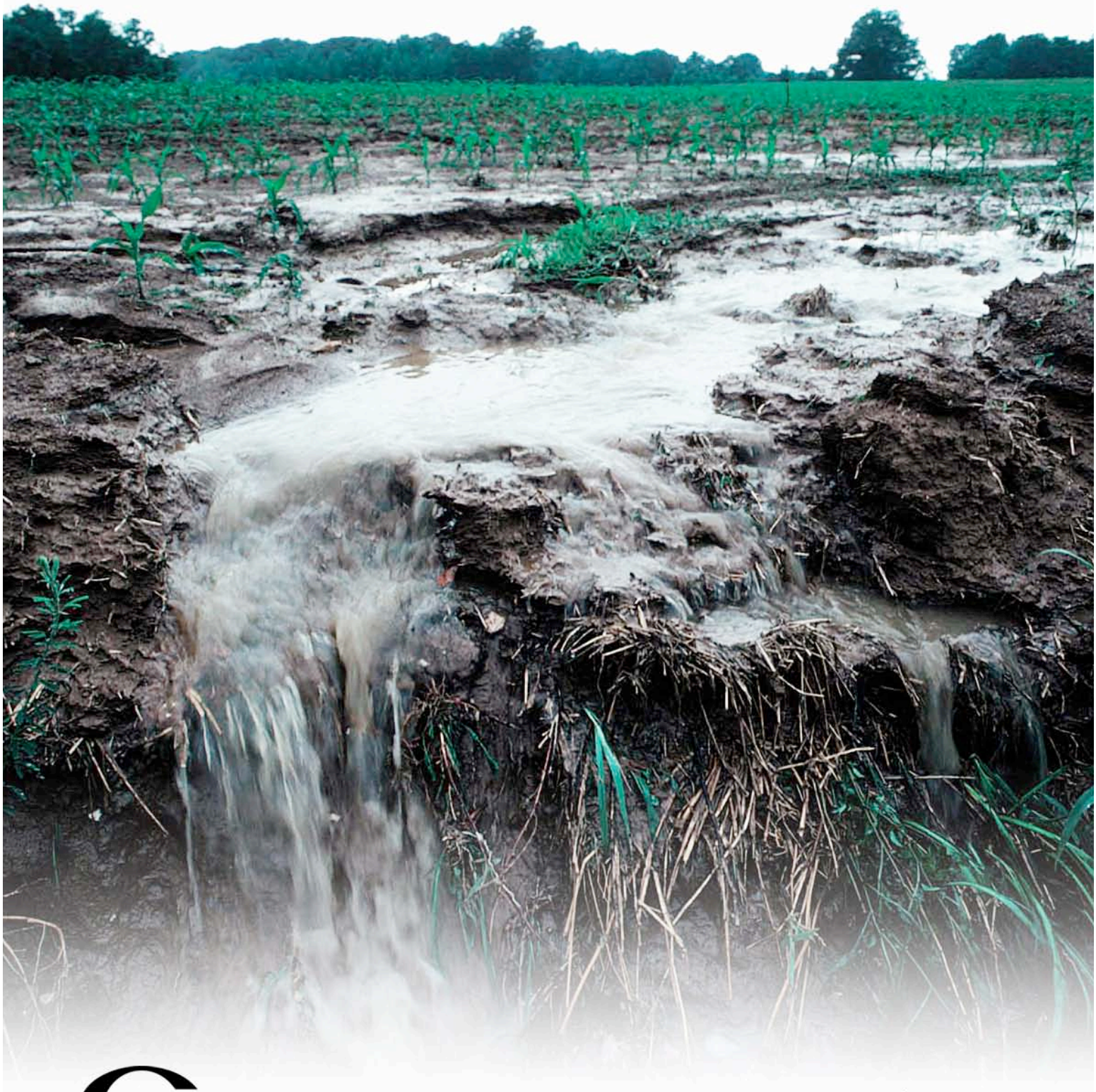
TROUBLE DOWNSTREAM

Upgrading Conservation Compliance



ENVIRONMENTAL WORKING GROUP

September 2007

ACKNOWLEDGEMENTS

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The Environmental Working Group prepared this report for the Mississippi River Water Quality Collaborative, with support from the McKnight Foundation. EWG would like to thank the members of the Collaborative, and especially Susan Heathcoate with the Iowa Environmental Council who served as Chair of the Collaborative's Farm Workgroup, for their assistance during the writing of this report. Special thanks go to Craig Cox who provided guidance and feedback throughout the process. EWG would also like to thank the conservation compliance staff at the US Department of Agriculture's Natural Resources Conservation Service (NRCS) and staff at the Farm Service Agency (FSA) for providing additional data and invaluable insight. Finally, EWG would like to thank the Senate Agriculture Committee staff for giving us access to additional NRCS and Government Accountability Office (GAO) data. The opinions expressed in this report are those of the Environmental Working Group and do not necessarily reflect the views of the supporters listed above. EWG is responsible for any errors of fact or interpretation contained in this report.

Cover photo: Soil erosion and water run-off on a cornfield. Source: USDA NRCS. Photo credit: Lynn Betts.

ABOUT THE MISSISSIPPI RIVER WATER QUALITY COLLABORATIVE

The Collaborative is comprised of environmental organizations from states bordering the Mississippi River as well as regional and national groups that work on Mississippi River issues. The purpose of the Collaborative is to harness the resources and expertise of diverse organizations to reduce all types of pollution entering the river. Mississippi River Water Quality Collaborative members who are jointly releasing this report include:

Environmental Law & Policy Center
Chicago, Illinois

Environmental Working Group
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Gulf Restoration Network
Louisiana and Mississippi

Iowa Environmental Council
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Kentucky Waterways Alliance, Inc.
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ABOUT ENVIRONMENTAL WORKING GROUP

EWG is a nonprofit research organization with offices in Washington, DC and Oakland, CA. EWG uses the power of information to educate the public and decision-makers about a wide range of environmental issues, especially those affecting public health.

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2. Without corrections to policy design constraints and adequate staff funding to effectively implement the program, conservation compliance will not reduce soil erosion on the majority of U.S. cropland to rates considered "sustainable."

3. Since geographic areas heavily associated with crop subsidies are linked with high levels of agricultural nutrient pollution, current conservation compliance policy misses an opportunity to prevent or reduce pollution that may be subsidized by farm programs.

4. Conservation compliance is a valid eligibility requirement for farmers receiving commodity subsidies since the current voluntary, financial assistance approach to solving agricultural environmental problems leaves 75 percent of farmer applications unfunded.

5. Conservation compliance should be expanded and strengthened to help reduce the additional soil erosion and nutrient pollution associated with the increase in agricultural biofuels production.

BACKGROUND

In the 1985 Farm Bill, Congress decided that as a *quid pro quo* for federal farm assistance, farmers receiving taxpayer support should control soil erosion on highly erodible lands used to grow subsidized crops. The policy principle was straightforward and widely embraced in conservation and agriculture policy circles: taxpayer support for agriculture should not inadvertently subsidize degradation of natural resources or the environment. Parallel policies were authorized in the 1985 law to prevent subsidies from encouraging conversion of fragile lands and wetlands to crop production.

In order to maintain their eligibility for federal farm benefits such as commodity crop subsidies and disaster payments, farmers were required to develop and implement a government-approved soil conservation plan specifying soil conservation practices. Common erosion reduction practices include: rotating crops, minimizing tillage, leaving soil covered with crop residue after harvest, and installing grassed buffers, etc. This program was called the Highly Erodible Land Conservation (HELC) Compliance provision or "conservation compliance," for short.

Farmers were given 10 years (until 1995) to fully implement the soil conservation plans. The U.S. Department of Agriculture (USDA) attributes the HELC planning and compliance process with widespread adoption of conservation systems, which made unprecedented progress in reducing erosion over these 10 years (Claassen et al, 2004). HELC compliance, coupled with the Conservation Reserve Program (CRP), reduced erosion by about 40 percent (1.2 billion tons) from 3.07 billion tons in 1982 to 1.9 billion tons in 1997 (national soil survey years which encompass the 1985 to 1995 time period). USDA attributes about 25 percent of that reduction to HELC compliance requirements. HELC compliance is also credited with a "technology-forcing" effect that helped reduce erosion on cropland not subject to HELC plans.

However, since full implementation of HELC compliance plans in 1995, there has been little additional progress in reducing erosion. According to the National Resources Inventory (NRI) survey, approximately 100 million acres of cropland in the U.S.—nearly one-third of the 368 million acres of cropland nationwide —continue to erode at rates deemed "unsustainable." As of 2003, when the latest NRI survey occurred, 1.76 billion tons of soil is still being lost each year. Sediment from cropland causes a variety of serious problems as it pollutes drinking water sources, clogs downstream reservoirs that include hydroelectric facilities, smothers aquatic life, and forces farmers to use more fertilizer to make up for reduced soil fertility. Moreover, since 1985, mounting scientific evidence has identified fertilizer run-off and animal manure from cropland as a major source of water nutrient pollution (Howarth et al, 2002). Nutrient run-off was not a consideration in the development or implementation of HELC policy or plans.

Another, even more dramatic development since the passage of the 1985 Farm Bill and the HELC policy is the ethanol boom. While experts are still trying to determine what the net impact of expanding corn acreage and production will be on natural resources and the environment, it is clear that ethanol

production is already leading to significant changes in cropping patterns, and to growing demand for corn. Both of which could have adverse impacts on water quality and soil erosion, increased fertilizer and pesticide application, and land use change. Current HELC policy and soil conservation plans may be inadequate to deal with potential emerging environmental impacts of the ethanol boom.

This report highlights the successes and shortcomings of the conservation compliance policy and sheds light on the nationwide problem of agricultural soil erosion and nutrient pollution. To provide a state-level perspective and to highlight one of the nation's largest agricultural-environmental problems—the Mississippi River-Gulf of Mexico "Dead Zone"—this report focuses on the 10 states that border the Mississippi River: Arkansas, Illinois, Iowa, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Tennessee, and Wisconsin.

The Mississippi River Basin (MRB) watershed includes 17 major tributaries that drain 31 states and 41 percent of the continental United States (U.S. Department of Interior). The Mississippi River also encompasses the majority of the country's subsidized production of corn, wheat, soybeans, cotton, and rice, and much of the nation's beef, dairy, hog, and poultry industries. According to the USDA, cropland in the Mississippi River Basin not only receives the highest federal commodity subsidies but also has the highest nitrogen runoff potential.

KEY FINDINGS, EXPLAINED

Finding #1: Due to lax standards and implementation problems, the conservation compliance program is missing cost-effective opportunities to make further, substantial reductions in soil erosion on U.S. cropland.

The conservation compliance program is not working as well as it could to reduce soil erosion because: a) the soil conservation plans in many cases require only modest reductions in erosion and; b) because implementation and enforcement of the program has diminished over time.

In enacting the HELC policy, Congress did not set a specific standard for the amount of erosion producers should be expected to achieve, stating only that a "substantial reduction" in erosion was required in order for affected producers to comply. Initially, the USDA's Natural Resources Conservation Service (NRCS)—the agency responsible for the technical aspects of compliance—proposed to use the soil loss tolerance level (symbolized as "T") as the standard for achieving a substantial reduction in erosion. T is intended to represent a rate of erosion, in tons of soil lost per acre per year, which can be sustained with no long-term loss in soil productivity.

In response to claims from some farm organizations that achieving T would create economic hardship for some producers, NRCS instead developed standards for two types of conservation compliance plans. A "basic plan" would reduce erosion to "T" when the plan could be implemented without creating economic hardship; an "alternative system" that did not reduce erosion to T was used in all other cases. The erosion reductions required by alternative systems varied between regions and states depending on soil characteristics. To some degree, the Conservation Reserve Program, which was also established by the 1985 Farm Bill, was intended to provide a paid, long-term retirement option for land that had erosion hazards so severe that conversion to grass or tree cover was the most cost-effective conservation practice.

Currently, two standards for "substantial reduction in erosion" are used to make a "compliance determination" during a status review. Conservation plans developed prior to July 3, 1996—whether a basic plan or an alternative system was required—are automatically considered to be meeting the substantial reduction standard provided the plan or the system is maintained. If the plan or system was developed after July 3, 1996, then a substantial reduction is defined as a 75 percent reduction in potential erodibility. On these latter tracts of eligible cropland, NRCS field staff should review crop residue levels and use water and wind erosion prediction equations to check if a 75 percent reduction in potential erodibility is being met.

Unfortunately, because NRCS does not systematically collect or maintain several types of data, the agency is unable to fully evaluate how effectively conservation compliance is working. As of 2007, there were 4.5 million tracts of subsidized cropland subject to HELC compliance. However, of these 4.5 million tracts, NRCS does not differentiate what proportions are covered by a "basic" plan or an "alternative" system. In addition, NRCS does not track the proportion of plans approved before or after July 3, 1996, and thus cannot determine which plans or systems meet the pre-1996 standard or the post-1996 "75 percent reduction standard." Finally, because NRCS and FSA maintain two separate databases for conservation

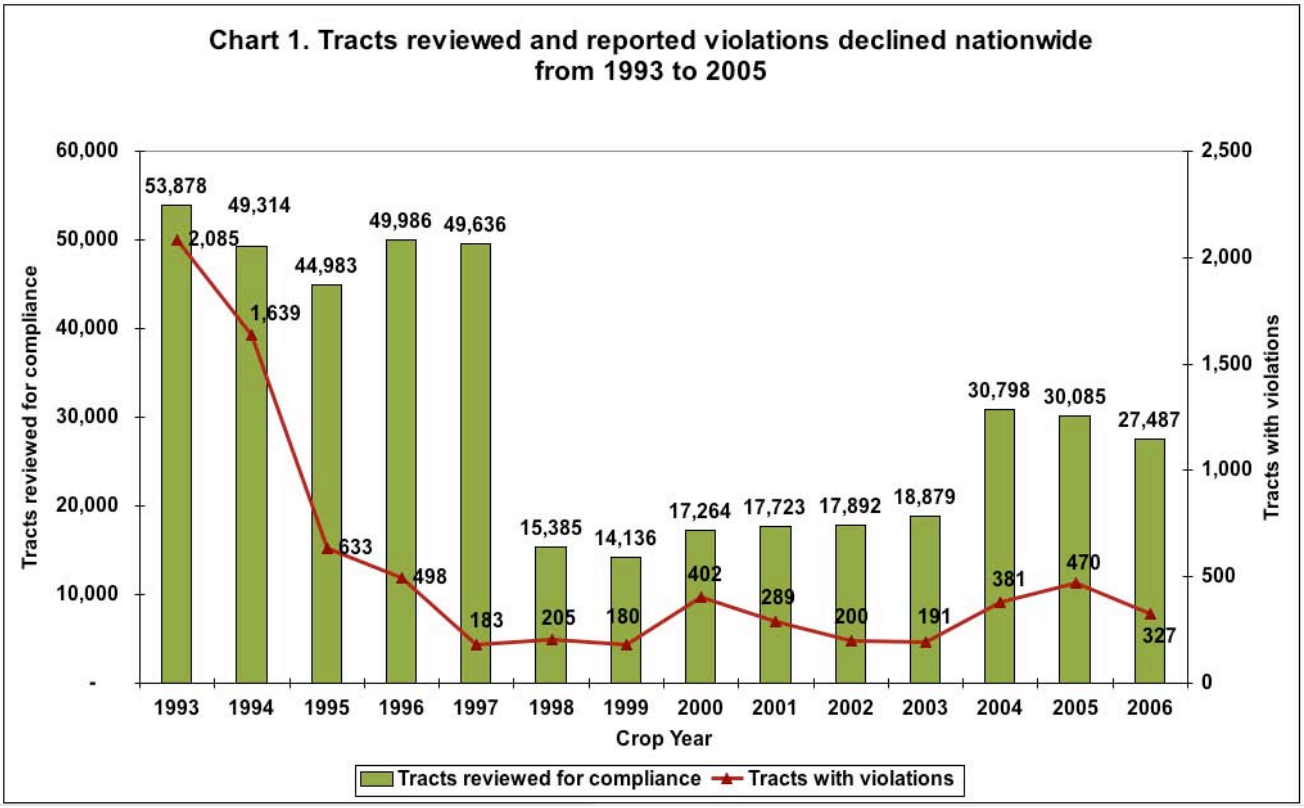
compliance information, compliance staffs at both agencies concede that tract violation information is irreconcilable between the two databases.

