGS is involved. A number of State institutions are involved. Unfortunately we do not all use the same sampling protocol. We do not all use the same laboratory techniques."⁹⁵⁷ Coordinating the effort was the problem, and it would stay a problem for a while. Still, the intensification of monitoring activities guaranteed

953. M Padgitt *and others*, "Production Practices for Major Crops in US Agriculture, 1990-97," *Statistical Bulletin No. 969* (2000).

954. Natural Resources and Environment Division Economic Research Service, *Agricultural Resources and Environmental Indicators, 1996-97* (USDA, 1997).

955. Kellogg, Maizel and Goss, "Agricultural Chemical Use and Ground Water Quality: Where Are the Potential Problem Areas?."

956. J J Goebel, "The National Resources Inventory and Its Role in US Agriculture," *Agricultural statistics* (2000): 181-192.

957. U.S. Government Publishing Office, "Water Quality Protection" (Hearing before the Subcommittee on Conservation and Forestry of the Committee on Agriculture, Nutrition, and Forestry, United States Senate), Web (U.S. G.P.O., October 24, 1989)., p. 10.

that more data would be available for future RCA appraisals and policy analysis. The second RCA appraisal relied on information up to the mid-1980s. Nonetheless, the second RCA National Conservation Program picked up on the saliency of water quality concerns on the list of priorities.

3. 1989 RCA National Conservation Program update

Although Strategic Planning & Budget Analysis rose in organizational prominence in 1987 (the division became attached to the chief's office), the updated RCA National Conservation Program (NCP) published in 1989 (but conceived as an update for the years 1988 to 1997) contained few new policy strategies. It was mostly because profound changes were already underway. After all, the Deputy Secretary of Agriculture said in 1988 that the 1982 RCA National Conservation Program was the most important factor that helped shape the course of USDA conservation policies.⁹⁵⁸ The 1988-1997 update did redirect the focus of the programs, however, in a new direction.

The effort was much smaller than the 1982 NCP, although it was more organized with a dedicated staff.⁹⁵⁹ The Assistant Secretary's office for Natural Resources and Environment at the USDA was closely involved in making decisions and formulating the outcome. The scale of the public participation component was reduced to a 60-day period. State agencies, conservation districts, and interested groups and individuals submitted 1,050 responses. While around 45% commented on soil erosion, 55% of the responses concerned water quality, signaling a shift in

958. P C Myers, "Conservation at the Crossroads," *Journal of Soil and Water Conservation* 43, no. 1 (1988): 10-13.

959. Personal Interview, 16.

public awareness of the issue. Only a small portion of the respondents (2%) opposed cross-compliance.

The resulting 27-page update reconfigured the priority order for the National Conservation Program for the years 1988 to 1997. Soil erosion remained the first priority, while reduction of nonpoint source water pollution became the second highest priority (it was a national long-term objective, but not a priority, in the 1982 NCP, where efficient water use was the second top priority). The authors acknowledged that better measurement and controls of point source pollution put a spotlight on the prevailing nonpoint pollution. Other priorities like reduction of upstream flood damages, improving water efficiency, and improving rangeland conditions continued to be emphasized. In a similar vein as the 1982 NCP, the new document promised to strengthen local, state, and federal conservation partnerships, as well as to increase effectiveness of existing programs and to target resources where they were needed the most.⁹⁶⁰

In his official letter of transmission of the updated RCA National Conservation Program to Congress, President Reagan emphasized that the voluntary approach was working, and that the ultimate decision to take care for the land rested on the individual landowner's shoulders.⁹⁶¹ Despite such statements, cross-compliance was firmly in place, and the update expanded the scope of conservation in important ways.

In contrast to the first NCP, the update promised to include off-site effects in identifying priority erosion areas. It also emphasized that the USDA will invest in research to more

960. Soil Conservation Service, *USDA A National Program for Soil and Water Conservation: The 1988-97 Update*.

961. Ronald Reagan, "Statement of Policy by the President" (Text of a Letter from the President to the Speaker of the House of Representatives and the President of the Senate on NCP 1998-1997 Update) (The White House, January 19, 1989).

accurately measure and assess rates of erosion and estimate damages under all different types of conditions. Restoring wetlands and wildlife habitats, and encouraging the use of “alternative agriculture” and “agricultural risk management” were added on as additional priorities.⁹⁶² Tightly packed with information, the updated National Conservation Program reflected a broader conception of conservation. While a popular idea at SCS, the questions of how to employ metrics to measure and assess all the parameters emerged.

One response was a “Total Resource Planning” system pioneered by SCS in the late 1980s, meaning that conservation planning should account for sets of natural resources, rather than individual goals such as soil erosion reduction. The Total Resource Planning concept, developed with ARS, took into account soil, water, air, plants, and animals. Gary Margheim, the Deputy Chief for Programs at the time, explained in 1992 that SCS had been “moving toward sustainable agriculture — agriculture that is environmentally sound, economically profitable, and socially acceptable.”⁹⁶³ This move was supported during the public response period for the updated NCP, when nearly a quarter of the respondents expressed support to encourage “adoption of alternative farming systems” through USDA programs.⁹⁶⁴

An Indicator Selection Model was the initial attempt to provide quantitative analysis on the interplay between different environmental parameters. The model’s goal was to connect ecosystem parameters with condition assessments and to be a tool for making planning decisions.

962. Soil Conservation Service, *USDA A National Program for Soil and Water Conservation: The 1988-97 Update*.

963. Margheim, Gary, "The Environmental and Agricultural Interface" (Sustainable Agriculture Symposium and Satellite Teleconference) (SCS, March 4, 1992).

964. Soil Conservation Service, *USDA A National Program for Soil and Water Conservation: The 1988-97 Update*.

The idea was that by prompting planners to respond to specific questions about each parameter group — including soil erosion, water quality and quantity, air quality, domestic and wildlife habitat conditions, and human dimensions like economics, social factors and institutions — they could evaluate concerns on a fuller scale.⁹⁶⁵ This effort did not take off then, however.

At the same time, the EPA's Office of Research and Development was thinking of undertaking a major effort to assess environmental indicators. The Environmental Monitoring and Assessment Program that lasted several years was created to collect detailed statistically-reliable and long-term data on the condition and status trends of landscapes.⁹⁶⁶ The data-collecting effort revolved around three types of indicators: response indicators or biological dimensions of the ecological system itself, exposure indicators or measurements that assess the physical and chemical inputs that may be causing disturbance to the system (such as nitrogen imbalance), and related stressor indicators or socioeconomic activities that produced the disturbance (such as fertilizer run-off from agricultural production). The EPA wanted to supplement the efforts with data from other agencies to fill in the gaps in statistical data across the parameters. Around 3,000 sampling sites from a grid frame were used to divide the nation. They would be evaluated using field visits and with satellite imaging and remote sensing technology.⁹⁶⁷ The assessment program did not last.

965. NRCS Indicators Action Team, "Ecosystem Indicators: Action Team Final Report" (Draft) (March, 1996).

966. Office of Research and Development, EPA "Environmental Monitoring and Assessment Project."

967. Office of Research and Development, U.S. EPA, "Environmental Monitoring and Assessment Program: Conceptual Overview and Issues" (Draft) (July 20, 1989).

Nonetheless, this period saw a lot of experimentation with data collection including attempts to involve local input. Locally, however, people were dissatisfied with the changes. Over the previous five years, the USDA heard of consternation among farmers finding themselves under the purview of the federal government through the swampbuster and sodbuster provisions. Conservation districts likewise expressed dismay at their newfound position. Many of the changes made to the USDA conservation programs in the 1990 and the 1996 Farm Bills came in response to the complaints voiced about the 1985 Farm Bill programs.

4. 1990 Farm Bill programs (and the CRP's Environmental Benefits Index)

Besides additions to the USDA conservation programs portfolio, one of the most significant changes the 1990 Farm Bill made was the creation of State Technical Committees. Headed by the SCS state conservationist (but attended by representatives from other USDA agencies, agribusiness and producer representatives, conservation districts, and nonprofit organizations), the committees would provide advice on carrying out the technical aspects of national conservation assistance at their jurisdictions.⁹⁶⁸ By advising on issues like identifying priority areas and establishing ranking criteria for programs, these proved to be critical pieces in determining the distribution of funds.

A significant program change in the 1990 Farm Bill was the new Wetland Reserve Program (WRP). It would be the first cost-share program with a land retirement component administered by SCS. Landowners could receive 100% of easement value plus costs to return land permanently to wetland status — or 75% for a 30-year contract. The minimum duration of

968. Congress, "Full Text of Bill: 1990 S. 2830" (1990 Farm Bill), ProQuest (1990).

a contract was 10 years.⁹⁶⁹ The initial funding year for the program was 1992. By 1996 it received around \$320 million to retire hundreds of thousands of acres.⁹⁷⁰ Most of the acres were in permanent easements. One reason for introducing WRP was that wetland conversions for agricultural uses were still happening despite the swampbuster provision (especially in Minnesota and North Carolina). Producers chose not to receive USDA commodity benefits rather than forego production. The NRIs were the primary source for information on wetland trends.⁹⁷¹

But the WRP was not a stand-alone program. The 1990 Farm Bill combined it with the CRP to form one land retirement program without effectively increasing the number of acres in the program. As amended, the cap would stand at 38 million until 1995 and 36.4 million after 1996 (the actual enrollment fell just a couple million acres below the ceiling because of turnover in contracts).⁹⁷² CRP eligibility was also changed to prioritize land identified in a state water quality plan, affected by the USDA Water Quality Initiative, or intended for certain purposes like wildlife conservation.⁹⁷³

969. Wildlife Habitat Management Institute, "A Comprehensive Review of Farm Bill Contributions to Wildlife Conservation: 1985-2000" (NRCS/USDA, December, 2000).

970. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

971. Environmental Law Institute, "Wetlands Loss Due to Agricultural Conversion: A Survey of Recent Data" (Research Report) (February, 1990).

972. Farm Service Agency "The Conservation Reserve Program."

973. Osborn, Tim; Llacuna, Felix; Linsenbigler, Michael "The Conservation Reserve Program: Enrollment Statistics for Signup Periods 1-12 and Fiscal Years 1986-93."

One impetus for the change was a 1989 GAO report which found that by extending priorities for the CRP beyond soil erosion could further conservation goals.⁹⁷⁴ Establishing multiple goals also boded well politically, since it made justifying the expense of the program easier. Measuring progress toward the goals proved to be elusive, however. Another GAO report in 1992 found that the Department undertook little such effort.⁹⁷⁵

Devised by the ASCS, the bidding system for the CRP got more complicated to account for all the priorities. Four different types of bids were allowed in the early 1990s. The initial plan was to weight competing priorities equally. The first Environmental Benefits Index (EBI) took into account seven of them, including potential to improve surface and ground water quality and prioritizing acres located in State-defined conservation priority areas.⁹⁷⁶

One initial problem was that the guidance for states on how to define priority areas was relaxed and the states reacted very differently. For instance, Oklahoma put few resources toward the effort, while Kansas went on to identify individual species for preservation.⁹⁷⁷ ASCS analysts used all available data to connect the various parameters to specific locations. The NRI provided one of the most consistent sources of reliable nationwide data on some environmental conditions. So the NRI data were used to identify critical water quality watersheds for the USDA Water Quality Initiative with much more rigor than state-driven efforts.⁹⁷⁸

974. GAO, "Farm Programs: Conservation Reserve Program Could Be Less Costly and More Effective" (Report to the Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate) (November, 1989).

975. GAO, "Conservation Reserve Program: Cost-Effectiveness Is Uncertain " (March, 1992).

976. Osborn, Tim; Llacuna, Felix; Linsenbigler, Michael "The Conservation Reserve Program: Enrollment Statistics for Signup Periods 1-12 and Fiscal Years 1986-93."

977. Personal Interview, 13.

978. Personal Interview, 13.

A more serious issue emerged by the mid-1990s with the CRP. It concerned the implementation of the program. While the bidding process through the EBI got more sophisticated, the implementation of conservation practices on the retired lands themselves got more simplistic. Since retired plots of many adjacent acres were covered by the same recommendation for the same conservation practice (like applying a cover crop or planting trees), swaths of monoculture crops appeared throughout the country. One ASCS analyst estimated that monoculture, which is notoriously unfavorable to wildlife, took over anywhere between half to three-quarters of the acres in the program at the time.⁹⁷⁹ Instead, scientists recommended establishing native grasses and diversity allowed practices. Building such recommendations into the selection process was more problematic, however. Although the initial 10-year contracts were expiring and many were up for renewal — presenting an opportunity to alter what was on the ground, farmers vocally opposed tearing down what had been done and re-planting all over.⁹⁸⁰ In the 1990s, when the administration of the program shifted to the recently created Farm Service Agency, it recommended using a five-seed grass mixture, although some farmers complained that this was an unnecessarily expensive option.⁹⁸¹ With time many more practices were allowed and encouraged.

As the ranking system got more complex, a number of issues arose with using data to link to specific parameters. For example, to estimate impact on air pollution, locations of prospective bids were linked to population numbers through zip codes, prompting questions of the accuracy

979. Personal Interview, 13.

980. Personal Interview, 13.

981. U.S. Government Printing Office, "Conservation," *Hearing before the Committee on Agriculture, Nutrition, and Forestry: United States Senate* (107th Congress, 1st Session) (February 28, 2001).

of such an approach. Most data problems, however, reflect the difficulties involved in applying a one-size-fits-all formulaic approach to disparate conditions across the nation. Wind erosion equations yielded problematic results in Washington state and its volcanic soils, for example. Rental rates continued to be controversial, as some aspect of their calculations could always be classified as subjective. Two Office of Inspector General reports found the error rate in EBI bid rankings of over 40%, although FSA maintained that this number was exaggerated.⁹⁸²

The effort to deal with the complexities culminated in 1996 with an updated EBI which placed wildlife, water quality, and erosion reduction on an equal footing (although this was already in place), allocated extra points for long-term contracts, targeted contracts to priority areas, and gave more weight to less costly bids.⁹⁸³ The maximum acceptable bid for rental rates was set according to the soil type and the estimated return the land would yield if it were cropped.⁹⁸⁴

Despite the complications, money poured into the program with nearly \$10 billion spent on it between the years of 1990 to 1995 (three times as much as was spent on Conservation Operations). Planting patterns varied across the country, with the Midwestern and the Great Plains states benefiting most in terms of restored wildlife habitat.⁹⁸⁵ By keeping the EBI calculations out of the formal rulemaking process through the *Federal Register*, the FSA could

982. Personal Interview, 13, USDA, Office of the Inspector General, "Agricultural Stabilization and Conservation Service Conservation Reserve Program Application of Eligibility and Payment Limitation Requirements" (Audit Report No. 03099-58-SF) (September, 1990), FOIA requested

983. M O Ribaldo *and others*, "Environmental Indices and the Politics of the Conservation Reserve Program," *Ecological Indicators* 1, no. 1 (2001): 11-20.

984. U.S. Government Printing Office "Conservation," p. 24.

985. Wildlife Habitat Management Institute "A Comprehensive Review of Farm Bill Contributions to Wildlife Conservation: 1985-2000."

quickly adjust different parameters to entice different outcomes. The experiment turned out mostly positive with dramatic reductions in average soil erosion and savings to the commodities program.⁹⁸⁶

Changes in the budget of the Conservation Operations Program reflected the looming deadlines for bringing farms on highly erodible lands into compliance. Hundreds of thousands of conservation plans had to be implemented by 1995. In 1995, SCS spent 70% of its budget on Conservation Operations. The amount SCS spent on structural activities — *i.e.*, watershed planning and flood prevention activities — went down to just 11%, the lowest percentage since the very beginning of those programs.

But the 1985 Farm Bill deadlines had been met mostly on time. By the end of 1994, SCS expected to develop 1.7 million conservation plans for 143 million acres of highly erodible cropland. In December 1993, around 70% of the eligible acres had conservation plans. The average erosion rate on highly erodible cropland was expected to fall threefold from 17.5 to 6 tons/acre/year.⁹⁸⁷ The 1996 RCA, “A Geography of Hope,” cited NRI data to state that erosion on CRP land declined from 12.5 tons per acre per year to 1.5 tons per acre per year in the decade between 1982 and 1992.⁹⁸⁸

Other programs continued along as before with minor additions. Over \$1.1 billion was spent on the ACP during 1990 to 1995. The RC&D program continued along with about \$190

986. James Hamilton, *Conserving Data in the Conservation Reserve: How a Regulatory Program Runs on Imperfect Information* (Washington, D.C.: Resources for the Future, 2010)., p. 118-119.

987. SCS, "Gaining Ground: Soil Conservation Achievements of U.S. Farmers" , NAL (August, 1994).

988. NRCS "America' s Private Land, A Geography of Hope."

million spent on it over the same period.⁹⁸⁹ At the same time, the USDA was getting considerable criticism about its shortcomings from external agencies (like in the 1992 GAO report⁹⁹⁰) and from the public (fueled by negative media stories.)⁹⁹¹ Pressure to reform was intensifying. Massive reorganization was just around the corner.

5. 1990s reorganizations and “A Geography of Hope,” again

In the 1990s, structural strains, which had been accumulating at the USDA over several decades, culminated in a serious departmental-reorganization debate. Whereas twenty years before, about 40% of the USDA’s budget was dedicated to farmer income support, only about 20% went to that goal in 1992. Nearly two-thirds of the total \$60 billion was spent on nutritional programs. The Forest Service comprised 40% of the total USDA staff the same year.⁹⁹² The reorganizations (described in the previous section) that followed brought a lot of changes to the USDA and to the conservation agency now known as NRCS. NRCS was now responsible for the majority of the USDA conservation programs. The reorganization also added an appeals division to deal with disputes for both NRCS and the Farm Service Agency that took over the administration of ASCS’s conservation programs. The workload for NRCS staff increased tremendously.

989. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

990. GAO "Conservation Reserve Program: Cost-Effectiveness Is Uncertain ."

991. Personal Interview, 13.

992. U.S. Government Printing Offices "Reorganization of the Department of Agriculture (Secretary Edward Madigan)."

A later 1997 reorganization aimed to save \$75 million across the USDA by cutting staff (primarily at the National Headquarters and at the Forest Service) and by co-locating NRCS county offices with the Farm Service Agencies' offices.⁹⁹³ This sealed a closer working relationship for the two agencies. Previously, uncertainty over the division of responsibility for conservation programs between the two caused some confusion for farmers who had to deal with both offices.⁹⁹⁴

Around the same time as the major 1994 USDA reorganization, two agency-wide reorganizations in quick succession revamped the operations of SCS/NRCS. Programs, many of which were inherited from the ASCS, got grouped into one Deputy Chief area, while management functions became separated into another. Strategic planning became a major focus during this time again (in 1997, strategic planning and resource assessment was reunited with the inventory division.⁹⁹⁵) One reason was the expanded third RCA appraisal process that turned into "America's Private Lands, A Geography of Hope," published in 1996.

a) GPRA reforms

But another major incentive to invest in strategic planning, however, came with the Government Performance and Results Act (GPRA) in 1993. It required agencies to develop 5-year strategic plans and to produce hard data on program results.⁹⁹⁶ NRCS embraced the effort

993. Office of Communications, USDA, "USDA Estimates \$75 Million in Savings Through Reorganization of the Natural Resources Agencies" (January, 1997).

994. U.S. Government Printing Office, "Implementation of and Amendments to the Conservation Title of the Food Security Act; And the Lower Des Plaines Tributaries Watershed Project, Illinois" (Hearing before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture, House of Representatives), Web (April 9, 1987)., p. 42.

995. Helms, Doug "SCS/NRCS Organizational Charts."

996. Vice President Al Gore "Creating a Government That Works Better & Costs Less.", p. 73.

wholeheartedly. The agency saw its partnerships with the conservation districts and others as an advantage. In theory, the strategic plans they already produced tended to be concrete, close to the ground, and easy to track.⁹⁹⁷ The framework proved to be much more difficult to use for national goals, since consistent data across states were rarely available. In fact, a major criticism that NRCS heard was that its assessment efforts of natural resource conditions were inadequate.⁹⁹⁸ Nonetheless, many argued that the GPRA reforms and more consistent strategic planning were sufficient to meet all national planning needs. Yet, there was significant tension between the strategic planning staff and their GPRA-related efforts and staff working on the RCA National Conservation Program.⁹⁹⁹

The two teams had the same financial account. The GPRA leader was interested in studying management improvements and management techniques and enjoyed favor with the top USDA leadership. RCA funds grew short as a result.¹⁰⁰⁰

Just a few years previously however, at the start of the 1990s, the third RCA appraisal effort was seen as the major component of a national assessment. The agency's mission statement produced in 1992 and titled "A Productive Nation in Harmony with a Quality Environment: Soil Conservation Service Strategic Initiatives for the 1990s," identified as one of its supporting goals for the first initiative to "provide leadership to the Soil and Water Resources Conservation Act (RCA) appraisal as a key means to strengthen capability in defining the scope

997. Rominger, Richard, "Working with Private Land Owners" (Remarks by Deputy Secretary Richard Rominger to State Conservationists, Regional Conservationists, NHQ Division Directors and Above in Albuquerque, New Mexico) (NRCS, October 28, 1996).

998. USDA "Data Rich and Information Poor."

999. Personal Interview, 28.

1000. Personal Interview, 25.

of resource problems and designing administrative or legislative solutions.”¹⁰⁰¹ And according to the mid-1990s NRCS Green Sheets (documents produced for the President’s Budget), the agency had every intention of carrying out the full RCA analysis, including one part requiring it to “project the short and long-term environmental quality and sustained agricultural conditions which would be attained under alternative agricultural production, conservation, commodity, environmental, and trade policies and their affect on the environment, producers, and the economic, social, and institutional structure of rural America.”¹⁰⁰² Review of program effectiveness did not make it into the strategic plan.

The strategic plan laid out 5 initiatives. The first was for SCS to participate more in the development of public policy. The second was to emphasize voluntary measures and use any regulatory oversight judiciously. The third was to “provide ecosystem-based assistance” to manage natural resources. The fourth was to encourage water use efficiency and to promote water quality. The final initiative focused on work-force development.¹⁰⁰³ The pressure mounted to cut staff in the face of smaller budgets.

The final RCA document, “America’s Private Land: A Geography of Hope,” contained the same theme of local leadership. It reiterated the agency’s vision to move beyond simple metrics. This was not an easy task, as the authors acknowledged — “[t]he challenge for policymakers today is to capture a national vision that resolves into regional goals and, with

1001. SCS, "A Productive Nation in Harmony with a Quality Environment" (Soil Conservation Service Strategic Initiatives for the 1990s) (April, 1992).

1002. NRCS, "SCS/NRCS Green Sheets," *Explanatory Statement* (Internal documents, 1980 to 2008) (2008).

1003. SCS "A Productive Nation in Harmony with a Quality Environment."

further refinement, translates into local action.”¹⁰⁰⁴ To resolve this ever-persistent dichotomy between the need to direct national goals and the need to remain flexible to local adjustments NRCS suggested emphasizing Aldo Leopold’s “land ethic.” By land, Leopold meant the entire collective community found on the land, including “soils, waters, plants, and animals.” By focusing on those elements at the national level, regional success could be measured.

Not unlike a mission statement would do, “A Geography of Hope,” outlined a research plan to meet the demand for greater understanding of the dynamics of land and the intricate connections between the ecological layers and the socio-economic dimensions. This meant more information gathering through collaborative efforts with other agencies.¹⁰⁰⁵

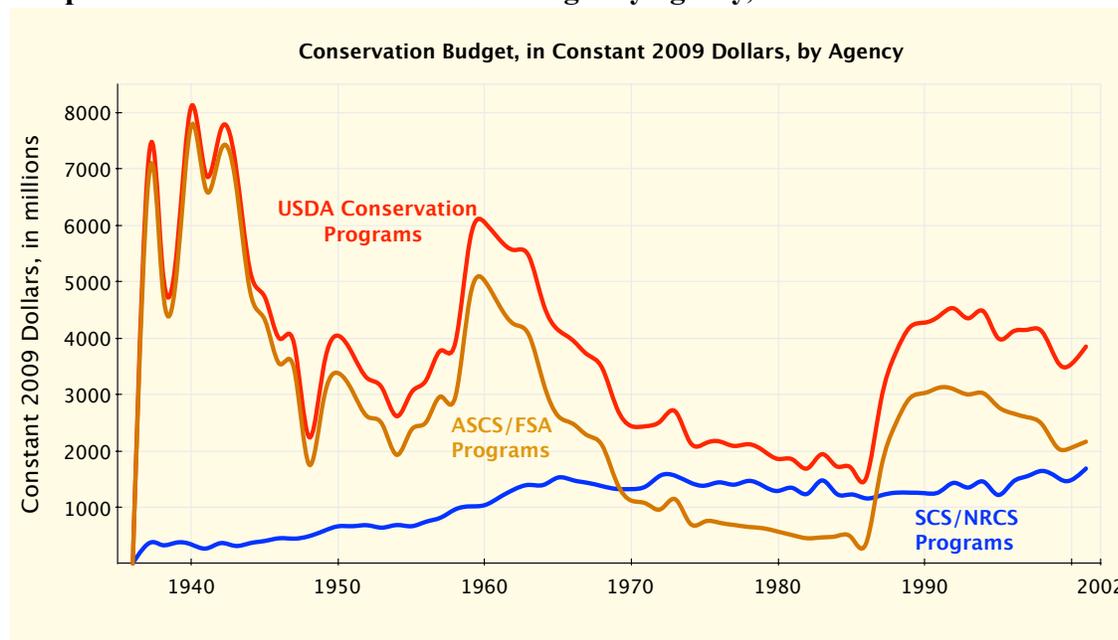
But all of this required money. Chief Johnson’s “Reinvention Forums” — designed to solicit public input on the reorganization effort — found that the public was willing to pay for conservation. Again, consistent with the agency’s goals, “A Geography of Hope” pointed out that the portion of the USDA’s budget dedicated to some sort of a conservation program (especially the ACP early on) was much greater in the first decades of SCS, measured in constant dollars. This point is accurate, as can be seen on the graph below. Using constant 2009 dollars, the expenditures showed that the total USDA budget dedicated to conservation peaked in the 1930s and 1940s and then again in the late 1950s, only to drop down and plateau at a low level by the 1980s. After the 1985 Farm Bill funds again shifted toward conservation, but by the 1990s another stagnation had taken hold. SCS/NRCS budget continued a steady increase throughout the agency’s existence. It is the fluctuation in the ASCS/FSA budgets that was responsible for the gross change. And therein lies the answer. The comparison between the

1004. NRCS "America's Private Land, A Geography of Hope."

1005. Ibid.

1930s and 1940s programs was not entirely fair since most of the funds were going through the ACP in lieu of commodity payments, as described previously. The second bump in the 1960s came primarily because of the Soil Bank program, another attempt to control the commodity policy. The third bump reflected the programs in the conservation title in the 1985 Farm Bill.

Graph 10. Total USDA conservation budget by agency, in nominal 2009 dollars.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

So despite the public input period as part of the Reinvention Forums and the reiterated mission statements in "A Geography of Hope," nothing took the place of the RCA National Conservation Program. There were no projections of future trends nor assessments of policy options in light of those trends. Some specific recommendations did arise. One was to double funding for conservation assistance to match 1937 levels. Another was to strengthen

partnerships and to publicize results more openly.¹⁰⁰⁶ But these did not address broader policy questions. The agency's decision in 1996 to "integrate[] its resource assessment and strategic planning activities that were underway to meet the requirements of the RCA and the Government Performance and Results Act of 1993 (GPRA)"¹⁰⁰⁷ resulted in no analysis of policy alternatives.

The GPRA reforms focused the agency's attention inward, on re-assessing its existing activities and programs. One complaint from the environmental community was that an amendment introduced by Senator Bob Dole (R-KS) to the 1990 Farm Bill limited the number of studies an agency could do, thereby a full assessment of cross-compliance and other programs would not happen.¹⁰⁰⁸ Another, rather strongly worded criticism came from a long-time observer of conservation policy, Ken Cook, who declared that the "[a]gency capacity for policy analysis and program evaluation, never strong, deteriorated perceptibly over the past decade."¹⁰⁰⁹

The strategic plans from 1997 to 2002 and then from 2000 to 2005 placed the focus on re-prioritizing existing concerns, re-shuffling existing programs, and re-thinking delivery of services.¹⁰¹⁰ The documents got more specific with multiple sub-objectives and detailed targets, and have provided, no doubt, valuable guidance to the internal workings of the agency.

1006. NACD, "Achieving Effective Land Stewardship: A Framework for Action" (Draft Report) (1997).

1007. NRCS "SCS/NRCS Green Sheets."

1008. U.S. Government Printing Office, "Conservation Compliance Provisions of the 1985 Farm Bill" (Hearing before the Subcommittee on Environment, Credit, and Rural Development of the Committee on Agriculture, House of Representatives), Web (Washington, August 11, 1994)., p. 28.

1009. *Ibid.*, p. 61.

1010. NRCS, "Natural Resources Conservation Service: Revised FY 2000 and FY 2001 Annual Performance Plans" (Strategic Plan for FY1997-2002) (1999)., NRCS, "Natural Resources Conservation Service Strategic Plan 2000-2005" (USDA, September, 2000).

However, strategic policy initiatives and evaluations, which would normally be part of the RCA process, were missing.

One exception was an effort started by team of high-profile NRCS officials working behind the scenes to develop a framework for a “conservation needs assessments.” The idea circulated in 1996 was to “design and implement a resource inventory and assessment system that provides natural resource information needed to inform and direct community led conservation.” In the best case, such information would be made available at all useful planning levels: watershed, county, and pre-specified regions. The team realized that such assessments would support GPRA goals as well.¹⁰¹¹ Yet no specific design germinated and the team fell apart in the late 1990s as people moved on with their careers. So strategic planning went missing entirely.

Nonetheless, according to many participants and observers, no one on the Hill noticed its absence.¹⁰¹² The debate on the 1996 Farm Bill was already raging and the outcome swept in another set of changes for NRCS and conservation.

6. 1996 Farm Bill: shifting programs to NRCS

The 1996 Farm Bill reframed delivery of the major traditional conservation programs. Several of them — among them the Great Plains Conservation Program and the Agricultural Conservation Program — were brought under one umbrella and renamed the Environmental Quality Incentives Program (EQIP). NRCS would administer all of its components, including

1011. NRCS, "Community Led Resource Assessment Charge" (Internal Document) (July 6, 1996).

1012. Personal Interview, 2.

the financial assistance side, although payments would still be distributed by the FSA; payments formerly had been distributed by the ASCS. The main idea was to provide continued cost-share incentives for farmers to install conservation practices, especially on smaller livestock operations. Large animal operations (or confined animal feeding operations known as CAFOs) were excluded, and maximum cost-share was limited to 75% of the cost with a \$50,000 maximum multi-year payment. The Wildlife Habitat Incentives Program (WHIP) was another new cost-share program specifically meant to provide funds for habitat restoration. Over \$1 billion went to EQIP between 1996 to 2001. WHIP was considerably smaller with only \$70 million spent on it during the same years.¹⁰¹³

EQIP and WHIP became additional mandatory programs, or those whose funding was fixed through the omnibus Farm Bills, rather than through the annual appropriations process as was the case with discretionary programs. In fact, as the graph below shows, before the 1985 Farm Bill, all the funding came through the annual appropriations process. After the 1985 Farm Bill, CRP became a mandatory program (and then the Wetlands Reserve Program in 1990), rapidly increasing the share of the budget funded through this mechanism.

With the 1996 Farm Bill, the share of mandatory programs went up because of EQIP, WHIP, and the extension of the Wetland Reserve Program or WRP, which approached having 1 million acres under its purview by 2001.¹⁰¹⁴ For comparison, the size of the area enrolled in the CRP that year approached 33.6 million acres with North Dakota, Texas, Montana, Kansas and Colorado having reserves of over 2 million acres (and over 4 million in Texas). The five states

1013. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

1014. Wildlife Habitat Management Institute "A Comprehensive Review of Farm Bill Contributions to Wildlife Conservation: 1985-2000."

accounted for nearly 50% of the total enrolled acres.¹⁰¹⁵ In 1996, 80% of CRP acres were in grass cover and 14% in wildlife habitat.¹⁰¹⁶ A major difference between the two land retirement programs was that the CRP involved 10-year contracts, while three-quarters of WRP recipients chose the permanent easement option.¹⁰¹⁷ An administrative change in September of 1996 allowed for continuous CRP sign-ups of high-priority lands without having to wait for the designated sign-ups and at beneficial rates.¹⁰¹⁸

The graph below shows the distribution of the USDA conservation budget. The portion going to SCS keeps going up until 1985 when the CRP was created as a mandatory program run by the ASCS. Since 1985 the number of mandatory programs rose and so did the funding for them. Many of the new mandatory programs, however, would be run by NRCS, explaining the increase in the proportion of the budget going to the agency.

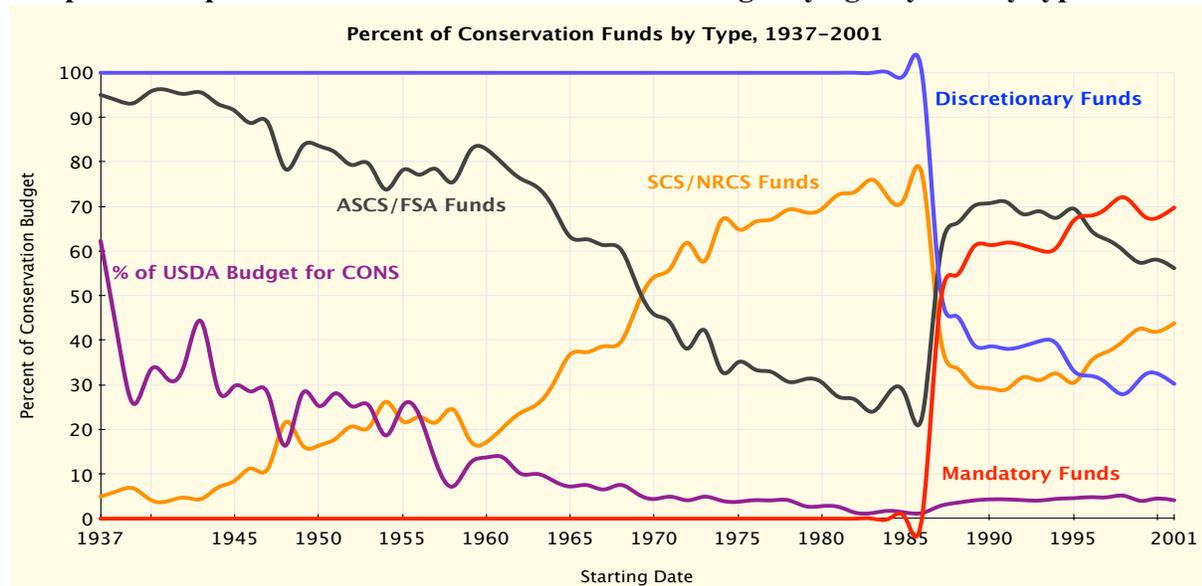
1015. FSA, "Conservation Reserve Program: FY 2001 Summary" (October, 2001).

1016. Wildlife Habitat Management Institute "A Comprehensive Review of Farm Bill Contributions to Wildlife Conservation: 1985-2000."

1017. Ibid.

1018. ERS, "Farm Policy: Title II, Conservation," *Side-by-side comparison: 1996 to 2001* (January 7, 2003).

Graph 11. Proportion of the USDA Conservation Budget by agency and by type.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

The graph above shows that the 1985 Farm Bill sharply increased the share of the USDA conservation budget going through the ASCS (and then the FSA). By contrast, SCS/NRCS share dropped. The trend reversed after the 1996 Farm Bill, as more programs were shifted to NRCS (for instance, one of the longest running ASCS programs, the ACP, was rolled into EQIP).¹⁰¹⁹ The portion of the USDA's total budget going to conservation programs stabilized at below 5% through the 1990s.¹⁰²⁰

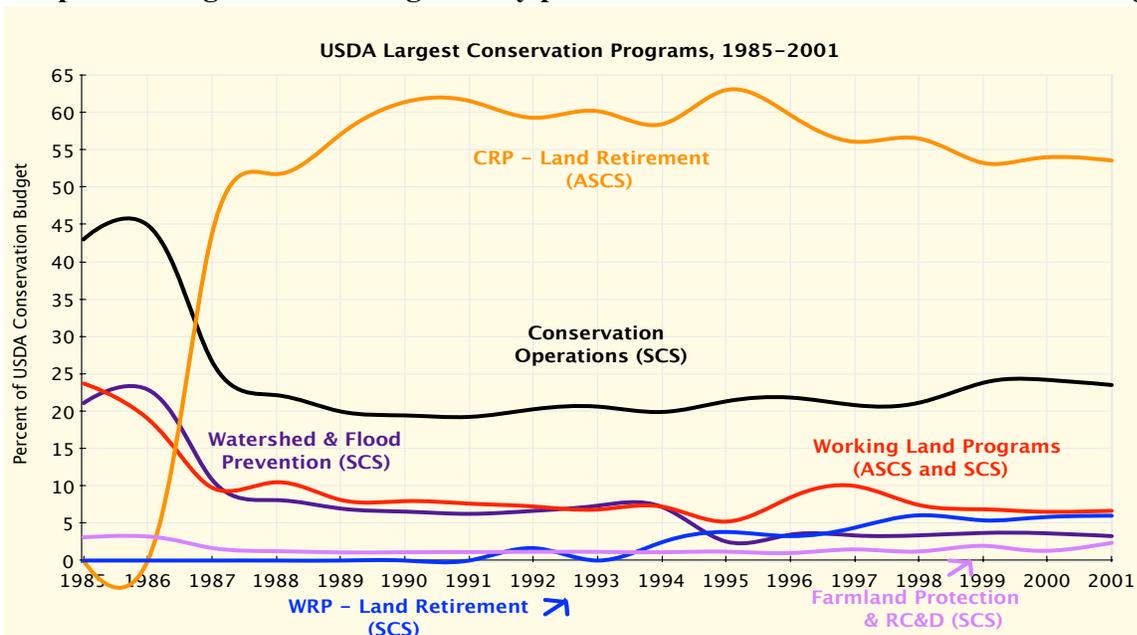
The largest USDA conservation programs relative to the share of total budget between this period are shown in the graph below. The shakeup after 1985 took a few years to stabilize,

1019. NRCS "America's Private Land, A Geography of Hope."

1020. Office of Management and Budget "Historical Tables: Budget of the U.S. Government."; Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

but by 1988 the trend for the following decade was established. The 1990 Farm Bill changed the balance little, while the 1996 Farm Bill initiated a slight reduction in the budget dedicated to the CRP and an increase in working-land programs (reflecting the new EQIP expenditures), as well as land retirement programs run by NRCS. The CRP received nearly \$10 billion between 1996 to 2001.

Graph 12. Largest USDA Programs by percent of the total USDA conservation budget.



Source: Ibid.

Following criticisms in the early 1990s that the money had not been used cost-effectively on the CRP,¹⁰²¹ good news came from researchers who investigated actual progress. Extensive wildlife benefits were documented.¹⁰²² Other studies found economic inefficiencies exaggerated. For instance, one FSA simulation showed that the CRP saved considerable money for the USDA

1021. GAO "Conservation Reserve Program: Cost-Effectiveness Is Uncertain ."

1022. Wildlife Habitat Management Institute "A Comprehensive Review of Farm Bill Contributions to Wildlife Conservation: 1985-2000."

in commodity program expenditures by increasing farm incomes and crop prices at the same time.¹⁰²³ The 1996 Farm Bill created a sub-program within the CRP, called the Conservation Reserve Enhancement Program or CREP. The focus was on building buffers around water bodies. CREP provided CRP benefits on a watershed-scale by requiring that local governments or organizations be the applicants, in order to increase wide-scale participation and, presumably, benefits.¹⁰²⁴ Researchers have long known of the powerful peer-pressure effect, and given the constraints of the voluntary approach, conservationists knew that farmers themselves were the best spokespeople. Some more innovative policy approaches included requiring a participation threshold before benefits were paid to any of the participants — sharply raising the stakes for everyone to get together.

For the first time since the initial appearance of a farmland protection policy in the 1981 Farm Bill, the Farmland Protection Program was funded in 1997. The Program gave matching federal grants toward purchasing conservation easements from the landowners to local organizations who wanted to protect farmland. About \$65 million went to it up to 2001. Funding for the WRP from 1996 to 2001 went up to \$900 billion, four times the amount spent in the first half of the program's existence. On the flip side, money spent on structural activities went down to \$670 million during 1996 to 2001, just half of what it was in the previous six

1023. Barbarika, Alex; Langley, Jim, "Budgetary and Farm-sector Impacts of the 1985–1990 Conservation Reserve Program," *Journal of Soil and Water Conservation* 47, no. 3 (1992): 254-267.

1024. FSA, "Conservation Reserve Enhancement Program" , Web (2012), <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=cep> (accessed April 11, 2012).

years. RC&D expenditures stayed around the same, with \$200 million between 1996 and 2001.¹⁰²⁵

After the surge in the need for technical assistance in the first decade after the 1985 Farm Bill, less and less of the budget was spent on the Conservation Operations Program following the 1996 Farm Bill and the cost-share programs it introduced. While at its pinnacle in 1995, 88% of SCS budget was spent on technical assistance, the percentage dropped to 67% in 2001, a historically low proportion. The actual figure stayed stable, while the total budget continued to increase. Annual spending on all USDA conservation programs passed \$3 billion in 2001. It reached \$1.3 billion for SCS the same year.¹⁰²⁶

Some farmers (including those with highly erodible lands) expressed support for cross-compliance provisions. At a symposium held in Washington, DC in the summer of 1995, farmers who had experience with NRCS felt that the agency was fair in carrying out the provision, although some were concerned that the system tended to ignore violators.¹⁰²⁷ Once again, they knew that the choice would come down between a voluntary-style program or a command-and-control option urged by the environmentalist groups. They contended that agricultural practices were not reformed. A USDA survey found that in the mid-1990s three-quarters of cropland was treated with nutrients and 90% with some kind of pesticide. For corn, 99% of the planted area had nutrients applied to it and 98% had pesticides.¹⁰²⁸

1025. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

1026. Ibid.

1027. RCA, USDA "RCA III: Symposium on Influence of Social Trends on Agricultural Natural Resources."

1028. Padgitt and others, "Production Practices for Major Crops in US Agriculture, 1990-97."

The 1996 Farm Bill changed how strict NRCS would be to potential violators. For example, it reduced the “good faith” or the grace period that the farmer had to implement the measures in the conservation plan from five years to one. On the other hand, if a violation was suspected, NRCS employees were directed to provide information to the violator on how to comply and give the farmer time to do so rather than report the violation immediately. Expedited exemptions to conservation requirements would be granted for crops under stress from weather, disease or pests at the Secretary’s discretion.¹⁰²⁹ Plus, when applying for FSA benefits (i.e. commodity program benefits), the producer could self-certify compliance with conservation plans. The self-certification was valid for 7 years.

7. Water quality in the late 1990s

Despite the renewed focus on water quality issues in the late 1980s and the initiatives in the early 1990s, agricultural water pollution was not getting better. Although the 1987 amendments to the Clean Water Act required states to develop management plans for nonpoint sources and theoretically enabled states to toughen regulations, little action (outside of the USDA conservation programs) followed. The states dragged their feet on designing specific standards for the Total Maximum Daily Loads (TMDL) program. Lawsuits against the states and the EPA spurred action in the late 1990s. In 1997 Vice President Al Gore called for the USDA, the EPA, and other agencies to develop a “Clean Water Action Plan” within 4 months. The Plan emphasized a watershed-level approach to planning and prioritized addressing nonpoint water pollution. The Clinton administration backed the Plan with dollars, as it continued to request

¹⁰²⁹ NRCS, "Transmittal of a Digest of Conservation Provisions of the 1996 Farm Bill" (June 6, 1996).

budget increases for the multi-agency Clean Water and Watershed Restoration Initiative, a \$2.5 billion effort.¹⁰³⁰ The Plan itself consisted of 111 specific actions, many stipulating more research, including carrying out fish surveys, assessing forest health, and developing nutrient transport models.¹⁰³¹

Although the EPA and the USDA endorsed the Initiative and the Action Plan, agricultural groups argued that insufficient data existed to carry out a TMDL-like program. The groups had a point, especially considering that one of the best sources of data on water quality in the nation came from the EPA's National Water Quality Inventory, a source which compiled the states' assessments of water quality in a limited number of water bodies and a source deemed non-scientific by other federal agencies like the USGS and the GAO.¹⁰³² On the other hand, the data collecting process could potentially be endless. After all, states wanting to implement a TMDL program would have to trace individual elements in large waterbodies to their origins and develop a strategy to reduce the inputs. Most states lacked the resources to undertake this, so did the EPA. According to the states' lists of impaired waters, over 20,000 watersheds needed to have a TMDL program developed by the end of the 1990s.¹⁰³³

By the late 1990s, after multiple lawsuits and an extensive public comments period, the EPA issued a major rule tightening TMDL regulations and directing states to start creating

1030. Claudia Copeland, *Water Quality Initiatives and Agriculture* (U.S. Library of Congress, December 20, 2000).

1031. USDA, "Clean Water Action Plan: The Second Year Report: Progress Through Partnerships" (Multi-agency report) (February, 2000).

1032. U.S. Government Printing Office, "Clean Water Action Plan, Review of a Water Pollution Control "blueprint" Proposed by the President" (Hearing before the Committee on Environment and Public Works, United States Senate), Web (Washington, D.C., May 13, 1999)., p. 5.

1033. Claudia Copeland *Water Quality Initiatives and Agriculture*.

TMDL plans within the next 10 years (with a possibility of a 5-year extension).¹⁰³⁴ The EPA's protocol recommended that states develop TMDLs using a combination of monitoring and computer modeling algorithms to arrive at the ultimate numbers.¹⁰³⁵ Contrary to the wishes of agricultural groups, the final rule placed nonpoint sources within the framework of the TMDL plans. Unexpectedly, then, the EPA promptly announced that it had no authority to regulate nonpoint sources. Only the states had that authority, and the EPA would limit itself to enticing states to regulate these sources by building incentives into federal grants to individual states.¹⁰³⁶

This approach hardly appeased the farming community. By the beginning of the 2000s, multiple lawsuits challenged the EPA's authority further. By 2003, the EPA withdrew the 2000 rule, going back to the deadlines established in a 1992 rule and through various lawsuits.¹⁰³⁷

8. Analysis

Coming back to the three guiding questions for this section reveals a convoluted picture.

1. Did NRCS reach out to other USDA agencies and to other federal agencies, for collaboration and eventual use of the results?

The answer to the question is yes.

In terms of collaboration on informational products, SCS collaborated with the other

1034. C Copeland, *EPA's Total Maximum Daily Load (TMDL) Program: Highlights of the Final Revised Rule* (Congressional Research Service, July 18, 2000).

1035. EPA, "Protocol for Developing Nutrient TMDLs" (November, 1999).

1036. Claudia Copeland *Water Quality Initiatives and Agriculture*.

1037. Copeland "Clean Water Act and Total Maximum Daily Loads (TMDLs) of Pollutants, CRS Report for Congress."

agencies as necessary. The second RCA appraisal, for example, used information from the USGS, the Department of Interior, the EPA, and other research. Its projects were based on models developed by ARS and ERS, as well as non-government participants like the Resources for the Future and Iowa State University's Center for Agricultural and Rural Development.¹⁰³⁸ At the start of the third RCA appraisal process, SCS involved other USDA agencies and other federal agencies very actively. USDA agencies on the RCA interagency group included 7 other agencies. The EPA, USGS, Fish & Wildlife Service, Army Corps of Engineers, Bureau of Land Management, the Council on Environmental Quality, NOAA, and Bureau of Reclamation sent representatives for the broader coordinating group.¹⁰³⁹ Their participation primarily involved exchange of data and information.¹⁰⁴⁰ NRCS led a monthly meeting with the agencies to talk about progress.¹⁰⁴¹

With the EPA the relationship was closer. For example, during the second RCA process, EPA representatives were on a panel in charge of distributing funding for the RCA special studies. Plus, all the water quality activity in the late 1980s necessitated close coordination between the EPA and the USDA. Water quality monitoring activities and responsibilities spread across the EPA and the USGS, as discussed.

Collaboration in policy implementation was less smooth. Split responsibilities between SCS/NRCS and ASCS/FSA for technical and financial portions of the CRP and other

1038. USDA "The Second RCA Appraisal: Soil, Water, and Related Resources on Nonfederal Land in the United States."

1039. NRCS "What Is RCA: RCA Issue Brief #1."

1040. USDA "Third RCA Appraisal: Plan of Work for An Integrated Conservation, Commodity, and Environmental Analysis."

1041. Personal Interview, 2.

conservation programs caused confusion. After the 1994 reorganization, the Wetland Reserve Program moved patrons from the FSA to NRCS, thereby putting a stricter interpretation on wetland protection. Issues of compliance and whether the FSA sided exclusively with farmers continued to plague cooperation efforts.

The USDA also ran into problems with external agencies when it came to administering cross-jurisdictional programs. Swampbuster was a particularly tough case, since jurisdiction over wetlands spread out across several federal agencies, including the Army Corps of Engineers, Fish & Wildlife Service, the EPA, and now SCS/NRCS. Some agencies felt left out. The leaders at the Fish & Wildlife Service complained that they were not included in “on-the-ground wetlands determinations.”¹⁰⁴² In the early 1990s the agencies outlined the specific roles for each organization. NRCS was now officially responsible for performing the determinations.¹⁰⁴³

2. Did SCS/NRCS use the results in program implementation?

The answer to this question is that it did in some cases. Most notably, the formula for ranking bids for the CRP was the earliest to use the NRI data explicitly. The formula went from one based on production to one that included conservation priorities, at least those suggested by the RCA process and defined by Congress. The Environmental Benefits Index (EBI) formula considered the NRI as one of the basic data sources in its computation. Plus, often states looked at the NRI data to designate special initiative areas (like to address water quality in a specific

1042. U.S. Government Printing Office "Oversight of Conservation Programs.", p. 114.

1043. U.S. Government Printing Office "Conservation Compliance Provisions of the 1985 Farm Bill.", p. 16.

watershed), which was another criteria in the EBI. Other programs had more difficulties deciding how the funds should be distributed.

In some cases, program allocation did not utilize the NRI or other factors. The states submitted their requests and worked with the Office of the Chief to ensure sufficient funds. On the other hand, the establishment of the State Technical Committees in 1990 gave them considerable power in allocating program money. They had control over how to prioritize actual individual bids for program funds. According to a former NRCS employee, some invited commodity groups and others to participate in the process by letting them suggest cost-share rates and rank priorities.¹⁰⁴⁴ This was not unusual, and not necessarily undesirable since the role of the Technical Committees was to inject different interests' perspectives into the allocation process. Overall, however, it seems that the use of NRI data for programs other than for the CRP was limited.

The RCA received more use internally as the process got combined with the agency's activities related to complying with the National Environmental Policy Act (NEPA). Environmental assessments of programs and environmental impact statements were done within the same framework.¹⁰⁴⁵ Yet whether such use translated into program implementation is highly uncertain.

3. Did some types of information receive more emphasis and others less?

The answer is certainly. Different types of information received variable emphasis as

1044. Personal Interview, 9.

1045. Personal Comment, 48.

political focus shifted from one topic to another. The NRIs themselves varied — because of both practical and political reasons — in the data collected. After the sweeping 1982 effort, the following several asked fewer questions about fewer topics, although the core remained the same. The NRI did not include wildlife habitat information again until 1992. Classification of prime farmlands and estimates of conservation treatment needs went out in 1997. In the 1990s, the NRIs also became the main monitoring tool for large conservation programs like the CRP and the WRP by probing conditions on the sample points enrolled in the programs.

Despite such developments, soil erosion control continued to be the dominant goal of the USDA conservation programs. Beyond the programs, in the early 1990s the USDA also started a private-public partnership — consisting of nine USDA agencies and dozens of outside organizations — to market crop residue management techniques (i.e. no-till or conservation tillage) to producers.¹⁰⁴⁶ But conservation issues are interrelated, and residue management is a great example of one practice that not only slows soil erosion but also provides habitat for wildlife and ensures cleaner water. It was not surprising that NRCS expanded its definition of priorities.

The agency came out with its SWAPA concept or Soil, Water, Air, Plants, and Animals priorities to emphasize the range of priority concerns. So while soil erosion control was the impetus for the 1985 Farm Bill, improving water quality, fish and wildlife habitats, protecting wetlands and grasslands, and reducing surplus production became all stated USDA goals during

¹⁰⁴⁶ NRCS, "Transferring a Copy of the USDA Crop Residue Management Action Plan," *To: Federal Crop Insurance Corporation* (Internal Document) (April 12, 1993).

this period.¹⁰⁴⁷ The second RCA appraisal introduced the Wildlife Habitat Assessment Model to measure how human activity has modified natural habitats.¹⁰⁴⁸ The 1990 Farm Bill emphasized wildlife preservation as a goal for USDA conservation programs, and the changes to CRP eligibility reflected the expansion of conservation priorities. Despite this, wildlife was still not at the top of the agenda for SCS staff in the 1980s.¹⁰⁴⁹ And even by the mid-1990s when the FSA started to investigate how to add a wildlife dimension to its Environmental Benefits Index ranking system (a move supported by Congress), wildlife factors played a relatively small role.¹⁰⁵⁰

Although the emphasis on wildlife grew in the programs, NRCS struggled to provide technical expertise for wildlife conservation. Most of its staff consisted of soil scientists and engineers. In an internal discussion document, the agency acknowledged that the first barrier to delivering wildlife assistance was “the lack of staff with training in wildlife biology.” Another barrier was that “wildlife [wa]s not on an equal level with other agency priorities” covered under SWAPA (soil, water, air, plants, and animals).¹⁰⁵¹ The swampbuster provisions in the 1985 Farm Bill that plunged NRCS into more regulatory waters and that proved to be controversial revolved around wetlands, so the agency by necessity had to work quickly to bring its expertise up. To deal with the issue the USDA needed to train not only more wetland ecologists, but also policy

1047. Scaling, Wilson, "Remarks to Michigan Farm Bureau in Washington, D.C" , NARA (April 1, 1987).

1048. USDA "The Second RCA Appraisal: Soil, Water, and Related Resources on Nonfederal Land in the United States."

1049. Personal Interview, 16.

1050. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 13.

1051. NRCS, "Barriers to Providing Wildlife Assistance" (Internal Discussion Draft) (1996).

personnel as staff in the programs office became inundated with problems related to carrying out the mandate.¹⁰⁵²

Traditional issues continued to dominate the budget, however. Using the delineation in the strategic plan, the resources the agency spent on wildlife habitats (excluding wetlands) was 3% of the budget in 2000. Wetlands received 14% of the resources. Structural protection for watersheds, on the other hand, received the largest share of the fund with 37%. Cropland issues got around 26%.¹⁰⁵³

The USDA's official stance was to expand its conservation priorities. In contrast to the strategic plan SCS developed in 1992, the one the agency did in 1997 (perhaps to define the boundaries of its new name) spelled out the types of land use the agency worked to keep "healthy and productive": cropland, grazing land, watersheds, wetlands, and wildlife habitats.¹⁰⁵⁴ In the 2000-2005 strategic plan for NRCS, the phrasing of the second goal (behind enhancing natural resource productivity) involved the reduction of "unintended consequences" on the environment. A sub-objective included protection of wildlife habitats and wetlands.¹⁰⁵⁵ New issues also arrived on the scene.

In the run-up to the 1994 USDA reorganization, SCS started to put more emphasis on "sustainable agriculture." SCS leaders talked about the need to include all the different resources in planning, soil, water, air, plants, and animals.¹⁰⁵⁶ The National Technical Centers started to

1052. Personal Interview, 28.

1053. NRCS "Natural Resources Conservation Service: Revised FY 2000 and FY 2001 Annual Performance Plans."

1054. Ibid.

1055. NRCS "Natural Resources Conservation Service Strategic Plan 2000-2005."

1056. Margheim, Gary "The Environmental and Agricultural Interface."

develop data interpretative and modeling techniques for all these resources.¹⁰⁵⁷ The SCS strategic plan for the early 1990s had a provision for “ecosystem-based” assistance “for the integrated management needed to sustain natural resources” as its third initiative.¹⁰⁵⁸ Pesticide management rose in importance, as did general agricultural sustainability.¹⁰⁵⁹ The 1996 Farm Bill started the intra-agency Agricultural Air Quality Task Force, chaired by the NRCS chief and composed of members from other USDA agencies as well as the EPA. The participants quickly established a list of research priorities — particulate matter, ozone emissions, and odor — and the USDA entered into a Memorandum of Understanding with the EPA to coordinate and share information and technical expertise.¹⁰⁶⁰ Research was still nascent in this area, and outside of the Task Force, the issue of air quality in agriculture received little actual attention during most of this period.

Water quality, on the other hand, received a lot of attention in the late 1980s, as the USDA moved to develop a water quality policy to incorporate across its programs and as SCS pledged to work with the EPA to address the issue (in light of Congressional action). More so, the appointed Assistant Secretary of Natural Resources and Environment in 1990, Jim Moseley came from the EPA, where he was an agricultural consultant to the Administrator of the EPA.¹⁰⁶¹ The 1990 Farm Bill added water quality (as well as air quality and wildlife habitats) as an

1057. Dornbusch, Gus, MNTC, "Role of National Technical Centers" (by Director of Midwest National Technical Center) (1994).

1058. SCS "A Productive Nation in Harmony with a Quality Environment."

1059. NRCS "What Is RCA: RCA Issue Brief #1."

1060. Air Quality Task Force, "Air Quality Task Force - 2nd Meeting," *Communication to Dan Glickman, Secretary* (June 23, 1997).

1061. "Washington: What's New."

objective for the USDA programs. In 2000, water quality became a top strategic goal for NRCS.¹⁰⁶²

Rural development also rose in prominence, as income support became another stated purpose of the USDA conservation effort.¹⁰⁶³ And although talk of prime farmland protection diminished somewhat from the height in the 1970s, the (unfunded) mandate to do so was on the books and rising in prominence. In 1997 Congress actually allocated funds (\$15 million) for the program. Despite this, the goal to protect prime farmland remained high on the USDA agenda. The first “unintended consequence” that the 2000-2005 NRCS strategic plan promised to address was to “protect farmland from conversion to non-agricultural uses.” This priority was above water and air quality enhancement.¹⁰⁶⁴

One interesting, if not entirely surprising, development was the acceptability of using market schemes to improve ecosystem quality. The 15th annual report by the Council on Environmental Quality published in 1984 recommended water quality trading in a chapter saying that only when water rights and access to public water were established and “recognized as negotiable private property, a freer market can function.”¹⁰⁶⁵ Economists elevated the markets as the solution to efficient water use and to prevent water shortages, especially in the Western states.¹⁰⁶⁶

1062. NRCS "Natural Resources Conservation Service Strategic Plan 2000-2005."

1063. Scaling, Wilson "1987 Chief's Message: Taking Hold of Our Future."

1064. NRCS "Natural Resources Conservation Service Strategic Plan 2000-2005."

1065. As quoted in B D Gardner, "Removing Impediments to Water Markets," *Journal of soil and water conservation* 42, no. 6 (1987): 384-388.

1066. Ibid.

The USDA also started to look into carbon in soils and began its first climate change-related activities in 1992.¹⁰⁶⁷

Overall, this period was marked by an uptick in the number of objectives and metrics the USDA conservation programs were supposed to achieve. A somewhat cynical explanation of this trend is that accounting for additional types of objectives translated into measuring many potential benefits, skewing the benefit portion of the cost-benefit equation. For instance, by the late 1990s the Economic Research Service succeeded in splitting the economic benefits of controlling soil erosion into 11 types. They ranged from benefits to fisheries in the form of better catch rates for freshwater and marine fisheries to lower expenditures of sediment removal from water-treatment plants. When monetized, each benefit produced a fairly low per acre per ton estimate, anywhere from a cent to a few dollars. When aggregated over hundreds of thousands of acres, the total ballooned to millions.¹⁰⁶⁸ Of course, the exact number of millions depended on how many dimensions were counted. The ecological benefits of managing resources that are easier to monetize are highly questionable.

How did Congress impact USDA conservation policy from 1985 to 2001?

The final story looks at the legislative branch and its contribution to conservation policy from 1985 to the early 2000s. Again, I trace the storyline in order to reconstruct the answers to two guiding questions — did House and Senate Agriculture Committee members receive

1067. Personal Comment, 18.

1068. Hansen, LeRoy; Ribaud, Marc, "Economic Measures of Soil Conservation Benefits: Regional Values for Policy Assessment" (Technical Bulletin Number 1922) (September, 2008).

information collected by NRCS, and did they choose policy alternatives consistent with the NRIs and the RCAs?

This section relies primarily on published hearings. To be exact, I read through 12 hearings from the 1990 cycle and 8 hearings from the 1995/1996 cycle. Appendix C lists the hearings. I classified 199 distinct arguments from witnesses, although as before, many more arguments could not be clearly identified or classified. Plus, I used data from the Policy Agenda Project at the University of Texas at Austin to describe the larger context for policy development. Appendix D describes the data sets.

The picture below presents a summary of results. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones. Congress took an interest in a number of policy alternatives and specific conservation issues during this period. A selection is shown here.

Graph 13. Congressional discussion on selected conservation policies and topics from 1985 to 2001.



1. 1985 Farm Bill aftermath

The passage of the 1985 Farm Bill provisions did not guarantee their funding. Less than two weeks before signing the 1985 Farm Bill, President Reagan signed the Gramm-Rudman-Hollings Balanced Budget and Emergency Deficit Control Act.¹⁰⁶⁹ The measure, aimed to curb the largest deficit ever, provided for automatic cuts in non-exempt programs if Congress failed to achieve pre-set targets meant to get the deficit to zero by 1992.¹⁰⁷⁰ All SCS programs were non-exempt and were preparing to take an across-the-board hit.¹⁰⁷¹ Congress did not let this happen, however, and SCS budgets steadily increased to \$700 million in 1989. Figuring in the conservation programs run by the ASCS (primarily the CRP), the 1989 budget topped \$2.3 billion.¹⁰⁷²

This outcome was far from certain during the 1980s. Led by the Reagan administration Congress remained focused on reducing the national deficit. After the Supreme Court invalidated the Gramm-Rudman-Hollings Act because it unconstitutionally usurped the powers of the Comptroller General,¹⁰⁷³ Congress had to work to pass another measure in 1987.¹⁰⁷⁴ Budget uncertainty remained a constant for federal agencies.

But Congressional leaders were also concerned about the burden the Conservation Title (especially cross-compliance) in the 1985 Farm Bill might have brought their constituencies.

1069. Public Law 99-177.

1070. Committee on the Budget, United States Senate "Congressional Budget and Impoundment Control Act of 1974, As Amended."

1071. Scaling, Wilson, "Remarks to the Southwestern RC&D Association at Fort Smith, Arkansas" , NARA (March 5, 1986).

1072. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

1073. *Bowsher v. Synar*, 478 U.S. 714 (1986)

1074. Public Law 100-119.

And many of them were very concerned. Representative Jerry Huckaby, a Democrat from Louisiana, complained that a third of the cotton producers in his state could lose benefits and some could lose it all “with a stroke of a pen in Washington.” In the same breath, he commended the USDA in being flexible and establishing regulations through the *Federal Registry* that solved many of the ensuing problems. Farmers praised the USDA’s continued understanding in implementing the program.¹⁰⁷⁵ Most everyone looked for solutions for farmers when problems invariably came up. For instance, one persistent problem was what to do with alfalfa and other legumes that were part of rotational cropping systems considered to be good conservation practices. The law mandated that conservation plans be developed before grasslands were plowed. So producers using standard rotational systems might find they had little time to comply.

Representative Pat Roberts from Kansas suggested changing the definition of agricultural commodities to include “multiseason legumes,” thereby exempting those producers from sodbuster requirements (since highly erodible fields planted with agricultural commodities from 1981 to 1985 had longer time to comply with the regulations).¹⁰⁷⁶ A consistent theme among House members of the Subcommittee on Conservation, Credit, and Rural Development was the need to tread lightly on the compliance provision and be flexible.

Not everyone agreed, however. Representative Howard Wolpe from Michigan urged the Subcommittee to resist attempts to weaken the cross-compliance provisions with exemptions.

1075. U.S. Government Printing Office "Implementation of and Amendments to the Conservation Title of the Food Security Act; And the Lower Des Plaines Tributaries Watershed Project, Illinois.", p. 3, 45.

1076. *Ibid.*, p. 8.

He argued that all farmers had to participate eventually.¹⁰⁷⁷ Since the Reagan administration proposed deep cuts to the conservation budget, another concern was how to preserve financing for generally popular programs. Using the mandatory funding scheme for the CRP again was the preferred option.¹⁰⁷⁸ And sufficient funding was necessary to keep farmers interested. A 1987 survey of SCS, the ASCS, and the Extension Service personnel found that the main reason farmers signed up for the CRP was “guaranteed income.” The top three reasons for participation related to economic security.¹⁰⁷⁹

Farmers were also concerned about how the swampbuster provision would affect their operations. Again, most policymakers argued for leniency (although some looked for ways to enforce the full provision), while the ASCS admitted in 1988 that it had only 4% of wetlands delineated. Environmentalists questioned the implementation of the law and whether violators were punished, and also pointed out that swampbuster allowed for indefinite grandfathering — the provision kicked in only with future changes to the land. The Fish & Wildlife Service contended that county committee hearings on swampbuster often happened without public notification and lacked transparency.¹⁰⁸⁰ Farmers, on the other hand, complained that identifying wetlands was not easy and the provision severely limited the use of draining. Plus, the penalties were too harsh and should apply only to the portion of the farm in violation and not to the whole farm.¹⁰⁸¹ The swampbuster issue reached critical proportions in North Dakota where producers

1077. Ibid.

1078. Ibid., p. 19.

1079. Ibid., p. 22.

1080. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 38.

1081. U.S. Government Printing Office "Oversight of Conservation Programs."

and environmentalists in the state battled over remaining prairie habitats (one legal case ended up in the Supreme Court).¹⁰⁸²

By the end of the 1980s, however, most of the issues had been resolved. Policymakers generally complemented the USDA on being reasonable. Most of them and interest group representatives felt that the remaining hiccups could be ameliorated administratively.¹⁰⁸³

2. 1990 Farm Bill

So by the time the debate for the 1990 Farm Bill started, the mood casting shadows across the 1985 Conservation Title had lightened. Witnesses at hearings expressed support for how the changes were unfolding, especially the cross-compliance provision that stimulated the large-scale development of conservation plans and the CRP. Many suggested the continuation of the same.¹⁰⁸⁴ Others suggested modifications, mostly to address water quality and wetland habitats.

Advocates of the CRP sought to increase the acreage. Some environmental groups suggested a reserve of up to 80 million acres. Senator Sam Nunn (D-GA) put in a bill to increase the acreage to 65 million.¹⁰⁸⁵ In his proposal, the extra acres would be put to address water quality issues. Others suggested that some of the acres could be used for wetland restoration. The Administration's proposal included reconfiguring the 40 million acre goal for the CRP to

1082. *Ibid.*, p. 643.

1083. See Congressional hearings, 1987-1989.

1084. For example see U.S. Government Printing Office, "Preparation for the 1990 Farm Bill" (Hearing before the Committee on Agriculture, Nutrition, and Forestry, United States Senate on Dairy, Environment, and Conservation Issues) (September 11, 1989), p. 33 and on.

1085. U.S. Government Printing Office "Oversight of Conservation Programs.", p. 19.

emphasize water quality and wetlands. The preferred method would be to allow for longer term contracts for bids focused on these goals. On the other hand, a forum of wildlife groups recommended establishing a Wetland Reserve Program to provide permanent easements for 2.5 million acres.¹⁰⁸⁶ Representative Arlan Stangeland, a Republican from Minnesota, formally introduced a bill to create such a program in the spring of 1990.¹⁰⁸⁷

One of the approved conservation practices for wetland programs was planting trees. The original 1985 Farm Bill targeted to plant 12.5% of CRP acres with trees. By the late 1980s, actual trees planted on CRP lands comprised less than half of this goal. This was a side-effect of a USDA policy that paid farmers almost twice as much to establish grass than trees. One solution proposed was to pay 80% of the cost-share to establish trees rather than the 50% cost-share for grass.¹⁰⁸⁸ President Bush supported tree planting with his “America the Beautiful” tree-planting initiative encompassing the Department of the Interior and the Department of Agriculture.¹⁰⁸⁹ This elevated the issue’s prominence among the members of the House Agriculture Committee.¹⁰⁹⁰ Secretary of Agriculture Clayton Yeutter emphasized that the

1086. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 4.

1087. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Water Quality and Environmental Proposals).", p. 5.

1088. U.S. Government Printing Office, "Review of the Conservation Reserve Program--Georgia Forestry Commission" (Hearing before the Subcommittee on Conservation and Forestry of the Committee on Agriculture, Nutrition, and Forestry, United States Senate), Web (January 19, 1988)., p. 17.

1089. Bush, George, "Message to the Congress Transmitting Proposed Reforestation Legislation" (Public Papers), Web (George Bush Presidential Library and Museum, March 22, 1990), http://bushlibrary.tamu.edu/research/public_papers.php?id=1680&year=1990&month=3 (accessed February 5, 2012).

1090. U.S. Government Printing Office "Preparation for the 1990 Farm Bill.", p. 42.

Department was discussing how to encourage tree planting not only in rural areas through the CRP, but also in urban centers.¹⁰⁹¹

The popularity of the CRP ensured wide support for the program and for the bill to expand the acreage (or at least to meet the 40 million goal) and extend the contract period to 15 years (rather than 10). But not everyone was enthusiastic. Some producers noted conflicts between wildlife and agriculture. The President of the Georgia Farm Bureau Federation gave an example of how a wooded area next door was “leased to hunters and those hunters hunt 2 or 3 days out of the year. I feed their deer 365 days a year in my pasture and they enjoy hunting them 2 or 3 days out of the year.”¹⁰⁹² More seriously, the American Soybean Association pointed out that one of the side effects of the CRP was to shift production from least subsidized to most subsidized crops. For example, soybean farmers who had relatively few support structures worried that the CRP rates provided better incentives to convert out of production. The return for corn and wheat with the subsidies, on the other hand, could not compete with the CRP rates. As a result, the number of soybean acres declined.¹⁰⁹³ On the other hand, the decline in acreage could have occurred in response to lowering prices for soybeans because of greater competition from the South American countries like Brazil. Whether the CRP had a significant impact on the economics of many crops remained an open question.

Still, the most frequently invoked argument against expanding the CRP to 50 or 60 million acres was economic. Representative Virginia Smith, a Republican from Nebraska,

1091. *Ibid.*, p. 44.

1092. U.S. Government Printing Office "Review of the Conservation Reserve Program--Georgia Forestry Commission.", p. 53-54.

1093. K Bader, "Conservation Title Impacts on Producers," *Journal of Soil and Water Conservation* 43, no. 1 (1988): 70-71.

argued that this “would substantially reduce our ability to respond to uncontrollable weather patterns especially drought and would automatically limit our potential to fill expanding export markets.”¹⁰⁹⁴ Many farmer groups were not comfortable with setting aside that much land when changing economic conditions could spell missed opportunities in the marketplace. Moreover, the CRP alone as written to focus on highly erodible lands did not address the more salient environmental issue of water quality. One long-time analyst on the environmental side, Ken Cook, suggested that the CRP might not be the best tool to deal with water quality issues.¹⁰⁹⁵ Technical experts at SCS acknowledged that it was “a mistake to draw a direct correlation between highly erodible acres and leachability.”¹⁰⁹⁶ The CRP could claim few other benefits attributed to it besides improvements in soil erosion control.

Still, the CRP had established momentum, and most suggestions revolved around tweaking the program to include other concerns. A number of producer groups agreed on a joint position supporting the existing 40 million acre goal for the CRP and to allocate another 10 million toward special environmental concerns. Moreover, the groups, which included the major national coalitions of cotton, wheat, corn, soybean, and rice growers, supported more education and research into sustainable agriculture and establishing a USDA Commission to review organic

1094. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 8.

