



## Dead Zone Action Needed

Remarks to Mississippi River Gulf of Mexico  
Watershed Nutrient Task Force

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Thank you very much for inviting me to meet with you today and share ideas about how to achieve the purpose of the Task Force: “to take action to reduce the size of the hypoxic zone, while protecting and restoring the human and natural resources of the Mississippi River Basin.”<sup>1</sup>

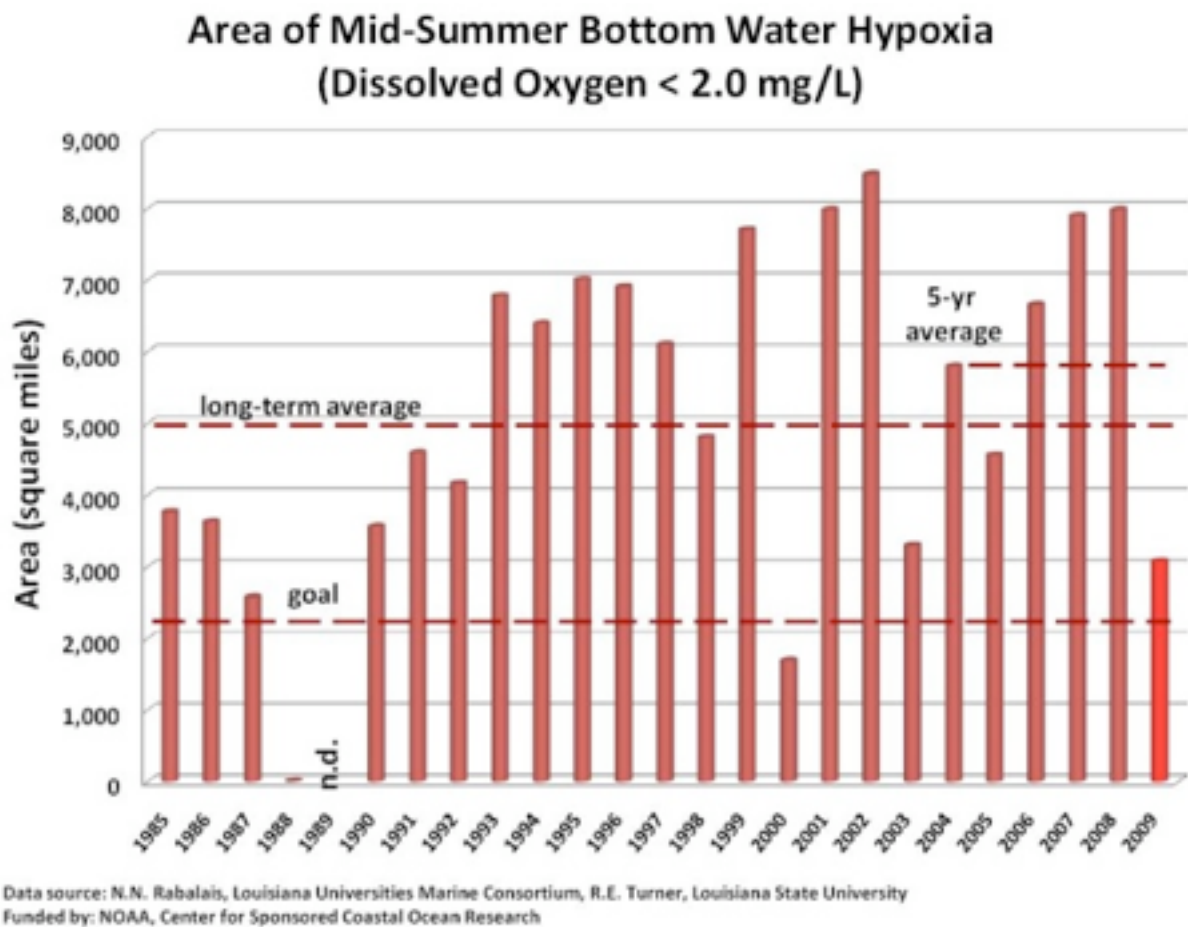
## STARTING POINT

I would like to begin by discussing the facts that, as I understand them, have shaped my remarks.