The Government Accountability Office (GAO) in 2003 questioned the NRCS claim that 98 percent of tracts reviewed were in compliance since:

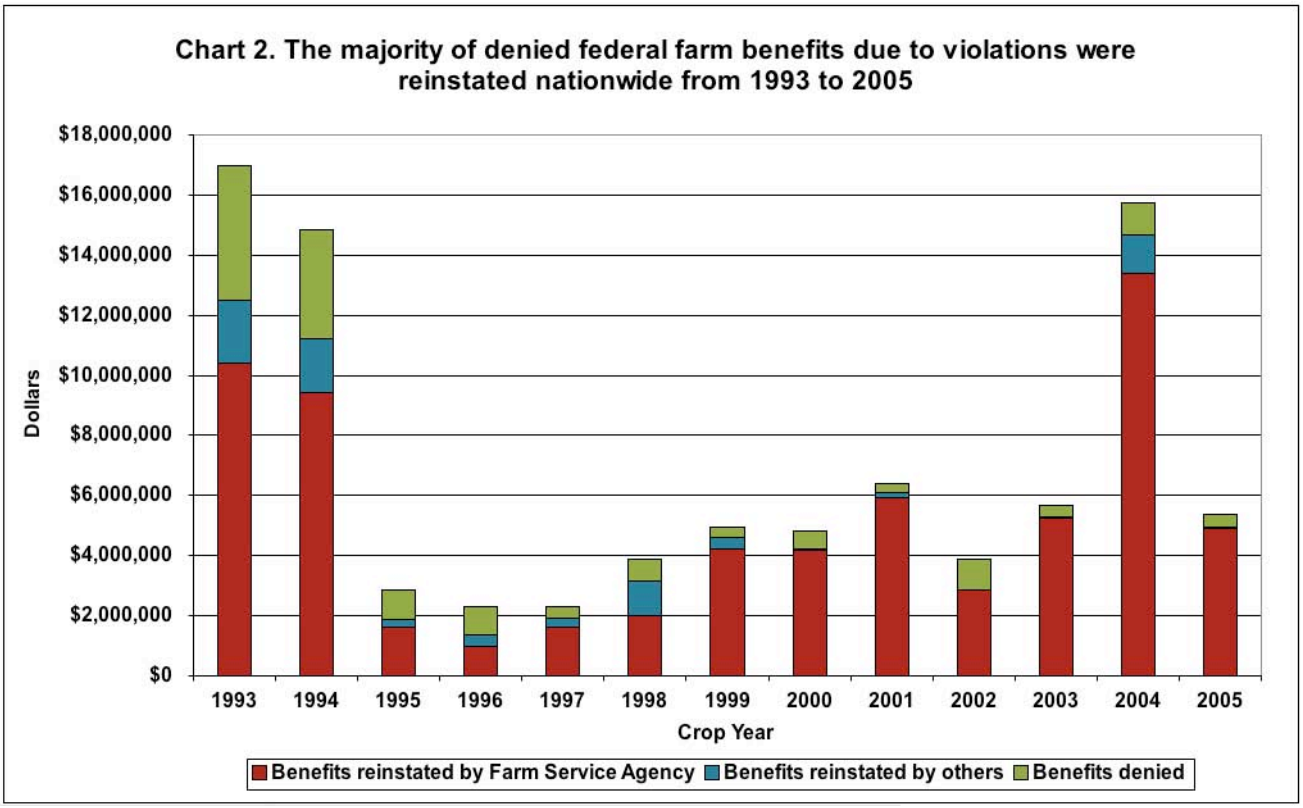
(1) NRCS selected about 20 percent of the tracts annually with little or no potential for non-compliance (such as permanent rangelands),
(2) NRCS does not have an automated system to send the list of sample tracts to the field offices for compliance reviews to be conducted during the critical erosion periods,
(3) NRCS does not consistently collect and analyze the results of the field offices' compliance reviews to identify unusual enforcement patterns across regions and states and over time, and the
(4) USDA Office of Inspector General noted that improvements in NRCS' implementation of the program, including, avoiding issuing waivers that are not warranted, are needed to strengthen the agency's ability to provide accurate and reliable assessments of farmer compliance.

EWG compiled and analyzed available data to provide the following snap shots of the implementation of the conservation compliance provisions over time:

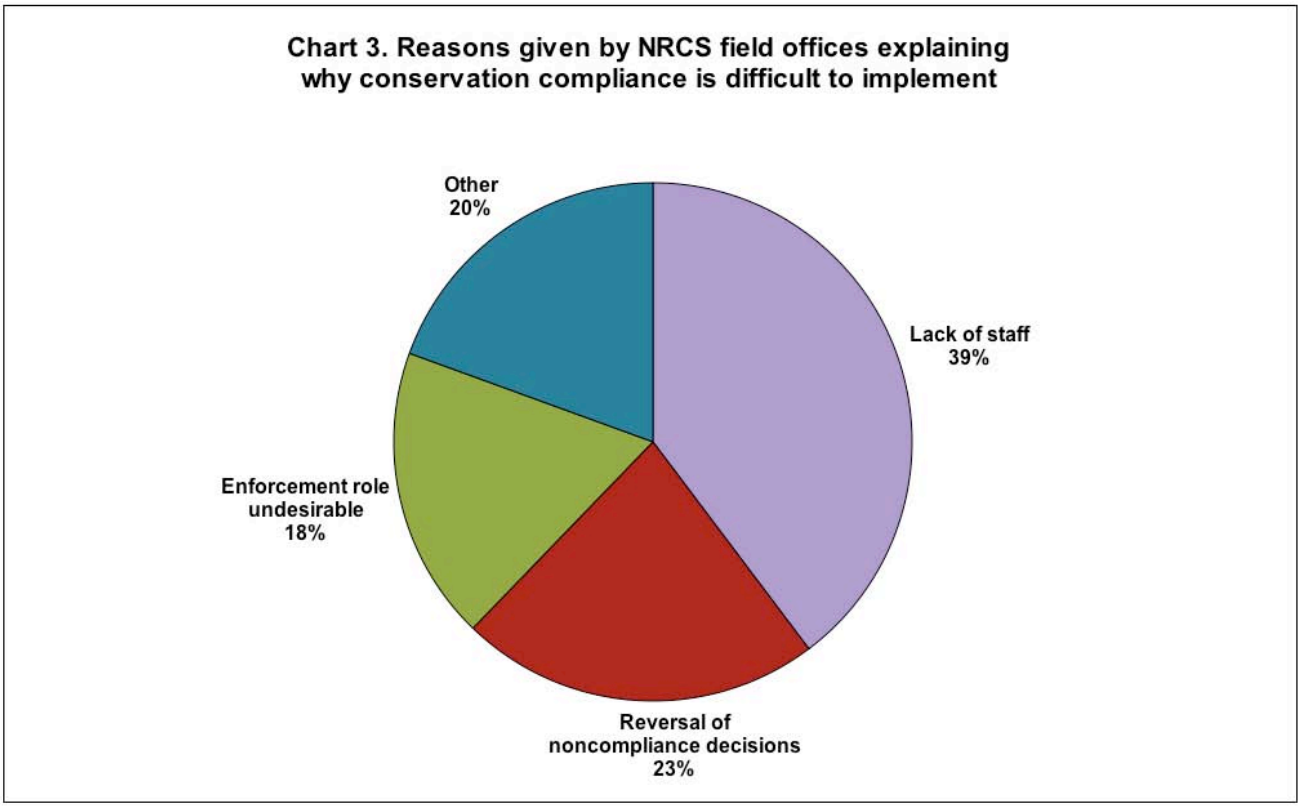
(1) NRCS significantly reduced the annual compliance status reviews conducted over time (See Chart 1);
(2) NRCS and FSA consistently overturned violation rulings using multiple waivers, exemptions, and Variances, while consistently reinstating federal farm benefits (See Chart 2); and
(3) NRCS field staff gave a variety of reasons to explain the difficulty in implementing the provisions (See Chart 3).



Source: Data for years 1993 to 1999 were taken from the 2003 GAO report while data for years 2000 to 2006 were provided by NRCS.
Note: Data for tracts reviewed and data for tracts with violations includes both HELC and WC violations.



Source: GAO (2003,2006).

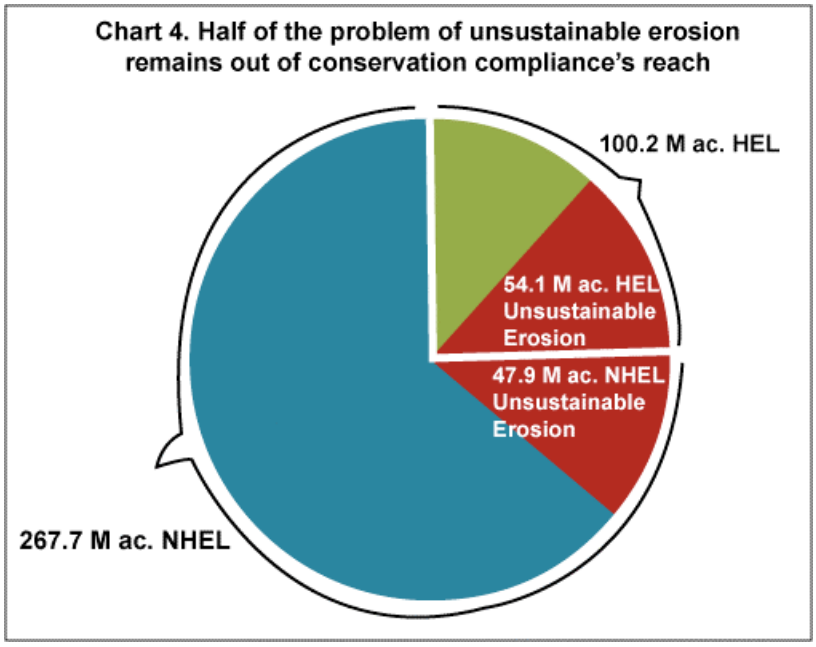


Source: GAO (2003).

Finding #2: Without corrections to policy design constraints and adequate staff funding to effectively implement the program, conservation compliance will not reduce soil erosion on the majority of U.S. cropland to rates considered "sustainable."

Soil conservation compliance plans are only required on cropland receiving federal farm subsidies and designated "highly erodible land" (HEL). But a great deal of unsustainable, excessive erosion occurs on cropland that is not technically classified highly erodible. According to the National Resources Inventory, of the 102 million acres of cropland nationwide eroding at unsustainable rates, nearly half (48 million acres) are classified as non-highly erodible (NHEL) and thus do not have conservation compliance requirements (See Chart 4).

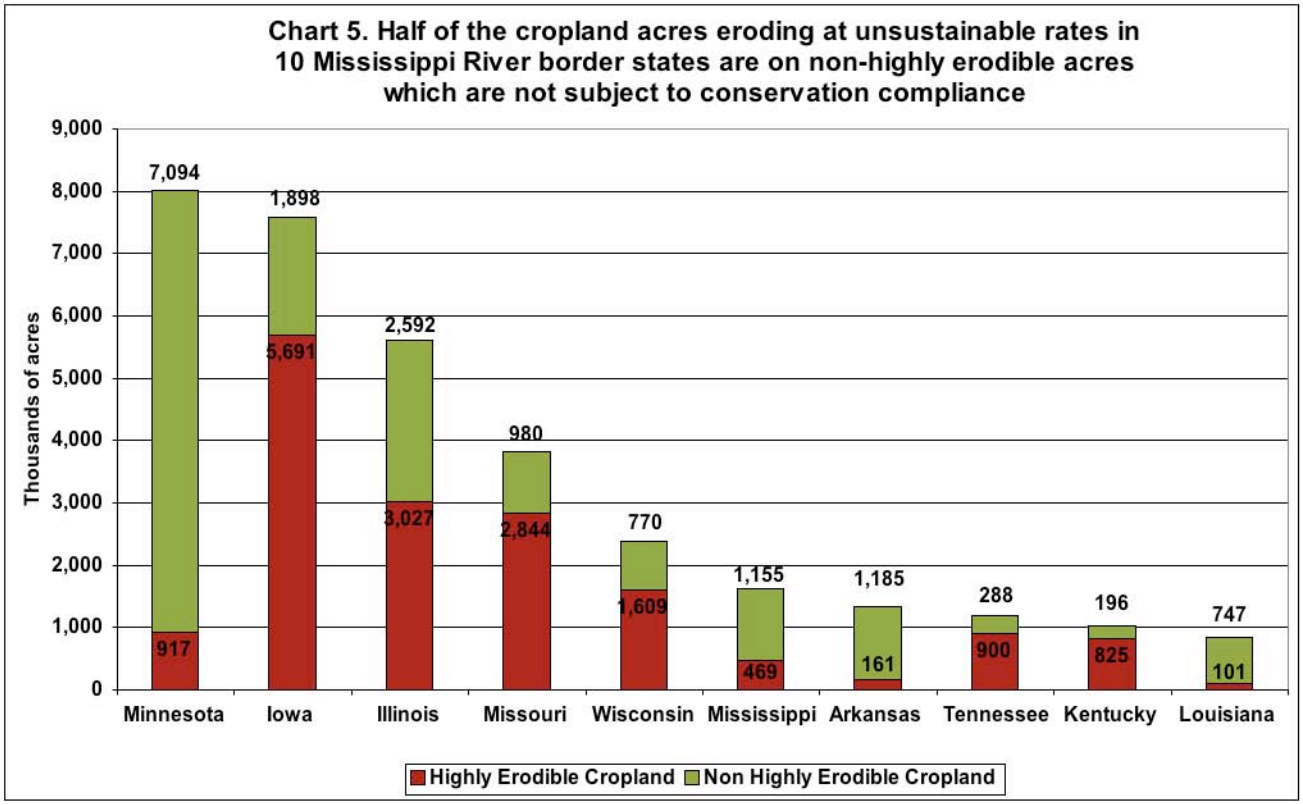
In the 10 states that border the Mississippi River, 33 million of the 123-million cropland acres are eroding unsustainably. Half of those 33 million acres (16.4 million) are non-highly erodible lands and thus not subject to conservation compliance.



Source: Data calculated from USDA's National Resources Inventory, 2003.

When looking at the problem of unsustainable erosion at the state level, four of the 10 states that border the Mississippi River have more of their unsustainable erosion problem occurring on non-highly erodible land than on highly erodible land: Minnesota, Mississippi, Arkansas, and Louisiana. Thus, conservation compliance does not address this significant problem on the 10.2 million acres in these four states where most of the 10 state's 16.9 million acres of NHEL-unsustainable erosion is occurring (See Chart 5).

With yearly budget cuts hampering the ability of NRCS field offices to conduct conservation compliance status reviews, it is increasingly difficult for agency staff to adequately monitor the environmental impacts of agricultural activities. Expanding conservation compliance to address unsustainable erosion problems and increasing funding to support NRCS staff or certified technical service providers, are critical components to improving the conservation compliance policy.



Source: Data for calculated from USDA's National Resources Inventory, 2003.

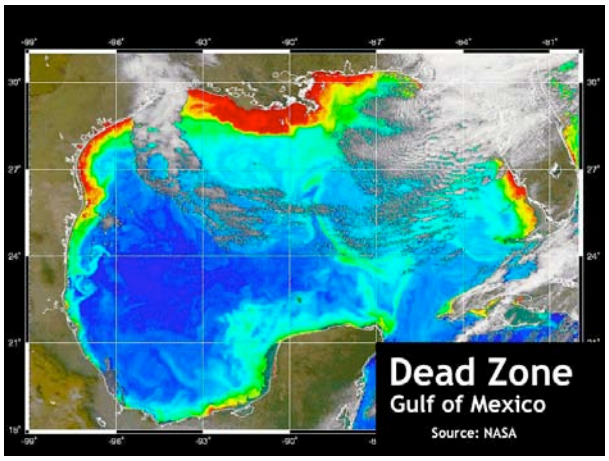
Finding #3: Since geographic areas heavily associated with crop subsidies are linked with high levels of agricultural nutrient pollution, current conservation compliance policy misses an opportunity to prevent or reduce pollution that may be subsidized by farm programs.

Source: University System of Maryland.
Photo credit: J. Burkholder.

By design, conservation compliance does not explicitly address one of today's most pressing agricultural-environmental problems: nutrient pollution. Excess runoff of commercial fertilizer and animal manure applied on cropland causes algae outbreaks in rivers and lakes (USDA ARS, 2003). The algae clog water intake pipes at industrial plants and municipal drinking water facilities.

Algae blooms can lead to "dead zones" which suffocate bottom-dwelling creatures like crabs and oysters, as well as fish unable to escape the resulting oxygen-deprived waters (See photo of fish kill). Nutrient pollution has also been linked to toxic microbes that cause lesions on fish and on humans, as well as short-term memory loss in humans who are exposed to the polluted water (CDC, 2004).

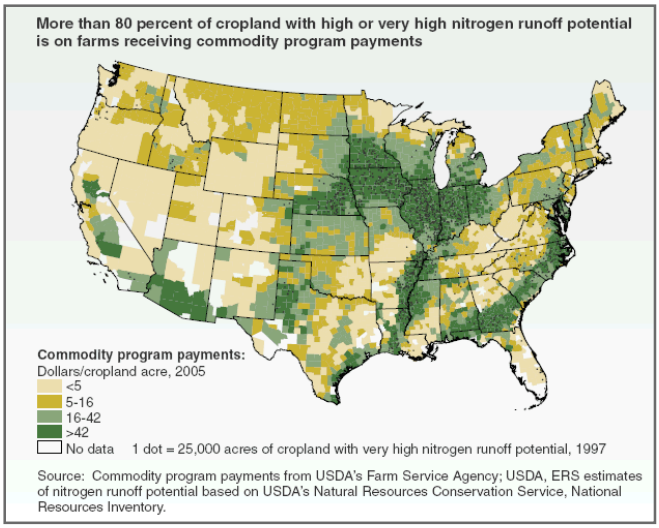
Dead zones occur throughout the world and are caused primarily from excess fertilizer and animal manure run-off, as well as, emissions from sewage treatment plants, urban and suburban run-off, and air emissions from vehicles (Howarth et al, 2002). Examples of dead zones in the U.S. are in the Long Island Sound, Chesapeake Bay, Corpus Christi Bay, Los Angeles River, and Puget Sound (WRI Earthtrends).



The largest dead zone in the country occurs at the mouth of the Mississippi River in the Gulf of Mexico each spring. In past years, the dead zone (pictured in the satellite image as the red coastal areas around Texas, Louisiana, Mississippi, Alabama, and Florida) has encompassed some 5,000 square miles, an area roughly the size of Connecticut. Predictions for 2007 indicate that the dead zone will be the third largest on record, about 7,900 square miles or nearly the size of New Jersey (LUMCON, 2007).

While the soil erosion reduction efforts in conservation compliance plans indirectly reduce phosphorus nutrient pollution, as some phosphorus is bound to soil particles, plans focused on soil erosion do not directly address the problem of *dissolved* phosphorus nutrient pollution or nitrogen nutrient pollution, which do not adhere to soil particles.