1095. Ibid., p. 33.

1096. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Water Quality and Environmental Proposals).", p. 15.

certification programs.¹⁰⁹⁷ Producers and environmentalists lobbied for greater discretion for the Secretary to waive the 25% county enrollment limit for the CRP.¹⁰⁹⁸

The Bush administration's proposal rectified a persistent inconsistency between commodity and conservation programs. Highly erodible lands diverted through an acreage reduction or a paid diversion program did not fall under the cross-compliance provision. The suggested solution would require annual or perennial cover (in which case cost-share would be available) on a portion of the diverted acres.¹⁰⁹⁹ The Administration also favored expanding the eligibility for CRP to include filter strips and wetlands.¹¹⁰⁰

Other inconsistencies remained unaddressed, however. A GAO study found support for the long-standing claim that commodity programs encouraged extra production of program crops (through crop acreage baselines). Conventional practices were more common on program crops, thereby farm policy indirectly encouraged higher inputs of chemicals.¹¹⁰¹ To decouple this incentive, commodity programs would have to encourage planting diverse crops.

The National Association of Conservation Districts (NACD) came out for no major changes to the 1985 Farm Bill other than an expansion of the CRP, although the organization's leaders expressed concern that technical staff now spent all of their time on complying with the mandates leaving no time for other tasks.¹¹⁰² The Association worked with commodity groups to

1097. Ibid., p. 42.

1098. Ibid., U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title)."

1099. Ibid., p. 5.

1100. USDA, "1990 Farm Bill Proposal of the Administration" (February, 1990).

1101. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Water Quality and Environmental Proposals).", p. 30.

1102. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 23.

reach consistent recommendations to address water quality. The recommendations included more research, local collaboration, and consistency with the recently passed Water Quality Act.¹¹⁰³ Many groups supported increased funding for the low-input sustainable agriculture (or LISA) research project that was created in the 1985 Farm Bill.¹¹⁰⁴ The American Farm Bureau Federation opposed the creation of new programs because of the associated cost, expressing support to concentrate the resources on meeting the 1985 provisions.¹¹⁰⁵

The final bill contained several major revisions to conservation programs. One was that highly erodible lands idled through commodity programs had to employ conservation plans. The bill dealt with a major swampbuster issue of dealing with prior converted wetlands and how far back to look. Now the bill defined them as those drained after the passage of the 1985 Farm Bill. Two additional programs were established — a Wetland Reserve Program with a goal of enrolling 1 million acres and a Water Quality Incentive Program to enroll 10 million acres (despite the Administration's opposition to putting any additional acreage toward a water quality program¹¹⁰⁶). The Secretary could waive the 25% county acreage limit. States could select special watershed areas like the Chesapeake Bay to target enrollment. The bill made no changes to the CRP acreage cap, leaving it at 40 million. Many smaller provisions encouraged research and demonstration projects.¹¹⁰⁷

1103. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Water Quality and Environmental Proposals).", p. 52.

1104. *Ibid.*, p. 66.

1105. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 47.

1106. Yeutter, Clayton, "Concerns Regarding H.R. 3950" (Letter to the Speaker of the House of Representatives) (USDA, July 20, 1990).

1107. ASCS, "Comparison of Commodity and Conservation Provisions for the 1985 and 1990 Farm Bill" (USDA, November 23, 1990).

The debate on the Conservation Title for the 1990 Farm Bill was characterized by coordination and cooperation between environmental and producer groups. The groups on each side coalesced their messages and worked together to develop a united position. All major farm groups signed it and so did the environmental groups.¹¹⁰⁸

On the environmental side, the Conservation Coalition from the 1985 discussion was still intact.¹¹⁰⁹ In 1988, one of its founding members and a frequent participant in hearings, Ken Cook, brought up two questions that have remained prominent since: what happens to conservation during good economic times when farmers are not reliant on commodity payments (hence rendering cross-compliance moot), and what to do with retiring CRP acres?¹¹¹⁰ One alternative for expiring CRP contracts was to let them go. Only a fraction would be left by the end of the 1990s. USDA's economists projected little impact on agricultural production, but undesirable impacts on wildlife habitat, water quality, and soil erosion.¹¹¹¹ The main objection to the other alternative of renewing contracts was the cost.

And the cost was rising because agriculture was prospering. By the mid-1990s, the Uruguay Round was about to bear fruit, surpluses were minimal, corn and wheat prices were on the rise, and farm incomes were about to begin a historical climb.^{1112,1113} This brings us back to

1108. U.S. Government Printing Office, "Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985" (Hearing before the Subcommittee on Conservation, Credit, and Rural Development of the Committee on Agriculture, House of Representatives), Web (Washington, May 7, 1992)., p. 1.

1109. U.S. Government Printing Office "Oversight of Conservation Programs.", p. 238.

1110. Ibid., p. 345.

1111. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 10.

1112. Ibid., p. 11.

1113. ERS "ERS/USDA Data - Farm Income - Data Files."

the first question. When production goals competed with conservation goals, conservation usually lost. But this could happen when the prices are low and economic incomes are depressed so the farmer has to put every piece of land into production and farm it more intensively. Or when prices are high so the farmer no longer relies on government incentives and does not have to abide by conservation plans. Conservation could lose in either case. Only a non-competitive strategy had any hope of lasting longer than business cycles.

The chair of the House Subcommittee on Conservation, Credit, and Rural Development in 1990, Glenn English (D-OK), expressed a similar sentiment when he said that the ultimate level of environmental protection depends on the other titles in the omnibus bill and how farmers' incomes were supported.¹¹¹⁴ At a hearing four years later, Representative Nick Smith, a Republican from Michigan, sounded outright frustrated with Chief Paul Johnson's equivocations on how to detach enticements to invest in conservation from commodity payments.¹¹¹⁵ A representative from the National Farmers Union said his organization also wanted to find ways to entice farmers not receiving subsidies to participate in the conservation effort.¹¹¹⁶

Other powerful interests approached the issue from a different side. Besides initiating the major USDA reorganization, the Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994¹¹¹⁷ also reformed crop insurance policy by providing basically cost-free coverage to producers growing any type of crop. The idea was to reduce ad hoc disaster

1114. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 40.

1115. U.S. Government Printing Office "Conservation Compliance Provisions of the 1985 Farm Bill.", p. 19.

1116. *Ibid.*, p. 30.

1117. Public Law 103-354.

payments that have become common from 1987 to 1994 and to increase participation in insurance programs. The 1994 Act required the purchase of crop insurance for producers interested in receiving USDA benefits, such as commodity program payments, farm loans, or CRP payments.¹¹¹⁸ Participation in insurance programs did not increase, however. By the time the debate on the next farm bill arrived, insurance reform was once again a major issue. Farmer groups argued that in order to boost crop insurance participation, Congress should remove all incentive barriers for participating, including cross-compliance. Farmers stayed away from purchasing insurance because it would subject them to unwanted government regulations.

3. 1996 Farm Bill

The scheduled completion of conservation plans to bring producers into compliance by the end of 1994 was going fairly smoothly. The SCS/NRCS wrote around 1.7 million conservation plans for 1.2 farmers to apply on 143 million acres. Over 90% of the plans were on schedule.¹¹¹⁹ Although practical details sometimes came up as errors were discovered — and Congress heard about such cases from dissatisfied producers, progress in controlling erosion was self-evident to many. Farmers from the heart of the Dust Bowl reported visible results. The Chair of the House Subcommittee, Glenn English from Oklahoma whose district was the epicenter of the Dust Bowl (which took place shortly before the Congressman's birth) also noted visible changes. Recalling being out a bit ago on a particularly windy day, Representative English described his observation — "I was riding in a parade on that day and had an open

1118. Chite, Ralph, "Crop Insurance and Risk Management: Provisions in the Enacted 1996 Farm Bill" (CRS Report for Congress) (May 28, 1996).

1119. U.S. Government Printing Office. "Conservation Compliance Provisions of the 1985 Farm Bill.", p. 10.

convertible, and I did not feel sandblasted at all. There are times in the past that that would not be the case. It was dangerous riding in that kind of wind out there, the dirt was blowing so bad.” A cotton farmer from Texas chimed in, “[s]ome days you couldn’t have seen the middle stripe in the pavement.”¹¹²⁰

A more consistent source of information on soil erosion trends was the NRI. The 1992 NRI showed that water and wind annual erosion dropped on average by 25% from the 1982 NRI numbers.¹¹²¹ Perhaps it was not surprising that such an improvement translated to visible results on the ground.

Information on progress of specific programs, however, was elusive. Environmental groups complained that the USDA did not provide information even on the extent to which farmers complied with the conservation plans.¹¹²² The groups questioned the compliance rate that the USDA calculated.¹¹²³ Another point of contention was the persistent questions of what constituted compliance and when variances were fair to issue. For instance, what to do if a storm damaged a part of a terrace installed through cost-share. Or what to do when a longer-than-usual snow cover interrupted the growing season, throwing off a scheduled crop rotation prescribed in the conservation plan. The farmer may be out of compliance but through no fault of his own.¹¹²⁴ As environmentalists pushed for better documentation of compliance statistics, farmers voiced

1120. U.S. Government Printing Office "Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985.", p. 13.

1121. NRCS "Highlights From the 1992 NRI."

1122. U.S. Government Printing Office "Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985.", p. 33.

1123. Ibid., multiple testimonies.

1124. U.S. Government Printing Office "Conservation Compliance Provisions of the 1985 Farm Bill.", p. 14, p. 32.

concerns that the NRCS staff spent too much valuable time on paperwork leaving less time to provide technical support.¹¹²⁵ The National Association of Conservation District echoed the same concern again.¹¹²⁶

The CRP remained a popular program despite some emerging difficulties. One was the fact that by 1994 a quarter of the land enrolled was not highly erodible and perhaps did not belong in the reserve long-term.¹¹²⁷ Acres that needed to be in riparian buffers to protect water quality more effectively did not make it. Only around 1/10th of 1 percent of CRP acres were in riparian buffers.¹¹²⁸ Some producers (although a minority) called the CRP a failure as an agricultural policy instrument as it did not produce higher prices or improve the farm balance sheet. They argued that the only answer was to maximize production for export markets before others took their place.^{1129,1130} Others pointed to the imperfections in the equations used to measure wind and water erosion.¹¹³¹ Plus, cover crops were attractive habitats for pests and buildup of organic matter through the years presented a fire hazard in some cases.¹¹³²

But evidence of the program's benefits started to trickle in. Besides preventing soil erosion and reducing costs of commodity programs (the Acreage Reduction Program acreage

1125. *Ibid.*, p. 29.

1126. *Ibid.*, p. 34.

1127. U.S. Government Printing Office "Conservation, Wetlands, and Farm Policy.", p. 2.

1128. *Ibid.*, p. 42.

1129. U.S. Government Printing Office, "Future of the Conservation Reserve Program" (Joint hearing before the Subcommittee on Environment, Credit, and Rural Development of the Committee on Agriculture, House of Representatives, and the Subcommittee on Agricultural Research, Conservation, Forestry, and General Legislation of the Committee on Agriculture, Nutrition, and Forestry, U.S. Senate), Web (Washington, September 1, 1994)., p. 19.

1130. U.S. Government Printing Office "Formulation of the 1995 Farm Bill.", p. 29.

1131. *Ibid.*, multiple testimonies, especially p. 32-33.

1132. U.S. Government Printing Office, "Formulation of the 1995 Farm Bill" (Hearings before the Committee on Agriculture, House of Representatives), Web (April, 1995)., p. 277.

went down to 1.5 million in 1992 from 43 million in 1986)¹¹³³, resurgence of wildlife opened new economic opportunities for rural economies.¹¹³⁴ Proliferation of wildlife spurred hunting and the creation of supporting businesses.¹¹³⁵

Of course, the rural economies also benefited from the direct infusion of federal funds. This point was not lost on anyone. In a review of all 375,000 CRP contracts in 1994, the Environmental Working Group found that half of CRP funds were spent on contracts in districts represented by members of the House Subcommittee on Conservation, Credit, and Rural Development.¹¹³⁶ [My statistical analysis of fixed-effects model did not find such a trend, although water erosion rates did play a very small role in determining the distribution of CRP acres. Appendix F provides the details of the results.] While such a charge concealed the fact that some states were represented by only one member in the House and that representatives with large agricultural districts sought out their committee assignments, the fact remained that importance of the CRP to farmers (and hence representatives) was growing. Therefore, the distribution of the money was also important.

One insider reported that while working on the Hill on 1996 Farm Bill, Senators Kent Conrad and Patrick Leahy had their staff test out different configurations of the Environmental Benefits Index (used to rank CRP applications) and their impacts on North Dakota and Vermont.

1133. U.S. Government Printing Office, "Review of the Government Acreage Idling Provisions and Their Impact on Program Commodity Crops" (Hearing before the Subcommittee on General Farm Commodities of the Committee on Agriculture, House of Representatives), Web (Washington, March 29, 1995)., p. 3.

1134. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 1.

1135. Ibid., p. 1.

1136. Ibid., p. 38

The two Democrats competed to make the formula more favorable to their states — a natural instinct for any state public servant. The fight was not partisan, but between geographical regions, Midwest versus the Northeast.¹¹³⁷ This practice of tailoring formulas was not unique to conservation programs. For example, by 2012 Congress still had not defined what “rural” meant for the purposes of allocating USDA benefits both to avoid stranding someone and to forestall controversy generally.¹¹³⁸

Rural economies were not the only beneficiaries. The CRP had also become one of the largest environmental programs in the nation altogether, since its budget rivaled the EPA’s total operating programs budget, as Ken Cook, by then the President of the Environmental Working Group, pointed out.¹¹³⁹ What would happen after the contracts expire was still an open question in the mid-1990s. Initially, the Clinton administration moved to reduce the program in an effort to constrain spending. This was unpopular with Congress and farmer groups (20 of them signed a statement opposing the cut)¹¹⁴⁰ as it forced the USDA to reduce commodity spending to make up for the shortfall, and the Administration reversed its position.¹¹⁴¹ At a public hearing on the CRP, about 98% of those present supported extending the program, although 90% thought it had to be reformed in some way.¹¹⁴²

1137. Personal Interview, 7.

1138. ERS "2012 Outlook Forum."

1139. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 41.

1140. U.S. Government Printing Office "Future of the Conservation Reserve Program.", p. 15.

1141. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 2.

1142. U.S. Government Printing Office "Future of the Conservation Reserve Program.", p. 32.

But the cost of the program was still an issue with the Administration pushing hard for cuts. In some cases, CRP rental rates were two to three times the going cash rent, raising questions about cost effectiveness.¹¹⁴³ The pressure to reduce costs was high, and even environmental groups suggested reducing the rates and allowing occasional managed use of the land like grazing or growing hay to reduce the rates further (producer groups opposed the latter idea because that would mean greater supply and lower prices). Plus, re-targeting CRP acres to maximize wildlife and water quality benefits, in addition to soil erosion, could magnify environmental benefits for the same number of total acreage. The system would have to incorporate local priorities and inputs to optimize the payoff.¹¹⁴⁴ Different priorities and configurations would distribute CRP acres into different counties and benefit different areas. For example, shifting away from soil erosion and toward wildlife enhancement took land out of Texas and Kansas and toward Minnesota and the Dakotas.

Swampbuster received less favorable treatment. Congress members heard many complaints from dissatisfied farmers all of a sudden finding themselves farming converted wetlands. The farmers brought up issues of private property rights and autonomy. In response, Congress moved to protect private property, potentially changing the enforcement of swampbuster.¹¹⁴⁵ It was true that coming up with a standard definition of a wetland proved to be a volatile process.¹¹⁴⁶ In some cases determinations had to be revised multiple times causing stress to the owner. Plus, Senator Max Baucus, a Democrat from Montana, made the point that a

1143. U.S. Government Printing Office "Conservation, Wetlands, and Farm Policy.", p. 20.

1144. Ibid., p. 43.

1145. Ibid., p. 5.

1146. Ibid., p. 16.

scientific definition did not have to translate into policy, “maybe even though technically, from a scientific point of view, an area of land is a wetland. Maybe from a common sense point of view, it should be managed somewhat differently.”¹¹⁴⁷ A representative from the American Farm Bureau pointed out that the NRCS manual defined 13 different types of agricultural wetlands and contained 200 pages on implementing the swampbuster provision. He further added that the current way of administering the provision compromised the historically good relationship between farmers and NRCS.¹¹⁴⁸

The fact that three other agencies had jurisdictional authority over wetlands continued to complicate coordination. Agricultural interests lobbied to have NRCS be the lead agency over agricultural wetlands. Otherwise, as one farmer told Chairman of the House Committee on Agriculture, Pat Roberts (R-KS), “Fish and Wildlife airborne drops behind the lines to create some havoc in the countryside... then the armored Corps of Engineers launches its assault followed closely by the foot soldiers of environmental political correctness, the Environmental Protection Agency.”¹¹⁴⁹ At a convention, the American Farm Bureau members expressed the most concern over wetland regulations.¹¹⁵⁰

A Colorado Farm Bureau representative felt that the numerous regulations burdened producers generally. He argued that, “[t]he Endangered Species Act, unrealistic water quality

1147. *Ibid.*, p. 23.

1148. *Ibid.*, p. 29-31.

1149. U.S. Government Printing Office, "Consideration of Agricultural Wetlands and Wetlands Issues in the 1995 Farm Bill" (Hearing before the Subcommittee on Resource Conservation, Research, and Forestry of the Committee on Agriculture, House of Representatives), Web (Washington, April 6, 1995)., p. 10.

1150. *Ibid.*, p. 4.

demands, and infringement upon agricultural water rights... have threatened producers' property rights and presented obstacles in their ability to produce efficiently."¹¹⁵¹

One idea that came up again was "green payments," or government payments to perform baseline conservation practices.¹¹⁵² Other popular suggestions were to allow wetland and water bank lands eligible for the CRP, to elevate wildlife enhancement to an equal priority status with soil erosion and water quality, and to strengthen the role of State Technical Committees for greater local control. Although the 1990 Farm Bill included a role for the committees, establishing them had been somewhat low on the Administration's agenda.¹¹⁵³

The debate flourished full force in 1995, culminating in a sweeping reconciliation bill that would have set program requirements up to 2002. Yet the resultant bill was vetoed by President Clinton. The pressure mounted to pass a farm bill engendered another round of debates in early 1996. The proposals circulated at the time were much friendlier toward conservation than the ones just a year earlier. The Senate version was more generous toward conservation, while the House less so. The compromise worked out in conference resembled the Senate bill. Senators Lugar and Leahy — the majority and minority leaders of the Senate Agriculture Committee — originally co-sponsored the bill that evolved into the final title.¹¹⁵⁴

The final Conservation Title of the Farm Bill capped the CRP at 36.4 million acres (the number already enrolled) and the cap for the Wetlands Reserve Program stayed the same at around 1 million acres; made the enforcement of the swampbuster provision more flexible;

1151. U.S. Government Printing Office "Formulation of the 1995 Farm Bill.", p. 5.

1152. Ibid., p. 9.

1153. Ibid., p. 484.

1154. Zinn, Jeffrey, "Farm Bill Issues: Soil and Water Conservation," *CRS Issue Brief* (April 8, 1996).

continued the Wildlife Habitat Incentives Program (WHIP); and strengthened the role of the State Technical Committees. Two surprising developments (at least from the stand point of prevailing discussions at public hearings) transpired. One was the creation of the Environmental Quality Incentives Program (EQIP), which became the umbrella program for the Agricultural Conservation Program, Water Quality Incentives Program, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program. Eligibility for many of the programs depended on being located in a watershed priority area, in an attempt to target resources. The programs gave cost-share funds to undertake conservation measures on working lands. The bill reserved half of the funding for livestock operations (this came after heavy lobbying from livestock groups¹¹⁵⁵). In another surprise, the bill contained a Farmland Protection Program that allocated \$35 million toward purchasing farmland easements on 170,000 to 340,000 acres to preserve agricultural lands.¹¹⁵⁶ The 1981 Farm Bill contained a similar program, but it was never funded and apparently forgotten until now.

Most importantly for the commodity side of agricultural policy, the 1996 Farm Bill did away with price support and supply control programs. Instead producers would receive direct payments based on historical production. The bill also attempted to introduce nearly complete flexibility in planting.¹¹⁵⁷

Within the conservation community, however, the important legacy of the 1996 Farm Bill would be the relaxation of the cross-compliance provision included in the 1985 Farm Bill.¹¹⁵⁸

1155. Personal Interview, 1.

1156. USDA, "1996 Farm Bill: Conservation Provisions" (Summary) (1996).

1157. Dimitri, Carolyn; Effland, Anne; Conklin, Neilson "The 20th Century Transformation of US Agriculture and Farm Policy."

1158. Personal Interview, 33, 30.

Farmers purchasing crop insurance were no longer required to comply with the swampbuster and sodbuster conservation provisions.¹¹⁵⁹

4. Analysis

To consider the extent the NRIs and NRI-related information played in Congressional deliberations, I come back to the two guiding questions.

1. Did the House and Senate Agriculture Committee members receive information collected by SCS/NRCS?

The answer to this question is yes.

This period was marked by an interesting shift in how different sides presented their arguments. Whereas in the 1980s the farmer groups were reluctant to sign onto the changes, now it was up to them to argue that everything was going well. The USDA, with Congressional help, made significant adjustments to accommodate farmers and their circumstances in the early days of the changes, and the farmers wanted to continue the arrangement. They frequently shared personal stories of change and dedication to conservation. The environmental groups, on the other hand, challenged the story and how well the progress was going. They invested in their own studies to investigate rate of compliance and exemptions (most notably, the Environmental Working Group with Ken Cook's leadership and the Soil and Water Conservation Society with Norm Berg at the helm).

The NRI was the main source of nationwide statistics on overall status of soil erosion,

¹¹⁵⁹ Chite, Ralph "Crop Insurance and Risk Management: Provisions in the Enacted 1996 Farm Bill."

and, although not intended as such originally, became the assessment tool for measuring the success of the conservation efforts. The NRI results were showing good progress, so government officials and farmer groups used them more frequently than environmental groups to demonstrate the success of the semi-voluntary effort. The surveys from the Conservation Technology Information Center, supported by grants from NRCS, EPA and other agencies, on the use of conservation tillage practices provided another piece of evidence that practices were actually changing. Therefore, no (or little) Congressional interference was necessary on that front, as the argument went.

With swampbuster and the creation of the Wetland Reserve Program in 1990, the wetlands data from the NRI appeared more frequently in discussions (often alongside Fish & Wildlife Service statistics). In fact, after NRCS officially took over the duty to delineate wetlands in the early 1990s, the wetlands data acquired a new sense of importance. For instance, an unusually terse debate broke out over the use of the numbers in a 1988 hearing when the question of which birds depended on wetlands and should be included in accounting arose (in this case, the Democratic Senator Kent Conrad insisted that declining bird habitats were not a problem in his state of North Dakota contradicting Fish & Wildlife Service figures).¹¹⁶⁰ The Senator was well aware that a wetlands designation might upset some of his constituency.

The shift in attention toward water quality in the late 1980s made the NRI less relevant in the pre-1990 Farm Bill discussions when the issue once again rose to the top. But few alternative data sources were available and policymakers noted the dearth of salient data.

1160. U.S. Government Printing Office "Oversight of Conservation Programs.", p. 216.

Senator Bob Dole from Kansas stated at a 1988 hearing that “it is not yet possible to assess the extent of ground water and surface water contamination on a national level...”¹¹⁶¹

Maureen Hinkle from the Audubon Society proposed adding water quality monitoring to the NRI data gathering efforts.¹¹⁶² This did not transpire, but as research in the 1990s established functional relationships between soil erosion and transport of specific chemicals into water ways and their interactions, the NRI sample points became useful parameters to impute water quality (although little of this research made it into the debates since by the mid-1990s, water quality seemed a less pressing issue).

While the NRI was a fairly frequent part of discussion for both farm bills dealt with in this section, the RCA effort did not receive much attention at all. The second RCA appraisal was mentioned once to illustrate estimates of future food and fiber demands.¹¹⁶³ No discussion about policy alternatives during hearings contained a reference to the effort. In fact, compared to the hearings during the debates for the 1985 Farm Bill, twice as many testimonies (out of the ones I reviewed) in the 1990s contained recommendations without much evidence (or at least those stated publicly). Countless environmental groups, farmers, local and state officials offered tweaks and wholesale changes to the existing programs without much justification other than personal experience or personal opinion.

To be sure, countless others did back up their positions with some type of research. Compared to 1985 though, the research cited dealt less with environmental issues and more often

1161. *Ibid.*, p. 6.

1162. *Ibid.*, p. 261.

1163. *Ibid.*, p. 525.

with economic concerns and analyses of implementation of the 1985 programs. The shift in the environmental groups' tactics explains much of this.

During the 1990 and the 1996 Farm Bill debates, environmental groups often presented their policy positions in economic terms. For example, the American Farmland Trust frequently presented original research results on the effects of conservation programs on commodity payments. Senator Nunn quoted the results projecting higher wheat and corn prices as a result of the CRP.¹¹⁶⁴ [Prices did inch up a little right around 1990, but then dropped and plateaued until the mid-1990s and the shifts likely had very little if anything to do with the CRP.] The American Farmland Trust also did not wait for the USDA to do research on sustainable agriculture. The organization was conducting 28 demonstration projects in the Corn Belt to see whether "farmers can increase their yields while reducing applications of chemicals and fertilizer."¹¹⁶⁵ Although the Trust initially stated that in some cases savings of \$10 to \$35 per acre were achieved, further investigation showed no consistent cost savings.^{1166,1167} Perhaps this revealed the truism that Republican Congressman Jim Lightfoot (R-IA) pointed out, "[i]f the solution to our environmental concerns is as simple as reducing the amount of pesticides and herbicides used

1164. Ibid., p. 17.

1165. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title)", p. 27.

1166. Ibid., p. 27., PRNewswire, "American Farmland Trust Releases Reports of Results on Midwest On-farm Demonstration Projects," *News Release* (June 12, 1992).

1167. The American Farmland Trust, *1989 Illinois On-farm Demonstration Project : Results* (Chicago, IL, 1990).; The American Farmland Trust; The Indiana Sustainable Agriculture Association, "Indiana On-farm Demonstration and Research Project: 1991 Results" (March, 1992).; The American Farmland Trust, "Michigan On-farm Demonstration and Research Project" (1991 Results) (1991).

while maintaining high yields, I think farmers would have adopted this practice a long time ago.”¹¹⁶⁸

On the other hand, purely environmental reasons also came into play and basic ecology helped connect the dots. At the time of little empirical evidence in the early 1990s, the representative of the National Association of State Foresters insisted that tree planting under CRP helped multiple goals among them “water protection, wetland protection, wildlife habitat...” and mitigation of climate change. But he also sprinkled his speech with economics promising that trees affected “the future substantial economic returns for landowners.”¹¹⁶⁹ His colleague at the Society of American Foresters echoed that effective management of programs benefited “upland wildlife habitat, carbon storage to combat the greenhouse effect, food and fiber production, and recreation.”¹¹⁷⁰ Neither offered concrete evidence for his statement. Others did, however.

Environmental groups like Ducks Unlimited, as well as academic researchers, responded with studies that indicated quantitative improvements in wildlife numbers. The policymakers wanted to connect those to dollars.

In a hearing on the CRP, Representative Wayne Allard (R-CO), an enthusiastic supporter of the program, demanded that the USDA economists provide him hard numbers on the non-tangible, environmental benefits incurred. He did not think that “the environmentalists necessarily want to force value on [wildlife] benefits,” yet those figures were precisely the ones needed to justify government support. Because if most of the benefits currently quantified —

1168. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Water Quality and Environmental Proposals).", p. 21.

1169. U.S. Government Printing Office "Formulation of the 1990 Farm Bill (Conservation Title).", p. 24-25.

1170. Ibid., p. 29.

like increased farm income, soil productivity, and timber production (because of tree planting provisions) — flowed to the farmer than the farmer would be on the hook to pay for them. So it was up to the USDA to make the first move. Representative Allard reasoned, “[a]nd if you will do that, then you are going to force them to respond, and then maybe we can get some kind of response back from them as to what the value is so that when we get into those discussions those figures can be made available.”¹¹⁷¹

Those types of figures started pouring into the debate shortly thereafter. Environmental groups were first to offer studies on the economic value of wildlife conservation, valued at billions (but not enough billions to cover the cost of the program).¹¹⁷² The economic value of preventing soil erosion was also calculated at billions. The NRI usually provided the baseline data for such soil erosion analysis.

Once again, environmental groups and members of academia came with different types of arguments, although most culminated in economics. Farmer groups were more practically oriented. Many talked about their personal experiences and recommendations for future policy. Farmers appealed to the notion that “farmers and ranchers are environmental stewards,” therefore precluding the need for stricter regulations.¹¹⁷³ And since swampbuster was seen as a restrictive measure, farmers started to evoke the need to protect private property rights, an argument not heard since the late 1970s and the implosion over proposed national land-use legislation.

1171. U.S. Government Printing Office "Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program.", p. 31

1172. U.S. Government Printing Office "Future of the Conservation Reserve Program.", p. 24.

1173. U.S. Government Printing Office "Formulation of the 1995 Farm Bill.", p. 8.

2. Did policymakers choose policy alternatives consistent with the NRI/RCA data?

The answer to this question is a soft yes. There is some correlation between the two, but whether the NRIs and RCAs provided policy direction is less clear. The RCA and the update of the RCA National Conservation Program in the late 1980s (based in large part on the NRI data) suggested a reorientation of SCS policies to focus on water quality, and the suggestion was supported by the rest of the agency. The farm bills also supported the expansion of the agency's mission to include multiple environmental dimensions — also as suggested by the 1996 RCA, “A Geography of Hope.” The renewed focus on bringing conservation to working lands (as opposed to putting land out of production) was also suggested in the RCA document. But it is not clear whether it came first or it just reflected what was already talked about for the farm bill.

But neither of the RCAs offered analysis of policy alternatives or more specific policy recommendations. Yet the 1990 and the 1996 Farm Bills contained considerable reconfigurations. External influences seemed more influential during this period.

The Conservation Title of the 1990 Farm Bill grew out of an agreement reached between farmer groups and environmental groups. The Conservation Title in the 1996 Farm Bill was a compromise between tightening budgets and the need to find common ground.

Yet this renewed commitment to working together can be traced back to the changes instituted in 1985, which unleashed a number of reverberating effects on agricultural policy in general. The House and Senate Agriculture Committees held more hearings on conservation in the late 1980s than ever before. The interest subsided in the early 1990s, but peaked again by the next farm bill discussion. Plus, the number of hearings on wildlife habitats — forests and species preservation — spiked from 1990 to 1995, although quickly falling until the early 2000s.

On the other hand, topics like subsidies, food inspection, and agricultural trade still received the majority of the committees' attention.¹¹⁷⁴

Concluding remarks

So did money go where the NRIs indicated it should? Given the dearth of data on program allocations during this period, it is difficult to test this out. Using funding levels for the Conservation Operations Program, however, statistical analysis was feasible. Appendix F describes the details. Tables 6 and 7 reproduce the results.

The results are dubious, however. A strong statistical association (using fixed-effects regression models for panel data) between conservation operation funds and acres in production, as well as water erosion levels was detected. But those were negative. A positive effect was seen with prime farmland acres, perhaps indicating that some of those variables are correlated (although not as strongly as one might think). The results may mask a divide between small and large states and their historical agricultural production levels. Membership on the agriculture committees (or the conservation subcommittees) or on the appropriations committees (or on the agriculture subcommittees) did not bestow special funding privileges, at least according to this analysis, which obscures the complexity of the issue.

In the late 1980s and through the 1990s, the NRIs remained one of the most important sources of data for nationwide environmental trends. Although they did not deal explicitly with the most pressing problem of the time — water quality — it expanded to meet the demand for data on wildlife and wetland habitats. NRCS recognized the inventories as one of the most

1174. Baumgartner, Frank; and Jones, Bryan "Policy Agendas Project."

visible activities and used the NRI results to showcase its work and to launch its media relations campaign.¹¹⁷⁵ In agency consulted with media insiders and hired a USDA Today artist to illustrate major NRI results.¹¹⁷⁶ Secretary of Agriculture Mike Espy (who served for only two years) held a press conference to showcase the NRI.¹¹⁷⁷

The attention was not undeserved. The EPA's experience with the Environmental Monitoring and Assessment Program proved how difficult it was in practice to undertake national environmental monitoring. For instance, in its evaluation of the program shortly after its conception, the National Research Council questioned whether the EPA could carry out the extensive mission of the program within reasonable cost constraints and at a scale that was relevant to policy analysis.¹¹⁷⁸ In contrast, NRI represented a successful (and improving) strategy for collecting relevant information.

The results were not used to evaluate policy strategy, however. The recommendations in the 1989 NCP update came from participation feedback. The 1996 "A Geography of Hope" contained no analysis of policy options.

NRCS left any type of strategic planning to GPRA assessments. But these consisted of program evaluations not of policy strategies. So despite the quality of data that the NRIs produced, and despite the NRIs being useful for some forms of policy analysis, the agency did not link the inventories to policy. Rather other considerations — primarily practical issues about

1175. NRCS, "NRI Media Plan - the "spring Blitz"" (Draft), JG papers (December 30, 1994).

1176. NRCS, "NRI Communications Plan-Budget Proposal" (February 10, 1995).

1177. NRCS, "Secretary' s Press Conference on National Resources Inventory," *Plan of Work* (Internal Paper), JG papers (July 5, 1994).

1178. National Research Council *Review of EPA' s Environmental Monitoring and Assessment Program: Overall Evaluation*.

implementing the programs engendered in the 1985 legislation like wetland delineation, cross-compliance, and establishing eligibility for programs — drove the debate during this period. General support for programs articulated by many types of constituents gave Congress the green light to extend financial support beyond land retirement and to working lands. And although the scope of issues NRCS addresses grew during this period, it seems to be primarily the result of actions set in motion in 1985, like pushing the agency to deal with wetlands. Plus, besides a genuine realization that conservation could help multiple issues at ones, the more types of conservation practices farmers adopted the more NRCS could claim in program benefits — its accounting was mostly additive so addressing more issues like water quality and wildlife looked better.¹¹⁷⁹ Except for the promotion of water quality to the top of the agenda in the 1989 NCP update and emphasis on working lands in “A Geography of Hope,” the NRIs did not motivate or advance policy from 1985 to the early 2000s as they did in the early and mid-1980s.

¹¹⁷⁹. Personal Interview, 27.

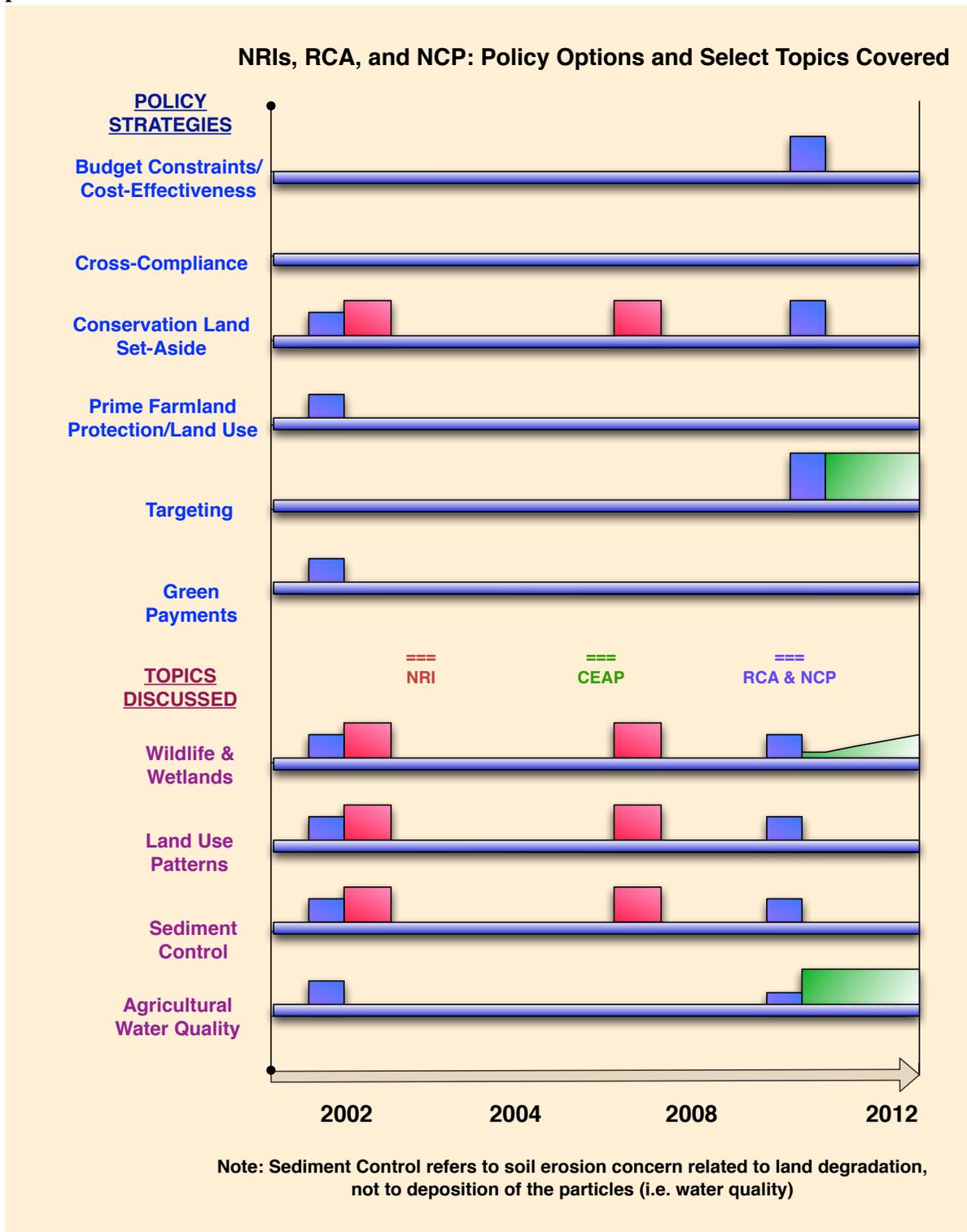
Chapter 6: Period 3, 2002 to present, 2012

How did NRCS respond to new informational needs after 2001?

Once again, the chapter begins with a review of the internal organizational dynamics that played a role in developing new data products during this period. At the conclusion of the section, I bring the history back to the two concrete guiding questions: did NRCS allocate money and staff time to gathering information, and did the agency provide information to external users including to other agencies. As before, I primarily rely on agency documents and interviews to reconstruct this period.

The figure below sketches the main results. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones. The different colors indicate categories of information products. The NRIs are in red, the RCA appraisals and the RCA National Conservation Program products are in blue, and CEAP is in green. Note that the sediment category is distinct from soil erosion, which is a more encompassing term. Sediment refers to land degradation without regard for its associated effects on nutrient run-off.

Graph 14. Major policy considerations and topics addressed by NRI and NRI-related products from 2002 to 2012.



1. 2002 NRI

By the end of the 1990s, the NRIs had become the main assessment tool for USDA conservation programs like the Conservation Reserve Program (CRP) and the Wetland Reserve Program (WRP). Since Congress demanded assessments of and numbers for the programs constantly, the 5-year cycles proved to be inadequate.¹¹⁸⁰

The USDA Forest Service's Forest Inventory and Analysis Program had the same issue. The inventory suffered from a very long inventory cycle (over 15 years in some areas) and delayed analysis and publications of results. One possible move — first discussed internally and then mandated by Congress in 1998 — was to reframe the inventory as a continuous, annual survey of a selected portion of the sampling sites. So a fifth of the sites would be measured annually, thus yielding trend results every five years. Such a design compromised the precision of the data in favor of more timely assessments of the results. Plus, time fluctuations in data posed problems for using them in modeling, which requires a consistent baseline. On the other hand, continuous inventories evened out the workload and made administrative decisions easier.¹¹⁸¹

NRCS leaders talked about making similar changes to the NRI. Since the mid-1990s, smaller specialized surveys already supplemented the 5-year cycle, but a full switch to an annual format required a few years to complete in order to ensure the reliability of the statistical design. After all, the results had to complement the trendline established with the 1982 NRI. The actual

1180. Soil and Water Conservation Society, "A History of Natural Resource Inventories Conducted by the USDA's Soil Conservation Service and Natural Resources Conservation Service" (Briefing Copy) (September, 2008).

1181. Gillespie, Andrew J.R., "Pros and Cons of Continuous Forest Inventory: Customer Perspective" (USDA Forest Service, 1999).

approach meant surveying a small portion of the 300,000 NRI's primary sampling units every year on-site to complement the annual assessment of remote sensing data for a quarter of the 300,000 units. An explicit intention behind the switch was to use NRI data for more modeling, assessment, and policy analysis purposes.¹¹⁸² Smoothing out the workload of the NRI cycles and further development of intra-agency collaboration were additional goals. Nonetheless, the change came at a price. The estimate was for the overall cost of the NRIs to increase by 15 to 20%, which it did. At the same time, margin of error deteriorated because of the reduced number of on-site samples.¹¹⁸³

Already in the late 1990s, special regional offices were created for regional oversight to assemble all the data. In the early 2000s, they evolved into Remote Sensing Labs that took over not only NRI data collecting activities, but also other activities like monitoring compliance with wetland provisions. The agency also invested considerable time and money purchasing photo images at the NRI points.¹¹⁸⁴

But all of these changes were costly. In some years unforeseen budget constraints and tighter deadlines limited the number of samples reviewed, so samples from different years (namely, 2004-2005 and 2006-2007) were combined and cleaned to produce statistically valid results.¹¹⁸⁵ On the other hand, the annual statistical design enabled analyses of specific issues of

1182. Nusser, Sarah; Goebel, Jeffrey; Thompsom, Dean "Recent Developments in the NRI Survey Program."

1183. NRCS, "Building a More Effective Multi-Resource Inventory Capability" (Internal Papers) (1998).

1184. Personal Interview, 31.

1185. Soil and Water Conservation Society "A History of Natural Resource Inventories Conducted by the USDA's Soil Conservation Service and Natural Resources Conservation Service."

interest. For example, the 2003-2007 NRI series focused on rangeland conditions. Results indicated good conditions on 80% of rangelands.¹¹⁸⁶ Much of the data relied on high resolution imagery collected from aircraft flown at 4,000 feet.¹¹⁸⁷ The presentation of the results still followed the original 5-year trend cycle with the national aggregations in 2002 and 2007 despite the fact that data collection became ongoing.

Interestingly, the design of the main survey on crop residue practices, the Conservation Technology Information Center's Crop Residue Management Survey, moved in the opposite directions. The surveys became biennial in 2000.¹¹⁸⁸ In their case, budget pressure had more to do with the decision to cut back. The budget for the NRI, on the other, rose for the most part. The budget in 2001 reached \$30 million in the run-up to the 2002 NRI rollout, then fell to just under \$18 million in 2002. The next four years, however, saw a steadier flow of money with around \$24 to \$23 million.¹¹⁸⁹

The 2002 NRI found further gains in soil erosion reductions. Now the average rate of erosion hovered around 5 tons per acre per year in states with the worst problem — Iowa, Alabama, Mississippi, and Georgia.¹¹⁹⁰

2. 2001 RCA process: the Interim RCA

Considering that the 1985 Farm Bill required appraisals every 10 years and the next RCA

1186. NRCS, "National Resources Inventory: Rangeland Resource Assessment" (October, 2010).

1187. NRCS, "National Resources Inventory: Explanatory Power Point" (Internal Paper) (2001).

1188. NRCS, "Fiscal Year 2000 Crop Residue Management Survey" (National Bulletin No. 450-0-1) (February 23, 2000).

1189. NRCS, "NRI Budget: 1998-2011" (Internal Document) (2011).

1190. NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

was not due until 2005, the 2001 RCA appraisal was meant to be an update on the 1996 effort. Although it became known as the “Interim RCA,” the authors intended the document to be not just an appraisal but also the ersatz National Conservation Program. The official title became “A Resources Conservation Act Report: Interim appraisal and analysis of conservation alternatives,” and the sleekly produced document incorporated both a comprehensive appraisal of natural resources and several policy alternatives tested through complex econometric and processes models. But even with another farm bill just around the corner, most agency insiders felt that the Interim RCA failed to contribute to the debate substantially.

For one, the appraisal did not arouse excitement within the agency itself. The effort had tough time getting started since the top political leadership was busy preparing for the 2000 election.¹¹⁹¹ The process got passed on to an ambitious NRCS official who took over the reins and single-handedly coordinated the report.¹¹⁹² Others remembered that the RCA team worked in isolation and did not solicit much respect from other divisions or other agencies. Plus, the division responsible for strategic planning within NRCS vied for control over the RCA process, so it refused to cooperate.¹¹⁹³

Many within NRCS stated that the very top USDA leadership did not put much stock in the document primarily because they considered it to be unnecessary. The conservation debate was stirring up anyhow (the agency was about to receive its largest budget boost since 1985 in the 2002 Farm Bill).¹¹⁹⁴ And although the NRCS Chief, Pearlie Reed, initiated the document, he

1191. Personal Interview, 10.

1192. Personal Interview, 3, 2.

1193. Personal Interview, 35.

1194. Personal Interview, 2.

was helpless in the face of opposition from other USDA branches. Specifically, the Farm Service Agency (FSA) protested that they were not included in the process and therefore the outcome hardly qualified as a full RCA effort. So the “interim” monicker was added.¹¹⁹⁵

The brush-aside was perhaps undeserved. The final report contained a fair appraisal of the resource issues based on the NRI, the EPA, Census of Agriculture, and other sources. The issues considered included soil erosion, water quantity and quality, air quality and climate change, sprawl and land use trends, wetlands and wildlife habitats, as well as grazing lands.¹¹⁹⁶

To come up with alternative policy scenarios to test for the policy portion of the document, the authors had to piggyback on the already ongoing forums and glean ideas from testimonies and various committee recommendations. They supplemented these by requesting comments from 60 different interest groups representing agricultural and environmental perspectives. Nonetheless, this pales in comparison with the enormous public sessions carried out for the first National Conservation Program in 1982 or even with the public outreach undertaken for the 1989 update. Clearly, the Interim RCA was a low priority for the USDA leaders who were not interested in a more comprehensive approach.

Still, the report used the different sources to outline a number of suggestions. Some of them dealt with obtaining more consistent information, such as establishing better national standards and numerical criteria to evaluate watersheds and ecosystems. Many expressed support for better funding of existing programs. Others indicated that they preferred a shift to “green payments” to pay producers for applying conservation practices.

1195. Personal Interview, 2.

1196. NRCS, "A Resources Conservation Act Report: Interim Appraisal and Analysis of Conservation Alternatives" (September, 2001).

The most interesting portion of the report, however, converted selected recommendations into policy scenarios. Using a combination of three models — one simulating the agricultural sector, another estimating the field-level environmental consequences, and the third combining them into real watersheds across the United States. With the help of ARS and Texas A&M University modelers, scenarios were disaggregated and tested for their impact on farm income and government expenditures as added onto the baseline of current activities derived from the 1997 NRI, the 1997 Census of Agriculture, and other data. The following scenarios individually, or with variations and in combinations were run: increasing the number of acres in CRP buffers to protect water quality (to the 2 million acre goal already underway with the USDA buffer initiative since 1997); upping the CRP cap to 45 million (and actually meeting it); increasing tillage on twice as many acres as then; and starting a Grazing Lands Reserve Program at \$50 million. Yet most interestingly, the researched looked at the impacts of redistributing a significant portion of the USDA conservation budget in “green payments.”

To provide a benefits estimate, the scenarios also included calculations of environmental monetary benefits. Because the researchers used the same values of benefits across the scenarios, the benefits-cost ratio in this case gives a helpful ranking of the projects. Using such scale, the Grazing Lands Reserve Program lost out on all counts. The modelers found the best benefit-cost ratios for putting CRP land into buffers and with green payments combined with requiring erosion control up to the “T” levels. Requiring soil erosion control to more “sustainable” level rapidly increased the cost. Despite simultaneous increases in environmental benefits, they could not catch up to the costs, thereby decreasing the overall ratio. The producers won out almost in every scenario because money flowed to them. The only scenario where they

experienced a serious cost was doubling tillage acreage. The lowest benefit-to-cost ratio was for the grazing lands reserve.¹¹⁹⁷

Congress allocated \$23.5 million toward such an initiative in 2003.¹¹⁹⁸ While the details of the models could be contested (for instance, the “green payments” scenario was regrettably crude), the results highlighted trends and provided an evaluative criterion between the different policy options.

Since the “interim” RCA document provided a nice compendium of facts relevant to conservation policy, it was used for internal purposes at NRCS like in strategic planning or during budget formulations.¹¹⁹⁹ It also provided a funding source for developing the processes models and building the platform for NRI-based nationwide estimates of the environmental effects — or the seed for the Conservation Effects Assessment Project.¹²⁰⁰ But it was not used on the Hill. In fact, some at the very top of the USDA leadership considered the RCA to be a blatant effort by NRCS to increase the agency’s budget.¹²⁰¹ Interestingly, this view was common during the origins of the RCA appraisals in the late 1970s. Among their ranks, the USDA leaders now included veteran employees from that era, perhaps explaining the distrust.¹²⁰² More pertinent was that the Department lobbied Congress to exempt it from the RCA requirement coming up in the

1197. Ibid.

1198. 108th Congress, "Joint Resolution: Consolidated Appropriations for FY 2003" (February 20, 2003).

1199. Personal Interview, 2.

1200. NRCS, "Status of National Nutrient Loss Database and NRI Simulation Model Project and Proposal for Continuing Funding Through April, 2003," *Internal Document* (March 1, 2001).

1201. Personal Interview, 35.

1202. Personal Observation.

mid-2000s. The 2002 Farm Bill not only increased the conservation budgets significantly, it also excused the USDA from conducting the next RCA cycle.

3. Creating CEAP (Conservation Effects Assessment Project)

Over a decade went by without a strong assessment relevant to policy. NRCS leaders felt the dearth of policy-relevant information. The NRIs started to take on more program evaluative functions by asking specifically whether the acres at the sample points were enrolled in the Conservation Reserve or the Wetland Reserve Programs. Yet this was inadequate to meet a new need. Expansion of programs delivered many types of conservation assistance, but the debate was still unsettled about how to optimize recommendations to achieve useful results.

The conservation community has been aware that the most useful results — and those demanded by the public — come at a watershed level. Conservation is most beneficial when it engenders improvements to the aggregate watershed. Calls to steer NRCS conservation efforts toward the watershed approach go back many decades. Yet doing so given practical considerations proved to be more difficult.

Already in the late 1970s researchers started developing modeling techniques to estimate watershed-wide environmental impacts from agriculture. To build more nuanced models required calibration and experimentation in actual watersheds. Such opportunities came along throughout the years, usually through funding from the USDA or the EPA. For instance, through the Rural Clean Water Program started in 1980 at a cost of \$64 million, researchers attempted to

evaluate the impacts of varying conservation practices in 21 watersheds.¹²⁰³ The EPA's Section 319 National Monitoring Program was developed to monitor watersheds that received Section 319 grants (around \$3.5 billion in total since 1990).¹²⁰⁴ Although some of the early efforts yielded inconsistent results, they provided valuable chances to improve research design and to start developing processes models to define relationships between practices and outcomes.

At the same time, such processes models could be combined with socio-economic and practices data to use for policy analysis. As part of the USDA's Water Quality Initiative begun in 1989, the Economic Research Service (ERS) started to experiment with surveying farmers' practices including their use of fertilizer and chemical inputs. Eventually in the mid-1990s, the different surveys were folded into the Agricultural Resources Management Survey. In the early 1990s, however, one of the projects was called the Area Studies Surveys and included several USDA agencies as well as the USGS and the EPA. The idea was to use NRI points in conjunction with the USGS' National Water-Quality Assessment Program area and connect them to survey results. This was initially tested on pilot watersheds before being conducted across 12 watersheds.¹²⁰⁵ One ERS employee who worked on the pilot surveys closely with the NRI data was Robert Kellogg.

At the same time, researchers became interested in using new computer tools like the Geographic Information System (GIS) to connect existing data to geographic points. One

1203. Osmond, Deanna "USDA Water Quality Projects and the National Institute of Food and Agriculture Conservation Effects Assessment Project Watershed Studies."

1204. US EPA, "Clean Water Act Section 319(h) Grant Funds History | Polluted Runoff" , Web (2012), <http://water.epa.gov/polwaste/nps/319hhistory.cfm> (accessed March 26, 2012).

1205. Keith Caswell, Margriet; Fuglie *and others*, "Adoption of Agricultural Production Practices: Lessons Learned From the U.S. Department of Agriculture Area Studies Project," *Economic Research Service* (January, 2001).

organization working across federal agencies to bring such tools to their analytical divisions was the National Center for Resource Innovations. With help from leaders at the American Farmland Trust who had connections in Congress, the small nonprofit received funding from both Congressional Agriculture Committees (the Senate gave the initial funding, then the House followed suit). As a result, the researchers had good access to different agencies and an independent relationship with them, since there was no reliance on agency funding. One of the founders of the nonprofit, Margaret Maizel, wanted to explore the opportunity to use new technology to bring in multiple layers of data and connect them for analytical purposes. She knew of the NRI and could see that the survey could be used as the backbone for such a project. The NRI sample points could be split up according to geographical units used in other data collections (like hydrological units or Major Land Resource Areas), thereby allowing for overlap and extrapolation into a variety of new subject matters. Margaret reached out to NRCS and the Resources Inventory Division (RID). While staffers at RID initially had concerns about privacy issues, they were open toward extending the analytical potential of the inventories. To do the first analyses, they reached out to the ERS and to Robert Kellogg.¹²⁰⁶

The first project involved investigating regional potential for pesticide leaching based on known cropping practices and distribution of such crops across the country.¹²⁰⁷ The research focused on water quality impacts and did not tie the results into an economic framework — counter to the usual focus of ERS studies. Preferring to pursue his research on the environmental dimension, Kellogg was able to move to NRCS (at the time SCS), close to the NRI. He

1206. Personal Interview, 37, 3.

1207. Kellogg, Maizel and Goss, "Agricultural Chemical Use and Ground Water Quality: Where Are the Potential Problem Areas?."

continued his research with the NRI database and with the modeling frameworks developed elsewhere at the USDA, like the Erosion-Productivity Impact Calculator (EPIC) built by modelers from ARS with support from other research centers located in Temple, Texas.

Since its creation for the very first RCA, when researchers primarily wanted to estimate the effect of erosion on crop productivity, EPIC had undergone many changes and calibrations, growing into a model that related hydrology, weather, erosion, addition of nutrients, temperature of the soil, plant growth cycles, tillage practices, level of treatment for the particular parcel, and basic economic expenses at the field level. Several submodels made up the smaller components.¹²⁰⁸ The expansion of the model also prompted a change to the phrase behind the acronym. The model was renamed Environmental Policy Integrated Climate (still EPIC), and newest iterations included carbon cycling simulations.¹²⁰⁹ Already since the mid-1970s, the ARS started to build nonpoint source simulation models in response to the Clean Water Act. The models related the level of edge-of-field runoff of nutrients and pesticides.¹²¹⁰ In the early 2000s, the RCA appraisal effort funded further experiments with connecting NRI points to the EPIC model.¹²¹¹

Validating and calibrating the models required data from on-the-ground experimentation. Much research in the 1990s went into expanding the modeling framework. Prompted by an EPA

1208. J R Williams, "The Erosion-Productivity Impact Calculator (EPIC) Model: A Case History," *Philosophical Transactions: Biological Sciences* 329, no. 1255 (1990): 421-428. <http://www.jstor.org/stable/76847>.

1209. Ibid.

1210. USDA/ARS; Texas A&M University, "SWAT: Soil and Water Assessment Tool" (SWAT98.1 documentation) (1998).

1211. NRCS "Status of National Nutrient Loss Database and NRI Simulation Model Project and Proposal for Continuing Funding Through April, 2003."

project on researching the impacts of livestock operations on watersheds (called “Livestock and the Environment: A National Pilot Project”), researchers connected homogenous field-level effects into watershed-level effects, combining the complex chemical cycles to evaluate how entire watersheds responded to the mix of activities along its shores. The Agricultural Policy/Environmental eXtender (APEX) model was born.¹²¹² To incorporate other land uses beyond agriculture like urban and to connect streams to the watersheds, researchers built the Soil and Water Assessment Tool (SWAT) and the Hydrological Units of the United States (HUMUS) model often used in conjunction with one another.¹²¹³ The SWAT/HUMUS modeling framework was built originally for the mid-1990s RCA appraisal that never materialized.¹²¹⁴

Much of the coordination related to model developments came through the Water Quality Initiative begun at the very end of the 1980s. Through it many of the federal agencies (and many of the USDA agencies) coordinated different water quality research functions and which helped fund the early “fate transport” models. The EPA, for example, provided some funding to start-up the development of the SWAT model.¹²¹⁵ By the end of the 1990s, however, the initiative was running out of steam.¹²¹⁶

When the conference report on the 2002 Farm Bill contained language to invest \$10 million in monitoring of farm bill programs, the top NRCS leadership was surprised. According

1212. NRCS, "APEX Model Upgrades, Data Inputs, and Parameter Settings for Use in CEAP Cropland Modeling" (January, 2011).

1213. USDA/ARS; Texas A&M University "SWAT: Soil and Water Assessment Tool.", NRCS "APEX Model Upgrades, Data Inputs, and Parameter Settings for Use in CEAP Cropland Modeling."

1214. Arnold, J.G.; Chinnasamy, Santhi; Di Luzio, M.; Haney, E.B.; Kannan, N.; White, M., "The HUMUS/SWAT National Water Quality Modeling System" (October, 2010).

1215. Personal Interview, 7.

1216. Personal Interview, 3.

to insiders, the 2002 Farm Bill was unusually open to influence from many different participants.¹²¹⁷ Some in the conservation community were especially interested in establishing monitoring and succeeded in putting in general language. Since the budget for conservation programs dramatically increased as well, it made sense to spend a portion on checking the outcomes. The initial sum included in the Senate version was \$20 million drawn out of mandatory CCC funds (Commodity Credit Corporation that finances USDA commodity operations and mandatory conservation programs like the RCP run by the Farm Service Agency), but it was yanked away at the last minute when Senator Kent Conrad, a Democrat from Minnesota, needed exactly that amount to make a tiny adjustment (a portion of a penny) to the minor oilseeds commodity support program (minor oilseeds are made from crops other than soybeans).¹²¹⁸

Although as a result CEAP did not become a mandatory program, the final conference language stated that “education, monitoring, and assessment... be conducted as a part of the technical assistance” of conservation programs at a cost of \$10 million a year. Furthermore, the Department was encouraged to leverage partnership expertise by working with states, nonprofits, and universities.¹²¹⁹

The Resource Assessment Division (RAD) director, located in the same deputy chief area as the NRIs, read the vague language and realized the potential opportunity. Because the 2002 Farm Bill also excused the USDA from conducting the RCA appraisal, there was no RCA to which this could be attached. Instead, a group of staffers — with their previous research

1217. Personal Interview, 3.

1218. Personal Interview, 33.

1219. U.S. Government Printing Office, "Farm Security and Rural Investment Act of 2002," *Conference report to accompany H.R. 2646* (House of Representatives) (May 1, 2002).

experience — created a proposal for a new project. Staffers included Robert Kellogg, who had experience with the NRIs and modeling. The inventories with their national extent seemed like a natural starting point. One of the persistent research needs was to connect the NRI points to farmer activities. At the time, \$10 million also seemed like a lot of money, and the team proposed doing a national survey of farmers at the NRI points. The NRIs had many different types of information except for actual production practices taking place on the land. This was the missing piece necessary to establish a connection between the myriad of conservation practices and environmental outcomes.

In addition, RAD met with the ARS leaders. Some of the research agency's work was losing relevancy as the Water Quality Initiative simmered down, and RAD suggested that joining the new assessment effort could make use of the innovations created during the effort.¹²²⁰ The Water Quality Initiative meetings that involved several federal and USDA agencies provided a good entry point to potential partners. At one of the meetings, an NRCS representative came in to discuss using the NRI and models to look at conservation outcomes and asked for feedback. Much of the feedback suggested doing not only a modeling approach but also undertaking watershed studies. Although NRCS did not get involved much in direct research, the reply was positive as long as other partners could provide some of the funds. The ARS leadership was very interested in taking the opportunity.

The new project was named the Conservation Effects Assessment Project or CEAP. The main component revolved around cultivated croplands since many of the developed models already existed for it. The initial idea was to extend a survey to NRI sample points on farmer

¹²²⁰. Personal Interview, 3.

practices and to do a national assessment of conservation treatment needs. Assessing conservation treatment needs went away with remote sensing technology, and NRCS analysts have tried in the past to bring it back.

The NRCS staff reached out to its partners first before going to the top leadership. Getting the ARS involved was crucial.¹²²¹ Other partners like the ERS initially disliked that NRCS was leading the effort. Some in the leadership wanted to undertake and lead the project itself, even complaining to the OMB about the case. When other leaders rose to the top, the problems disappeared signaling that the initial issues were related to personality issues rather than inherent systemic resistance.

On the other hand, the head of the USDA's National Agricultural Statistics Service (NASS) was on board right away and helped design the CEAP-NRI national survey despite the initial ERS opposition. For validation and analytical purposes, NRCS staffers wanted to ask farmers for their practices during the previous three years, not just one. Traditional ERS surveys asked for one year's worth of practices and researchers questioned whether adding extra years was a wise use of resources prompting further disagreement between the two agencies.¹²²² In the end, asking for three years worth of information on practices proved critical to the surveys and the final product. But at the beginning what sold CEAP to the very top of the USDA was its ties to the NRI.

Leadership there was just taken over by the former head of the Strategic Planning & Budget Analysis division in the late 1980s, R. Mack Gray. Back then, strategic planning was its own Assistant to the Chief office — on par only with the Assistant Chiefs to the state offices.

¹²²¹. Personal Interview, 35.

¹²²². Personal Interview, 20.

Gray retired in the early 1990s, but came back to become the USDA Deputy Undersecretary for Natural Resources and Environment in the early 2000s. Although he was initially skeptical about CEAP, he trusted the NRIs and came to support the project. (Gray had used the NRI and the predecessor surveys in his policy research at the USDA going back to the 1970s, although he intensely disliked the RCA and thought of it as a waste of budget dollars).^{1223,1224} By 2003, the Resources Inventory Division (RID) was merged with the Resources Assessment Division (RAD) within the Soil Survey & Resource Assessment Deputy Chief area to form RIAD. The new division's leaders scurried to start CEAP.

Yet when time came to appropriate the money for the project, at first none materialized. One opportunity came when the Deputy Chief became aware of an uncommitted sum of \$8 million under NRCS purview of CCC funds. He wanted to persuade the top to spend it on CEAP. The newly appointed NRCS Chief Bruce Knight — who signaled a transition to the Republican administration after the 2000 election — questioned why the money could be diverted out of programs. While he did not allow the use of CCC funds, the team did succeed in securing \$8 million from the conservation operations fund as a dedicated line item starting with fiscal year 2004.¹²²⁵ CEAP received around \$5.4 million in 2003, the official starting point of the project.¹²²⁶

One of the reasons for success was that the team made its case by tying the CEAP

1223. Gray, Roy M, "A National Soil Conservancy Law: Implications for Public Soil Conservation Programs," *Journal of Soil and Water Conservation* 29, no. 5 (1974): 210-212.

1224. Personal Interview, 35.

1225. Personal Interview, 14.

1226. NRCS, "CEAP Budget: 2003 to 2011," *Internal Documents* (2012).

concept into existing USDA research capacity.¹²²⁷ The NRI sampling points provided the initial points, technical centers contributed the modeling expertise, the ARS shared its long-term research results and other resources, and NIFA (the Extension Service agency) expanded its watershed studies design to meet CEAP needs. Involvement of outside research centers and universities bolstered the case that the assessments would be apolitical. Soil and Water Conservation Society stands out among the organizations as one tapped to pull together collaborative research seminars and anthologies. It also led the Blue Ribbon panel for CEAP. The Society pulled together a number of leading thinkers in conservation policy. The panel recommended orienting CEAP toward strategic policy questions (including tying the results into the RCA process) and carefully thinking about considering effects in context of the limited available monitoring data. It also advocated for a regional watershed-based focus.¹²²⁸ By that point, the several million dollars promised did not seem like much money at all. But getting even this level was not easy.

At the end, the money for the NRCS portion came from existing program funds, not through “new” dollars. Still, the rest of the USDA conservation agencies viewed the effort positively. After all, the goal of CEAP was to look sharply at the practical questions about conservation: what are the specific benefits from a conservation practice and from a suite of conservation practices? Since establishing conservation practices was linked to NRCS programs, the CEAP process allowed for evaluation of practices, if not programs themselves. In fact, early

1227. Personal Interview, 14.

1228. Soil and Water Conservation Society, "Final Report: From the Blue Ribbon Panel Conducting An External Review of the U.S. Department of Agriculture Conservation Effects Assessment Project" (2006).

on a decision was made not to focus on the programs but on the practices.¹²²⁹ This made practical sense since USDA conservation programs essentially provided different ways to bring conservation practices onto private lands. It also made political sense since no one wanted to rank popular programs against one another, especially since the outcome was far from certain.

The finer details of CEAP were decided within NRCS for the most part.¹²³⁰ But many of the early decisions were vetted and coordinated through the CEAP Steering Committee. Its members included participants in an Interagency Advisory Group, which included the ERS, FS, EPA, USGS, Fish & Wildlife Service, and other agencies, and participants in the newly created CEAP Executive Steering Committee, which included top leadership from other USDA research agencies like NRCS, ARS, NASS, FSA, and NIFA.¹²³¹ Eventually an overarching CEAP Steering Committee took over the coordination efforts with much of the top leadership replaced by rank-and-file staff.¹²³²

The Blue Ribbon Panel gave the effort an overarching mission. At first two major parts were envisioned: a National Assessment complemented by regional watershed assessment studies.

The National Assessment branched out to include four major components. The cropland component had the farmer surveys at their core and was the starting point since that was where most USDA money was spent. Around 19,000 NRI points across the nation were used to survey farmers from 2003 to 2006. The NRI points were especially useful for the cropland component.

1229. Personal Comment, 38.

1230. Personal Interview, 14.

1231. NRCS, "Measuring the Environmental Benefits of Conservation," *The Conservation Effects Assessment Project* (CEAP Briefing, Internal Document) (2004).

1232. Personal Interview, 39.

Other components were created in part by happenstance, but in larger part because the leaders of CEAP kept an eye out for recruiting needed specialists. As a result, they drafted a wetlands specialist who was interested in assessing ecosystem services on wetlands to start working out a wetlands component.¹²³³ This was a natural decision since the NRI already collected information on wetlands. The wildlife component was the one odd addition because the NRI collected little detailed information on it. Yet wildlife habitats restoration has been one of the core parameters for calculating CRP bids since the 1990s — and the CRP was still the largest single USDA conservation program. Plus, the NRCS Chief at the time, Arlen Lancaster, was an enthusiastic advocate for wildlife.

NRCS started developing research capacity for wildlife evaluations in the 1990s. One of its research centers was dedicated to wildlife and the agency started to attract top wildlife biologists. They drafted more specific evaluation criteria for assessing wildlife impacts. To get input from others on how to implement such assessments, NRCS staff invited dozens of experts to participate in a discussion. Many of them were gathering for a conference on the CRP in Fort Collins, Colorado, in the summer of 2004, and so they stayed extra time to brainstorm ideas. The CEAP-Wildlife component was born.¹²³⁴ One of the first actions was to update the scientific review of farm bill programs and their contributions to protecting wildlife habitats. The 1985 to 2000 assessment was very well received by both NRCS partners and Congress.¹²³⁵ The studies within the assessments focused primarily on the CRP, since that was the largest conservation program. While NRCS funded some of the research, most studies had external funding. The

1233. Personal Interview, 39.

1234. Personal Interview, 4.

1235. Personal Interview, 3.

next update for the years up to 2005 came out as an official partnership with CEAP. The CEAP framework was used not only to compile the disparate studies, but also to fund projects looking into effects of conservation practices on specific wildlife species.¹²³⁶ A similar compilation of our state-of-knowledge on cropland conservation was also done.¹²³⁷

Extending CEAP to grazing lands took longer, again primarily because at the time NRCS grazing land specialists (or at least their directors) resisted the idea. Once leadership changed hands a few years down the road, an enthusiastic leader embarked on developing that portion.¹²³⁸ Grazing lands include rangeland and pastureland, which require drastically different management practices since the first relies on native grasses and vegetation, while the latter grows domesticated plants suitable for livestock. This complicated the picture and required considering the two separately. One of the first products from this CEAP component was the Rangeland CEAP Synthesis. The result of several years of work of many rangeland scientists an assessment of rangeland conservation practices came out in 2011. It proved to be unexpectedly popular as professors across the country ordered copies for their courses.¹²³⁹

The grazing lands component continued to take shape in 2012, although its progress lagged behind the cropland portions along with modeling capacity. But the capacity started to evolve with the creation of the Simulation of Production and Utilization of Rangelands (SPUR) model that looked at the responses of individual species to various vegetation and management

1236. The Wildlife Society, "Fish and Wildlife Benefits of Farm Bill Conservation Programs: 2000-2005 Update" (A Partnership of the Conservation Effects Assessment Project) (October, 2005).

1237. Soil and Water Conservation Society, "Environmental Benefits of Conservation on Cropland: The Status of Our Knowledge" (edited by Max Schnepf and Craig Cox) (2006).

1238. Personal Interview, 3.

1239. Personal Comment, 5.

practices used for rangelands.¹²⁴⁰ SPUR developed into the Rangeland Hydrology and Erosion Model (RHEM). CEAP connected RHEM with NRI points and with other models for wider watershed assessments.¹²⁴¹

But while some components prospered, others like air quality or the livestock sector, on the other hand, did not materialize. At the end, the National Assessments branch had four components: cropland, wetlands, wildlife, and grazing lands.

Out of the National Assessment process, it became clear that basic information like literature reviews on specific management practices were lacking and that the process would benefit from comprehensive literature reviews of the topics at hand. So through collaboration with the National Agricultural Library (NAL) — a USDA agency, CEAP acquired a third branch composed of bibliographies and literature reviews on field-level effects of conservation practices. An NAL specialist in water quality led the efforts to develop a multi-volume CEAP Bibliography to compile research related to a range of agricultural conservation topics. The hardbound (and PDF) versions evolved into dynamic bibliographies that generated real-time comprehensive results on a number of pertinent conservation policy questions, such as environmental impacts of USDA conservation programs and environmental credit trading.¹²⁴²

The bibliographies never constituted a large portion of total CEAP funding, but they did provide important reference points for researchers.

1240. NRCS and ARS, "SPUR 2000: Interagency Approach to Quantify the Benefits of NRCS Technical Assistance" (November, 1998).

1241. CEAP, "Estimating Conservation Benefits on Western Rangelands," *Presentation* (2009).

1242. National Agricultural Library, "Bibliographies | Dynamic Bibliographies | Conservation Effects Assessment Project Bibliographies" , Web (2011), <http://wqic.nal.usda.gov/publications/bibliographies> (accessed March 26, 2012).

The development of the wetlands component was a bit behind schedule in 2012. The initial plan designed a few years earlier culminated in creating a national wetlands monitoring framework. The first step involved defining study regions and quantifying the ecosystem services attributable to wetlands across various topographies and conditions.¹²⁴³ In 2012, there were studies underway in seven out of 11 identified regions and several more major steps remained before embarking on creating an NRI-based monitoring framework.¹²⁴⁴

With the proliferation of wildlife initiatives at NRCS, measuring their effects on wildlife populations became a more immediate goal for the CEAP wildlife component. Using existing monitoring data of fish populations in the Great Lakes, CEAP was working out an experimental framework to integrate such data into the SWAT/HUMUS model in 2012.¹²⁴⁵ The Western Erie Lake Basin became the first test case to unite biological endpoints with cropland CEAP data. CEAP was also developing evaluative approaches for the specific USDA initiatives like the Sage-Grouse, New England Cottontail, Lesser Prairie-Chicken, and others to measure their success in terms of vegetation and species population responses.¹²⁴⁶

The main challenge was to model effects at ever lower geographical scale. While the CEAP cropland component was testing out its surveys at a 12-digit HUC levels in the Maumee

1243. NRCS, "CEAP Briefing Papers," *Internal Document* (March 17, 2008).

1244. NRCS, "Wetlands National Assessment," *Webpage*, Web (May, 2012), http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?&cid=nrcs143_014155 (accessed May 29, 2012).

1245. The Nature Conservancy; USDA Agricultural Research Service; Ohio Sea Grant, and the Ohio State University, "Integrating the Cropland and Wildlife Components of CEAP to Assess and Forecast Benefits of Agricultural BMPs to Biological Endpoints Across the Western Lake Erie Basin Watershed" (Proposal to the Wildlife Component of CEAP) (March 12, 2012).