### We Aren’t Getting the Results We Need

First, we are clearly not achieving the goal of shrinking the size of the hypoxic zone to less than 5,000 square kilometers (Figure 1). The Task Force’s 2008 Action Plan reports that the five-year average (2003-2007) size of the hypoxic zone is two times larger than the Task Force goal.<sup>1</sup> This year the hypoxic zone was well below the 5-year average, but that welcome change appears to be related to short-term weather patterns rather than to a reduction in excessive nutrient runoff, according to the National Oceanic and Atmospheric Administration.<sup>2</sup>

**Figure 1: Annual Size of the Hypoxic Zone**



Moreover, the Action Plan suggests that there has been no reduction in the springtime loads of nitrate that cause the most damage to the Gulf despite a 21 percent reduction in total nitrogen loads.

## **Reducing Pollution from Agriculture Is Crucial**

A 2008 report from the National Research Council concludes that “agriculture contributes the major portion of nutrients and sediments delivered to the Mississippi” and that “reduction in pollutant loadings, especially nutrients, from agriculture therefore are crucial to improving Mississippi River water quality.”<sup>3</sup> A follow-up report from the National Research Council called for a Mississippi Basin Nutrient Control Implementation initiative focused on reducing agricultural sources of nutrient pollution.<sup>4</sup>

## **Problem is Poor Policy and Institutional Inertia**

We have well-understood and proven conservation and farm management practices that could, if implemented in the right places by the right farmers, substantially reduce sediment and nutrient pollution from agricultural operations.<sup>5</sup> Indeed, each of these practices is used today by some farmer in some location in the Mississippi Basin. Unfortunately, the intensity and type of conservation management that is the norm in agricultural landscapes is well below state-of-the-art management. Our information about the practices used by farmers is fragmentary—a serious problem that impairs our ability to strategically direct efforts to meet the Task Force’s goal—but those data that are available indicate that many of the most important conservation practices such as no-till and post-planting applications of fertilizer are still used by a minority of farmers in the United States.<sup>6,7</sup> Anecdotal evidence suggests that even very conventional but important conservation practices such as grassed waterways and field borders are missing from much if not most of the crop fields in Upper Mississippi River Basin States.

The fundamental problem we face is not lack of technology or solutions. The problem is poor policy and institutional inertia

## **Stakes are Getting Higher**

Finally, I think we should be approaching the issue of Gulf hypoxia and Mississippi River water quality with a growing sense of urgency. The demands we are placing on our land, water, and watersheds are increasing. A human population growing in both numbers and wealth is demanding more food and more resource intensive types of food from a limited supply of land and water. Now we are also looking to our land, water, and watersheds to produce energy as well as food and fiber. Production of biomass and crops for biofuels and biomass energy at the scale anticipated in U.S. public policy will put more pressure on land and water resources. We will need to face this increasing pressure on our most basic natural resources at a time when global warming and water scarcity will make that challenge much more difficult. A report from the Soil and Water Conservation Society, for example, found that rates of soil erosion and runoff from cropland could double as the frequency of severe storms increases as the planet warms.<sup>8</sup> A quick look at the Iowa State University Daily Erosion Project website indicates that such damaging storm events are occurring somewhere in Iowa each year.<sup>9</sup>

## **Business as Usual Won’t Get It Done**

Unless we take aggressive and focused action to accelerate conservation in agricultural watersheds, the hypoxic zone in the Gulf will likely grow in size. At the same time, the health of lakes and streams in the Upper Mississippi will decline and agriculture will be even more exposed to damage from severe storms and the variable climate expected as global warming accelerates.