Every year, over the last five-year Farm Bill, taxpayers provided between $8 and $17 billion in commodity crop subsidies and between $1 and $3 billion in disaster relief to farmers (Chite, 2007 and EWG Farm Subsidies Database). While subsidies are projected lower in the next five years because of the price-enhancing effect of ethanol production and other factors, commodity program expenditures alone are still projected to be about $7 billion annually (Chite, 2007). In addition, taxpayers spend, on average, $3 billion per year subsidizing crop insurance for farmers and crop insurance companies.



Source: Claassen, 2007.

Since these federal farm income support programs enable farmers to till cropland and apply fertilizers, they share responsibility for the agricultural soil erosion and nutrient pollution problems in our nation's waters. More than 80 percent of the nation's cropland with high or very high nitrogen runoff potential (dots on the USDA map) is receiving commodity program payments (dark green areas of the map) (Claassen, 2007).

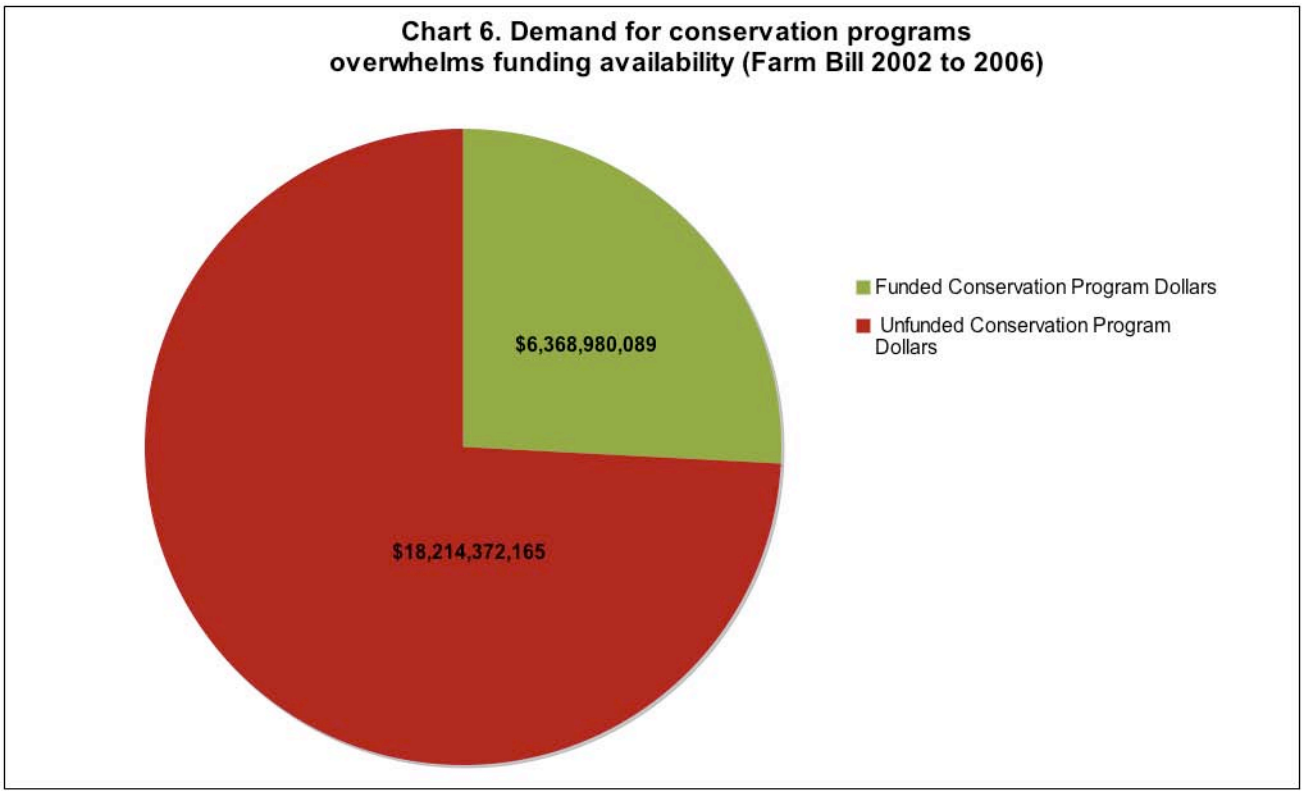
It is reasonable for policy makers to expect farmers to reduce and control both soil erosion *and* nutrient pollution in cost-effective ways as a condition of taxpayer support. Taxpayers, on average, provide $45 to $100 per acre *annually* in commodity support payments to farmers in the highest nitrogen runoff areas. In contrast, nutrient management plans – plans that optimize crop yield while minimizing nutrient pollution—have a one-time cost, on average, of $5 to $15 per acre, according to the USDA, and costs of updating such plans are modest (Claassen, 2007).

As a further step, landowners and operators should be required to establish and maintain grass or tree buffers on a minimum area along streams and ponds. Such buffer zones would have multiple environmental benefits. A minimum setback with planted grassed buffers will trap sediment and nutrient runoff and reduce the amount of pollution reaching surface waters. A minimum setback, plus treatment of gully erosion, will help stabilize stream or shore banks and prevent bank erosion sediment from smothering aquatic habitat. Finally, a minimum setback will allow waterside habitat for wildlife and provide nesting and food resources. Several conservation programs, notably the Conservation Reserve Enhancement Program (CREP) and the Conservation Reserve Program's continuous buffer sign-up, provide taxpayer assistance for the express purpose of establishing and maintaining grass, shrub or tree buffers along water bodies.

Finding # 4: Conservation compliance is a valid eligibility requirement for farmers receiving commodity subsidies since the current voluntary, financial assistance approach to solving agricultural environmental problems leaves 75 percent of farmer applications unfunded.

The amount of taxpayer dollars spent subsidizing agricultural production dwarfs the amount spent on cleaning up or preventing agricultural-environmental problems. Over the 2002 Farm Bill (2002 to 2006), taxpayers have provided about $64 billion in commodity crop subsidies, $10 billion in disaster aid (the majority of both payments was spent on states in the Mississippi River Basin) and only $14 billion to conservation programs (Chite, 2007 and EWG Farm Subsidies Database). The Environmental Working Group (2006) determined that commodity spending overwhelms water quality conservation spending by more than 500 to 1 in the areas of the Mississippi River Basin with the highest nitrogen loadings.

Additionally, voluntary demand from farmers for conservation financial assistance to solve environmental problems dramatically exceeds available funds. According to NRCS, from 2002 to 2006, 515,000 applications from farmers and landowners have been rejected from receiving conservation funding largely due to lack of funds. The total unfunded requests amount to $18 billion for conservation practices that would have covered 28 million acres. Thus, farmers have sought three times more conservation assistance than has been supplied (See Chart 6). A major factor in the funding shortfall is the propensity of Congress to de-fund conservation programs and reduce the budgets of the agencies that oversee them in annual appropriations cycles in order to pay for commodity and disaster programs or meet other budgetary shortfalls. Expanding and strengthening conservation compliance and supporting the agencies responsible for its oversight could contribute to solving agricultural-environmental problems during times of tight federal budgets, when insufficient funds are available for voluntary conservation practices.



Source: Data calculated from multiple USDA Natural Resources Conservation Service "Unfunded Conservation Information" websites.
Note: The following programs are included: EQIP, WRP, GRP, FRPP, WHIP, CSP. However, CSP did not provide unfunded dollar information. The Conservation Reserve Program (CRP) is not displayed here.

Finding # 5: Conservation compliance should be expanded and strengthened to help reduce additional soil erosion and nutrient pollution associated with the increase in agricultural biofuels production.

In 2007, fifteen million more acres of corn were planted than had been grown in 2006 in response to burgeoning demand for ethanol (and continued strong export demand for U.S. grain) (NASS, 2007). The expansion of corn production ostensibly serves to meet energy policy goals of reduced dependence on foreign oil and lower emissions of climate changing gases. However, soil and water quality scientists are increasingly concerned about unintended local and regional environmental consequences of an expansion in corn production (Simpson et al, 2007).

Currently, crop production, whether for feed grain use or ethanol production, is not subject to federal environmental standards or guidelines to minimize soil erosion or nutrient pollution. The only environmental performance standard now applied to corn production is the soil conservation plan required of farmers on just the portion of the corn crop that is subsidized and produced on highly erodible land. Expanding and strengthening conservation compliance to all subsidized cropland provides an important policy option for dealing with potential increases in soil erosion and nutrient pollution that may accompany the increase in corn production to supply the ethanol boom.

JUSTIFICATION: ENSURING FARM PROGRAM PAYMENTS BENEFIT THE PUBLIC GOOD

A wide array of conservation organizations have supported incentive programs for farmers to assist in the protection of agricultural resources and environment quality. If the government will not sufficiently help farmers solve environmental problems through voluntary incentive-based programs, it is reasonable for the public to expect, at minimum, that various forms of agricultural subsidies will not make soil and nutrient pollution of surface waters worse. It is also reasonable for taxpayers to expect that investments in agricultural subsidies come with a *quid pro quo* for the beneficiaries: cost-effective practices to protect our land, air, and water.

Solving agriculture's water quality and aquatic resource problems takes targeted and focused interventions at the watershed scale. Most conservation funding continues to be spent on a non-targeted basis and only recently have state and regional pilot projects been developed to target and focus watershed-level efforts. Conservation compliance is a broad-brush policy instrument and should be seen as requiring a basic measure of pollution prevention on all acres getting subsidies. Conservation compliance will not solve the nation's agricultural water quality problem, but it can reduce the likelihood of pollution and improve water quality.

RECOMMENDATIONS FOR IMPROVING CONSERVATION COMPLIANCE

The Highly Erodible Land Conservation Compliance program suffers from a number of weaknesses in design and implementation. What follows is a list of the primary weaknesses and action that could be taken to make progress towards reducing the unintended, environmental harm resulting from subsidized agricultural activities. Addressing these issues will require changes in the federal law and regulations.

Expand the limited reach of compliance

Problem: A great deal of erosion is occurring on cropland that is not classified as highly erodible and is as damaging a source of sediment and nutrients as highly erodible cropland. Conservation compliance only requires soil conservation measures on highly erodible cropland.

> **Solution:** Amend federal law to require conservation compliance on all cropland acres receiving farm program benefits.
>
> **Solution:** Amend the statute to include crop insurance in the list of farm program benefits that are subject to conservation compliance.

Problem: Current soil conservation requirements have little or only very indirect effects on nutrient pollution and degradation of aquatic and riparian habitat.

Solution: Amend the statute to require nutrient management plans, not just soil conservation plans, on cropland receiving farm program benefits.

Solution: Amend the statute to require a meaningful minimum setback from streams for crop production on land receiving farm program benefits. Allow producers to meet this requirement by enrolling sufficient acres in the continuous sign-up of the Conservation Reserve Program or other conservation incentive programs in order to achieve technical specifications for riparian buffers or filter strips on a site-by-site basis.

Establish better and consistent standards

Problem: Currently, conservation compliance requires that approved soil conservation plans or systems achieve a "substantial reduction" in erosion—a weak standard that was further weakened in implementation.

Solution: Require NRCS to develop a better standard than "T" for soil conservation plans that would include new standards for soil degradation (erosion, loss of organic matter, compaction, etc.) and standards reflecting the environmental implications of soil degradation. In addition, NRCS should consider developing soil erosion reduction goals related to sediment loads within specific watershed basins as a more effective approach to reducing soil erosion through required soil conservation plans.

Solution: While those new standards are being developed, amend the statute to require soil conservation plans that reduce sheet and rill erosion, the worst kinds of water erosion, to the Soil Loss Tolerance Level (T).

Solution: Require all current and future conservation plans to meet these upgraded standards.

Ensure better enforcement

Problem: Emphasis on and enforcement of conservation compliance lagged after passage of the 1996 Farm Bill, which introduced a number of new waivers and exemptions that made enforcement more difficult. In the decades since, soil continues to wash away and the Gulf of Mexico Dead Zone grows larger. Reclaiming conservation compliance as an effective policy tool can put American farming back on a path to saving its soil and restoring the health of the nation's waters.

Solution: Mandate an annual compliance review of at least one percent of crop fields subject to conservation compliance provisions.

Solution: Allow graduated penalties scaled to severity of the violation and degree of cooperation by the producer in correcting deficiencies. Eliminate most other waivers and exemptions.

Solution: Mandate sufficient funding from the Commodity Credit Corporation, which disburses the crop subsides, to support the technical assistance by NRCS staff and certified third-parties needed to develop and implement conservation plans and to conduct mandated status reviews.

Improve data collection, evaluation and reporting

Problem: Insufficient data are being collected and evaluated by NRCS and FSA compliance staff preventing these agencies from being able to properly evaluate and provide evidence that 98 percent of farmers are in compliance with the policy provisions.

Solution: Require NRCS and FSA to document and report:

1) What level of erosion reduction is required in each approved soil conservation plan,
2) What level of erosion reduction is actually being achieved by each soil conservation plan,
3) If there was a violation, whether the appropriate action was taken to ensure the problem is corrected and the plan is fully implemented,
4) How much erosion is occurring on the tracts, which received waivers for not fully implementing the plan (e.g. economic and personal hardship, good faith, technical violation, etc.) but are counted as in compliance anyway,
5) A complete statistical profile of farmers deemed in and out of compliance, and
6) The number of tracts with violations associated with the benefits at risk of denial and benefits actually denied.

I. INTRODUCTION

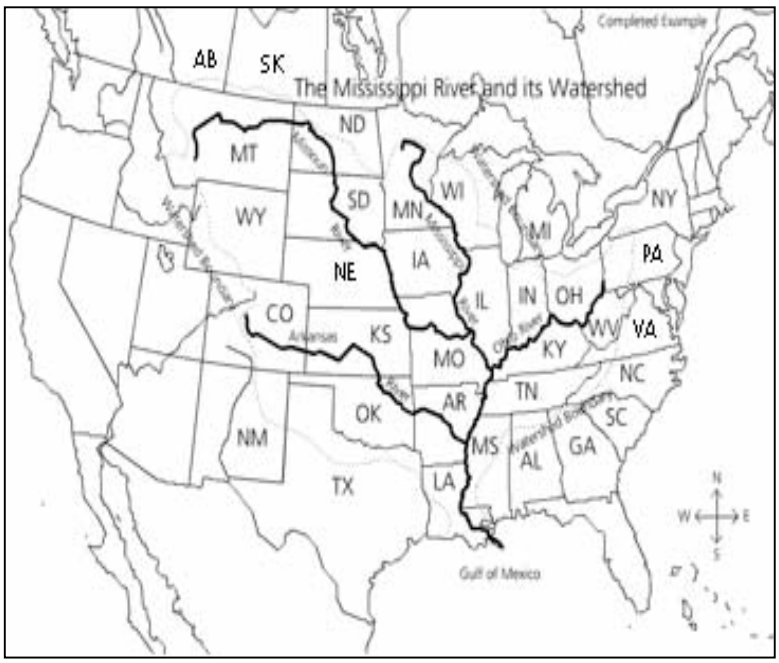
A. Purpose of the report

The highly erodible land conservation (HELC) compliance provision of the 1985 Farm Bill was intended to ensure all highly erodible cropland receiving subsidies was under a soil conservation plan. When these conservation plans were fully implemented by the 1995 deadline, the HELC compliance provision had produced significant direct and indirect reductions in soil erosion (Claassen et al, 2004). Since 1995, there has been little further reduction in soil erosion and it is unclear whether this policy mechanism is still working as intended (GAO, 2003). The 2007 Farm Bill provides an opportunity to strengthen the existing policy and expand the reach of conservation compliance to include additional cropland and additional priority environmental concerns, such as agricultural nutrient pollution.

This report provides a nationwide review of the conservation compliance policy and highlights the status of the program in the 10 states that border the Mississippi River, which comprise a major source of agriculturally-related nutrient pollution associated with the "dead zone" in the Gulf of Mexico (EWG, 2006): Arkansas, Illinois, Iowa, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Tennessee, and Wisconsin. The report also focuses on these states because the vast majority of subsidized agricultural production occurs in the Mississippi River Basin and these 10 states provide important insights about the implementation of conservation compliance and how the policy might be improved.

Including the 17 major tributaries that ultimately join the Mississippi River, the Mississippi River Basin drains portions of 31 states or about 41 percent of the continental United States. The 10 Mississippi River border states have large agricultural economies producing much of the nation's most highly subsidized commodity crops: corn, wheat, soybeans, cotton, and rice. In addition, much of the indirectly subsidized livestock industries are also located near the corn and soybean feed crops, such as dairies in Wisconsin, hogs in Iowa and Missouri, and poultry in Arkansas.

The Mississippi River Basin drains 31 states and 41 percent of the continental U.S.



Source: http://www.nps.gov/archive/miss/features/factoids/watershed.html

B. Introduction to the environmental problems associated with agriculture

Farmers have a strong affinity for the land they operate. Farmers often refer to themselves as "the first environmentalists" and cite their need to keep the land healthy as a standard business practice in their own best interest. Unfortunately, like most environmental pollution from point sources such as industrial and commercial facilities, pollution from non-point agricultural activities often occurs because there is no private cost to the environmental damage but only an external cost borne by the public and the natural environment.