1246. NRCS, "CEAP Wildlife Supplemental Funding Needs," *Internal Document* (June 5, 2011).

River to help statistical validity at the 8-digit HUCs,¹²⁴⁷ the attempt for the wildlife component was to link up to the updated National Hydrology Database (NHD-Plus) designed by the USGS and its stream routing. It is many times smaller than the HUC units. For example, an 8-digit HUC is around 1000 square kilometers, a 12-digit HUC is on the order of 100 square kilometers, while NHD-Plus segments may be just a few square kilometers in area.¹²⁴⁸ Correcting for incongruities between CEAP's data collection and the NHD-Plus database would be a challenging necessity — now about 75% of CEAP points became statistically irrelevant in the SWAT model because of the scale differences.¹²⁴⁹

A big question for the CEAP wildlife component and for NRCS in general was what species to focus on — or whether to formulate the question in terms of improving selected species at all. Certain practices like cover cropping, for example, tended to help many types of wildlife habitats. Other practices like planting brush, for example, tended to promote habitat for some bird species but demote it for others. As it stood, however, the pressure to get into wildlife habitat conservation altogether came from the threat of regulatory action through the Endangered Species Act (ESA). The Act focuses on species, and so did NRCS targeting and evaluative efforts. The agency worked with NatureServe (a nonprofit conservation organization dedicated to compiling information on at-risk species) to identify species that were threatened from agricultural management practices and wanted to overlap that information with the species on the

1247. Personal Interview, 38.

1248. NRCS, "SWAT Watershed Modeling: CEAP Wildlife," *Presentation* (May 16, 2012).

1249. NRCS, "Integrating CEAP Cropland and Wildlife Components to Assess and Forecast Benefits of Conservation Practices to Biological Endpoints Across the Western Lake Erie Basin Watershed" (Informational WebEx Net Meeting) (May 16, 2012).

verge of being listed through the ESA.¹²⁵⁰ A listing would trigger regulations on the farming community, something the farmers and NRCS wanted to avoid.

The cropland component was the most expensive for NRCS. But the most costly portion of CEAP as a whole was the Watershed Assessments. Most previous studies focused on measuring outcomes at the field level (and the CEAP bibliographies synthesized those), but studies on watershed-scale impacts were few and far in between. Although this information was critical to creating a more comprehensive modeling framework and watershed studies became a large experimental part of CEAP, their initial selection process did not involve the CEAP modeling team.¹²⁵¹ Agencies with more expertise on conducting such experiments stepped in with research support and with resources. The ARS contributed 85% of the total funds spent on the watershed component from 2003 to 2011. NIFA provided 6% of the funds through its 13 watersheds. NRCS funds provided the rest. The idea was to choose watersheds with existing long-term monitoring data and partnership networks across the country. Three types of watershed studies were organized.

The Benchmark Watershed Studies funded primarily by the ARS with some support from NRCS consisted of watersheds across the country chosen specifically for availability of data and watershed-level monitoring. The ARS initiated a data-sharing service especially for CEAP to enable researchers to access each others' data on watersheds.¹²⁵² The studies would be used to build and validate the processes models. Their cost was several times higher than the cost of the

1250. NatureServe, "Threats to Species Framework: NatureServe," *Internal Communication* (November 4, 2010).

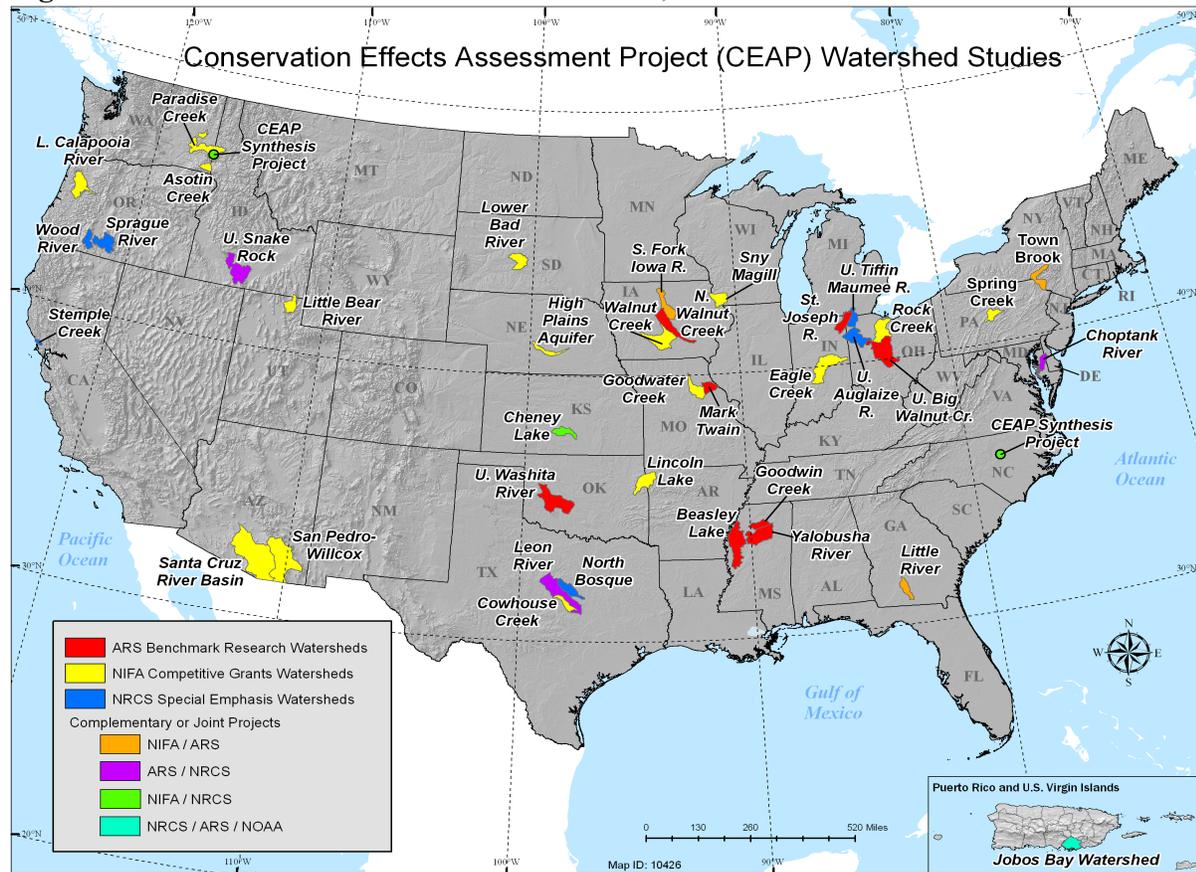
1251. Personal Interview, 38.

1252. ARS, "STEWARDS-For Access to Vital Watershed Data" (Agricultural Research) (August, 2006).

other types of CEAP watershed studies. The second type of watershed studies were the Competitive Grant Projects done with NIFA and NRCS funding (although about three-quarters of the funds came from NIFA). These studies focused on social and economic factors that played into adopting conservation practices, as well as incorporating the physical measurements. Monitoring the cumulative effect of practice adoptions across watersheds was another goal with special attention paid to the timing of applying conservation, location, and the interactions between different conservation practices.¹²⁵³ NRCS undertook leadership over Special Emphasis Studies, the third type of watershed studies. These were watersheds picked to address specific issues that slipped through the cracks with the other types of studies like livestock, irrigation, or drainage management. The number of watersheds examined went up over the years to a total of over 40. The picture below shows their locations.

¹²⁵³. Duriancik and others, "The First Five Years of the Conservation Effects Assessment Project."

Figure 1. Locations of CEAP Watershed Studies, 2012.



Source: NRCS, "Watershed Studies," *CEAP website*, Web (2012), [http://](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/)

www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/ (accessed March 26, 2012).

At the beginning of CEAP, more promises were made than could be kept. Initially NRCS researchers envisioned annual updates to the national assessments, as the 2004 press release announced.¹²⁵⁴ The promise was "to estimate environmental benefits for conservation practices implemented in each year... [to] allow for direct comparisons between benefits obtained and

1254. USDA, "USDA Press Release," *USDA to Assess Environmental Benefits of Conservation Programs* (July 22, 2004).

program expenditures year-by-year.”¹²⁵⁵ A presentation from that period showed that the team expected to finish the first annual report by December 2005, the second one a year later, followed by a third one in December 2007.¹²⁵⁶ Soon, however, the gravity of the task became apparent. The first task of the CEAP team to conduct farmer interviews at NRI points was already estimated to take a few years. Detecting annual changes hardly seemed feasible. The CEAP Blue Ribbon Panel encouraged NRCS leaders to “quickly identify ‘low-hanging fruit’ — opportunities to use the CEAP framework to inform the 2007 farm bill debate.”¹²⁵⁷ This did not materialize, and the next farm bill was passed with little mention of CEAP. The gears were in motion, however. With pretty meager funding to do the job, CEAP leaders managed to invest a lot more by convincing other agencies to contribute additional funds.

The ARS and NIFA stand out especially in their contributions. The ARS spent funds on the wetland and the grazing lands components, although most of its funds went toward watershed studies. Over the nine years since the start of CEAP, the ARS spent nearly \$150 million on those (and it contributed an additional \$17 million toward other components).¹²⁵⁸ In comparison, NIFA contributed around \$10 million. NRCS dedicated around \$60 million toward CEAP in total. USGS also contributed some of its funds toward the wetlands programs. The graph below looks at the contributions from different agencies to the total CEAP effort. Smaller contributions from NASS and FSA are not on the graph. In the graph, other sources of funding include small

1255. Mausbach, M.J.; Dedrick, A.R., "The Length We Go: Measuring Environmental Benefits of Conservation Practices," *Journal of Soil and Water Conservation* 59, no. 5 (2004): 96A-103A.

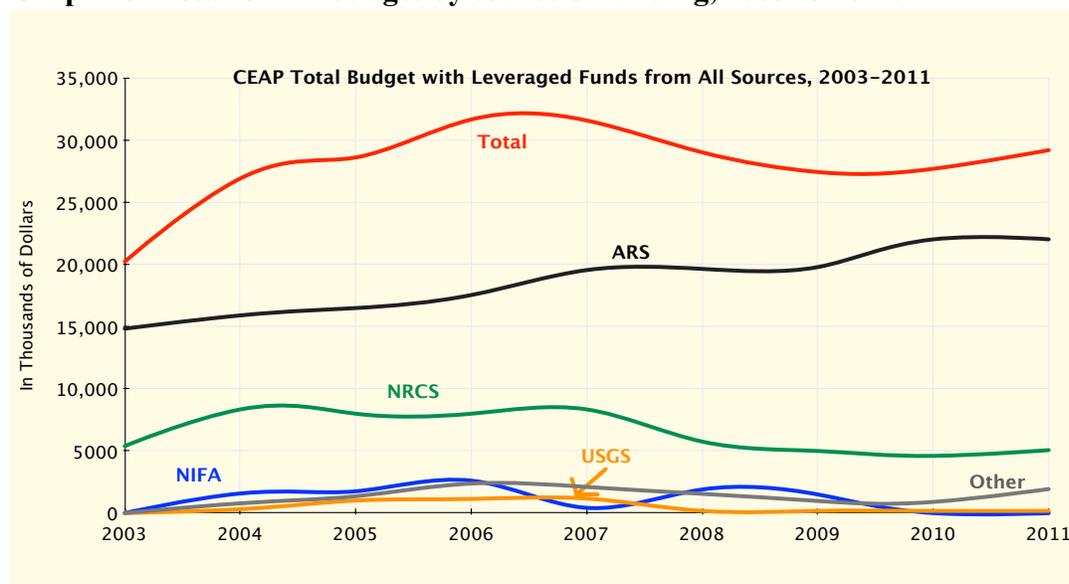
1256. NRCS "Measuring the Environmental Benefits of Conservation."

1257. Soil and Water Conservation Society, "Conservation Provisions of the 2007 Farm Bill: Opportunities to Inform Debate," *From the Blue Ribbon Panel Conducting an External Review of the U.S. Department of Agriculture Conservation Effects Assessment Project* (2005).

1258. NRCS "CEAP Budget: 2003 to 2011."

contributions from NASS and FSA, and NOAA, and larger contributions from university sources. The last source picked up in the recent years when significant resources went to the wildlife component.

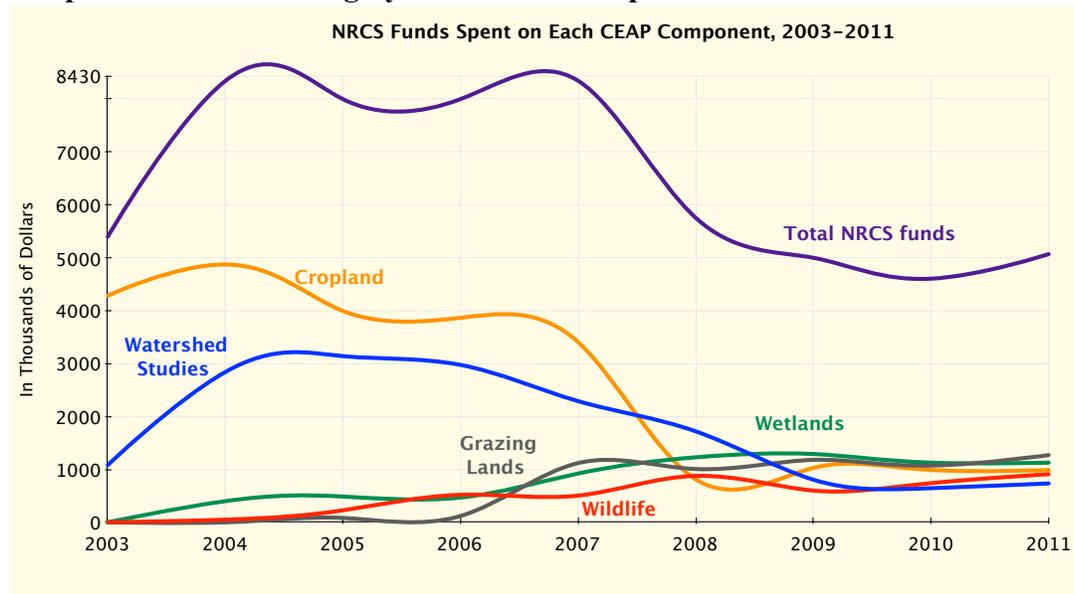
Graph 15. Total CEAP budget by source of funding, 2003 to 2011.



Source: Ibid.

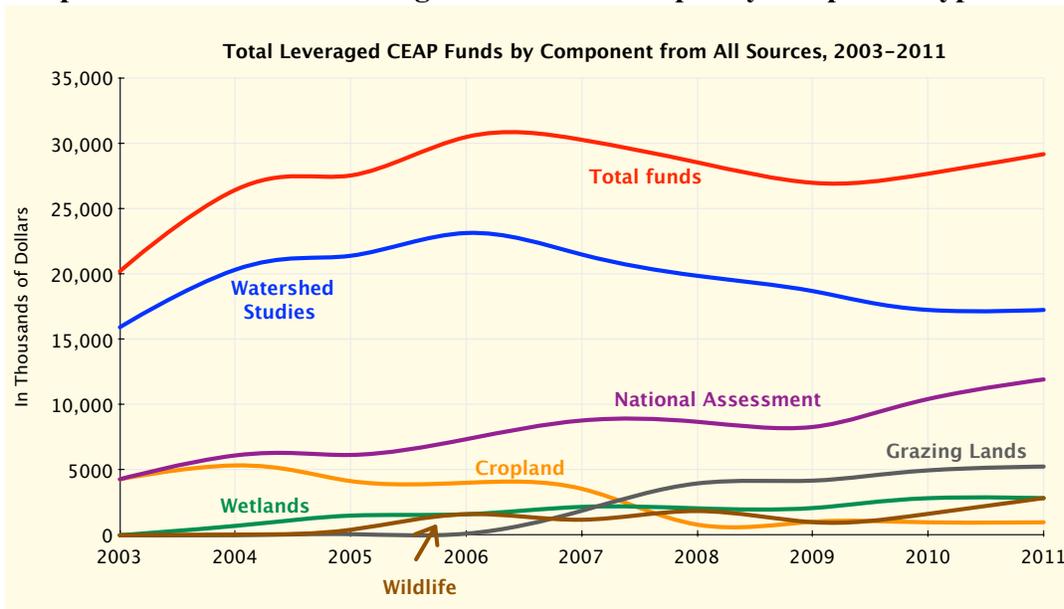
Overall, cropland was the dominant component at the beginning of CEAP with the farmer surveys taking up significant portions of the total NRCS funding. The graph below looks at the progression of NRCS funding for the different CEAP components.

Graph 16. NRCS funding by each CEAP component from 2003 to 2011.



Source: Ibid.

Considering the total funding for CEAP from multiple sources, the spending on each component breaks down differently. The graph below demonstrates the outcome. Watershed studies rise to the top because of the considerable ARS funding. The National Assessment portion includes the four bottom components — cropland, wetlands, wildlife, and grazing lands.

Graph 17. Total CEAP funding from all sources split by component type.

Source: Ibid.

While watershed studies were the costliest investment, the more visible results started coming in with the reports done through the National Assessment's regional reports. Realizing that a sweeping national assessment was out of reach and to follow the Blue Ribbon Panel's recommendations, the CEAP team broke the country up into regional watersheds. And to get the effort moving, the CEAP modeling team worked to calibrate the models before results from the watershed studies started to come in. Most of their results were still in the pipeline in 2012 when the regional reports started to come out (although the Little River watershed near Tifton, Georgia was useful early on for calibrating the fate of pesticides). Instead, the modelers worked to cleanup existing NRCS data on soils and croplands. Future results from the watershed studies will be used to compare the fit of the existing models' assumptions.¹²⁵⁹

¹²⁵⁹. Personal Interview, 38.

The first regional assessment came out in the summer of 2010 on the Upper Mississippi River Basin. The second one on the Chesapeake Bay followed in the spring of 2011. A few months later the report on the Great Lakes region came out and then one on the Ohio-Tennessee River Basin.¹²⁶⁰ Once the framework was in place, it became mostly a matter of plugging in the data for the next region and writing its story. The model evolved along the way, resulting in adjustments to the model and adjustments to the results, sometimes worrying critics.¹²⁶¹ For instance, adding cover crops over the winter resulted in significant reductions in nitrogen loads and required changes to one of the reports.¹²⁶²

The basic unit of analysis was information about conservation practices at the NRI points. Farmer surveys carried out in the watersheds provided one piece of information. Farmers were asked to show three years' worth of records on their fields during the interview, making it a time-consuming commitment on their part. Other sources of information included the 2003 NRI data that informally gathered types of practices employed. Because the inventories were not designed to collect statistically-valid data on practices, NRCS leaders were hesitant to disclose their existence and they certainly did not allow them to be used outside the organization.¹²⁶³ Records at the NRCS and FSA county offices provided another data point. If any of the sources indicated that a conservation practice was in place, it was counted.¹²⁶⁴

1260. NRCS, "Cropland National Assessment," *CEAP reports*, Web (2012), http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?&cid=nrcs143_014144 (accessed June 1, 2012).

1261. NRCS, "Radio Bride on the Chesapeake Bay Report with Chief Dave White" (Personal Notes) (March 15, 2011).

1262. CEAP Steering Committee Meeting, January 21, 2011.

1263. Personal Interview, 3.

1264. NRCS, CEAP "Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region."

The assessments took the data and fed them into the newly updated physical processes models. If the default goal of CEAP was to evaluate the “conservation effects” of implemented practices, the design of the regional studies subtracted those practices to see what conditions would prevail otherwise. The difference in environmental conditions was the “conservation effect,” or the derived benefits. The details of the derived benefits — both at the field level and beyond the field — were evaluated through the models.

Specifically, using the information on practices, researchers used the APEX model to estimate onsite field-level effects of those practices such as leaching levels of nutrients and chemicals. The results of the APEX model from each field were aggregated into complete watersheds using the SWAT/HUMUS model to estimate the fuller off-site effects given all land uses in the area. The HUMUS model combined the field-level outputs from APEX into instream conditions, and the SWAT model connected the instream loadings to watersheds and provided outputs for the other land uses.¹²⁶⁵ Importantly, the models incorporated daily weather information in addition to the other parameters. Heavy precipitation can quickly negate any carefully laid out conservation plan by sweeping away sediment and chemicals.

Effectively, this exercise tested out what the situation would be without any practices employed. But another point of the studies was to evaluate the efficacy of the practices employed in meeting given conservation goals.

Conservation goals, of course, can encompass many dimensions and one of the first tasks was to decide which ones to measure. The vision of the approach was reminiscent of the

1265. Goebel, Jeffrey; Kellogg, Robert, "Using the National Resources Inventory to Supply Indicator Variables" (Presentation at OECD Workshop on Indicators for Developing, Monitoring, and Analyzing Agri-Environmental Policies) (March 20, 2007).

“conservation needs” assessments of the early NRI studies. Then, however, estimates of conservation needs were derived from estimates calculated by NRCS staff on the ground. The definition of conservation needs was synonymous with erosion. This time, a more sophisticated approach would be used. Initially, the CEAP team laid out a plan to do baseline estimates for erosion, but also for soil quality parameters related to productivity, carbon sequestration potential, nutrient loss and risk due to pesticide leaching, as well as water efficiency potential for irrigation.¹²⁶⁶ Some of the ambitions proved to be beyond reach. For instance, each pesticide carried its own environmental risk factors and calculating them individually would have been impossible.¹²⁶⁷ Plus, testing the adequacy of pest management techniques would require information about actual pest infestations — information not available in any of the regions. Instead, researchers looked at resource concerns that they could test. Namely, these were sediment loss, nitrogen and phosphorous particles attached to the sediment (or their loss to surface water), and nitrogen loss to subsurface flows. [In some cases, wind erosion vulnerability was also assessed.] Each acre has its own vulnerability profile to each of the losses, so the researchers looked at soil properties to determine soil runoff and leaching potential.¹²⁶⁸ The idea was to overlap fields’ vulnerabilities with the level of conservation treatment.

Merging data on conservation practices with the acres’ vulnerability showed a matrix of acres with different treatment needs for each resource concern. Some acres fell into low treatment needs, while others had moderate, moderately high, or high needs. The grades allowed for a fairly simple way to communicate complex ideas, although the cut-off points for each

1266. NRCS, "CEAP Progress and Status," *Internal Document* (December 6, 2004).

1267. Personal Interview, 3.

1268. NRCS, CEAP "Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region."

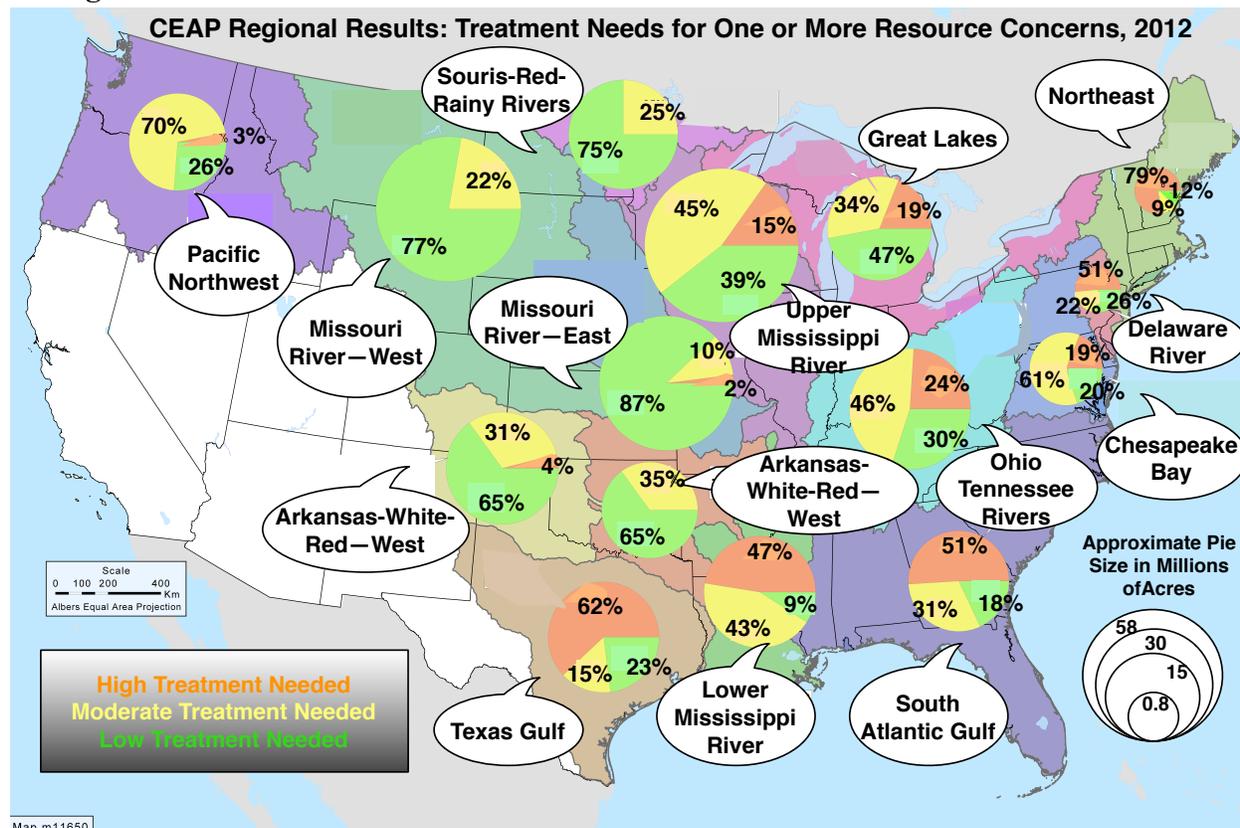
designation were decided somewhat subjectively — with modelers testing multiple assumptions to see the resultant distribution.¹²⁶⁹ Political interference was almost inevitable and suspected, and NRCS Chief Dave White was left explaining why the final report for the Chesapeake Bay put 19% of acres into the “high treatment” category while a draft version listed 47%.¹²⁷⁰

By the end of 2011, NRCS had enough data to complete such analyses for most of the country. The picture below shows the results. [The figure breaks down treatment needs into three categories that are somewhat different than the detailed CEAP regional reports.] Larger size of the pie corresponds to greater number of acres cultivated around the watersheds.

1269. Personal Interview, 3.

1270. NRCS "Radio Bride on the Chesapeake Bay Report with Chief Dave White."

Figure 2. Percent of cultivated acres in need of some form of conservation treatment by region.



Source: USDA, "RCA Appraisal: Soil and Water Resources Conservation Act" (July, 2011).

The next steps included administering follow-up regional surveys to tease out changes. After all, the first surveys were done from 2003 to 2006 with significant land use changes occurring in the intervening areas. The Chesapeake Bay report was the number one priority and a second survey was administered at the same NRI points — plus additional ones — in 2011 and early 2012. Following an outreach campaign to the farming community for the second survey, the response rate reached unheard of levels of nearly 80%. But because of land use changes that occurred between the first surveys and the second ones, it was uncertain how much useful information the extra sampling points would contain.¹²⁷¹

Another priority was to get results at lower geographical levels. In the summer of 2012, CEAP started a pilot project in the Maumee River (flowing into western Lake Erie) to see whether it can carry out farmer surveys at 12-digit HUC levels. Two million out of the \$3 million provided in extra funding in 2012 was going to test this out. Much of the rest was going to develop additional modeling capacity.¹²⁷²

1271. Personal Comment, 31.

1272. NRCS, "2012 CEAP Funding," *Internal Communication* (March 14, 2012).

The CEAP results provided a much more detailed picture of conservation activities undertaken by farmers than any other previous survey. It received continued support from the environmental community, producer groups, and Congress (the first lobbied on behalf of expanding CEAP, the second sent letters in support of providing more funding for CEAP despite trying times, and the third actually appropriated extra funds during the 2012 fiscal year when everything else was getting cut). The final chapter in this work explores the recent developments with an eye toward possible policy impacts. For now, I continue to explore the information-collecting developments at NRCS that were going on parallel to CEAP. Each supported the evolution of the other.

4. 2007 NRI

Since the NRI went to an annual format, NRI activities became more coordinated across the agency. Plus, NRCS worked to include additional variables into the dataset. One concern was incorporating rangelands into the protocols. An NRI Advisory Board established in the early 2000s and in operation for a few years helped work with Bureau of Land Management and the Forest Service to roll out a range emphasis NRI from 2003 to 2007. Much money was going to rangelands management, and many interest groups made the case that more baseline information was necessary. Without their input, it is unlikely that the agency would have allocated the money

toward the purpose.¹²⁷³ Thus far, the NRI collected basic information on rangelands, but has not collected information about their condition since 1992.¹²⁷⁴

The full annual NRI continued with data collection, compiling the results for the 2007 NRI update. By that point, data coordination was done through three remote sensing laboratories that did photo interpretation for the NRIs and the WRP. Planes flying nearly 4,000 feet above the ground took the images.¹²⁷⁵

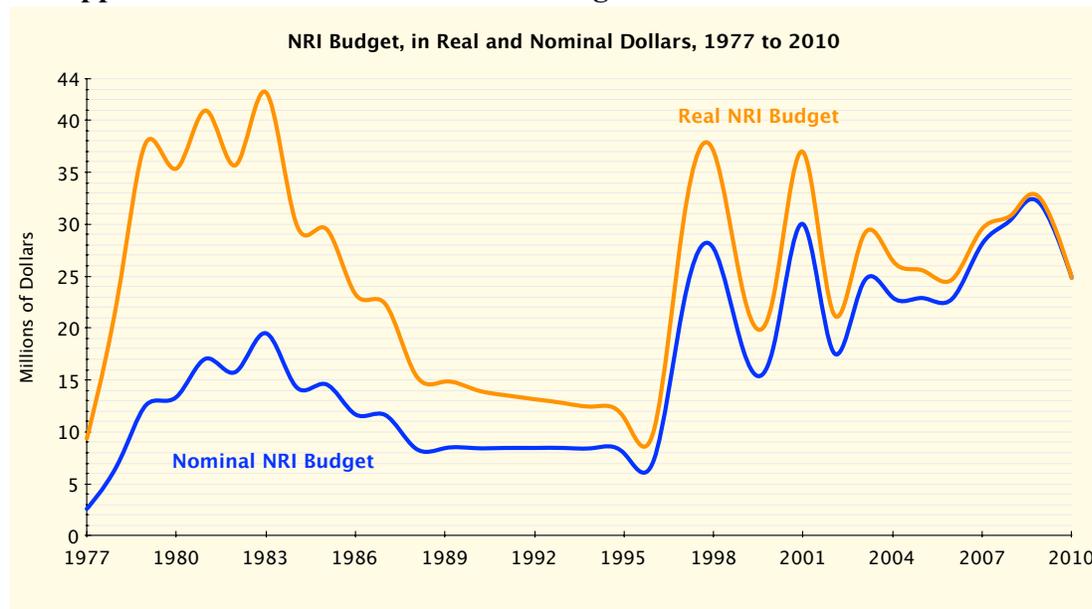
The budget for the NRIs in 2007 jumped a healthy 23% to just over \$28 million. In 2008, the budget jumped another 9% to \$30.5 million. The following year, the NRI budget was the highest in nominal terms at nearly \$32 million. Yet in real terms, the NRI budget saw a decline in the latter part of the 2000s. The figure below looks at the trends.

1273. Personal Interview, 31.

1274. Soil and Water Conservation Society "A History of Natural Resource Inventories Conducted by the USDA's Soil Conservation Service and Natural Resources Conservation Service."

1275. NRCS "CEAP Briefing Papers."

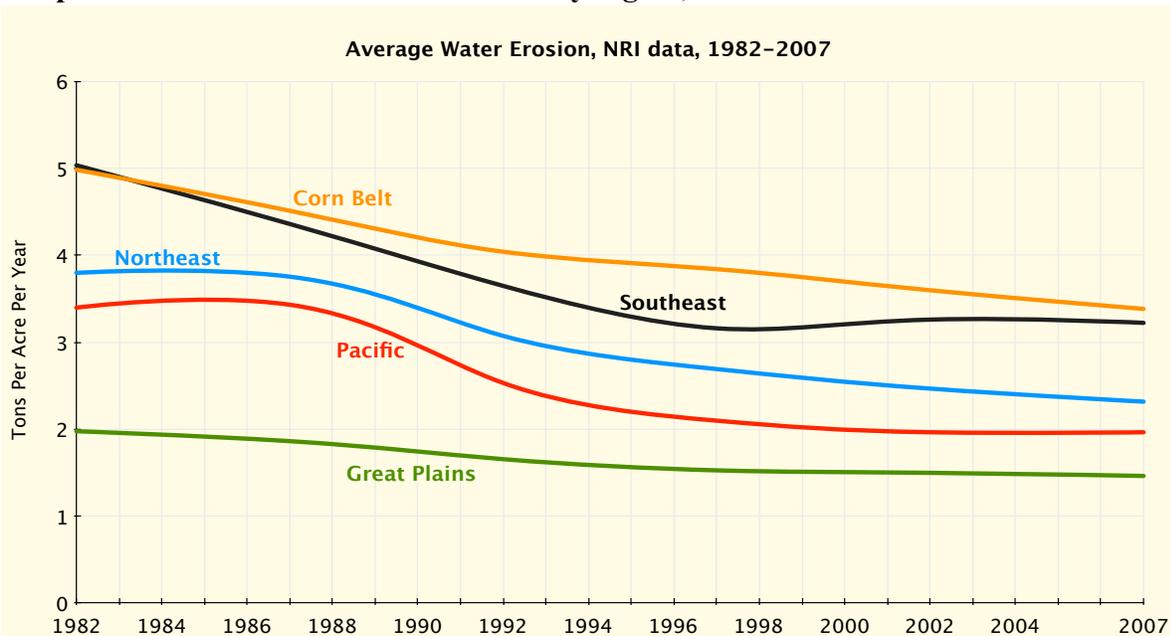
Graph 18. The NRI budget evolving over time in Nominal 2010 dollars, 1977 to 2010. Appendix G has the details on NRI budget numbers.



Source: NRCS "Inventory and Monitoring History of Funding: 1977 to 2002."; NRCS, "NRI Budget: 1998-2011" (Internal Document) (2011).

The 2007 NRI continued to ask the same questions as before. The results showed stabilizing trends for soil erosion rates. Still, some of the states most affected were again Iowa, Mississippi, Georgia, Alabama, and Missouri. The chart below shows the significant NRI results for water soil erosion trends over the years.

Graph 19. Trends of water erosion rates by region, 1982 to 2007.

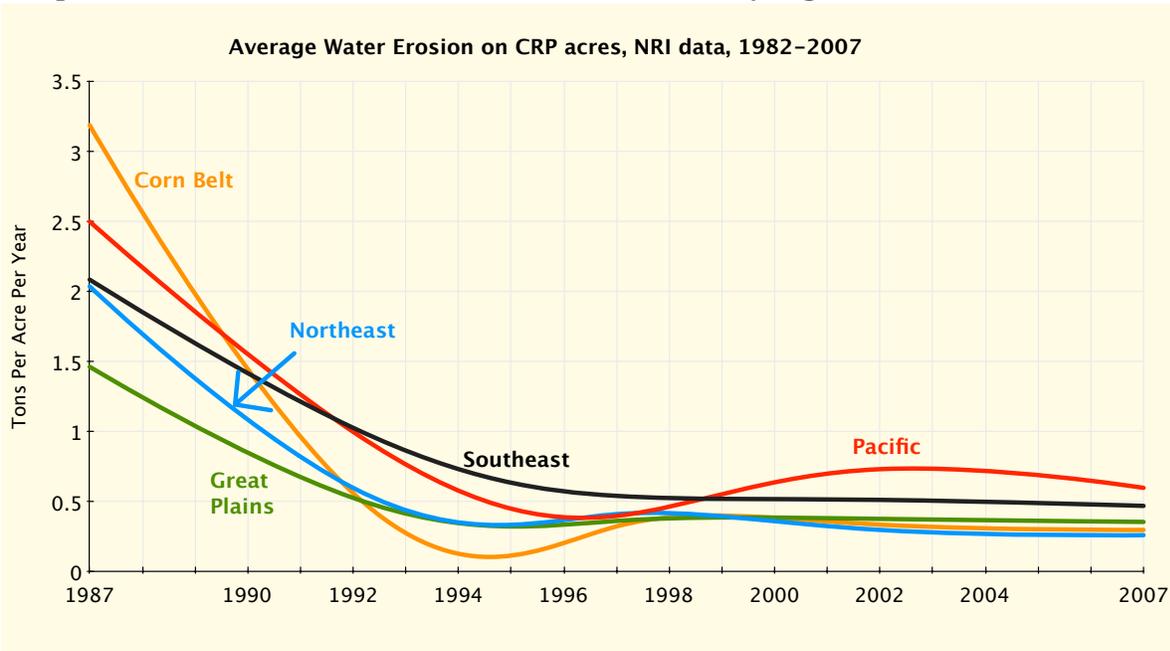


Note: Corn Belt/Lake States region includes IL, IA, MO, IN, OH, MN, WI, MI; Northeast/Mid-Atlantic region includes ME, NH, VT, MA, NY, RI, CT, NJ, DE, MD, PA, NC, VA, WV, KY, TN; Great Plains/Mountain region includes MT, ID, WY, UT, NV, AZ, CO, NM, ND, SD, NE, KS, TX, OK; Greater Southeast region includes LA, AR, MS, FL, AL, GA, SC; Pacific region includes WA, CA, OR, HI, and AL.

Source: NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

The chart shows a consistent downward trend in average water erosion rates in all regions, albeit the trend has stabilized in recent years. The same is true for acres in the CRP. A plateau in soil erosion rates is apparent after a precipitous fall in the average water soil erosion rates. The same regional designations are used as in the graph above.

Graph 20. Trend of water erosion rates on CRP acres by region, 1982 to 2007.



Source: Ibid.

One critique of the results came from the Environmental Working Group. They argued that this progress was deceiving, since *average* erosion rates for states presented in the NRI masked the *actual* erosion rates seen on the field. The Group calculated that erosion rates at the township level in Iowa with high levels of precipitation were several times greater than the state-wide average reported in the NRI.¹²⁷⁶ The criticism that the NRIs do not represent daily erosion is valid. The inventories were specifically designed to track average erosion rates and their movements over the years. And the NRIs can be designed to supply information on other topics of interest.

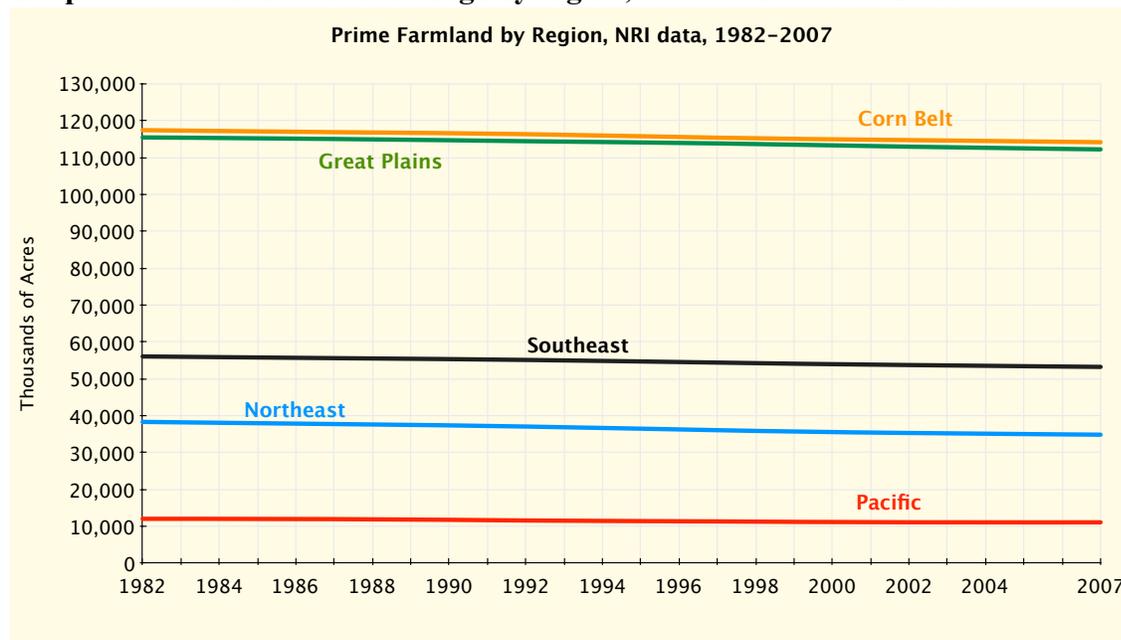
A special NRI report used 2003-2006 data to investigate conditions on rangelands, finding that 80% of the 405 million acres used for rangeland had no significant “soil, hydrologic

¹²⁷⁶ Cox, Craig, Hug, Andrew and Bruzelius, Nils, "Losing Ground."

or biotic integrity problems,” although biotic integrity problems was the most significant concern which persisted on around 18% of them.¹²⁷⁷ The relatively good condition of rangelands discussed in the first RCA endured for a quarter of a century.

Another issue that can trace its roots back to the same time is prime farmland acreage. The 2007 NRI showed that around 14 million acres have been lost since 1982. Relative to the size of the stock, however, the number did not seem that significant. The graph below shows the losses by broad geographical regions.

Graph 21. Prime farmland acreage by region, trends from 1982 to 2007.



Source: NRCS and Center for Survey Statistics and Methodology, Iowa State University, "Summary Report: 2007 National Resources Inventory."

Such aggregations disguise that some states have been affected much more than others. For example, during that time Arizona, Nevada, and New Mexico lost around a third of their

¹²⁷⁷ NRCS, "National Resources Inventory: Rangeland Resource Assessment" (October, 2010).

prime farmland acres. Other Northeastern states like New Jersey, Massachusetts, Rhode Island, Delaware, Connecticut also lost a considerable chunk of their prime farmland resource.¹²⁷⁸

Understandably, representatives from those states continued to invoke the issue.

5. 2011 RCA and NCP

During the 1990s and the early 2000s, NRCS failed to produce a comprehensive planning document for the USDA conservation programs. Although the NRIs took on a more evaluative role for some of the programs, the “Geography of Hope” from 1996 and the “Interim RCA” from 2001 lacked strategic vision. According to one NRCS official, during the 1996, the 2002, and the 2008 Farm Bill debates, the agency had little to give Congressional members to inform the policy direction of conservation titles. Other participants filled in the gaps for the policymakers.¹²⁷⁹ Judging from testimonies at hearings, NRCS and the USDA had few policy suggestions in time for the 2002 Farm Bill debate, instead relying on backlog numbers to argue for increased spending. For the next farm bill cycle, however, the Administration conducted 52 public forums across the country to get policy recommendations. Its formal policy proposals for all farm bill titles came directly from those.¹²⁸⁰ NRCS was excused from conducting a more thorough analysis of policy options through the RCA process in the 2002 Farm Bill.

When CEAP was launched in the 2000s, it became a potential source of policy-relevant information. For the 2008 Farm Bill, the NRCS leaders insisted that an RCA appraisal based in

1278. Ibid.

1279. Personal Interview, 2.

1280. USDA, "2007 Farm Bill Proposals: United States Department of Agriculture" (January, 2007).

part on the CEAP results could go a long way toward informing policy. They recalled that the 1980 RCA was a “game-changer” and thought NRCS could use a new game plan.¹²⁸¹ The Soil and Water Resources Conservation Act of 1977 that mandated the RCA process originally was set to expire on December 31, 2008, and conservation groups, like the Soil and Water Conservation Society and Environmental Defense (now the Environmental Defense Fund), lobbied for the Act’s extension.¹²⁸²

The 2008 Farm Bill re-established the RCA requirement. The bill required an RCA appraisal by the end of 2011 and 2016. The USDA was to deliver an RCA National Conservation Program considering policy alternatives to the House and Senate Agriculture Committees by 2012 and 2017.¹²⁸³

When it restarted, the RCA remained a fairly small operation with one full-time person coordinating the various pieces. In 2009, the RCA budget was \$1 million. By 2011, it fell to a modest \$300,000.¹²⁸⁴ The Department has not put significant resources into the RCA appraisal nor into the RCA National Conservation Program.¹²⁸⁵ Outside organizations (like the American Farmland Trust and others) pitched in and held public forums to get input. With little direction

1281. Personal Interview, 14.

1282. Soil and Water Conservation Society; Environmental Defense, "Technical Assistance for Farm Bill Conservation Programs," *Recommendations for Action by the Conference Committee* (February, 2008).

1283. U.S. Government Printing Office, "Food, Conservation, and Energy Act of 2008," *Conference Report to accompany H.R. 2419* (110th Congress, House of Representatives) (May 13, 2008).

1284. NRCS, "NRCS - Soil Survey and Resource Assessment: FY 2011 Agency Initiatives" (Internal Document) (2011).

1285. Personal Interview, 2.

from the top, although with baseline support for the project, this RCA appraisal cycle only somewhat resembled past ones.

Like in the early 2000s, it had few resources to work with. Unlike the previous effort, however, this time staff leveraged relationships with other organizations to pull in extra resources. In that respect, it was similar to the RCA process in the 1990s. Unlike the RCA of the early 1980s — and counter to the main intent of the RCA legislation, the 2011 RCA effort involved fairly few agencies outside of the USDA and then mainly to review the outcome, not to participate. A few other USDA agencies had more significant roles.

To work with other relevant USDA agencies, NRCS pulled together an Interagency Working Group. To work with outside federal agencies like the USGS, the EPA, BLM, and others, the USDA formed an RCA Coordinating Council chaired by the Deputy Secretary, Kathleen Merrigan. The Coordinating Council met just once.¹²⁸⁶ As a result, participation from other federal agencies was fairly limited. The ones who cared to be included — like the EPA — complained that their input was not valued and their review was sought only for clearance.¹²⁸⁷ The Interagency Working Group, on the other hand, had a positive working relationship and the agencies cooperated well together. Overall, it seemed that the NRCS leadership preferred to stay out of the RCA process.¹²⁸⁸

The final RCA appraisal that came out in the summer of 2011 was a beautiful glossy volume full of pictures and information on land use trends and wetland patterns (as measured by the NRI), on soil erosion trends (as measured by the NRI), on trends in the structure of

1286. Personal Interview, 17.

1287. Personal Interview, 6.

1288. Personal Interview, 17.

agricultural production (from other USDA data), on water quality and quantity (the EPA and USGS were the sources for that) and on the difference application of conservation practices made (as measured by CEAP studies), among other topics. The RCA appraisal also addressed climate change from the perspective of potential impacts on agriculture and also on the potential of agriculture to develop renewable energy sources through biofuels.¹²⁸⁹

As the RCA Coordinator, Dan Mullarkey, prepared the RCA appraisal in 2011, he also worked with the American Farmland Trust and the Farm Foundation to convene six regional public forums to develop recommendations for the RCA National Conservation Program. Participants brought ideas back to a national forum called the National Agricultural Landscapes Forum held in Washington DC in early spring 2011. A distinguished group of experts formed the Forum's Blue Ribbon Panel including the likes of Otto Doering III, an eminent professor from Purdue University, two former state secretaries of of agriculture, a former Congressman and others. There were plenty of good ideas, such as thinking in terms of watersheds rather than political boundaries, being able to work across agencies (referring especially to the continuing issues between the FSA programs and NRCS), and enabling NRCS to stay on top of technological advances. People also recognized the need to address water quality and that monitoring may not be an efficient solution because of how long it would take to implement.¹²⁹⁰

With help from the National Association of Conservation Districts (NACD), the agency also conducted surveys and received many comments on the current programs. Nearly 2,200

1289. USDA "RCA Appraisal: Soil and Water Resources Conservation Act."

1290. American Farmland Trust "Agenda : National Agricultural Landscapes Forum | American Farmland Trust."

individuals submitted feedback. Much of it called for better cooperation and coordination. But concrete recommendations for testing policy interventions were few.

The RCA team came up with the testable policy scenarios using the CEAP framework. Simply by adding cost factors to conservation practices, CEAP models now contained information not only about the inherent environmental nature of the sampling sites from the NRIs and information on farmers' conservation practices from the NRI-CEAP national survey of farmers conducted from 2003 to 2006 but also on the budgetary implications of investing in different types of practices. This enabled modelers to optimize the distribution of payments across the nation based on varying preferences.

Three analyses were run for cropland and four for rangelands. Including rangeland on equal footing with cropland was new for NRCS. Over the last several years, however, grazing lands have moved up in status. CEAP and its grazing lands component had much to do with this ascension.

The first cropland analysis replicated the CEAP regional assessments language. Using the same underlying APEX model, the sample acres (on NRI points) were split according to their conservation treatment needs — low, medium and high. Since this was an estimate of which conservation practices were lacking to bring the land into sustainable shape (defined in a manner similar to CEAP reports), information about the types of conservation practices for each sample was already in the system. From there, the task was to apply costs to the practices and see how different optimization scenarios changed the distribution of funds. Four types of conservation practices were explicitly considered: planting rye cover crops during the winter, installing drainage water management system on farms to reduce run-off, introducing structural practices

like terraces for soil erosion control, and practicing nutrient management through the 4 Rs approach (right type, right method for the tillage practice, right rate, and right timing depending on leaching susceptibility).

The initial calculation set the bar. To fund all of the conservation practices needed for the acres classified as having medium and high treatment needs would take \$8 billion per year. The optimization scenarios looked at different budget levels prioritizing a single conservation benefit (nitrogen loss as achieved through practices matched to the need) with and without limitations to regional distribution. The scenarios looked at cost-effectiveness assuming that acres with the highest needs and lowest costs to address them with be first. Regional restrictions on fund distribution lowered the environmental benefit received. Since conservation practices have overlapping benefits, the modelers also looked at how addressing nitrogen loss impacted additional ones like prevention of phosphorus loss, soil erosion control, and carbon sequestration. These auxiliary benefits were often very significant. And cleverly, instead of putting environmental benefits into monetary terms — as was the temptation for a cost-benefit analysis and the approach taken in the interim RCA — the modelers left all the environmental gains in terms of relative improvement compared to current levels. The final optimization scenario maximized multiple environmental benefits to see budget distribution outcomes.¹²⁹¹

Using NRI data from 2003 formed the baseline and the APEX model was used to connect the pieces. The second cropland analysis looked at converting marginal agricultural lands (defined as having lower yields than the average for the area) to switchgrass production.

Depending on the definition for marginal lands, 23 to 42 million acres would qualify. The results

¹²⁹¹ USDA, "National Conservation Program," *Soil and Water Resources Conservation Act* (April, 2012).

found that such a strategy could not only meet the goals for ethanol production from biomass set in the Energy Independence and Security Act of 2007,¹²⁹² but can also reduce wind and water erosion by dramatic proportions. Estimated nitrogen reduction losses would be equally impressive — on average nitrogen loss would be reduced by 92% nationwide. Phosphorus losses would be reduced by around 72%. Since switchgrass pulls carbon into the soil (unlike the crops currently grown on the marginal land), carbon sequestration benefits would likewise be plentiful.

The third cropland scenario looked at the CRP acres and how their return to agricultural production with typical conservation practices (as measured through the NRI-CEAP farmer survey) may affect environmental benefits — in this case soil health and carbon sequestration, water quality, and aquifer recharge. Over three-quarters of CRP land returned triggered the threshold for environmental damages established in the study.

Three of the four rangeland analyses looked at the costs of controlling the spread of invasive species on rangelands — woody plants like juniper in Texas, grasses like cheatgrass in the Great Basin, and weeds like the leafy spurge in the Northern Plains. The fourth rangeland analysis looked at the practices needed to minimize wind erosion. The NRI rangeland study from 2003-2006 provided the data. Interestingly, rangeland scientists devised so-called Ecological Site Descriptions — a concept to capture common types of ecosystems by looking not only at their geomorphological, hydrological and biotic characteristics but also at the responses to disturbances and vulnerability to thresholds.¹²⁹³

1292. Public Law 110-140.

1293. Ibid.

The 2012 RCA National Conservation Program marked the most innovative policy analysis effort perhaps in all of NRCS history. And while much of it was to the credit of the NRCS staff, significant credit should also go to the availability of advanced models. Plus, contrary to the 1980s NCP work, analysts working during this round enjoyed relative freedom to explore whichever policy options they deemed appropriate. The availability of models prepared for the CEAP assessments made running different iterations of policy options relatively easy. Clearly a lot of interesting possibilities exist for future analyses.

On that front, the next step of the RCA process was to evaluate the process itself. One idea was to make the RCA a continuous process that would include periodic policy analyses of pertinent topics.¹²⁹⁴ This way, the agency could be proactive with its own policy analysis rather than depend on others.

Not much about the present distribution of program evaluation tasks has to change to achieve this. Although some argue that the strategic plans the agency produces will become obsolete, the RCA process serves a different function. Historically, the agency's strategic plans set internal priorities. The most recent one for the years 2011-2015, for example, promoted delivering program timely and efficiently and developing technology to accomplish that.¹²⁹⁵ A key ingredient for that will be the Conservation Delivery Streamlining Initiative (CDSI) rolled out in 2009. The CDSI was an effort to bring handheld wireless technology to the field, in order (among other goals) to enable conservation work to be synchronized across the region to maximize environmental goals. The agency wants to connect a range of resource concerns, including different types of soil erosion including from concentrated flows and channel erosion;

1294. Personal Interview, 17.

1295. NRCS, "5 Year Strategic Plans: Fiscal Years 2011-2015" (October, 2011).

soil quality degradation like subsidence and loss of organic matter and presence of chemicals; water quantity parameters like inefficient use of irrigation water or having excess water through flooding; water quality degradation from presence of nutrients, pesticides, salts, heavy metals, elevated temperature, and other threats; degraded plant condition like presence of pests and productivity losses; wildlife habitat degradation; livestock production limitations, air quality parameters like greenhouse emissions and odors, and inefficient energy use.¹²⁹⁶ Although this list raises several questions about data collection, CEAP has the capacity already to provide some of the necessary layers.

6. Analysis

The history shows the evolution of NRCS informational efforts. Bringing the discussion back to the two questions at the top shows that NRCS did allocate money and staff to the informational effort (despite difficulties) and that the agency had a relatively good cooperative relationship with its partners.

1. Did the NRCS allocate money and staff time to this effort?

The answer to this question is that NRCS allocated variable money and staff time to its information efforts during this period. While the NRIs continued to receive steady support at around \$30 million, the 2002 RCA appraisal had to make due with few resources and little participation from the top. It also had no champion at NRCS nor at the USDA level, despite containing fairly innovative (although not necessarily error-free) analysis. The funding for the

¹²⁹⁶ NRCS, "Resource Concerns: Conservation Delivery Streamlining Initiative" (Internal Document) (August 23, 2010).

RCA cut after it was no longer a budget line item.¹²⁹⁷ CEAP, on the other hand, received much more support and enthusiasm. At the beginning, however, it was the internal staff in the Soil Survey and Resource Assessment Deputy Chief area who formulated the idea and pushed it through to the top. Linking CEAP to the NRI was the major selling point which secured early support.

Although the top leadership worried about the expenditure (especially some who thought that the GPRA-mandated performance measures sufficed), most recognized the value.

Bruce Knight expressed his support for CEAP at a Senate hearing with this introduction: “one of the important authorities that was directed in the Farm Bill was a new measurement and assessment effort called CEAP.”¹²⁹⁸ And although the results were unavailable in time for the 2008 Farm Bill, the USDA leadership continued to refer to CEAP when prompted about program assessment efforts.¹²⁹⁹

Nonetheless, practically speaking CEAP has received sometimes reluctant fiscal support with every chief reevaluating the decision to fund the project. The Resources Assessment Division had to fight for its share of money during the mid-2000s. On the other hand, the NRCS leadership allowed the idea to move forward and found the resources to keep it going. The first year CEAP got around \$5 million and then \$8 million for the next few years before its budget dropped again to \$5 million. The design of CEAP, however, allowed that money to go a long

1297. Personal Interview, 35.

1298. U.S. Government Printing Office, "To Discuss How Farm Bill Programs Can Better Support Species Conservation," *Hearing before the Subcommittee on Forestry, Conservation, and Rural Revitalization, Senate* (109th Congress, 1st Session) (July 26, 2005), p. 10.

1299. U.S. Government Printing Office, "Statement of Mark Rey, Under Secretary, Natural Resources and Environment, USDA," *Before the House Appropriations Committee* (April 3, 2008).

way, somewhat mitigating the effects of the dearth of funds. When Arlen Lancaster became the NRCS Chief in 2006, he supported CEAP openly and tried to appropriate as much money to it as he could.¹³⁰⁰ The top leadership of the two administrations — with Bruce Knight and Arlen Lancaster — grew increasingly frustrated at the slow rate of progress and sometimes had to plead with the CEAP team to churn out tangible results.¹³⁰¹ Nonetheless, they supported the mission.

The current tenure of Dave White as the Chief has continued the tradition of support for CEAP, especially since now there were tangible results to discuss. According to one NRCS official, the popularity of CEAP spread across NRCS leadership to a point where nearly any public speech mentioned CEAP.¹³⁰² Following another tradition, the leadership again pressured the CEAP team to speed up results. This time the interest was in the Chesapeake Bay follow-up survey results slated to come out in 2013.¹³⁰³ The CEAP team heard the message and wanted to ensure that future CEAP projects produced concrete deliverables every year.¹³⁰⁴ Without results continued funding would be jeopardized. Although CEAP has permeated the agency's culture and answered a critical need, fiscal support was not as forthcoming. The Administration blamed Congress for the situation. Perhaps the general political landscape in 2012 was a reasonable scapegoat.

The Administration's budget request for the 2012 fiscal year included an additional \$7 million for CEAP. Congress agreed to give an extra \$5 million in its appropriations bill. Still,

1300. Personal Interview, 14.

1301. Personal Interview, 3.

1302. Personal Interview, 12.

1303. Personal Comment, 5.

1304. Personal Interview, 43.

that year most other federal programs were getting slashed, so any increase, especially one that doubled the budget, was a sign of outward support. In spite of the clear Congressional intent to increase funding for CEAP, NRCS leadership — desperate to find any additional money to make up for other shortfalls — considered for several months whether to drop the original \$5 million from the CEAP's budget and simply replace it by the \$5 millions from the appropriations bill. Effectively this would keep the CEAP budget steady.¹³⁰⁵ In the end, CEAP received a portion of the promised funds (\$3 million), although it had to come out of program funds. The justification given was that since Congress cut expenditures elsewhere it undermined its own intent to fully fund CEAP.¹³⁰⁶

The budget for the 2011 RCA effort was relatively small, with just over \$1 million allocated to conduct public forums for the National Conservation Program, and then dropping down significantly. The RCA staff consisted of a Coordinator who worked across agencies and divisions to compile the data and to run simulations. While the RCA received positive endorsements from NRCS leaders, as of this writing, it has been too early to tell whether the RCA National Conservation Program would have any advocates on the Hill for the 2012-2013 Farm Bill round.

2. Did the agency provide information to external users and other agencies?

The answer to this question is less so than in the past. During this period, NRCS clamped down more on the NRI data. A 2001 GAO report highlighted how researchers using data and

1305. Personal Interview, 43.

1306. NRCS "2012 CEAP Funding."

record “linkages” can compromise privacy and confidentiality.¹³⁰⁷ Congress passed additional privacy protection laws. The subsequent OMB guidelines for cleaning the data to make them compliant with the law made the process prohibitively expensive for some agencies.¹³⁰⁸ Plus, the stakes for improper use of data were high. When the 1997 NRI data were released, a small statistical error was identified outside of the agency. The results changed only a little, but NRCS decided against future releases of detailed data. Limiting the outside use of the data was the logical response. Plus, to prevent the information from getting out through FOIA requests or other means, the 2002 Farm Bill protected the NRI data from disclosures unless all identification information (like location of the sample) was removed.¹³⁰⁹

Some institutions that had prior relationships with NRCS could receive updated data, but most researchers could only receive the complete data from the 1997 NRI. The data CD provided by the Resource Inventory Division included a warning about using the data to estimate local statistics, such as for county levels. Still, NRCS worried about misuse and decided in 2012 to discontinue providing even the 1997 CD.¹³¹⁰ The increasingly stringent Congressional and OMB requirements for providing statistical data made the NRI data out of reach for ordinary research.

Another issue that arose in providing the 2007 NRI data was the continuous modifications. For example, changes in how urban and built-up acres were reconciled among

1307. General Accounting Office, *Record Linkage and Privacy: Issues in Creating New Federal Research and Statistical Information* (April, 2001).

1308. Personal Interview, 10.

1309. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1310. Personal Interview, 11.

different sources led to significant adjustments to the estimates provided for the 2003-2007 years.¹³¹¹ Freely sharing the data increased risk of errors associated with using outdated datasets.

On the other hand, the 1997 and previous data went a long way. NRCS provided information to hundreds of researchers throughout the years.¹³¹² So perhaps it is not surprising that an NRI customer survey done in 2006 found that 65% of the users have been using NRI data for over 10 years. Two-thirds of the users came from within the federal government.¹³¹³ Within the USDA, the Forest Service, the ERS, and the ARS used the NRI data for their own research. Within the government, the US Census Bureau, the EPA, the USGS, and state governments requested the NRI data. Research institutions, non-profit organizations and consulting firms, like the Heinz Center, the American Farmland Trust, Ducks Unlimited, the Heritage Foundation, and others.¹³¹⁴ The users generally valued the continuous nature of the survey. Many wanted to see the types of information collected through the NRI expand beyond land use and soil erosion. Others expressed the need to tie in the NRI data to a “comprehensive conservation needs assessment.”¹³¹⁵ Of course, doing so on a national scale was the original goal for CEAP. Realizing that goal proved to be much more time consuming and difficult than anticipated at the onset.

1311. NRCS, "2007 NRI Estimates for Developed Land" (Differences in urban acreage depending on data set) (June, 2010).

1312. NRCS, "NRI ACSI Customer List" (Internal Document) (September 28, 2006).

1313. CFI Group, "NRCS: National Resources Inventory, Customer Satisfaction Survey," *Final Report* (2007).

1314. NRCS, "National Resources Inventory External Users," *Categories and Examples* (Internal document) (February, 2012).

1315. Soil and Water Conservation Society, "Examining Future Directions for the National Resources Inventory," *A Special Report, briefing copy* (September, 2008).

One of the most persistent complaints with the NRI was that its statistical reliability did not reach to the county level. Users have wanted county-level NRI data since the 1980s (although calls to that effect can be traced to the 1950s). This would be an extremely costly proposition, although in 2012 the agency was evaluating rescaling the survey to lower geographical levels, as discussed above.¹³¹⁶

Besides dealing with the NRI data, NRCS was notoriously private about disclosing data on program payments and other records. One reason may be that the agency is staffed with technical personnel who do not feel comfortable sharing less-than-perfect data — an inevitable characteristic of evolving program data.¹³¹⁷ Another reason may be the agency's less-than-stellar record for managing documents. The agency has spent little effort maintaining historical documents and files, losing information invaluable for policy analysis.

Beyond the NRIs, disclosing information about the status of NRCS conservation plans has always been a sore point because producers feared that the information may be used against them in cross-compliance or swampbuster violation proceedings.¹³¹⁸ The American Farm Bureau and other producer groups successfully lobbied to put confidentiality provisions on conservation plan data in the 2002 Farm Bill.¹³¹⁹

Many of the CEAP components relied on direct participation from its partners. More than 60 different groups counted among them.¹³²⁰ Bibliographies and literature reviews, in

1316. Personal Interview, 10.

1317. Personal Interview, 29.

1318. Personal Interview, 35.

1319. U.S. Government Printing Office, "Formulation of the 2002 Farm Bill," *Hearings before the Committee on Agriculture and its Subcommittees* (107th Congress, 1st session) (May, 2001), p. 47.; U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1320. NRCS "Conservation Effects Assessment Project | Technical Resources | NRCS."

particular, demanded a lot of information exchange. Watershed studies likewise relied on availability and sharing of long-term data. But cropland assessments, on the other hand, were done in-house. CEAP researchers sent draft copies to a list of pre-selected recipients for review and took any feedback with caution.¹³²¹

During the 2011 RCA process, most USDA agencies participated fully and openly. Once again, NRCS felt that the ERS wanted to control some of the process and was reluctant to give the data over to the ERS analysts. Still, everyone pulled together for the process. As far as external agencies were concerned, the USDA kept them at a distance. The EPA wanted to be involved in the process and share data on water quality, as well as suggest model runs and analysis for the RCA National Conservation Program. But the USDA preferred to keep the analysis close.¹³²² Interestingly, the public forums part of the RCA process revealed (unsurprisingly) that producers and others involved in agricultural-environmental policy preferred for the two organizations — the EPA and the USDA — to be on the same page and to work together. The recent experience with the two different reports on the Chesapeake Bay and the public reaction to that may have solidified the lesson.

How did the USDA conservation programs develop after 2001?

Following the familiar structure, the second storyline concerns the actual programs delivering conservation. At the conclusion, I come back to the three pertinent questions. Did NRCS reach out to other USDA agencies and other federal agencies? Did NRCS use the results

1321. Personal Interview, 3.

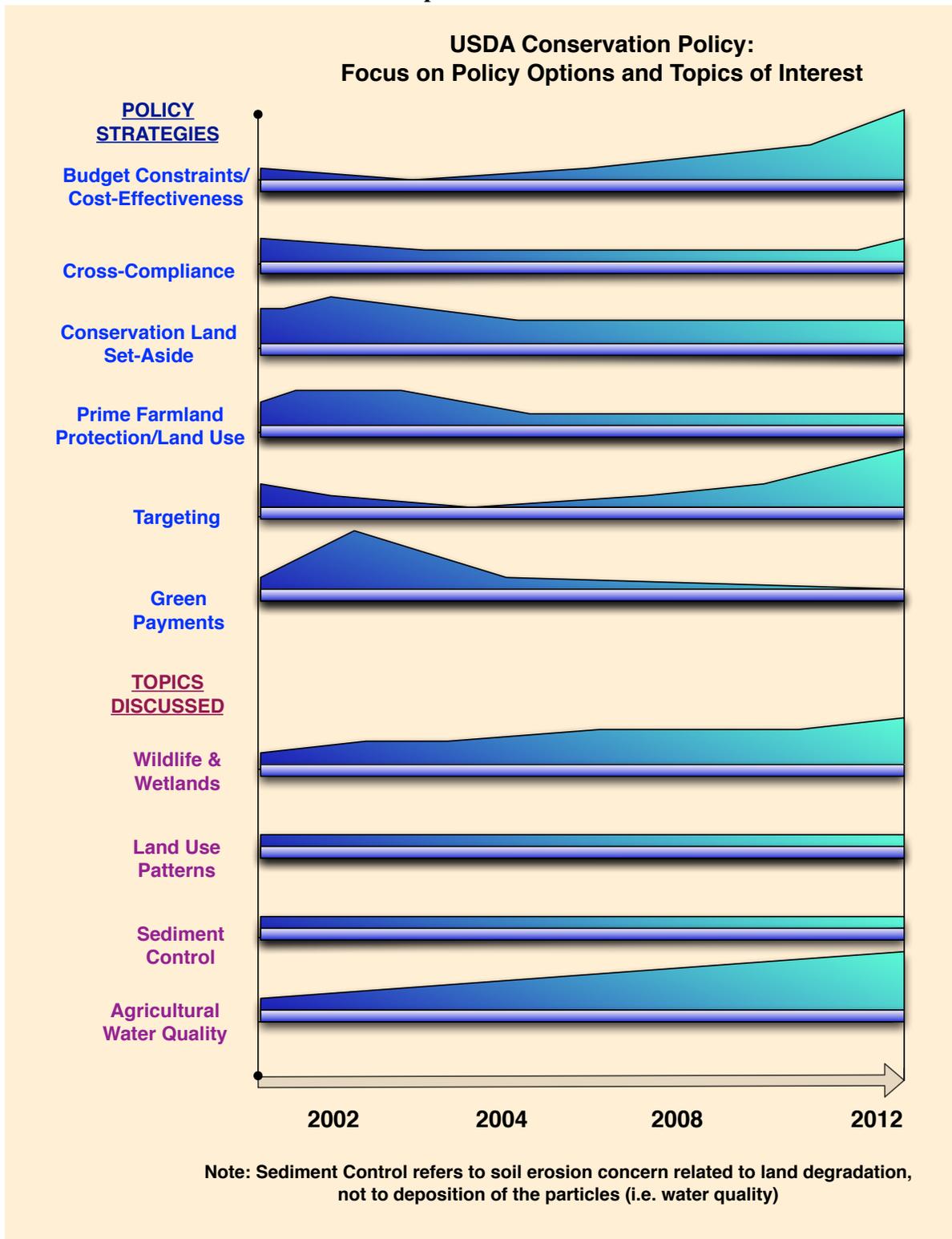
1322. Personal Interview, 17.

in program implementation? And finally, did some types of information receive more emphasis and others less?

Once again, I utilized hundreds of speeches that were archived online or archived through the NRCS records management department (which kindly provided speeches from 2002 to 2004). I also reviewed agency documents and secondary literature sources for further information. For program funding information, I used the data compiled by the USDA history office. The categories used here are described in Appendix B.

The figure below visualizes some of the major results of the chapter. It looks at the variable interest in select policy alternatives and topics. The top rows correspond to the various policy alternatives that the USDA considered, while the bottom rows look at how specific conservation topics fared in the organization. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones.

Graph 22. Policy alternatives and conservation topics of interest receiving differing levels of attention at the USDA from 2002 to present.



1. 2002 Farm Bill

The few years leading up to the 2002 Farm Bill had been tumultuous for the farming community. There was a slump in prices and a slump in farm incomes. The long-promised trade agreements had not materialized and even exports, which had seen a general uptick, receded in the face of global surpluses. International trade negotiations revved up in 2001 with the start of the Doha Development Agenda, yet actual agreements were few in number, as Senator Pat Roberts, a Republican from Kansas, noted tersely in a radio interview.¹³²³

Besides trade, 2001 was the year of the foot-and-mouth disease scare. The USDA leadership spent considerable amount of time fielding questions about the safety of the US food supply and the Department's preparedness to deal with an outbreak like the ones in Britain. On the other hand, climate change became a more prominent issue.¹³²⁴ The 2002 Farm Bill contained a separate title on energy — encouraging development of biofuels. By the end of 2003, the USDA invested \$66 million toward that goal.¹³²⁵ The Bush administration continued to push for energy policy reform for the next two years until the passage of the Energy Policy Act in 2005.¹³²⁶ Besides changing the incentive structure for the production of traditional energy sources, the bill further secured subsidies for ethanol production — an issue that the top USDA officials spent much time advocating.¹³²⁷

1323. USDA, "Radio Press Conference," *Secretary of Agriculture Ann M. Veneman and Senator Pat Roberts of Kansas* (December 20, 2001).

1324. See USDA, "USDA Miscellaneous Speeches" (Selected sources) (2001).

1325. USDA, "Remarks by Agriculture Secretary Ann M. Veneman," *2003 Farm Journal Forum* (December 4, 2003).

1326. Public Law 109-58.

1327. Tyner, Wallace E, "U.S. Ethanol Policy - Possibilities for the Future" (Purdue Extension) (January, 2007)., see USDA "USDA Miscellaneous Speeches."

Most importantly for NRCS, however, was that the 2002 Farm Bill provided much more money for the agency than ever before. Conservation at the USDA as a whole saw the second largest increase in modern history — the first was in 1985.¹³²⁸ The estimate was that the bill increased conservation budgets by \$17.1 billion with later calculations adjusting the figure to \$18.5 billion over 10 years, an increase of 80 percent.¹³²⁹ The details of implementing the programs would take time to develop. In early 2003, Secretary Ann Veneman said that the USDA “will need to issue nearly 100 regulations and more than 40 reports and studies over the course of the bill’s life.”¹³³⁰

The increases in funding for different conservation programs were uneven, however. It was not lost that working land programs received the largest increase.¹³³¹ The Environmental Quality Incentives Program (EQIP) created in 1996, the same program that combined the long-standing Agricultural Conservation Program (ACP) and the Water Quality Incentives Program, got more than \$5.5 billion for the next 6 years.¹³³² This represented an increase of more than

1328. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

1329. USDA, "Getting More Conservation Done on America's Working Lands," *Draft of Remarks by Secretary of Agriculture Ann M. Veneman* (Cattle Industry Annual Convention and Trade Show) (January 30, 2003)., USDA, "New Relationships-New Ways of Thinking," *Remarks by Bruce Knight, Chief, NRCS* (National 2002 Farm Bill Implementation Workshop) (March 15, 2003).