The three major reports cited above<sup>1,3,4</sup> make it clear that business as usual will not get the job done. Even substantial increases in funding alone will not ensure we meet our goal. We need to change the way we are doing business and then increase the money and people we are putting on the job.

Four things are needed to accelerate progress toward a healthy Gulf and Mississippi River system:

1. Dramatically increase the effectiveness of federal and state voluntary programs.
2. Construct a regulatory framework that works in agriculture.
3. Strengthen our technical assistance and scientific support network.

## **FOCUS VOLUNTARY PROGRAMS**

To date, we have relied almost exclusively on voluntary federal and state conservation programs to reduce agricultural sources of pollution, with limited results. Lack of funding for technical and financial assistance to producers has often, and accurately, been cited as a reason for those limited results. Fortunately, funding for USDA voluntary programs has doubled since 2002 and at least a few States have been able to increase funding for their programs too.

But lack of funding for conservation programs is only part of the reason for limited results. Our traditional approach to implementing voluntary programs focuses on individual farms and ranches—an atomistic approach that doesn't take advantage of the cumulative and joint effects that a watershed-based approach can capture. Getting all the producers along a stream to install riparian buffers, for example, will do much more to reduce channel erosion and transport of nutrients and sediments than the same acres of buffers scattered across multiple stream segments. But the way we traditionally allocate funds and select individual participants in voluntary programs can end up dispersing rather than focusing effort.

### **Focus Funding in Priority Watersheds**

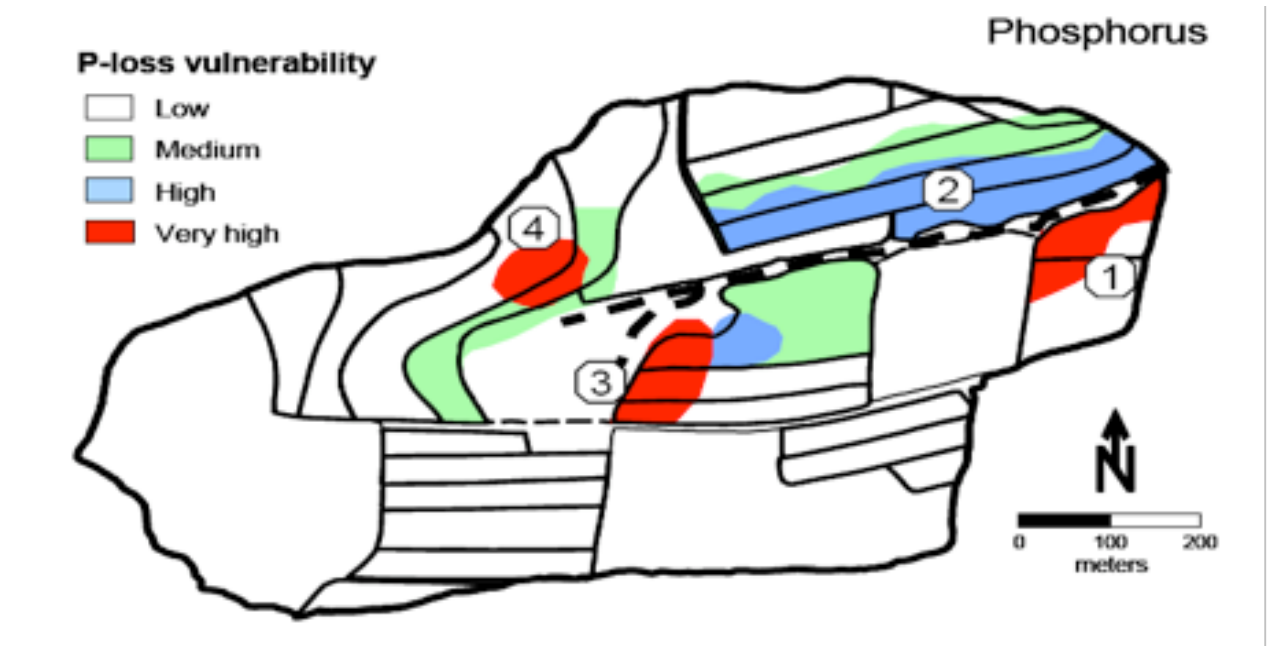
Numerous studies, some of them decades old, have confirmed the need to focus most program resources in priority watersheds or habitats and work with groups of producers to take joint actions to solve pressing problems.<sup>10,11</sup> Yet such approaches remain the exception rather than the rule.<sup>12</sup> Success stories lauding the results from such well-focused projects to improve water quality and protect watersheds get most of the attention but only a small portion of the money. The Environmental Working Group's review of the implementation of the Environmental Quality Incentives Program (EQIP) in the ten states bordering the Mississippi River found that only one state in 2008 was allocating EQIP funds to a specifically designated watershed-based water quality project. Less than 1 percent of that State's EQIP allocation was dedicated to that project.<sup>12</sup>