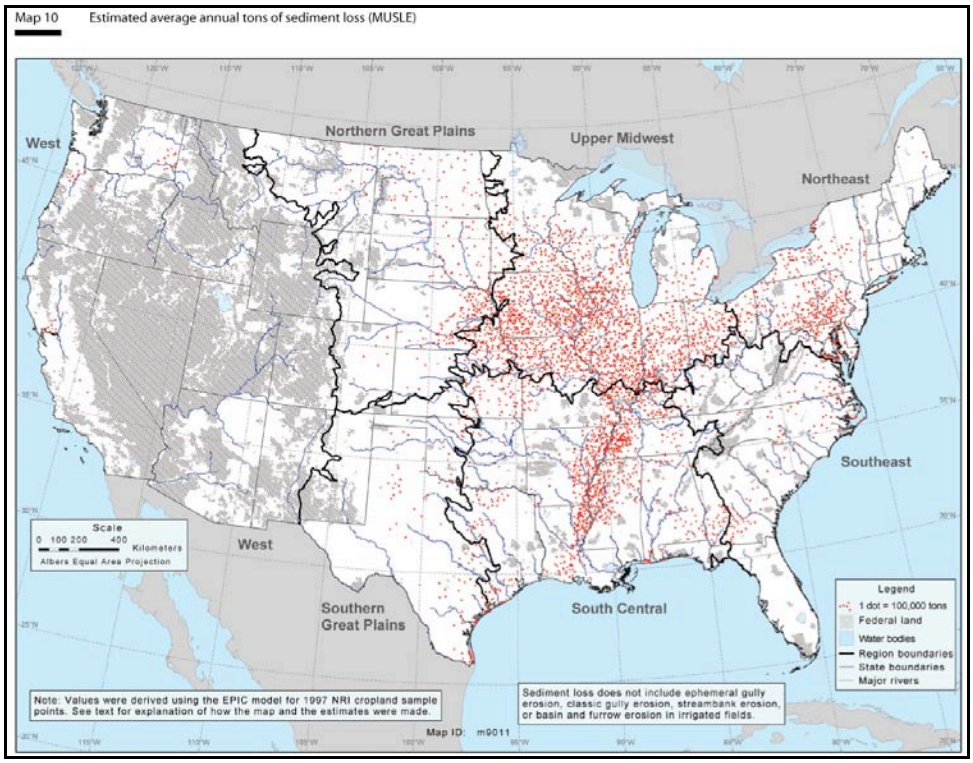
State water quality agencies report that agriculture is still the largest source of impairment in rivers and streams. Agriculture affects nearly half of stream and river miles nationwide with water quality problems involving nutrients, siltation, and pesticides (SWCS & ED, 2007). The U.S. Department of Agriculture reports that agricultural development, grazing, and use of agricultural chemicals is responsible, in part, for the listing of 380 of the 663 species on the Endangered Species List in the contiguous 48 states (USDA, 1997). From decades of compiled water quality data, the U.S. Geological Survey (USGS) concludes that in areas with the highest levels of surface nitrogen pollution, roughly half of the nitrogen comes from agricultural commercial fertilizer applications (Claassen, 2007). The remaining half of the nitrogen load comes from sewage treatment plants, urban and suburban storm water run-off, and atmospheric deposition of nitrogen emissions from vehicles and power plants (Howarth, 2002).

Furthermore, it is estimated that despite significant progress in reducing erosion from policies enacted in the 1985 Farm Bill, 1.76 billion tons soil still erode each year (USDA NRI, 2003). Soil erosion robs land of its productivity, lowers crop yields and forces farmers to use more fertilizer. When eroded soil enters surface waters, sediment smothers filter feeders, clogs fish gills, and buries spawning grounds and food supplies for many aquatic animals. Even hydroelectric dams and drinking water reservoirs are affected, as soil erosion shortens their lifespan.

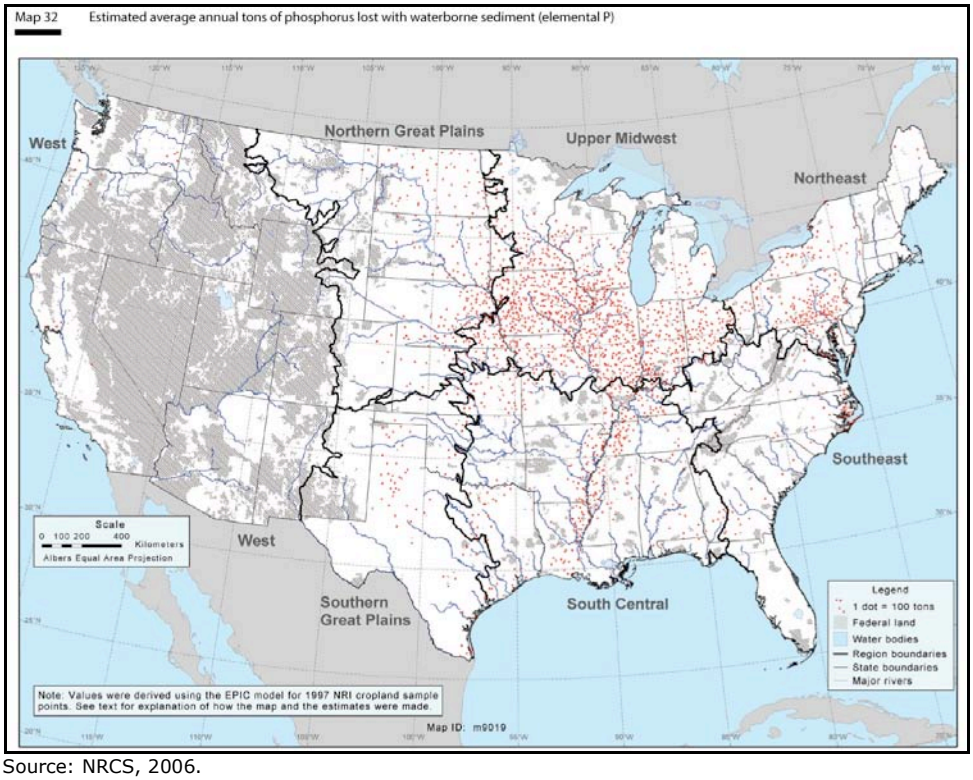
In addition to the problem of soil loss, increased agricultural inputs such as commercial and manure fertilizers, pesticides and herbicides, threaten the environment and our food supply with bacteria and toxic chemicals. One of the most commonly used weed killer is atrazine, a potential hormone-disrupting chemical linked to cancer in some studies (US EPA, 2006). Water utilities across the Midwest frequently pay to remove atrazine from drinking water (AWWA, 2006). Nutrients, such as phosphorus and nitrogen, which are valuable inputs for crop production in commercial and manure fertilizers, become deadly catalysts for algae blooms if they run-off the land into surface waters (USDA ARS, 2003). Algae outbreaks rob oxygen from the water causing low to no oxygen zones that kill crabs, oysters and many fish species unable to escape the suffocating water.

The primary agricultural impacts on the health of the Mississippi River are loadings of (1) sediment, (2) nitrogen, and (3) phosphorus, as well as, (4) degradation of aquatic habitat through loss or degradation of riparian zones and destabilization of stream channels. A recent model simulation of the loss of sediment, nitrogen and phosphorus, however, provides a good look at the concentration of sediment and nutrient pollution in the Mississippi River Basin (NRCS, 2006). Five maps are provided below.

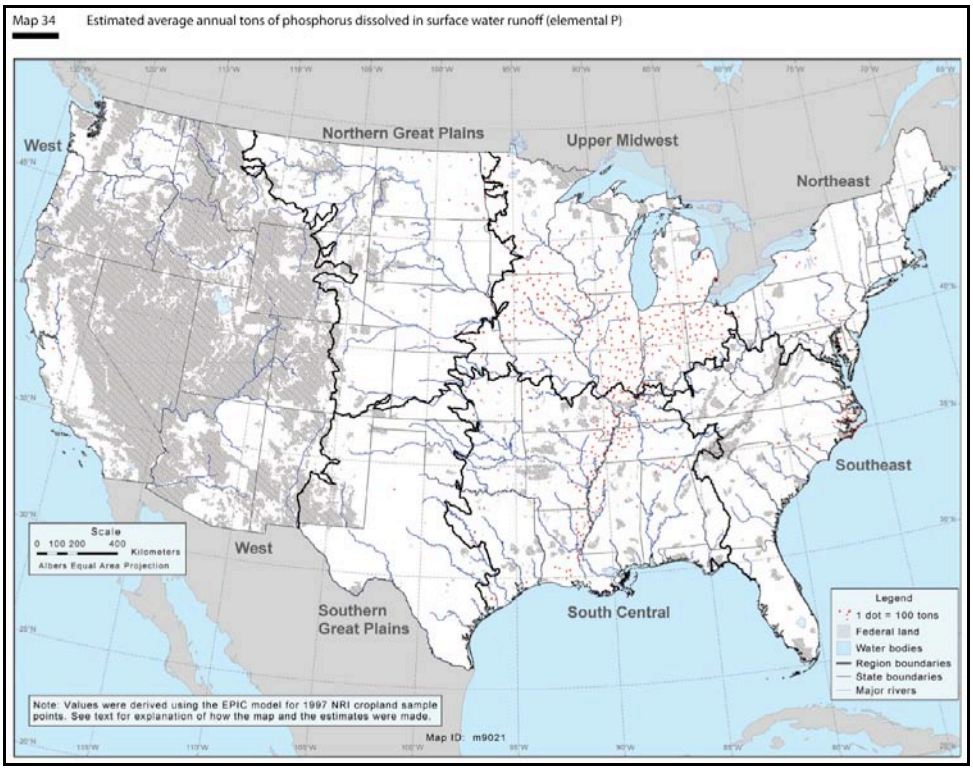
The first map shows estimated annual tons of sediment loss per year where one dot represents 100,000 tons. The second map shows estimated annual tons of phosphorus lost with waterborne sediment where one dot equals 100 tons. HELC compliance, designed to reduce soil erosion, indirectly will benefit sediment-related phosphorus loadings. As for the problem of dissolved phosphorus and dissolved nitrogen, three additional maps (two are surface water loads and one is loads to groundwater) are provided to show the extent of these problems, which conservation compliance does not directly address.



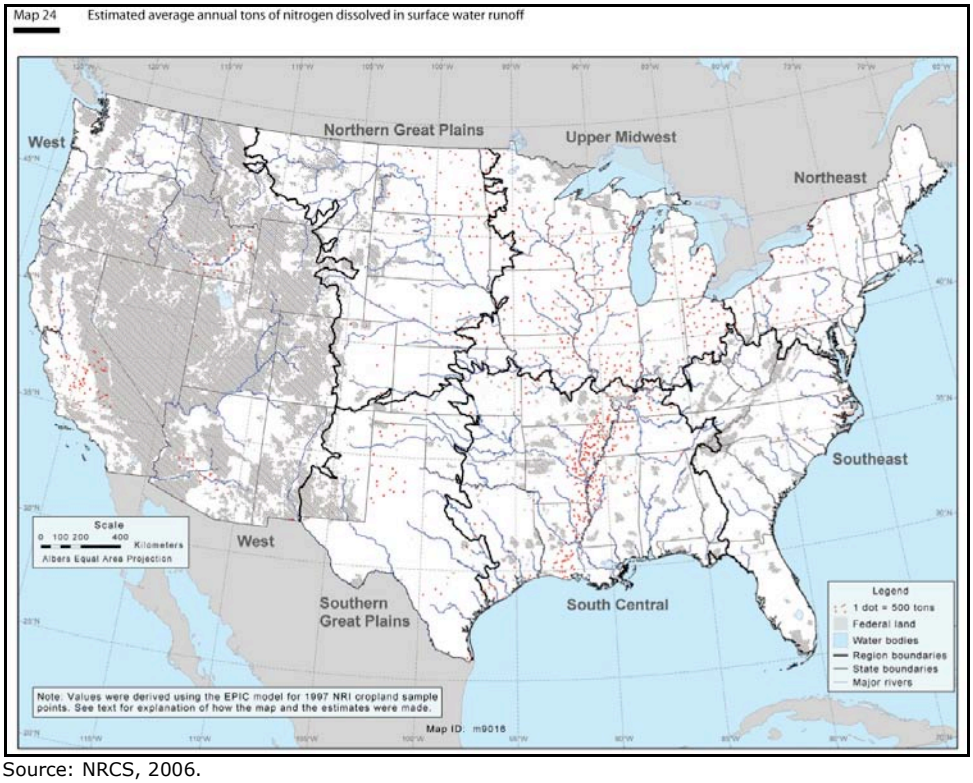
Source: NRCS, 2006.



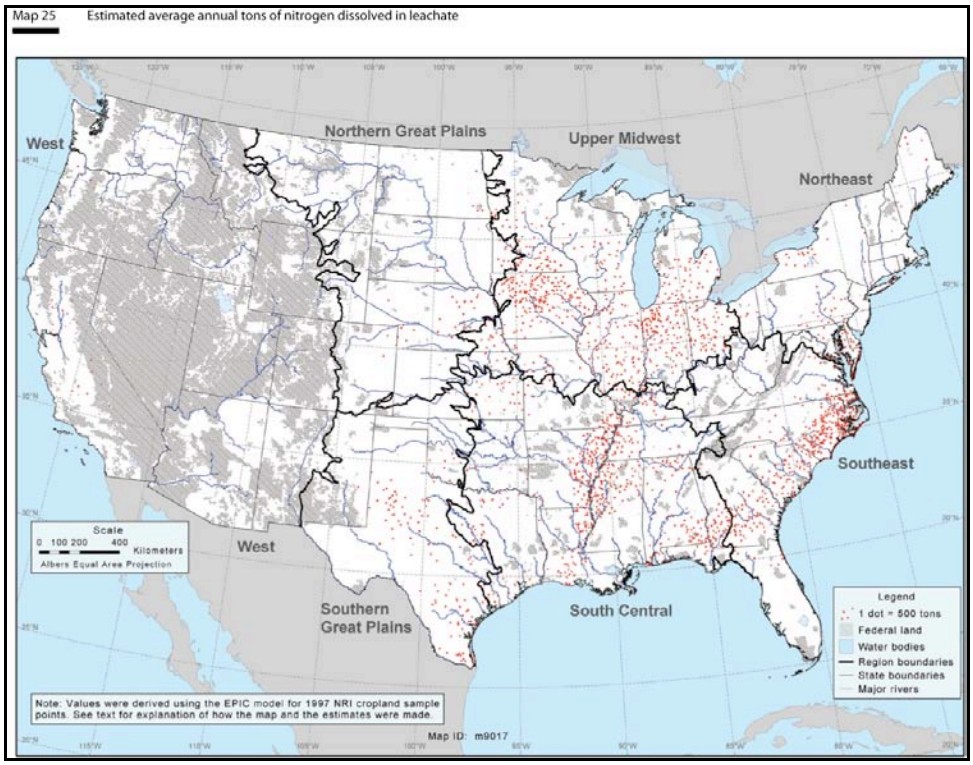
Source: NRCS, 2006.



Source: NRCS, 2006.



Source: NRCS, 2006.



Source: NRCS, 2006.

C. Introduction to the erosion problem nationwide and in the 10 Mississippi River border states

1. The majority of cropland is non-highly erodible and not subject to compliance

Of the entire 368 million acres of cropland in the nation, 100 million acres (or 27 percent) are designated as highly erodible (HEL) while 268 million acres (73 percent) are designated as non-highly erodible lands (Natural Resources Inventory, 2003) (See Table 1) (See sidebar for definitions of HEL and non-HEL).

Of the 123 million acres of cropland in the 10 states bordering the Mississippi River, 27 million acres (or 22 percent) are classified as highly erodible while 96 million acres (78 percent) are designated as non-highly erodible land (See Table 1).

WHAT IS HEL AND NON-HEL LAND?

According to the USDA, a field is designated as highly erodible (HEL) if:

a) the highly erodible soil map units in the field make up 33 percent or more of the field's acreage or
b) the highly erodible soil map units in the field equal 50 or more acres.

A non-highly erodible (NHEL) field is designated if:

a) the highly erodible soil map units in the field do not make up more than 33 percent of the field's acreage or
b) the highly erodible soil map units in the field are less than 50 acres.

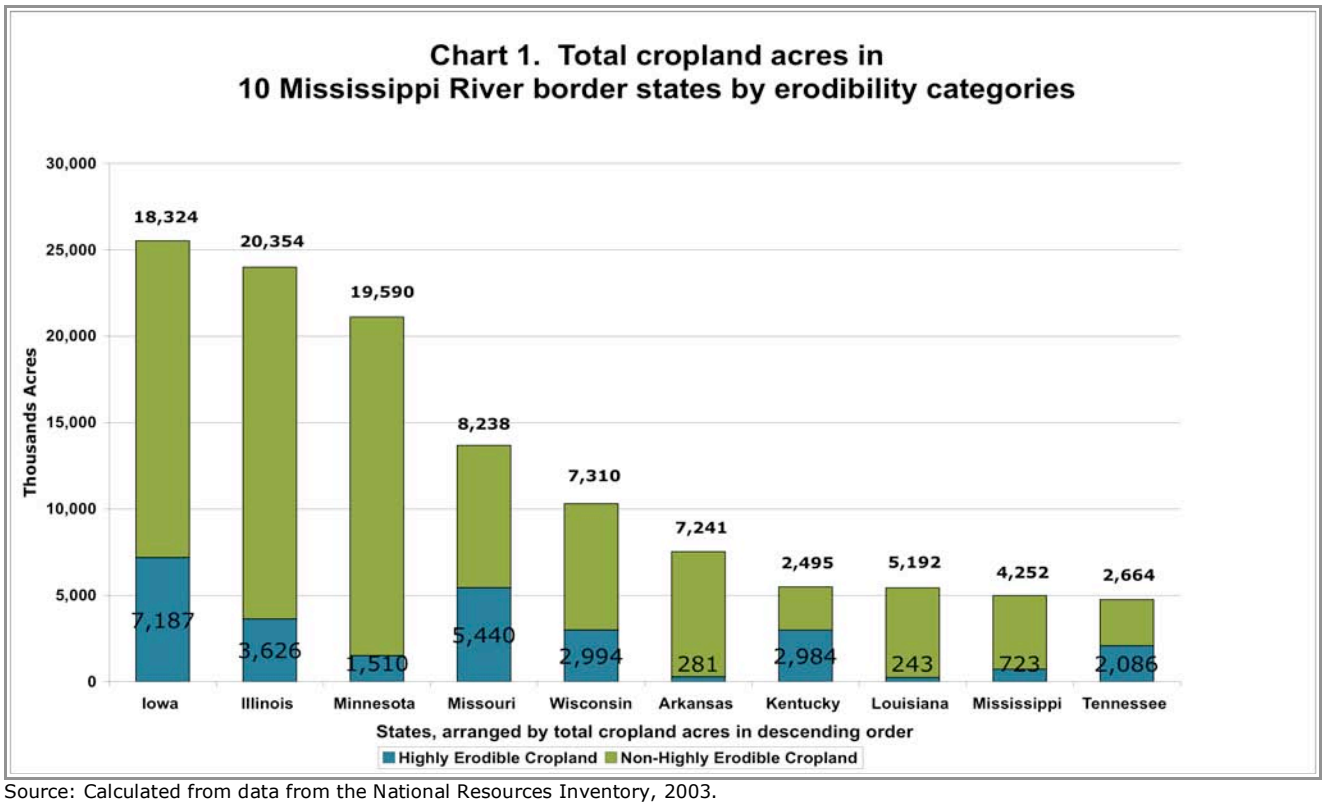
Table 1. Types of cropland nationwide and in the 10 Mississippi River border states

		Total Acres	Highly Erodible Cropland (HEL)	Non-Highly Erodible Cropland (NHEL)
Nationwide	Millions of acres	367.9	100.2	267.7
	Percent		27 %	73 %
10 Mississippi River Border States	Millions of acres	122.7	27	95.6
	Percent		22 %	78 %

Source: Calculated from data from the National Resources Inventory, 2003.