1330. USDA "Getting More Conservation Done on America's Working Lands."

1331. Cox, Craig A, "The Promise and Peril of Technical Service Providers," *Agricultural Outlook Forum* (February 21, 2003).

1332. USDA, "Soil and Water Conservation Society: Annual Conference," *Deputy Secretary of Agriculture Jim Moseley* (July 15, 2002).

four-fold from the \$1.27 billion that had been spent on the program by the end of the 2002 fiscal year since its inception in 1996.¹³³³

The 2002 Farm Bill allowed large livestock operations or CAFOs to participate and raised the maximum multiyear payment cap ninefold from \$50,000 to \$450,000. This provision caused quite a stir in Congress with unexpected alliances forming at the stake of old friendships. Many in the conservation community argued that the high cap would prevent widespread conservation efforts. Others joined forces with the National Cattlemen's Beef Association to support the increase, making the point that large operations needed urgent help. This was counter to their previous efforts. At least two powerful conservation-minded Congress members who had stuck their necks out for those conservation groups in the past were upset enough not to speak with their representatives (who enjoyed a particularly friendly relationship in the past) for a period of time.¹³³⁴

The bill also prohibited NRCS from using cost as the final deciding metric for funding EQIP applications. If two applications had similar scores on environmental benefits, the cheaper option should not automatically prevail. Despite this, Congress specifically required cost-effectiveness to be part of the ranking criteria. The other criterium Congress identified was that the application met a broad goal of meeting national conservation priorities.¹³³⁵ As a result of the changes, NRCS proposed changing the purpose of the program from one to "maximize environmental benefits per dollar" spent to one aimed to "optimize environmental benefits."¹³³⁶

1333. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

1334. Personal Interview, 33.

1335. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1336. NRCS, "EQIP Proposed Rule with Request for Comments" (January 30, 2003).

The final rule on EQIP listed four national priority subjects, namely: reduction on nonpoint source water pollutants consistent with TMDL issues, reduction of air pollution, increases in soil quality, and recovering at-risk species.¹³³⁷

One innovative addition to the EQIP portfolio in the 2002 Farm Bill was the Conservation Innovation Grants provision establishing a discretionary fund for awarding competitive grants to local government and nongovernment organizations to conduct innovative conservation-related projects such as using credit markets to control pollution or look into carbon storage in soil.¹³³⁸ By 2004, the main problem for EQIP was its popularity — only 1 out of 6 applications could be funded.¹³³⁹ The shortfall for the program in the same year reached \$1.1 billion.¹³⁴⁰

With the 2002 Farm Bill, NRCS took over the primary financial responsibilities for EQIP, WRP, and other programs with mandatory funding through the CCC funds. The FSA retained control over the CRP. The two agencies split responsibilities for the Grasslands Reserve Program (GRP).¹³⁴¹ Most programs saw increased funding. The budget for the Wildlife Habitat Incentives Program (WHIP) went up to \$360 million for the next 6 years — a threefold bump in funding for this program created in 1996. By 2002, around 1.6 million acres were enrolled in WHIP.¹³⁴² Both CRP and WRP saw increases in acreage caps. The CRP cap went back up from

1337. Ibid.

1338. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1339. NRCS, "Environmental Quality Incentives Program: A Voluntary Program for Farmers and Ranchers," *AgStar Conference* (Talk by Barry L. Kintzer) (March 24, 2004).

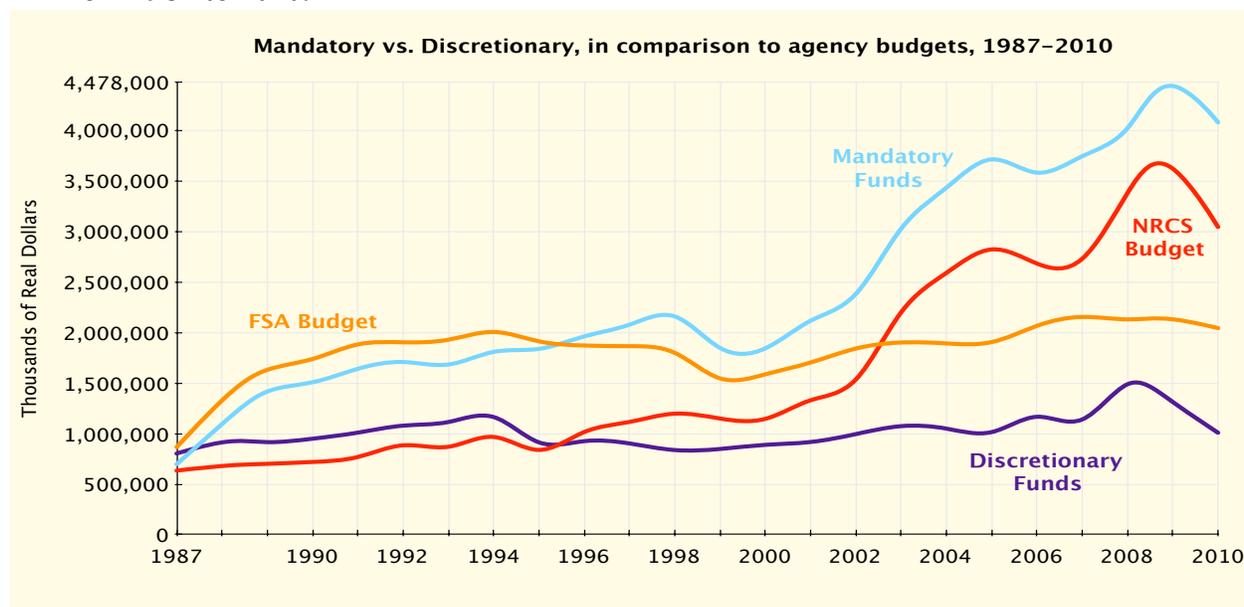
1340. NRCS, "Natural Resources Conservation Service, Conservation Operations," *Green Sheets, 2004* (2004).

1341. Stubbs, Megan "Technical Assistance for Agriculture Conservation."

1342. NRCS, "Conservation Provisions of the 2002 Farm Bill" (2002).

36.4 million set in the previous Farm Bill to 39.2 million. CRP acres were eligible for cost-share for nearly 30 conservation practices, ranging from planting cover to habitat management and wetland restoration.¹³⁴³ The WRP acreage cap was upped up to 2.275 million from less than 1 million.¹³⁴⁴ For EQIP and WRP, the priority area designations were dropped, opening the eligibility pool but reducing ability to target. Priority areas were retained for the CRP. Many of the additional programs were mandatory programs. The graph below shows how the mandatory funds increased in 2002 — most of them going to enhancing the NRCS budget. The 2008 Farm Bill put a break on the increasing trend.

Graph 23. The USDA budget: mandatory and discretionary programs and agency budgets, from 1987 to 2010.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

1343. FSA, "CRP Associated Conservation Practices," *Appendix B to Conservation Reserve Program: Final Programmatic Environmental Impact Statement* (January, 2003).

1344. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

The flagship NRCS program, the Conservation Operations Program continued to see a fairly stable annual budget in the 2000s at over \$800 million. The program received high marks from its customers in a 2001 survey. The categories of trust and overall customer service got especially high marks. Most respondents also indicated that resolving complaints with the agency was easy.¹³⁴⁵ From that perspective, the agency continued to provide a solid service to its customers. Conservation technical assistance continued to evolve, as NRCS reviewed and updated its 160 or so individual practice standards on a 5-year basis. In a major move though in 1999, it adopted a system of four core practices.¹³⁴⁶ The Conservation Technology Information Center (CTIC) — the same center that undertook the regular conservation tillage surveys — originally proposed the idea to have four foundational practices: conservation tillage, nutrient management, integrated pest management, and establishing buffers around watersheds. A CTIC representative said in a Senate hearing that these four practices can take care of 80% of the agricultural pollution problem.¹³⁴⁷

The largest new program established in 2002 was the Conservation Security Program (CSP), conceived as an entitlement program. This program originated in the Senate under Senator Tom Harkin's (D-IA) leadership and was added to the final bill in conference.¹³⁴⁸ This program paid active farmers for good stewardship — a “green ticket” option advocated for so many years by the conservation community. The Farm Bill outlined some details like to have

1345. USDA, "American Customer Satisfaction Index: Report on Natural Resources Conservation Service" (April, 2001).

1346. NRCS, "CORE4: Conservation Practices Training Guide," *The Common Sense Approach to Natural Resource Conservation* (August, 1999).

1347. U.S. Government Printing Office "Conservation.", p. 95.

1348. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

three tiers of contracts (depending on the length and intensity of conservation treatment) and to calculate payments based on a rate that accounted for regional variability. Many other details were left to the discretion of the Secretary.¹³⁴⁹ By the end of 2003, Secretary of Agriculture Ann Veneman noted that the USDA was still in the process of issuing a formal rule on its implementation. The details of the program were left largely unstructured in the Farm Bill and to fill the gaps the Department conducted listening sessions and consulted with stakeholders.¹³⁵⁰ The catch was that the final design could not exceed the budget limit, initially estimated at \$6 billion over 10 years. Yet the USDA calculated that the cost of enrolling all farms eligible under the Congressional definition, over 1.8 million of farms on 900 million acres, would far surpass that amount. The solution was to limit program access. One way was to accept applications during windows of time rather than continuously. The second way was to modify the definition of eligibility. Congress allowed CSP contracts with producers who “address at least 1 significant resource of concern.”¹³⁵¹ The USDA modified it that eligible applicants were the ones whose practices already addressed “both soil quality and water quality as significant resource concerns.”¹³⁵² Plus, NRCS started prioritizing contracts based on watershed goals and on the tier (focusing on the second two tiers that stipulated more conservation practices). This proved to be controversial, generating 20,000 comments on the agency’s proposed rule.¹³⁵³

1349. Ibid.

1350. USDA "Remarks by Agriculture Secretary Ann M. Veneman."

1351. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1352. USDA, "Getting Conservation on the Ground by Using Incentives," *Agricultural Outlook Forum speech* (by Craig Derickson, Conservation Security Program Manager) (February, 2006).

1353. Tadlock Cowan, "Conservation Security Program: Implementation and Current Issues," in (Congressional Research Service, April 24, 2008).

As time went on, however, tighter and tighter eligibility restrictions and new rules that curbed payment rates, coupled with less money appropriated for the program than expected netted an anti-climatic result. The appropriations act for 2003 limited the expenditures for CSP to make up for the growing disaster payments by not funding the program at all. During the 2004 appropriations, the limit was lifted but it provided only \$41 million toward the program for that fiscal year. So NRCS enrolled only 2,200 contracts in 18 watersheds in 2004. In 2005, Congress once again placed a cap on CSP expenditures in order to offset further disaster assistance programs. The Program itself received \$200 million in 2005. The second enrollment was much larger, signing up around 13,000 contracts across 220 watersheds. The watersheds were selected in part using the NRI data. Over 2,000 watersheds were prioritized based on whether their status was improving according to a ranking that incorporated several factors including intensity of agricultural production around a watershed, evidence of previous and ongoing conservation efforts, and the extent of pesticide, fertilizer, and manure use.¹³⁵⁴

Congress continued to gradually increase the amount allocated to CSP to nearly \$320 in 2008. In the same year, nearly 16 million acres of working lands had contracts with the CSP across over 330 watersheds.¹³⁵⁵ Yet this was less than 2% of the total agricultural working lands. In order to make more than a dent, the program needed much more money. A change in accounting also contributed to the programs' evolution. Rather than paying out the entire sum of the obligation incurred to the producer in a multi-year contract for CSP contracts, NRCS paid out only the amount owed that year. While this increased the initial number of people who could participate, this also meant that every year the agency had to first pay the existing contractees

1354. Ibid.

1355. Ibid.

before signing on any new participants. The tepid budget increases were inadequate to spur serious growth. Moreover, the level of environmental conservation achieved also depended on more funding, since the size of the payment to the producer increased with greater conservation requirements.¹³⁵⁶

One of the arguments for channeling more money toward such “green payments” was that they did not conflict with the World Trade Organizations’s aversion to direct subsidies. During this period of ubiquitous trade negotiations, the argument may have had some initial sway. The debate, after all, hinged on reducing (and eliminating) various government support structures for large industries, such as agriculture. The USDA argued that its subsidies paled in comparison to the ones distributed in Europe and Japan.¹³⁵⁷ There was truth in that statement. For example, in 2006 the European Union paid its farmers 3.7 times more in total payments than did the US. In 2008, that ratio was 4.6 times. Yet the EU had many more farmers than the United States — around 6.5 times more. The European farmers worked on much smaller farms taking up half the amount of land as American agriculture. The average size of an American farm was 14 times larger than a farm in Europe. Both the EU and the US spent comparable portions of their agricultural payments on conservation, around a fifth of the total payments. The figure most often evoked, however, was the subsidy per acre. The European total subsidy per acre was about 10 times that of the American subsidy (of course, Europe had many fewer acres

1356. Soil and Water Conservation Society; Environmental Defense, "Conservation Security Program: Program Assessment," *A report* (February, 2007).

1357. USDA, "Secretary Veneman's Comments on Recent Trade Issues," *Press conference to farm broadcasters* (January 21, 2003).

to subsidize).¹³⁵⁸ So the numbers told a more nuanced story that defied simple comparative statements. Nonetheless, main trade advantage would have come from a wholesale shift of commodity subsidies into conservation payments worth many billions of dollars.

The Conservation Security Program (CSP) was envisioned as a step in that direction, but as carried out it became a smallish supplementary program in the context of other US conservation programs. As the Soil and Water Conservation Society along with the Environmental Defense group pointed out in their assessment, lack of funding failed both of the program's goals: to serve as income support for farmers and to encourage more conservation on working lands. The assessment simply stated, "CSP cannot continue to function with such a large gap between the vision of an open-ended entitlement program and the reality of strict caps on annual funding."¹³⁵⁹ The USDA had to restrict eligibility to a small portion of watersheds (about an eighth of the watersheds in contiguous US) and devise a complex structure for choosing bids because ranking applications was counter to the theory of an entitlement program.¹³⁶⁰ To achieve nationwide scope, as prescribed in the 2002 Farm Bill, the USDA decided to rotate which watersheds were eligible every eight years.¹³⁶¹ Clearly some producers would have to wait a very long time for their turn.

1358. European Commission; FAO; UNSO, "Basic Data, Key Agricultural Statistics," *Table 2.0.1.2* (2010).; EU Comptroller and Auditor General, "Financial Management in the European Union" (2006 Budget) (April 25, 2008).; EU Comptroller and Auditor General, "Financial Management in the European Union" (Budget 2009) (June 11, 2010).

1359. Soil and Water Conservation Society; Environmental Defense "Conservation Security Program: Program Assessment."

1360. USDA "2007 Farm Bill Proposals: United States Department of Agriculture."

1361. U.S. Government Printing Office, "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program," *Hearing before the Committee on Agriculture, Nutrition, and Forestry, Senate* (110th Congress, 1st Session) (January 17, 2007)., p. 29.

The design of CSP contracts also had incentives not directly aligned with conservation goals. For instance, to increase contract payments the producer could treat more acres, treat land that has higher rental rates, or address new resource concerns through additional conservation practices. But treating each resource concern adequately requires a deeper investment in a number of conservation practices, not installing one practice in order to be able to check a box on the form. The conservation community argued that contractees should be rewarded for quality, not quantity.¹³⁶² The more fundamental problem with the “green payment” concept was the difficulty of accounting how much *extra* conservation is done and how much that extra was worth.

Another change in the 2002 Farm Bill was the provision allowing non-NRCS employees to become certified as technical service providers. Representatives from every interest group perspective argued that with such large increases in conservation funding, NRCS technical field staff would be overwhelmed with requests. There was already a sizable backlog. Plus, conservation on working lands required more nuanced techniques than retiring land out of production and therefore required more technical assistance man-hours.¹³⁶³ After the 2002 Farm Bill introduced CSP and expanded EQIP, the NRCS Chief Bruce Knight declared that such an investment was “...too big for NRCS to tackle alone. We need to build an industry to get the job done.”¹³⁶⁴ Certifying third-party providers was the answer contained in the Farm Bill. The

1362. Soil and Water Conservation Society; Environmental Defense "Conservation Security Program: Program Assessment."

1363. Cox, Craig A "The Promise and Peril of Technical Service Providers."

1364. As quoted in, Editorial, "Technical Service Providers: What' s the Opportunity," *Journal of Soil and Water Conservation* 57, no. 6 (2002): 144A.

USDA leadership supported this as a market-based approach, one that did not strain the federal government.¹³⁶⁵

So the idea was for technical service providers to become the industry ready to handle the expected increase in demand. Private individuals (or firms) would get certified and get paid at the same rates as the NRCS field staff (prompting questions by NRCS employees about their job stability¹³⁶⁶). The producer hiring a technical service provider would pay from the program funds received through the WRP, EQIP, CRP, WHIP, etc.¹³⁶⁷ This arrangement also made practical sense considering that the mandatory programs authorized through the omnibus farm bills received a big overall boost in 2002, while the stability of the technical assistance budget authorized through annual appropriations was more uncertain. The same reasoning made sense in setting up the reimbursement process for NRCS technical assistance (normally in the discretionary programs account and so at the mercy of the annual appropriations process) provided for the mandatory programs. During the 1990s, the USDA had discretion in deciding how much of a portion out of mandatory programs to dedicate to technical assistance and how much to spend on financial assistance, sometimes causing a bit of tension between the FSA (the agency carrying out the largest financial assistance programs), and NRCS (the agency providing the technical assistance).¹³⁶⁸ Soon after the passage of the 2002 Farm Bill, however, events tested this fragile arrangement over and over again, as it became embroiled in a politically deeper, but substantively shallower, debate.

1365. USDA, "Farm Bill 2002: National Technical Service Provider Summit," *Deputy Secretary Jim Moseley* (November 7, 2002).

1366. *Ibid.*

1367. Editorial "Technical Service Providers: What's the Opportunity."

1368. Stubbs, Megan "Technical Assistance for Agriculture Conservation."

The mandatory programs were funded through the CCC (Commodity Credit Corporation) funds. Back in the mid-1990s, the FSA apparently overstretched its authority in using some of the funds to purchase expensive (and quickly deemed outdated) computer equipment. In the 1996 Farm Bill, Congress specifically placed a limit on how much the agency could spend on reimbursing administrative expenses. This did not affect NRCS until late in 2002 when the OMB used this limitation to cap the amount of CCC funds used for technical assistance. The OMB argued that discretionary programs were the proper tool to fund technical assistance for all programs. Congress disagreed. Federal support agencies fell to either side — the Department of Justice throwing its weight behind the OMB decision, while the GAO supporting the Congressional determination. Either way, for the next three years, Congress refused to appropriate money for technical assistance through the annual appropriations process as requested in the Bush administration's budget insisting that it provided the necessary funds through the mandatory programs. During this stalemate, to pay for shortfalls in technical assistance funds the USDA shifted money between programs, effectively reducing the amount available to some programs. For example, EQIP saw a drop of 15% to its financial assistance funds because that money had to be moved to cover technical assistance costs for other programs. And in the case of the Conservation Innovation Grants provision, its launch was delayed because of problems related to of the technical assistance funding.¹³⁶⁹ Despite Congressional attempts to resolve the issue, it persisted. In the 2008 Farm Bill, Congress expanded the definition of approved EQIP practices, thereby placing technical service providers' activities into those eligible for cost-share funds, *i.e.*, the funds from the mandatory pot of

¹³⁶⁹. NRCS, "Implementing the Farm Security and Rural Investment Act of 2002: Delivering Conservation to America's Private Lands" (Internal Document) (2003).

money.¹³⁷⁰ The issue was not over in 2012, however, since Congress exempted only those programs covered under the Conservation Title, while some programs that required technical assistance were in a different title.¹³⁷¹

The Congressional support proved inadequate to build an entire industry for conservation assistance, as Chief Knight proposed. Enthusiasm dwindled. While around 2,100 registered providers signed up in 2004, just over 1,100 remained by 2010, although the number went up to nearly 2,000 unique service providers in early 2012. Nearly 90% of them were individuals with the rest representing agencies or businesses.¹³⁷² In comparison, NRCS employed over 11,000 technical staff during this period. Interestingly, in 1985 the agency had about 2,000 more employees than in 2012 — precisely the number of certified private service providers.¹³⁷³ Because the distribution of NRCS offices varied from state-to-state, in some smaller northeastern states there were nearly as many (or in some cases more) registered providers as NRCS employees. Of course, this did not imply a proportional shift in the workload away from NRCS employees, since the external providers did specific contract work. The share of the NRCS' conservation operations budget spent on the technical service providers was around 5-6% throughout the 2000s.¹³⁷⁴

One reason behind the less-than-expected interest in technical service providers was that their use did not result in more overall dollars for the programs and so there was no incentive for

1370. Stubbs, Megan "Technical Assistance for Agriculture Conservation."

1371. Personal Interview, 29.

1372. USDA, "USDA-NRCS Technical Services Provider Registry" , Web (April, 2012), <http://techreg.usda.gov/> (accessed April 11, 2012).

1373. U.S. Government Printing Office "Conservation.", p. 6.

1374. Stubbs, Megan "Technical Assistance for Agriculture Conservation."

NRCS to develop the program. Of course, the scope could be expanded with more money. Other problems of liability insurance and matching true cost of private industry rates also came up.¹³⁷⁵ But as one analyst pointed out, NRCS itself did not need to create an industry. The industry would germinate once the market conditions were right.¹³⁷⁶ Perhaps it was not surprising then that out of the 42 categories in which technical service providers could be certified, most were certified in nutrient management.¹³⁷⁷ Nutrient management was the main practice under regulatory pressure from the EPA, especially through its regulations over large livestock producers running Confined Animal Feeding Operations (CAFOs). Regulations can be one source of incentivizing a market response.

But tightening regulations was not the way Congress wanted to go in 2002. The cross-compliance provision was weakened by giving power exclusively to the Secretary (and to nobody else) to determine whether a violation of sodbuster or swampbuster was occurring.¹³⁷⁸ Otherwise, conservation programs benefited tremendously from the 2002 Farm Bill. The graph below looks at the largest USDA programs.

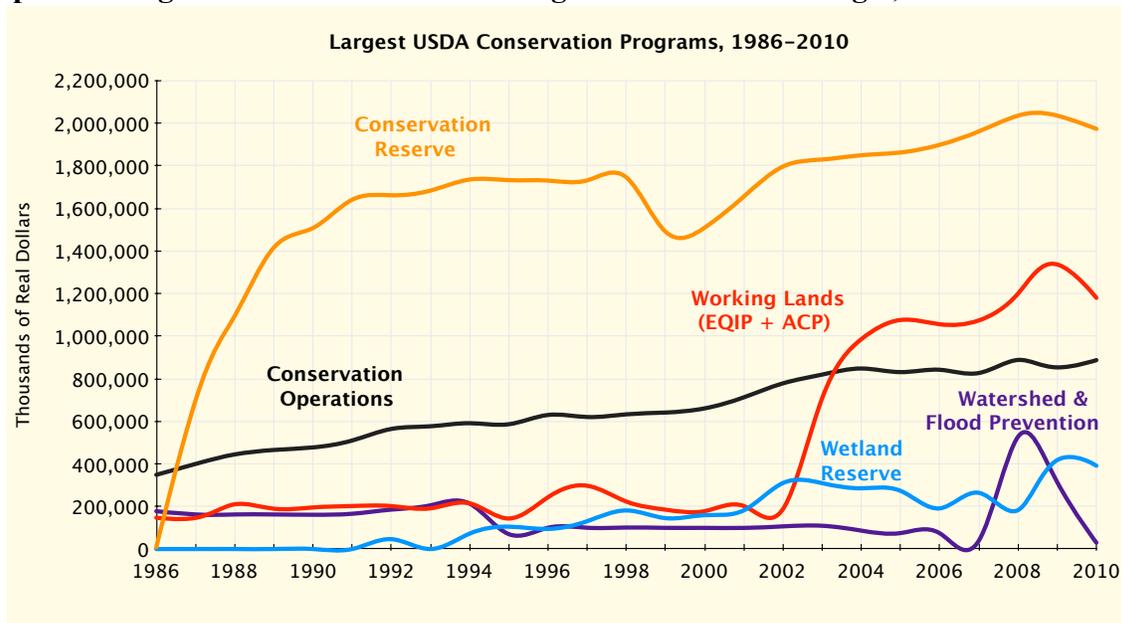
1375. U.S. Government Printing Office, "Review of Federal Farm Policy," *Hearings before the Subcommittee on Conservation, Credit, Rural Development, and Research; House of Representatives* (109th Congress, 2nd Session, May 1, July 27, September 18th) (2006)., p. 81.

1376. Editorial "Technical Service Providers: What's the Opportunity."

1377. Stubbs, Megan "Technical Assistance for Agriculture Conservation."

1378. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

Graph 24. Largest USDA Conservation Programs in terms of budget, 1986 to 2010.



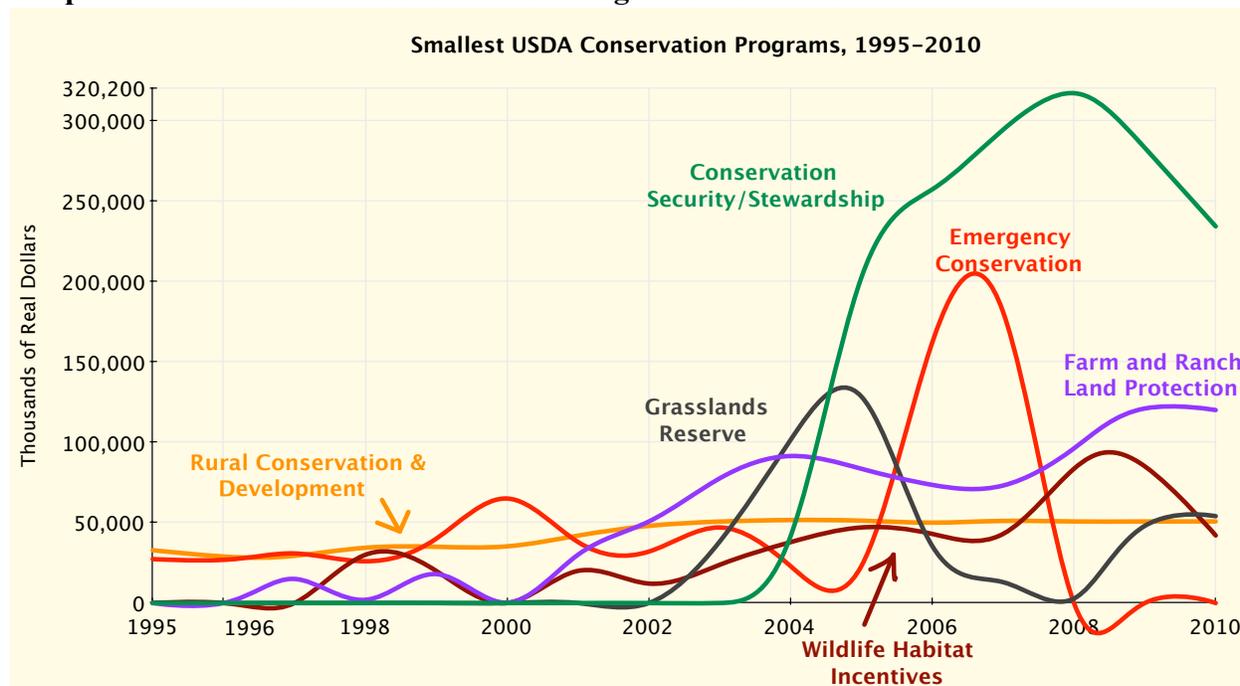
Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

The graph demonstrates continued support for traditional USDA conservation programs but also shows, in 2002, a sharp increase in funding for working-land programs — mainly EQIP — and, in 2008, a spike in watershed and flood prevention funding. The starker picture is on the next graph. It shows the many smaller programs that were added in 2002, such as the Conservation Security Program discussed above (that was envisioned to be very large but never got there). Other existing programs that have been lying low got a boost, like the Farmland Protection Program which saw its funding increase by over 4 times in 2002 (by 2001 only about 100,000 acres were enrolled in the program)¹³⁷⁹. Other smaller programs were less lucky. The

1379. NRCS, "Farm Bill 2002: Farmland Protection Program" (Fact Sheet) (May, 2002).

Resource Conservation & Development Program which had from \$29-40 million in annual appropriations in the 1990s was somewhat helped in the 2002 Farm Bill. Its funding increased to over \$50 million in 2003 and stayed that way until the program was cut altogether in the appropriations bill for 2011.¹³⁸⁰

Graph 25. Smallest USDA Conservation Programs from 1995 to 2010.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

More specialized programs focused primarily on wildlife benefits like the expanding reserve-style programs. The newly established Grasslands Reserve Program was capped at 2 million acres and the Wetland Reserve Program was capped at around 2.3 million acres, representing a two-fold increase from the over 1 million acres enrolled in 2003.

¹³⁸⁰. USDA "Soil and Water Conservation Society: Annual Conference."

The 2002 Farm Bill did not bring only positive news for the conservation community. Some lamented that the individual cap for EQIP funding was placed at a very high threshold of \$450,000 in lifetime payments, effectively subsidizing large livestock operations as some contended.¹³⁸¹ The previous cap was \$50,000 total for multiyear contracts. While both the House and the Senate versions of the bill increased that cap somewhat, the \$450,000 number came out of the Conference process. The Conference report also allowed for 60% cost-sharing payments to livestock producers participating in EQIP, while cropland applicants could receive cost-share payments up to 40%.¹³⁸² EQIP was a popular program especially among livestock producers.

The inflow of money also brought intensified scrutiny to NRCS and its allocation practices. Throughout the long history of the NRCS Conservation Operations Program, each state got about as much as it received in the previous year plus an adjustment (up or down) depending on the total annual budget.¹³⁸³ But no one broke down the costs based on the workload needed to support different program activities. As a result, the agency could not provide accurate estimates of its future budget needs based on changes to the programs. In 1998, NRCS embarked on the process, which involved developing a “cost of programs model” to derive the estimates. The results showed, for example, that it cost ten times more to provide technical assistance for a WRP contract than for a CRP contract because of the complexities involved in wetland restoration. A 2004 GAO report found that the model’s estimates were

1381. National Sustainable Agriculture Coalition, "Comment on Interim Final Rule for the Environmental Quality Incentives Program" (Statement by Ferd Hoefner) (March 25, 2009).

1382. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1383. Personal Interview, 22.

imperfect and diverged from the actual costs incurred (the estimates projected a higher cost).¹³⁸⁴

The allocation mechanisms for the new and expanding programs were less transparent. The formulas based on resource concerns re-assigned dollars away from some states and toward others, prompting a “regional equity” provision in the 2002 Farm Bill. For certain programs, each state was to receive a baseline payment regardless of other considerations. Allocation of dollars became an especially hot issue at the agency as leadership stepped in to minimize any sudden budgetary impacts on any state.

2. Program allocations

During the 1990s and early 2000s, the number of NRCS-run programs multiplied. In addition to technical assistance, NRCS ran around 20 separate programs. The issue how program funds should be allocated to the states came up in the 1990s. NRCS allocation systems seemed haphazard especially in contrast to the Environmental Benefits Index formula created for the CRP allocations by the Farm Service Agency (FSA). For older programs like technical assistance, NRCS still used historical allocations and followed Congressional earmarks. During the tenure of Pearlie Reed as the NRCS Chief (from 1998 to early 2002), budgeting was done out of the Office of the Chief level itself.¹³⁸⁵ State conservationists determined the number of staff needed and allocations by county given the budget provided.¹³⁸⁶

Allocations for newly created programs depended on the program managers’ designs. At

1384. GAO, *Agricultural Conservation: USDA Should Improve Its Methods for Estimating Technical Assistance Costs* (November, 2004).

1385. Personal Interview, 23.

1386. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 55.

the time, however, funding for the programs went up on an annual basis, and since each year states got more than they did the previous one, there was little concern over who got what.¹³⁸⁷

There was also little to no transparency in the process.

Yielding to Congressional pressure, NRCS made a concerted effort to retool its allocation process. The starting point was technical assistance. In 1998, the agency pulled together a number of state conservationists to work out a system. The idea was to align the objectives to available resource factors and data. The formula was released in 2003 (although pilot formulas were tested in several states in the years before).¹³⁸⁸ The team came up with a number of factors including demographic elements like number of farms and resource-concern factors like soil erosion levels about the “T” or tolerance limit as well as business expenses like cost of doing business and performance measures related to level of conservation applied. The NRI provided the bulk of the resource factors figures, although some desirable factors — like conservation treatment needs last estimated in 1992¹³⁸⁹ — were outdated and therefore unusable.¹³⁹⁰ Many of the elements proved to be hard to estimate. Providing technical assistance takes time and repeated interactions with the producer. This spread out the workload making it difficult to precisely attach a number for a given period like for a fiscal year. And since there were many varieties of technical assistance, attaching accurate costs to each was problematic.¹³⁹¹

Nonetheless, the formula was created.

1387. Personal Interview, 23.

1388. Personal Interview, 23.

1389. NRCS, "2003 Annual NRI SAS File Layout," *Internal Document* (2009).

1390. Personal Interview, 23.

1391. GAO, "Agricultural Conservation: USDA Should Improve Its Methods for Estimating Technical Assistance Costs" (Report to the Committee on Agriculture, House of Representatives) (November, 2004).

Although it provided transparency, moving to such a format threatened traditional funding levels for many states. Different states had different problems, and shifting weights from one factor to another in some cases resulted in large swings. For example, attributing even a slightly different weight for the factor coupled to cropland with soil erosion about the “T” level, significantly affected the amount of money Minnesota would receive. Politically this was an unacceptable result. To remedy the situation, each state’s annual budget was allowed to vary by a small percent — from 1% to 5% depending on who was in charge.¹³⁹² So it proved to be extremely difficult to re-allocate funding. After one such attempt, a former USDA official then in charge of budgeting remembered receiving a personal phone call from the Chair of the Appropriations Committee demanding that funding to his state be reinstated within one hour or else his job would be eliminated.¹³⁹³

In the case of technical assistance, the agency used the formula to allocate only a portion of the total funding. Congressional earmarks (that rose to \$90 million by the end of the 2000s decade from around \$5 million in 1996), special initiatives and projects constituted the other portion.¹³⁹⁴

The complexity of the formula grew. In 2007 it contained 36 separate factors, some of which were deemed highly correlated and redundant.¹³⁹⁵ The agency reduced the redundancy and brought down the number of factors to 22 in 2009.¹³⁹⁶ The weight on resource base factors (like

1392. Personal Interview, 23.

1393. Personal Interview, 28.

1394. Personal Interview, 23.

1395. World Perspectives, Inc., "Background Material in Support of Evaluation of the Natural Resources Conservation Service's Allocation Formulas" (April, 2007).

1396. NRCS, "Fiscal Year 2009 Allocation Formula Methodologies" (January, 2009).

acres under different land uses or number of irrigated acres and wetlands) went up to accounting for two-thirds of the total, as opposed to half of the total in 2007. The proportion of funding allocated according to resource concern factors (like soil erosion levels or numbers on endangered species) went down.

When he arrived in 2009, the new Chief decided to redo the allocation process. To replace pre-formulated criteria, states now were asked to submit specific budget requests according to their needs. The idea was that funding levels were based not just on cost-of-business estimates but also on State Resource Assessments — formal assessments for wildlife, water quality, and many other resource issues. These were begun in 2009 in order to connect performance goals to results for strategic planning. Each state completed its own assessment of its needs, although the quality of assessments varied and so did their usefulness.¹³⁹⁷

The idea was similar to how the funding for the farm bill programs used to be allocated. In the 1990s as farm bill programs proliferated, states submitted their requests and worked with the program managers to receive funding. In subsequent years, states received funding based on historic allocations combined with a performance-based system where states were ranked against each other according to meeting established performance goals.¹³⁹⁸

After the 2002 Farm Bill passed, the NRCS Chief Bruce Knight moved to establish formulas for the other programs. Each program developed its own mix of indicators and weights. By the mid-2000s, the number of programs NRCS had ballooned and so had the number of different formulas. In 2007, the agency brought in a consultant to aggregate and compare the formulas and recommend improvements. The final report found wide variation in

1397. Personal Interview, 17.

1398. Personal Interview, 24.

the types of elements used and recommended combining many of them and creating clear categories of elements. Specifically, it said “NRCS does not manage a single ‘pot’ of funds. It manages 21 separate ‘pots.’”¹³⁹⁹

In the case of EQIP, for example, the 2007 formula put half of the total weight on resource quality factors. The 2009 version dropped that weight to 30%. The story was similar with the Wildlife Habitat Incentives Program, where around 75% of the factors’ weight used to be in resource quality factors in 2007, going down to 33% in 2009. Other programs like the Resource Conservation and Development Program (RC&D) used an entirely different scheme when it split its formula according to type of concern addressed — *i.e.*, land conservation versus water management, land management versus community development.

By 2009, most programs had their formulas rewritten to specify four categories of factors: resource base, resource quality, cost-of-doing business, and performance.¹⁴⁰⁰ Many parameters previously found problematic were now to be omitted. For example, a GAO report on the EQIP formula found inadequacies in 31 parameters comprising the formula. Particularly problematic were the 29 data elements. Some of them were used twice, others were outdated or unreliable.¹⁴⁰¹ As a result, new formulas had considerably fewer elements and used fewer data sources. Since NRI data were common to many formulas, NRCS attempted to unite all data under one roof. The Resource Assessment and Inventory Division (RIAD) — the same division

1399. World Perspectives, Inc., "Evaluation of the Natural Resources Conservation Service's Allocation Formulas," *Final Report* (April, 2007).

1400. NRCS "Fiscal Year 2009 Allocation Formula Methodologies."

1401. GAO, "Agricultural Conservation: USDA Should Improve Its Process for Allocating Funds to States for the Environmental Quality Incentives Program," *Report to the Ranking Democratic Member, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate* (GAO-06-969), Web (DIANE Publishing, September, 2006).

that ran the NRI and started the 2011 RCA process before being split again into RAD and RID — would serve as the main clearing house for data products. But this role would never materialize, primarily because some in the agency were hesitant to disclose the program allocation process in its entirety.¹⁴⁰² Nonetheless, the formulas became simpler under Chief Arlen Lancaster and, for the first time, NRCS released publicly some details of its allocation process.

Although formulas allowed for transparency and for shifting funds according to conservation priorities, Congress was hesitant to allow for the full consequences. Establishing regional equity payments in the 2002 Farm Bill was one attempt to counteract bias in resource-based allocation. And through earmarking, Congress effectively limited the shifting of funds between or even within programs.¹⁴⁰³

3. 2008 Farm Bill (and initiatives)

The 2008 Farm Bill was the product of an extended debate on how to resolve the multitude of problems that arose in implementing the provisions in its predecessor, the 2002 Farm Bill. But, like all farm bills, the 2008 statute was a product of the economic situation in the agricultural sector. The prices for commodities were rising again — after a slump in the mid-2000s — and putting land out of production seemed less sensible. The CRP cap was dropped down to 32 million acres (to start in 2010). When the bill passed in April 2008, around 35 million acres were in reserve.¹⁴⁰⁴ The bill retained the continuous CRP and the enhanced CRP

1402. Personal Interview, 31.

1403. World Perspectives, Inc. "Evaluation of the Natural Resources Conservation Service's Allocation Formulas."

1404. Soil and Water Conservation Society; Environmental Defense Fund, "Conservation Reserve Program (CRP): Program Assessment," *A Report* (April, 2008).

modifications. Around 3.8 million acres were enrolled through both of these in 2008.¹⁴⁰⁵ To meet the new acreage cap, FSA allowed acres to expire, offering selective extensions to most environmentally sensitive acres. By the fall of 2010, 31 million acres were in the CRP.¹⁴⁰⁶

The WRP cap went up to over 3 million acres, although now only 10% of a county's land could be enrolled in the program (as opposed to the 25% cap in the past). Cost-effectiveness and financial ability to contribute to establishing wetlands were added criteria for prioritizing applications.

At the same time, the CRP became more flexible with the addition of continuous CRP sign-ups in the late 1990s to encourage priority enrollment for specific high-value conservation practices — establishing buffers or filter strips on portions of fields close to the water through the National Conservation Buffer Initiative. The FSA used the same concept to branch out to other priorities. In 2008, CRP extensions included the State Acres for Wildlife Enhancement initiative (SAFE) and the Agricultural Water Enhancement Program (AWEP).

The CRP initiatives allowed for focused distribution of funds. States proposed their own wildlife priorities, so among other priorities SAFE acres in Indiana were aimed at restoration of Henslow's Sparrow, while Wisconsin could target the Karner blue butterfly. In 2010, nearly 700,000 acres were in 90 different state-led SAFE initiatives.¹⁴⁰⁷ By the mid-2000s, NRCS had joined suit in starting initiatives with its program funds (like EQIP, WHIP, WRP, and GRP) too.

1405. ERS, "2008 Farm Bill Side-by-Side Comparison," *Farm Bill Resources* (April, 2008).

1406. U.S. Government Printing Office, "Hearing to Review the Implementation of the Conservation Title of the 2008 Farm Bill," *Before the Subcommittee on Conservation, Credit, Energy, and Research; House of Representatives* (111th Congress, 1st Session) (October 7, 2009), p. 4.

1407. NRCS, "SAFE Acres by Project Area," *Internal Communication* (September, 2010).

In the 2000s, the USDA special initiatives focused either on establishing wildlife habitats or dealing with water quality issues in a designated watershed. Both types of initiatives were designed to stave off tougher regulatory approaches. The wildlife initiatives targeted species on the brink of being listed under the Endangered Species Act. The water quality initiatives targeted watersheds on the brink of stricter EPA scrutiny through the TMDL scheme.

A number of initiatives have appeared over the years. One of the earliest with the CPR was the Northern Bobwhite Quail Habitat Initiative begun in 2004 to protect the falling quail populations in northern states. The design of the initiatives encouraged collaboration and participation in the program between multiple stakeholders. In this case, the FSA teamed up with multiple state agencies and non-profit organizations like Ducks Unlimited, Pheasants Forever, the National Wild Turkey Federation, and others.¹⁴⁰⁸ Their participation encourages broader support from producers.

NRCS used a similar approach to carry out its initiatives. In some cases, the non-profits worked with retired farmers to knock on doors of farmers whose property affected the establishment of migratory bird habitats (or other wildlife habitats) and asked them to sign up for the program.¹⁴⁰⁹ The agency learned from one of its earliest experiences that targeted action can prevent regulatory measures. For example, in 2004 the agency targeted sage-grouse habitats in Western states, staving off a decision by the Fish & Wildlife Service to list the species as endangered. NRCS doubled its commitment to \$5 million the following year.¹⁴¹⁰

1408. Soil and Water Conservation Society; Environmental Defense Fund "Conservation Reserve Program (CRP): Program Assessment."

1409. Personal Interview, 4.

1410. U.S. Government Printing Office "To Discuss How Farm Bill Programs Can Better Support Species Conservation.", p. 4.

Initiatives restoring migratory bird habitats have proven to be especially popular among hunters who encouraged the states to get involved. Other initiatives required more enticement. For example, for many years range conservation in the West involved destroying sagebrush to make room for grazing. Now the Sage-Grouse Initiative paid to restore the brush and use grazing as a conservation technique. This turnaround did not sit well with some managers wondering about the lost investments.¹⁴¹¹

While change is part of scientific discovery, it also creates uncertainty, which farmers (and any businesspeople) detest. For example, a change in the Environmental Benefits Index (EBI) one year in the mid-1990s to reflect states' regional wildlife priorities led to a redistribution of eligible CRP acres, disappointing certain farmers and their representatives in Congress. Some contracts were "in jeopardy because of the red fox, I can't remember what little small fox we were trying to protect, and the burrowing beetle," explained Senator Pat Roberts from Kansas.¹⁴¹² Tragically for the cause, the beetle was misidentified in Kansas, causing quite a scandal between Senator Roberts and Secretary Dan Glickman (at one point, the Secretary brought the Senator a box with a burrowing beetle in it¹⁴¹³). When the dust settled, the state conservationist of Kansas ended up in Alaska.¹⁴¹⁴

Incidences like this — *i.e.*, changes in the allocation formula redistributing the eligibility pool — prompted Congress to put limits on how much the state's annual allocations could fluctuate from the previous year. This and regional equity requirements limited the capacity for

1411. Personal Interview, 4.

1412. U.S. Government Printing Office "Conservation.", p. 12.

1413. *Ibid.*, p. 12.

1414. Personal Interview, 13.

nationwide targeting of resources. Since the 2008 Farm Bill raised the minimum “regional equity” payments from \$12 million to \$15 million despite protestations from the USDA officials who lamented their inability to target under such restrictions,¹⁴¹⁵ initiatives became a tactic to overcome that. In 2012, NRCS supported several and had more on the way. They enjoyed popularity especially since policymakers found a way to reduce uncertainty. The USDA and the Fish & Wildlife Service would enter into “safe harbor agreements” with private landowners who were participating in wildlife conservation programs, protecting them from incurring any future obligations related either to changes in recommendations for conservation activities or to any land use restrictions triggered from greater incidence of endangered species.¹⁴¹⁶

The map below shows some of the recent initiatives. An important initiative not listed on the map is the Gulf of Mexico Initiative. It, along with the Mississippi River Basin Healthy Watershed Initiatives grew out of the large inter-agency federal effort called the Hypoxia Task Force that included high-profile members from the EPA, the USDA, NOAA, Department of Interior, and others.¹⁴¹⁷ Notice that the initiatives were spread throughout the country. Some speculated that this was done to appease policymakers in the various states.¹⁴¹⁸ This would hardly be surprising, given that subjectivity that was invariably involved in choosing which

1415. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program."

1416. U.S. Fish & Wildlife Service, "Safe Harbor Agreements for Private Landowners" (July, 2011).

1417. U.S. EPA, "Mississippi River/Gulf of Mexico Watershed Nutrient Task Force ," *Gulf of Mexico Hypoxia, Mississippi Basin* (Members), Web (2012), <http://water.epa.gov/type/watersheds/named/msbasin/members.cfm> (accessed May 3, 2012).

1418. Personal Interview, 4.

initiatives to pursue. Experts submitted their recommendations to the Chief, who then decided the final outcome.¹⁴¹⁹

Another important initiatives development in the 2008 Farm Bill was a new restriction on eligibility for the Wildlife Habitat Incentives Program (WHIP). Previously, nearly anyone could apply for WHIP funding. Partnership projects involving local governments and non-profits popped up across the country. Some of them worked on removing dams and restoring streams located on state-owned lands. The 2008 Farm Bill restricted eligibility for funding to producers located on private lands, meaning that many projects could no longer go forward. Rumor has it that a lawmaker heard about a \$100,000 nature trail built with WHIP funds through a local school district.¹⁴²⁰ As a result policymakers restricted access to the entire pot of money. Given the restrictions on funds, NRCS Chief Dave White dedicated all WHIP funding for the fiscal year 2012 toward a new round of initiatives called Working Lands for Wildlife.¹⁴²¹ The initiatives chosen in conjunction with the Fish & Wildlife Service focused on several new species like the Bobwhite quail, Golden-winged Warbler, the bog turtle, gopher tortoise and others.¹⁴²² The map below shows the geographical spread of NRCS initiatives.

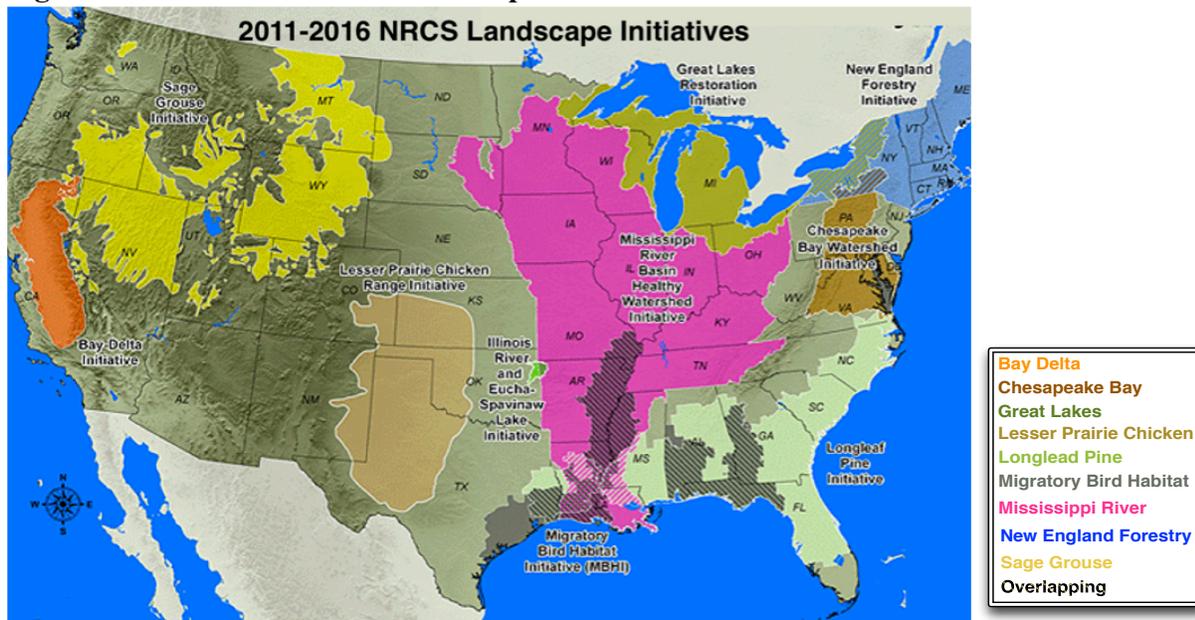
1419. Personal Interview, 4.

1420. Personal Interview, 4.

1421. Personal Interview, 4.

1422. NRCS, "2012 Working Lands for Wildlife Initiative at a Glance" (March, 2012).

Figure 3. Location of NRCS Landscape Initiatives.



Source: NRCS, "Landscape Initiatives Map" (Website), Web (2011), <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/farmland/initiatives/?&cid=stelprdb1042502> (accessed April 16, 2012).

To identify priorities and priority species, NRCS was using information from CEAP and other sources to overlay different layers on natural resource conditions. This work was still in progress in 2012, as discussed. Meanwhile, new initiatives sprouted up. While the FSA could use flexible mechanisms within CRP for its major initiatives, NRCS had to be more creative. Funding for the initiatives was made possible through leveraging a few different tools. One was the Conservation Innovation Grants (CIG) begun in 2002. Another was the Cooperative Conservation Partnership Initiative (CCPI) created in 2008. The CCPI allocated a portion of EQIP, CSP, and WHIP program funds toward projects organized on the ground by external partners such as state agencies or non-profit organizations. But the portion of the funds that

could go toward CCPI projects was fixed at 6%. When the Mississippi River Basin Initiative started in 2009, Congress protested that NRCS violated the legal limitation. Unlike the Chesapeake Bay Initiative which had a Congressional earmark in the farm bill, the Mississippi River Basin did not. Speaking to NRCS Chief Dave White, Representative Bob Goodlatte, a Republican from Virginia, said that he was “not sure that you [or NRCS] ha[d] the statutory authority to give a preference in that area when there is no Congressional mandate to do so.” He continued that Congress already decided which areas should be emphasized and it “did not authorize you [or NRCS] to set up other separate, special initiatives that would take money away from other regions of the country that are represented around this dais this morning that are concerned about making sure that their farmers receive their fair share.” The chief expressed confidence that NRCS was “on firm legal footing,” when it came to using CCPI authority. He also assuaged policymakers that enough money was available and that the initiatives did not shortchange others. But with the persistent backlog in applications, some policymakers remained unconvinced.¹⁴²³ Nonetheless, initiatives proliferated.

Conservation assistance was still stretched thin. Despite the introduction of the third-party technical service providers and much emphasis on allocating enough resources toward paying for technical assistance, the backlog persisted. From 1985 to 2007, financial assistance funds grew around 500% (in 2009 dollars), while technical assistance funds increased only by 40% (although the number of NRCS field employees declined by about 10%).¹⁴²⁴

1423. U.S. Government Printing Office "Hearing to Review the Implementation of the Conservation Title of the 2008 Farm Bill.", p. 40-41, p. 48.

1424. Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

The increase in financial assistance programs placed on the shoulders of NRCS has resulted in its personnel spending more and more time on paperwork. Staff complained that they had less time to spend in field planning actual conservation. The agency promised to reduce the time spent on financial assistance activities by 80% through its Conservation Delivery Streamlining Initiative (CDSI) launched in 2009.¹⁴²⁵ Another lingering concern was the changing relationship between NRCS staff and producers, since NRCS personnel was tasked with making technical determinations that could trigger cross-compliance provisions (jeopardizing commodity payments for violators). Although the provisions have been weakened considerably over time, the agency was still on the receiving end of complaints from angry farmers and their representatives.¹⁴²⁶ The 2008 Farm Bill brought few changes on either front. The changes did come, but through the implementation process. When the Obama administration came in and reviewed the rules for the programs, it decided to make some of the programs more favorable to producers.

One of the changes concerned the Farm and Ranch Lands Protection Program (now renamed that Farmland Protection Program) and the Grassland Reserve Program and explicitly established that the easements acquired through the programs did not constitute a purchase of Federal property rights. Another change eased the requirement on participants in the WRP to see

1425. NRCS, "USDA Revises National Standard to Improve Nutrient Efficiency and Water Quality | NRCS" (Press Release), Web (December 13, 2011), <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/?cid=STELPRDB1046194> (accessed April 8, 2012).

1426. Personal Interview, 29.

the project to its completion before transferring the property to a different owner. The new Administration also expanded where EQIP and WHIP money could be spent.¹⁴²⁷

The 2008 Farm Bill re-configured the Conservation Security Program (CSP). Since its creation in 2002, severe funding caps restricted its full realization. Although initially the agency decided to prioritize funding for adoption of higher level conservation practices through the three-tiered scheme, in 2005 payments were distributed almost evenly among the three. More than half of the number of contracts were for payments in the lowest tier. The trend shifted sharply in 2006, when NRCS decided to reclassify eligibility to shift payments toward the upper two tiers.¹⁴²⁸ But Congress opposed such a change. Senator Harkin (D-IA) argued that the program needed to be available to everyone and was designed to support baseline conservation practices.¹⁴²⁹

The 2008 Farm Bill replaced “security” with “stewardship” to make the new Conservation Stewardship Program, abbreviated with the same acronym CSP. The focus was shifted toward establishing additional conservation practices. The three-tiered system was dropped. The ranking of applications was now based on maximizing number of priority resource concerns addressed and effectiveness of the practices (“based to the maximum extent possible on conservation measurement tools”).¹⁴³⁰ The first sign-up received over 21,000 applications for

1427. U.S. Government Printing Office "Hearing to Review the Implementation of the Conservation Title of the 2008 Farm Bill.", p. 14.

1428. Soil and Water Conservation Society; Environmental Defense "Conservation Security Program: Program Assessment."

1429. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program."

1430. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008.", Section. 1238F.

nearly 33 million acres, only about 40% of which could fit within the 12.8 million acre cap.¹⁴³¹

Despite the limitations of the program, the continuing trade talks still drove the conversation toward “green payments.”

While the CSP was scaled down, EQIP continued to expand. Congress increased the number of priorities addressed by the program, although it preserved the 60% cost-share portion. It scaled back the lifetime maximum payment from \$450,000 to \$300,000 potentially opening up the program to more individuals. Sub-programs within EQIP became more flexible. The Conservation Innovation Grants (CIG), for example, no longer had a 50% federal cost-share cap for projects. The funds allocated for the Agricultural Watershed Enhancement Program (the 2002 Farm Bill established this along with the Innovation Grants extension) could now be used for water quality improvements on farms themselves. Other programs like WHIP, GRP, and the Farmland Protection Programs were re-authorized and subject to regional equity payments (along with EQIP).¹⁴³²

In 2011, NRCS came out with an updated nutrient standard known as the 4 Rs — the right amount placed at the right location at the right time and at the right rate. While the agency has around 160 management practices, the nutrient management standard was one of the most controversial.¹⁴³³ But the change could be justified — it used the CEAP results to guide the work. The previous year, a third of practices had been revised without input from CEAP.¹⁴³⁴

1431. U.S. Government Printing Office "Hearing to Review the Implementation of the Conservation Title of the 2008 Farm Bill.", p. 15.

1432. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

1433. Rutherford, Burt, "NRCS Releases Updated Nutrient Management Standard," *Beef Magazine* (2011).

1434. CEAP Implementation Meeting, February 2, 2012.

Over the last twenty years the number of standards started to creep up more quickly. For a fairly long time the number of standards remained stable. In 1959, the Soil Conservation Service had 111 standard soil and water conservation practices.¹⁴³⁵ In 1982, the agency had 115 approved practices, which included wildlife improving activities.¹⁴³⁶ By 1989, the agency had 140 different standards. That year it introduced nutrient management, pest management, and wetland restoration standards.¹⁴³⁷ Over the last two decades, twenty additional standards came into use.¹⁴³⁸

The update to the nutrient management standard arrived at a time when Congress and the public scrutinized progress of water quality improvement efforts. One glaring example was the Chesapeake Bay where poor water quality persisted despite billions of dollars invested in cleaning it up. In the latest attempt to get results. In 2011, the EPA was designing a TMDL program for the Bay. The concept was not new and goes back more than twenty years to the 1987 amendments to the Clean Water Act, which promised to empower the EPA to tighten nonpoint source water pollution regulation.

4. The Chesapeake Bay effort

The efforts to clean up the Bay go back even further. A decade after the passage of the

1435. Soil Conservation Service, *National Catalog of Practices and Measures Used in Soil and Water Conservation* (United States Department of Agriculture, Soil Conservation Service, 1959).

1436. SCS, USDA, "National Handbook of Conservation Practices" , NAL archives (April, 1982).

1437. Shaw, Robert, Deputy Chief for Technology "National Handbook of Conservation Practices, Notices 111."

1438. NRCS, "List of Conservation Practices" , Web (April 27, 2012), http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/alphabetical/ncps/?&cid=nrcs143_026849 (accessed May 6, 2012).

Clean Water Act in 1972, monitoring data from the USGS showed that indicators of nonpoint source pollution told of a worsening problem across the nation.¹⁴³⁹ In 1983, the EPA released the results of a 5-year study of the Chesapeake Bay watershed specifically verifying that nonpoint source pollution represented a large portion of the water pollution problem. This prompted the local political leadership (Governors of Maryland, Pennsylvania, and Virginia, and the Mayor of Washington, D.C.) to come together and sign a Chesapeake Bay Agreement of 1983 creating the Chesapeake Executive Council charged with coordinating the nascent cleanup effort. In 1987, the Council established specific goals for its work — for the first time relying on actual numerical goals, which included achieving a 40% reduction in nitrogen and phosphorous loads (compared to a year with average precipitation) by 2000. The EPA matched states' funding to provide over \$60 million in grants within the first few years of the program with 60% of the money going toward implementing agricultural best management practices for cropland and animal operations.¹⁴⁴⁰

Around the same time, Congress passed amendments to the Clean Water Act intended to tighten nonpoint source pollution regulations. The 1987 changes compelled states to develop management plans to deal with nonpoint pollution. They also officially solidified the leadership role of the EPA in the Chesapeake Bay Program as well as dedicating funds to go toward the Bay specifically (in addition to similar provisions made for the Great Lakes).¹⁴⁴¹

1439. EPA, "Report to Congress: Nonpoint Source Pollution in the U.S" (Office of Water Program Operations; Water Planning Division) (January, 1984).

1440. EPA, "A Report to the Congress: Activities and Programs Implemented Under Section 319 of the Clean Water Act - Fiscal Year 1988" (Office of Water) (August, 1989).

1441. U.S. Government Printing Office, "United States Statutes at Large: 1987," *Volume 101: Part 1: Public Laws 100-1 through 100-179* (Amendments to Federal Water Pollution Control Act) (1989).

The threat of regulatory oversight over nonpoint source activities in the Bay alarmed farmers. The USDA sprung into action quickly. Soon, a memorandum of understanding signed between the USDA's Soil Conservation Service and the EPA transferred the leadership of all conservation activities under the Chesapeake Bay Program to the state conservationists.¹⁴⁴² To allay fears across the board, the USDA issued its Water Quality Program in 1989 with the goal to "provide farmers, ranchers, and foresters the knowledge and technical means to respond independently and voluntarily in addressing on-farm environmental concerns and related State water quality requirements." The document went on to say that "[t]he Department plans to achieve this goal in a way that reduces the need for restrictive regulation, and in a manner that maintains agricultural productivity, avoids economic hardship, and sustains an economical and safe supply of food and fiber."¹⁴⁴³ The translation meant that the EPA regulations would not be necessary and all of the different priorities could be met in harmony with each other.

And the EPA regulations of nonpoint sources remained largely theoretical despite mandates in the Clean Water Act (going back to the original 1972 law) calling for the agency to intervene if states failed to set acceptable quantitative goals for the amount a given pollutant could be discarded into their waterways. The theory was that the states would match the goals — dubbed Total Maximum Daily Loads (TMDLs) — to acceptable water quality standards for each waterway based on its designated use. But developing such goals was a costly process that required a large commitment of resources and skilled coordination among many participants. In cases where the states could not or did not muster the effort, the EPA would take over. Despite

1442. EPA, "Memorandum of Understanding - Soil Conservation Service and Environmental Protection Agency," *Chesapeake Bay Program* (1988).

1443. USDA "Water Quality Program Plan to Support the President's Water Quality Initiative."

the provisions, for thirty years no action on the score was taken. When the states dragged their feet to complete the very first step of the process which required them to identify impaired waters within their borders, the EPA did little. It also procrastinated on issuing regulations for the states on developing the TMDLs. An initial but tentative and ineffective move toward issuing regulations came in 1985.¹⁴⁴⁴

The more serious change happened in 1992 when the EPA finalized regulations that gave states two years to categorize their waterbodies by the level of their impairment and to establish TMDLs. While the states begun submitting lists of impaired waterbodies to the EPA, for the most part they did not go to the next step. By the late 1990s, the EPA estimated that around 20,000 waterways (measured in “water quality limited segments”) required TMDLs and about 1,500 had been written. Environmental groups filed lawsuit after lawsuit trying to goad the agency into action. One key issue was the absence of solid deadlines without which there was little incentive to act. In 1997, the EPA came out with a policy prodding states to develop schedules for establishing TMDLs. The new policy gave states 8 to 13 years to do so.¹⁴⁴⁵ And as time went on, more and more impaired waterbodies were identified prompting the development of more and more TMDL plans.

In the summer of 1999, the EPA made an attempt to strengthen the TMDL program and establish clearer deadlines for progress. Nearly every constituency was dissatisfied with the proposed rule. States balked at the potential expense of meeting new requirements; farm groups questioned the EPA’s authority to include nonpoint sources in the TMDL program; industrial and municipal groups insisted that the point sources should not be the sole victims of new

1444. Claudia Copeland *Water Quality Initiatives and Agriculture*.

1445. Ibid.

regulations; and environmentalists lamented the slow speed of progress. Congress held multiple hearings on the subject and policymakers introduced multiple bills aimed at curtailing the rule. Although none passed, by restricting the use of funds Congress did succeed in postponing the rule's implementation. By that time, the White House switched hands and the Bush administration announced further review of the rule.¹⁴⁴⁶

Meanwhile, many of the issues were playing out in the courts. One of the most important court decisions established that the EPA had the authority to include nonpoint source pollution under its TMDL requirements just as the EPA had argued.¹⁴⁴⁷ In response to Congressional inquiry, the National Research Council found that the scientific basis was sufficient to move forward.¹⁴⁴⁸ Despite such assurances, the Bush administration did not proceed with the new rule. States, on the other hand, continued to write more and more TMDLs — completing around 35,000 TMDLs by the end of 2008 (although at least 70,000 more remained to be done at a cost of at least a couple of billion dollars).¹⁴⁴⁹ But completing a TMDL document was one thing, implementing change on the ground was another. On that front, little happened during the 2000s.

In the Chesapeake Bay, however, the situation was somewhat different because of the federal attention it was receiving. President Clinton's Clean Water Action Plan launched in 1997

1446. Copeland "Clean Water Act and Total Maximum Daily Loads (TMDLs) of Pollutants, CRS Report for Congress."

1447. M M Hale, "Pronsolino V. Marcus, the New TMDL Regulation, and Nonpoint Source Pollution: Will the Clean Water Act's Murky TMDL Provision Ever Clear the Waters," *Environmental Law* 31, no. 4 (2001): 981.

1448. National Research Council, "Assessing the TMDL Approach to Water Quality Management," *Testimony of Committee Chair, Kenneth Rechow* (Before the Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives) (June 28, 2001).

1449. EPA, "Handbook for Developing Watershed TMDLs," *Office of Water* (Draft) (December 15, 2008).

helped introduce additional initiatives in the Bay to tackle nonpoint source pollution.¹⁴⁵⁰ The Chesapeake 2000 agreement (organized by the Chesapeake Executive Council) brought in Delaware, New York, and West Virginia into the effort and established over 100 goals to promote environmental soundness of the Bay.¹⁴⁵¹

The 2002 Farm Bill included the Chesapeake Bay as one of three conservation priority areas for the CRP and gave the USDA authority to steer funding from the newly created Conservation Security Program toward priority areas like the Chesapeake Bay. Specifically, the manager's report stated that they "intend for the Secretary to use this authority to help producers avoid the need for further federal and state regulations to protect clean water and air."¹⁴⁵²

Through the CREP (the flexible extension to the CRP) funds, the USDA put considerable resources into establishing conservation buffers for farms situated in the Chesapeake Basin. As an (unused) op-ed piece from the USDA phrased it, "[t]he lack of improvement in the health of the Bay does not reflect a lack of commitment on the part of this Administration or USDA."¹⁴⁵³ In fact, planning and coordination among different federal agencies became one of the hallmarks of the effort.

1450. U.S. Government Printing Office "Clean Water Action Plan, Review of a Water Pollution Control "blueprint" Proposed by the President.", p. 36.

1451. Chesapeake Bay Program, "Chesapeake Bay Program History" (www.chesapeakebay.net/about/how/history) (2010).

1452. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002.", p. 479.

1453. USDA, "Chesapeake Basin Farmers Help Maintain the Health of the Bay," *Draft Op Ed, not used* (Chesapeake Basin Op Ed, USDA-NRCS-CCS) (November 26, 2002).

During the 2000s the Chesapeake Bay Program made significant progress in reaching out to the federal agencies to coordinate the use of resources.¹⁴⁵⁴ Among other activities, in 2007 the USDA signed a memorandum of understanding with the EPA designed to facilitate communication between the two and to increase participation in each other's respective efforts related to the Bay.¹⁴⁵⁵

The 2008 Farm Bill established the Chesapeake Bay Watershed Program and allocated \$188 million in dedicated funds over the next four years.¹⁴⁵⁶ By the start of the 2010 fiscal year, NRCS spent \$23 million on 765 contracts with farmers designed to install "a variety of pre-selected conservation practices such as cover crops, conservation tillage, buffer and filter strips, stream bank fencing, grassed waterways, nutrient management, and tree planting."¹⁴⁵⁷ The contracts covered 98,000 acres or less than 1% of the 13 million acres in farms (with 6 million in harvested cropland) spread around the 44-million-acre watershed.¹⁴⁵⁸ In fiscal year 2011, NRCS directed over \$60 million in funds through its Chesapeake Bay Watershed Initiative.¹⁴⁵⁹

Much of the on-the-ground effort came from the conservation community. For example, the National Fish and Wildlife Foundation established the Chesapeake Bay Stewardship Fund in 2000. The Fund attracted corporate sponsors like FedEx and Altria and awarded grants toward

1454. Chesapeake Bay Program, "Chesapeake Bay Watershed Assistance Network Access to Federal Funds" (March, 2007).

1455. USDA; EPA, "Memorandum of Understanding Between the U.S. Environmental Protection Agency and the U.S. Department of Agriculture," *Internal Document* (May, 2007).

1456. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

1457. U.S. Government Printing Office "Hearing to Review the Implementation of the Conservation Title of the 2008 Farm Bill," p. 23.

1458. NRCS, CEAP "Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region."

1459. NRCS, "Chesapeake Bay 2011 Activities Report" (March, 2012).

adopting conservation practices on farmland including outreach to farmers usually hesitant to participate in federal programs. In 2011, the Fund awarded \$10 million for projects across 5 states in the Chesapeake Watershed.¹⁴⁶⁰

The Chesapeake Executive Council had been preparing for a bay-wide TMDL since the early 2000s, although progress proceeded slowly. It took years for the participants to prepare for it. In the fall of 2007, they agreed that the EPA would establish a TMDL across multiple jurisdictions and the process started to roll forward slowly.¹⁴⁶¹ The arrival of the Obama administration and the quickly issued Executive Order calling on the federal agencies to step up the Bay's restoration efforts provided an immediate jolt to the process. As the lead coordinating agency on water quality, the EPA made the Bay TMDL a key feature in the mandated Action Plan.¹⁴⁶²

Immediately, TMDL development activities kicked into high gear. The EPA moved to break up the watershed into 92 segments and established allocation targets (for nitrogen, phosphorous and sediment) for each applicable sector through the target years of 2017 and 2025. The goals set were more modest than the previous ones — the 2017 total load for nitrogen was set at 15% lower than estimated loads deposited in 2009 used as the baseline year. The 2025

1460. U.S. Senate, "Strengthening Conservation Through the 2012 Farm Bill," *Hearing before the Senate Agriculture Committee* (February 28, 2012)., Testimony of Executive Director of National Fish and Wildlife Foundation, Jeff Trandahl.

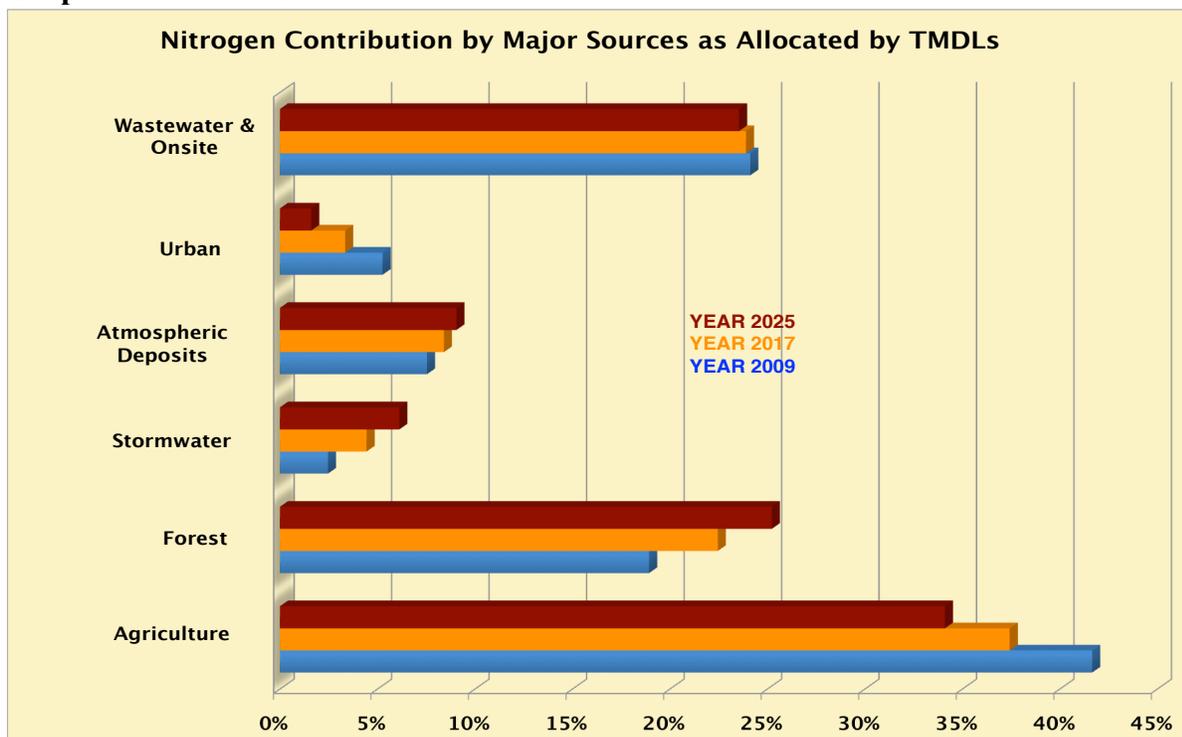
1461. EPA, "Frequently Asked Questions About the Bay TMDL," www.epa.gov/reg3wapd/tmdl/ChesapeakeBay (2012).