Watershed-based water quality projects must become the norm rather than the exception. Most of our conservation dollars should be allocated directly to projects with clear goals, explicit timelines, and means to determine if we are getting results. We recently recommended that NRCS begin shifting the way they allocated EQIP funds so that 60 percent of those funds are allocated to such projects by 2012. The remaining 40 percent would leave plenty of money to address critical problems outside of project boundaries.

### **Precision Conservation**

Scientific and technical developments are making it clear that focusing program dollars and staff into priority watersheds is just the first step in effective targeting. Precision conservation, an approach that focuses effort within priority watersheds on the often small portion of agricultural land in a watershed that is responsible for much or most of the problems, holds great promise for enhancing the effectiveness of our programs. Figure 2 illustrates why this is so important.

**Figure 2: Locations Most Vulnerable to Phosphorus Loss**

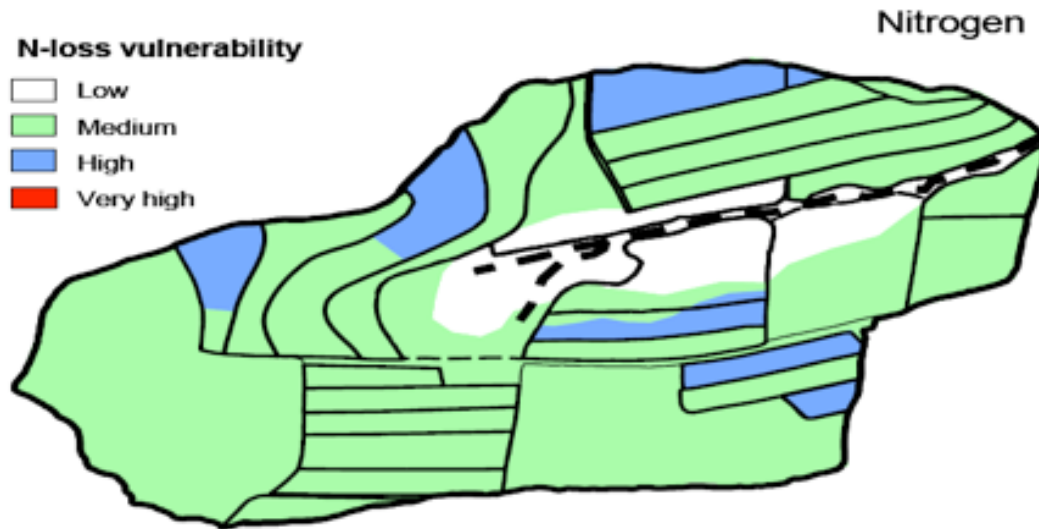


Source: Sharpley A. et al. 2006. *Nutrient Management Practices*. In *Environmental Benefits of Conservation on Cropland: The Status of Our Knowledge*. Schnepf and Cox (eds). Soil and Water Conservation Society, Ankeny Iowa.