The 10 states bordering the Mississippi River differ greatly in the amount of cropland acreage. As displayed in Chart 1, three of the 10 states have over 20 million acres of cropland (Iowa, Illinois, and Minnesota) while another three states have between 7 million and 14 million acres of cropland (Missouri, Wisconsin, and Arkansas). The remaining four states have around 5 million cropland acres each (Kentucky, Louisiana, Mississippi, and Tennessee).

Chart 1 also shows that the majority of cropland (78 percent) in all 10 states is considered non-highly erodible and thus not subject to conservation compliance. Of the remaining 22 percent of cropland which is highly erodible, 40 percent or more of the cropland in three states is designated HEL (Kentucky: 54 percent, Tennessee: 44 percent, and Missouri: 40 percent) while between 15 and 30 percent of the cropland in four states is considered highly erodible (Wisconsin: 29 percent, Iowa: 28 percent, Illinois: 15 percent, and Mississippi: 15 percent). There are three states with fewer than 10 percent of their cropland considered to be highly erodible (Minnesota: 7 percent, Arkansas: 4 percent, and Louisiana: 4 percent) and thus, where the applicability of the HELC compliance mechanism is very limited.



Source: Calculated from data from the National Resources Inventory, 2003.

2. Half of the unsustainable erosion problem occurs on non-highly erodible cropland not subject to conservation compliance

According to the Natural Resource Inventory 2003 survey, of the 368 million acres of cropland in the nation, 102 million acres or 28 percent are eroding at unsustainable levels. If an unsustainable rate of erosion is occurring, there will be significant long-term soil productivity loss since erosion is exceeding the

sustainable rate known as soil loss tolerance level ("T" for short). Surprisingly, just over half (53 percent) of these unsustainably eroding acres nationwide are on highly erodible cropland, while the remaining 47 percent (48 million acres) is occurring on non-highly erodible cropland (See Table 2). Thus, nearly half of the unsustainable erosion problem nationwide occurs on non-HEL land that is not subject to the conservation compliance mechanism.

Just as unsustainable erosion is a problem nationwide, of the 122 million acres in the 10 states bordering the Mississippi River, 33 million acres or roughly 25 percent are eroding at unsustainable levels (See Table 2). Approximately half of those acres (16.5 million) are on highly erodible land and half of them (16.9 million) are on non-highly erodible land. Thus, like the situation nationwide, nearly half of the unsustainable erosion problem occurs in the 10 states on non-HEL land that is not subject to the conservation compliance.

Table 2. Cropland acres eroding at unsustainable rates nationwide and in the 10 Mississippi River border states

		Total Acres Eroding at Unsustainable Levels	Highly Erodible Cropland (HEL)	Non-Highly Erodible Cropland (NHEL)
Nationwide	Millions of acres	102	54.1	47.9
	Percent		53 %	47 %
10 Mississippi River Border States	Millions of acres	33.4	16.5	16.9
	Percent		49 %	51 %

Source: Calculated from data from the National Resources Inventory, 2003.

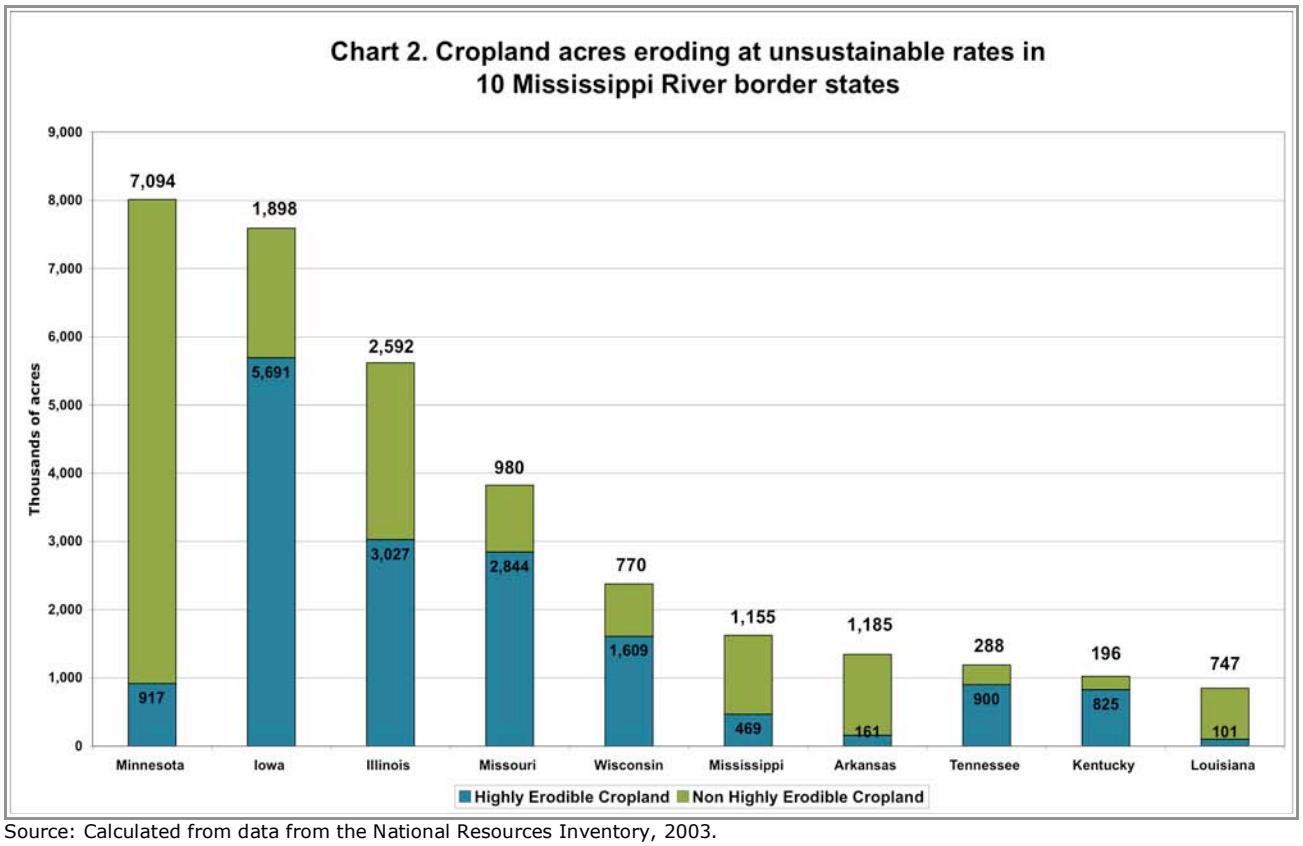
3. Conservation compliance can help solve the unsustainable cropland erosion problems in the 10 Mississippi River border states if it was applied to all subsidized cropland

Four of the 10 states bordering the Mississippi River have the majority of their unsustainable erosion problem occurring on non-HEL land (Arkansas: 88 percent, Louisiana: 88 percent, Minnesota: 86 percent, and Mississippi: 71 percent) (See Chart 2). Thus, the conservation compliance mechanism may only indirectly reduce the majority of the unsustainable erosion problem in these four states by leading to what experts call, "technology forcing" or the adoption of erosion control practices on non-highly erodible land which are only required on HEL land.

For example, although Minnesota ranked third in Chart 1 in terms of acres of cropland (21.1 million), when it comes to unsustainable erosion, Minnesota is ranked first with 8 million acres eroding above the soil loss tolerance level. Furthermore, the vast majority of the unsustainable erosion in Minnesota occurs on non-highly erodible land (7 million acres or 87 percent) while just under 1 million acres of highly erodible lands are eroding at unsustainable rates. In Mississippi, Arkansas, and Louisiana, the vast majority of the unsustainable erosion problem (59 to 86 percent) is also happening on non-highly erodible land that conservation compliance has no control over. Thus, HELC compliance is powerless to address the occurrence of this significant and unsustainable soil loss problem occurring primarily on non-highly erodible lands in these four states.

For the remaining six states, conservation compliance as currently constructed is more relevant: those states have the majority of their unsustainable erosion problem occurring on HEL land (Kentucky: 81 percent, Missouri: 74 percent, Tennessee: 76 percent, Iowa: 75 percent, Wisconsin: 68 percent, and Illinois: 54 percent). Thus, the conservation compliance statute can help reduce the unsustainable erosion problem occurring on the majority of highly erodible land in these six states.

However, in all 10 states, non-highly erodible cropland often is located closer to waterways and may be a more important source of the sediment and nutrient pollution actually delivered to streams and rivers than is highly erodible cropland that is often located upland away from waterways. The exemption of non-highly erodible land from conservation compliance substantially reduces its potential as a tool to improve water quality in the Mississippi River and its tributaries.



Source: Calculated from data from the National Resources Inventory, 2003.

II. A PRIMER ON CONSERVATION COMPLIANCE

A. What is conservation compliance?

In the late 1970's, concerns from farmers, ranchers, conservationists and the public arose over the increase in soil erosion and environmental damage caused by the decade's fence-row-to-fence-row agricultural production policies. In response, Congress decided in 1985 to require operators receiving subsidies for crops grown on highly erodible lands (HEL) to reduce soil erosion as a condition of eligibility for those subsidies. HEL compliance had the added advantage of making payments to growers of commodity crops more politically palatable at a time when the wisdom of such payments was being called into question.

Conservation compliance required farmers who cultivate highly erodible land that was in production between 1981 and 1985 to install and maintain conservation systems or risk losing their federal farm payments, including commodity, disaster, and conservation payments. According to the 1985 statute, by 1995, all farmers receiving federal subsidies and operating the 100 million acres of HEL land that make up about 25 percent of all U.S. cropland, were to have received and implemented their conservation plans.

Along with the requirements tied to HEL land, two other restrictions were established in the 1985 Farm Bill. The "Swampbuster" provision, also known as "Wetlands Conservation (WC) Compliance" denies federal farm program benefits to producers who convert a wetland into cropland unless explicitly permitted to do so, usually by replacing the converted wetland. The "Sodbuster" provision denies federal farm program benefits to producers who bring pasture or range land with no a cropping history into crop production unless a pre-approved soil conservation plan is implemented. Together the three provisions are referred to as "conservation compliance." These three federal agricultural environmental policy mechanisms are the only quasi-regulatory approaches available to the USDA amidst the conventional, voluntary programs approach to solving agricultural environmental problems. This report focuses on the highly erodible land compliance policy mechanism.

B. How is conservation compliance implemented?

The conservation compliance review process involves two U.S. Department of Agriculture (USDA) agencies and their state-level and field-based representatives: the Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA). NRCS implements the USDA's conservation programs while the FSA implements the USDA's commodity programs. As the GAO schematic of USDA's compliance review process reveals (See Schematic below), the process involves two stages beginning with NRCS.

At the beginning of each calendar year, NRCS headquarters provides an updated list of randomly generated cropland fields (officially know as "tracts") that receive FSA farm payments and are subject to HELC and Wetland Conservation (WC) compliance provisions to the state NRCS field staff. The entire universe of tracts potentially subject to review nationwide is about 4.5 million (GAO, 2003). However, GAO reports that of the 4.5 million tracts that receive federal farm benefits and subject to compliance, about 1.7 million tracts are designated as highly erodible land while the remaining 2.8 million tracts are designated as potential wetlands.

From interviews with NRCS compliance staff in the Washington, DC headquarters, in the early years of compliance, NRCS' goal was to randomly select and send to the states for review about five percent of

TRACTS CHOSEN FOR REVIEW EACH YEAR

In addition to the tracts randomly generated each year and sent from NRCS headquarters, state and field offices also add additional tracts for a variety of reasons. When field offices discover that tracts are not eligible (e.g. sold for development, pasture land, timber, etc.) they are to be replaced by the state staff. State and field offices also add specified tracts such as: tracts that were granted a waiver in the prior year, tracts with whistleblower complaints, tracts with potential violations observed by NRCS employees when providing technical assistance, etc. Finally, FSA requires NRCS to conduct compliance reviews on a five percent random sample of FSA loan program participants in each state as well.

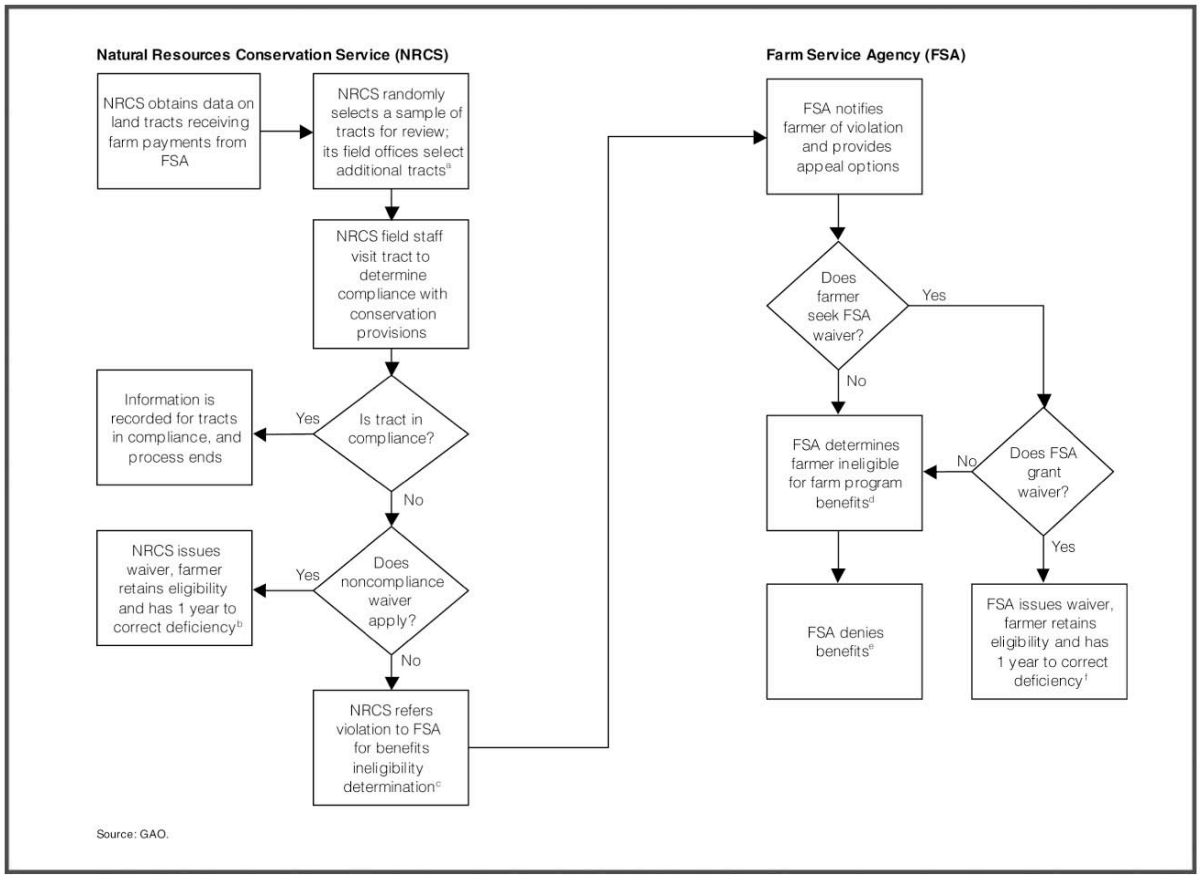
All combined, every year, the field offices are to conduct a compliance status review on every single tract that NRCS headquarters' provides them and that they add to the list. Over the course of the year, NRCS field staff will visit all the tracts on the combined list to determine if farmers operating that tract are applying the approved conservation systems.

eligible tracts in each state. Their current goal is to randomly select one percent of all tracts to send to the states for review (See sidebar on how additional tracts are chosen for review by the states).

However, of the sample tracts selected randomly by NRCS for review, GAO reports that 60 percent are selected for highly erodible land while 40 percent are selected for wetlands. This suggests NRCS may be over sampling from the smaller universe of highly erodible land tracts. In contrast, NRCS compliance staff responded that when they sample tracts each year, they do not differentiate between or report the distinction between HELC and WC tracts in the 4.5 million-tract database they receive updated each year from FSA. Furthermore, regardless of this breakdown of HELC versus WC tracts in the database or percentage selected into the random sample, NRCS compliance staff said that each field office is supposed to check for both HELC and WC compliance on each tract that was sent by headquarters each year.