1462. Federal Leadership Committee for the Chesapeake Bay, "Executive Order 13508 Action Plan," *Strategy for Protecting and Restoring the Chesapeake Bay Watershed* (March 30, 2012).

target was 25% lower.¹⁴⁶³ The lower cap agreed to in 2003 placed the nitrogen limit at an annual average of 175 million pounds, 35% lower than the estimated loads in 2009.¹⁴⁶⁴

If the allocations were implemented, the distribution of pollution attributable to each major source would shift. The graph below shows the estimates for nitrogen.

Graph 26. Estimated contributions of sources with the TMDL allocations.



Note: Atmospheric deposits include non-tidal water atmospheric deposition and atmospheric deposition to tidal waters.

Source: Chesapeake Executive Council "Water Quality: Overview."

1463. Chesapeake Executive Council, "Water Quality: Overview," *ChesapeakeStat*, Web (2012), <http://stat.chesapeakebay.net/?q=node/130> (accessed June 2, 2012).

1464. EPA, "Chesapeake Bay Phase 5.3 Community Watershed Model," *Chesapeake Bay Program Office, Annapolis MD* (EPA 903S10002 - CBP/TRS-303-10) (December, 2010).

If agricultural and urban sources decreased their loads, the share of nitrogen entering the Bay in the form of atmospheric deposits (responsibility of the EPA and not the states) and from stormwater and forests would go up. The vast majority of the impacted agricultural sources were those not regulated through CAFO permits since the permits already established targets for water quality standards. The allocations varied state-by-state. In most cases, agricultural, urban, and wastewater sources would have to cut their pollution loads dramatically. The table below presents what each source was asked to do.

Table 2. Percent reductions that the TMDL allocations required for each source by state, compared to the 2009 baseline. Some sources like stormwater would be allowed to increase their baseline emissions.

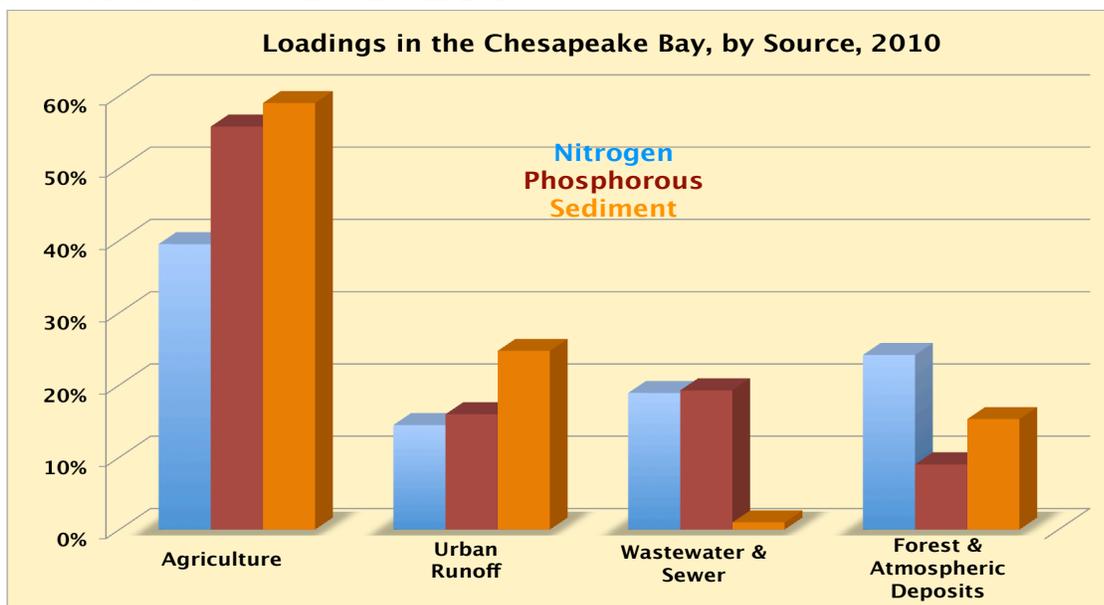
		Delaware	Maryland	Virginia
Agriculture				
	by 2017	-25%	-16%	-21%
	by 2025	-42%	-27%	-36%
Forest				
	by 2017	3%	0%	1%
	by 2025	5%	0%	1%
Stormwater				
	by 2017	227%	54%	27%
	by 2025	378%	90%	45%
Urban				
	by 2017	-60%	-35%	-30%
	by 2025	-100%	-57%	-50%
Wastewater				
	by 2017	-29%	-6%	62%
	by 2025	-47%	-10%	106%

Note: Allocations were also made for segments of waterways in Pennsylvania, New York, West Virginia, and District of Columbia.

Source: Ibid.

It made sense to target the sources that contributed the most to the problem. Agriculture was the main source for nitrogen, phosphorous, and sediment pollution into the Bay. Other significant sources like those from forests and atmospheric deposition were more difficult to tackle. The figure below looks at how much each source contributed to water quality issues in the Bay in 2010.

Graph 27. Percent of nitrogen, phosphorous, and sediment loadings in the Chesapeake Bay attributable to each source in 2010.



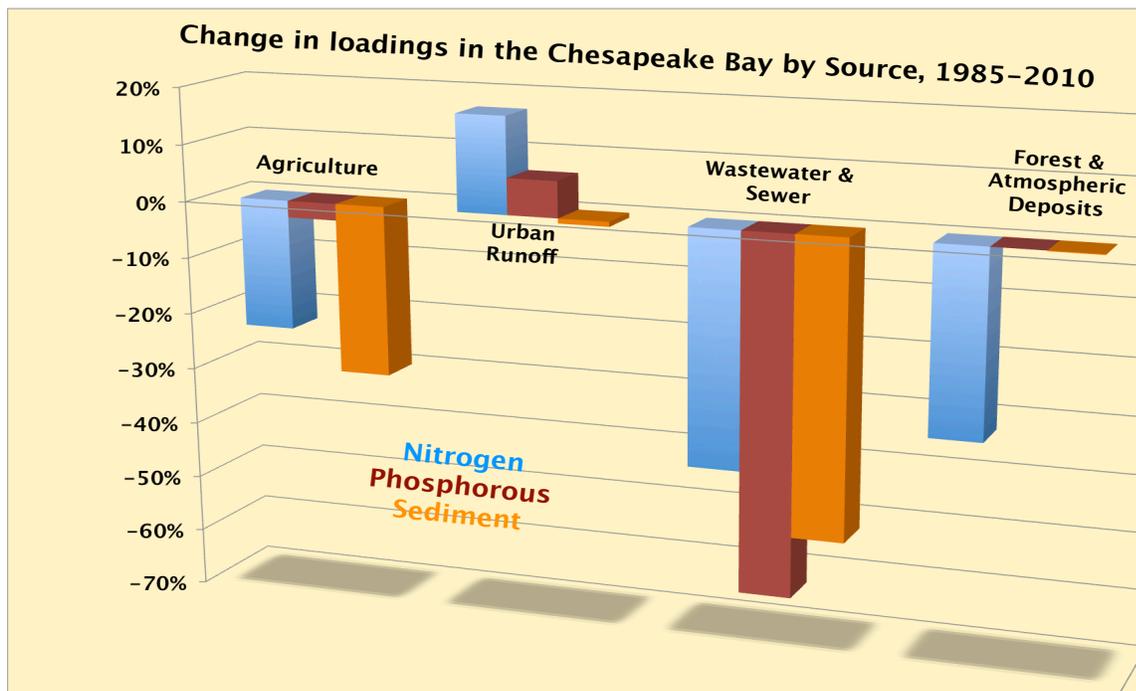
Note: Septic sources that contributed around 3% of total estimated nitrogen loadings in 2010 are not included in this graph. Their contribution went up 61% from 1985 to 2010.

Source: Ibid.

On the other hand, agricultural producers and others protested that they have already been doing more than their fair share. This was true to an extent considering that agriculture and

wastewater sources had managed to reduce their pollution significantly since 1985, as the following figure shows.

Graph 28. Change in pollutant loadings in the Chesapeake Bay between 1985 and 2010, by source.



Source: Ibid.

Although the idea of using the TMDL process to affect the Bay's water quality had been around for a long time, the allocations caught many by surprise. They wondered how they were calculated and assigned. In fact, the figures were estimated through a complex model built over the last three decades called the Chesapeake Bay Watershed Model. Really, the Watershed Model incorporated a suite of submodels.

Over the course of many iterations, each component has gotten more detailed. The most recent version of the Chesapeake Bay Model Package, version 5.3, split the Bay up into many more segments than before, it calibrated inputs over longer periods, and it included more

elaborate versions of each submodel. The first models were created back in the early 1980s. The key was that they were written in a public domain code (Hydrologic Simulation Program-Fortran) enabling greater collaborative capacity. The 1987 Chesapeake Bay Agreement that established a 40% reduction goal by the year 2000 was based on the results of the second version of the model. The next round of agreements in 2003 was based on the fourth iteration of the Watershed Model.

The Watershed Model connected different land covers to their use of nutrients (nitrogen and phosphorous) and overlaid them with a hydrological component. The fate of nutrients — either incorporated into crops or forests or the soil, volatilized to the atmosphere in the case of nitrogen, or carried off with precipitation into the Bay — resultant from the practices were simulated on a daily basis. The NRI data were used to estimate erosion rates and sediment deposits.¹⁴⁶⁵

The Watershed Model in its most recent manifestation included a thousand segments with an average size of 66 square miles and additional land uses previously excluded. It, along with an Airshed Model that simulated the atmospheric deposition routes, provided inputs for the Water Quality and Transport Sediment Model. The third model evaluated how the loads from the first two affected the broader ecosystem and the water quality goals.¹⁴⁶⁶

A scenario simulator was also built in, so a user could specify a set of management decisions and see what happened. But assumptions about management decisions underlying the model were problematic especially for estimating the loads coming from the agricultural sector. Because of dearth of data and necessity to simulate the sector, the modelers used crop growth

1465. EPA "Chesapeake Bay Phase 5.3 Community Watershed Model."

1466. Ibid.

data from the USDA's Census of Agriculture and matched them up against standard crop practices. For example, to provide timing and rates of nutrient application, the model used state recommendations listed for each crop.¹⁴⁶⁷ Although the assumptions made a lot of sense in terms of filling in data gaps, many of them may not have reflected reality.

The CEAP report on the Chesapeake Bay came out just after the allocations were distributed and showed different figures for the agricultural sector. This was inevitable since it used an entirely different model matched to different data sources. Notably, the CEAP surveys of the farming community provided more accurate data on its actual activities. The discrepancies caused quite a stir.

An industry group hired consultants to evaluate and compare the two models. The result confirmed the discrepancies and the plain reasons for them,¹⁴⁶⁸ prompting a lawsuit from the American Farm Bureau Federation (and others) challenging the results and the validity of the EPA's model.¹⁴⁶⁹ The EPA pointed out that an independent review panel found that the two models were "in approximate agreement on both the nutrient and sediment loadings from agricultural lands at the large basin scale."¹⁴⁷⁰ The large basin scale was not the problem, however. The idea that the Chesapeake Bay Model — with all of its imperfections including

1467. Brosch, Christopher, "Estimates of County-Level Nitrogen and Phosphorus Data for Use in Modeling Pollutant Reduction," *Documentation for Scenario Builder Version 2.2* (September, 2010).

1468. Agricultural Nutrient Policy Council "Comparison of Draft Load Estimates Cultivated Cropland in the Chesapeake Bay Watershed."

1469. Pennsylvania Farm Bureau "PA Farm Bureau Joins AFBF in Lawsuit Against EPA Over TMDL's for Chesapeake Bay Watershed."

1470. U.S. Government Printing Office, "Hearing to Review the Implementation of Phase II of the Chesapeake Bay TMDL Watershed Implementation Plans and Their Impacts on Rural Communities," *Before the Subcommittee on Conservation, Energy, and Forestry; House of Representatives* (112th Congress, 1st Session) (November 3, 2011), p. 7.

parameters estimated at regional or state-level data and extrapolated into much smaller geographical segments — will be used to hold millions of individuals accountable for its assigned goal at a cost of multiple billions did not sit well with some policymakers. Farm groups demanded that until the two models were reconciled, regulations should not go on.¹⁴⁷¹

While some protested the allocations, calculating them was the initial step in implementing the TMDL program. By the end of 2010, the affected states developed Watershed Implementation Plans or strategies for actually meeting the allocated loads. The next step stretching into 2012 was to inform stakeholders of their roles and to specify milestones that will be used to identify progress.¹⁴⁷² But whether the EPA will have any actual power to enforce the allocations remained to be seen. Even some strong supporters admitted that since the Clean Water Act mandated that the states carry out any TMDL scheme, the EPA was rendered impotent.¹⁴⁷³ Opponents carried out their battles in courts.

A number of lawsuits have been filed challenging the EPA's authority on every conceivable count: that the EPA could not establish a TMDL across jurisdictions, that it could not assign allocations off the field, that the agency had no authority to establish the necessary accountability framework, that the agency was basing decisions on flawed modeling, and other counts. While fighting out the charges through the courts, the EPA has also responded by opening up completely about the modeling process and the process of arriving at the TMDLs. Now there was an "incredible inclusion of stakeholders," as the EPA's Senior Advisor for the

1471. Wyant, Sara, "Drastic Differences Divide USDA, EPA Data on Chesapeake Bay Watershed," *Agri-Pulse Communications, Inc.* (2011).

1472. EPA, "Chesapeake Bay TMDL - Getting It Done," www.epa.gov/reg3wapd/tmdl/ChesapeakeBay (2012).

1473. Personal Interview, 30.

Chesapeake Bay put it at a recent conference on the Chesapeake Bay modeling effort. The stakes also increased the level of scrutiny. The official continued to say that this year (2012) was the deciding one for whether an effective TMDL scheme for the Bay could be implemented.¹⁴⁷⁴

On the other hand, all parties acknowledged the imperfect nature of the model. A county government worker from a small rural county in Virginia relayed his experience. He spent the last decade preparing the county officials of the impending TMDL allocations and obligations. But when the figure arrived, it was multiple times more stringent than what best management practices could achieve across the forests and agricultural fields dominating the county's landscape. According to the account, most of the crops were already in no-till, so the county was at a loss of what else it could do to achieve the unrealistic goal.¹⁴⁷⁵

The modelers readily recognized the dearth of accurate data on management practices. NRCS had such data. CEAP was just in the process of finishing another round of surveys at NRI points around the Chesapeake Bay watershed, achieving an impressive response rate.¹⁴⁷⁶

While the two agencies had the best intentions to work together, it has been difficult for NRCS to share information with the EPA. In an apparent misunderstanding of the USDA's mission and priorities, some EPA officials insisted that the data they get may be used for regulatory purposes.¹⁴⁷⁷ Such proclamations — even if only constructed to appease a certain audience — did not bode well for mutual openness. It also did not bode for future availability of

1474. Chesapeake Community Modeling Program, "Chesapeake Modeling Symposium 2012" (Annapolis, MD), Web (May, 2012), <http://www.chesapeakemeetings.com/CheMS2012/registrants.php> (accessed May 29, 2012).

1475. Ibid.

1476. Personal Comment, 31.

1477. Personal Interview, 43.

accurate practices data. The second survey around the Chesapeake Bay saw multiple farmers drop out, potentially because of concerns about the use of information. An additional danger was that farmers would not provide accurate information in the future if they think their responses could be used for regulatory purposes.¹⁴⁷⁸

Another, more practical issue related to data sharing was the scale. Most NRCS results were statistically valid at 4-digit HUCs, while TMDLs were written at 14-16 digit HUC.¹⁴⁷⁹ HUCs are hydrologic unit codes developed by USGS used to delineate watersheds. More digits represent smaller and smaller watersheds. At 14 or 16-digit HUCs, the area under consideration is very small, often encompassing just a few producers. This means that to get valid statistics at that scale, each individual would have to be surveyed, requiring an enormous amount of resources. CEAP started to experiment with collecting survey data at a smaller scale, although the goal was not to get down to the smallest HUCs but rather to validate results at the 8-digit HUC level.¹⁴⁸⁰ After issuing the two reports on the Chesapeake Bay, Congress scolded the agencies for their lack of coordination; the agencies promptly promised to reform.¹⁴⁸¹

But besides estimating agricultural sources of pollution, measuring other sources remained just as problematic although they accounted for large portions of the total loads.

Around the Chesapeake Bay, half of the nitrogen loads came from urban and forest lands.¹⁴⁸²

1478. Personal Interview, 38.

1479. Chesapeake Bay Program "Chesapeake Bay Watershed Assistance Network Access to Federal Funds ."

1480. Personal Interview, 38.

1481. U.S. Government Printing Office "Hearing to Review the Implementation of Phase II of the Chesapeake Bay TMDL Watershed Implementation Plans and Their Impacts on Rural Communities."

1482. NRCS, CEAP "Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region."

Emissions from those sources were also estimated and not monitored, meaning that the estimates did fine in reflecting basin-wide pollution but had greater and greater error terms for individual sources.¹⁴⁸³

As it stood in 2012, there were very few data sources capable of accurately describing the fine geographical scale needed for a regulatory scheme. Extrapolating could often produce estimates that underrepresented the loads of problematic players and overrepresented the loads of responsible parties.¹⁴⁸⁴ Effectively, such a system rewards negative behavior and punishes positive actions. And so the legal tussle continued. In the spring of 2012, a number of environmental groups filed more lawsuits against the EPA trying to compel the agency to act on what they saw as stalled progress in regard to wastewater treatment. In response, the National Association for Clean Water Agencies (representing mostly municipal wastewater treatment utilities) issued a news release “blasting [the] litigation,” and appealing to the groups to “join with us to focus our efforts where the impact will be the greatest: on agricultural operations...”¹⁴⁸⁵ The point pollution sources wanted attention averted from them, and their argument was essentially economic: it costs less to control agricultural pollution.

This is the premise behind an interesting issue that has come out of the TMDL process — a renewed prominence of market-based mechanisms to deal with the problem and to allocate abatement according to lowest control costs. After all, a TMDL assigns a cap, which is, theoretically, halfway to a cap-and-trade scheme. Several water quality programs have been established, yet only a few have resulted in actual trades, undermining the claims of substantial

1483. Personal Interview, 38.

1484. Personal Interview, 38.

1485. National Association for Clean Water Agencies, "NACWA Blasts NRDC-led Litigation on Nutrient Pollution," *News Release* (March 16, 2012).

profits to be made.¹⁴⁸⁶ Many proponents of the TMDL standard insisted that a nutrient trading scheme would be the most cost-effective way of dealing with the situation. The EPA encouraged the development of trading platforms.¹⁴⁸⁷ Theoretically — and there have been numerous publications on the theoretical aspects — the cost savings were there.¹⁴⁸⁸ One study from the World Resources Institute found that such a program for the Chesapeake Bay could significantly reduce the cost of reducing nitrogen loads for point sources (in some cases for wastewater treatment plants up to 60%), while at the same time generating up to \$300 million annually for the agricultural sector — around the amount invested in conservation practices around the Bay.¹⁴⁸⁹

The states affected by the Chesapeake Bay TMDL have established nutrient trading markets.¹⁴⁹⁰ But despite promises that the agricultural community could win out by participating,¹⁴⁹¹ it has been reluctant to do so. Establishing a functioning marketplace is a costly proposition since among other requirements it has to include numerous traders and ways for them to identify one another, a framework for certifying trades, and a legal system for enforcing

1486. J Boyd, "The New Face of the Clean Water Act: A Critical Review of the EPA's New TMDL Rules," *Discussion Paper 00-12* (Resources for the Future) (March, 2000).

1487. EPA, "Final Water Quality Trading Policy" (Office of Water) (January 13, 2003).

1488. Chesapeake Bay Commission, "Nutrient Credit Trading for the Chesapeake Bay, An Economic Study" (May, 2012).

1489. Jones, Cy; Branosky, Evan; Selman, Mindy; Perez, Michelle, "How Nutrient Trading Could Help Restore the Chesapeake Bay," *Working Paper* (World Resources Institute) (2010).

1490. Branosky, Evan; Jones, Cy; Selman, Mindy, "Comparison Tables of State Nutrient Trading Programs in the Chesapeake Bay Watershed," *World Resources Institute* (May, 2011).

1491. Conservation Technology Information Center, "Getting Paid for Stewardship: An Agricultural Community Water Quality Trading Guide" (With funding from the U.S. EPA) (July, 2006).

contracts.¹⁴⁹² Point sources had an easier way to meet the checklist, so they were the focus of most efforts aimed at stimulating trading. With nonpoint sources, on the other hand, the conservation community was hoping for self-generated interest and voluntary entry.¹⁴⁹³ At the same time, the USDA has announced in the spring of 2012 that it will provide \$5 million in grants to help develop water quality trading for the Chesapeake Bay.¹⁴⁹⁴

Although nutrient trading was still in initial stages with few actual trades, the concept of trading proved to be popular. The USDA established an Office of Environmental Markets in 2008 to look into the idea of establishing markets for other purposes related to ecoservices, such as for biodiversity or wetlands. The actual development of such markets, however, were facing multiple obstacles including limited demand, lack of institutional structure, and significant risk related to uncertainty about future public investments and support.¹⁴⁹⁵

The next farm bill promised significant changes to funding going toward the Chesapeake Bay. Certainly the CRP acreage will go down. Fewer than 30 million acres were in the reserve at the beginning of 2012. The Senate version of the next farm bill not only reduced the cap for the CRP, but it also eliminated the special priority designation for the Chesapeake Bay (and other priority areas).¹⁴⁹⁶ Without the designation, many other watersheds across the country may be

1492. Manale, Adrew; Morgan, Cynthia; Sheriff, Glenn; Simpson, David, "Offset Markets for Nutrient and Sediment Discharges in the Chesapeake Bay Watershed: Policy Tradeoffs and Potential Steps Forward" (August, 2011).

1493. Personal Interview, 34.

1494. NRCS, "USDA Announces Funding for Water Quality Markets, Seeks Proposals for Projects " , Web (January 13, 2012), <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/?cid=STELPRDB1046367> (accessed June 1, 2012).

1495. USDA, "Ecosystem Services and Environmental Markets in the Chesapeake Bay," *2011 Green Infrastructure Conference* (Office of Environmental Markets) (2011).

1496. U.S. Government Printing Office, "Senate, 2012 Farm Bill Mark-up," *Stabenow's mark-up* (112th Congress, 2nd Session) (April, 2012).

competing for the same funds. The key will be to identify the most vulnerable acres. CEAP provided a way to do that. For example, in February 2012, Secretary Vilsack announced the Highly Erodible Land Initiative to allow 750,000 acres with an erosion rate higher than 20 tons per acre to stay in the CRP through the continuous sign-up. The USDA would use CEAP (and other monitoring programs) to identify priorities.¹⁴⁹⁷

Whether such targeting will help cleanup the Chesapeake Bay is uncertain. It is also uncertain whether the TMDL scheme for the Bay can succeed regardless of how well-constructed the models are. The “next generation” Watershed Model for the Chesapeake Bay will include a more nuanced hydrodynamic platform that allows for stream mixing in shallow waters.¹⁴⁹⁸ It is unlikely that any change in the make-up of the model can correct for the fluctuations in the socioeconomic and climatic conditions that drive much of the observed (or monitored) outcome. A regulatory framework that depends on forcing modeled practices onto real conditions is bound to be controversial.

And using modeling for regulation has always been that way. NRCS has suffered its share of criticism over the use of the soil erosion equations (and modeling is just but a set of connected mathematical functions) — USLE and RUSLE and their offshoots. For example, the Soil Conditioning Index developed out of RUSLE estimated how conservation practices affected soil organic matter.¹⁴⁹⁹ Because eligibility for certain programs like the CSP in the mid-2000s

1497. U.S. Senate "Strengthening Conservation Through the 2012 Farm Bill.", Testimony of FSA Administrator Bruce Nelson.

1498. Chesapeake Bay Program's Scientific and Technical Advisory Committee, "Chesapeake Bay Hydrodynamic Modeling," *A Workshop Report* (June 9, 2011).

1499. NRCS, "Interpreting the Soil Conditioning Index: A Tool for Measuring Soil Organic Matter Trends," *Soil Quality-Agronomy Technical Note, No. 16* (April, 2003).

depended on the Index, some pointed out that the underlying computer model imperfectly represented the situation on the field.¹⁵⁰⁰

There are few alternatives to modeling because the costs of thorough monitoring are prohibitive. As the TMDL experience in the Chesapeake Bay pushes modeling to unprecedented regulatory heights, the response has been to denigrate the model itself and modeling as a concept. The tool whose promise was to bring people together to agree on the factual baseline has turned into a tool that is driving people apart.

5. Analysis

The evolutionary story of the USDA conservation programs does not directly get at the question of whether the information impacted their origins or their implementation. Reaching back to the guiding questions for this section helps move the story along toward that goal.

1. Did NRCS reach out to other USDA agencies and to other federal agencies?

The answer to this question is definitely for the CEAP effort. On the other hand, during the early 2000s for the interim RCA effort, collaboration was extremely limited. In fact, the eventual failure of the effort can be, in part, traced to poor cooperation between NRCS and other USDA agencies. Lack of support at the USDA level was the other part. Yet once CEAP originated, the level of collaboration blossomed.

For the most part then, this period saw renewed collaboration through CEAP and through changes to conservation programs. CEAP received positive support from its many partners,

¹⁵⁰⁰. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 42.

especially from NASS, NIFA and ARS. The watershed approach made CEAP fundamentally a collaborative process since watershed boundaries transcend political districts. The CEAP Steering Committee early in the process helped guide the design of CEAP and included representatives from the relevant USDA agencies and federal agencies, including the EPA, USGS, BLM, NOAA, and the Fish & Wildlife Service. For the most part, problems with cooperation were minor and had to do with personality conflicts and not structural imbalances. In each case — with a pushy ERS leader who wanted to control the CEAP effort¹⁵⁰¹ or with an uncooperative EPA manager who very briefly stalled a part of the process because of a minor disagreement¹⁵⁰² — once the position changed hands, new leaders tended to support the vision of CEAP and worked to promote its progress. Non-cooperation was the rare exception, however. The EPA was closely involved and sent staffers to detail with the project. The staffers worked hard to familiarize the top EPA leadership about CEAP.¹⁵⁰³ The EPA also helped CEAP extend a friendly hand to external partners and to the public, as it helped NRCS develop public outreach and the website.¹⁵⁰⁴ The EPA Deputy Administrator sent a letter of support for CEAP to the USDA Deputy Secretary in 2007.¹⁵⁰⁵ Through the USGS framework, the USDA and the EPA effectively formed a Memorandum of Understanding to share CEAP data in October 2010 through the USGS.¹⁵⁰⁶

1501. Personal Interview, 35.

1502. Personal Interview, 39.

1503. Personal Interview, 6.

1504. Personal Interview, 39.

1505. EPA, "EPA Deputy Administrator Letter to USDA Deputy Secretary," *From Marcus Peacock to Charles Conner* (CEAP endorsement letter) (May 31, 2007).

1506. EPA, "Chesapeake Bay Watershed FY11 4th Quarter Progress Report," *E.O. 13508 Action Plan* (February 23, 2012).

Despite this, true coordination was hard to achieve. Not at all surprising, each government entity — the EPA and the USDA — preferred to have control over data and messaging on its side. The incentive structure may be changing. After the uproar over the differences between two separate reports on the Chesapeake Bay released by the agencies in 2011 (after just a few interactions between the modelers), the respective leaders saw more value to proactive collaboration. The two departments developed a work plan on how to proceed, promising to synchronize the model components and to develop methods to report at the same geographical scale.¹⁵⁰⁷ Making a lasting change, however, requires structuring incentives to promote long-term mutual benefit from sharing information. But the EPA and the USDA have fundamentally different regulatory structures — their interplay underpins much of the evolution of conservation policy. The USDA and NRCS rely on the voluntary approach, which also means protecting information. So while the EPA may wanted to get closer involved (in fact, high-up EPA officials argued for jointly releasing statements related to CEAP reports), NRCS preferred to keep control. Throughout the agency and beyond, fear that the EPA wanted to use the data for its regulatory purposes permeated the discussion. At one meeting in spring 2012, an exasperated NRCS official told of a recent interagency meeting where once again, the EPA leadership promised its constituencies that it was hard at work to get to the CEAP's Chesapeake Bay farmer surveys. The NRCS official lamented that such rhetoric distorts the reality. If farmers knew that the EPA had their information, they would have little incentive to come forward with accurate

1507. U.S. EPA, "Letter to the Honorable Glenn Thompson, Chairman of the Subcommittee on Conservation, Energy, and Forestry" (Office of Congressional and Intergovernmental Relations) (June 28, 2011).

records rendering the surveys useless.¹⁵⁰⁸ NRCS wanted to cooperate but on its own terms and on terms that did not cede further control of its most prized asset — farmer trust.

Within the USDA family some tension continued. For example, NRCS felt uncomfortable at times sharing raw NRI data with analysts at the ERS. Several NRCS employees explained that the strain existed because of fears that ERS wanted to control and publish the data without NRCS input.¹⁵⁰⁹ For their part, the ERS analysts complained that NRCS did not share.¹⁵¹⁰ Another point of tension was between NRCS and the FSA (Farm Service Agency, which administers the CRP). The FSA did not appreciate being left out of the early 2000s RCA process. Plus, it did not take kindly to the reductions in its program funding while NRCS funding took off. On the other hand, NRCS participated in other mutual information-sharing projects like the high-resolution imagery the FSA started to collect. NRCS chipped into the multi-million dollar project and continued to participate in it over the years.¹⁵¹¹ Throughout the years several reorganizations attempted to merge county offices of the two agencies (the earliest such efforts go back to the 1950s¹⁵¹²). The two agencies struggled to get along in some places — in Texas, for example, even the *state* office remained split in 2012.¹⁵¹³ Although progress may have stalled in some places since the friction originated at the local level, the USDA leadership has tried to smooth the relationship. In the summer of 2003, the FSA and

1508. Personal Interview, 43.

1509. Personal Interviews, multiple people.

1510. Presentation on ERS research, May 18, 2011.

1511. NRCS "CEAP Briefing Papers."

1512. Personal Interview, 29.

1513. Personal Interview, 29.

NRCS agencies organized a national all-employee meeting between the two agencies via satellite transmission.¹⁵¹⁴

The incidences, however, were the exception rather than the rule. For the most part, NRCS has enjoyed a positive working relationships with other agencies through CEAP and through other projects. For NIFA and ARS, CEAP watersheds became an important part of their work. At a recent NIFA conference, the CEAP team was invited to give a special presentation.¹⁵¹⁵ Especially at the beginning of the project, the CEAP Steering Committee acted as a sounding board and provided feedback on structuring the process. An Executive CEAP Steering Committee pulled in leadership personnel from federal agencies. CEAP even received an award from the American Association for the Advancement of Science (AAAS) as an “Exemplary Collaborative Case Study” at a natural resources round table in the spring of 2011.¹⁵¹⁶

Later on, however, the Committee fell out of an active participatory role. The Committee’s previous role to coordinate funding and provide feedback on regional assessments ran its course. Now its duties became more perfunctory. Members met every month to hear updates on progress and to see a presentation from a selected speaker. Overwhelmed by other priorities, some CEAP leaders abstained from meetings altogether. The Executive CEAP Steering Committee no longer existed. In the spring of 2012, the question of how to reform the Committee came up.¹⁵¹⁷ Coordination among the parties would still be necessary. For the EPA,

1514. USDA, "NRCS and FSA: Working Together on Farm Bill Implementation," *Remarks by Bruce Knight, Chief, NRCS* (Joint Executive Session of FSA State Executive Directors and NRCS State Conservationists) (June 24, 2003).

1515. NIFA, "NIFA National Water Conference," *CEAP Symposium* (January 31, 2011).

1516. NRCS, "AAAS Recognition for CEAP," *Internal Communication* (February 17, 2011).

1517. Personal Participation, CEAP Steering Committees.

for example, the top priority in its interactions with NRCS was to get to review reports before they were finalized. Although imperfectly, the Steering Committee afforded the opportunity to hear of the many projects NRCS undertook.¹⁵¹⁸

Nonetheless, CEAP continues to provide a forum to involve other agencies directly with NRCS. The ARS, for example, took on projects specifically related to the needs of CEAP. Its Action Plan in the 2000s addressed the need to research how collective conservation practices impacted watersheds. Its 2011-2015 Action Plan included items on research geared toward improving conservation effectiveness. Much of the research under this goal — which promised exciting outcomes like developing methods for distinguishing the source of pollutant — interfaced with CEAP and was designed to help calibrate models for CEAP.¹⁵¹⁹

2. Did NRCS use the results in program implementation?

The answer to the question is certainly yes. Although NRCS continued to use historical allocations and allocations based on the State Technical Committee recommendations for most of its programs until the early 2000s, the NRIs became much more relevant once the agency switched to a formula system. The NRI data were used to calculate many of the elements in the various formulas — from resource base elements like acres of forests or grazing lands to resource concern elements like soil erosion and conversion of prime farmlands. As described, despite the clarity and ability of the formulas to aim funds at conservation priorities, political elements prevented their full use. Other considerations like regional equity (Congressional

1518. CEAP Steering Committee Meeting, January 20, 2012.

1519. ARS, "ARS Presentation on the Strategic Action Plan 2011-2015" (Internal presentation) (January 25, 2012).

imposed through Congressional pressure) or mitigation of annual budget impacts (imposed at the NRCS level) kept the funds locked to the regions. This was one of the original debates with targeting. Some states, like those in the Northeast, for example, did not fare well under resource-based formulas. Regional equity corrected for that — and sometimes overcorrected in the view of analysts. NRCS leadership would argue that the influx of money through special initiatives compensated for at least a part of it.

The section above on program allocations described the allocation process to states. How individuals received money and applied for programs also varied program-by-program. In the case of the Wetland Reserve Program (WRP) in the 2000s, interested parties submitted their applications to the State Technical Committees (composed of NRCS employees, other state and federal agency representatives, producer and environmental groups) who designed their own ranking for prioritizing the contracts.¹⁵²⁰ The ranking criteria for NRCS programs remained in the hands of the State Technical Committees. On the other hand, the FSA ranked its CRP applications using the national Environmental Benefits Index (EBI). This provided for national targeting, but upset local interests. Some groups like the NACD lobbied Congress to give the State Technical Committees control over the EBI too.¹⁵²¹ Everyone wanted to have access to conservation dollars.

In response, the 2002 Farm Bill inserted regional equity into the equation. Senator Patrick Leahy, a Democrat from Vermont, led the charge to ensure that any efforts to shift funds did not overlook smaller states. As a result, the bill was sprinkled with language on having the Secretary carry out the programs in a regionally equitable manner. Most concretely, the bill

1520. U.S. Government Printing Office "Conservation.", p. 26.

1521. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 153.

provided each state a cumulative minimum of \$12 million in funds for many NRCS programs (for EQIP, WHIP, GRP, CSP, and Farmland Protection Program).¹⁵²² The 2008 Farm Bill allocated \$15 million minimum payments.¹⁵²³

Within NRCS regional equity was not favored, since this meant that some small states like Rhode Island or Delaware were swimming in money, while larger states with severe erosion problems like Iowa or Texas struggled to find funding. In 2008 the agency made a strong push to eliminate it. Instead, the threshold was increased. At the end, however, NRCS leaders have become quite adept at figuring out how to maximize the flexibility of funds. During the 2012 budget cuts, for example, the agency was sweeping unused funds on a quarterly basis in order to fill other immediate needs.

Even the CRP's Environmental Benefits Index, arguably one of the most consistently transparent methods for allocating USDA conservation funds, was at the mercy of political winds.¹⁵²⁴ It is probably fair to say that an unbiased allocation formula is a figment of the regulatory imagination. Formulas inherently have to compare different components against each other and it is hard to come up with an objective way to weight the importance of wetlands and wildlife habitats against the number of farms or value of production in any given state or county. On the other hand, a formula at least ensures some level of transparency.

3. Did some types of information receive more emphasis and others less?

The answer to this question is that a number of new issues emerged — like renewable

1522. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1523. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

1524. Personal Interview, 13.

energy — while some issues like structural activities faded from view. The expansion of issues dominated, however, and NRCS hoped that CEAP could be used to evaluate them.

By the time the shift to the annual format for the NRIs took place in 2000, NRCS leaders talked about increasing the uses for the inventories, making them more responsive to policy questions and providing information on emerging topics like climate change.¹⁵²⁵ President Bush announced his Clear Skies & Global Climate Change Initiative on an average (weather-wise) Valentine's day in 2002 prompting much activity on the issue across the federal government.¹⁵²⁶ The USDA embraced the initiative and launched a research program to help figure out how to calculate potential sequestration credits that farmers would receive under the proposed cap-and-trade approach. As the topic of establishing market-based controls on greenhouse gas emissions became more prominent in Washington, the agricultural community became interested in calculating whether conservation practices contributed to carbon sequestration, therefore affording it a more favorable position at the negotiation table. At the same time, top USDA officials cautioned farmers not to get their hopes up too high.¹⁵²⁷ Still, reasons to carry on research on the topic were plenty. At a USDA Symposium on Natural Resource Management to Offset Greenhouse Gases, NRCS Chief Bruce Knight outlined his vision for a sensible

1525. NRCS, "National Resources Inventory-Overview and Challenges," *Presentation by Maurice Mausbach* (2001).

1526. White House, "Clear Skies and Global Climate Change Initiatives," *Speech by President George W. Bush* (February 14, 2002).

1527. USDA, "Climate Change Workshop: Department of Energy" (Remarks by Deputy Secretary of Agriculture Jim Moseley) (November 18, 2002).

monitoring network across the country to measure greenhouse gas emissions and link them to other conservation goals.¹⁵²⁸

NRCS had already invested in research on the subject of climatic changes. Actually, the Resource Inventory Division (the same one responsible for the NRIs) developed a joint project with the Soils Division back in 1990 to put 21 stations across the country to monitor soils responsiveness to moisture and temperature changes. The original title, Global Climate Change Pilot Project, was dropped in 1994 in favor of a more straightforward monicker, the Soil Moisture and Soil Temperature Pilot project. It continued along until 2004, when the Pilot Project Final report was published. With climate change prominently on the agenda in 2000s, NRCS spun the pilot project into a National Soil Moisture and Soil Temperature Monitoring project in 2005.¹⁵²⁹

The idea was to establish a national monitoring framework to provide data on soil-climate exchange to researchers — especially as needed for modeling needs. Subsequently, two types of monitoring networks were created. One with 181 stations across 40 states to monitor conditions at lower elevations, which provides hourly data on precipitation, temperature, humidity, snow depth, soil moisture and soil temperature, wind speed, and other parameters. The second network took advantage of the historic snow surveys that NRCS started conducting back in the very early days of the agency under the direction of Hugh H. Hammond and collected

1528. NRCS, "Monitoring, Measuring, Mitigating: Performance-Based Conservation Programs to Reduce Greenhouse Gas Emissions and Sequester Carbon," *Remarks by Bruce I. Knight, Chief NRCS* (USDA Symposium on Natural Resource Management to Offset Greenhouse Gases) (November 20, 2002).

1529. NRCS, "Soil Moisture and Soil Temperature Monitoring," by *Deborah Harms, Soil Scientist, National Soil Survey Center* (March, 2010).

information across Western states at over 750 monitoring locations.¹⁵³⁰ The networks provided invaluable information to climate scientists across the world, although a market-based exchange system for carbon sequestration credits did not materialize.

Such a system was also advocated for other agricultural-environmental needs. In a Senate hearing in 2001, one group advocated that market-based exchanges should be used to transfer credits for Best Management Practices.¹⁵³¹ This was a favored strategy of many producer groups and other agribusiness groups like the Alliance for Agricultural Conservation, sponsored by Cargill, Inc., ConAgra, Inc., Monsanto Company, Syngenta Crop Protection, Inc., and others. The Alliance also supported increased funding for EQIP and continuation of CRP.¹⁵³² The National Farmers Union (NFU) initiated a credit trading program to trade carbon credits generated through conservation farming practices like no-till on the Chicago Climate Exchange. In just a few short months since the launch of the program, the NFU spokesperson announced that farmers signed up a million acres.¹⁵³³

Although the Chicago Climate Exchange shut its operations in 2010 after a failed effort in Washington to pass a federal climate change bill, the idea of credit-trading was alive and well in 2012. In the 2000s, the World Resources Institute (WRI) started advocating for a cap-and-trade program for water pollution and developing actual strategies for doing this. Its efforts were going strong in 2012. Although the WRI primarily focused its efforts on bringing in point

1530. Ibid.

1531. U.S. Government Printing Office "Conservation.", p. 131.

1532. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 136.

1533. U.S. Government Printing Office, "Review of USDA Farm Bill Conservation Programs," *Hearing before the Subcommittee on Conservation, Credit, Energy, and Research; House of Representatives* (110th Congress; 1st Session) (April 19, 2007)., p. 6.

sources into the trading arena, others tried to figure out how to incorporate nonpoint sources into the equation. Variable efforts went into actually testing how such a program could run, as the previous section described.

On the policy side, NRCS was already leading the USDA Agricultural Air Quality Task Force since the 1996 Farm Bill. To the list of its research priorities set in 1997 (particulate matter, ozone, and odor), by the mid-2000s, the Task Force added greenhouse gases and volatile organic compounds and had a subcommittee for each.^{1534,1535} It supported the creation of the Carbon Management On-line Tool for Voluntary Reporting developed in conjunction with Colorado State University where producers could estimate their annual carbon savings based on local practices.¹⁵³⁶ By 2006, NRCS had seven full-time people dedicated to air quality issues and the ARS redirected nine researchers to work on the issue. The Extension Service side extended over \$15 million in funding to universities for research.¹⁵³⁷ Since the mid-1990s, the USDA as whole had dedicated around \$60 million annually in research funds across its research agencies including the Forest Service, NIFA, and ARS (only a small sliver of the budget went to NRCS). In 2010, the Department expended twice as much, with most of the increase going directly to NIFA's research grants.¹⁵³⁸

Climate change also entered the discussion through biofuels. Senator Richard Lugar (R-

1534. USDA, "Summary Minutes: USDA Agricultural Air Quality Task Force" (November 28, 2006).

1535. NRCS, "Global Climate Change: Air Quality and Atmospheric Change" (Description) (March 8, 2011).

1536. Ibid.

1537. USDA, "Remarks to the NRCS Agricultural Air Quality Task Force Meeting," by *Secretary Mike Johanns* (March 1, 2006).

1538. USDA, "Presentation to USDA Agricultural Air Quality Task Force," *By William Hohenstein* (USDA Climate Change update) (September, 2010).

IN), Chairman of the Senate Agriculture Committee, exclaimed that biomass was “the magic word” in a hearing in 2001.¹⁵³⁹ The 2002 Farm Bill included the first “Energy Title” and Congress moved to strengthen subsidies to encourage ethanol production in 2005 that it begun in the late 1990s. The climate change subcommittee on the USDA Agricultural Air Quality Task Force became known as the greenhouse gases and bioenergy subcommittee.¹⁵⁴⁰ Alternative energy in general got a lot of support in the early 2000s. One analyst suggested creating a conservation energy reserve program to encourage biomass production. He also pointed out that wind energy leases could be “truly a cash crop for farmers.”¹⁵⁴¹

Interest in climate change issues continued as reflected in the 2008 Farm Bill which established the Office of Environmental Markets within the USDA.¹⁵⁴² Yet this office received little funding after its creation. So while climate change became a taboo issue with political winds elsewhere in Washington, the USDA officials continue to talk about it and about carbon sequestration potential for farmers without mentioning specific policy interventions. The regional forums convened for the RCA National Conservation Program in 2011 identified water security, landscape integrity, and climate change among the top concerns.¹⁵⁴³ In 2011, the number one initiative for the Soil Survey & Resource Assessment Deputy Chief Area (home to

1539. U.S. Government Printing Office "Conservation.", p. 11.

1540. USDA, "Agricultural Air Quality Task Force" (Meeting notes and documents), Web (2012), <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/air/taskforce/?&cid=stelprdb1046282> (accessed March 27, 2012).

1541. U.S. Government Printing Office, "The New Federal Farm Bill," *Hearing before the Committee on Agriculture, Nutrition, and Forestry: United States Senate* (107th Congress, 1st Session) (June 28, 2001)., p. 31.

1542. 110th Congress, "Food Conservation and Energy Act of 2008," *110 P.L. 246* (June 18, 2008).

1543. Conklin, Neil, "Conservation in the 21st Century: What We Learned From Our Regional Forums," *Farm Foundation* (November 16, 2011).

the NRI, the RCA, and CEAP) was to develop a baseline for carbon in soils and to advance science related to climate change mitigation and adaptation.¹⁵⁴⁴

With the collapse of the climate change bill, certain concepts like climate change currently get little respect on the Hill. Despite this — and perhaps reflecting the recognition of climate change impacts on agriculture at the producer level — the USDA continued to focus on carbon sequestration and reducing greenhouse gas emissions. In the summer of 2011, the Department gave \$7.4 million in Conservation Innovation Grants to nine large projects addressing greenhouse gas emissions. Most of the projects dealt with developing measurable outcomes for participating in carbon credit markets.¹⁵⁴⁵ And the 2012 RCA National Conservation Program specifically considered carbon sequestration as one of the major environmental benefits in its optimization analyses. NRCS continued to fund projects focused on reducing greenhouse gas emissions through EQIP in the early 2010s.¹⁵⁴⁶

Congress finally funded a farmland preservation program in the early 2000s allowing for the first sets of easements to be bought. Just as forty years ago, supporters of farmland preservation (then more specifically focused on prime farmland preservation) argued that our capacity to feed ourselves and the world was at stake.¹⁵⁴⁷ At the same time, the 2002 and 2008 Farm Bills refocused program money on working lands and NRCS implemented the programs with an eye toward solving multiple resource concerns, as with the final rule for the

1544. NRCS, "Deputy Chief for Soil Survey and Resource Assessment Annual Initiatives" (February 24, 2011).

1545. USDA, "USDA Funds Projects to Reduce Greenhouse Gas Emissions in 24 State," *New Release* (June 8, 2011).

1546. NRCS, "USDA Funds Projects to Reduce Greenhouse Gas Emissions in 24 States," *News Release* (June 8, 2011).

1547. U.S. Government Printing Office "Review of Federal Farm Policy."

Conservation Security Program that required applicants to address both soil and water concerns. Perhaps just as importantly, NRCS implemented the program through a watershed approach — one not specified explicitly through Congress.

Of course, CEAP also evolved to take advantage of watershed studies despite the eventual goal of compiling a national assessment. A true national assessment may still be far off, since it has to account for local variability and availability of data on local watersheds, coupled with the fact that few actual intervention studies have been carried out on which to base conclusions about watershed-wide conservation efforts. Nonetheless, the regional assessments yielded many lessons including the need to apply a suite of conservation practices — both for erosion control and comprehensive nutrient management that controls how and when the nutrients are applied.

Yet there was a political element in how the regional watersheds were chosen. For example, it was no coincidence that the CEAP report on the Upper Mississippi Basin was the first priority, since there was talk of mobilizing another TMDL scheme there.¹⁵⁴⁸ Along with the EPA and other agencies, USDA leadership was involved in the intra-agency Hypoxia Task Force focused on the Gulf of Mexico. The CEAP report provided baseline data for the effort. The Chesapeake Bay report rolled out in the spring of 2011. The Bay was the battleground for the debate on establishing TMDLs, as discussed in the previous section. Water quality continued to be a top priority across the country, so it is hardly surprising that political necessities dictated which watersheds receive more attention.

¹⁵⁴⁸. Personal Interview, 29.

Besides the traditional focus on soil erosion and water quality, the agency's wildlife initiatives shifted more resources toward promoting wildlife habitats. In the spring of 2003, Bruce Knight specifically hired a wildlife advocacy person to do outreach with wildlife groups.¹⁵⁴⁹ Right at the same time as CEAP acquired its wildlife component, the agency began its first wildlife initiative in 2004.

The distribution of money going toward wildlife issues remained fairly low, however. For example, around 7% of payments paid through the CSP program went to enhancing wildlife habitats specifically.¹⁵⁵⁰ Around 5.8 million acres of CRP lands (about 19% of the total CRP acreage) enrolled through the continuous sign-ups or the Conservation Reserve Enhancement Program (CREP) as of 2011 provided more targeted wildlife and water quality benefits.¹⁵⁵¹

There has also been a renewed push to quantify ecosystem benefits in monetary terms. Understandably, the NRCS economists saw opportunities to assign higher dollar values to beneficial environmental outcomes. For example, much interest among NRCS economists was generated by a doctoral dissertation done at the Ohio State University that connected wetland enhancement values (in decimal increments rising linearly) to economic gains in terms of water quality enhancement, economic activity related to bird watching and hunting, their role in flood control, and other parameters.¹⁵⁵² The premise of such studies rings false because the main driver behind the final dollar figure is the researcher's creativity in parceling the problem. We could

1549. USDA, "Private Lands Conservation in the National Agenda," *Remarks by Bruce Knight, Chief, NRCS* (NRCS National Leadership Team Meeting) (March 19, 2003).

1550. Soil and Water Conservation Society; Environmental Defense "Conservation Security Program: Program Assessment."

1551. USDA, FSA "The Conservation Reserve Program: 39th Signup Results."

1552. NRCS, "Wetland Valuations for CEAP," *NRCS Internal Communication* (December 9, 2010).

add air purification services, for example, or subtract the cost of controlling mosquito infestations to change the outcome. The pressure to do such evaluations did not just originate from a new breed of environmental economists.

The 2008 Farm Bill specifically required the USDA to develop a protocol for “measuring environmental services from conservation,” including devising a procedure for doing so and developing a registry to keep track of the results. The bill made clear that the priority use for the information should be to establish guidelines for participating in carbon markets.¹⁵⁵³

Early such studies within the USDA included estimates of economic benefits associated with soil erosion control and then a large study on benefits from CRP lands.¹⁵⁵⁴ ERS studies also used NRI surveys and surveys from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation to draw out economic connections.¹⁵⁵⁵ Other groups joined suit. The Theodore Roosevelt Conservation Partnership (which represented Ducks Unlimited, Pheasants Forever, The Wildlife Society, and other large conservation groups) funded a study to determine the annual values of CRP to wildlife-related activities.¹⁵⁵⁶ The results were used in testimonies on the Hill frequently.

Other niche interests have also entered the debate. Advocates for protecting pollinators, for example, had a strong presence in the 2008 Farm Bill debate.¹⁵⁵⁷ The 2008 Farm Bill

1553. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

1554. Sullivan and others, "The Conservation Reserve Program: Economic Implications for Rural America."

1555. Peter M Feather, Daniel R Hellerstein and LeRoy Hansen, *Economic Valuation of Environmental Benefits and the Targeting of Conservation Programs the Case of the CRP* (Washington, DC: U.S. Dept. of Agriculture, ERS, 1999).

1556. Theodore Roosevelt Conservation Partnership, "Growing Conservation in the Farm Bill" (Agriculture and Wildlife Working Group) (2007).

1557. Personal Interview, 29.

included additional national priorities for the EQIP program, including energy conservation, forest management, and conversion to organic production systems. New priorities for payments included “animal carcass managing technology” and pollinator habitats among them.¹⁵⁵⁸ The Coevolution Institute (now the Pollinator Partnership) lobbied on behalf of pollinators. Armed with an impressive list of backers — with the likes of E.O. Wilson and Paul Ehrlich as science advisors, the group made a strong case for investing in protecting the dwindling pollinator populations stressed by the troubling Colony Collapse Disorder affecting honeybees. On the other hand, the American Sportfishing Association and Trout Unlimited lobbied unsuccessfully to expand the definition of “wildlife” in the conservation title to include fish.¹⁵⁵⁹

As a whole, there was an observable trend not only in the number of issues brought to the table, but also in the number of issues the USDA and NRCS tried to address through policy. At the end of 2010, NRCS Chief White announced that energy will become another major resource concern by the next fiscal year, meaning that the acronym SWAPA+H (soil, water, animals, plants, air, plus humans) which stands for the types of resource concerns addressed by NRCS was tagged on with an “E” at the end to create the acronym SWAPA+H+E. This meant that major agency initiatives like the Conservation Delivery Streamlining Initiative(CDSI) and programs will aim at incorporating all those concepts totaling 28 better defined resource concerns or “micro” concerns.¹⁵⁶⁰

1558. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

1559. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 51, p. 108.

1560. NRCS "Resource Concerns: Conservation Delivery Streamlining Initiative.", NRCS, "Energy As a Resource Concern," *Communication from the Chief* (December 6, 2010)., NRCS, "Resource Concerns: Conservation Delivery Streamlining Initiative," *Internal Communication* (August 23, 2010).

How did Congress shape USDA conservation policy after 2001?

The final narrative looks at Congressional activities and how they worked to shape the USDA conservation policy from the early 2000s to present (2012). After I reconstruct the history, I come back to two guiding questions — did House and Senate Agriculture Committee members receive information collected by NRCS, and did they choose policy alternatives consistent with the NRIs and the RCAs?

For this narrative, I relied on thousands of pages of published hearings. In total, I reviewed 6 hearings from 2001/2002 cycle and 6 hearings from the 2007/2008 farm bill debates. I also looked at the two public hearings held so far for the 2012/2013 debate cycle. I classified over 100 distinct arguments from witnesses. Appendix C lists the hearings. I also utilized data from the Policy Agenda Project at the University of Texas at Austin to describe the larger context for policy development. Appendix D describes these data sets, as well as my analytical procedure.

The figure below outlines the main results visually. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones.

Graph 29. Congressional interest in selected conservation policies and topics from 2002 to 2012.



1. 2002 Farm Bill

By the time the debate on the farm bill started, the Democrats controlled the Senate and were keen on supporting conservation measures. R. Mack Gray, a top USDA official commented that he had not seen such enthusiasm for conservation in all of his years with the Department since the Eisenhower administration.¹⁵⁶¹ The House, on the other hand, was controlled by the Republicans, who emphasized commodity programs in their version of the Farm Bill.¹⁵⁶² In fact, much of the debate revolved around how to reform commodity programs.

Such reforms were needed to combat chronic overproduction brought on by federal policies like keeping high target prices and loan rates, as the Bush administration argued. Furthermore, a new set of policies should address all farmers, not just the ones growing commodity crops.¹⁵⁶³ And by the time the debate was taking place in 2001, more and more money had been spent in disaster payments. As Senator Richard Lugar, a Republican from Indiana, pointed out, since emergency programs were introduced in 1989, \$40 billion had been spent altogether, yet much of the total came within the last 3 years.¹⁵⁶⁴ The 1996 Farm Bill restructured production payments and removed some of the income stability for farmers, so reliance on emergency supplemental expenditures increased. The debate for the next farm bill revolved around this issue.¹⁵⁶⁵ The 1996 Farm Bill created a specific body called the Commission on the 21st Century Production Agriculture tasked with investigating potential

1561. Associated Press, "Farm Bill Hot Topic at Conservation Conference in Nevada" (2002).

1562. Personal Interview, 3.

1563. USDA "Radio Press Conference."

1564. Library of Congress, "Agriculture, Conservation, and Rural Enhancement Act of 2001," *Senate Debate* (Page: S597) (February 12, 2002), p. 78.

1565. USDA "Soil and Water Conservation Society: Annual Conference."

policy strategies for production policy. The Commission produced a report in time for the farm bill debate. The first round of hearings started with reviewing the results.¹⁵⁶⁶ The recommendations of the Commission — which itself was designed to reach consensus across many different stakeholders — were timid. The overall theme was limiting the government's role and minimizing market distortions. Still, the report recommended establishing an income safety net for farmers by introducing a counter-cyclical payment program.¹⁵⁶⁷

The fundamental problem of low agricultural prices and high input prices remained, however.

Yet both Congress and the Administration insisted that coming up with the money was not an issue and they would be there to support the farmers. The contentious issue was what form the distribution of the money would take place. Republicans complained that the Democrats insisted on their version of the bill at all costs, unwilling to compromise. The tension was conservation versus commodity payments. As Secretary of Agriculture Ann Veneman stated, for the first time in many years the effort to produce a farm bill in 2001 collapsed along partisan lines.¹⁵⁶⁸ On the side of the House Agriculture Committee, Representative Ron Kind, a Democrat from Wisconsin, introduced an amendment to move \$19 billion or about a sixth of total commodity subsidies to conservation. Three fellow representatives — two Republicans and one Democrat — from urban areas and not on the Agriculture Committee co-sponsored the bill.

1566. U.S. Government Printing Office, "Review of the Final Report of the 21st Century Commission on Production Agriculture," *Hearing before the Committee on Agriculture, Nutrition, and Forestry: United States Senate* (107th Congress, 1st Session) (January 30, 2001).

1567. *Ibid.*, p. 16.

1568. USDA "Radio Press Conference."

The amendment fell short 16 votes when put to the floor two days after its introduction.¹⁵⁶⁹ The House version of the bill passed in October of 2001 with the leadership from Chairman Larry Combest, a Republican from Texas, worked \$73 billion in new spending authority into the bill. When the Senate picked up the bill in 2002, it increased the share going to conservation very quickly.¹⁵⁷⁰

So the expansion of conservation programs was on the agenda early in the process. In principle, groups were united in their vision for the money, even prompting Representative Collin Peterson (D-MN) to say in 2000 that the American Farm Bureau and the Sierra Club agreed on the outline of that portion of the next Farm Bill.¹⁵⁷¹ The Commission on the 21st Century Production Agriculture put conservation as its third priority (behind establishing an income safety net program and privatizing farm insurance). Among its recommendation to fully fund EQIP, it urged that any extra CRP acreage be put into buffers, wetlands, and other practices benefiting multiple resources. Plus, it brought up the idea of paying farmers for establishing beneficial conservation practices through a totally separate program.¹⁵⁷² In fact, the CRS natural resources specialist, Jeff Zinn, predicted that Congress would be under pressure to expand the reach of conservation programs far beyond soil erosion. After all, the focus on soil erosion has

1569. U.S. Government Printing Office, "Congressional Record-House" (October 4, 2001) (October, 2001).

1570. U.S. Government Printing Office, "Congressional Record: Proceedings and Debates of the 107th Congress, First Session," *Senate* (Vol. 147, No. 177.) (December 19, 2001).

1571. U.S. Government Printing Office, "Review of the Conservation Reserve Program, Conservation Reserve Enhancement Program, and Other Conservation Matters Affecting U.S. Agriculture" (Hearing before the Subcommittee on General Farm Commodities, Resource Conservation, and Credit of the Committee on Agriculture, House of Representatives), Web (Washington, March 31, 2000)., p. 8

1572. U.S. Government Printing Office "Review of the Final Report of the 21st Century Commission on Production Agriculture.", p. 17.

led to programs aimed primarily at crop production, about a fifth of the total value of agricultural production.¹⁵⁷³ To fully address conservation, other sectors had to be included. Specific topics of interest talked about that year were carbon sequestration, biomass and energy, and livestock.

Livestock industry issues ascended in prominence since the previous farm bill discussion, and questions arose about how to incorporate this issue previously ignored by USDA conservation programs. One program that had the flexibility to take on additional goals was EQIP. The main complaint about it expressed over and over again was the allocation of funds. Everyone wanted access to it, yet preference was reserved for farms located in designated priority areas.¹⁵⁷⁴ While this allowed for targeting resources to most environmentally sensitive lands, it also disappointed producers (and as a result their representatives) located outside of those areas. Several large groups like the National Association of State Departments of Agriculture, the Farm Bureau, National Association of Wheat Growers and the livestock groups came out for relaxing EQIP cost-share cap of \$50,000 for livestock operations and generally opening up the eligibility pool.¹⁵⁷⁵ The 1996 Farm Bill specifically excluded large confined animal operations from eligibility and put a \$50,000 total cap on any one producer's multi-year contracts.¹⁵⁷⁶ Some Congress members like Representative Tom Osborne, a Republican from Nebraska, argued that lifting the cap meant fewer producers would have access to money and seemed counterproductive for supporting small farmers.¹⁵⁷⁷

1573. U.S. Government Printing Office "Conservation.", p. 10.

1574. *Ibid.*, p. 17.

1575. See various hearings like at *Ibid.*

1576. 104th Congress, "Federal Agriculture Improvement and Reform Act of 1996," *104 H.R. 2854* (1996 Farm Bill) (April 2, 1996).

1577. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 91.

Yet, as the NRCS Deputy Chief for programs reported, demand for EQIP and other programs (WRP, Wildlife Habitat Incentives Program) by far outstripped supply of funds.¹⁵⁷⁸ Most policymakers agreed that this was a problem. Congress members complained that their constituencies had trouble getting in and some talked again about increasing the CRP acreage limit to 45 million. The changes made to the CRP in the previous few years like the Conservation Reserve Enhancement Program (CREP) and continuous CRP enrollments proved to be popular variations. Both allowed more flexibility in allocating acres with a specific focus on creating buffers to limit runoff.¹⁵⁷⁹

Senator Tom Harkin (D-IA) suggested that conservation “ought to be the centerpiece of the next farm bill.”¹⁵⁸⁰ Sensing an opportunity, conservation groups aimed high. Always a strategic presenter, Craig Cox then at the Soil and Water Conservation Society started with a request to double the total USDA conservation funding to an annual \$5 billion. In the next sentence he upped it to \$10 billion and then quickly minimized the total impact of such an increase by putting the number into the larger perspective of the USDA total commodity payments. He further reasoned that considering the backlog for existing programs, \$10 billion “seems almost conservative.”¹⁵⁸¹ The former Chief of NRCS Paul Johnson (introduced as the modern Aldo Leopold by Senator Harkin) agreed that \$10 billion was “in the ballpark” of what was needed.¹⁵⁸² The members of the House Agriculture Committee fully expected requests up to

1578. U.S. Government Printing Office "Conservation.", p. 21.

1579. U.S. Government Printing Office "Review of the Conservation Reserve Program, Conservation Reserve Enhancement Program, and Other Conservation Matters Affecting U.S. Agriculture."

1580. U.S. Government Printing Office "Conservation.", p. 90.

1581. *Ibid.*, p. 93.

1582. *Ibid.*, p. 99.

\$8 billion from the conservation community. The focus in the House was also on extending working-land programs.¹⁵⁸³

One point that Craig Cox continued to bring up was that just over a third of farmers (36%) received commodity payments, therefore limiting cross-compliance power only to that group. Senator Lugar (R-IN) specifically referenced the argument and mentioned that there “could be a much broader net if we centered much more of our income sufficiency on the conservation situation...”¹⁵⁸⁴ Some in the environmental community argued for a reformation of the commodity payment structure away from subsidizing specific crops and towards paying farmers for practices that produced extra environmental benefits with the specifics of the payments determined by the State Technical Committees.¹⁵⁸⁵ A representative from the American Farmland Trust outlined the position simply: “we think that ultimately we should get to a point where the payments to the landowners are consistent with the goods that landowner produces for society... social goods, if you will.”¹⁵⁸⁶ Such social goods could be protecting highly erodible land or preserving farmland or promoting clean water. Marrying conservation with commodity payments increased the pool of money available, and multi-billion dollar figures became regular parts of discussion.

Echoing the conservation groups, the National Farmers Union recommended further investments in working land conservation and commended Senator Harkin for introducing the Conservation Security Act. The Act promised to provide payments to farmers for their

1583. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 1-3.

1584. U.S. Government Printing Office "Conservation.", p. 100.

1585. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 113.

1586. Ibid., p. 118.

conservation efforts — payments consistent with the WTO “green box” standards. The Union representative noted that such a program could also incorporate carbon sequestration elements (the Act already had them in place).¹⁵⁸⁷ The Farm Bureau also supported direct payment programs consistent with the WTO standards.¹⁵⁸⁸ In other words, most of the major producer groups supported some form of the Conservation Security Program.

Their ambitions for such a program for the producer groups were lower than those of the environmental community. Again, the Farm Bureau foresaw payments through the program as being complementary to the current conservation and commodity payments.¹⁵⁸⁹ The National Association of Conservation Districts (NACD) was more aggressive. The NACD mounted a huge effort to get feedback from its member conservation districts and worked for 2 years on the details of a conservation-incentives program.¹⁵⁹⁰

How to structure such a program was a big concern, especially since the payments relied on identifying additional conservation practices. While the idea was to establish a national threshold and pay producers who exceeded it, the structure channeled money to producers with the biggest marginal improvements essentially rewarding previously bad behavior. Farmers who already practiced sound conservation saw a smaller differential and therefore were entitled to smaller payments. This made sense from the perspective of maximizing environmental benefits but not from the perspective of fairness. How to rank and classify different types of benefits across the country was another practical concern. Representative John Thune (R-SD) who

1587. U.S. Government Printing Office "Conservation.", p. 115.

1588. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 28.

1589. *Ibid.*, p. 46.

1590. *Ibid.*, p. 85.

sponsored the Conservation Security Act on the House side sounded optimistic that “we could figure out a way to accomplish all of these objectives and provide broad public benefits at the same time that we are supporting our producers.”¹⁵⁹¹

Environmental groups and producer groups alike argued that NRCS conservation technical assistance was stretched to the limit. In 2001, the EPA was reviewing its discharge permit rules for livestock operations and proposed clarifying the definition of “animal feeding operations.” The beef industry groups balked at the new definition arguing that it would bring the entire industry under the EPA purview.¹⁵⁹² At the hearings on the 2002 Farm Bill the American Farm Bureau was clearly concerned with this possible outcome, which meant that nearly half a million livestock operations would have to apply for a discharge permit and implement a comprehensive nutrient management plan. The Bureau calculated that it took about 320 hours to complete each plan, meaning that to do all of them nationally would require 7,200 people more than 10 years.¹⁵⁹³ Tougher regulations necessitated more expenditures for technical assistance.

The argument engendered the Technical Service Provider program in the final farm bill. When the EPA came out with the final rules on animal operations in 2003, however, it reverted back to the original definition encompassing about 15,500 Confined Animal Feeding Operations

1591. *Ibid.*, p. 124.

1592. Federal Register, "Environmental Protection Agency: National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitation Guidelines and Standards for Concentrated Animal Feeding Operations," *Final Rule* (Part II) (February 12, 2003), p. 7189.

1593. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 46.

(CAFOs) or around 30 times fewer livestock operations than the Farm Bureau feared.¹⁵⁹⁴ Back in 2001, however, the Farm Bureau used the same reasoning to argue for expanding the EQIP budget. The cost of applying nutrient management plans on the half million operations at a cost of \$50,000 could cost over \$22 billion (half of which would fall on the producers) and take 10 years to implement.¹⁵⁹⁵ The National Pork Producers Council used the figures to split the cost among all animal operators, claiming that the EPA underestimated its cost estimates and argued for sharp increases in EQIP funding or through another program. The official statement read: “[o]ur bottom line is that society is now demanding from a private entity — livestock agriculture — a significant public good in the form of clean water.” The Council demanded at least \$12.2 billion over 5 years to make up for the private costs.¹⁵⁹⁶ In contrast, the official federal estimate in 2001 for the number of CAFOs affected was around 270,000 operations. The NRCS cost estimate was around \$13 billion total to implement (with presumably \$6.5 billion falling on the shoulders of the industry with a 50 percent cost-share rate).¹⁵⁹⁷ Either number was very significant, and NRCS acknowledged the technical workload shortage it would experience (and was already experiencing because of backlogs).

To remedy the situation, one suggestion was to expand the use of third-party providers and pay them to draft conservation plans with EQIP funding. The NACD representative testified that some states, like Washington, already worked with third-party engineers who were certified

1594. Federal Register "Environmental Protection Agency: National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitation Guidelines and Standards for Concentrated Animal Feeding Operations.", p. 7176.

1595. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 46.

1596. Ibid., p. 71-75.

1597. Ibid., p. 56.

according to a federal standard but worked with the localities directly.¹⁵⁹⁸ With or without third-party providers, technical assistance dollars were limited to a small percentage of program funds, leading many participants in the hearings to argue for better support.

The conservation groups were using the same tactic of pointing out program backlogs to argue for increased funding. A joint report issued in 2001 by four leading conservation organizations found \$2 billion in unfunded WRP, WHIP, EQIP, and Farmland Protection Program applications. The organizations urged Congress to step in.¹⁵⁹⁹ Another report issued by a conglomerate of wildlife groups estimated that to meet wildlife habitat priorities across regions, the CRP cap should be raised to 63.9 million acres (about double what it was at the time).¹⁶⁰⁰ In public hearings, however, representatives of conservation groups held to more realistic acreage goals for the CRP at 45 million acres.¹⁶⁰¹

Although the Farm Bureau and other producer groups favored limited extensions to the CRP, the National Corn Growers Association, the National Feed Grain Association, the National Pork Producers Council, and the National Association of Wheat Growers did not.¹⁶⁰² Some of the groups did not want to see any whole-field enrollment into the CRP. Most supported the continuous CRP sign-ups to add buffers on partial fields. This underscored the focus on working lands that year. Another proposed change to the program was to make the recommendations

1598. Ibid., p. 97.

1599. American Farmland Trust; Environmental Defense; Environmental Working Group; Trust for Public Land, "Losing Ground: A State-by-state Analysis of America's Growing Conservation Backlog" (2001).

1600. Wildlife Management Institute, "How Much Is Enough for 2002?," *A Regional Wildlife Habitat Needs Assessment for the 2002 Farm Bill* (January, 2001).

1601. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 104.

1602. Ibid.

more specific to local needs. The original problem of creating monoculture grasses across CRP lands was not entirely resolved by the use of a five-seed mixture, since local weather conditions were not necessarily favorable to it, as Representative Peterson from Minnesota pointed out.¹⁶⁰³ The Native Seed Trade Association naturally proposed that the CRP should promote using native seeds and lobbied for a pilot demonstration project.¹⁶⁰⁴ A broad coalition of wildlife groups, including Ducks Unlimited, the Nature Conservancy, the Congressional Sportsman Foundation, and the National Rifle Association (after all hunting often involves rifles) endorsed an expansion of WHIP as well as other programs friendly to wildlife like increasing the CRP cap to 45 million acres and creating a specific reserve for grasslands.¹⁶⁰⁵ The Nature Conservancy worked with the National Cattlemen's Beef Association (formed in 1996 when the National Cattlemen's Association and the Beef Industry Council of the Meat Board merged to represent all of the beef industry)¹⁶⁰⁶ to develop the design for the Grassland Reserve Program (GRP) introduced in a bill by Representatives Bob Schaffer, a Republican from Colorado, and Representative Bennie Thompson, a Democrat from Mississippi.¹⁶⁰⁷

The representatives from the National Association of State Departments of Agriculture also suggested that the Wildlife Habitat Incentives Program (WHIP) be re-designed to primarily target habitats deemed critical by Fish & Wildlife Service to protect threatened or endangered species. Representative Peterson from Minnesota exclaimed in disbelief, "[s]o... reallocate a lot

1603. *Ibid.*, p. 99.

1604. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 138.

1605. *Ibid.*, p. 108.

1606. National Cattlemen's Beef Association, "National Cattlemen's Association - Beef USA," *History of the Association*, Web (2012), <http://www.beefusa.org/nationalcattlemensassociation.aspx> (accessed May 1, 2012).

1607. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 266-267.

of this money into trying to deal with the Endangered Species Act? Is that what you are basically saying?... That would take a lot of money.”¹⁶⁰⁸ In general though, the threat of tougher regulation on their constituency motivated Congressmen. Representative Tom Osborne, a Republican from Nebraska, took the landowner’s perspective — “[w]e currently have an increase in TMDLs and the requirements of the Clean Air Clean Water Act [sic] and Endangered Species, and of course this is adding cost to the landowners. And my contention is that we are not adequately compensating them for what we are expecting them to do.”¹⁶⁰⁹

Some wildlife groups felt that the conversation about increasing EQIP funding left out wildlife. The President of the Wildlife Management Institute put it frankly, “[w]e are very well aware that there is a kind of a grounds swell that is saying that we should increase EQIP in a very large manner, to serve water pollution programs, water quality problems, and we don’t want any wildlife in it, is what we are hearing from the agricultural community.”¹⁶¹⁰ Although water quality was the predominant environmental issue during the farm bill discussions, most of the debate revolved around the economics of shifting support payments.

Commodity programs and conservation goals continued to come into conflict on the farm level. For example, because the largest commodity program payments at the time, the AMTA payments named after the formal title of the commodity portion of the 1996 Farm Bill, the Agricultural Market Transition Act, calculated the amount of payment based on historical acreage of program crops, farmers who included hay or grasses or other non-program crops in

1608. *Ibid.*, p. 98.

1609. *Ibid.*, p. 120-121.