The good news story Figure 2 tells is that we could reduce phosphorus loss in this watershed by treating only a small portion of the landscape. The bad news story is that getting 80 percent of the land in the watershed in the program—a common measure of a successful program—would produce little or no improvement if that land is the 80 percent with low vulnerability to losing phosphorus. The way we traditionally operate most of our voluntary programs is more likely to produce the bad news than the good news.

The focus of precision conservation changes in this watershed, of course, if one is worried more about nitrogen than phosphorus (Figure 3). The area vulnerable to nitrogen loss is larger than for phosphorus, but there are still areas with high vulnerability that should receive priority attention. If one made this same map for an intensively drained watershed the picture would change even more. But the story remains the same. Conservation effort must be directed toward those fields, farms, or tile lines that are producing a disproportionately large amount of sediment, phosphorus, or nitrogen to streams and rivers.

**Figure 3: Locations Most Vulnerable to Nitrogen Loss**



Source: Sharpley A. et al. 2006. *Nutrient Management Practices. In Environmental Benefits of Conservation on Cropland: The Status of Our Knowledge.* Schnepf and Cox (eds). Soil and Water Conservation Society, Ankeny Iowa.

The Iowa Drainage and Wetland Landscapes Systems Initiative (The Iowa Initiative) is a compelling example of precision conservation. The Iowa Initiative is targeting restoration of wetlands in highly strategic locations to intercept tile drainage water. Such precise location and restoration of wetland systems are expected to: (1) reduce nitrate losses by between 40 and 70 percent, (2) reduce phosphorus delivery by 50 percent, (3) increase wetland habitat and wetland functions and values, and (4) decrease nitrous oxide emissions. The benefit to producers through improved drainage could serve as a potent market-based driver to accelerate implementation far beyond what reliance on public subsidies could achieve. The Iowa CREP project is demonstrating the benefits of this approach.

### **NRCS Healthy Watersheds Initiative**

The USDA Natural Resource Conservation Service Mississippi River Basin Healthy Watersheds Initiative is another bright spot on the horizon that could and should become a means to moving implementation of USDA voluntary programs in the right direction. The initiative proposes to: (1) concentrate program resources into “focus areas” based on multiple criteria related to sediment and nutrient loading, (2) use the Cooperative Conservation Partnership Initiative as a funding mechanism for targeting resources on a watershed basis to concentrate effort at smaller, 12-digit HUC watersheds within the larger, 8-digit focus areas, (3) emphasize a system of core conservation practices designed to avoid, control, and trap sediment and nutrients, and (4) include monitoring and modeling requirements to validate the results produced through the Initiative.<sup>13</sup>

EWG applauds NRCS for proposing this initiative and we look forward to working with NRCS to ensure this initiative bears fruit. The Initiative appears to include most of the components of an effective effort to improve water quality driven by watershed-based water quality projects. At first glance, we think the Initiative could and should be strengthened by explicitly including the highly successful Conservation Reserve Enhancement Program (CREP) and the continuous sign-up of the Conservation Reserve Program (C-CRP) in the Initiative along with the programs managed by NRCS. We encourage the Farm Services Agency (FSA) to participate in the request for proposal process anticipated by the Initiative and encourage partners to integrate CREP and C-CRP into their proposals. Targeting future CREP proposals into the watersheds that are covered by successful proposals would also be very helpful.

In addition, a continuous sign-up into NRCS and FSA conservation programs for producers willing to implement a conservation system that includes practices from all three core conservation practice categories could reduce administrative burdens, speed participation, and provide more focus on the most effective core conservation practices. The RFP process should also give high priority to proposals that strengthen the technical assistance and scientific support network through non-federal contributions. Finally, it is critical that this federal initiative be implemented in close cooperation with state and local programs and initiatives. The USDA State Technical Committee would appear to be the obvious vehicle for achieving such integration.