Since the 2003 GAO report was published, NRCS has significantly improved the administration of the compliance program. For example, NRCS created an electronic status review reporting system that enables staff to send, via internet, the list of tracts randomly selected each year for each state. In turn, those state offices are able to electronically return the results of their compliance status reviews. However, it remains unclear if states are conducting all the status reviews during the critical erosion periods, which was one of the concerns raised by GAO.

Schematic. The compliance status review process



Source: 2003 GAO report.

1. HEL compliance established conservation practices on HEL subsidized cropland

Within 10 years of the 1985 Farm Bill, farmers were to have state Natural Resource Conservation Service (NRCS) agents design site-specific conservation systems for the eligible tracts on their farms taking into account soil type, topography, climate, cropping patterns, etc. and compile those systems into a conservation plan document (See side bar).

CONSERVATION SYSTEMS AND PRACTICES

Conservation systems are a combination of one or more conservation practices that have been chosen to achieve a substantial reduction of soil erosion on a given tract of cropland. Conservation practices can be structural or vegetative measures, as well as, management techniques including: reducing tillage (conservation tillage), shifting to less erosive crops (conservation cropping), leaving crop residue covering the soil after harvest (crop residue use), and installing grassed waterways to channel water runoff away from tilled soils. Over 1,600 conservation systems have been approved over the years but more than 50 percent of acres with conservation systems install just one or more of just three conservation practices: conservation cropping, conservation tillage, and crop residue use.

Conservation systems are designed to be affordable for a farmer while achieving substantial reductions in soil erosion. Additional cost-share funds are available through the federal Environmental Quality Incentives Program (EQIP) to install and maintain the practices. According to the GAO 2003 compliance report, conservation crop rotation is used on 81 percent of highly erodible cropland, conservation tillage is used on 33 percent, terraces are used on 13 percent and grassed waterways are used on nine percent of highly erodible cropland. In some areas, a single practice can achieve a substantial reduction while in other areas, a combination of practices is necessary.

2. To what standard are the HELC soil conservation plans being held and how much reduction are they achieving?

WHAT DOES "T" MEAN?

The sustainable rate of erosion that prevents soil productivity loss or "T" is site-specific and depends on many factors including soil type, soil depth, climate, slope, etc. In general, T is commonly thought of as no more than 5 tons of soil loss per acre per year, in regions with deep soils, before the soil begins to suffer productivity losses. T will mean different rates in different areas depending on soil characteristics. An erosion standard that allows soil to erode at 2T is allowing an amount of soil erosion that is two times greater than what is considered sustainable.

It is important to note that the T standard pertains only to the sustainability of soil productivity – not the sustainability of the water bodies into which the soil erodes. Currently, there is no environmental standard for soil erosion regarding an environmentally unsustainable level.

Initially, the NRCS proposed that conservation plans be designed to reduce erosion to the soil loss tolerance level (symbolized as "T") where the rate of erosion can occur without significant long-term productivity loss, also known as a sustainable rate of erosion (See sidebar on what "T" means). However, concern arose that accomplishing this level of erosion reduction would cause economic hardship for some producers.

Hence, as Claassen et al (2004) put it, "conservation compliance was implemented for all HEL land using a flexible approach that accounted for both soil erosion and the cost of erosion reduction, without imposing a fixed erosion standard." Thus, two types of conservation plans were developed:

(1) a "basic" conservation plan was designed to reduce erosion to T where it would not cause economic hardship while
(2) an "alternative" conservation system would not require any specific reduction in erosion other than a "significant" erosion reduction.

When visiting a tract to determine if it is in compliance, according to Section 512.01 of the NRCS Manual for Conservation System Requirements, NRCS field agents are to choose between two definitions of substantial reduction in soil erosion:[1]

A. "If the field was used to produce crops prior to December 23, 1985, and the conservation system or plan has been approved, applied, and maintained **prior to July 3, 1996**, then a substantial reduction has already been met, providing the plan or system is continued to be applied and maintained…"

B. "If the field was used to produce crops prior to December 23, 1985, and has a conservation system or plan that has been approved **after July 3, 1996**, then a substantial reduction is a 75 percent reduction of the potential erodibility, not to exceed two times the soil loss tolerance level for the predominant highly erodible soil map unit in the highly erodible field."

Thus depending on when the plan was developed by NRCS, farmers are held to two different standards. Definition A indicates that the vast majority of HELC plans in farmers' filing cabinets are in compliance and considered to be achieving a substantial reduction merely if the conservation systems are in place and maintained. Definition B indicates that any new systems developed after 1996 should be measured to determine if it is achieving at least a 75 percent reduction though more may be required if the system has not achieved at least the local 2T standard.

Further complicating the picture is Section 518.10 of the NRCS Manual for Conducting Compliance Reviews, which states that field visits should involve two quantitative measurements:

- "Review crop residue levels as per the National Agronomy Manual and/or the National Range Manual as appropriate."
- "Review the cropping system actually being used, using the current version of RUSLE or WEQ (See sidebar).

Therefore, there are a number of uncertainties regarding what soil erosion reduction standard the conservation plans were designed to achieve, what standards they are being held to, and what on-site measurements are taken to assess the level of erosion reduction actually occurring.

Unfortunately, NRCS compliance staffs were unable to clarify the situation. NRCS does not know what proportions of plans were designed to be "basic" plans or are "alternative" systems. In addition, NRCS does not know what proportions of plans were designed before or after July 3rd, 1996. Finally, it is unclear whether the crop residue, RUSLE, or WEQ measurements are taken on all tracts regardless of what type or time frame of plan. Therefore, it is unclear how many tracts are actually subject to what standard.

PREDICTING SOIL EROSION FROM WATER AND WIND

RUSLE is the "Revisions to the Universal Soil Loss Equation" and is used to predict soil erosion caused by water. It includes factors for climate, soils, topographic conditions, and the degree to which the use and management of the soil reduces erosion. The factors in the RUSLE equation, A=RxKxLSxCxP, have the following definition: 1. A is the estimation of average annual soil loss in tons per acre caused by sheet and rill erosion. 2. R is the rainfall erosivity factor. 3. K is the soil erodibility factor. 4. LS is the slope length and steepness factor. 5. C is the cover and management factor. 6. P is the support practice factor.

WEQ is the wind erosion equation for predicting soil loss due to wind erosion. The factors in the WEQ equation, E=f(IKCLV), have the following definitions: 1. E is the estimation of average annual soil loss in tons per acre. 2. f indicates the equation includes functional relationships that are not straight-line mathematical calculations. 3. I is the soil erodibility index. 4. K is the ridge roughness factor. 5. C is the climatic factor. All climatic factor values are expressed as a percentage of the value established at Garden City, Kansas, which was the location of early research in the WEQ and established the standard for climatic factors against which the other locations are measured. 6. L is the unsheltered distance across an erodible field, measured along the prevailing wind erosion direction. 7. V is the vegetative cover factor.

3. There are numerous opportunities to overturn a violation

If a tract was considered in compliance—that is, the practices outlined in the farmer's conservation plan or system are installed and maintained, the process ends. If there is a violation, that is, if a tract receives a "non-compliance determination," NRCS representatives can provide a non-compliance waiver enabling the farmer continued eligibility for federal farm program benefits and one year to correct the problem.

Waivers are provided if the farmer is unable to apply a conservation system or practice because of severe or unusual weather, disease, or pests; because the farmer experienced an extreme personal hardship, illness or death; or because the deficiency is minor and technical in nature. If the tract is not in compliance and no waiver applies, the NRCS representatives provide the farmer with 30 days to request a field review for reconsideration of the NRCS non-compliance decision. After 30 days, NRCS can pass on the violation to the FSA representatives in the state for determination of benefits ineligibility.

When the FSA takes over the compliance review process in the second stage, the local FSA county committee notifies the farmer of the violation and provides appeals options. If the farmer seeks an FSA waiver, the local FSA county committees can issue waivers to continue a farmer's eligibility for farm benefits for the following reasons: inability to implement a conservation system because it would cause undue economic hardship; the farmer acted in good faith and without intent to violate the conservation provisions; if a landlord prevents a tenant farmer from implementing the approved conservation system. If issued a waiver, the farmer has one year to correct the problem. If the farmer is not issued a waiver, the local FSA county committee provides a benefits ineligibility determination either for the tracts with a violation or for the whole farm operation. A farmer can appeal the FSA determination to the local committee first, then to the USDA National Appeals Division and then can sue in federal district court.

Despite several changes made to the conservation compliance program after the 2003 GAO report, several problems remain. In particular, because NRCS and FSA maintain two separate databases for conservation compliance information, compliance staffs at both agencies concede that tract violation information is irreconcilable between the two databases. Not all the violations reported by NRCS are represented in the FSA database of benefits at risk of denial since a) the farmer may choose not to apply for federal benefits after receiving a non-compliance determination, or b) the tract of land with a violation may not be an eligible tract with compliance requirements. In both situations, the FSA database does not specify the number of violations that their "benefits to be denied before appeals" data represent or the number of violations that the "benefits denied after the appeals" data represent.

C. Successes attributed to conservation compliance

According to the Natural Resources Inventory (NRI), between 1982 and 1997, an estimated reduction of 1.2 billion tons per year of soil erosion occurred nationwide. Claassen et al. (2004) have estimated that 295 million tons per year or roughly 25 percent of all the erosion reduction could be directly attributed to the conservation compliance policy. Factors contributing to the reduction of the other 880 million tons per year of erosion, include: a) land-use changes (enrolling land in the Conservation Reserve Programs, for example), b) reductions on land not receiving subsidy payments, or c) reductions on land not classified as highly erodible.

Economists suggest that erosion reductions on land not subject to conservation compliance may have occurred because of "technology forcing," that is, the development and dissemination of machinery needed to carry out the conservation compliance practices such as conservation tillage, conservation cropping, and crop residue use (Claassen et al, 2004). Thus, the mere presence of the federal conservation compliance policy on just one quarter of the nation's cropland helped send the right signal to the market and to farmers not subject to the statute to implement good conservation practices.

There are several other factors that have reduced soil erosion over the years that are unrelated to conservation compliance. Factors that have allowed farmers to reduce the number of trips across a field and reduce the frequency or intensity of plowing the ground (collectively called, conservation tillage), include: a) increased energy prices which increase cost of tractor diesel fuel, b) increased average farm size allows less time to operate the larger acreage, and c) the development of pre-emergence herbicides and genetically modified seed enables farmers to plant crops directly into the previous crop without needing to till the land first.

After the conservation compliance implementation deadline in 1995 and the National Resources Inventory (NRI) survey in 1997, which documented the erosion reduction success, it is unclear if any additional soil reduction benefits have been achieved due to the policy (Claassen et al, 2004). Although annual cropland erosion, according to the NRI dropped by 40 percent (1.2 billion tons) from 3.07 billion tons in 1982 to 1.9 billion tons in 1997 (survey years encompassing the years 1985 and 1995), about 1.76 billion tons of soil per year is still being lost as of 2003 (the latest NRI survey).

III. IMPLEMENTING COMPLIANCE STATUS REVIEWS

In 2003, at the request of Senator Tom Harkin (D-IA), the Government Accountability Office (GAO) published a study on the conservation compliance program. The GAO report revealed many problems with the implementation and enforcement of the program. Such deficiencies led the GAO to question the NRCS claim that 98 percent of the nation's cropland tracts subject to conservation provisions were in compliance. EWG analyzed data presented in that report along with additional data obtained from NRCS through Freedom of Information Act requests.

A. The number of tracts reviewed each year is very small and does not achieve the NRCS goal of reviewing one percent of tracts each year

Table 3.
Tracts reviewed for compliance, Nationwide

Crop Year	Tracts reviewed for compliance	Percent of tracts reviewed each year
1993	53,878	1.2%
1994	49,314	1.1%
1995	44,983	1.0%
1996	49,986	1.1%
1997	49,636	1.1%
1998	15,385	0.3%
1999	14,136	0.3%
2000	17,264	0.4%
2001	17,723	0.4%
2002	17,892	0.4%
2003	18,879	0.4%
2004	30,798	0.7%
2005	30,085	0.7%
2006	27,487	0.6%
Total	**409,959**	**0.7%**

Source: Data from 1993 to 1999 were taken from the 2003 GAO report while data from 2000 to 2006 were provided by NRCS compliance staff.

Table 4.
Tracts reviewed for compliance, 10 Mississippi River border states

State	Tracts reviewed for compliance (sum of 1993 to 2001 reviews)	Tracts subject to review every year (sample year 2002)	Percent of tracts reviewed each year
Arkansas	3,758	81,536	0.5%
Illinois	18,619	288,310	0.7%
Iowa	21,076	253,538	0.9%
Kentucky	13,072	236,722	0.6%
Louisiana	2,371	60,597	0.4%
Minnesota	9,270	191,164	0.5%
Mississippi	7,120	85,270	0.9%
Missouri	13,808	172,309	0.9%
Tennessee	9,980	177,455	0.6%
Wisconsin	11,640	161,973	0.8%
Total	**110,714**	**1,708,874**	**0.7%**

Source: Aggregated data for 1993 to 2001, as well as, the sample year 2002 data are from the 2003 GAO report. This data combines HELC and WC tracts reviewed because NRCS does not keep it separately.

Compliance Reviews Nationwide

Of the 4.5 million tracts of subsidized cropland that are subject to either highly erodible land conservation (HELC) or wetlands conservation (WC) compliance,[2] NRCS field offices conducted reviews on 410,000 tracts, from 1993 to 2006 (See Table 3). Thus, given the annual NRCS goal to review one percent of all tracts nationwide, NRCS fell short of the goal of reviewing 45,000 tracts a year or a total of 630,000 tracts over the 14 year time period by 220,000 tracts.

During the first five years of available data (1993 to 1997), NRCS exceeded the one percent annual tract review goal by reviewing over 45,000 tracts a year. However, this is also the time period that NRCS compliance staff said NRCS had an early goal of reviewing five percent of all tracts. This would mean that NRCS should have been reviewing 225,000 tracts per year, instead of the 45,000 to 50,000 tracts being reviewed each year between 1993 and 1997. Over this five year time period, NRCS fell short of the five percent goal by 877,000 tracts. In the next time period, from 1998 to 2003, NRCS reviewed only about a third of one percent of tracts each year or between 14,000 to 19,000 tracts per year. And finally, after the

publication of the 2003 GAO report, NRCS increased the number of tracts they reviewed to nearly 31,000 in 2004, falling back a little to 30,000 in 2005 and down to 27,500 in 2006. In all three of the most recent years, NRCS was still below its one percent goal.

Discussions with NRCS compliance staff indicate that the significant drop in tracts reviewed after 1997 reflects a variety of factors, including the fact that the 1996 Farm Bill established several new conservation programs that NRCS had to implement (EQIP, WRP, WHIP, FRPP[3]) and thus the field staff were overwhelmed with new implementation activities. Thus, headquarters cut back the number of tracts that had to be reviewed before sending the list to the states.

NRCS compliance staff did explain the rise in tracts reviewed in 2004 to 2006, to around 30,000, after being below 20,000 for so many years. They acknowledged that the increase was "a response to the GAO report recommendations which said they weren't reviewing enough sample tracts." In addition, the improved oversight was aided by their implementation of another GAO recommendation, a new internet-based compliance reporting system, which began in 2004. This tool made it significantly easier to transmit the lists of randomly generated tracts from headquarters to the field offices directly over the internet rather than mailing the list to the state offices. The new system also made it easier for field offices to report their status review results back to headquarters.

Compliance Reviews in the Mississippi River Border States

Every year in the 10 states bordering the Mississippi River, approximately 1.7 million tracts are potentially subject to a conservation compliance review, comprising 38 percent of all 4.5 million eligible tracts in the nation (See Table 4). In fact, six of the 10 Mississippi River border states are ranked in the top 10 of a 50-state ranking of all eligible HELC and WC tracts: Illinois (ranked 1st), Iowa (2nd), Kentucky, (4th), Minnesota (7th), Tennessee (9th), and Missouri (10th). The four remaining states and their rank are: Wisconsin (14th), Mississippi (21st), Arkansas (23rd), and Louisiana (27th).

To provide an understanding of how many tracts are eligible to be reviewed in each of the 10 states, we used the 2002 figures that GAO used in their 2003 report. GAO provided the number of tracts subject to review in 2002 as a snapshot of the magnitude of tracts for each state in the FSA database. The actual number of tracts varies slightly from year to year as FSA constantly updates their database with input from NRCS.

Thus, the number of tracts eligible for HELC and WC review in the Mississippi River border states ranges from just 60,587 in Louisiana to 288,310 in Illinois. This range is due to the number of subsidized tracts in the state and the potential for the subsidized tracts to be considered highly erodible or as having wetlands (See sidebar).

TRACT SELECTION FOR COMPLIANCE REVIEWS, 10 MISSISSIPPI RIVER BORDER STATES

Of the 1.7 million tracts that are eligible for review in the 10 states, approximately 1.02 million are flagged as having the potential to have wetlands while 686,000 are likely to be highly erodible lands. (See Table 1 in the Appendix for a breakdown by state of HELC and WC tracts subject to review.) However, when randomly selecting tracts or when reporting these tracts to the states, NRCS does not differentiate between HELC and WC tracts. NRCS says each state is supposed to conduct both a HELC and a WC compliance review on every tract they receive.

Over the nine years (1993 to 2001) of GAO data, these 10 states reviewed a total of 111,000 tracts. This represents only seven-tenths of one percent of the 15.4 million tracts eligible for review over these nine years (1.7 million tracts per year x 9 years). To have achieved the one percent annual review goal over this nine year time period, NRCS would have had to check nearly 154,000 tracts, falling short by 43,000. If the average number of tracts reviewed each year over this nine-year time period was 12,300 (111,000 / 9 years), then these states fell short of reviewing the one percent goal of 17,000 tracts per year by about 4,700 tracts per year (For more on these calculations, see Table 2 in the Appendix).