1610. *Ibid.*, p. 1525.

the rotation for conservation purposes lost out.¹⁶¹¹ Some producers, including representations from the National Corn Growers Association, expressed frustration with swampbuster rules.¹⁶¹² This complaint was nothing new. In fact, a retired NRCS official in charge of programs for a long period shared with me that wetland delineation issues took up much of his time despite the relatively small portion of the budget dedicated to them.¹⁶¹³ Both previous farm bills in 1990 and 1996 attempted to soften swampbuster implications.

The 1996 Farm Bill provided for mitigation flexibility, meaning that farmers can continue farming on a converted wetland if they restored a comparable wetland elsewhere, although as an NRCS official stated this provision was not utilized often. The 1996 Farm Bill also provided for “fast track” exemptions for converting wetlands with “minimal effect” on the environment, but as of summer 2001 the exact rules on what this meant were still in development.¹⁶¹⁴ Farm groups argued that they needed relief from regulation. The final version of the bill placed the authority to find sodbuster and swampbuster violations exclusively with the Secretary.

Attempts to tie payments to regulations were quickly rebuffed. For example, with the support of major environmental groups, Senator Harry Reid (D-NV) introduced a change in the terms of participating in the CRP’s extended Conservation Reserve Enhancement Program (CREP). Namely, the change required farmers participating in this 1.1 million acre program to give up their water use rights to the Federal government. Theoretically, the Federal government could then preserve the water for other uses such as for wildlife habitat needs, meaning that the

1611. U.S. Government Printing Office "Conservation.", p. 112.

1612. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 52.

1613. Personal Interview, 28.

1614. Ibid., p. 60.

Endangered Species Act provision could kick in. Farmers in the Western States balked at the idea and all the large farmer groups mustered strong opposition to defeat the change.¹⁶¹⁵

Protecting state rights became the rallying cry. Senator Reid argued that his proposal “takes nothing, I repeat nothing, away from the States.”¹⁶¹⁶ Yet the majority of Senators preferred to side with the state rights argument and responded by voting against the change.

As usual a big concern for policymakers was the flow of funds. The geographic distribution of costs and benefits troubled some Congressional representatives. Notably Senator Patrick Leahy, a Democrat from Vermont, took up the cause of smaller states. Speaking of agricultural payments as a whole he suggested that the Mid-Atlantic and Northeastern states effectively subsidize Midwestern states. The smaller states, he said, “get very little back. We had one disaster bill where we got virtually nothing back, and yet we had to pay about 80 percent of our taxes for that. We should be looking at something that more evenly distributes it.”¹⁶¹⁷

Senator Leahy succeeded in putting in a provision, known as “regional equity,” guaranteeing that each state received a minimum amount for certain NRCS programs.

With the likely proliferation of programs, some Congress members wanted to know what evidence existed to show their success. An ERS economist made the point that the environmental benefits from conservation programs must be substantial, although the exact number was elusive. “We don’t even know the total value of the benefits, because many of them are benefits that are not valued on the market, they’re non-market benefits that are difficult to

1615. Library of Congress, "Agriculture, Conservation, and Rural Enhancement Act of 2001," *Senate Debate* (Page: S467) (February 7, 2002).

1616. Library of Congress "Agriculture, Conservation, and Rural Enhancement Act of 2001."

1617. U.S. Government Printing Office "The New Federal Farm Bill.", p. 11.

evaluate,” she said.¹⁶¹⁸ Some numbers, however, were available. Besides the estimated benefits for on-field and off-field erosion reductions based on the NRI, there were also surveys on expenditures on wildlife-related recreational activities. Both arguments put a dollar metric on conservation and both arguments were familiar from the debates on the previous two farm bills.

The CRS natural resources specialist, Jeff Zinn, pointed out that there was a dearth of information on programs themselves. He testified that as NRCS technical assistance is stretched thin to administer the programs “far fewer resources [were] devoted to monitoring and program evaluation, making it more difficult to ascertain what the programs are actually accomplishing. The need for more information has made the Natural Resources Inventory an even more important tool...”¹⁶¹⁹ Senator Peter Fitzgerald, a Republican from Illinois, sounded less optimistic about the state of evaluations of the USDA conservation programs, saying “I’m wondering whether we’ve really ever done any studies to analyze which of the many conservation programs give us the best bang for our buck.”¹⁶²⁰ One time Paul Johnson referred to the RCA process in response to whether the USDA had any idea what the states themselves were doing on conservation. Of course during this period the RCA appraisal was low on everyone’s priority list within the USDA. Besides NRI-derived numbers and in absence of other figures, NRCS officials kept evoking backlog application numbers as a sign of program success.¹⁶²¹ While it gave a hook for the conversation debate to revolve around concrete costs of meeting the workload, it also revealed the lack of other data to estimate conservation benefits from the

1618. U.S. Government Printing Office "Conservation.", p. 3.

1619. Ibid., p. 6.

1620. Ibid., p. 15.

1621. See Senate and House hearings in 2001-2002.

investments. USDA officials kept stumbling on that point in hearings as Congressional members asked for numbers over and over again.

One witness from a wildlife group observed at the end of his statement “that research has a need, in terms of evaluation and specific demonstration of the value of these programs seems even more important than we had thought when I listened to the testimony of the last panel.”¹⁶²²

Another idea presented was for Congress to delineate very specific goals for the USDA conservation programs, such as establishing a specific number of acres that should be reaching the established “T” or soil erosion tolerance level, or a specific reduction goal for agricultural water pollution.¹⁶²³ Such an approach would logically require monitoring progress toward the goals. But how to do it? Representative Adam Putnam (R-FL) doubted that even if the backlog were funded, NRCS could calculate environmental benefits prompting an NRCS representative to respond that indeed it would be an imprecise process with the NRI playing some role in it.¹⁶²⁴

The Senate version of the bill indeed included vague language to implement monitoring — ”to provide education, outreach, training, monitoring, evaluation, and technical assistance to agricultural producers.” The House bill had no comparable language. The conference managers were the ones to add specifically that Congress intended “that education, monitoring, and assessment of the programs [established in conservation titles] be conducted as a part of the technical assistance for these programs.” They also put \$10 million annually toward the goal.¹⁶²⁵

1622. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 1525.

1623. U.S. Government Printing Office "Conservation.", p. 130.

1624. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 23.

1625. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002.", p. 480.

Arriving at the figure was not easy. Proponents of monitoring initially argued that a certain percent of program funding should go toward it. They suggested one percent after a staffer asked several industry specialists what their norm was for quality control.¹⁶²⁶

The House bill and the Senate version varied widely in other ways too. Representative Ron Kind's (D-WI) amendment to shift commodity dollars to conservation failed in October. The Senate version included \$21.3 billion for conservation.¹⁶²⁷ After weeks of negotiations, the House agreed to spend \$17 billion on conservation. The reconciliation process also put in the Senate's Conservation Security Program.¹⁶²⁸

The Chairman of the House Agriculture Committee, Larry Combest (who retired at the end of the term), was not particularly happy with the outcome. Already early on in the process he had to compromise on conservation. When trying to pass the House version in the fall of 2001, his staff realized that the bill lacked the necessary votes and that they needed to secure support from the conservation community. The chief of staff placed an unexpected call to the NACD (National Association of Conservation Districts) reluctantly offering a compromise. The NACD asked for a few changes, including the proposed merging of NRCS and the FSA agencies, an idea the Association especially opposed. The staffer complied but ended the call on a threatening note. Soon after the passage of the bill, the House Agriculture Committee initiated a formal investigation into the relationship between NRCS and the NACD. The suspicion was that NRCS provided federal money to the NACD for lobbying. The investigation found nothing

1626. Personal Interview, 7.

1627. Becker, G.S; Womanch, J., "The 2002 Farm Bill: Overview and Status" (CRS Report for Congress) (March 13, 2002).

1628. Becker, Elizabeth, "Accord Reached on a Bill Raising Farm Subsidies," *New York Times* (2002): 1.

on that score, but did result in cutting federal NRCS dollars going to NACD for program support.

The Association's activities were badly disrupted as it worked to reorganize and pull multiple financing sources to fill the gap.¹⁶²⁹ The 2002 Farm Bill came at a serious price for it.

The final Conservation Title in the Farm Security and Rural Investment Act of 2002¹⁶³⁰ contained increases to the CRP acreage and the WRP, it created a new Grassland Reserve Program, boosted funding for EQIP and at the same time raised the minimum payment cap significantly to enable participation from large livestock operators. CRP acres could now support managed haying and grazing and harvesting of biomass materials. The Act also created the new Conservation Security Program with a three-tier system designed to pay farmers more for better conservation practices. Finally, it allowed for individuals to be certified to provide technical service assistance for comprehensive nutrient management plans (necessary for livestock producers participating in EQIP), and it provided for minimum regional equity payments for all states. The mandatory funding amounts went up significantly.

On the other hand, the final commodities title in the 2002 Farm Bill fell under heavy criticism. One complaint was that the bill boosted farm subsidies right during the ongoing free trade Doha Round negotiations. The USDA argued that the newly obligated support was comparable in size to that paid to farmers in previous years, granted if the comparative total included emergency support payments.¹⁶³¹ Regardless of criticism, exports and farm incomes kept climbing in 2003 and 2004. Farmers worried about sustaining this, especially as Europe cut off its imports of bioengineered products and China refused to abide by WTO regulations and

1629. Personal Interview, 36.

1630. Public Law 107-171.

1631. USDA, "Regarding Farm Bill Criticism," *Statement by Secretary Ann M. Veneman* (May 21, 2002).

open its poultry and meat markets.¹⁶³² On the American side, the “green payments” through the Conservation Security Program (CSP) never gained enough steam to start replacing commodity payments.

A policy analyst for a conservation group blamed the program’s failure in part on the strong association of the CSP concept with Vice President Al Gore and his failed run for the presidency. When George W. Bush became president instead, the CSP received the short end of the stick as a pet program of the previous Administration.¹⁶³³

2. 2008 Farm Bill

Besides constant funding shortages, implementation of the CSP ran into a multitude of problems related to definitions and measuring the additional effort. Congressman Collin Peterson summed up his concern with the CSP when it was first debated in 2001 in a way that turned out to be prophetic — “some of the concern I have about this is who it is that is going to decide what is the appropriate thing to do and are they going to come up with some cockamamie idea of about what I ought to be that is going to drive us crazy again, to be blunt about it.”¹⁶³⁴ This is pretty much what happened with the program. On the other hand, the response from the advocates was that “unless this stewardship option is very big, \$3 billion at a minimum, if we are not willing to make that kind of commitment within farm policy to stewardship, then we shouldn’t do it.”¹⁶³⁵ The political will was not there to make that kind of commitment that

1632. USDA "Secretary Veneman' s Comments on Recent Trade Issues."

1633. Personal Interview, 33.

1634. U.S. Government Printing Office "Formulation of the 2002 Farm Bill.", p. 119.

1635. Ibid., p. 120.

required shifting away from traditional commodity programs. So despite the lofty rhetoric during the debates in the early 2000s, the battle for the money continued each budget year and it was mostly lost.

On the economic front, in sharp contrast to just two years prior, the 2003 farm income hit a record high. Exports were about to match the previous high record set in 1996.¹⁶³⁶ This would not last long, however. Income fell again by the mid-2000s, just when farm groups and others started issuing initial recommendations for the next farm bill. In the summer of 2005, the USDA began the first of fifty-two national forums on the farm bill. The House Committee on Agriculture commenced its listening hearings around the country in winter 2006. The Senate Committee followed suit in the summer.¹⁶³⁷

The 2002 Farm Bill was popular in the agricultural community, but Congress expected tighter budgets in this round. The Chairman of the House Subcommittee on Conservation, Credit, Rural Development, and Research was Representative Frank Lucas, a Republican from Oklahoma. He summarized the challenges for the farm bill's conservation program pithily. The CSP was not implemented as intended (although admittedly because of Congress and the Administration's interference), and Representative Lucas "intend[ed] to take a very serious look at this program." He wanted to support programs where everyone could participate, and — as implemented — CSP was off that mark. Plus, around 28 million acres of CRP lands were set to retire by 2010.¹⁶³⁸ Other issues like the need to provide sufficient funding for technical assistance remained steadily on the agenda.

1636. USDA "Remarks by Agriculture Secretary Ann M. Veneman."

1637. *The Farm Bill and Its Far-Ranging Impact*, ed. J T Owens (New York: Nova Science Publishers, Inc., 2008), p. 8.

1638. U.S. Government Printing Office "Review of Federal Farm Policy.", p. 40.

The 2002 Farm Bill was also very popular with the conservation and environmental groups who lauded Congress for the investments and expressed hope that the next farm bill does not retract the budget increases. Farm groups likewise conveyed support for the conservation programs. Some recommended changes to make sign-ups easier for farmers. A representative from the National Association of Wheat Growers suggested that producers file paperwork “in a single sign-up indicating which program or programs they are interested in, submitting the necessary information, and then allow NRCS or FSA to determine the program or programs for which they qualify.” A cattle producer representing the National Cattlemen’s Beef Association added that the administrative burden from EQIP applications was too much.¹⁶³⁹ While the idea to streamline may have been good, the reasoning underscored the presumed relationship between the producer and the USDA. The latter had little leverage to entice participation, while the former saw himself as the client.

As such some producers knew how to make the most out of the system. A GAO report found that overlap across programs allowed some farmers to collect payments twice, although such incidences were rare. In one example, a producer was paid for crop rotation through the CSP and then through EQIP for the same thing. To apply for the CSP, NRCS created a self-assessment worksheet for producers to define their baseline conservation efforts, and the GAO questioned whether this was adequate.¹⁶⁴⁰

What to do with the CSP was a matter of considerable debate. Chairman Lucas said that although he was “not philosophically totally opposed to CSP,” he wondered if the money was

1639. *Ibid.*, p. 65-66.

1640. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 9.

better spent elsewhere. Representative Peterson (and the Chairman of the full House Agriculture Committee) agreed and said his main problem with the CSP was that “we are kind of paying people for what they are already doing. I don’t think we can afford that.” Recipients of payments should deliver significant additional environmental benefits.¹⁶⁴¹ The current administration of the program with very limited funding by necessity restricted funds to select areas and applied strict criteria for acceptance. This did not set a good precedence for a program in theory vying to replace commodity payments. A sorghum producer from Oklahoma (and former president of the National Sorghum Producers) stated outright that “Oklahoma sorghum producers would be very anxious about switching from our current commodity-based farm programs and farm policy to a completely green policy, if that new program were to be administered similar to the current Conservation Security Program.” He continued, “[o]ur Oklahoma membership is frustrated with the operation of that program in the State.”¹⁶⁴²

The NACD (National Association of Conservation Districts) continued to support the CSP, but recognized that it needed to change given the current funding levels. One suggestion was to allocate money to states directly and let them choose eligible watersheds, rather than select watersheds at the National Headquarters and distribute money from the top.¹⁶⁴³ Having to compete for limited CSP funds sold as entitlements frustrated states, districts, and producers alike. A representative from the National Pork Producers Council summed up the problem: “[w]e simply can’t spend 80 hours on an application, wait an unknown time period and learn that

1641. U.S. Government Printing Office "Review of Federal Farm Policy.", p. 77.

1642. Ibid., p. 144.

1643. U.S. Government Printing Office, "Field Hearing on 2007 Farm Bill," *Hearing before the Subcommittee on Forestry, Conservation, and Rural Revitalization, Senate* (109th Congress, 2nd Session) (August 11, 2006)., p. 23-24.

there is no funding available.”¹⁶⁴⁴ The process also frustrated some policymakers. Senator Tom Harkin, still the Chairman of the Senate Agriculture Committee, noted that the program was designed to have most enrollees in the lowest tiers — guaranteeing payments for basic conservation practices — but now “[i]t has sort of become topsy-turvy.” Throughout its short existence, the funding mechanism had been changed six times.¹⁶⁴⁵

One reason for such cutbacks was that Congress took out money from the CSP to pay for disaster payments in 2003. Senator Harkin decried the move as unprecedented and extreme — “[w]e would never consider telling Louisiana that the cost of recovery for New Orleans would come out of their State’s highway funds...” Disaster funding should come out of the general fund and “[w]e must never accept taking conservation funds to pay for disaster assistance.”¹⁶⁴⁶ But funding was irreversibly lost to the tune of \$4.3 billion. Disasters did not abate. In 2006, the USDA classified more than half of US counties as primary or contiguous disaster area. The previous year around 80 percent of all counties had such designations from the Secretary or at the Presidential level.¹⁶⁴⁷

The CSP money disappeared when caps were established by the Appropriations Committees and during the reconciliation process. Reconciliation, introduced in 1974 with the Congressional Budget Act,¹⁶⁴⁸ is a process that allows Congress to force legislative changes in order to comply with the set budget goals. Although the annual budget process in theory should

1644. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 14.

1645. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 10-11.

1646. Ibid., p. 2.

1647. U.S. Government Printing Office "Review of Federal Farm Policy.", p. 173.

1648. Public Law 93-344.

suffice to do that, reconciliation is a frequent companion. After all, its technical rules on debate time limits (which put a 20-hour limit on budget reconciliation debate itself and a 10-hour limit on the conference) preclude the use of filibuster making the process much friendlier to slim majorities since 51 votes guarantee full passage as opposed to the 60 votes necessary to end filibuster.¹⁶⁴⁹ Since its use became popular in 1981, almost every single year saw a reconciliation bill.¹⁶⁵⁰ Often couching controversial legislation, their rates of passage were much higher than regular legislation.¹⁶⁵¹ The CSP fell victim to this process in addition to the cuts suffered during the annual appropriations. As Senator Harkin pointed out “both [cuts were] done... in conference reports without the ability to amend or to have a vote.”¹⁶⁵²

To implement the CSP fully, assuming that about half of the agricultural lands would enroll (out of 930 million acres of non-forested cropland and grazing lands) at a cost of \$20 per acre would cost around \$9 billion in annual spending.¹⁶⁵³ Senator Harkin balked at the number calling it “bogus.” He was concerned that this would be the number used by “all the reporters writing very furiously” when it was invoked. The Senator pointed out that some of the acres were already covered by EQIP or CRP. He also challenged the watershed-based implementation approach the USDA was using.¹⁶⁵⁴ Either way, the scope of the program as envisioned required

1649. Lindblom, Derek, "The Budget Reconciliation Process: Briefing Paper No. 25," *Harvard Law School: Federal Budget Policy Seminar* (May 11, 2008).

1650. Bill; Murray, Justin Heniff Jr, "Congressional Budget Resolutions: Selected Statistics and Information Guide," *CRS Report, RL30297* (2008).

1651. Lindblom, Derek "The Budget Reconciliation Process: Briefing Paper No. 25."

1652. U.S. Government Printing Office, "Conservation Policy Recommendations for the Farm Bill," *Hearing before the Committee on Agriculture, Nutrition, and Forestry; Senate* (110th Congress; 1st Session) (May 1, 2007), p. 2.

1653. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 13.

1654. *Ibid.*, p. 26, p. 39.

much more funding. Plus, the question of whether or not such payments officially qualified under the “green box” rules for the WTO was unresolved.¹⁶⁵⁵

Despite such difficulties, support for conservation was unwavering. The National Farmers Union argued for full funding for CSP and EQIP. It also argued that the paperwork burden of the programs should be shifted to the FSA with NRCS focusing on technical assistance only.¹⁶⁵⁶ The National Corn Growers Association likewise acknowledged the popularity of EQIP and the shortcomings of the CSP created by the funding cuts.¹⁶⁵⁷ The National Cattlemen’s Beef Association highlighted its support for the working lands’ programs such as EQIP, CSP, but also WHIP and the GRP. While the new Grasslands Reserve Program (GRP) benefited producers many were reluctant to sign-up because “they simply don’t trust the Government.”¹⁶⁵⁸

Again, conservation groups questioned the availability of technical assistance, as opposed to financial programs. Craig Cox of the Soil and Water Conservation Society suggested emphasizing “management-intensive” systems rather than “capital-intensive” ones. Management techniques (like nutrient management, grazing lands management, irrigation management, soil management) require information about the risks and knowledge on balancing the outcomes. They were also low cost and could yield significant environmental benefits.¹⁶⁵⁹ Support for more technical assistance was high among most participants including industry groups.

1655. *Ibid.*, p. 30.

1656. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 5.

1657. *Ibid.*, p. 7.

1658. *Ibid.*, p. 11-13.

1659. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 40-41.

The USDA itself proposed a “Conservation Enhanced Payment Option,” where the producer could opt out of marketing loan and counter-cyclical payment programs in favor of conservation payments.¹⁶⁶⁰ It also asked for increases to the mandatory conservation programs of \$7.8 billion over 10 years in order to consolidate existing cost-share programs (like WHIP and EQIP), to raise the WRP cap to 3.5 million and to expand the land protection efforts among other proposed changes. The Administration asked Congress “to accelerate the development of private markets for the trading of ecosystem benefits associated with conservation.”¹⁶⁶¹ It also recommended getting rid of “regional equity” minimum payments established in the 2002 Farm Bill in order to be able to target funds.¹⁶⁶² The USDA put quite a bit of emphasis on trying to eliminate regional equity to no avail.¹⁶⁶³ The original sponsor of the provision, Senator Leahy from Vermont, continued to single it out as a change particularly helpful to his state and wanted to expand it.¹⁶⁶⁴

The Department also recommended expanding eligibility for the CSP by better funding it, moving from three to two tiers, and removing the obstacles to ranking applicants (in place because the program was designed as an entitlement). A new proposal was to create a “sodsaver” program that made lands converted out of grasslands into crop production permanently ineligible for commodity support programs. The main reason given was that the

1660. U.S. Government Printing Office, "Hearing to Review the 2007 Farm Bill Proposals of the U.S. Department of Agriculture," *Hearing before the Committee on Agriculture, House of Representatives* (110th Congress, 1st SSession) (February 14, 2007)., p. 13.

1661. *Ibid.*, p. 16.

1662. USDA "2007 Farm Bill Proposals: United States Department of Agriculture."

1663. Personal Interview, 12.

1664. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 3.

NRI showed that nearly 24 million acres of grasslands were lost in 20 years between 1982 and 2002.¹⁶⁶⁵ Groups from Defenders of Wildlife to Sustainable Agriculture Coalition strongly endorsed the idea.¹⁶⁶⁶

The livestock industry (ranging from the National Cattlemen's Beef Association to United Egg Producers) continued to praise EQIP. Senator John Thune (R-SD) understood that livestock producers "never have wanted really to be in the other parts of the farm program." The funding increases in the 2002 Farm Bill reduced the backlog for EQIP applications significantly, although it still exceeded available funds by two to one.¹⁶⁶⁷ The conservation community also supported EQIP. But problems remained. For example, producers of specialty crops (or fruits, tree nuts, vegetables, and horticulture) felt left out since much of the expertise for delivering EQIP revolved around large operations of commodity crops.¹⁶⁶⁸ Although specialty crops took up less than 3% of total harvested acres in 2004, their economic contribution in terms of cropland value produced was nearly 40%.¹⁶⁶⁹ Until the mid-2000s, specialty crop producers did not participate much in farm bill policy and did not receive much federal support. This changed in

1665. USDA "2007 Farm Bill Proposals: United States Department of Agriculture."

1666. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 64.; U.S. Government Printing Office "Conservation Policy Recommendations for the Farm Bill.", p. 19.

1667. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 24-25.

1668. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 8.

1669. Noel, Jay E., "The U.S. Specialty Crop Industry: Significance and Sustainability," *California Institute for the Study of Speciality Crops* () (February, 2006).

the run-up to the 2008 Farm Bill with the formation of the Specialty Crop Farm Bill Alliance uniting 120 national specialty crop groups.¹⁶⁷⁰

The National Cattlemen's Beef Association promoted dropping the arbitrary maximum payment caps for EQIP, arguing that conservation options should be available to all. The Association wanted to expand EQIP eligibility to custom feeders (temporary feeding operations for livestock before the animals are slaughtered) and to livestock markets (where the animals are held before slaughter). Although the EPA considered livestock markets CAFOs, they were not eligible for EQIP funding.¹⁶⁷¹ A similar message to expand eligibility came from the National Pork Producers Council. Their representatives complained that pork producers saw "a paltry three percent of [EQIP] funds," which was "less than the share received by goats, emus and ostriches, and we are deeply disappointed." One solution was to provide EQIP funds toward purchases needed for environmental management like "GPS units, flow meters and injectors." Plus, each major group of producers should have its dedicated funding source. This way applications from specialty crop producers can compete against each other rather than against applications from animal operators or corn farmers.¹⁶⁷²

Basically, everyone wanted to be included. The disagreements came on how to divide the money, since crop growers disagreed with earmarking 60% of the funds toward livestock operations. The livestock industry wanted to see it raised to 75%, while the rest wanted to drop the percentage.

1670. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 9.

1671. *Ibid.*, p. 11.

1672. *Ibid.*, p. 13-14.

Despite the rising commodity prices in 2007, the CRP received unwavering endorsement. The National Farmers Union, the National Corn Growers Association, the National Pork Producers Council on the other hand, continued to support the current cap of 39.2 million acres.¹⁶⁷³ Representative Frank Lucas, a Republican from Oklahoma (who used to be the chair of the Subcommittee on Conservation, Credit, Rural Development, and Research and was now the ranking minority member under the Democratic leadership), said that he saw “the 39 million acres as a minimum number.” The American Wildlife Conservation Partners, a coalition of several large wildlife associations, called for a 45-million-acre CRP.¹⁶⁷⁴ Again, different participants lauded the flexible elements of the CRP like the continuous sign-ups and the enhancement programs.

Policymakers wondered if the CRP could incorporate more working land uses, such as to grow energy stocks in the form of switchgrass.¹⁶⁷⁵ The idea of harvesting biomass for energy on CRP land was ubiquitous. In fact, the 2002 Farm Bill already added that to the list of potential considerations for accepting CRP bids. Another idea was to use the CSP, which already incorporated energy conservation into its priority concerns. Now a few Senators put together an amendment to produce cellulosic energy crops through CSP.¹⁶⁷⁶ Although it did not make it into the conservation title, the final farm bill’s energy title built on the previous one and included incentives to develop “advanced biofuels” or those derived from anything other than “corn

1673. Ibid., p. 5, p. 7.

1674. Ibid., p. 39.

1675. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 25.

1676. U.S. Government Printing Office "Conservation Policy Recommendations for the Farm Bill.", p. 12.

kernel starch.¹⁶⁷⁷ Renewable energy as a whole, however, received much attention and debate time during the 2007-2008 farm bill cycle.

But just as in the debates for the previous farm bill, few concrete pieces of evidence were available on the success of the various programs. Yet this time, Congressional members expressed knowledge of CEAP and also keen interest in the concept and its promise. Some, like Senator Saxby Chambliss (R-GA) praised NRCS for its efforts directly despite the dearth of results.¹⁶⁷⁸ All different parties continued to present numbers on contracts and dollars spent. A coalition of wildlife groups talked about the number of practices focused on wildlife habitats funded through the CSP. But when prompted whether they had research on actual benefits, the answer was “not yet.”¹⁶⁷⁹

Some in the agricultural community were more proactive. The National Corn Growers Association, for instance, commissioned a study of NRI data to evaluate what types of conservation practices producers have implemented across the country.¹⁶⁸⁰ Yet the NRIs could not reveal more data than had already been done by other similar efforts and with CEAP results still underway, the Association made due with general NRI results on soil erosion trends in its reports.¹⁶⁸¹

1677. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

1678. U.S. Government Printing Office "Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program.", p. 13.

1679. Ibid., p. 47.

1680. U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 159.

1681. Tolman, Rick, "Corn Is No “Big Blue Frog” ," *National Corn Growers Association, Our View* (By the CEO), Web (October 19, 2007), <http://ncga.eweb3.socket.net/print/476> (accessed May 4, 2012).

Other groups explicitly supported monitoring. In a Senate Agriculture Committee hearing, Ferd Hoefner of the Sustainable Agriculture Coalition presented the group's first priority as reauthorizing the RCA process and "combining [it] with the monitoring and evaluation provision that this Committee rightly added to the last farm bill." This component should be funded "as a percentage of total spending for each conservation program, much like we do with technical assistance right now."¹⁶⁸² The same group made the same argument last time around missing the target only narrowly.

Many of the conservation programs in the 2002 Farm Bill were expiring at the end of September, 2007 or the end of the fiscal year, but the new farm bill was still in the works. In order for the programs not to lapse, Congress used short-term extensions to the 2002 Farm Bill, while continuing to debate how to shift limited funds between titles. When both Chambers passed their versions with around three to one majorities in late spring of 2008, President Bush vetoed the bill. Within twenty-four hours, Congress overrode the veto.¹⁶⁸³

The final Conservation Title of the 2008 Farm Bill adopted fairly few provisions that the various interests supported. The bill gave funding increases for EQIP, relaxed cost-share caps for the Conservation Innovation Grants program within EQIP, and created smaller programs within EQIP to channel funds for specific purposes — the Agricultural Water Quality Enhancement Program (AWEP) and the Chesapeake Bay Watershed Program are two examples. But the bill somewhat unexpectedly reduced the CRP cap to 32 million and mentioned no further provisions

1682. U.S. Government Printing Office "Conservation Policy Recommendations for the Farm Bill.", p. 18.

1683. Harris, Wes; Lubben, Brad; Novak, James; Sanders, Larry, "The Food, Conservation, and Energy Act of 2008: Summary and Possible Consequences," *Prepared for the Extension National Farm Bill Train the Trainer Conference* (DAERS-WP-1-72008) (July, 2008).

for continuous CRP sign-ups or the enhancement payments. Both the House and the Senate versions originally passed preserved the 39.2 million acre cap.¹⁶⁸⁴ In conference, 7 million acres were lost. Funding for WHIP went down. The WRP cap went up by a third to over 3 million acres. The Conservation Security Program was re-branded as the Conservation Stewardship Program and given rigid limits on funding — the program was now limited to 12.77 million acres at a cost of \$18/acre. Congress got rid of the tiered system altogether, mandated that payments go to producers installing additional conservation practices and especially to those addressing the most severe concerns, and forbade CSP payments from going toward animal waste storage facilities (to avoid duplication with EQIP explicitly). The Farmland Protection Program (FPP) received additional financing, and the acreage for the Grassland Reserve Program was expanded slightly. Minimum state allocations for WHIP, EQIP, GRP, and FPP — or regional equity — went up from \$12 million to \$15 million. The bill also reauthorized the RCA process, but gave no further instruction on monitoring.¹⁶⁸⁵

In total, Congress approved \$4.3 billion in new annual funds toward conservation that year through the 2008 Farm Bill signed in May. But the subprime mortgage crisis was already underway. Just a few short months later the gigantic investment bank Lehman Brothers collapsed signaling the official start of an economic recession that would last several years (and is still ongoing as of this writing in 2012). Soon the recession was coupled with ballooning deficits accumulated through expenditures on foreign policy interventions and domestic spending. The deficits grew worse as the recession slowed rates of investment and circulation of

1684. USDA, "Remarks by Acting Agriculture Secretary Chuck Conner to the Sportsmen's Rendezvous Dinner at National Pheasant Fest 2008" (January 18, 2008).

1685. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008."

money and therefore lowered the annual tax bill. Rather than focusing on reviving nationwide circulation of dollars (as Keynesian economists urged), Congress concentrated its attention on reducing the deficit without increasing revenue through taxes. Some argued that this difficult strategy resulted because of Republican Congressional members' ties to Grover Norquist, a conservative activist. His anti-tax pledge became a rite of passage for Republicans after President Obama's election.¹⁶⁸⁶ Nearly every single Republican in the House and the Senate signed the pledge not to raise income taxes, making negotiations on reducing deficits without impacting economic growth or government program support difficult. The situation climaxed in the spring and summer of 2011.

Federal debt neared its ceiling, as had happened many times in the past. And many times in the past, Congress raised the ceiling, since otherwise the United States could suffer sovereign default with unpredictable consequences for the economy. Although each time the situation provided an opportunity for Congress to argue for reining in deficits, it usually reacted in a timely manner (with notable exceptions like in 2002 when Congress waited to act bringing the deficit to within \$15 million of the ceiling or the equivalent of just 5 minutes of federal outlays). In 2011, the opportunity provided for the Republican caucus to extract major concessions from the Obama administration and the Democrats. The latter had to agree to significant budget cuts without raising taxes. Without the cuts, an automatic sequestration of funds across the federal agencies would occur at the beginning of 2013.¹⁶⁸⁷

1686. Dickinson, Tim, "Grover Norquist: The Billionaires' Best Friend: How the Anti-tax Activist Hijacked the GOP on Behalf of the Rich," *Rolling Stone* (2011).

1687. D Andrew; Levit, Mindy R. Austin, "Debt Limit: History and Recent Increases," *Congressional Research Service*, Web (January 20, 2012).

But while the rest of the economy stagnated under little federal or private investment, one sector seemed to be immune from the long recession. This was agriculture. Exports were breaking records and commodity prices were reaching new heights.¹⁶⁸⁸ So the framework for the debate on the next farm bill was once again the economic situation.

The dynamics in Congress in 2012, however, offer little wiggle room for compromise. So the next farm bill may not be on the immediate horizon. As an assistant from Representative Leahy's office noted on the development of the 2012 Farm Bill that it may not happen this year at all, but we should anticipate a 2013 Farm Bill instead.¹⁶⁸⁹ This was also the consensus from other analysts in the field.¹⁶⁹⁰ Nonetheless, the conversations that take place now and the decisions made will likely drive the course of the next Farm Bill, regardless of when it clears both Chambers.

3. The Next Farm Bill

With good prospects for solid farm income, traditional commodity support programs seemed like a good place to cut. Eliminating many of them was the goal for the current discussions and was the course suggested by the Chair's mark-up bill released by the Senate in April 2012 and the bill Senate passed in June 2012.¹⁶⁹¹ The policymakers already agreed to cut \$6.3 billion to the conservation title over the next 10 years in the fall of 2011. One outcome of the impasse on raising the debt ceiling was the so-called Supercommittee (or the Joint Select

1688. ERS "2012 Outlook Forum."

1689. American Farmland Trust, "The Farm Bill in the Northeast: Conservation Title" (Webinar) (December 16, 2011).

1690. Personal Interview, 33, 36.

1691. U.S. Government Printing Office "Senate, 2012 Farm Bill Mark-up."

Committee on Deficit Reduction officially) created to recommend cuts to specific programs. As part of the Supercommittee process, policymakers evaluated farm bill programs including the ones in the conservation title. Although the Supercommittee failed to reach a compromise, it jumpstarted the debate on the farm bill. The hurriedly produced conservation title placed 60% of the cuts on the CRP and consolidated programs although retaining the integrity of each type. With the annual appropriations amounts also cut, conservation programs would see \$4.6 billion less each year.¹⁶⁹²

Many long-term participants remarked that drafting of the farm bill through the Supercommittee process was unusually secretive and hasty. All mandatory programs were to sustain a \$23 billion cut in the course of 10 years, meaning significant reductions in commodity payments. Secretary of Agriculture Tom Vilsack predicted that this meant “an elimination of direct payments and a restructuring of th[e] safety net to focus on revenue and crop insurance and risk management.”¹⁶⁹³

The Chairwoman of the Senate Agriculture Committee, Debbie Stabenow, a Democrat from Michigan, used the Supercommittee process to start the 2012 farm bill process. She, along with the ranking minority member Senator Pat Roberts from Kansas, has been a strong supporter of conservation in previous farm bills. She continued to express her support of conservation

1692. National Sustainable Agriculture Coalition, "Path to the 2012 Farm Bill: Senate Agriculture Committee Highlights Conservation Programs – NSAC" , Web (February 28, 2012), <http://sustainableagriculture.net/blog/senate-conservation-hearing/> (accessed April 8, 2012).

1693. Souza, Christine, "' Super Committee' Shapes the Next Federal Farm Bill," *AgAlert: The Weekly Newspaper for California Agriculture* (2011).

goals saying that “no farming operation can be prosperous without good quality soil and clean water in sufficient quantities.”¹⁶⁹⁴

But the farm bill debate did not become more open, however, to the dismay of many usual participants. For example, throughout the years many types of conservation and environmental groups enjoyed access to the policy process and were able to contribute ideas.

As they realized the limitations of the current process, conservation leaders displayed impressive cohesion. They pulled together 643 organizations — among them 79 national organizations like the National Association of Conservation Districts, Soil and Water Conservation Society, the American Farmland Trust, Ducks Unlimited, Sierra Club, the Nature Conservancy, Ducks Unlimited, and any other environmental organization one can think of, with the rest being state and local organizations — to sign onto a short letter in support of preserving conservation programs through the budget cuts. The letter did not name any specific program.¹⁶⁹⁵

The large commodity organizations — including the American Farm Bureau Federation, National Farmers Union, National Corn Growers Association and all the other ones representing major commodities — also expressed support for continuing conservation efforts (especially on working lands), while consolidating programs.¹⁶⁹⁶ Farmland protection groups fighting to keep best agricultural lands out of development submitted their own plea specific to the Farmland

1694. U.S. Senate "Strengthening Conservation Through the 2012 Farm Bill.", Chairwoman's Opening Statement.

1695. Conservation Organizations, "Letter From 643 Conservation Groups," *To Senate and House Committees on Agriculture* (February 27, 2012).

1696. Commodity Groups, "Letter From 10 Commodity Groups," *To Senate Committee on Agriculture, Nutrition & Forestry* (February 24, 2012).

Protection Program (known as the Farm and Ranchland Protection Program before the 2008 Farm Bill).¹⁶⁹⁷

The Obama administration argued that conservation programs should be consolidated. NRCS Chief Dave White said he wants a bill that not only streamlined programs but also one that “increase[d] flexibility to address the most pressing conservation needs of agriculture; and emphasize[d] projects that address regional priorities and leverage resources so that the public conservation investment goes further.”¹⁶⁹⁸ NRCS suggested that its ongoing Conservation Delivery Streamlining Initiative (CDSI) could help reduce the bureaucratic burden on applicants, as well as reduce the paperwork time for its field staff.¹⁶⁹⁹

The Senate moved to pass its version of the farm bill in June 2012.¹⁷⁰⁰ Whether the House can agree on its own bill this year was still a question. If a bill does not pass in 2012, the situation next year looks glum. Much depends on the outcome of the 2012 election. The potential sequestration set to trigger in 2013 would leave fewer dollars.¹⁷⁰¹ Regardless of what happens with sequestration, fewer dollars are likely to be available later anyhow. Chairwoman Debbie Stabenow (D-MI) and the ranking minority member Pat Roberts (R-KS) made a concerted push to get the Senate’s version of the bill to the floor in the summer of 2012. The bill strengthened crop insurance provisions and cut subsidies for major commodities as well as for conservation programs. Estimated savings from the changes totaled more than what the House

1697. U.S. Senate "Strengthening Conservation Through the 2012 Farm Bill."

1698. Ibid., Testimony of NRCS Chief Dave White.

1699. Ibid., Testimony of NRCS Chief Dave White.

1700. Strauss, Daniel, "Senate Passes Farm Bill, As 16 Republicans Vote with Democrats," *The Hill* (2012).

1701. Pincus, Walter, "Ignoring Sequestration Won't Make It Vanish," *The Washington Post* (2012).

and the Obama administration called for, potentially increasing the chances of floor action on the bill in 2012.¹⁷⁰²

In the early summer of 2012, it seemed that consolidation of programs would be inevitable. Senator Roberts said that while conservation programs had to provide options and flexibility, “we have gone too far” in establishing new ones to the point where now “it’s really an alphabet soup.”¹⁷⁰³ Many participants in the farm bill debates suggested this already five years ago. On the other hand, ten years ago it seemed like a distant possibility. At a testimony in 2001, Jeff Zinn, a CRS analyst, commented that according to his observations “it has been far easier to create new programs than to eliminate ones that are no longer being used or are needed. Authorized but unimplemented or unfunded programs have continued to accumulate.”¹⁷⁰⁴

At the same time as funds for programs decreased and appetite for new programs was nonexistent, high prices for agricultural products were changing the conversation about conservation. Since the passage of the 2008 Farm Bill, the USDA has been under pressure to release CRP acres for production. As a reporter noted at a press conference in the summer of 2008, Senator Chuck Grassley, a Republican from Iowa, already asked the Secretary to release 24 million acres for cropping. The Democratic Senator from Iowa, Tom Harkin, asked the

1702. Rogers, David, "Farm Bill on the Move in Senate," *Politico* (2012). <http://www.politico.com/news/stories/0612/77035.html> (accessed June 10, 2012).

1703. U.S. Senate "Strengthening Conservation Through the 2012 Farm Bill.", Senator Roberts' opening statement.

1704. U.S. Government Printing Office "Conservation.", p. 47.

Secretary to allow foraging on CRP lands before nesting season ended.¹⁷⁰⁵ The final decision allowed foraging and haying on 24 million acres but after the nesting season was over.¹⁷⁰⁶

The Supercommittee agreement put much of the budget reduction burden on the CRP. The argument was that the subsequent reductions in acreage would be equivalent to the reductions sustained through natural market forces anyhow since expiring acres would likely not be re-bid as the return on agricultural production increases.¹⁷⁰⁷ How not to jeopardize the environmental benefits accrued thus far was an issue. One suggestion was to allow holders of CRP land to apply for preferential CSP and EQIP spots before their CRP contracts expired. This meant changing the current statutory limit on applying for additional programs while already receiving payments from one.

One point that stood out in the recent debate was the information supplied through CEAP. The NRCS Chief, Dave White, began using the results from the CEAP reports as soon as they came off the presses in 2010. CEAP results suggested targeting. Unlike in previous years where targeting was a politically laden concept, this time most everyone agreed that the few available resources had to be channeled in a smart way. The RCA process lagged behind, however. While the USDA managed to finish the RCA appraisal, the RCA National Conservation Program with actual policy recommendations was still circulating between different checkpoints. According to

1705. USDA, "Top USDA Officials Discuss Farm Bill Implementation," *With Secretary of Agriculture Ed Schafer* (June 25, 2008).

1706. USDA, "Agriculture Secretary, Deputy and FSA Discuss Conservation Reserve Program (CRP) Decision" (July 29, 2008).

1707. National Sustainable Agriculture Coalition "Path to the 2012 Farm Bill: Senate Agriculture Committee Highlights Conservation Programs – NSAC."

insiders, however, Congressional staff was paying attention to the RCA process and was curious about the outcome.¹⁷⁰⁸

The main recommendation from multiple perspectives was to target resources. Certain provisions built into the mandatory programs — like the continuous sign-ups for CRP acres, the Conservation Innovation Grants or the Cooperative Conservation Partnership Initiative — gave flexibility to the USDA for strategically approaching watershed-wide or regional priorities. Whether Congress will want to expand this capacity or restrain it remained open.

Besides channeling money through land retirement or working-land programs, the USDA conservation efforts depended on cross-compliance. Linking conservation plans to other USDA payments in the 1985 Farm Bill brought conservation to many more farmers. Changes made to crop insurance payments in the 1990s eased the cross-compliance obligation for recipients of such payments. In absence of new dollars for programs, the environmental community argued that strengthening cross-compliance for crop insurance was the way to keep conservation intact. Four previous NRCS (and SCS) chiefs joined forces in a letter to highlight their support for stronger cross-compliance or conservation compliance as it became known in recent years. The signatories included every single chief since Bill Richards in 1990 except for Pearlie Reed who held the post from 1998 to 2002 and was now a top official at the USDA. In recognition of the ongoing debate, the chiefs urged Congress “to make sure cross-compliance provisions cover all income support, including eligibility for crop and revenue insurance premium subsidies.”¹⁷⁰⁹ A

1708. Personal Interview, 29.

1709. Richards, William; Johnson, Paul; Knight, Bruce; Lancaster, Arlen, "Letter From Four Previous Chiefs to Congress" (April 20, 2012).

number of environmental groups likewise put their support behind cross-compliance for premium crop insurance when such amendments were offered by Senators.¹⁷¹⁰

A long list of producer groups disagreed. Thirty-one groups (among them the American Farm Bureau Federation and multiple insurance firms like the John Deere Insurance Company) signed a letter to Congress strongly opposing such a change. Since farmers were already “exceptional stewards of their land and water resources,” and that attaching cross-compliance to crop insurance “would cause numerous unintended consequences,” including the loss of the original reason Congress dropped the insurance compliance requirement in 1996 — to establish a widespread crop insurance program. Instead, the “[f]arm groups are willing to attach cross-compliance to any new commodity programs encompassed in this farm bill, but such linkage should not be required for crop insurance.”¹⁷¹¹ The proposal rang hollow since, as the farm groups fully knew, the prospects for new commodity programs were close to zero.

It was likely though that the new safety net would involve more crop insurance payments. The farming community would rather have kept those free from obligations. The conservation benefits from introducing crop insurance compliance were uncertain. Because insurance compliance was not an exact substitute for direct payment compliance, the distribution of each type of payment varied. Most environmentally sensitive land (at least as measured by erodibility) was located in areas where direct payments exceeded insurance payments.¹⁷¹²

1710. Conservation Groups, "Letter of Support for S.A. 2219" (June 13, 2012).

1711. AgriPulse Staff, "Ag Groups Oppose Linking Conservation Compliance to Crop Insurance," *AgriPulse* (2012). <http://www.agri-pulse.com/Ag-groups-oppose-linking-conservation-compliance-crop-insurance-04202012.asp> (accessed April 26, 2012).

1712. Claassen, Roger, "The Future of Environmental Compliance Incentives in U.S. Agriculture: The Role of Commodity, Conservation, and Crop Insurance Programs," *ERS Report: Economic Information Bulletin Number 94* (March, 2012).

Achieving fuller environmental benefits in the absence of traditional cross-compliance looked difficult, but achieving them without cross-compliance tied to crop insurance looked impossible.

The Senate mark-up bill released in April 2012 did not address insurance compliance. It did, however, make a number of changes.

It instituted a gradual reduction of CRP acres to 25 million by 2017. The CSP acreage went down to 10.4 million. EQIP essentially stayed the same, but now had 5% of its funds reserved for the Wildlife Habitat Incentives Practice (apparently substituting the Wildlife Habitat Incentives Program or WHIP). The bill united under one roof the separate easement programs — WRP, GRP, and the Farmland Protection Program — to create the Agricultural Conservation Easement Program. The new Regional Conservation Partnership Program merged the various targeting provisions like the Agricultural Watershed Enhancement Program, the Chesapeake Bay watershed program, the Great Lakes Basin program, and the Cooperative Conservation Partnership Initiative. Minimum regional equity payments were dropped, although states still had their budgets tied to historical allocations and were entitled to a minimum percentage (0.6% of each eligible program's funds).¹⁷¹³

The bill that the Senate passed in June of 2012 also contained a cross-compliance provision for crop insurance.¹⁷¹⁴

Efforts to make CEAP a program, not a project, did not succeed. This may have been because some preferred to keep it as a project independent of program ownership.¹⁷¹⁵ But this made it susceptible to the annual discretionary processes. Certain long-term proponents of

1713. U.S. Government Printing Office "Senate, 2012 Farm Bill Mark-up."

1714. 112th Congress, "S. 3240," *Senate Farm Bill* (May 24, 2012).

1715. Personal Interview, 7.

CEAP in the conservation community once again argued that monitoring should comprise a percentage of mandatory program funds. But, as usual, shifting money away from programs and toward monitoring did not please top USDA leadership.¹⁷¹⁶

4. Analysis

The history of Congressional debates on conservation does not readily reveal whether information has played a distinctive role. To probe this history more deeply, I come back to the two guiding questions relevant here.

1. Did the House and Senate Agriculture Committee members receive information collected by NRCS?

The answer to the first question of whether House and Senate Agriculture Committee members received information from NRCS is yes for the 2002 and the 2012 debates with much less information provided for the farm bill in the middle.

In the run-up to the 2002 Farm Bill, the NRI data enjoyed prominent mention from nearly everyone. Senators and Congressman, FSA and NRCS officials, environmental groups and producer interest representatives mentioned the estimated 40% average reduction in soil erosion on cropland from 1982 to 1997 nationwide. Some used the figures on land conversion trends. On the other hand, witnesses and Congress members alike much more frequently invoked the backlog demand for the USDA conservation programs. This was by far the major piece of evidence used to argue for more conservation dollars. Their effectiveness was less clear.

¹⁷¹⁶. Personal Interview, 33.

But beyond providing elementary figures on programs, the USDA did not invest in coming up with recommendations for conservation policy. The RCA received almost no mention at all during the 2000s. This is not surprising. This research shows that the interim RCA of the early 2000s had no supporters within the USDA or NRCS. The Department lobbied to exempt itself from the formal RCA process in 2002. Despite this, the idea had support from groups who remembered its roots. The National Association of Conservation Districts' (NACD) official position statement for the 2000s called for the RCA process to identify conservation priorities and to guide program decisions and budgets.¹⁷¹⁷

Without input from the USDA on conservation, other organizations contributed their positions. One document that circulated among policymakers was the Soil and Water Conservation Society's report titled "Seeking Common Ground for Conservation," which recommended increasing budgets for technical assistance and other programs as well as creating a large-scale incentives stewardship program.¹⁷¹⁸ Jim Moseley, the USDA Deputy Secretary, acknowledged the role the Soil and Water Conservation Society played in the 2002 Farm Bill at the Society's meeting in the summer of 2002, just a month after President Bush signed the bill.¹⁷¹⁹ The NACD also invested considerable time into holding forums and outlining position statements.

1717. National Association of Conservation Districts, "National Association of Conservation Districts: Policy Positions 2000" (2001).

1718. Soil and Water Conservation Society, "Seeking Common Ground for Conservation," *An Agricultural Conservation Policy Project (A Farm Bill Proposal: Responding to the Grassroots)* (2001).

1719. USDA "Soil and Water Conservation Society: Annual Conference."

In the debates for the 2008 Farm Bill, FSA and NRCS officials invoked again the numbers of contracts and acres participating in various programs. Again, they had few numbers on the actual outcomes of the programs besides the NRI soil erosion and wetland numbers. The FSA benefited from the efforts of researchers working for government and non-government entities. A major effort was to compile studies that investigated effects of CRP on specific wildlife species into one volume. It covered years 1985 to 2000.¹⁷²⁰ The CEAP wildlife component sponsored the updated volume through the Wildlife Society — another piece of evidence used to convey a strong message about impacts on wildlife. Others used figures from the EPA and the USGS on water quality data, although many arguments simply outlined the group's preferred design for programs.

Besides wildlife assessments, CEAP had little else to provide for the 2007-2008 farm bill debate cycle despite a recommendation in 2005 by the Blue Ribbon Panel on CEAP to produce at least a few deliverables for the debate.¹⁷²¹ But inaction was understandable since CEAP took time to design and its sweeping scope demanded patience. The few resources available went to planning and carrying out the initial elements of the effort.

At the same time, NRCS did not carry out an RCA in the mid-2000s so the agency provided no input from the policy perspective. Some conservation groups, however, called for a return to the RCA process. Many came out with their preferred recommendations for reforming the USDA conservation programs. And that is what the 2008 Farm Bill came to be about: reforming existing programs not changing course. No major guiding documents surfaced that

1720. Wildlife Habitat Management Institute "A Comprehensive Review of Farm Bill Contributions to Wildlife Conservation: 1985-2000."

1721. Soil and Water Conservation Society "Conservation Provisions of the 2007 Farm Bill: Opportunities to Inform Debate."

year. But seeds for assessments had been planted across the USDA. By the time the Obama administration came in, the USDA had documented success for some of its programs. For example, in a 2009 hearing, the FSA Administrator used results from a model developed by the Food and Policy Research Institute to estimate that on average each of the 4 million CRP acres in restored wetlands and riparian buffers reduced annual deposits of sediment by 55 pounds, nitrogen by 154 pounds, and phosphorous by 31 pounds.¹⁷²²

In the one hearing on conservation in the Senate available to the public so far in the 2012-2013 farm bill debate cycle (written in the summer of 2012), the main theme emerging was economic productivity. Witnesses recounted hunting and fishing expenditures, in addition to the estimated nutrient and sediment reduction numbers. Some of the CEAP regional assessments had come out, so the USDA presented those as evidence for the effectiveness of current programs. The CEAP report on the Chesapeake Bay already received significant attention.

One analyst pointed out that Agriculture Committee members tended to be more favorably predisposed toward the USDA numbers.¹⁷²³ So in the case of the conflicting reports, the EPA's results engendered more skepticism. Still, the existence of the two reports forced Congressional staff to dig more deeply into the numbers.¹⁷²⁴

Looking at all the arguments evaluated for this research for farm bills from 1981 to 2008, the environmental groups and the USDA stand out in their use of NRI results. Environmental groups also presented the strongest case for their argument out of all the different groups, although they resorted to "should" arguments as much as their colleagues representing producer

1722. U.S. Government Printing Office "Hearing to Review the Implementation of the Conservation Title of the 2008 Farm Bill.", p. 9.

1723. Personal Interview, 29.

1724. Personal Interview, 29.

groups. Yet the 1985 Farm Bill still stood out as the one where NRI data was mentioned the most and when the main point of the argument was environmental, although other strong arguments and NRI information popped up every cycle. Economic arguments were the most frequent for all cycles, although private property arguments came to the fore in 1990 and 1996.

2. Did policymakers choose policy alternatives consistent with NRI, CEAP and RCA analysis?

The answer to this question is no. Policymakers, as if by habit, did emphasize resource concerns identified through the NRI but made no concerted effort to structure programs according to NRI analysis. Yes, the policymakers put emphasis on resource concerns identified through the NRI. NRCS has made few policy recommendations recently; policymakers' focus on working lands has likely been coincidental. In other cases, like with regional equity, Congress specifically went against recommendations implicit in nationwide analyses calling for prioritization of resource concerns. This may be changing; some CEAP results have been released, and the 2012 RCA National Conservation Program (NCP) has a chance to showcase its findings. NCP analyses have been intriguing; notably, using marginal lands to grow bioenergy stocks, like switchgrass, could decrease nutrient loads into adjacent watersheds dramatically.

So far, the 2012/2013 farm bill debate has revolved almost exclusively around budget cuts and how to preserve environmental benefits achieved in light of those cuts: a dilemma ripe for NCP-style analyses using CEAP models. Taking notice seems to depend on cultivating champions for policy analysis at NRCS and on cultivating champions for information products on the Hill.

Concluding remarks

Did the NRIs advance conservation policy during this period? Possibly. The NRIs themselves continued to be used, but since NRCS did not translate the results into policy recommendations, the policy debate bypassed the agency.

The big question — whether money went to where the NRIs pointed — remains unanswered. Statistical analysis (data are described in Appendix E and the full results are presented in Appendix F in Tables 8, 9, 10, and 11) reveals that for this period there was a very strong association between Conservation Operations Program funds and acres of working lands, although erosion numbers themselves did not explain much. A fixed effects regression model on the full time series showed no association between dollars going to states and membership on on of the Committees.

A different regression analysis just for 2002 and 2007 data showed much stronger associations between funding and water erosion figures (Appendix F, Table 10). Prime farmland also explained some of the funding. Membership on the Subcommittee on Agriculture in the Appropriations Committee for either Chamber made a difference (which is consistent with some previous findings). Chairmanship of the Appropriations Committee showed a significant impact on funding levels, but only when other agricultural payments are controlled (Appendix F, Table 11).

Results of the statistical analysis for all the periods together are shown in Appendix F, Tables 12 and 13. They show strong negative correlations between the variables usually exhibiting statistical significance. Since the correlations were both positive and negative in analyses of individual periods, this is likely a sign that the specification of the statistical model is

faulty. Readers should refer to the parameters on model fit listed in the Appendix before interpreting the results.

The RCA process suffered a setback in the early 2000s and was not used on the Hill. The interim RCA did provide useful information for internal policy coordination, but not outside the agency since it had no champion within NRCS or within the USDA altogether. Despite its high quality — in fact, its identical scope to the previous RCAs — and a policy analysis that trumped previous efforts, at least in its saliency and innovation, the interim RCA flopped. The 2011 RCA effort was still unfolding as of this writing. But some of the insiders were skeptical about its capacity to influence the policy process, since the Administration did not want to get involved in policy recommendations during campaign months.¹⁷²⁵ The RCA National Conservation Program may still make an appearance in smaller pieces, although it is not likely to be used to build an actual *program* rather than act as demonstrations of analytical capacity.

The NRI process has been difficult to reproach. Quality has been high, costs low. Many researchers in the field have realized that. Some have wanted to see it extended to other parts of the world, and researchers abroad have requested assistance emulating the NRI.¹⁷²⁶ So while direct influence on policy has been hard to assess, the volume and reliability of NRI information has been valuable. The impact of the NRIs in some ways have depended on whether other concerns have risen to the top of the conservation-policy agenda. Since conservation falls within the purview of agricultural policy, the agenda has quickly filled up with — and has often been dominated by — other issues.

1725. Personal Interview, 17.

1726. NRCS "National Resources Inventory External Users."

Chapter 7: The big picture, review of macro-trends

A unique feature of agricultural policy was that it was one of the few bipartisan issues left in Congress in 2012. It used to be even less partisan before the 2002 Farm Bill when the battles raged along regional divides pinning Midwestern states against those in the Northeast.¹⁷²⁷ Nonetheless, participants in agricultural policy reported that even in the atmosphere of general noncooperation prevailing during the 112th Congress, members of both parties were coming together to devise the next farm bill.¹⁷²⁸ This made sense since Republican members could get on board with conservation the way the USDA practices it much more easily than with other environmental policy strategies.¹⁷²⁹

Despite continued bipartisanship in 2012, there was no consensus on conservation policy, however. Environmental groups argued that in this time of budget cuts, cross-compliance was the way to go, while others insisted that replacing commodity payments with conservation payments was the way to reform.¹⁷³⁰ Budget cuts enveloped every discussion including conservation, although Congress had already agreed on heavy budget cuts for conservation programs.¹⁷³¹

Given the budget pressure, the natural response was to target resources toward the most needed spots. This approach was politically difficult, however, since most counties had agricultural production and wanted access to conservation assistance. By extension, their

1727. Personal Interview, 7.

1728. Trachtenberg Policy Forum "2012 Trachtenberg Policy Forum, ' Shaping the Farm Bill for a Sustainable Future.' .", Kathleen Merrigan.

1729. Personal Interview, 27.

1730. Personal interview, 30, 33.

1731. National Sustainable Agriculture Coalition "Path to the 2012 Farm Bill: Senate Agriculture Committee Highlights Conservation Programs – NSAC."

Congressional representatives wanted to make sure such access was available. One outcome was regional equity. Another result was that powerful Congressional members made sure that their state was included in the program definition. For example, when the Agricultural Water Enhancement Program (part of EQIP) rolled out in 2009, selected watersheds did not include ones in Kansas to the dismay of the powerful members of the Senate Agriculture Committee from Kansas.¹⁷³² Although the total amount given out through the contracts rapidly decreased from \$270 million in 2009 to under \$20 million in 2010 and to under \$5 million in 2011, the latter two years invariably included projects in Kansas.¹⁷³³

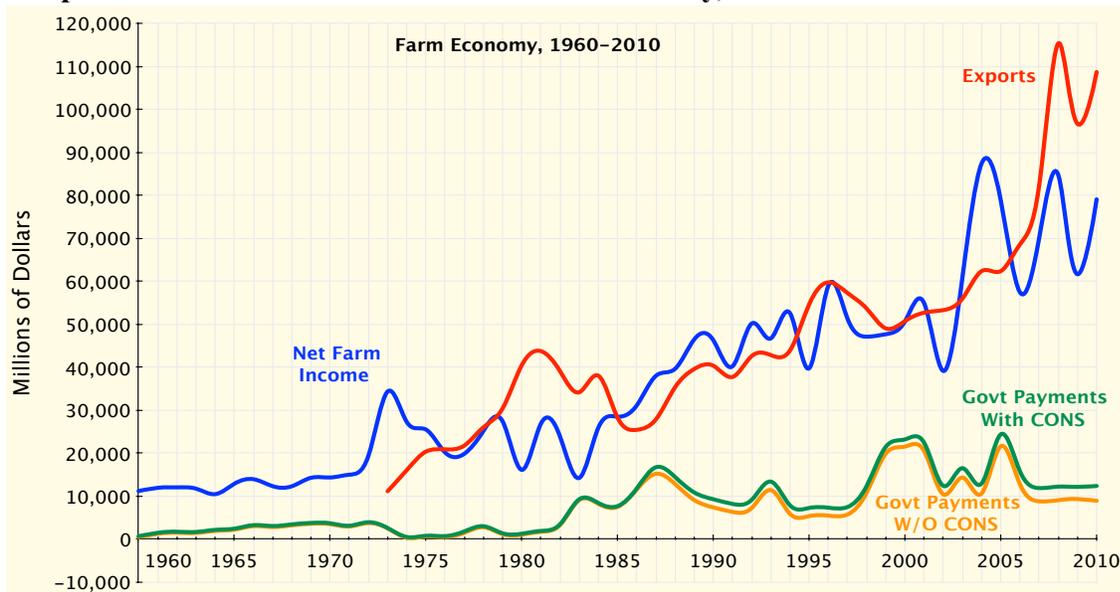
The political element was inescapable. It did, however, have its own, logical motivations. In agricultural policy — a policy sphere that hit close to home for nearly all federal representatives — one of the main motivations was economics. In this case, economics was really short-hand for constituent pressure.

Economics

Starting in the mid-1990s, discussions about removing some of the income support structure for the agricultural sector started to get serious. The 1996 Farm Bill attempted to do just that, although the plan to save money backfired when much more had to be spent in emergency funds instead. The graph below shows a brief overview of the farm macroeconomy including the size of government payments compared against farm income and exports.

1732. Personal Interview, 29.

1733. NRCS, "Agricultural Water Enhancement Program, 2009 to 2011" (Website), Web (2012), <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/awep> (accessed April 9, 2012).

Graph 30. Selected Indicators of the Farm Economy, from 1960 to 2010.

Source: ERS "ERS/USDA Data - Farm Income - Data Files."; ERS "ERS/USDA Data - Foreign Agricultural Trade of the United States (FATUS)."

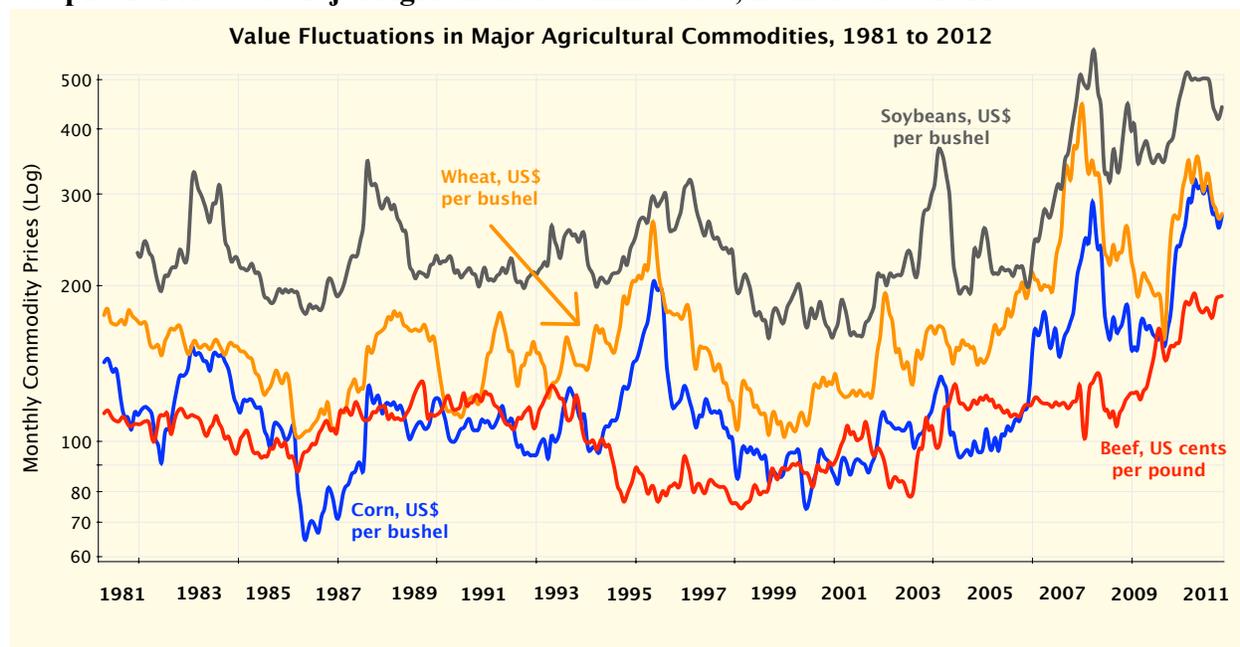
Following an increase in net farm income during the second half of the 1980s, farm income fluctuated significantly and remained low for the discussions on the 1996 Farm Bill. Net farm income rose for the next few years only to drop again right before the discussions for the 2002 Farm Bill. It then fluctuated significantly and was on the uptick in the summer of 2012. At that year's Agricultural Outlook Forum annually put on by the USDA, ERS economists projected a positive outlook for crop prices.¹⁷³⁴ Total USDA payments (and the graph shows that conservation payments formed a small sliver of the total) decreased over most of the late 1980s, spiked in the mid-1990s and then plateaued until 1998 when declining farm income precipitated

1734. ERS "2012 Outlook Forum."

another bump in payments — most were in the form of ad hoc emergency and loan deficiency payments.¹⁷³⁵

Another parallel picture of economic health is the fluctuation in major commodity prices, presented in the graph below. Prices for soybeans and wheat reached historic high levels in 2008 with significant spikes in 1996 and 2004. Corn and beef, on the other hand, were at an all-time high price in 2012, although soybeans and wheat were not far behind.

Graph 31. Prices of Major Agricultural Commodities, from 1981 to 2012.



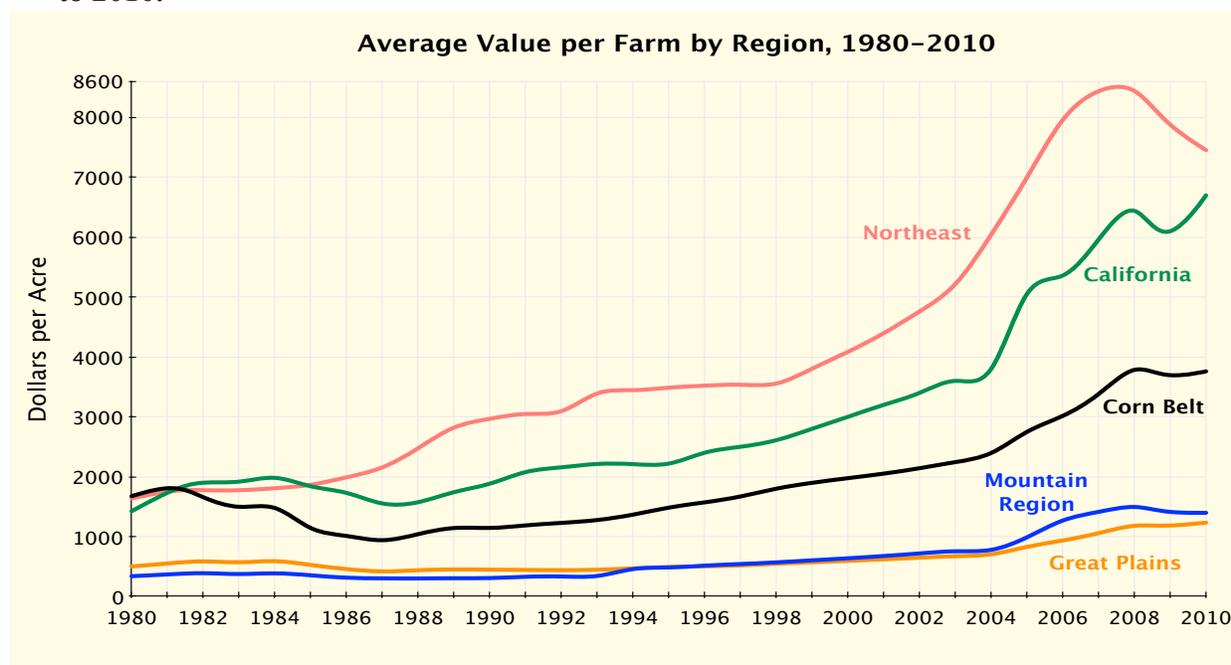
Source: USDA Market News "Wheat - Monthly Price - Commodity Prices."

The rising prices created competition for easement programs like the CRP or the WRP that sought to keep certain lands out of production. To keep land out of production during times of high returns on agricultural products required higher payments. Plus, high commodity prices also drove land values upward raising the payment threshold once again. Rampant speculation

¹⁷³⁵. ERS "ERS/USDA Data - Farm Income - Data Files."

in real estate likewise drove land prices up. The graph below looks at farm land prices across major US regions and the state of California where the rate of price increases outpaced other areas. The graph clearly shows a price bubble forming in the mid-2000s culminating in the economic collapse in 2008 after which prices started to fall slowly.

Graph 32. Regional Differences in Average Value per Farm (Dollars per Acre), from 1980 to 2010.



Source: ERS "ERS/USDA Data - Farm Income - Data Files.", Note: Corn Belt includes IL, IA, MO, IN, OH; Northeast includes ME, NH, VT, MA, NY, RI, CT, NJ, DE, MD, PA; Mountain Region includes MT, ID, WY, UT, NV, AZ, CO, NM; Great Plains includes ND, SD, NE, KS, TX, OK.

Some say that changes in land use was the main concern in the 1960s and 1970s that evolved into a broader agenda for soil and water conservation.¹⁷³⁶ It is true that preservation of

¹⁷³⁶ Personal Interview, 41.

prime agricultural lands entered the conservation title before most provisions on soil and water. The issue of preserving lands for certain uses has stayed on the agenda, and Congress allocated limited funds toward easements. An analysis of NRI land use data suggested that policy intervention could achieve relatively few results. Pouring subsidies into certain uses like forestation or eliminating direct payments changed the outcome little. Regardless of policy tools used, economic and demographic shifts drove most of the land use changes projected to take place on over a third of the land in the United States between 2001 and 2051.¹⁷³⁷

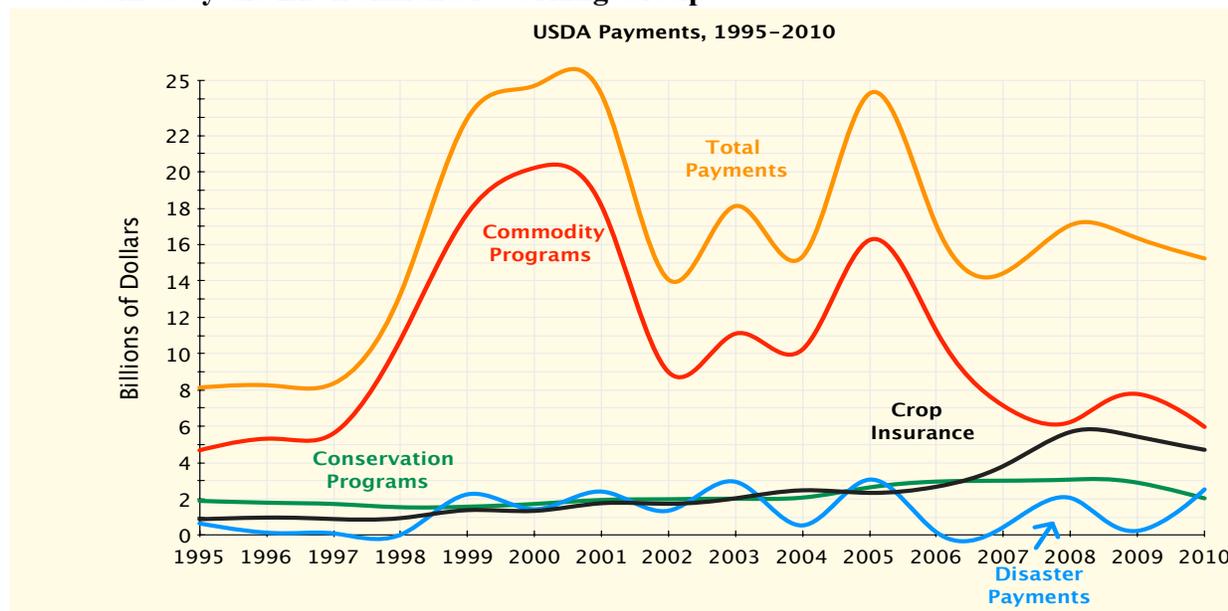
At the same time, the agricultural economy was affected by the USDA's actions. As graph 30 on the farm economy showed there have been sharp increases in the size of agricultural exports. Much of the increase reflected the USDA's leadership (but really successive Executive Administrations' leadership) on promoting trade. Of course, as discussed previously, such export-oriented policies can be volatile because of unpredictable geopolitical forces and can also be counter to conservation goals.