## **Accountability**

Finally, voluntary programs at local, state, and federal levels must include clearer mechanisms for ensuring accountability. Those mechanisms should include:

- Setting explicit goals and timelines for achieving specific objectives in specific locations.
- Ensuring full transparency regarding how, where, and for what practices and systems taxpayers' money is being spent.
- Monitoring and evaluation to track progress toward goals and to verify that programs are producing results.

A small percent of the funding for each voluntary conservation program should be set aside for monitoring and evaluation of progress. At the federal level, a one-half of one percent set aside from USDA conservation programs would generate about \$250 million to use to monitor and evaluate whether those USDA programs are producing the results taxpayers expect and agriculture needs.

## **REGULATIONS THAT WORK**

If we take concerted action to improve the effectiveness of federal and state voluntary programs, we will see more results, more quickly. But even the most focused and best-managed voluntary programs will not be sufficient to meet the challenges we face this century. Voluntary programs have inherent weaknesses including: (1) the producers who volunteer are often not the ones who can do the most to solve problems, (2) producers' priorities dominate especially if they are picking up part of the tab, but producer priorities may be different than what needs to be done to solve pressing problems, and (3) programs are designed more to provide equal opportunity for all producers to participate than to wisely direct scarce funding to producers actually who can make the greatest contribution to solving problems.

These weaknesses in voluntary programs too often result in random acts of conservation rather than the highly focused acts of conservation we urgently need today. If NRCS ensures that the critical elements of the Mississippi River Basin Healthy Watersheds Initiative are effectively and strictly implemented, if the majority of USDA conservation program funds are implemented following the model of the Initiative, if Congress funds USDA programs at their mandated levels, if Congress increases funding for those programs in the 2012 farm bill, and if State legislatures increase funding for key state programs, then voluntary programs can remain the primary means used to reduce sediment and nutrient loading in the Mississippi River basin.

But even if voluntary programs remain the primary means we use to meet the Task Force goals for the Gulf and solve pressing water quality problems in Task Force States, we must supplement and reinforce voluntary programs with other, less voluntary approaches.

Several years ago, a farmer told me that "agriculture is going to need a speed limit" in the face of growing concerns over degradation of natural resources and the environment—particularly in the face of what he correctly predicted would be growing demands on and threats to soil and water resources. I think the speed limit he recommended could be most effectively instituted in two ways:

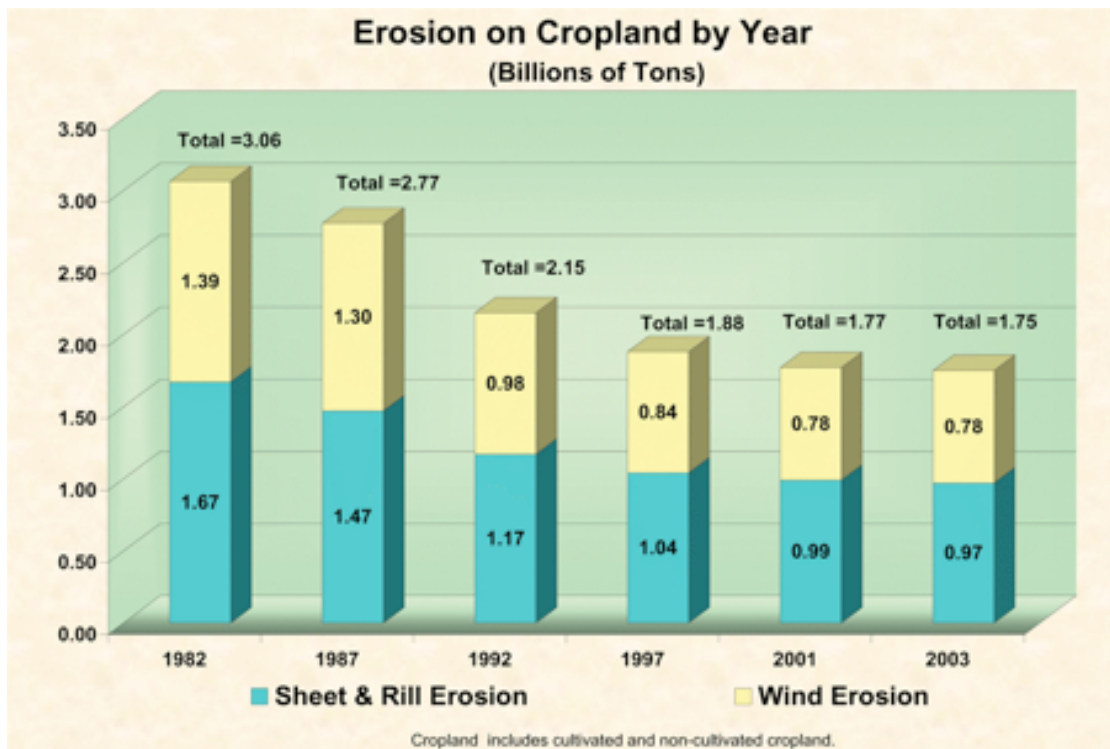
1. Strengthening the conservation compliance provisions of the 1985 farm bill.
2. Restricting the use of particularly damaging farming practices through State regulation.