The number of tracts actually reviewed over the nine years of data in each state, ranges from a low of 2,371 in Louisiana to a high of 21,076 in Iowa. However, all of the states fell short of reviewing one percent of eligible tracts each year with Louisiana reviewing the lowest percentage—0.4 percent. Mississippi and Iowa reviewed the highest percentages of eligible tracts each year: 0.9 percent and 0.9 percent, respectively. The five states with the lowest percentage of tracts reviewed each year are Louisiana

(0.4 percent), Arkansas (0.5 percent), Minnesota (0.5 percent), Kentucky (0.6 percent), and Tennessee (0.6 percent).

To understand the trend in tracts actually reviewed in each of the 10 states over time, NRCS provided us with data from 2000 to 2006, which are the years they now maintain electronically per the recommendation of the GAO 2003 report (See Table 5 below). In the first column, the number of tracts that each state should be reviewing each year to meet the one percent NRCS goal is listed. Approximately 17,000 tracts should be reviewed each year in these 10 states. Yet, the closest these states came to that goal was 12,170 tracts in 2005. The 10 states reviewed as few as 6,844 tracts in 2000. Within each state, Louisiana has the lowest number of tracts to review to achieve the one percent goal with only 606 tracts while Illinois has the most number of tracts to review with 2,883 tracts. To see the number of tracts that each state fell short of to reach their one percent annual review goal each year over the seven years, see Table 3 in the Appendix.

Table 5. None of the 10 Mississippi River border states reviewed sufficient numbers of tracts to achieve the one percent NRCS goal from 2000 to 2006

	Number of tracts reviewed								
State	**Tracts to review each year to achieve one percent review goal**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2000 to 2006**
Arkansas	815	322	266	273	545	338	430	367	2,541
Illinois	2,883	1,184	1,162	1,030	1,061	1,803	2,257	1,977	10,474
Iowa	2,535	1,512	1,430	1,542	1,516	2,387	2,205	1,707	12,299
Kentucky	2,367	762	938	823	1,017	1,248	1,934	1,612	8,334
Louisiana	606	242	244	242	247	423	349	285	2,032
Minnesota	1,912	572	505	514	506	1,382	1,049	960	5,488
Mississippi	853	426	423	421	465	482	356	297	2,870
Missouri	1,723	838	881	1,069	922	1,283	1,103	1,185	7,281
Tennessee	1,775	361	440	440	435	584	1,059	861	4,180
Wisconsin	1,620	625	835	827	791	1,430	1,428	1,239	7,175
TOTAL	**17,089**	**6,844**	**7,124**	**7,181**	**7,505**	**11,360**	**12,170**	**10,490**	**62,674**

Source: NRCS compliance staff provided data to EWG for years 2000 to 2006 by state. These years are maintained electronically while all previous years' data are in hard copy.

B. The number of highly erodible lands violations alone, and when combined with wetlands violations, is a tiny fraction of the number of tracts reviewed

Table 6. Tracts with violations, Nationwide

Crop Year	Total tracts with violations	Tracts with highly erodible lands (HELC) violations	Tracts with wetlands (WC) violations	Percent of reviewed tracts with HELC violations
1993	2,085	1,893	192	3.5%
1994	1,639	1,530	109	3.1%
1995	633	605	28	1.3%
1996	498	402	96	0.8%
1997	183	150	33	0.3%
1998	205	167	38	1.1%
1999	180	134	46	0.9%
2000	402	195	207	1.1%
2001	289	198	91	1.1%
2002	200	164	36	0.9%
2003	191	151	40	0.8%
2004	381	274	107	0.9%
2005	470	367	103	1.2%
2006	327	240	87	0.9%
Total	**7,683**	**6,470**	**1,213**	**1.6%**

Source: Data from 1993 to 1999 were taken from the 2003 GAO report while data from 2000 to 2006 were provided by NRCS compliance head quarter's staff and represents data that is now automated.

Table 7. Tracts with violations, 10 Mississippi River border states

State	Total tracts with violations (1993 to 2001)	Tracts with highly erodible land violations (1993 to 2001)	Tracts with wetland violations (1993 to 2001)	Percent of reviewed tracts with HELC violations
Arkansas	14	9	5	0.2%
Illinois	387	355	32	1.9%
Iowa	988	926	62	4.4%
Kentucky	71	69	2	0.5%
Louisiana	3	0	3	0.0%
Minnesota	147	23	124	0.2%
Mississippi	68	65	3	0.9%
Missouri	639	611	28	4.4%
Tennessee	43	35	8	0.4%
Wisconsin	295	206	89	1.8%
Total	**2,655**	**2,299**	**356**	**2.1%**

Source: Aggregated data for 1993 to 2001 are from the 2003 GAO report.

Tracts with Violations Nationwide

Of the 410,000 tracts reviewed for conservation compliance from 1993 to 2006, NRCS staff found 7,683 "non-compliance determinations" or violations of either highly erodible lands conservation (HELC) or wetlands conservation (WC) compliance provisions (See Table 6). That is, fewer than two percent of the tracts reviewed over the 14 years were reported to have violations. Of those 7,683 violations, the vast majority (6,470) were HELC violations, while just 1,213 were WC violations.

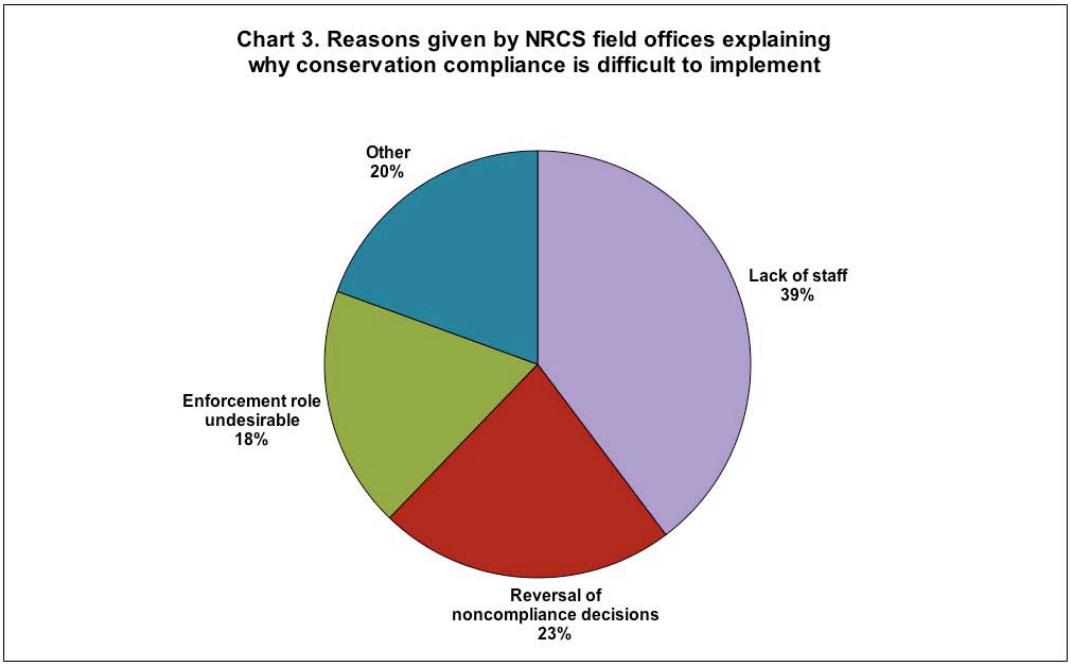
In the earliest years, 1993 and 1994, NRCS found the most number of violations, 2,085 and 1,639, respectively. The number of violations reported dropped significantly in 1995 to 633 and then continued to be below and often times well below, 500 violations reported per year. The trend downwards over time is the same for the HELC-only violations. Thus, except for the first two years of data, the percentage of violations reported with highly erodible lands problems hovered around one percent per year.

NRCS ONLY COUNTS INITIAL VIOLATIONS

The number of violations reported here is the initial number of NRCS "non-compliance determinations"—that is, it is the initial reporting of a violation on a reviewed tract of land. NRCS does not collect data on the number of violations that survive the various stages of the appeals process.

The percentage of tracts with violations in Table 6 drops over the years from a high near four percent in 1993 to about nearly one percent in 2006. NRCS compliance staff explained that in the early years of implementing compliance, though farmers were not required to file a conservation plan until the official 1995 deadline, those farmers that did receive a plan between 1985 and 1995 were subject to compliance status reviews. Thus, far more violations were found in 1993 and 1994 because producers had not fully implemented their plans yet or had not implemented them properly. However, over the years, with education and training sessions by the field staff explaining the requirements, NRCS says, far fewer violations have been found.

GAO's survey of 2,500 NRCS field staff suggests a different explanation. NRCS field staff gave the following factors as the primary hindrances in carrying out conservation compliance provisions (See Chart 3): lack of staff, reversal of non-compliance decisions, undesirable enforcement role, and other. The category of "other" includes: lack of NRCS guidance, lack of appropriate information like maps, lack of a priority for compliance reviews with supervisor, tracts received at inconvenient times, etc. NRCS compliance staff declined to comment on this GAO assessment.



Source: Chart replicated from the 2003 GAO report.

Tracts with Violations in the Mississippi River Border States

Of the 111,000 tracts that were reviewed over the years 1993 to 2001 in the 10 states that border the Mississippi River, 2,655 violations were reported (See Table 7). That is, only 2.1 percent of the tracts reviewed over the nine years were reported to have violations. Of the 2,655 violations found, the vast majority were HELC violations (2,299) while just 356 tracts were wetlands violations. Over these nine years, states ranged from reporting as few as three violations in Louisiana to reporting 988 violations in Iowa.

To understand the trend in tracts with reported violations over time, in each of the 10 states, EWG used the NRCS-provided data from 2000 to 2006 (See Table 8 for HELC violations and Table 4, in the Appendix, for WC violations). Over these last seven years, 1,137 violations in total have been reported – again, the vast majority, 891 violations are for highly erodible lands violations while 246 were wetlands violations. Highly erodible lands violations each year in these 10 states have been under 130 from 2000 to 2003. Again, in 2004, the year after the 2003 GAO report, the number of HELC violations reported shot up from 110 in 2003 to 170. Violations for HELC dropped back down in 2005 to 131 and to 120 in 2006.

Mississippi had the fewest HELC violations reported over these seven years, just five, while Iowa reported the most, 386. Two states, Arkansas and Kentucky reported zero HELC violations for three years in a row while Mississippi reported zero violations in four years and Louisiana reported no violations in two years.

Table 8. Tracts with highly erodible lands conservation (HELC) compliance violations

	2000	2001	2002	2003	2004	2005	2006	2000 to 2006
Arkansas	3				3	1	17	24
Illinois	56	22	36	46	57	33	33	283
Iowa	51	63	62	49	65	61	35	386
Kentucky				4	1		4	9
Louisiana	1		1		5	4	2	13
Minnesota	2	8	2		11	9	2	34
Mississippi			1		2	2		5
Missouri	10	1	2	1	7	9	13	43
Tennessee	1	1	2		2	3	9	18
Wisconsin	5	20	10	10	17	9	5	76
TOTAL	**129**	**115**	**116**	**110**	**170**	**131**	**120**	**891**

Source: NRCS compliance staff provided this data to EWG.

C. A majority of the federal farm benefits at risk for denial are ultimately reinstated during the appeals process

Table 9.
Benefits at risk for denial and denied, Nationwide

Crop Year	Benefits to be denied before appeals for HELC violations	Benefits denied for HELC violations	Percent of benefits denied for HELC violations
1993	$12,748,000	$3,005,000	24%
1994	$10,692,000	$2,243,000	21%
1995	$2,674,000	$968,000	36%
1996	$1,266,000	$492,000	39%
1997	$1,391,000	$334,000	24%
1998	$1,932,000	$301,000	16%
1999	$2,381,000	$238,000	10%
2000	$3,617,000	$404,000	11%
2001	$5,477,000	$150,000	3%
Total	**$42,178,000**	**$8,135,000**	**19%**

Source: GAO 2003 report. Data for years 2000 to 2006 were requested from the Farm Service Agency via the Freedom of Information Act (FOIA) but had not arrived before publication of this report.

Table 10.
Benefits at risk for denial and denied, 10 Mississippi River border states

State	Benefits to be denied before appeals (1993 to 2001)	Benefits denied (1993 to 2001)	Percent of benefits denied for total violations
Arkansas	$1,033,000	$637,000	62%
Illinois	$5,195,000	$869,000	17%
Iowa	$20,559,000	$2,136,000	10%
Kentucky	$220,000	$81,000	37%
Louisiana	$115,000	0	0%
Minnesota	$2,304,000	$829,000	36%
Mississippi	$1,237,000	$47,000	4%
Missouri	$2,291,000	$645,000	28%
Tennessee	$42,000	$17,000	40%
Wisconsin	$2,421,000	$356,000	15%
Total	**$35,417,000**	**$5,617,000**	**16%**

Source: GAO 2003 report. Includes both HELC and WC violations.

Benefits Reinstated Nationwide

For the years 1993 to 2001,[4] GAO reports that a total of $42 million federal farm benefits (commodity program payments and disaster relief payments) were at risk for denial because of approximately 6,000 highly erodible land compliance violations reported over these nine years. However, FSA compliance staff cautioned us from concluding that the $42 million represented all of the benefits associated with the reported violations. Since conservation compliance is a benefits eligibility requirement, some farmers who received non-compliance determinations on their land might have decided not to apply for the federal benefits that year to avoid fixing the problem or working through the appeals process.

Over the nine years, from 1993 to 2001, GAO reports that $8 million farm benefits were ultimately denied for violations that did not succeed in the appeals process. Thus, just 19 percent were actually denied and 81 percent of the at-risk benefits were ultimately reinstated. Neither NRCS nor FSA could provide information on the number of violations that remained after the appeals process.

Benefits Reinstated in Mississippi River Border States

Of the $35 million worth of federal farm benefits that could have been denied over the nine years (1993 to 2001) in these 10 states, only $5.6 million or just 16 percent were actually denied (See Table 10). Thus, 84 percent of the benefits put at risk were ultimately reinstated in these 10 states. The state with the lowest value of benefits denied was Louisiana, which did not deny any of the $115,000 associated with the state's three wetlands violations (there were no HELC violations reported) over the nine years. The state with the largest value of benefits denied was Iowa with $2.1 million denied. However, Iowa ultimately denied just 10 percent of the possible $20.6 million at risk of denial. Arkansas had the highest benefits denied rate at 62 percent where $637,000 were ultimately denied of the $1 million that were at risk before the appeals process for the nine highly erodible land and five wetland compliance violations over the nine years.

D. Discussion

Despite 14 years of data nationwide, it is difficult to conclude how well the conservation compliance program is working to reduce soil erosion on subsidized highly erodible croplands. There are several issues to consider regarding the number of tracts sampled, the number of violations, and the amount of benefits reinstated after the appeals process.

Concerns Regarding Number of Tracts Sampled

a. Sample size is less than the one percent annual review goal and should be set to position compliance status reviews as an enforcement mechanism

To achieve the one percent annual review goal in 2006 (45,000 tracts out of a 4.5 million-tract database), NRCS would have to review at least 17,500 more tracts than the 27,500 tracts it actually reviewed. Furthermore, since the state field offices are supposed to add their own list of tracts (follow-up on the tracts with violations from last year, whistle-blower complaints, suspected violations seen during technical assistance provision, etc.) Congress should expect to see more than 45,000 tracts reviewed each year.

This report demonstrates that except from 1993 to 1997, NRCS did not review enough tracts each year to meet the one percent goal of 45,000 tracts. In the 2003 GAO report, NRCS officials said they attempted to select about 13,000 tracts to review each year (this is less than one-third of one percent). As reported in the GAO study, these NRCS officials maintain that selecting about 13,000 tracts to review each year is a statistically valid sample for projecting nationally. However, they note that the sample is not large enough to project on a state-by-state basis.

In fact, NRCS compliance staff say that they under-sample in some states that have the largest numbers of eligible tracts because if they sampled one percent for those states, their field offices would have an overwhelming number of tracts to review each year. Thus, given the fact that there are major differences in the number of highly erodible and wetlands tracts subject to compliance in each state and given the under-sampling that goes on in states with large numbers of tracts, it is difficult to concur with the NRCS claim that their sample sizes are statistically representative at the national level.

Regardless of statistical validity of the sample size for projecting nationally or at the state level, NRCS should be choosing the number of compliance status reviews nationwide and in each state to position the status reviews as an enforcement mechanism. That is, enough status reviews should be conducted in each state so that there is a reasonable expectation among farmers that they will be caught eventually if they are not implementing their compliance plans.

b. Ineligible tracts are still in the database inflating the compliance rate and over-counting the number of valid tracts reviewed each year

NRCS field offices reported to GAO during interviews that many sample tracts they received from NRCS headquarters were not subject to conservation compliance because they did not contain highly erodible lands or wetlands or were not cropland. Agricultural land that is not considered cropland includes: pasture, rangeland, timber, or permanent cover grass. Despite this, those ineligible tracts were reported as in compliance anyway. This situation inflates the farmer compliance rate reported by NRCS and further lowers the actual number of valid compliance tracts reviewed each year. In its 2003 report, GAO estimated that about 20 percent of tracts selected for review turned out to be ineligible for status reviews. NRCS' latest annual Compliance Review Report (USDA NRCS, 2006) suggests the agency is still selecting a significant number of tracts for review where a plan is not needed. In 2005, the last year of available data, 7,603 tracts (or 30 percent) of the 25,548 tracts selected for review were reported back as not needing a plan (USDA NRCS, 2006).

c. Status reviews are irreconcilable with acres eroding at unsustainable rates and lack of erosion reduction information

NRCS does annually evaluate its compliance program but stops short of relating the agency's efforts to the magnitude of the soil erosion problem they are supposed to be addressing. There is no effort to determine what proportion of the nation's highly erodible land is actually subject to compliance and has received a status review. The agency does not estimate what proportion of highly erodible lands with an unsustainable

erosion problem are under a soil conservation plan. Furthermore, NRCS does not estimate whether those plans are reducing the unsustainable erosion to sustainable rates. This problem is compounded by the fact that NRCS does not keep track of the actual rate of erosion that may have been measured on the land during the status review.