While the executive branch could take a leadership position on promoting certain goals like trade, the Congress controlled the USDA programs and the size of the total payments. The graph below looks at the types of payments distributed through the USDA from 1995 to 2010. Despite the 1996 Farm Bill's provisions, total commodity payments rose dramatically — exactly the point of discussion during the 2002 Farm Bill debates. Disaster payments became more frequent along with crop insurance payments that have gained in prominence in recent years. Of course, crop insurance was exempt from cross-compliance provisions (since the 1996 Farm Bill),

1737. V C Radloff *and others*, "Economic-based Projections of Future Land Use in the Conterminous US Under Alternative Economic Policy Scenarios," *Ecological Applications* 22, no. 3 (2012): 1036-1049.

so if more payments flowed through crop insurance programs then the compliance provisions became less significant.

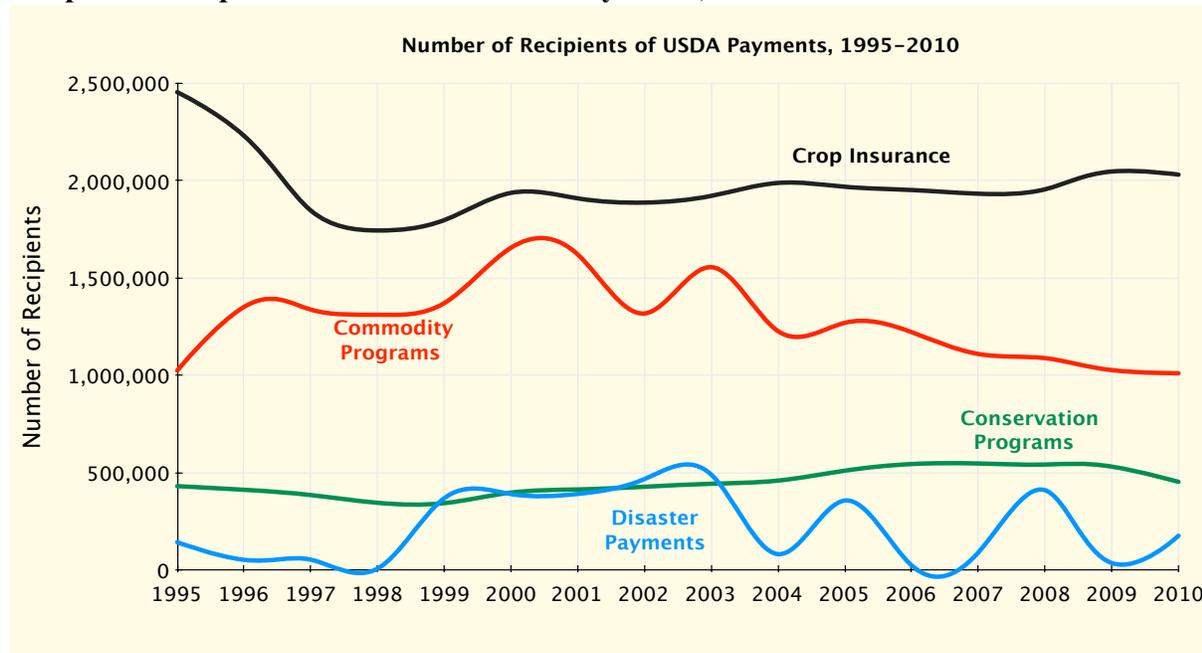
Graph 33. Total USDA payments from 1995 to 2010, by type, according to FOIA requests obtained by the Environmental Working Group.



Source: Environmental Working Group "EWG Farm Subsidy Database."

Interestingly, the number of recipients broke down differently. Many more farmers received crop insurance payments than commodity payments, implying that commodity payments were allocated in larger chunks (and likely to larger farms). The next graph shows those trends.

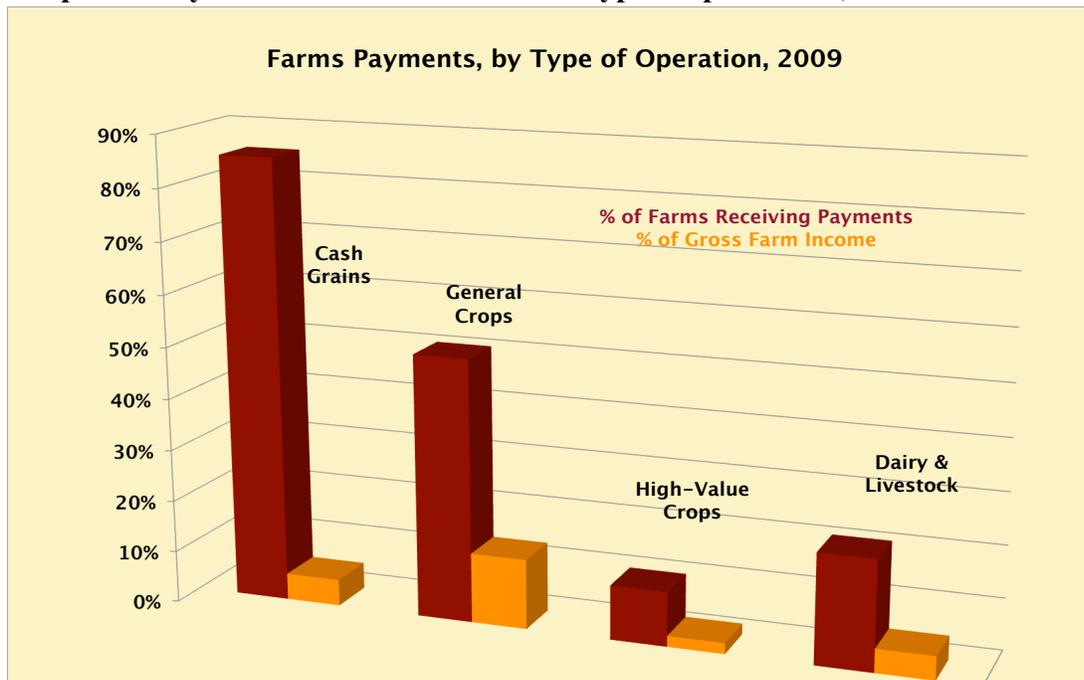
Graph 34. Recipients of Different USDA Payments, from 1995 to 2010.



Source: Ibid.

The reliance of different types of operations on government payments varied sector-by-sector. For example, in 2009, over 80% of operators of cash crops like corn, wheat, sorghum, soybeans, rice and cotton received payments, although they constituted only 5% of their gross farm income. The graph below shows the importance of payments to producers of different agricultural commodities. High-value crops are fruits, vegetables, tree nuts, and nursery products.

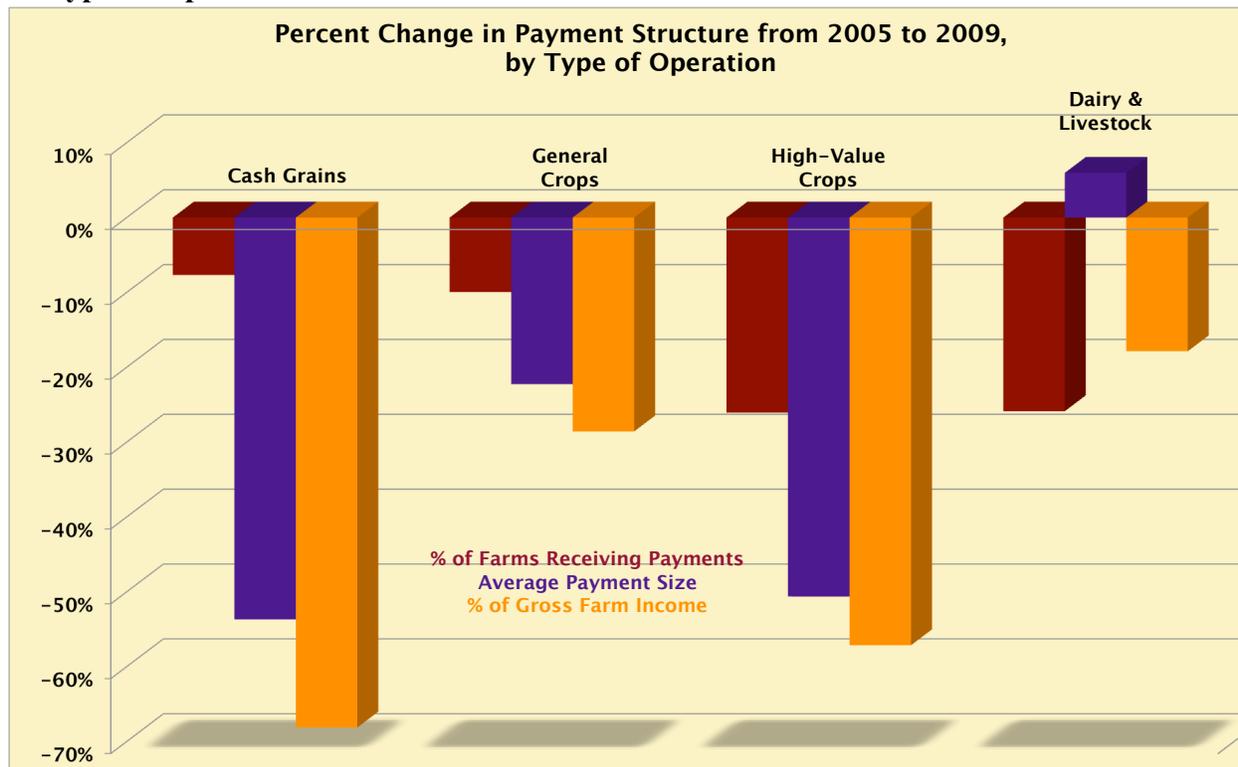
Graph 35. Payment structure for different types of producers, 2009.



Source: T K White and R A Hoppe, "Changing Farm Structure and the Distribution of Farm Payments and Federal Crop Insurance," *ERS Report, Economic Information Bulletin Number 91* (2012).

But even within a short period of time, the structure of payments can change. For example, the size of the average payment went down considerably from 2005 to 2009 for most agricultural sectors. The number of farms receiving payments also went down. The contribution of USDA payments toward the operations' bottom line also decreased, underscoring the economic well-being of the sector.

Graph 36. Changes from 2005 to 2009 in the importance of USDA payments to different types of operations.



Source: Ibid.

The largest types of USDA payments, commodity programs and crop insurance, were generally based on the number of acres under production, so — unsurprisingly but highly controversial — bigger farms received the most generous checks. Since bigger farms tended to be more profitable, the trend has been toward consolidation of fields. So the size of an average farm kept growing. Within 15 years between 1992 and 2007, the acreage of an average corn field doubled to 600. For all typical crop commodities, the average size of the field went up over 70% within the time frame.¹⁷³⁸

¹⁷³⁸. Ibid.

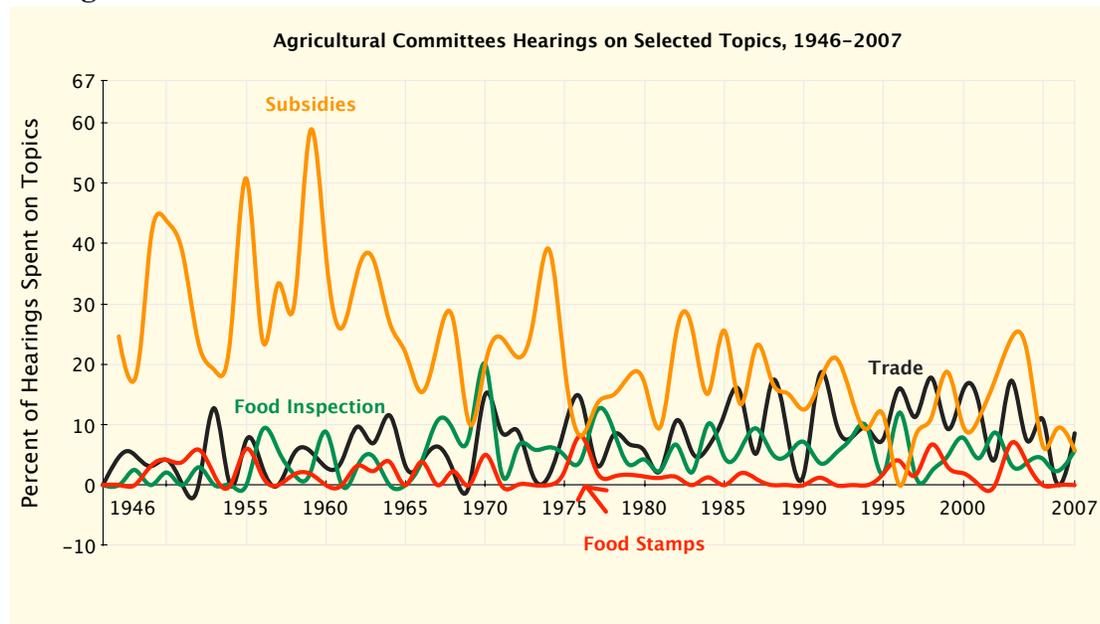
Generally speaking, the agricultural sector was healthy and growing in 2012. Amidst the good news, one issue continued to worry policymakers as it had for many prior decades. Rising age of the farming population got brought up very frequently. Thanks to our increasing lifespans, however, the cause for serious concern may not necessarily be there, as was discussed in the introduction. Plus, since the agricultural sector has offered solid economic payback, new farmers have been attracted to the trade.

Beyond the complexities of economics in agricultural policy (and I have barely touched on the complexities of the ownership structure), the spectrum of issues dealt within the same umbrella has expanded considerably over the years. Dealing with conservation in isolation is impossible since it is invariably couched in everything else that the USDA does.

Conservation in the context of agricultural policy

Agriculture Committees in the House and the Senate have a busy schedule keeping up with the constantly evolving agenda. The graph below looks at selected topics that rose to the top of their hearings' agendas. Subsidies and trade — economic concerns — come in as the most frequent topics of hearings. Food inspection issues also rose to the top. Food stamps lagged behind. Appendix D describes the details related to the data on congressional hearings' topics that are used in this section.

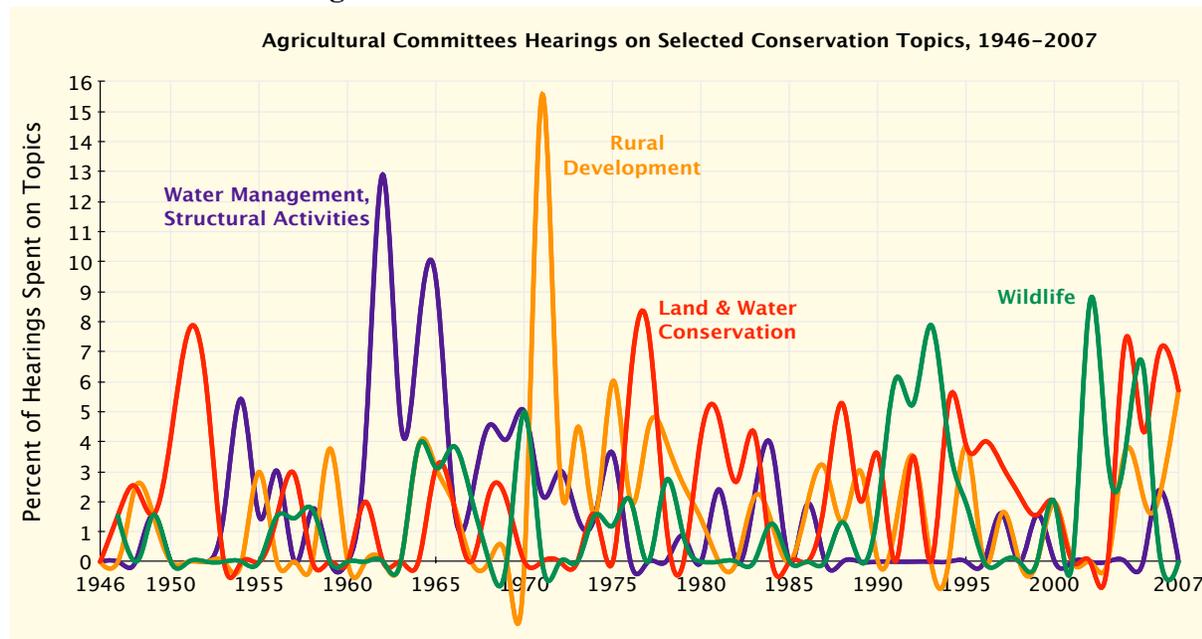
Graph 37. Percent that each selected topic was the main agenda item on House and Senate Agriculture Committees from 1946 to 2007.



Source: Baumgartner, Frank; and Jones, Bryan "Policy Agendas Project."

Some conservation topics also received significant attention, as the graph below shows. Attention to water management activities peaked in the early 1960s — when a lot of flood control activities spread across the country. Rural development issues came to the fore in the late 1970s — exactly when the broader land use debate was revving up in Congress. Wildlife concerns dominated the agenda in the mid-1990s and then again in the early 2000s, probably related to the regulatory threat presented by the Endangered Species Act. The uptick in the 2000s for land and water conservation topics likely reflects the increased attention to water quality problems related to nonpoint sources.

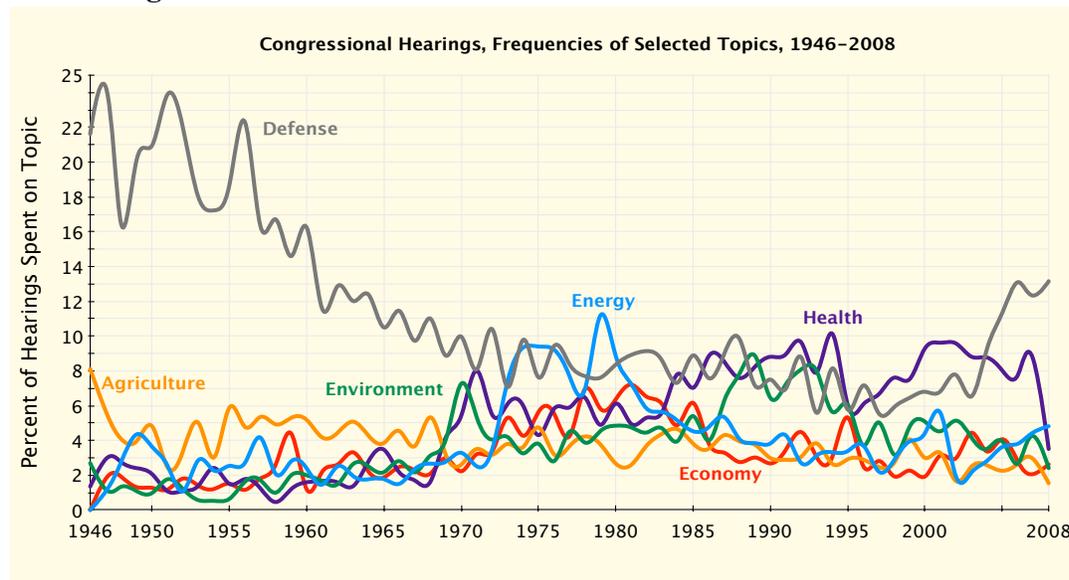
Graph 38. Percent that each selected conservation topic was the main agenda item on House and Senate Agriculture Committees from 1946 to 2007.



Source: Ibid.

To put agricultural policy in perspective, the graph below shows how it fared among other topics of national importance. While attention to defense was clearly fluctuating in tune to the worldwide geopolitical developments (first the Cold War spurred the topic, then the September 11th attacks), agriculture seemed to follow the path of the economy and the environment.

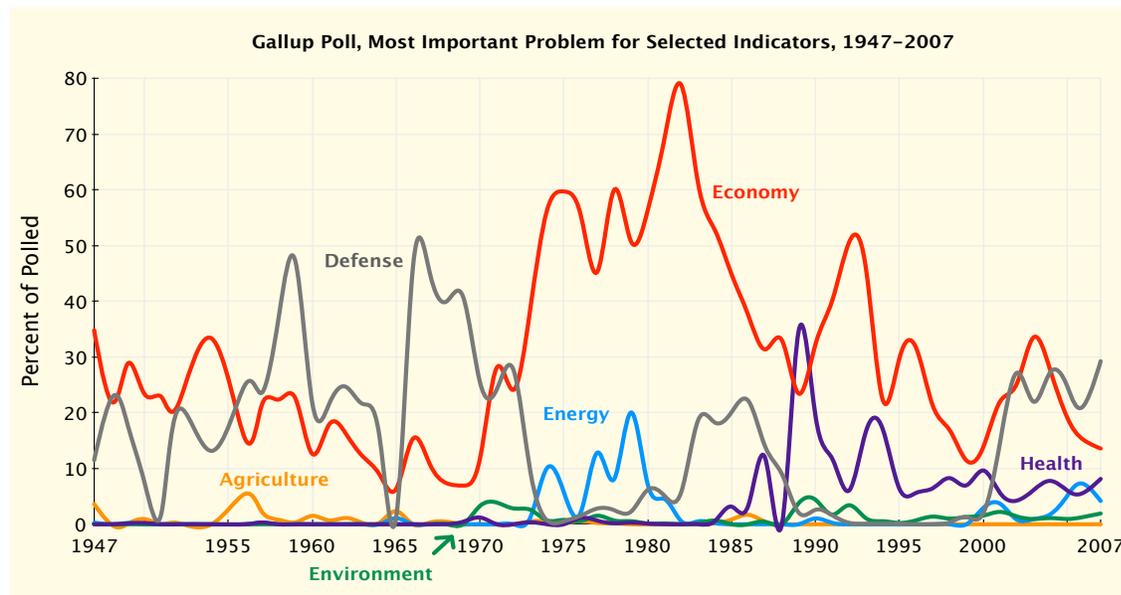
Graph 39. Frequency each selected topic rose to the top of the agenda for Congressional hearings held between 1946 and 2008.



Source: Ibid.

Contrasting with the discussions on the Hill is public opinion. Graph X shows the results of the Gallup Poll's annual survey on the most important issue of the day. The public frequently thought the economy deserved the most attention, although other issues rose up with times (the graph does not include the topic of civil rights that shot up in saliency in the 1960s). Both agriculture and the environment rarely made it as top most important issues.

Graph 40. Public opinion indicated by the Gallup Poll on the most important problem.



Source: Ibid.

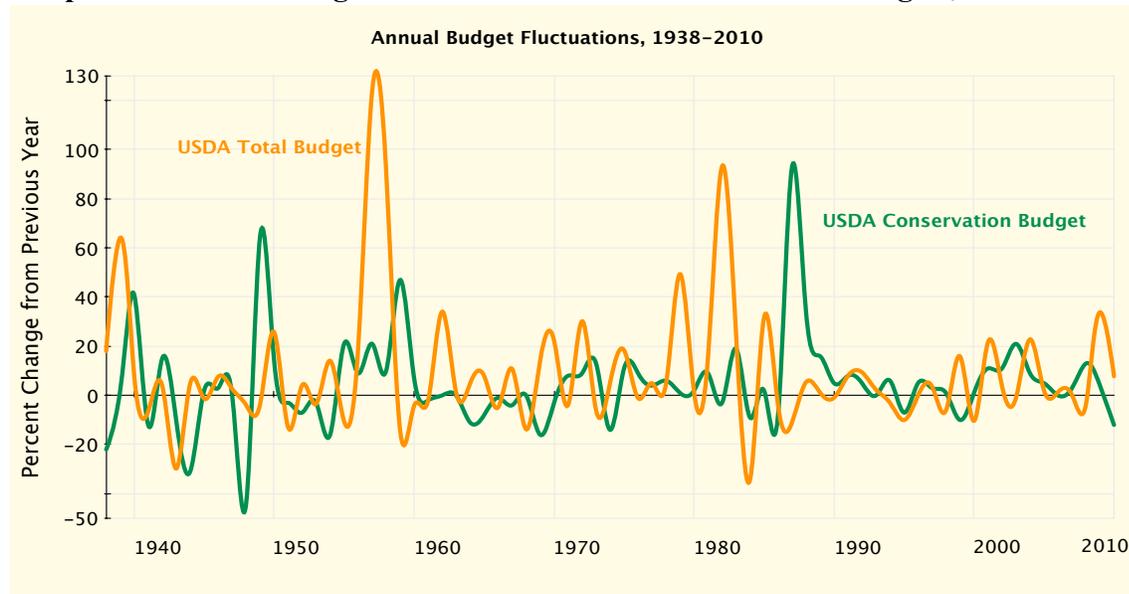
Congress works in an environment of change and unpredictability as events propel some issues to the top of the agenda at the expense of others. The success of conservation legislation was in part owed to the institutional knowledge that resided within the legislative committees. It took time and experience to make sense of conservation in light of agricultural policy and in light of the broader policy context. Conservation policy has benefited not only from the institutional knowledge within the legislative chambers, but also from the knowledge found within the USDA and NRCS.

Budgets

Just like running a business, carrying out policies and programs requires certainty. With unpredictable political winds, the USDA officials had to make due with sudden changes in their

budgets. It is not surprising that budget uncertainty drove a lot of decisions and program implementation. The graph below shows annual fluctuations in the USDA total budget and the USDA conservation budget. Usually the change has been to increase or keep the budget steady.

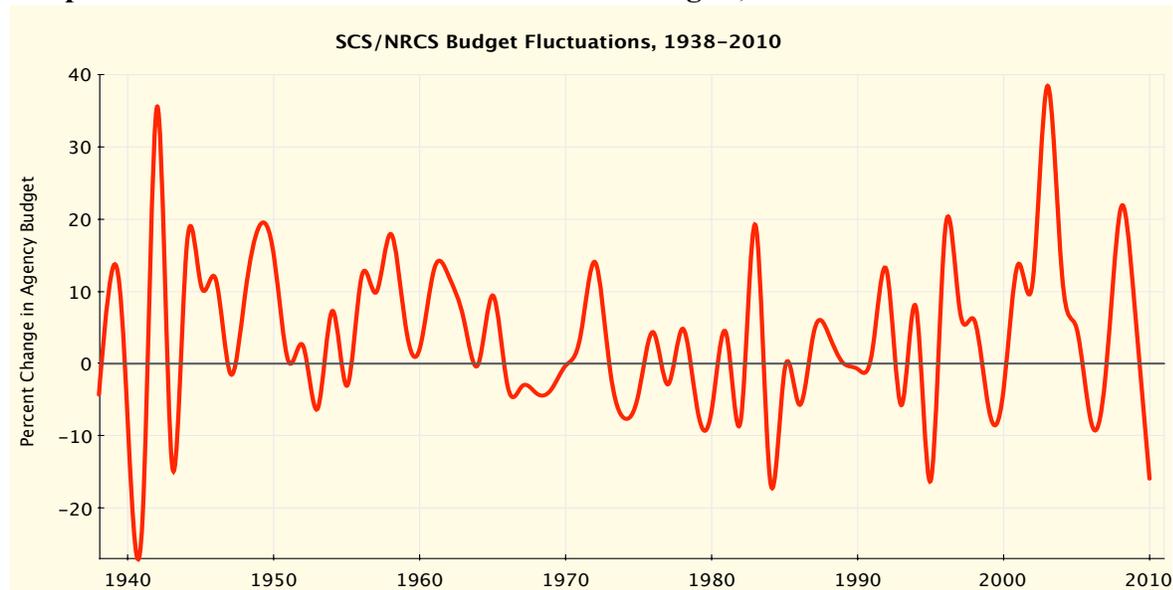
Graph 41. Annual changes in USDA and USDA conservation budgets, 1938 to 2010.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."; Census Bureau "The 2011 Statistical Abstract: Historical Statistics."

For NRCS the story was no different, as the following graph shows. In recent years, the budget booms tended to occur when the farm bills were enacted with funding petering out in the intervening years. The impact of the 2002 Farm Bill is apparent immediately.

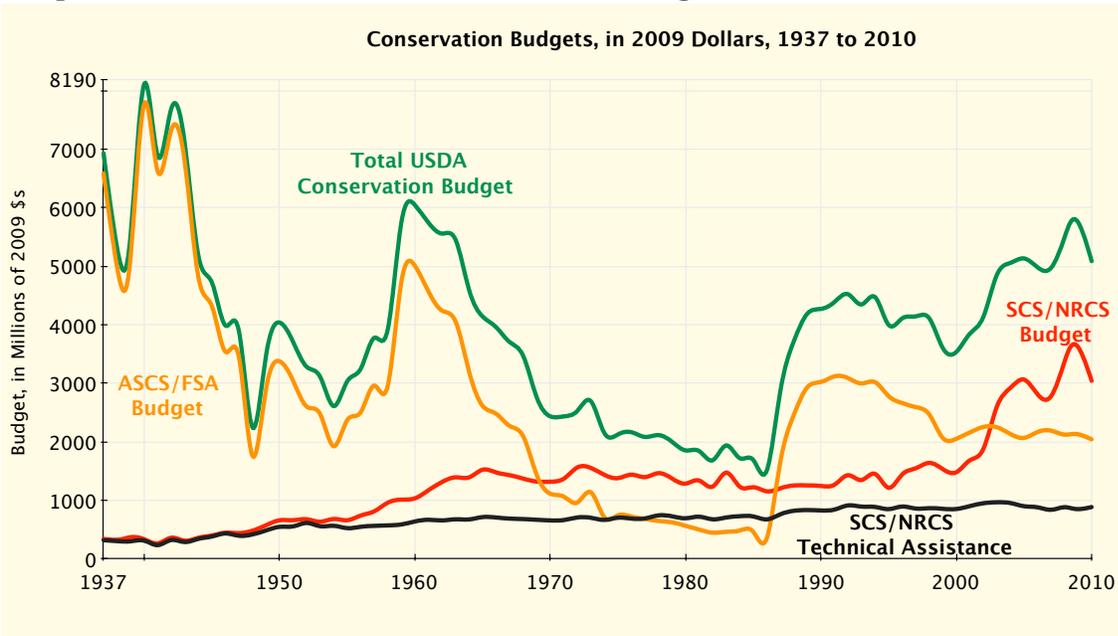
Graph 42. Annual fluctuations in SCS/NRCS budgets, from 1938 to 2010.



Source: Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010."

Looking at the macro breakdown of the USDA's conservation budget, the increasing role of NRCS in administering programs is evident immediately. The graph below shows which agency controlled which portion of the total conservation budget over the years. The black line at the bottom shows the portion of the budget that went to technical assistance — its steadiness is a frequent complaint of the conservation community, since technical assistance underlies all other USDA conservation programs, which have only proliferated in number.

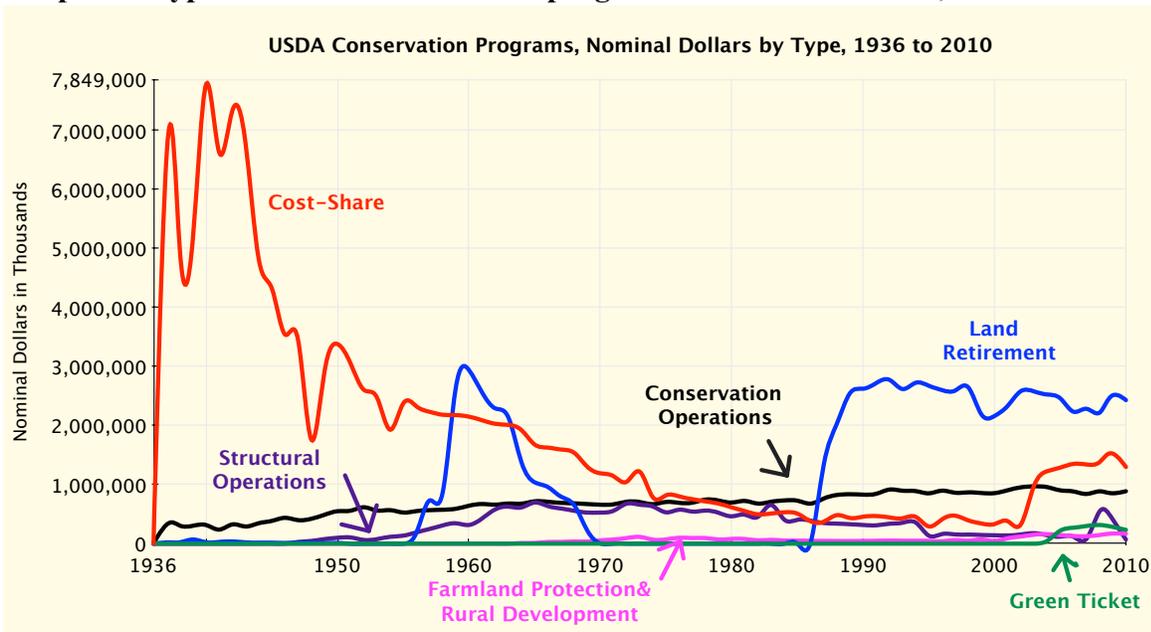
Graph 43. Breakdown of USDA conservation budget in constant dollars, 1937 to 2010.



Source: Ibid.

Over the years, Congress has created different types of conservation programs. Cost-share and land retirement programs have received the most resources, as graph 43 visualizes.

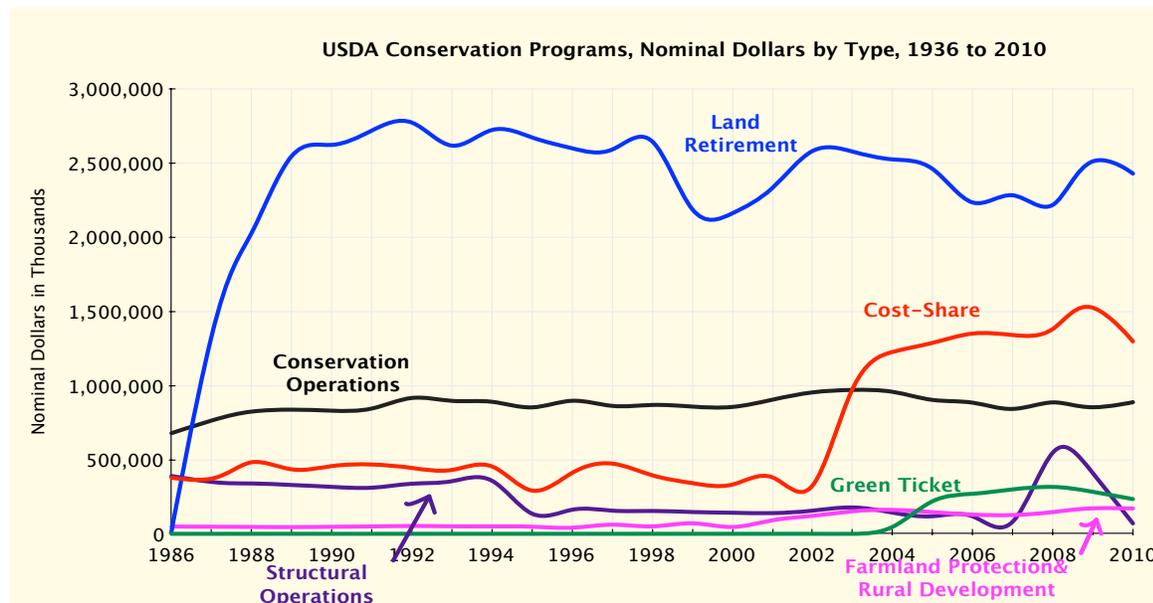
Graph 44. Types of USDA conservation programs in constant dollars, 1936 to 2010.



Source: Ibid.

Zooming in to the modern era since 1985, graph 44 shows that the green ticket option and farmland protection programs never took off and that funding for land retirement programs has plateaued after the initial jump after 1985.

Graph 45. Types of USDA conservation programs in constant dollars, 1985 to 2010.



Source: Ibid.

Availability of different types of programs may restrict the delivery of conservation since needs vary widely across states and program goals have historically been considered from the top down. In making policy, Congress considers a lot of information and arguments. The data from the NRIs — and the related NRCS informational products like the RCA, the NCP and CEAP — have been part of the information stream. Figuring out whether they have actually impacted the outcomes over other competing interests was the goal of this research. The investigation shows that yes, the NRIs have influenced the outcomes of conservation policy especially through the related NRCS products. The size and likelihood of the influence over the years, however, has depended on several factors.

Chapter 8: Conclusion

Considering the periods together, the first RCA process clearly emerges as the most significant one. Several times during my research I heard from interviewees that the first RCA effort saved the agency itself. Without it, I was told, the agency had nothing but goodwill to justify its expenditures and goodwill was running short under constant pressure to cut budgets, going back to the Carter administration and before. Evidence of how influential the first NRIs were showed up in the 1981 Farm Bill — the one with the initial conservation title that was never funded. The title's preamble referred to the alarming rate of soil loss (according to USDA studies) and called for identification of special areas of needs according to the NRIs, *inter alia*.¹⁷³⁹

The real change came in the next farm bill after the RCA National Conservation Program came out. That RCA cycle was truly a momentous undertaking that enjoyed full support from the top USDA leadership. Despite its imperfections like the steering committee's initial dissolution into factions, the political pressure to limit the scope of analysis for the National Conservation Program, and the compromises made to appease interest groups, by many accounts, the process and the outcome guided the debate on how to formulate conservation policy. The fundamental power of the RCA relied on the statistical reliability of the NRIs and that policymakers trusted the source of the data indicating a worsening problem.

During the other periods, the data products had less straight-forward impact. Certainly at the program level, during the second and third periods the use of the NRI data became

commonplace to figure out program funding levels for states. Yet as discussed above, the

¹⁷³⁹ U.S. Government Printing Office, "Agricultural and Food Act of 1981," *Public Law No. 97-98* (December 22, 1981).

resultant formulas were far from objective and were often designed to suit political needs.

During the second period designing a national program took a back seat to the many political reforms and has only been revived recently with the latest installment of the National Conservation Program. Since the last serious attempt to formulate such a program in the early 1980s, now much better data and models are available to do more nuanced analysis. The Conservation Effects Assessment Program (CEAP) has contributed significantly toward that. Yet there seems to be little political desire to actually design a National Conservation Program worthy of the capitalized moniker.

Nonetheless, there is evidence that the data processing advances could make a difference on the field. In 2009, NRCS began a Conservation Delivery Streamlining Initiative (CDSI). Its main objective was to reduce the office workload on NRCS technical personnel by using mobile and other computer technology to connect disparate data pieces and information to make field-level conservation decisions consistent with area-wide resource concerns. The Initiative promises to integrate conservation effects into the evaluative framework.¹⁷⁴⁰ This would be an enormous step toward upgrading the agency's support systems and an answer to critics who say that NRCS lags in technological innovation.¹⁷⁴¹

The criticism is not new. At an oversight hearing in 1992, a producer made the point, “[NRCS] should expedite implementation of innovative techniques. Conservation plans must

1740. NRCS, "Conservation Delivery Streamlining Initiative," *Overview: Initiatives & Strategies* (January, 2011).

1741. American Farmland Trust, "Blue Ribbon Panel : National Agricultural Landscapes Forum | American Farmland Trust," *National Agricultural Landscapes Forum*, Web (April 8, 2011), <http://www.farmland.org/news/events/national-agricultural-landscapes-forum/Blue-Ribbon-Panel.asp> (accessed April 14, 2011).

not be static. They must be dynamic and updated as new technology becomes available."¹⁷⁴²

Twenty years later, this goal is still on the horizon. Current NRCS Chief Dave White is very focused on bringing the agency closer to meeting modern technological advances and using them in the field for conservation. Innovations like optical sensors to detect nitrogen levels or slow-release fertilizer to time nutrient application can be critical tools for avoiding leaching, for example.¹⁷⁴³

But NRCS is not just a technical agency anymore, and when it comes to interactions with the federal government with some regulatory power, producers resent change. In the past, unwanted change has happened when the agency has shifted priorities and different conservation practices rose in stature. Not only could farmers be asked to adhere to new standards, the lack of coordination across fields in a watershed resulted in disappointing environmental outcomes. The CDSI is an attempt to fix that.

As discussed above, the CDSI aims to feed information about watershed needs according to different conservation priorities and pinpoint which conservation practices on a particular field could be most effective. The producer is still the client and has the final decision, but perhaps aiming at more comprehensive results will win over some skeptics.

As the initiative moves forward, the idea is that measuring discernible watershed-scale results and attributing them to NRCS actions will become easier. If the CDSI realizes its full potential, it could also provide information about active practices back to the analysts. Privacy issues will be a huge concern, especially within regions like the Chesapeake Bay where such

1742. U.S. Government Printing Office "Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985.", p. 10.

1743. NRCS "Radio Bride on the Chesapeake Bay Report with Chief Dave White."

information could be used for enforcement. Yet the need for such information for policy research purposes is enormous.

CEAP has already proven its analytical prowess with the most recent RCA National Conservation Program exercise. Although it hardly produced a full blueprint for a national program and the document may only be released in constituent parts, it showcases what types of analyses are possible. In the right hands, it could be used to test out many ideas that float around — and have floated around for a while — to see changes in conservation outcomes. After all, now CEAP can test how conservation goals could be affected from policy suggestions like “green payments” that propose to convert commodity payments into conservation payments. Or the impact of introducing crop insurance compliance. Or the impact of a combination of policy strategies. Whether such documents end up collecting dust on shelves or guide the considerations discussed in policy debates depends on many factors. The last thirty-five years give us some idea of what they are. Table 3 below presents the results of this investigation.

The NRIs influenced policy the most through the RCA when support for the process was high at the agency and at the USDA level, when participation from other USDA agencies and other federal agencies was high, when there was (at least some) willingness to restructure programs according to the findings and when Congress members about the results from many sources.

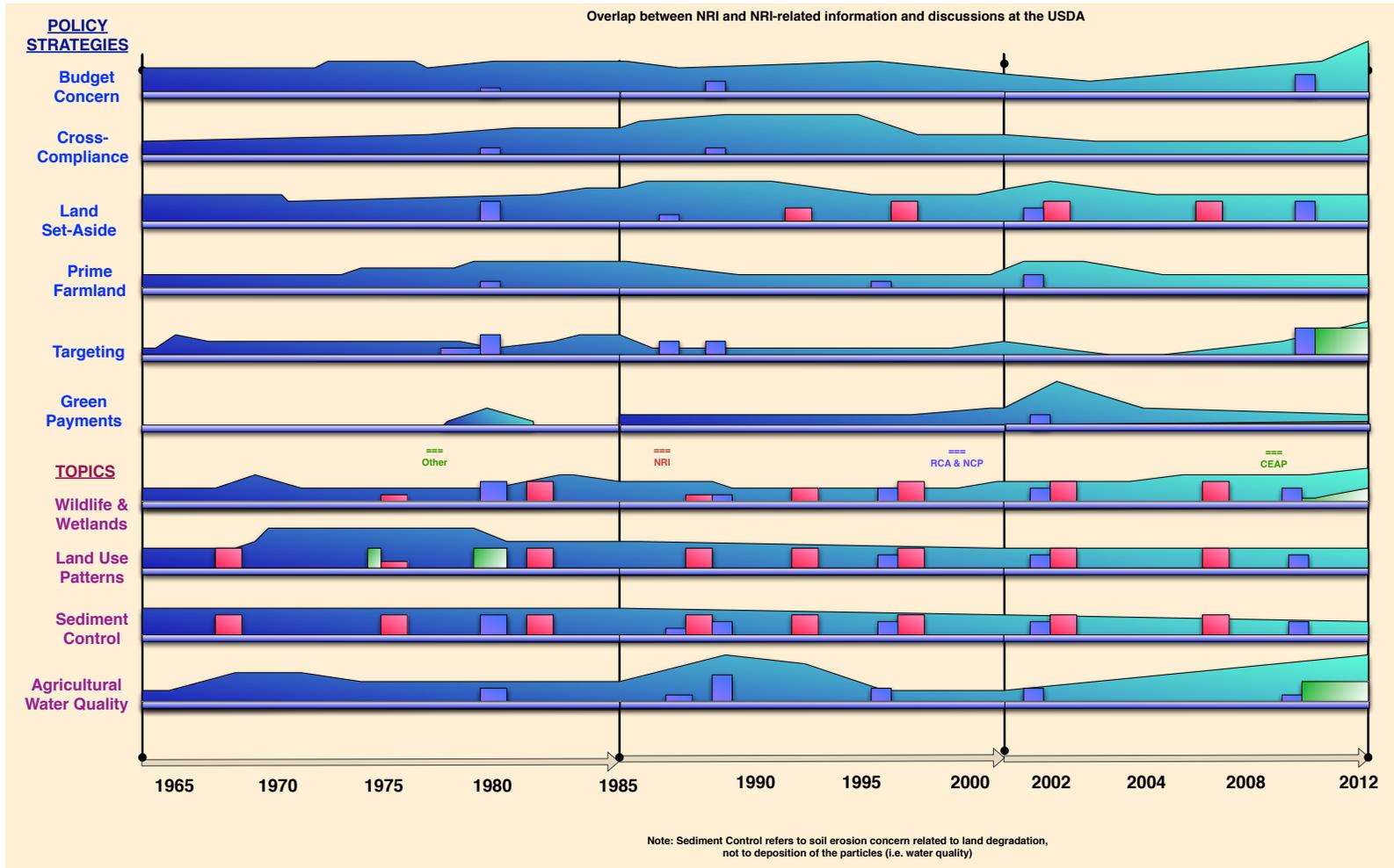
Table 3. Main Results.

		Information collecting				USDA programs			Congressional policies		Final Answer
		Staff and Money?	Support at USDA level?	Support at SCS/NRCS level?	Data available to Other Users? Public Participation (pp)?	Other USDA agencies took part?	Other Federal Agencies?	Information used to carry out USDA programs?	Members received NRCS information?	Policy consistent with recommended course?	Did the NRI advance conservation policy?
Period 1	1977 NRI	Yes, medium	Yes, high	Yes, high	Yes, high availability	.	.	No	Yes, high certainty	.	.
	1980 RCA	Yes, high	Yes, high	Yes, high	Yes, high availability	Yes, high	Yes, high	Yes, high certainty	Yes, high certainty	.	.
	1982 NRI	Yes, high	Yes, high	Yes, high	Yes, high availability	.	.	Yes, high certainty	Yes, high certainty	.	.
	1982 NCP	Yes, high	Yes, high	Yes, high	Yes, high pp	Yes, high	Yes, high	Yes, high certainty	Yes, high certainty	Yes, high certainty	Yes, high certainty
Period 2	1987 NRI	Yes, medium	Yes, but low	Yes, medium	Yes, high availability	.	.	Yes, used in formulas	Yes, high certainty	.	.
	1989 RCA	Yes, high	Yes, high	Yes, high	.	Yes, high	Yes, high	Yes, medium certainty	Yes, high certainty	.	.
	1989 NCP update	Yes, medium	Yes, medium	Yes, high	Yes, high pp	Yes, high	Yes, high	Yes, medium certainty	Yes, high certainty	Yes, high certainty	Yes, medium certainty
	1992 NRI	Yes, medium	Yes, medium	Yes, medium	Yes, high availability	.	.	Yes, used in formulas	Yes, high certainty	.	.
	Geography of Hope	Yes, high	Yes, medium	Yes, high	No	Yes, medium	Yes, but low	No	Yes, high certainty	Yes, high certainty	No
	1997 NRI	Yes, high	Yes, high	Yes, high	Yes, high availability	.	.	Yes, used in formulas	Yes, high certainty	.	.
Period 3	Interim RCA	Yes, but low	No	Yes, medium	No	Yes, but low	Yes, but low	No	No	No	No
	2002 NRI	Yes, high	Yes, high	Yes, high	Yes, medium availability	.	.	Yes, used in formulas	Yes, high certainty	.	.
	CEAP	Yes, medium	Yes, high	Yes, high	No	Yes, high	Yes, medium	Yet to see, likely	Yes, high certainty	High potential	High potential
	2007 NRI	Yes, high	Yes, high	Yes, high	Yes, medium availability	.	.	Yes, used in formulas	Yes, high certainty	.	.
	2011 RCA	Yes, but low	Yes, medium	Yes, medium	.	Yes, but low	Yes, but low	No	Yes, medium certainty	.	.
	2012 NCP	Yes, but low	Yes, but low	Yes, medium	Yes, high pp	Yes, but low	Yes, but low	Yet to see, but unlikely	Yet to see...	Yet to see...	Yet to see...

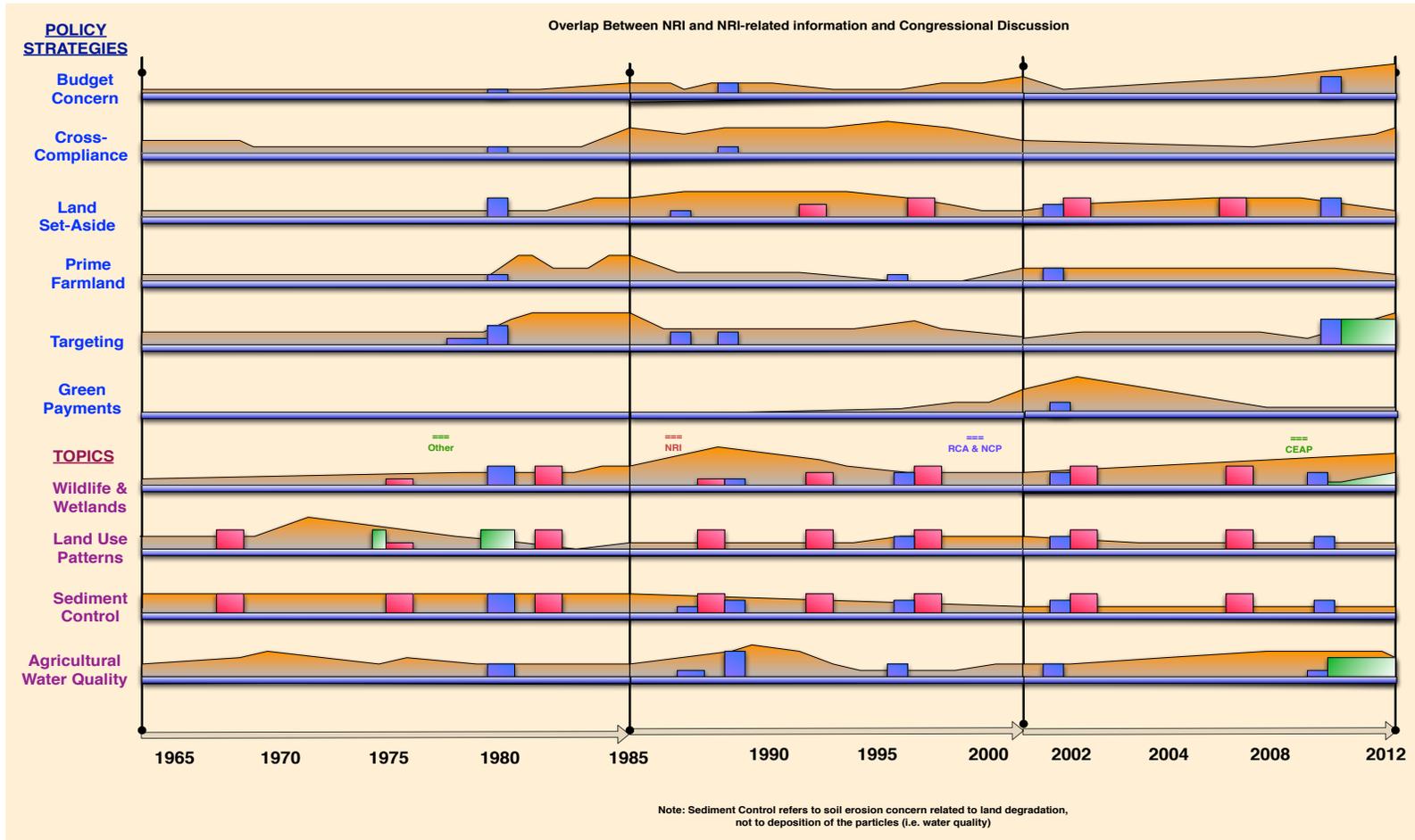
One cross-check with the above results is an evaluation of whether there was an overlap between the issues discussed in the NRI and the NRI-related products and the issues discussed by policymakers. I provide the results visually below. The first picture looks at the overlap between NRI information and conversation among the USDA leaders based on the speeches and communiques produced. The second picture looks at how much interest Congress expressed in those topics based on the public hearings examined. Vertical height corresponds to the intensity paid attention to each topic relative to the other ones. The different colors indicate categories of information products. The NRIs are in red, the RCA appraisals and the RCA National Conservation Program products are in blue, and other relevant information, like NALS in the early years and then CEAP, is in green.

The results show that the NRIs overlapped with both fairly often, but also that other forces drive the discussions. For instance, once it was introduced cross-compliance received significant attention at the USDA and in Congress simply because it affected farmers in a previously unexplored — and often negative — way and provided a strong incentive to keep attention on it.

Graph 46. Overlap between NRI information and related products and discussions at the USDA level.



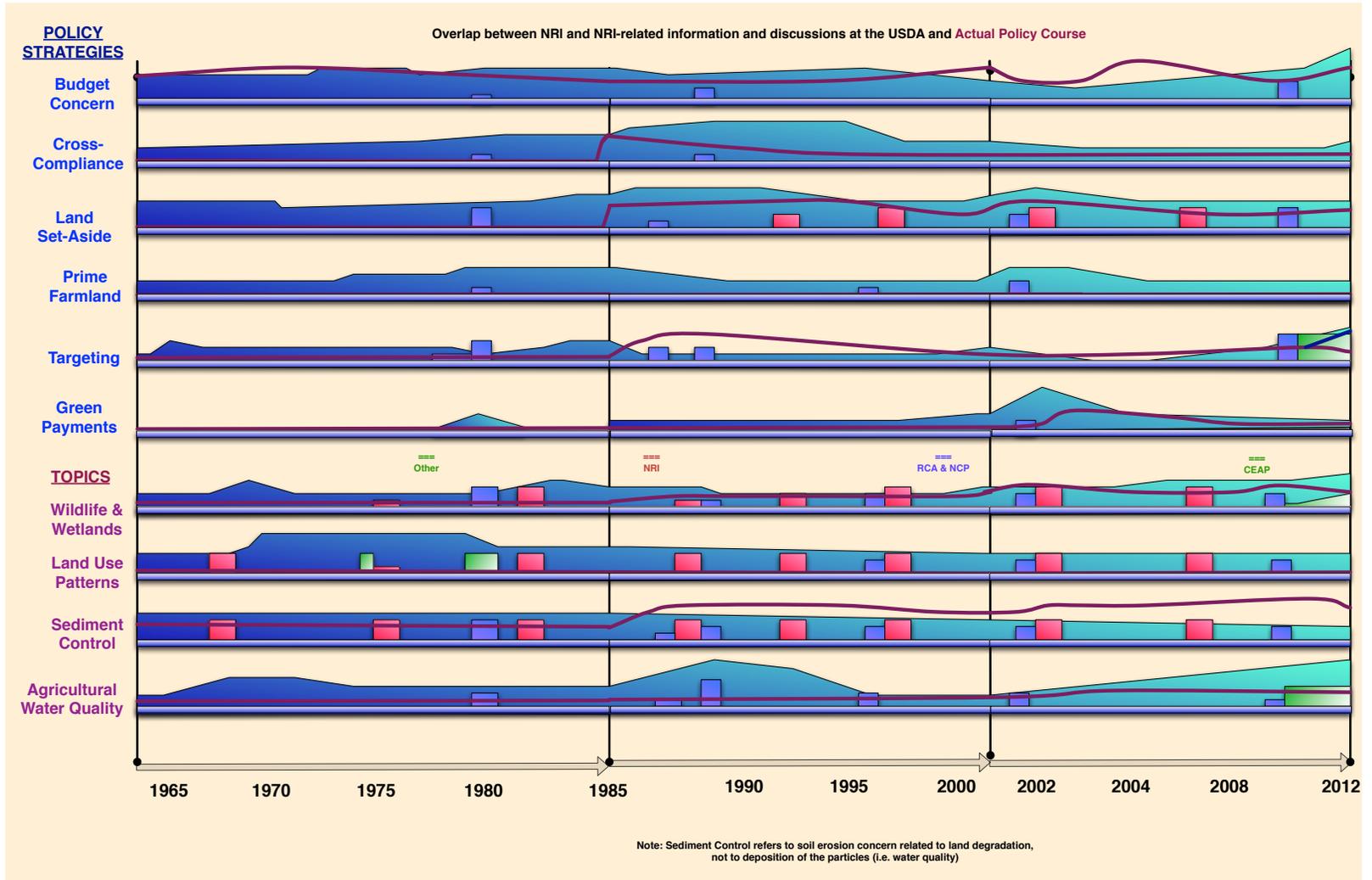
Graph 47. Overlap between NRI information and related products and Congressional discussions.



Conversation is one thing; action is another. The next set of pictures looks at conversation at the USDA and Congress against actual policy mandates and actual funding dedicated to the issues of interest. Appendix H describes how I determine what money to attribute to which natural resource concern. The purple line then represents actual budget numbers for the topics and the “budget concern” policy. For the remainder of policy strategies considered, the line follows the language in the Farm Bill. For targeting, an additional blue line traces NRCS actions.

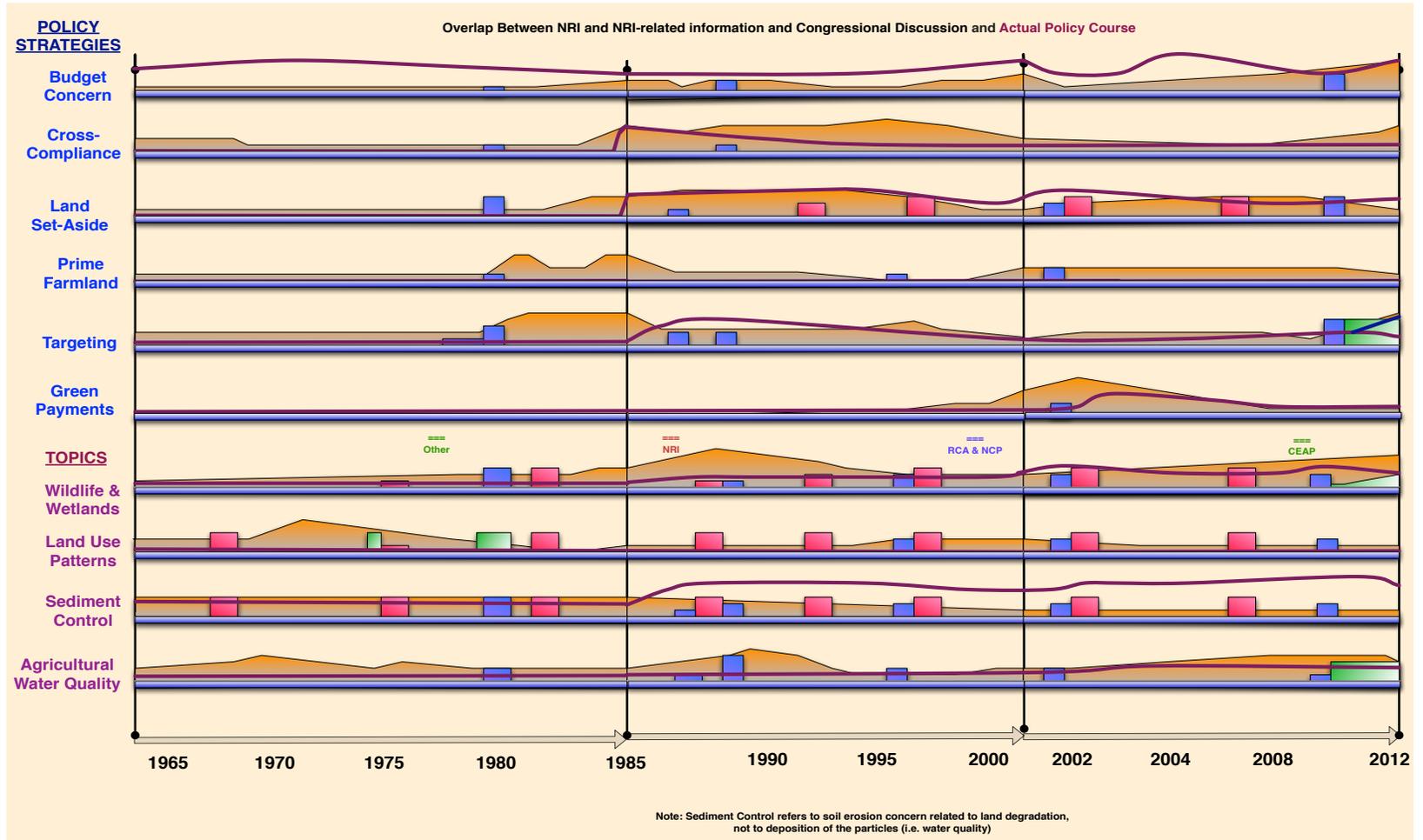
In cases like prime farmland preservation, discussions did not result in policy. In other cases, like sediment control policy, resulted without much discussion.

Graph 48. Overlap between NRI information and related products and discussions at the USDA level and actual policy events.



Graph 49. Overlap between NRI information and related products and Congressional discussions and actual policy

events.



So the answer to the main question, have the NRIs advanced conservation policy, is yes, although the impact was of variable strength throughout the years. And the impact came from three sources, each one with its own profile.

The first is steering the course of debate. The NRIs themselves are ubiquitous behind the scenes primarily because of their unique nature. No other comparable survey exists of natural resource conditions on private lands. Initially, the survey design that focused on soil erosion and land use trends provided the numbers and stirred the debate on the issues. The NRIs lost some steam in the 1990s when the agenda moved toward water quality. With the connection to water quality parameters through CEAP, the NRIs attained a new level of importance. The CEAP team was also working to connect wildlife and other parameters to the NRI sample points, giving the inventories further uses. The NRIs feed the debate on conservation policy, and at least twice (with soil erosion and land use) setting it. This source of impact is the clearest to identify, but it is fairly weak in relation to designing actual policy.

Program implementation is the second source of impact. Looking at allocation of program dollars specifically, the NRIs have had a small effect. The data have been used in allocation formulas, but many other factors were also considered. If the CDSI initiative succeeds, the data may become much more important in guiding program decisions.

The third potential source of impact is in policy formulation at the Congressional level. The first RCA process had a strong effect at least in bringing all sides together around a national strategy for conservation. The impact of other RCAs is harder to identify since so many factors came together. The NRIs made fairly frequent appearances — either in raw form or in a form overlaid with additional parameters — in congressional debates, but whether it made a real

difference in justifying policy decisions is a different matter. The CRS natural resource specialist, Jeffrey Zinn, wrote in 2005 that “[t]he role of information and research is more limited in this process. Information helps, but usually is not critical. If you give them information that confirms their viewpoint, they are delighted.”¹⁷⁴⁴

The arguments assessed in this research indicate that environmental groups put more effort into coming up with original research to back up their policy preferences. Farmer groups also came up with research mostly consisting of the economics of conservation policies. One of the assumptions that I set out to test in my methodology was that more NRI information in the policy stream will result in its greater use. This does not seem to be the case. The NRIs were used most frequently in the discussions leading up to the 1985 Farm Bill. They were used during all discussions, but their use did not appear to relate to actual availability of data.

Another assumption that I set out to test was that groups will choose information according to their ideological fit. Unsurprisingly, this turns out to be true. The final assumption was that during times of greater collaboration across federal agencies the NRI information would appear more prominent. This one is true, since the deepest collaboration occurred in 1985. But there were other times of close collaboration that did not have a similar effect. Overall, dissecting and classifying arguments according to their justifications proved to be difficult. Many groups simply stated their policy preference without giving a justification. Other groups used a combination of arguments to defend their point. The NRIs were a definite presence.

1744. World Wildlife Fund, "Building the Scientific Basis for Green Payments," *A report on a Workshop sponsored by the USDA, CSREES, WWF, and the Elton R. Smith Endowment at Michigan State University* (April, 2005).

In the case of the NRIs, their persistency outlived fleeting policy ideas and topics *du jour*. Their reliability and the availability of an established trendline make them unique, perhaps giving them a better chance at influencing policy outcomes.

One relentless pressure on the NRIs and related informational efforts (especially the RCA process and CEAP) has been funding uncertainty. Some argue that the NRIs have been underfunded and that Congress has cut back significantly on monitoring efforts across the federal government.¹⁷⁴⁵ But the NRIs and CEAP have proven themselves to be useful to many different partners outside of NRCS and the USDA. Farmer groups like to cite CEAP results for example. From a political perspective, cutting a popular program is extremely unattractive. And the deeper such information penetrates into actual conservation programs, the more important it becomes.

Given these findings, what is the potential of CEAP, as the next generation informational tool, for influencing policy?

Policy implications within NRCS

The promise of CEAP is that it will become ingrained in the operations of NRCS. The promise of CEAP is that it will not only receive information from the ground and process it, but that it will send information and recommendations back to the field. To do that, CEAP has to become integrated with other parts of the NRCS operations, including with programs and technical assistance. One early effort to integrate CEAP fell flat largely because there was little

¹⁷⁴⁵. Personal Interview, 30.

usable information at that point.¹⁷⁴⁶ But at the turn of the decade, the investments made started to produce the first detailed results for regional assessments based on large watersheds. Within NRCS, in 2011 the RAD team started to work across organizational divisions to integrate their work with the CEAP effort. Before this push, many NRCS directors at the national headquarters were unfamiliar with CEAP. As the conversation continued, concrete ideas emerged on how to use CEAP to further their divisions' projects such as testing out thresholds for program implementation and revising practice standards.¹⁷⁴⁷ CEAP results may even be used as an official performance outcome measure for NRCS strategic planning purposes, which would centralize the role of CEAP within the agency. It should be noted that this was an original goal that went into designing CEAP.¹⁷⁴⁸ The current emphasis on identifying quantifiable performance outcomes across the agency is the result of a major ongoing internal NRCS initiative that seeks to integrate performance measures with budget formulation.¹⁷⁴⁹

Interest in CEAP outside of NRCS also grew. When NRCS Chief White was asked to give a briefing to a number of Hill staffers on the agency's recent work in the Great Lakes, he sent a RAD representative to talk about not only NRCS but also CEAP.¹⁷⁵⁰ The briefing generated much interest and ended up lasting much longer than expected.¹⁷⁵¹ Soon after, the staffers requested another meeting on the CEAP results for the Chesapeake Bay.

1746. Personal Interview, 31.

1747. Personal Observation.

1748. NRCS, "Status of the CEAP National Assessment" (Presentation by Robert Kellogg and Jerry Lemunyon) (2006).

1749. NRCS, "Annual Initiatives Report," *Internal Document* (February 24, 2012).

1750. NRCS, "NRCS Programs and Activities in the Great Lakes Region," *Briefing for Congressional Staff from Great Lakes States* (May 10, 2012).

1751. Personal Interview, 43.

The popularity of CEAP has grown because the concept of targeting resources strategically makes sense to most observers. Finer-level information zooms in on the problematic areas. The problematic areas are defined through natural resource conservation goals, which have expanded to multiple dimensions. One of the goals for the ongoing Conservation Delivery Streamlining Initiative (CDSI) is to connect those multiple dimensions to a specific location. The idea is that CEAP will provide the underlying information about how the dimensions actually connect. For example, CEAP can identify acres that have the most pressing need for conservation because they are located on soils vulnerable to erosion and leaching and because treatment is lacking. The same idea was used for the regional reports. For the CDSI purpose, one proposal defined appropriate treatment as having a suite of practices that avoid negative practices, control any potential nutrient and soil losses from the field, and trap any losses before they go off the field.¹⁷⁵²

Traditionally, targeting in conservation meant distributing dollars to where soil erosion was worst (according to the NRI). Now a combination of natural resource priorities could steer resource dollars. CEAP can be linked to a multitude of tools already available with information on natural resources across the country. For example, a portfolio of InVEST (which stands for Integrated Valuation of Ecosystem Services and Tradeoffs) models from the Natural Capital Project allows managers to see how emphasis on different resource concerns impact environmental outcomes.¹⁷⁵³

1752. NRCS, "The CEAP Conservation Benefits Identifier Layer," *SSRA/S&T CEAP Implementation Project* (Internal Document) (December 8, 2011).

1753. Natural Capital Project, "InVEST - Aligning Economic Forces with Conservation" (2012).

Assuming that policymakers can agree on the priorities, knowing the location of the problem is still half the job. Translating the problem into solutions with measurable outcomes on a watershed scale is the other, harder, part. The design of watershed studies providing information for CEAP currently lack the consistency and the scope to be able to reliably connect how conservation practices on farms affect the larger watershed.

One NRCS analyst (who has a lot of experience with ARS experimental watersheds) suggested that focusing even on just two watersheds and undertaking a full-scope experiment to measure outcomes as conservation practices are aggressively adopted would go a long way.¹⁷⁵⁴ It would illuminate just how much progress toward watershed-level goals can be realistically expected from the agricultural sector. This would require an ambitious campaign to secure participation from farmers. It would also require a long-term commitment from the USDA, which can only happen if there is political support. But consistent political support may be especially difficult to achieve as time progresses, since incremental changes from adoption of conservation practices will be more and more difficult to measure. Such an outcome could reflect poorly on the programs.

Of course, the original language in the 2002 Farm Bill that was used to create CEAP called for the need to evaluate programs and their effectiveness. Policymakers waited impatiently for the results. In a Senate hearing in 2005, NRCS Chief Bruce Knight first applauded the CEAP effort, but then admitted that completion “is always frustratingly slow and... I am very nervous about having this sort of work far enough along for us all to be able to make rational decisions for the 2007 farm bill.” He promised Congress interim results by

¹⁷⁵⁴. Personal Interview, 39.

2006.¹⁷⁵⁵ The next chief, Arlen Lancaster, likewise prodded the CEAP team for results.¹⁷⁵⁶ The first regional results started to come in by 2010. Although Chief White promised in the spring of 2011 that the goal is for all regional reports to come out by the fall of 2011.¹⁷⁵⁷ They were still not complete as of summer 2012. Of course much of the delay had to do with availability of personnel and resources to do the work, but missed deadlines can prevent information from being used in policy simply because the timetables for producing information and policy differ. Another reason — and a more complicated one to deal with — is the disconnect between programs and application of conservation practices.

Even though the capacity for program assessment has increased considerably because of CEAP, teasing out program effects is not necessarily straightforward. Focusing on programs to develop an understanding of the full scope of conservation on its own ignores ripple effects. A farmer may have received cost-share dollars through EQIP to perform a conservation practice once but liked it and kept doing it up at her own expense. She may have also told her neighbor who invested out of his pocket to try it out. The idea that farmers would adopt conservation practices if they could see the results for themselves goes back to the founder of NRCS, Hugh Hammond Bennett whose legendary figure still looms large among conservationists. Although later he recognized that this approach alone failed, the policy developments over the last 30 years helped spread the use of conservation practices through programs and regulations — such as swampbuster and sodbuster — and also through popularizing the concept of conservation.

Another complication is that many conservation benefits and related studies of conservation

1755. U.S. Government Printing Office "To Discuss How Farm Bill Programs Can Better Support Species Conservation.", p. 10.

1756. Personal Interview, 3, 5.

1757. NRCS "Radio Bride on the Chesapeake Bay Report with Chief Dave White."

benefits are based on CRP, not an NRCS program. Massaging the language to make them relevant to similar NRCS programs was a constant struggle.¹⁷⁵⁸ Because the programmatic origin of conservation practices was hard to establish, CEAP was build to look at the effects of practices. In doing so, CEAP has the capacity to connect to segments of programs and to do program evaluations, if needed. The design was to look at the difference in conservation treatment needs when all practices were present and when practices installed under a specific program within a given period were taken away.¹⁷⁵⁹

One persistent problem is that program participation does not guarantee the installation of practices nor does it guarantee the installation of effective practices. This is perhaps downplayed in CEAP discussions about the quality of its data on conservation practices employed. Some of the most needed practices are disliked by farmers. Buffers between fields and waterways take land out of production. Nutrient management is time-consuming and the results are hard to see, plus, farmers fear reductions in yields. Successful practice adoption often comes with technological innovation like conservation tillage where trusty John Deere equipment developed for the purpose helped spread a conservation practice. Changes in land ownership and management of leased lands are all complicated issues that have implications for installing and maintaining conservation practices.¹⁷⁶⁰

Over the years, the question of whether compliance provisions actually compel farmers to undertake conservation measures has come up as tougher mandates gradually eroded. Farmers receive exemptions for good faith attempts and if they can demonstrate economic hardship and

1758. Personal Comment, 4.

1759. Personal Interview, 38.

1760. CEAP Steering Committee Meeting, DO, November 19, 2010.

are given a year's grace period if found out of compliance.¹⁷⁶¹ NRCS does not view noncompliance as a big problem. Its annual spot checks have found violation rates of 1-2% for sodbuster and swampbuster over the last several years.¹⁷⁶² But how far conservation plans extend and who receives program dollars for what is more difficult to examine.