## Carrots with Strings: Conservation Compliance

The conservation compliance provisions of the 1985 farm bill require farmers to reduce soil erosion on highly erodible land and protect wetlands in order to remain eligible for a wide range of subsidies provided through USDA commodity, disaster, and loan programs. These two provisions are credited in a USDA Economic Research Service study with reducing erosion on highly erodible cropland by at least 40 percent.<sup>14</sup> The highly erodible land provisions indirectly contributed to a much larger erosion reduction by inducing technical innovation that led to new reduced tillage systems that cut erosion on non-highly erodible as well as highly erodible cropland. The same ERS study concluded that compliance provisions could be an effective means to improve water quality if the provisions were broadened to cover more land and additional practices.

The Natural Resources Inventory, conducted by NRCS indicates that little further progress in reducing soil erosion has been accomplished since the highly erodible land provisions were fully implemented by 1997 (Figure 3). Moreover, two reports have raised serious concerns about the lack of effective enforcement of the compliance provisions in recent years. Those reports suggest we are at risk of losing much of the soil conservation benefits we achieved through conservation compliance.<sup>15,16</sup>

**Figure 3: Trend in Soil Erosion on Cropland**



Source: National Resources Inventory. U.S. Department of Agriculture, Natural Resources Conservation Service.

Offering carrots with strings—requiring recipients of federal and state subsidies and benefits to meet certain criteria in return for getting those subsidies and benefits—is a widespread and largely accepted feature of federal and state policy. It seems more than fair to ask farmers to undertake a measure of soil conservation and pollution prevention on their operations in return for what can be very large subsidies. In 2006, the 12 States participating in the NRCS Mississippi River Healthy Watersheds Initiative received



\$5.5 billion in commodity subsidies. The sum is well above the amount of money spent on the entire farm bill conservation title in the same year and is nearly 70 times more than the \$80 million NRCS intends to devote to their Initiative.

USDA should immediately improve the enforcement of conservation compliance provisions by:

1. Increasing the number of tracts subject to annual status reviews to ensure the number of reviewed tracts is large enough to ensure compliance with highly erodible land and wetland conservation provisions at both federal and state levels.
2. Undertake a statistically sound sample of existing soil conservation plans developed to meet the requirements of the highly erodible land provisions to determine whether those plans are adequate given current climatic conditions, cropping systems, and technologies.

Those concerned about the effect of agricultural production on the health of the Gulf and the Mississippi River system should work to expand the conservation compliance provisions to address sediment and nutrient pollution in addition to soil erosion on highly erodible land when the farm bill is reauthorized in 2012. The carrots with strings approach could and should be applied to other state and federal subsidy programs, most appropriately the subsidies and mandates provided for biofuel production and biomass energy production.