Concerns About Tracts with Violations—What does the data on violations reported mean?

NRCS compliance staff agreed that they were uncertain whether the number of violations reported has dropped since 1994 simply because farmers had until 1995 to comply with the deadline and have learned how to comply with their required soil conservation plan or because the number of tracts reviewed has dropped over the years. It is possible that after 1994, farmers have simply done better at managing their soil erosion. However, it could also be that some NRCS staff are not able to effectively review all the tracts sent to them or they are not formally citing as many violations as they actually find.

A rise in the number of violations reported did occur in the years after the 2003 GAO report was published suggesting that when policy makers and the public are watching, NRCS field offices are able to conduct more status reviews and report more violations than in the years before the 2003 report when there was no oversight or external interest in the program.

Concerns About Benefits Reinstated After Appeals

a. What do the large percent of benefits reinstated mean?

The large percent of benefits reinstated is difficult to interpret. It could mean that conservation compliance is not working to correct soil erosion problems because NRCS and FSA consistently overturn NRCS non-compliance determinations and most farmers do not get their benefits taken away from them. This could suggest that the incentive to install and maintain good soil conservation practices in order to remain eligible for federal farm benefits is too limited to have an impact on farmer behavior. When billions of commodity and disaster dollars are paid to farmers annually, the few million dollars that are at risk before the appeals process may present a negligible risk of violation to farmers. In addition, with the probability that just one in five at risk benefits will be denied further weakens the potential for compliance to influence behavior.

However, the large percent of benefits reinstated could mean the exact opposite situation: that compliance is working well to keep most farmers implementing their soil conservation practices because farmers have one year to fix the problem that has been brought to their attention. The fact that most benefits are reinstated could suggest that farmers are working with NRCS over the one-year to fix the problem and don't have their benefits denied. Unfortunately, we do not know if the erosion problems are really being fixed over the following year because NRCS and FSA do not keep track of the tracts on which violations have been rectified.

b. Types of waivers provided by NRCS and FSA are different and likely problematic

As noted earlier, the waivers that NRCS can provide to farmers who appeal their non-compliance determination is different from the waivers that FSA can provide in the second stage of the appeals process after farmers have been denied a waiver by NRCS. The NRCS, as a technical assistance organization, provides waivers to farmers with violations if the violations are related to severe weather, disease or pests; personal hardship like illness or death; or because the deficiency was minor or technical in nature. If the farmer does not meet these criteria and is not granted a waiver, he/she can proceed to the FSA appeals process. FSA can provide waivers to farmers if their inability to implement a conservation system was because it would cause undue economic hardship; the farmer acted in "good faith" without the intent to violate the provision; or when a landlord prevents a tenant farmer from implementing the conservation system.

Thus, the FSA waivers are not based on technical issues like those provided by NRCS but based on economic and political judgments. Since the FSA county committees that are reviewing the waiver appeal are comprised mostly of fellow farmers or are individuals in the farming community (bankers, fertilizer dealers, equipment representatives, etc), these individuals may find it difficult to deny benefits to a farmer who may be a neighbor or a client.

Additional Questions

We agree with GAO's questioning the NRCS claim that 98 percent of tracts are in compliance. The fact remains that NRCS has not met its goal of reviewing one percent of eligible tracts each year. Of the tracts it did review, only a tiny number of violations were found, and of those, the vast majority were overturned in the appeals process with the vast majority of benefits reinstated. This evidence, therefore, suggests that NRCS and FSA are not providing sufficient data to prove that the vast majority of tracts are, indeed, in compliance.

The data that are collected leave an incomplete and misleading picture. On the one hand, finding around one percent of tracts in violation of conservation compliance provisions could suggest that the program is working well. The more likely explanation is that compliance is not providing the intended incentive to farmers to maintain good soil conservation practices on their farm in order to maintain their eligibility for federal farm benefits.

The data were too incomplete for us to fully understand how well conservation compliance is working to reduce soil erosion on highly erodible subsidized cropland. With such limited data collected by NRCS and FSA and made available to the public, it is impossible to ask and answer such straightforward questions as:

1. Across states, why is there such a difference in the tracts actually reviewed as a percent of tracts eligible for review?

2. Across states, why is there such a difference in the number of violations reported as a percent of the tracts reviewed?

3. If there were no violations reported for several years within a state, does that mean all the farmers were in compliance, that NRCS did not do enough reviews to find violations, that NRCS decided not to report any violations or that NRCS worked with the farmers to correct the problems instead of reporting them?

4. Why do so many tracts still get selected for a status review that turn out not to need a soil conservation plan but are counted as in compliance anyway?

5. How many more tracts in which states would need to be reviewed each year to ensure that the status reviews are statistically representative in size to allow projection on a state-by-state basis?

6. How many acres does the 4.5 million-tract database represent?

7. How many of the nation's 100 million highly erodible land acres are growing subsidized crops and thus should be in the FSA database of 4.5 million tracts (where 1.7 million tracts are designated as HEL according to the GAO (2003))?

8. How many acres eroding at unsustainable rates have received a conservation compliance review?

9. To what standard of soil erosion reduction are the plans designed and to what standard of erosion reduction are they being held to achieve?

10. How much erosion reduction is being achieved on all the reviewed tracts that were deemed in compliance?

IV. RECOMMENDATIONS FOR IMPROVING CONSERVATION COMPLIANCE

Despite an initial and significant reduction in soil erosion due to the 1985 Highly Erodible Land Conservation (HELC) compliance policy, many environmental problems associated with subsidized agriculture remain unaddressed by conservation compliance. What follows is a list of the primary weaknesses with conservation compliance and action that could be taken to make progress reducing the unintended, environmental harm of agricultural activities. Addressing these issues will require changes in the federal Farm Bill statute and regulations.

A. Expand the limited reach of compliance

Problem: A great deal of erosion is occurring on cropland considered "non-highly-erodible" and therefore beyond the reach of HELC compliance. In fact, nearly half of the unsustainable erosion is occurring in both the 10 Mississippi River border states and nationwide on cropland that is not highly erodible. In some states, the unsustainable erosion problem occurs on many more acres of non-highly erodible cropland than highly erodible cropland. Expanding soil conservation requirements to all cropland would substantially increase the benefit of compliance provisions to the Mississippi River and waterways nationwide. Expanding soil conservation requirements to all cropland acres is even more urgent and justified given the expected intensification of corn production to meet ethanol mandates. In addition, cropland receiving federally subsidized crop insurance should come under the compliance umbrella, along with the cropland currently under compliance requirements—those tracts receiving commodity, disaster, and conservation farm program benefits.

Solution: Amend the statute to require conservation compliance on all cropland acres receiving farm program benefits, regardless of designation as highly erodible or non-highly erodible land.

Solution: Amend the statute to include crop insurance in the list of farm program benefits that are subject to conservation compliance.

Problem: The primary threats agriculture poses to the health of the Mississippi River and its tributaries are pollution from sediments and nutrients, and degradation of aquatic and riparian habitat. HELC compliance directly addresses sediment loadings and can indirectly address phosphorus loadings since most phosphorus is delivered to waterways attached to sediment. Expanding HELC to include all cropland would increase the impact of compliance on sediment and phosphorus loadings. Current soil conservation requirements, however, have little or no effect on loadings of nitrogen or degradation of aquatic and riparian habitat. Compliance provisions should be expanded to address nitrogen management and to directly address phosphorus management through requirements to implement a nutrient management plan. Impacts on aquatic and riparian habitat could be addressed by requiring a minimum setback of crop production from waterways.

Solution: Amend the statute to require nutrient management plans, not just soil conservation plans, on cropland receiving farm program benefits.

Solution: Amend the statute to require a meaningful minimum setback from waterways for crop production on land receiving farm program benefits. Allow producers to meet this requirement by enrolling sufficient acres in the continuous sign-up of the Conservation Reserve Program to achieve technical specifications for riparian buffers or filter strips on a site-by-site basis.

B. Establish better and consistent standards

Problem: The HELC statute requires that the approved soil conservation plan produce a "substantial reduction" in erosion. This standard is and has been subject to wide variation in interpretation. Establishment of more quantitative and more meaningful standards would help improve the performance of HELC compliance. The traditional quantitative standard has been the soil loss tolerance level (T)—an estimate of the amount of erosion that can be sustained without loss of soil productivity. However, this T standard does not address the environmental impact of the soil erosion, only the impact on soil productivity. More recently, other standards, such as the "non-degradation" standard used for implementation of the Conservation Security Program have been developed. In addition, NRCS should consider developing soil erosion reduction goals related to sediment loads within specific watershed basins

as a more effective approach to reducing erosion through required soil conservation plans. Until a better soil erosion standard is determined, achieving the T standard on all existing HELC tracts would yield significant reductions in soil erosion.

It is unclear how many of the existing 4.5 million tracts have the "basic" conservation plans designed to reduce erosion to T and how many have the "alternative" conservation systems with no specific reduction goal other than a "substantial reduction" with two definitions depending on the year the plan was prepared. It is also unclear though more likely that the vast majority of tracts are held to the modest "substantial reduction" standard of compliance because most fields were used to produce crops prior to 1985. Thus, it is likely that only a minority of tracts subject to compliance are required to achieve the specific reduction of a "75 percent reduction in potential erodibility, not to exceed two times the soil loss tolerance level for the predominant soil map unit."

Solution: Require NRCS to develop a better standard than "T" for soil conservation plans that would include new standards for soil degradation (erosion, loss of organic matter, compaction, etc.) and standards reflecting the environmental impact of soil degradation. In addition, NRCS should consider developing soil erosion reduction goals related to sediment loads within specific watershed basins as a more effective approach to reducing soil erosion through required soil conservation plans.

Solution: While those new standards are being developed, amend the statute to require soil conservation plans that reduce sheet and rill erosion, the worst kinds of water erosion, to the Soil Loss Tolerance Level (T).

Solution: Require all current and future conservation plans to meet these upgraded standards.

C. Ensure better enforcement

Problem: Emphasis on and enforcement of conservation compliance lagged after passage of the 1996 Farm Bill, which introduced a number of new waivers and exemptions that made enforcement more difficult.

The emphasis placed on enforcing compliance varies greatly among states. According to the 2003 GAO survey of NRCS field offices, the primary reasons NRCS staff said they had difficulty implementing the conservation provisions were: a) they lack staff, b) their managers do not emphasize the provisions, c) they are uncomfortable with their enforcement role, d) their non-compliance decisions are routinely reversed by FSA. During the appeals process from 1993 to 2001, the FSA waived 4,948 out of 8,118 cases of NRCS non-compliance determinations.

Solution: Mandate an annual compliance review of at least one percent of crop fields subject to conservation compliance provisions.

Solution: Allow graduated penalties scaled to severity of the violation and degree of cooperation by the producer in correcting deficiencies. Eliminate most other waivers and exemptions.

Solution: Mandate sufficient funding from the Commodity Credit Corporation, which disburses the crop subsides, to support the technical assistance by NRCS staff and certified third-parties needed to develop and implement conservation plans and to conduct mandated status reviews.

D. Improve data collection, evaluation and reporting

Problem: Insufficient data are being collected and evaluated by NRCS and FSA compliance staff. This in turn prevents these agencies from being able to properly evaluate and provide adequate evidence to support the claim that 98 percent of farmers are in compliance with the policy provisions.

Solution: Require NRCS and FSA to document and report:

1) What level of erosion reduction is required in each approved soil conservation plan,
2) What level of erosion reduction is actually being achieved by each soil conservation plan,
3) If there was a violation, whether the appropriate action was taken to ensure the problem is corrected and the plan is fully implemented,

4) How much erosion is occurring on the tracts which received waivers for not fully implementing the plan (e.g. economic and personal hardship, good faith, technical violation, severe conditions, etc.) but are counted as in compliance anyway,
5) A complete statistical profile of farmers deemed in and out of compliance, and
6) The number of tracts with violations associated with the benefits at risk of denial and benefits actually denied.

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APPENDIX

Table 1. Estimate of the annual number of tracts that are subject to a conservation compliance review and percentage of those tracts that are highly erodible lands

	Tracts potentially subject to review in 2002			
State	Highly erodible lands	Potential wetlands	Total	Percent of tracts subject to review that are highly erodible lands
Arkansas	5,766	75,770	81,536	7%
Illinois	101,018	187,292	288,310	35%
Iowa	128,783	124,755	253,538	51%
Kentucky	124,700	112,022	236,722	53%
Louisiana	4,499	56,098	60,597	7%
Minnesota	40,691	150,473	191,164	21%
Mississippi	30,675	54,595	85,270	36%
Missouri	89,090	83,219	172,309	52%
Tennessee	78,913	98,542	177,455	44%
Wisconsin	81,812	80,161	161,973	51%
Total	**685,947**	**1,022,927**	**1,708,874**	**40%**

Source: Data taken from Table 7. "USDA Benefits Denied Farmers by the Farm Service Agency for Violations of Conservation Provisions by State, Crop Years 1993 to 2001" from the 2003 GAO report.

Table 2. From 1993 to 2001, none of the 10 Mississippi River border states were meeting the NRCS one percent annual tract review goal

State	Tracts reviewed for compliance during 1993 through 2001 (GAO 2003 Report)	Thus, on average, each year, the number of tracts reviewed was	However, the number of tracts that should be reviewed each year to meet the one percent NRCS annual goal is	So, the percent of the annual NRCS one percent review goal that is being met by each state is
Arkansas	3,758	418	815	51%
Illinois	18,619	2,069	2,883	72%
Iowa	21,076	2,342	2,535	92%
Kentucky	13,072	1,452	2,367	61%
Louisiana	2,371	263	606	43%
Minnesota	9,270	1,030	1,912	54%
Mississippi	7,120	791	853	93%
Missouri	13,808	1,534	1,723	89%
Tennessee	9,980	1,109	1,775	62%
Wisconsin	11,640	1,293	1,620	80%
Total	**110,714**	**12,302**	**17,089**	**72%**

Source: Data in the first column was taken from Table 7. "USDA Benefits Denied Farmers by the Farm Service Agency for Violations of Conservation Provisions by State, Crop Years 1993 to 2001" from the 2003 GAO report.

Table 3. Number of tracts that each state fell short of reviewing to achieve the one percent annual review goal from 2000 to 2006

		Number of tracts that should have been reviewed each year							
	Tracts to review to achieve the one percent annual review goal	2000	2001	2002	2003	2004	2005	2006	2000 to 2006
Arkansas	815	-493	-549	-542	-270	-477	-385	-448	-3,164
Illinois	2,883	-1,699	-1,721	-1,853	-1,822	-1,080	-626	-906	-9,707
Iowa	2,535	-1,023	-1,105	-993	-1,019	-148	-330	-828	-5,446
Kentucky	2,367	-1,605	-1,429	-1,544	-1,350	-1,119	-433	-755	-8,235
Louisiana	606	-364	-362	-364	-359	-183	-257	-321	-2,210
Minnesota	1,912	-1,340	-1,407	-1,398	-1,406	-530	-863	-952	-7,896
Mississippi	853	-427	-430	-432	-388	-371	-497	-556	-3,101
Missouri	1,723	-885	-842	-654	-801	-440	-620	-538	-4,780
Tennessee	1,775	-1,414	-1,335	-1,335	-1,340	-1,191	-716	-914	-8,245
Wisconsin	1,620	-995	-785	-793	-829	-190	-192	-381	-4,165
TOTAL	**17,089**	**-10,245**	**-9,965**	**-9,908**	**-9,584**	**-5,729**	**-4,919**	**-6,599**	**-56,949**

Source: Data in the first column was calculated by taking one percent of the data for each state listed in the fourth column in the Appendix Table 1.

Table 4. Tracts with wetlands conservation (WC) compliance violations

	2000	2001	2002	2003	2004	2005	2006	2000 to 2006
Arkansas	2				1		1	4
Illinois	2	1	4	1	2	5	3	18
Iowa				2	2	14	13	31
Kentucky								0
Louisiana					5	3	3	11
Minnesota	19	15	11	7	31	35	27	145
Mississippi						1		1
Missouri	3	1	2	6	5	1	2	20
Tennessee						1	1	2
Wisconsin		2		1	6	1	4	14
TOTAL	**26**	**19**	**17**	**17**	**52**	**61**	**54**	**246**

Source: Data provided by NRCS compliance staff.

ENDNOTES

[1] NRCS. "512.01 – Conservation System Requirements." Manuals: Title180 – Conservation Planning and Application: Part 512 – Conservation Systems and Plans: Subpart A – Conservation Systems. April 2004. EDirectives.

[2] Of the 4.5 million tracts that are eligible for review nationwide, GAO (2003) reports that approximately 2.8 million are flagged as having the potential to have wetlands while 1.7 million are likely to be highly erodible lands. However, when NRCS pulls it's sample of tracts to send to the states, the compliance staff say they are not required to maintain a certain proportion of HELC or WC tracts in that sample and they do not keep tract of that proportion. Again, each tract sent to the states is supposed to be checked for both highly erodible and wetlands conservation compliance requirements.

[3] EQIP – Environmental Quality Incentives Program, WRP – Wetlands Reserves Program, WHIP - Wildlife Habitat Incentives Program, and FRPP - Farm and Rangeland Protection Program.

[4] Data for 2000 to 2006 was requested in a Freedom of Information Act (FOIA) letter to the Farm Service Agency (FSA) but it did not arrive in time for the publication of this report.