Such analyses of program implementation are made difficult because NRCS is hesitant to disclose program data and guards information on programs closely, even at the aggregate state or county levels. Interestingly, the Senate version of the 2002 Farm Bill included a specific provision requiring the USDA to "maintain data concerning conservation plans and programs." The provision was eliminated during the Conference.¹⁷⁶³ The 2002 Farm Bill did stipulate confidentiality on the NRI locations and on case file data.¹⁷⁶⁴ The USDA culture is to protect producers' records especially if the information could be used to question someone's compliance status. The response does not have to be complete reluctance to disclose any program data. One analyst complained that while the FSA managed to publish CRP state-by-state CRP statistics on a regular basis, NRCS published information only on occasion. The analyst speculated that perhaps this was because the agency employed mainly technical personnel who want the data to be perfect before releasing them.¹⁷⁶⁵

It is true that record keeping is not the agency's strongest asset, although recently some attempts have been made to provide more information about program delivery through the latest

1761. Rogers, David, "Change Erodes 1985 Soil Pact," *Politico* (2012).

1762. NRCS, "Food Security Act (FSA) Compliance Review," *2011 Report* (April, 2012).

1763. U.S. Government Printing Office "Farm Security and Rural Investment Act of 2002."

1764. NRCS "Conservation Provisions of the 2002 Farm Bill."

1765. Personal Interview, 29.

RCA process and through the strategic planning division.¹⁷⁶⁶ The CEAP effort is likewise demanding cleaned up program data for analysis. One of the main problems is that over the years the database accounting system has changed multiple times and conservationists in the field had a difficult time separating technical assistance from planning assistance, for example. Little effort went into reconciling different accounting systems from each other.¹⁷⁶⁷ Recently, the RCA website has served as a collection point for program data. In the summer of 2012, a decision was made to remove from the website practices data on the CSP (Conservation Stewardship/Security Program) because of incomplete accounting for enhanced practices.¹⁷⁶⁸ The data inconsistencies and problems hinder policy analysis, and the latest efforts to make sense of historical program data was an encouraging sign.

Imputing sufficient data on practices from program data is not straight-forward. A focused CEAP-sponsored study on a watershed in Utah checked how NRCS program data on installed practices overlapped with information gathered through aerial photographs and farmer interviews. Some respondents did not recall using a practices listed for their field — especially if it was a management practice like for nutrients and irrigation. Structural practices that involved tangible assets were more likely to be remembered. The results indicated that about a sixth of producers did not implement the practices contracted (in most cases because they didn't think the practice was included in the contract and in some cases because the implementation

1766. NRCS, "Ongoing Effort to Address Data Inconsistencies," *Internal Communication* (June 20, 2011).

1767. NRCS, "Reconciling Records, Personal Experience," *Internal Communication* (March 30, 2011).

1768. Personal Comment, 18.

was not an actual management practice despite the producers' belief to the contrary).¹⁷⁶⁹

Sometimes the trouble was, to paraphrase one long-term analyst, that NRCS knew how to add, but not how to subtract in its accounting.¹⁷⁷⁰ So additional practices on fields were added to databases but older practices now obsolete never taken out. All of the factors combine to make a strong case for relying not only on program data but also on surveys (and observations gleaned from aerial imagery for example). CEAP modelers insist that their assumptions give a conservative estimate of the actual effects.¹⁷⁷¹

With open questions about the extent of practice implementation and the reliability of record-keeping to reflect actual management of private lands, the use of CEAP models — and all models — brought up direct monitoring as an alternative, and perhaps a much more reliable, source of information.

At the beginning of 2011, NRCS initiated a review of its practice standard number 799, one for monitoring and evaluation in order to strengthen its use in the programs. Some NRCS leaders argued that enabling farmers to monitor edge-of-field emissions was exactly the right approach. Edge-of-field monitoring was the best way to demonstrate what was actually happening on the field. The problem, however, was that monitoring is very expensive. The interim 799 standard was already in use (the Mississippi River Basin Healthy Watershed Initiative has especially encouraged its use), but has generated very little interest among farmers.

1769. D B Jackson-Smith *and others*, "Measuring Conservation Program Best Management Practice Implementation and Maintenance at the Watershed Scale," *Journal of Soil and Water Conservation* 65, no. 6 (2010): doi:10.2489/jswc.65.6.413.

1770. Personal Interview, 27.

1771. Personal Interview, 38.

The equipment and collection of data was pricey,¹⁷⁷² and it counted against farmers' overall cap toward receiving cost-share assistance for NRCS programs.

The economics of installing practices play a huge role in how the practice is handled by all parties involved. For example, doing sampling on pesticides is extremely expensive, while doing nitrogen testing is cheap.¹⁷⁷³ As a result nitrogen became a more lucrative target to monitor and to use in policy discussions.

Using monitoring data as the main source for evaluating program benefits on a large scale was unrealistic not only because of the costs involved, but a host of other issues complicated the picture very quickly. They include the usual concerns like lag time between implementation and results and the effect of heavy precipitation on load numbers. Unless careful experimental design is used to control for precipitation, monitoring will erroneously pick up downward trends that are attributable not to practices but to the weather. Another concern is that because of the presence of many other sources of pollution, detecting changes in agricultural practices through watershed monitoring does not present a full account. In fact, modeling is used precisely to strip away the many unknown complexities and to isolate the effect of agricultural conservation practices alone.¹⁷⁷⁴ This is impossible to do in actual watersheds. It is very difficult to do with modeling because of the number of interactions involved.

1772. Missouri NRCS, "Missouri 2010 MRBI Policies for 799 Monitoring and Evaluation" (August 4, 2010).

1773. Personal Interview, 6.

1774. NRCS, "Why We Are Unlikely to Succeed in Showing Watershed-Scale Water Quality Improvement Through Monitoring," *Internal Document* (By Science Advisor for Water Quality) (May 21, 2012).

For the purposes of measuring agricultural pollutants, modeling is not an easy alternative also because it relies on surveys and so on the goodwill and honesty of farmers. Getting statistically valid survey results at smaller watershed scales means tapping more farmers for information and doing so more frequently. The federal government has regulations on burdening respondents with surveys. And farmers skeptical of how the results may be used will likely have more incentives to obfuscate. Clustering of samples within sub-watersheds can help,¹⁷⁷⁵ and in 2012 the CEAP team invested resources into developing the technology to do this. The team realized that it needed to move carefully — scaring off farmers can bring down the entire effort. The risk may not outweigh the benefits for NRCS. Most of the agency's policy analysis needs can probably be met with the traditional approach at the 4-digit HUC level.¹⁷⁷⁶ Moving beyond that may only benefit others, so NRCS was proceeding with caution.

To make up for the shortfalls in reporting and program data, CEAP has weaved different sources together. This may overestimate which practices were implemented and so underestimate conservation treatment needs.¹⁷⁷⁷

While the social aspect has gotten more convoluted, the technical aspect to CEAP has gotten clearer. The underlying models continue to evolve and the results and the capacity for analysis have become more nuanced. There is still room for improvement from the technical side. Currently, some of the weaknesses include the poorly developed wildlife component and lack of air pollution and livestock modules. Other types of land cover besides cultivated croplands — like the complex vegetable farms in California — require special attention, and

1775. NRCS, "Assessing the Effects of Conservation Practices in Small Watersheds," *Internal Communications* (December 28, 2011).

1776. Personal Interview, 38.

1777. Personal Interview, 3.

NRCS was exploring adding new types of covers in 2012.¹⁷⁷⁸ The exchange between wind erosion and water erosion has not been fully developed (soil deposited on fields through water erosion turns out to be more susceptible to wind erosion).¹⁷⁷⁹ Synergistic effects of chemical pesticides are becoming more and more important especially for wildlife conservation, yet such effects are not present in the models. But the models cannot account for everything. For example, stream dispersal (and with it nutrient dispersal) depends among other things on the presence and configuration of headlands.¹⁷⁸⁰ Mapping out underwater topography is likely beyond the scope of most models. Because of the proliferation of modeling tools, their coordination will become increasingly difficult. It will likely be a major challenge for CEAP as well.

As modeling techniques have marched forward, availability of experimental data on which to base model components has dragged behind. One huge scientific and policy issue that is ignored is often the presence of legacy deposits. Significant depositions of nitrogen and phosphorous lie at the bottom of many watersheds and get stirred up during storms or heavy precipitation. To paraphrase Otto Doering III from Purdue University, legacy deposits is the 800-pound gorilla that no one wants to deal with. The distinguished professor shared that when he worked with the EPA on developing the contentious water quality standards in Florida, he was

1778. Personal Interview, 3.

1779. Personal Interview, 38.

1780. W Rockwell Geyer and Richard P Signell, "A Reassessment of the Role of Tidal Dispersion in Estuaries and Bays," *Estuaries* 15, no. 2 (1992): 97-108. <http://www.jstor.org/stable/1352684>.

disappointed to realize that legacy nutrients were not taken into account at all.¹⁷⁸¹ The persistence of legacy deposits is astounding. A pilot sustainable farm in Maryland located on a former tobacco field had trouble controlling phosphorous levels after two decades of trying.¹⁷⁸²

Complexities abound in measuring emissions from other sources including those stemming from the use of fertilizer on urban lawns — a concern on par with agriculture in the Chesapeake Bay¹⁷⁸³ — as well as on point sources. There too, assumptions about flow rates drove the models rather than any direct monitoring.

In reality of constantly evolving conditions on the ground, any assumption loses its saliency quickly. Of course this is the nature of any data and any analysis. But for program evaluation monitoring may simply not do an accurate job. Monitoring alone also does little to help develop policy recommendations.

But within NRCS, top leadership argued for relying on monitoring.¹⁷⁸⁴ Improving policy design was not a priority. In fact, one potential downfall for CEAP in terms of its use in policy is that the agency does not seem to be very interested in larger policy analysis. One NRCS official said that the extent of the agency's policy analysis was to interpret the directions from the Hill in the form of regular farm bills. When asked how much analysis the agency was providing during the ongoing farm bill debate in the spring of 2012, the answer was pretty much none.¹⁷⁸⁵ The

1781. EPA Science Advisory Board, "Reactive Nitrogen in the United States: An Analysis of Inputs, Flows, Consequences, and Management Options " (August, 2011)., Comment made at a briefing to the USDA on the Report on September 22, 2011.

1782. Personal Interview, 27.

1783. Environment Maryland Research & Policy Center, "Urban Fertilizers & the Chesapeake Bay: An Opportunity for Major Pollution Reduction" (March, 2011).

1784. Personal Comment, 39.

1785. Personal Interview, 12.

agency's top leadership was closely involved in the farm bill discussions and negotiations without the guidance of an RCA program (although the RCA appraisal was around). The latest RCA National Conservation Program (NCP) was still undergoing finishing touches and editing at multiple checkpoints — internal reviews, reviews by other USDA agencies, then other federal agencies, then the OMB, and then back for more internal scrutiny. The stalemate continued. After two months and prompting by senior NRCS officials, it turned out that the USDA officials made a deliberate decision to steer clear of policy recommendations during the tumultuous 2012 election season. Besides the Presidential election, Secretary of Agriculture Tom Vilsack's wife was locked in a heated political race in Iowa (where her husband used to be the Governor).¹⁷⁸⁶ Since, traditionally, a statement of policy accompanied the RCA Conservation Program, writing one became the sticking point. To get around the problem, NRCS staff were working on re-packaging individual chapters for public review and for general consumption.¹⁷⁸⁷ United into one document, the policy analyses sections present a full picture — one that perhaps stimulates concrete policy suggestions. Individually, the sections showcase the types of analyses that could be done.

Does this mean that the NCP will be irrelevant by the time, and if, it materializes? Not necessarily. Few expect the final farm bill to emerge in 2012. More likely, it will be a protracted battle extending beyond the election in November. Plus, this NCP effort was in fact an exercise in policy analysis, not meant to present a recommended policy course. Recommendations have to come later, after many different analyses are completed. Beyond the NCP, however, within

1786. Morton, Joseph, "Vilsack Poses 'toughest Race' for Iowa's King," *World-Herald Bureau* (2012).

1787. Personal Comment, 18.

the agency there seems to be little emphasis on nurturing policy analysis expertise and even less willingness to develop concrete policy recommendations. Yet like in any other federal entity, Congress members and their staff were constantly asking for policy analysis and for policy direction on different issues.¹⁷⁸⁸ CEAP opens many doors for policy analysis, although it is uncertain whether NRCS will want to walk through.

NRCS has gotten savvier about communicating the results to the public, on the other hand. Top NRCS leadership have now regularly participated in the rollouts of CEAP regional reports, and the agency started to develop media strategies to accommodate reporters' requests.¹⁷⁸⁹ The reports generated interest especially among local news outlets and especially in areas with regulatory activities revolving around water quality, although the story was even picked up by the Associated Press.¹⁷⁹⁰

A big part of CEAP's success has been its reliance on and coordination with its partners, especially with other federal agencies including other USDA agencies. Not only did this help leverage resources but also engage supporters from different corners and ensure continued support for the project. Politicians from all sides — when new administrations come in or new Congress members rise in seniority — review programs afresh, so having many groups know and talk about a specific program can help save it. While this strength was recognized at the start of CEAP, NRCS has since disconnected CEAP somewhat from other federal agencies. Hopefully this phase will pass as more results come out and the need to make them meaningful emerges.

1788. Personal Interview, 12.

1789. NRCS, "Conservation Effects Assessment Project Communications Strategy for Upcoming Studies" (Internal Document) (January 21, 2010).

1790. Associated Press, "USDA Official Points to Chesapeake Bay Progress" (2011).

One way for NRCS leaders to reignite the collaborative energy between the CEAP effort and other federal agencies and USDA agencies would be to embark on a major review of how conservation policy is done and how to proceed forward. In other words, the answer would be to design something akin to what was originally intended for the RCA National Conservation Program process. Unlike the recent effort, however, the implication would be to design an actual policy program on which the parties can come together and agree. The current NCP process showcased the capacity to do interesting and useful policy analysis, but it did not support the creation of a united policy direction. So the question is, could CEAP change not just the program assessment culture at NRCS, but also serve to usher in larger change to conservation policy?

Larger policy implications

It is true that research on how management practices impact watersheds — including CEAP — has yielded many cautionary lessons about attributing water quality effects to different sources. It has also yielded many recommendations on how to structure practices for best environmental outcomes. How to entice action based on that information is the pivotal question of the policy debate. To paraphrase one EPA employee, how long can we keep learning the same lessons over and over again?¹⁷⁹¹ We know what needs to be done — a suite of conservation practices — but how to convince farmers to do it is at the bottom of the policy disagreement.

The EPA's position is that the NRCS's approach has not worked. Cross-compliance instituted in 1985 produced a lot of conservation plans and hopes were high that water quality

¹⁷⁹¹ Personal Comment, 6.

would rebound as a result. The head of the National Association of Conservation Districts told Congress in 1992 that “[f]ailure to fully implement cross-compliance will mean that our States’ conservation plans and particularly our nonpoint source water quality plans relating to agriculture will fail.”¹⁷⁹²

But water quality in many ways has not gotten much better, implying that the idea (at least on its own) did not work. By showing how conservation practices contributed to conservation goals, CEAP provided a response. The age-long argument that voluntary programs were working now had better support. Forced by the courts to move forward with regulatory schemes, the EPA naturally disagreed.

One fascinating constant in the policy debate on conservation has been the struggle between regulatory and voluntary approaches. More so than any other element considered in conservation policymaking — but perhaps because it encapsulates most of the other ones — the perennial and existential battle between the two policy approaches shows up everywhere in the narrative. This is the battle that the farmers invoke, the battle that the USDA publicly wages, the battle that the EPA downplays, and the battle that the conservation community carefully steps around. From my reading, over the years nothing else has propelled conservation policy more than the fear of regulatory or federal oversight with the very notable exception of the 1985 Farm Bill. Then it seems that the RCA process and results overshadowed the concerns. And, of course, it was then that the cross-compliance provision made its way through to launch NRCS into new regulatory territory.

Otherwise, major changes came in the 1990 Farm Bill because of the swampbuster

¹⁷⁹² U.S. Government Printing Office "Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985.", p. 18.

provision — another regulatory action. In the following farm bills and years, NRCS worked to stave off regulation on farmers looming from the enforcement of the Endangered Species Act.

The ongoing debate over nonpoint source water pollution only revved up the familiar battle.

But behind the scenes, there was hardly a battle. Federal agencies mostly worked together to channel conservation resources toward mutual goals. So while the rhetoric of a battle has been useful to increase interest in conservation, most productive results on the ground have come in moments of mutual cooperation. But because tension exists purely based on the nature of the regulatory agencies' and the USDA's differing missions, cooperation has broken whenever push comes to shove. It seems that these moments in turn have generated excitement and momentum toward policy change. Out of necessity the parties have come together and united on a policy course. This observation eerily evokes the hypothesis, generated by Mancur Olson, that spurts of economic growth have happened, classically, when established systems and institutions have weakened or collapsed.¹⁷⁹³

Perhaps another breakdown leading to productive change is on the horizon. Lately the CEAP Steering Committee — with representation from the EPA, USGS, NOAA, FSA, ARS, and other federal agencies — has been reduced to a role of passively listening to presentations on the various projects CEAP launched. Future direction was decided within NRCS, although common political pressures helped to steer it toward common goals. NRCS was retreating because it was afraid of how CEAP results could be used and it wanted to protect its future capacity to collect information. The agency wants to protect its clients — the farmers — and it knew that only

1793. Mancur Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (Yale University Press, 1982).

mutual trust guaranteed accurate responses. But the EPA and other agencies were under regulatory (and court) pressure to continue the course. And so the battle went on.

One potential, and hopeful, outcome is that the wrangling will probably work to strengthen conservation efforts, since farmers will be under more pressure to change their practices meaning that they will need more help from NRCS. The goal for either agency is ultimately the same — to see farmers apply a set of conservation practices. The EPA needed NRCS to do that since it has no capacity to do that on its own. The EPA also needed the data from NRCS to carry out its TDL program. Its demand for information disclosures undermines the USDA's capacity to deliver service, so it will not be fulfilled. Given the problem with estimating local loads — a problem well known and acknowledged — the most likely result of the TMDL tug-of-war will be to create “safe harbor” agreements for farmers. They say that if the farmer implements a prescribed set of practices they will be exempt from further regulations. The interplay of the two pressures can fundamentally change the way the USDA operates.

Such practical solutions will no doubt be tested by political winds, which also drove and drive policy strategies that interest groups pursued. Conservation groups for instance have pursued a strategy strongly focused on instituting cross-compliance regulations in the 1985 Farm Bill and the two following bills. It was not a successful strategy in 1996 when the crop insurance compliance was dropped. Momentum shifted toward providing money for conservation rather than finding ways to entice producers to pay for the expenditures themselves. For the next two farm bills, the Conservation Coalition supported putting more money into voluntary programs.¹⁷⁹⁴ Large producer organizations joined suit. One former USDA official said that they “saw the

¹⁷⁹⁴. Personal Interview, 30.

writing on the wall” that conservation programs were much better than the alternative and put their lobbying dollars into high gear.¹⁷⁹⁵ But in 2012 there was a realization that funding for conservation peaked — at least for a while — and would only drop and attention turned back to compliance.¹⁷⁹⁶ The pressure will feed back into the debate on voluntary versus mandated conservation.

Although everyone agreed that the goal was to install conservation practices suited to a desirable environmental outcome, each farm bill cycle produced several new programs — each with its own rules and complications.

Perhaps a useful outcome of CEAP then will be that it prompts a move toward a more flexible payment structure for conservation practices and away from the many programs that make up the USDA conservation program portfolio. The next farm bill (due in 2012, but more likely coming in 2013) is proceeding in that direction by the necessity of the current political situation that demanded budget-cutting and streamlining, so the multiple programs spawned over the years will likely be combined.

It makes practical sense. As a spokesperson for the National Association of Conservation Districts put it, “[i]t does not matter whether it is EQIP or CSP, WRP or CRP; on-the-ground results are what counts.”¹⁷⁹⁷ Consolidation of programs may also free up field personnel’s time to do more technical assistance. The overwhelming amount of paperwork that fell on the shoulders of NRCS staff has been a constant point of criticism from many different participants. For example, the National Pork Producers Council summed up the problem: “[a] tremendous

1795. Personal Interview, 28.

1796. Personal Interview, 30.

1797. U.S. Government Printing Office "Food, Conservation, and Energy Act of 2008.", p. 18.

quantity of NRCS's staff time in the field and in headquarters is consumed by developing new policies and learning new programs' delivery requirements that come from Farm Bill innovations."¹⁷⁹⁸ In response to this ever-present complaint, the current NRCS Chief launched the awkwardly named "90-percent Solution" — a reference to the goal of having technical staff spend 90 percent of their time in the field.

While currently the move toward more field work and program consolidation is happening in response to political considerations, in future years, such streamlining may happen directly because of CEAP.

Even more importantly, CEAP can help tailor practices recommendations to the landscape avoiding the one-size-fits-all approach.

As CEAP expands its scope nationally, its capacity to identify problematic areas and to design an appropriate response will be unmatched (it is already unprecedented). Because the most useful results focus on practices and not on programs, it will make more sense to develop cost-sharing techniques around the conservation treatments needed. If programs become less cumbersome to administer, goodwill between NRCS and the producers — the most valued currency for the agency — may be rekindled. And if concrete results emerge, the incentive to participate may increase. Who knows, perhaps NRCS could then entice more farmers to participate in its initiatives.

Progress depends on whether the right conservation practices are applied to the right places. Unfortunately, the right places do not necessarily align with the places favored by the political system. For Congressional members targeting is an anathema. They want to assure that

¹⁷⁹⁸ U.S. Government Printing Office "Review of USDA Farm Bill Conservation Programs.", p. 180.

their constituency has access resources comparable to or superior to those available to any other constituency. The concept of regional equity — a favorite of the policymakers in the Northeast — is completely counter to the goal of targeting. It is, however, in line with the goal of making conservation an entitlement, albeit one based on contractual obligation.

This is not a bad concept because conservation is needed everywhere. It is just needed in some places more. Where depends entirely on how the goals are parceled and defined.

Currently, the definition revolves primarily around soil erosion control. It is ideal as a goal because it encompasses more parameters than first meet the eye. Chemicals like nitrogen, phosphorous, and pesticides attach to the soil particles and wash away with erosion causing water quality problems. Erosion is also a convenient targeting tool simply because this is what the NRI was designed to handle and data are available for use. For the time being, the lack of comparable datasources preclude the use of other potential goals. CEAP could change that with the development of new tools to account for other ecosystem services like wildlife habitat. Of course, if a different goal was used to prioritize conservation activities, different geographical areas would be affected. The main point of this discussion is that because distribution of conservation depends on the goal chosen, nearly every field could be affected. In other words, every field could benefit from conservation in some way.

Some goals are more politically advantageous to adopt than others. Soil erosion was particularly enticing at the beginning because it represented a direct danger to a farmer's long-term productivity, although the severity was reportedly overblown. The analysis in the first RCA found that given the soil erosion rates prevailing in 1977, the yields would not be much lower

than with established erosion control in most regions by 2030.¹⁷⁹⁹ By the 1980s, the real negative implication of soil erosion was evident and it involved water quality and the transport of chemicals attached to soil particles. But another dimension also became evident — the CRP set-aside program initiated to control erosion turned out to do wonders for wildlife, which excited not only the conservation community but also outdoor enthusiasts and the associated industries. Groups popped up dedicated to increasing the numbers of species with the right economics like pheasants, ducks, or trout. This speciation — to use an apt-sounding evolutionary term for an entirely different purpose — has resulted in the collection of information relevant to individual species rather than supporting entire habitats. So while pheasant numbers and expenditures related to hunting receive enormous attention in Congress, larger problems like monocropping receive none.

Although monocropping is pervasive and is detrimental to wildlife communities — imagine unbroken thousands of acres of monocropped corn in Iowa or Kansas uninhabitable by nearly any wildlife, the issue hardly gets any attention. It is not in anyone's interest to bring it up. Another similar issue is pesticides and the interactions of the hundreds of active ingredients in waterways. Because of the sheer number of pesticides in use, teasing out effects is time-consuming and expensive and political incentives seldom predispose to investigation.

The trade-off between different practices also complicates matters. Some practices have unintended consequences. For example crop residue management (*i.e.*, conservation tillage) became increasingly popular in the 1980s. Already in the early 1990s more than two-thirds of

1799. USDA "1980: Appraisal, Part I."

conservation plans involved crop residue management (*i.e.*, conservation tillage).¹⁸⁰⁰ But cover crops made hospitable environments for certain pests like the scab or the Hessian fly outbreaks on wheat, necessitating more frequent use of herbicides.¹⁸⁰¹ Other times practices that decrease surface runoff may increase sub-surface runoff neutralizing the effect on a watershed.

Regardless of what issue is under discussion, the disconnect between designing policy responses even in light of information is wide. For example, the NRI provides ample evidence that prime farmlands are disappearing to development in certain areas of the country. Some argue that this was the original issue that propelled conservation to the top of the national agenda in the 1970s,¹⁸⁰² and it is true that land use change was the prevailing topic that decade. But feasible policy alternatives needed to stop the momentum are scarce. The government can hardly compete with rising real estate prices, and the current process that allows for local organizations to purchase easements can save just a tiny portion. The conversation on the topic has not died down over the years, however, although novel policy suggestions are rare. Again, the NRI deals with this topic, so availability of information has allowed for farmland protection to stay prominent despite the lack of viable policy alternatives to actually correct the situation.

Another favorite topic that has not receded over the years and that has been entirely disconnected from actual policy alternatives is food security across the world. Clearly food availability in developing nations is a global problem and with rising populations is a daunting challenge. But this has been the case for many years, and the framing of the issue from the

1800. U.S. Government Printing Office "Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985.", p. 39.

1801. U.S. Government Printing Office "Conservation Compliance Provisions of the 1985 Farm Bill.", p. 30.

1802. Personal Interview, 41.

USDA's and the farming community's perspectives has not changed significantly since the 1950s. The argument is that American farmers have a responsibility to feed the world — a goal that is possible only through increased yields and intensification of practices. A quick reflection on the goals of our national agricultural policy, however, reveals a picture entirely inconsistent with the lofty rhetoric. The main goal of our agricultural policy — as it probably should be — is to provide an income safety net for farmers. Historically, this has translated into boosting prices by decreasing risk or by direct intervention. Theoretically, because high prices benefit farmers and so the goal of agricultural policy, the entire system should be designed to work against overproduction. This would have been achieved in the 1930s when Congress sanctioned a bill supported by producers to tax themselves to control production levels had the Supreme Court not struck down the key provisions (as described in more detail earlier). Instead, to prop up prices, the USDA has had to resort to more creative solutions like acting as another buyer to take surpluses off the market or negotiating free trade agreements to allow foreign markets to gobble up the extras. None of it has to do with feeding the world or the needy. All of it has to do with a careful preplanned attempt to control the forces of supply and demand. In agriculture, such forces are unpredictable and powerful since they depend not only on foreign relations but also on Mother Nature.

Helping poorer nations provide food for their citizens depends on other policy interventions — perhaps ones that focus on developing the local knowledge and capacity to establish their own sources of food and sustainable agricultural production. Truth be told, because such an outcome limits the worldwide demand for American agricultural goods, it is not in the financial interest of the producers or their representatives in Congress. Of course, while

everyone wants to help fight hunger and malnutrition, boosting our exports may not be as useful as transfer of knowledge. This point rarely gets mentioned in the frequent speeches on the need for American farmers to feed the world. [Not to say that the USDA does not participate in transfer. In fact, NRCS used to send soil scientists to other nations to help map the soil profile of their landscapes.]

The trend with the types of arguments used in conservation policy is that information — like the NRIs — definitely drive the discussion one way or another. What we measure drives what we talk about and what we continue to measure. But it is also true that information does not spontaneously arise but is created by interested parties. They choose what to present and what not to present. They also choose how to structure the conversation around it. Every time the farm bill is argued, new types of information float around to reinforce the same arguments. Long-term and reliable information, however, is much rarer. Eventually, despite the desired spin someone may want to apply to it, an accurate picture emerges from which there is little escape. Multiple goals complicate that picture, and the challenge for CEAP will be to optimize and combine them in a meaningful way. It will also need to move beyond soil erosion and toward uncharted territory.

In the hands of imaginative policy researchers, CEAP could be used to provide pioneering analysis on novel technological advances. For instance, new techniques for measuring the size of underground water aquifers can guide analysis focused on water security (another salient topic).¹⁸⁰³ There is no limit to what could be tested. Researchers are exploring

¹⁸⁰³ Wald, Chelsea, "Uncharted Waters: Probing Aquifers to Head Off War," *New Scientist*, no. 2851 (2012).

ways to harvest electrons from roots in soils, and CEAP could be used to look at the potential national output.¹⁸⁰⁴

Perhaps the most effective lasting impact CEAP can have on policy is to forge further collaboration. CEAP includes many participants and research partners and it has many supporters among politically active interest groups, which helps not only continue its activities but steer policy toward a more science-based framework. The trick will be to move beyond agreement on facts and toward agreement on policy. To achieve that, CEAP has to be integrated into a true RCA National Conservation Program, one whose goal is to actually establish a national program. CEAP can serve as the foundational piece by bringing together different interests.

A big threat to this potential is the lack of sharing information and data. This stems from the EPA's need to get serious about regulation, and the USDA is right to be cautious. The lower down to the ground the modelers get, the harder it becomes to protect the privacy of farmers. Perhaps the only way to proceed is for the EPA to contract out that piece of modeling to NRCS, essentially what has been done through CEAP. However much do researchers dream of open-access data,¹⁸⁰⁵ the intricacies of policy-making demand protection of information.

The most dramatic changes in conservation policy have occurred when there has been strong mutual collaboration between all parties. This was true with the two most significant pieces of legislation in modern history of conservation, the 1985 and 2002 Farm Bills. The 1985 Farm Bill came out of broad agreement over the extent of the problem — defined as soil erosion

1804. Caroline Williams, "Power Plants: Grow Your Own Electricity," *New Scientist* 2851 (2012).

1805. W Yang, "Developing Open Access in Conservation Research," *Journal of Soil and Water Conservation* 66, no. 1 (2011): doi:10.2489/jswc.66.1.6A.

then primarily through the NRI and the RCA appraisal — between producers and the environmental community after several years of deliberation. Similarly, the 2002 Farm Bill came as a result of the two sides working together. This time, the deliberation revolved around the potential regulatory threat from stricter enforcement of the Clean Water Act and the Endangered Species Act. In other words, the side promoting voluntary conservation through financial incentives was only able to achieve its goals because of regulatory fears. Collaboration across different perspectives is key to continued progress.

The environmental side has achieved collaboration to a respectable degree. Following the 1985 Farm Bill, the major groups formed a Conservation Coalition composed of many different groups to work on agricultural-environmental policy issues. One participant in the Coalition remembered the prevailing sense of urgency among members to ensure that producer groups were on board with the plan.¹⁸⁰⁶ Throughout the years, some groups retreated closer to their niche mission and at times conflicts over resources obscured common goals.¹⁸⁰⁷ As one conservation activist put it — different groups can agree on top 10 priorities but their top 3 priorities will not align. The number of groups participating in the debate has grown considerably since the 1980s contributing many more opinions and interests to the process mix.¹⁸⁰⁸ This makes a coordinated policy strategy harder to achieve. One conservationist explained that to make decisions one now needs to get 200 people to agree, while in the 1980s a small conference room would suffice.¹⁸⁰⁹ When a lot of money for conservation became

1806. Personal Interview, 33.

1807. Personal Interview, 33.

1808. Personal Interview, 30.

1809. Personal Interview, 33.

available in the 2002 Farm Bill, synergies broke down as each group fought for its own piece. One staffer commented that it became a “degenerate process.”¹⁸¹⁰ Nonetheless, for the most part, the coalition kept going strong because, given the extent of private lands in the country, agricultural production touched on most environmental issues of interest. As a result, NRCS has enjoyed fairly broad support for its programs, which translated into many different groups testifying on their behalf to Congress.

It should be noted that some of the policy analysts from the environmental and the conservation communities had intimate familiarity with NRCS because they came from the agency’s ranks. As a result, many know not only NRCS programs, but also the NRIs and the RCA process. CEAP enjoys popularity among the groups because they see it as the next step forward in targeting. And because CEAP’s results tell the farmers’ side of the story, producer groups have used CEAP reports to demonstrate the benefits of their actions. The Corn Growers Association in particular often refers to CEAP and its work.¹⁸¹¹ A conglomerate of producer groups sent a letter to the Chairman of the Subcommittee on Agriculture in the House Appropriations Committee asking for an additional \$7 million in funding.¹⁸¹² Importantly, the OMB has come out in support of the targeting approach used for CEAP regional reports.¹⁸¹³ It also fully supported the integration of CEAP across other NRCS deputy chief areas.¹⁸¹⁴ So even within the 2011-2012 political climate of slashing budgets — including deep cuts for research

1810. Personal Interview, 7.

1811. CEAP Steering Committee Meeting, May 16, 2012.

1812. Producer Associations, "Letter to the Chairman of Subcommittee on Agriculture, House Committee on Appropriations," *About CEAP funding* (May 9, 2011).

1813. CEAP Steering Committee Meeting, January 21, 2011.

1814. NRCS, "CEAP OMB Passback Briefing," *Internal Communication* (March 14, 2011).

agencies like ARS and NIFA and cuts in operational costs within NRCS (in one communicate the Chief encouraged directors to consider student programs and detailed positions to meet staffing needs)¹⁸¹⁵ — CEAP came out fairly decently.

CEAP was able to get carryover funds from other areas at the beginning of 2011. The Appropriations bill for Fiscal Year 2012 gave an extra \$5 million to CEAP, although because of cuts to other departments only an extra \$3 million actually ended up going to CEAP.¹⁸¹⁶ At the same time, the Soil Survey division was reorganized, dozens of positions eliminated, and the division was re-created as a Soil Science Division.¹⁸¹⁷ The extra funding also shows a strong commitment to CEAP from the OMB. This is a hopeful sign for future work. On the other hand, the OMB may count on future CEAP results to argue for the elimination of certain programs. Similarly, some environmental groups rally around CEAP with the idea that analysis will prove voluntary programs insufficient.¹⁸¹⁸ It will be up to the CEAP team to show that applying different goals spreads out the conservation workload in a different geographical pattern, implying that while targeting is necessary to work on a specific issue, conservation to some degree is necessary everywhere. The established framework of conservation districts found in nearly every county in the United States has provided such baseline assistance. Implementation of focused initiatives should not affect their work.

1815. NRCS, "Budget Issues - Notes From Chief at State Conservationists Teleconference" (February 10, 2010).

1816. NRCS, "USDA Conference Report Is Out," *Internal Communication* (November 15, 2011).

1817. Personal Interview, 43.

1818. Personal Comment, 27.

In fact empowering locally led conservation should be the ultimate goal since it can help not only conservation delivery but can also be a powerful tool for estimating progress.

CEAP could become a priority-vetting mechanism at regional-watershed scale. It might also become the scaffold upon which the future National Conservation Program could be built. Political backing for such a Program would not be easy to secure. Perhaps CEAP could generate demand for a new collaborative policy strategy based on its scientific framework, thereby committing the foreboding but inevitable *faux pas* in policy theory of mixing science and policy questions.

Appendix A: List of speeches analyzed

Period	Source	Organizational Level	Dates	Number of Speeches
1	National Archives in College Park, MD	USDA	February 23, 1954 to December 19, 1958	2
	National Archives	NRCS	April 17, 1969 to February 26, 1970	10
	National Archives	NRCS	September 15, 1971 to March 22, 1977	99
	National Archives	USDA	March 7, 1974 to November 26, 1976	83
	National Archives	NRCS	April 30, 1981	2
2	National Archives	NRCS	July 14, 1985 to August 22, 1986	32
	National Archives	NRCS	September 2, 1986 to April 9, 1987	30
	National Archives	NRCS	July, 1987	2
	National Archives	NRCS	February 23, 1987 to November 10, 1987	3
	National Archives	NRCS	April 17, 1987 to April 6, 1988	36
	National Archives	NRCS	October, 1991	1
	National Archives	NRCS	September, 1991	2
	National Archives	NRCS	January to December, 1996	2
	USDA Website	USDA	January to December, 2001	40
3	USDA Website	USDA	January to December, 2002	88
	USDA Website	USDA	January to December, 2003	123
	USDA Website	USDA	January to December, 2004	4
	NRCS Records Office	NRCS	January, 2002 to December, 2004	157
	USDA Website	USDA	January to December, 2005	2
	USDA Website	USDA	January to December, 2006	7
	USDA Website	USDA	January to December, 2008 to 2012	52
	Web search	NRCS	Multiple years from 2002 to 2006	19
Totals	Period 1, subtotal			196
	Period 2, subtotal			148
	Period 3, subtotal			452
	Total			796

Appendix B: Description of program categories

The detailed data on historical allocations to programs came from the irreplaceable NRCS history office. Doug Helms, NRCS historian from 1981 to 2011, and his team provided both nominal and real data for all USDA conservation programs on the national level from 1936 to 2010. For the purposes of summarizing the data in categories, I assigned the following programs to categories:

- Conservation Operations: Conservation Operations Program, from 1936 to present; and Emergency Erosion Control, from 1940 to 46.
- SCS/NRCS Land Retirement: Land Utilization Program, from 1937 to 1950; Wetland Reserve Program, from 1992 to 2012; Grassland Reserve Program, from 2003 to present; Healthy Forests Reserve Program (option for easement or cost-share), from 2006 to 2012.
- SCS/NRCS Structural Activities: Watershed and Flood Prevention Operations, from 1947 to 2012; Water Conservation & Utilization Projects, from 1947 to 1960; Watershed Planning, from 1965 to 1995; River Basin Surveys and Planning, from 1969 to 1995; Watershed Surveys and Planning, from 1996 to 2008; Watershed Rehabilitation Program, 2002 to 2012.
- SCS/NRCS Cost-share programs: Great Plains Cons Program, from 1958 to 2001; Colorado River Salinity Control, from 1987 to 2002; Environmental Quality Incentives Program, from 1996 to 2012; Wildlife Habitat Incentives Program, from 1998 to 2012; Agricultural Management Assistance, from 2001 to 2012.
- SCS/NRCS Farmland protection: Farm and Ranch Lands Protection Program, 1997 to 2012.

- SCS/NRCS Rural development: Resource Conservation & Development Program, from 1958-2011.
- NRCS Green ticket: Conservation Stewardship and Security Program, from 2003 to 2012.
- ASCS/FSA Land retirement: Soil Bank, from 1956 to 1972; Conservation Reserve Program, 1986 to 2012.
- Other ASCS/FSA Programs: Agricultural Conservation Program, from 1937 to 2002; Emergency Conservation Program, from 1968 to 2007; Water Bank Program, from 1983 to 1996; Forest Incentives Program, from 1984 to 2003; Conservation Farm Option, 1998; Grassroots Source Water Protection, from 2002 to present; Biomass Research and Development, from 2003 to 2005; Emergency Forestry Conservation Reserve, from 2007 to 2009; Voluntary Public Access Incentive Program, from 2008 to 2012.

The totals for all the programs equal a hundred percent of the USDA conservation program budget. I select the resultant categories for analysis as appropriate.

Appendix C: Hearings reviewed

Period	Date	Title of the Hearing	Chamber	Committee
1	August 3-4, 1976	Resource Conservation	House	Subcommittee on Conservation and Credit
	April 11, 1977	Soil Conservation	Senate	Subcommittee on Environment, Soil Conservation, and Forestry
	August 2, 4, 1977	Protection and Enhancement of Soil and Water Resources	Senate	Subcommittee on Environment, Soil Conservation, and Forestry
	July 29, 1980	Session on S.1942 Resource Conservation and Development Program	Senate	Subcommittee on Environment, Soil Conservation, and Forestry
	March 12, 13, 16, 1981	General Farm Bill, Part 6	House	Subcommittee on Conservation, Credit, and Rural Development
	April 20-22, 1981	General Farm Bill, Part 9	House	Full Committee on Agriculture
	May 4, Sept 20, 1983	Miscellaneous Conservation	House	Subcommittee on Conservation, Credit, and Rural Development
	May 4, July 6, Oct 8, 1984	Long-Term Farm Policy To Succeed the Agriculture and Food Act of 1981. (Conservation and Credit Programs), Part 4	House	Subcommittee on Conservation, Credit, and Rural Development
	February 28, 29, 1984	Long-Term Farm Policy To Succeed the Agriculture and Food Act of 1981, Part 1	House	Full Committee on Agriculture
	August 17, 31, September 5, 1984.	Farm and Food Programs	Senate	Subcommittee on Agricultural Production, Marketing, and Stabilization of Prices
	March 5, 20, 21, April 24, May 17, 18, 1985	General Farm Bill of 1985, Part 1	House	Full Committee on Agriculture
	March 26, 29, April 4, May 13, 1985	General Farm Bill of 1985, Part 2	House	Subcommittee on Conservation, Credit, and Rural Development
April 1-4, 15, 18, 24, 25, 1985.	Reauthorization of the Agriculture and Food Act of 1981, Part II	Senate	Full Committee on Agriculture	

2	March 5, 10-12, 26, 1987.	Overview of the Agencies and Programs Under the Jurisdiction of the Subcommittee on Conservation, Credit, and Rural Development	House	Subcommittee on Conservation, Credit, and Rural Development
	April 9, 1987.	Implementation of and Amendments to the Conservation Title of the Food Security Act; and the Lower Des Plaines Tributaries Watershed Project, Illinois	House	Subcommittee on Conservation, Credit, and Rural Development
	January 19, 1988.	Review of the Conservation Reserve Program: Georgia Forestry Commission	Senate	Subcommittee on Conservation and Forestry
	March 24, 1988	Oversight of Conservation Programs	Senate	Subcommittee on Conservation and Forestry
	March 28, April 13, 1988.	Review of the Soil and Water Conservation Provisions of the Food Security Act of 1985	House	Subcommittee on Conservation, Credit, and Rural Development
	May 23, 1988.	Review of Soil and Water Conservation Programs Mandated Under the Food Security Act of 1985; And Current and Developing Technologies and Research Being Employed in Today's Poultry and Egg Industries	House	Subcommittee on Conservation, Credit, and Rural Development
	August 9, 1988	Implementation of Soil Conservation Title XII of the Food Security Act of 1985	House	Subcommittee on Conservation, Credit, and Rural Development
	October 4, 1988	Soil Conservation Service's Implementation of the Soil Conservation Provisions of the Food Security Act of 1985	Senate	Subcommittee on Nutrition and Investigations
	September 11, 1989.	Preparation for the 1990 Farm Bill, Part V	Senate	Full Committee on Agriculture
	October 24, 1989.	Water Quality Protection	Senate	Subcommittee on Conservation and Forestry
	March 8, 1990.	Formulation of the 1990 Farm Bill. Part 13 (Conservation Title)	House	Subcommittee on Conservation, Credit, and Rural Development

	March 15, 1990.	Formulation of the 1990 Farm Bill. Part 12 (Water Quality and Environmental Proposals)	House	Subcommittee on Department Operations, Research, and Foreign Agriculture and Subcommittee on Conservation, Credit, and Rural Development
	May 7, 1992.	Implementation of the Conservation Compliance Provisions of the Food Security Act of 1985	House	Subcommittee on Conservation, Credit, and Rural Development
	August 2, 1994.	Review of the Budget and Policy Consequences of Extending the Conservation Reserve Program	House	Subcommittee on Environment, Credit, and Rural Development
	August 11, 1994	Conservation Compliance Provisions of the 1985 Farm Bill	House	Subcommittee on Environment, Credit, and Rural Development
	September 1, 1994.	Future of the Conservation Reserve Program	House and Senate	Subcommittee on Environment, Credit, and Rural Development; and Subcommittee on Agricultural Research, Conservation, Forestry, and General Legislation
	March 14, 1995	Conservation, Wetlands, and Farm Policy	Senate	Full Committee on Agriculture
	April 18, May 18, 24, 1995.	Formulation of the 1995 Farm Bill, Part 2	House	Subcommittee on Resource Conservation, Research, and Forestry
	April 21, 25, 26, May 19, 27, 1995.	Formulation of the 1995 Farm Bill, Part 1	House	Full Committee on Agriculture
	June 6, 1995.	Resource Conservation	Senate	Subcommittee on Forestry, Conservation, and Rural Revitalization
3	March 31, 2000.	Review of the Conservation Reserve Program, Conservation Reserve Enhancement Program, and Other Conservation Matters Affecting U.S. Agriculture	House	Subcommittee on General Farm Commodities, Resource Conservation, and Credit
	February 28, March 1, 2001.	Conservation	Senate	Full Committee on Agriculture

May 23, June 6, 9, 20, 16, 27, 2001	Formulation of the 2002 Farm Bill	House	Subcommittee on Conservation, Credit, Rural Development, and Research
June 28, 2001.	New Federal Farm Bill	Senate	Full Committee on Agriculture
October 27, 2001.	Farm Bill Issues	Senate	Full Committee on Agriculture
July 25, 2001	To Discuss How Farm Bill Programs can Better Support Species Conservation	Senate	Subcommittee on Forestry, Conservation, and Rural Revitalization
May 1, 2006; July 27th, 2006; September 18, 2006	Review of Federal Farm Policy	House	Subcommittee on Conservation, Credit, Rural Development, and Research
August 11, 2006.	Field Hearing on 2007 Farm Bill	Senate	Subcommittee on Forestry, Conservation, and Rural Revitalization
January 17, 2007.	Working Land Conservation: Conservation Security Program and Environmental Quality Incentives Program	Senate	Full Committee on Agriculture
February 14, 2007	Hearing to review the 2007 FB proposals of the USDA	House	Full Committee on Agriculture
April 9, 2007	Review of USDA Farm Bill Conservation Programs	House	Subcommittee on Conservation, Credit, Energy and Research
May 1, 2007	Conservation Policy Recommendations for the Farm Bill	Senate	Full Committee on Agriculture
October 7, 2009	Hearing to Review the Implementation of the Conservation Title of the Farm Bill	House	Subcommittee on Conservation, Credit, Energy, and Research
February 28, 2012	Strengthening Conservation through the Farm Bill	Senate	Full Committee on Agriculture

Appendix D: Description of Congressional data on hearings conducted and public opinion data

To do broad analysis of trends among state representation in Congress and public opinion, I rely on the data collected as part of the Policy Agendas Project at the University of Texas at Austin and on the data hosted by Charles Stewart of Massachusetts Institute of Technology through his webpage. Specifically, from the Policy Agendas Project I use the data on the topics discussed during nearly 90,000 congressional hearing from 1946 to 2008. The researchers split the topics into 20 major categories with multiple subtopics. This provided an opportunity to put conservation into broader policy discussions. The Policy Agendas Project also provided the data on the Gallup Poll's most important issue from 1946 to 2007, split along the same categories of topics.

From Charles Stewart's page, I used the data on membership of congressional committees from 80th to 102nd Congress and from 103 to 111th Congress (the two datasets came split into those years and required merging). The data for the earlier Congresses came from Garrison Nelson, while the latter period came from Charles Stewart III and Jonathan Woon. From the same page, I also used the House Committee Request data compiled by Scott Frisch and Sean Kelly.¹⁸¹⁹

The full disclaimer of the Policy Agendas Project reads:

"The data used here were originally collected by Frank R. Baumgartner and Bryan D. Jones, with the support of National Science Foundation grant numbers SBR 9320922 and 0111611, and were distributed through the Department of Government at the University of Texas at Austin. Neither

1819. Stewart, Charles "Charles Stewart's Congressional Data Page."

NSF nor the original collectors of the data bear any responsibility for the analysis reported here."¹⁸²⁰

1820. Baumgartner, Frank; and Jones, Bryan "Policy Agendas Project."

Appendix E: Description of program data analysis

The finer level statistical correlations and regressions (when data allows) come from several data sources. For program funds for 1983 (the first year available) to 2000, I used figures for conservation operations' obligations listed in the NRCS Green Sheets, developed for the President's budget. From 2001 to 2010, I used the figures provided by the NRCS strategic planning division. Since the goal was to look at how NRI information may have impacted allocation of resources, I assumed that the previous cycle's NRI data would have been used in the intervening years (*i.e.*, the same 1982 NRI data was filled in for years 1983 to 1986, etc.). For more recent and detailed program information by state, I used the data collected by the Environmental Working Group through FOIA requests. Coming from my own experience of unanswered FOIA requests filed with the USDA, I appreciate the tenacity of the Group's efforts.

Other data sources include ERS/USDA data on agricultural productivity, use of inputs, and exports; NASS survey data on broad farm trends such as number of operations and acreage; NRI data on land use trends and erosion rates; and FSA data on CRP acres.

For committee representations for each state, I calibrated the seats represented by each state to the number of seats the state was allotted (as determined by the decennial Census). A state's representation on the subcommittees was indicated by the number of seats it held — usually a 1 or a 0, although in rare cases 2 or more, mimicking a Poisson distribution. For the statistical analysis portion, I included several types of variables. For committee representations for each state, I calibrated the seats represented by each state to the number of seats the state was allotted (as determined by the decennial Census). A state's representation on the subcommittees was indicated by the number of seats it held — usually a 1 or a 0, although in rare cases 2 or

more, mimicking a Poisson distribution. Chairmanship of Agriculture or Appropriations Committee is a 1 or a 0 for each state and includes ranking minority members and chairmanship positions and ranking minority member of the conservation subcommittees. Vice chairmen were also included, if indicated as such. The data came from Congressional Directories and was coded by me.

To do statistical correlations for the first period, I matched up the available program data to the NRI data from the closest year with available program information. For example, only 1983 program data was available, so the 1982 NRI data was correlated with the 1983 funding. This was not necessary for the second or the third periods. Whenever regression models with panel data were used, I utilized fixed effects to control for unobserved state-to-state variables. The results are reported in the text. Detailed results are reported in the following appendix.

Appendix F: Results of the statistical analysis

Up to 1983, few data are available either for program expenditures or for conservation problems. In the National Archives at College Park, I located state-level expenditures for the Conservation Operations Program in 1955 and the Agricultural Conservation Program in 1954. The Conservation Needs Inventory in 1958 provided state-wide information on acres needing conservation treatments. I also found data on acres under USDA conservation treatment for 1967. The 1967 Conservation Needs Inventory provided water erosion numbers for that year and conservation treatment needs. The 1977 NRI also gave information on acres needing treatment and water erosion. The following table looks at the correlations between variables of interest. Scarcity of data prevented the possibility of a meaningful time-series regression analysis. Hawaii and Alaska were excluded.

Table 4. Correlations for Variables of Interest with Data on Resource Concerns and SCS Program Expenditures. ACP is Agricultural Conservation Program; CO is Conservation Operations.

	1954			1955			1958		
	ACP (1954 data)	CO (1955 data)	Acres in Need of Treatment (1958 data)	ACP (1954 data)	CO (1955 data)	Acres in Need of Treatment (1958 data)	ACP (1954 data)	CO (1955 data)	Acres in Need of Treatment (1958 data)
Acres in Farms	0.7128*** (0.0000)	0.5686*** (0.0000)	0.7630*** (0.0000)	0.7103*** (0.0000)	0.5684*** (0.0000)	0.7624*** (0.0000)	0.7022*** (0.0000)	0.5677*** (0.0000)	0.7616*** (0.0000)
Senate Agriculture Committee	0.0562 (0.7042)	0.0814 (0.5863)	0.2046 (0.1630)	0.1526 (0.3005)	0.0645 (0.6665)	0.2551* (0.0801)	0.2098 (0.1523)	0.0282 (0.8509)	0.2974** (0.0401)
Senate Appropriations Committee	-0.1761 (0.2311)	-0.0340 (0.8208)	-0.1225 (0.4067)	0.1181 (0.4239)	0.2187 (0.1398)	0.0602 (0.6846)	0.0768 (0.6040)	0.1426 (0.3391)	0.0488 (0.7420)
House Agriculture Committee	0.3205** (0.0264)	0.0987 (0.5094)	0.2742* (0.0593)	0.2084 (0.1552)	0.0455 (0.7613)	0.2181 (0.1364)	0.2079 (0.1561)	0.0441 (0.7686)	0.3426** (0.0172)
House Appropriations Committee	0.0233 (0.8749)	-0.0797 (0.5944)	0.0579 (0.6959)	-0.0018 (0.9903)	-0.0531 (0.7230)	-0.0974 (0.5102)	0.0465 (0.7535)	-0.0424 (0.7771)	-0.0791 (0.5929)
Government Payments (All USDA payments)	0.8402*** (0.0000)	0.7116*** (0.0000)	0.7757*** (0.0000)	0.8564*** (0.0000)	0.6986*** (0.0000)	0.7030*** (0.0000)	0.9449*** (0.0000)	0.5937*** (0.0000)	0.7852*** (0.0000)
	1967		1977						
	Acres in SCS Programs	Water Erosion	Acres in Need of Treatment	Water Erosion					
Acres in Farms	0.4551*** (0.0012)	0.181 (0.2183)	0.6676*** (0.0000)	-0.1294 (0.3807)					
Senate Agriculture Committee	-0.0825	0.0224	0.3156**	0.2008					

*** p<0.01, ** p<0.05, * p<0.1

	(0.5773)	(0.8801)	(0.0289)	(0.1710)
Senate Appropriations Committee	0.2544* (0.0809)	-0.1242 (0.4004)	-0.1243 (0.3998)	0.1390 (0.3462)
House Agriculture Committee	0.3824*** (0.0073)	0.1606 (0.2755)	0.2876** (0.0475)	0.0866 (.5585)
House Appropriations Committee	-0.0957 (0.5175)	-0.1834 (0.2122)	0.0078 (0.9579)	0.0288 (0.8461)
Government Payments (All USDA payments)	0.6208*** (0.0000)	0.1505 (0.3073)	0.6917*** (0.0000)	-0.0940 (0.5252)

Consistent data on conservation operations expenditures do not appear until 1983. A regression analysis with the data becomes possible. For details on the Congressional representation figures, see Appendix E. The results are below. In parenthesis under each coefficient is the standard error. Hawaii and Alaska are excluded from the results.

Table 5. Regression Model Results for 1983, the first year conservation operations expenditures are available.

VARIABLES	(1) Conservation Operations, \$	(2) Conservation Operations, \$	(3) Conservation Operations, \$	(4) Conservation Operations, \$	(5) Conservation Operations, \$
Working Lands, 1000s acres	122.1*** (12.84)	129.6*** (10.09)	97.58*** (13.60)	103.3*** (14.44)	90.95*** (17.29)
Water Erosion, total, tons per acre per year		573,606*** (103,176)	393,746*** (109,562)	419,618*** (113,084)	316,478* (159,309)
Prime Farmland, 1000s acres			139.3*** (43.58)	118.1** (47.91)	146.2** (54.96)
Senate Agriculture Committee Membership				148,605 (181,468)	-113,938 (246,440)
House Agriculture Committee Membership				-80,126 (95,990)	-55,134 (115,735)
House Appropriations Committee Membership				41,940 (40,198)	25,240 (45,470)
Senate Appropriations Committee Membership				-41,175 (217,070)	-21,139 (342,360)
Chair of Agricultural Committee					445,880 (945,668)
Chair of Appropriations Committee					-567,265 (605,340)
Senate Subcommittee on Conservation/Ag Committee					1.390e+06 (950,560)
Senate Subcommittee on					215,672

Agriculture/ Appropriations Committee					(762,689)
House Subcommittee on Conservation/Ag Committee					-88,922 (677,136)
House Subcommittee on Agriculture/ Appropriations Committee					627,321 (674,032)
Constant	3.576e+06*** (401,419)	1.346e+06** (508,438)	1.659e+06*** (473,472)	1.527e+06** (570,075)	1.842e+06** (720,357)
Observations	48	48	48	48	48
R-squared	0.663	0.800	0.838	0.847	0.860

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The second and the third periods are analyzed in two ways. The first assumes that the 5-year figures for the NRI data can be extended forward and so performs a panel data regression model with state-level fixed effects. The second way considers only the available data at 5-year intervals and presents a panel data regression model with state-level fixed effects and dummy variables for the years. The results for the period from 1985 to 2001 are below. Working lands here means the sum of cropland, rangeland, and pasture land acres. In parenthesis under each coefficient is the standard error.

Table 6. Panel Data Regression Model Results with State-level Fixed Effects, for 1985 to 2001. The years in between NRI data collections are filled in with previous NRI data.

Years 1985 to 2001, continuous	(1)	(2)	(3)	(4)	(5)
	Conservation Operations, \$				
VARIABLES					
Working Lands, 1000s acres	-3,064*** (126.1)	-2,650*** (142.1)	-2,872*** (178.0)	-2,899*** (178.2)	-2,940*** (179.5)
Water Erosion, total, tons per acre per year		-946,618*** (161,460)	-1.089e+06*** (175,191)	-1.079e+06*** (174,875)	-1.099e+06*** (177,496)
Prime Farmland, 1000s acres			3,174** (1,538)	3,065** (1,542)	3,590** (1,567)
Senate Agriculture Committee Membership				-95,089 (106,290)	48,914 (120,622)
House Agriculture Committee Membership				-177,987*** (66,049)	-179,050** (70,690)
House Appropriations Committee Membership				-39,575 (54,684)	-66,226 (56,072)
Senate Appropriations Committee Membership				-95,512 (120,704)	-155,229 (142,941)
Chair of Agricultural Committee					-330,651 (314,782)
Chair of Appropriations Committee					-115,327 (309,521)
Senate Subcommittee on					-614,956**

Conservation/Ag Committee					(298,934)
Senate Subcommittee on Agriculture/ Appropriations Committee					205,273 (323,079)
House Subcommittee on Conservation/Ag Committee					121,711 (155,038)
House Subcommittee on Agriculture/ Appropriations Committee					326,903 (233,395)
Constant	6.896e+07*** (2.435e+06)	6.384e+07*** (2.539e+06)	4.640e+07*** (8.820e+06)	4.818e+07*** (8.866e+06)	4.526e+07*** (9.102e+06)
Observations	816	816	816	816	816
R-squared	0.435	0.459	0.462	0.468	0.474
Number of States	48	48	48	48	48

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7. Panel Data Regression Model Results with State-Level Fixed Effects for 1987, 1992, and 1997.

Years 1987, 1992, and 1997	(1)	(2)	(3)	(4)	(5)
VARIABLES	Conservation Operations, \$				
Working Lands, 1000s acres	-5,389*** (667.6)	-4,731*** (755.6)	-6,072*** (924.9)	-6,187*** (943.8)	-6,289*** (977.4)
Water Erosion, total, tons per acre per year		-1.410e+06* (788,555)	-2.302e+06*** (854,350)	-2.276e+06*** (864,496)	-2.558e+06*** (910,687)
Prime Farmland, 1000s acres			17,707** (7,376)	17,557** (7,521)	20,564** (8,222)
Senate Agriculture Committee Membership				-435,780 (531,977)	-162,062 (681,907)
House Agriculture Committee Membership				-416,088 (307,130)	-426,014 (342,285)
House Appropriations Committee Membership				-15,765 (321,904)	-131,940 (339,232)
Senate Appropriations Committee Membership				-299,025 (557,179)	-348,722 (694,986)
Chair of Agricultural Committee					-129,473 (1.619e+06)
Chair of Appropriations Committee					-1.423e+06 (1.629e+06)
Senate Subcommittee on					-1.296e+06

Conservation/Ag Committee					(1.840e+06)
Senate Subcommittee on Agriculture/ Appropriations Committee					505,753 (1.719e+06)
House Subcommittee on Conservation/Ag Committee					138,224 (746,117)
House Subcommittee on Agriculture/ Appropriations Committee					2.039e+06* (1.217e+06)
Constant	1.144e+08*** (1.282e+07)	1.059e+08*** (1.353e+07)	1.093e+07 (4.171e+07)	1.550e+07 (4.269e+07)	-3.102e+06 (4.834e+07)
Observations	144	144	144	144	144
R-squared	0.407	0.426	0.460	0.473	0.492
Number of States	48	48	48	48	48

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8. Panel Data Regression Model Results with State-level Fixed Effects, for 2002 to 2011. The years in between NRI data collections are filled in with previous NRI data.

Years 2002 to 2010, continuous	(1)	(2)	(3)	(4)	(5)
VARIABLES	Conservation Operations, \$				
Working Lands, 1000s acres	6,304*** (501.2)	6,201*** (513.5)	6,361*** (812.2)	6,357*** (818.2)	6,359*** (823.4)
Water Erosion, total, tons per acre per year		431,247 (465,629)	452,398 (473,611)	471,441 (480,087)	360,380 (492,441)
Prime Farmland, 1000s acres			-667.3 (2,619)	-673.7 (2,651)	-1,585 (2,712)
Senate Agriculture Committee Membership				-4,189 (102,639)	90,262 (119,093)
House Agriculture Committee Membership				-9,154 (59,619)	1,261 (60,662)
House Appropriations Committee Membership				-15,903 (109,486)	-5,874 (112,638)
Senate Appropriations Committee Membership				54,389 (154,580)	-114,577 (180,886)
Chair of Agricultural Committee					417,100 (252,852)
Chair of Appropriations Committee					-148,439 (351,172)

Senate Subcommittee on Conservation/Ag Committee					-314,344 (245,434)
Senate Subcommittee on Agriculture/ Appropriations Committee					500,810 (383,324)
House Subcommittee on Conservation/Ag Committee					-211,086 (144,838)
House Subcommittee on Agriculture/ Appropriations Committee					122,006 (286,102)
Constant	-1.053e+08*** (9.294e+06)	-1.045e+08*** (9.343e+06)	-1.029e+08*** (1.111e+07)	-1.029e+08*** (1.123e+07)	-9.645e+07*** (1.194e+07)
Observations	384	384	384	384	384
R-squared	0.321	0.322	0.323	0.323	0.338
Number of States	48	48	48	48	48

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9. Panel Data Regression Model Results with State-level Fixed Effects, for 2002 to 2010, with commodity program data supplied by the Environmental Working Group. The years in between NRI data collections are filled in with previous NRI data.

Years 2002 to 2010, continuous	(1) Conservation Operations, \$	(2) Conservation Operations, \$
VARIABLES		
Working Lands, 1000s acres	6,280*** (918.0)	6,405*** (921.9)
Water Erosion, total, tons per acre per year	449,726 (515,918)	483,168 (517,378)
Prime Farmland, 1000s acres	-2,152 (2,915)	-2,906 (3,023)
Total Commodity Subsidies, \$	0.000814 (0.000991)	0.000883 (0.001000)
Total Disaster Payments, \$	0.00214 (0.00196)	0.00202 (0.00196)
Crop Insurance Payments, \$	-0.00199 (0.00147)	-0.00187 (0.00147)
Chair of Agricultural Committee		373,809 (268,854)
Chair of Appropriations Committee		-158,894 (353,720)
Constant	-9.138e+07*** (1.452e+07)	-8.868e+07*** (1.528e+07)
Observations	336	336
R-squared	0.346	0.351
Number of States	48	48

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 10. Panel Data Regression Model Results with State-Level Fixed Effects for 2002 and 2007, with a 2002 dummy variable.

Years 2002 and 2007	(1) Conservation Operations, \$	(2) Conservation Operations, \$	(3) Conservation Operations, \$	(4) Conservation Operations, \$	(5) Conservation Operations, \$
VARIABLES					
Working Lands, 1000s acres	240.2*** (19.88)	253.1*** (14.13)	174.8*** (18.23)	173.4*** (19.12)	177.4*** (17.50)
Water Erosion, total, tons per acre per year		2.377e+06*** (245,577)	1.481e+06*** (262,198)	1.397e+06*** (272,708)	1.328e+06*** (250,348)
Prime Farmland, 1000s acres			339.7*** (58.90)	338.5*** (62.10)	282.3*** (61.52)
Senate Agriculture Committee Membership				217,301 (245,227)	19,645 (341,324)
House Agriculture Committee Membership				-97,351 (161,189)	-167,307 (156,744)
House Appropriations Committee Membership				71,872 (54,781)	20,908 (51,459)
Senate Appropriations Committee Membership				573,521 (347,510)	-69,122 (384,785)
Chair of Agricultural Committee					-59,220 (776,987)
Chair of Appropriations Committee					890,418 (733,649)
Senate Subcommittee on Conservation/Ag Committee					883,692 (841,990)
Senate Subcommittee on					1.743e+06**

Agriculture/ Appropriations Committee					(764,120)
House Subcommittee on Conservation/Ag Committee					819,912* (413,719)
House Subcommittee on Agriculture/ Appropriations Committee					1.310e+06** (531,904)
Year 2002, dummy	1.318e+06 (901,059)	1.083e+06* (638,203)	1.168e+06** (549,334)	1.188e+06** (550,076)	1.469e+06*** (497,812)
Constant	6.025e+06*** (734,982)	191,035 (796,237)	1.438e+06** (718,411)	856,037 (785,137)	568,499 (721,923)
Observations	96	96	96	96	96
R-squared	0.614	0.809	0.860	0.866	0.902

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 11. Panel Data Regression Model Results with State-Level Fixed Effects for 2002 and 2007, with commodity program expenditures supplied by the Environmental Working Group.

Years 2002 and 2007, with Commodity Programs	(1)	(2)
VARIABLES	Conservation Operations, \$	Conservation Operations, \$
Working Lands, 1000s acres	149.1*** (22.16)	145.8*** (21.47)
Water Erosion, total, tons per acre per year	1.305e+06*** (270,343)	1.295e+06*** (261,757)
Prime Farmland, 1000s acres	211.9*** (79.02)	217.0*** (78.08)
Total Commodity Subsidies, \$	0.00633** (0.00270)	0.00533** (0.00264)
Total Disaster Payments, \$	0.0130 (0.0147)	0.0167 (0.0142)
Crop Insurance Payments, \$	0.00365 (0.00535)	0.00470 (0.00522)
Chair of Agricultural Committee		221,940 (786,746)
Chair of Appropriations Committee		1.970e+06*** (700,054)
Year 2002 dummy	869,548 (659,126)	922,110 (638,490)
Constant	1.837e+06** (761,577)	1.641e+06** (740,452)
Observations	96	96
R-squared	0.870	0.881

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The final analysis considers the entire time series together. Starting with 1983, I run regression models to gauge the impacts of values of interest on distribution of conservation operations dollars. Again, the first type of analysis assumes that years in between NRI data collections have the same NRI figures from the previous survey. The second type simply deletes the intervening years. In parenthesis under each coefficient is the standard error.

Table 12. Panel Data Regression Model Results with State-level Fixed Effects, for 1983 to 2011. The years in between NRI data collections are filled in with previous NRI data.

Years 1983 to 2010, continuous	(1)	(2)	(3)	(4)	(5)
VARIABLES	Conservation Operations, \$				
Working Lands, 1000s acres	-2,621*** (77.43)	-2,328*** (88.31)	-2,582*** (103.0)	-2,593*** (103.0)	-2,630*** (104.9)
Water Erosion, total, tons per acre per year		-676,678*** (103,064)	-639,909*** (102,502)	-642,263*** (102,640)	-671,731*** (103,725)
Prime Farmland, 1000s acres			-0.0258*** (0.00549)	-0.0252*** (0.00549)	-0.0273*** (0.00564)
Senate Agriculture Committee Membership				-64,851 (73,274)	-2,760 (82,770)
House Agriculture Committee Membership				-97,842** (45,071)	-51,719 (47,536)
House Appropriations Committee Membership				-64,076 (40,881)	-79,175* (41,679)
Senate Appropriations Committee Membership				-37,800 (87,143)	-223,865** (105,456)
Chair of Agricultural Committee					264,646 (212,399)
Chair of Appropriations Committee					368,962 (226,430)

Senate Subcommittee on Conservation/Ag Committee					-265,381 (205,988)
Senate Subcommittee on Agriculture/ Appropriations Committee					652,414*** (229,624)
House Subcommittee on Conservation/Ag Committee					-196,793* (112,541)
House Subcommittee on Agriculture/ Appropriations Committee					65,611 (162,062)
Constant	6.024e+07*** (1.484e+06)	5.657e+07*** (1.562e+06)	6.149e+07*** (1.869e+06)	6.207e+07*** (1.887e+06)	6.281e+07*** (1.929e+06)
Observations	1,296	1,296	1,296	1,296	1,296
R-squared	0.479	0.496	0.505	0.508	0.515
Number of States	48	48	48	48	48

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13. Panel Data Regression Model Results with State-Level Fixed Effects for 1983 to 2010. The years in between NRI data collections are omitted, so year-level dummy variables were added. Since in 1983, no NRI survey took place, I used the 1981 figures for that year. So years included are 1983, 1987, 1992, 1997, 2002, and 2007.

Years 1983, 1987, 1992, 1997, 2002, 2007	(1)	(2)	(3)	(4)	(5)
VARIABLES	Conservation Operations, \$				
Working Lands, 1000s acres	-3,002*** (247.4)	-2,668*** (284.4)	-3,619*** (326.1)	-3,622*** (328.3)	-3,687*** (350.8)
Water Erosion, total, tons per acre per year		-777,424** (335,255)	-636,032** (319,452)	-631,193* (322,020)	-608,949* (333,568)
Prime Farmland, 1000s acres			-0.0917*** (0.0176)	-0.0920*** (0.0178)	-0.0956*** (0.0189)
Senate Agriculture Committee Membership				-15,853 (238,055)	17,251 (278,016)
House Agriculture Committee Membership				-191,168 (151,070)	-159,386 (164,817)
House Appropriations Committee Membership				-79,526 (139,774)	-79,117 (144,141)
Senate Appropriations Committee Membership				118,997 (286,062)	-114,565 (360,471)
Chair of Agricultural Committee					-140,145 (737,667)
Chair of Appropriations Committee					113,742 (745,243)

Senate Subcommittee on Conservation/Ag Committee					6,133 (750,728)
Senate Subcommittee on Agriculture/ Appropriations Committee					887,804 (817,023)
House Subcommittee on Conservation/Ag Committee					-6,522 (386,501)
House Subcommittee on Agriculture/ Appropriations Committee					98,202 (556,031)
Constant	6.765e+07*** (4.738e+06)	6.349e+07*** (5.026e+06)	8.186e+07*** (5.938e+06)	8.225e+07*** (6.032e+06)	8.334e+07*** (6.469e+06)
Observations	288	288	288	288	288
R-squared	0.381	0.395	0.457	0.462	0.465
Number of States	48	48	48	48	48

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix G: Description of the NRI budget data

I had two sources for the NRI budget data. The historical source is an estimate, which was based on three documents: SCS/NRCS Explanatory Notes from 1977 to 1986, the Annual Budget reports from 1987 to 1988, and Statistical Reports from 1989 to 2002. The other document is an internal source with the budget from 1998 to 2011. Because of the overlap in the two sources, I use the latest source from 2011 to 1998 and the historical source from 1989 to 1977. To convert the nominal budget to real numbers, I used the Bureau of Labor Statistics historical inflation numbers.

Appendix H: Description of the actual policy course numbers

I used two techniques to sketch actual policy course numbers described in the conclusion. The first involved more nebulous policy interventions: cross-compliance, targeting, and land use. For those dimensions, I used information from the farm bills to see how the issues were address. For the rest of the topics, I used actual budget data for programs (supplied by Pavelis, George A; Helms, Douglas; Stalcup, Sam "Soil and Water Conservation Expenditures by USDA Agencies, 1935-2010.") split as follows.

- Land Set-Aside Programs: included the Conservation Reserve Program
- Prime Farmland Preservation: Farm and Ranchlands Protection Program
- Green ticket: Conservation Stewardship Program
- Wildlife & Wetlands: included the Forest Incentives Program, Water Bank Program, Wetlands Reserve Program, Grassland Reserve Program, Wildlife Habitat Incentives Program, Healthy Forests Reserve Program

- Plus, additional finances from: 10% of the Land Set-Aside Program (CRP); 33% of the Conservation Operations Program; 25% of the Working-Land Programs (Agricultural Conservation Program; Environmental Quality Incentives Program; Conservation Stewardship Program; Emergency Conservation Program; Great Plains Conservation Program; Colorado River Salinity Program; Agricultural Management Assistance Program)
- Agricultural Water Quality: 10% of the Land Set-Aside Program; 25% of the Working-Land Programs; 33% of the Conservation Operations Program
- Sediment Concern: 80% of the Land Set-Aside Program; 50% of the Working-Land Programs; 33% of the conservation Operations Programs

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