## **Precision Regulation**

In addition to the carrots with strings approach outlined above, States should take the lead in developing laws and regulations that restrict the use of particularly risky and damaging crop and livestock production practices. Those regulations should be tailored to specific regions or watersheds within the state, as appropriate, and restrict the use of those practices that lead to the greatest loss of sediment and nutrients from agricultural operations.

Such regulations could and should be designed to drive those producers who are causing problems into voluntary programs. For example, requiring producers to plant a narrow strip of vegetation to setback crop production from water bodies would create an incentive for those producers to enroll in the continuous Conservation Reserve Program, where they can get paid to install a larger and more effective buffer.

But the primary purpose for such precision regulations should be to create the speed limit recommended by the farmer I mentioned above. The fact is that poor practice in particularly vulnerable portions of a watershed can undo much of the benefit from the additional conservation practices farmers undertake in voluntary programs or on their own initiative.

The two pictures below were taken this spring (2009) not far from the areas we toured yesterday. The stream bank erosion encouraged by planting crops right up to the edge of a stream to the type of bank erosion pictured here will deliver enough sediment and nutrients to streams to outweigh a great deal of effort on farms and fields farther away from the stream.



In the same way, the uncontrolled gully erosion picture below defeat the progress made by other farmers elsewhere in the watershed.



Unfortunately, scenes like these are not hard to find in Iowa and the Upper Mississippi River basin States, particularly in the last few years. These scenes are more frustrating given the fact that voluntary programs such as the continuous sign-up of the Conservation Reserve Program are readily available to compensate these producers for putting in a riparian buffer or a grassed waterway to solve these problems.

In other watersheds and/or in other states practices such as fall application of nitrogen, spreading of manure on frozen ground, or uncontrolled access of livestock to streams may be the critical issue. We need a flexible regulatory framework that can focus on those specific practices in those specific locations that should be considered unacceptable and inappropriate given the effect of those practices on soil resources and water pollution. Such a targeted approach would affect far fewer producers and likely produce more results than blanket regulations that require all producers to have nutrient management or soil conservation plans. The goal of precision regulation should be to affect the smallest number of producers needed to produce the most beneficial impact on water quality.

## **TECHNICAL AND SCIENTIFIC NETWORK**

The capacity to provide technical assistance and scientific support, monitor progress, and enforce regulations ultimately determines the success of voluntary or regulatory programs. That capacity is provided through a network of individuals and organizations in the public, private, and nonprofit sector that includes local, state, and federal governmental agencies, universities and colleges, private, for-profit companies, and non-governmental organizations. That network is fraying and is increasingly not capable of meeting the environmental and conservation challenges that confront agriculture.

A recent review by the Soil and Water Conservation Society and Environmental Defense of the technical assistance for implementation of farm bill conservation programs by concluded that:

“An essential federal role in US agriculture conservation policy should be to build and maintain a technical support and assistance network suitable to meet the resource conservation and environmental management needs of the 21st century. A stronger technical assistance network—built from partnerships with federal, state, and local governments, for-profits businesses, non-profit organizations, universities, and other entities— will allow the United States to capture the benefits of rapidly advancing conservation science and technology. Currently, our nation’s technical assistance network can’t keep up—good ideas, new tools, and innovative practices stay on the shelf because USDA and its partners don’t have the capacity to more quickly move science into practice. As a result, taxpayers and producers are getting less from their investments in conservation than they could—and should.”<sup>17</sup>

This assessment applies equally as well to the challenges that State and local governments and agricultural producers face.

A key component of any strategy to protect the Gulf and the Mississippi River must include a strategy for building and sustaining the scientific and technical network needed to effectively implement both voluntary and regulatory programs at local, state, and federal levels.

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