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An Accounting Tradeoff Between WRP and Government Payments

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Abstract
The Wetlands Reserve Program (WRP) can provide farmers financial compensation in exchange for retiring marginal lands from standard agricultural practices. Often overlooked in the analysis is the cost to the government to implement these programs. This paper examines two issues: first do farmers benefit from WRP enrollment and second does the government say money with WRP enrollment. With WRP the government no longer has to pay yearly direct, counter-cyclical, LDP, or crop insurance payments. Results from three Mississippi counties show that for certain crops that have historically paid a lot in government payments, WRP can be cheaper for the government. For farmers, the decision likely depends upon other revenue sources that can take the place of lost crop production.

An Accounting Tradeoff Between WRP and Government Payments

The Wetland Reserve Program (WRP) can provide farmers financial compensation in exchange for retiring marginal lands from standard agricultural practices. In addition, there are financial incentives offered for restoring, protecting, and enhancing the land that is entered into the Wetland Reserve Program. Farmers basically convert land that is in production into land set aside for conservation. Farmers lose their production income on the land but gain the yearly WRP payment.

An issue that needs future examination is the cost to the government to support the Wetland Reserve Program. Often overlooked in the cost analysis is the reduction in other government payments. For WRP land, the government no longer has to pay program payments on land that was formerly in production agriculture. These payments include direct payments, counter-cyclical payments, and loan-deficiency payments (LDP). Crop insurance payments would also be eliminated. The government still has to make WRP payments on the land converted.

The purpose of this paper is to examine land as farmland and land enrolled in the WRP from strictly an accounting process. Two issues will be examined. First, what is the cost to the government from enrolling land in the WRP. The government enters into a contract with WRP that requires paying the landowner a fee. However, the government then does not have to pay for any other government payments that were discussed above. Second, what happens to farmer income from enrolling land into the WRP. This is similar to the first question but with the addition of examining lost crop production revenue by WRP enrollment and including any benefits such as timber revenue from the land.

These two questions will be examined by looking at the costs and returns from three counties in the Mississippi Delta. For each of the three counties, net revenue to the farmer and cost to the government will be examined when land within the county is farmed and also when it is converted to WRP. The net revenue and cost analysis will be conducted on a crop-by-crop basis.

Background on WRP

The Wetland Reserve Program (WRP) was authorized in the 2002 Farm Bill (Farm Security and Rural Investment Act of 2002). Under the current farm bill, 2,275,000 acres can be enrolled into WRP. As of April 2007, there are 1,899,979 acres enrolled in WRP. The Secretary of Agriculture can enroll up to 250,000 acres per year until the 2,275,000 acre cap is reached (NRCS).

The landowners that participate in the Wetland Reserve Program receive several types of benefits. First, there are financial and technical benefits provided in exchange for enrolling the land into the program. Second, farmers no longer have to handle the problems associated with the land that could possibly make it to difficult to manage due to moisture or accessibility. In other words, potential WRP land is not the easiest land to farm. Finally, the landowners choosing to participate in this program open the doors for new opportunities to develop new uses for the land that might not have been available before. Recreational activities such as improved hunting, fishing and wildlife viewing are some of the examples of such opportunities.

Other benefits to the general public from a conversion of land from production to WRP would be an increase in the population of threatened or endangered species due to the better habitat that would be created on the land. An improvement in water quality would also occur as the land in able to filter sediments and chemicals more efficiently. There is also the possibility

of a reduction in flooding and better recharging of groundwater. The hunting and fishing improvements mentioned earlier are beneficial not only to the landowners but also to individuals looking to expand on their current hunting and fishing opportunities.

The WRP has a dual goal of optimizing wildlife along with achieving the greatest wetland function and valuation. For a project enrolling in WRP, 70% of the land must be restored to original natural condition. The rest of the land can be restored to other conditions. Farmers enrolling in the WRP have three options: a 10-year restoration cost-share option, a 30-year conservation easement option, and a permanent easement.

The 10-year restoration cost-share option is to re-establish wetlands that have been damaged or destroyed. The USDA pays up to 75% of the restoration cost. The key feature of this option is that the option does not place an easement on the property. The other two options both place an easement on the property. The permanent easement option is for perpetuity. The payment for a permanent easement is the lowest of three amounts: the change in fair market value of the land (comparing the land value before and after the easement), an established payment cap, or an amount offered by the landowner. The USDA also pays all of the cost of restoring the wetland. The last option, the 30-year easement, is basically 75% of the permanent easement. This includes 75% of the easement payment and 75% of the restoration cost.

Not all land and landowners are eligible to participate in WRP. The adjusted gross income provision of the 2002 Farm Bill affects participation. Individuals or entities must have adjusted gross income below $2.5 million for three years to participate. However, the income rule does not apply if 75% of the adjusted gross income is derived from farming, ranching, or forestry. In addition, landowners must have owned the land for 12 months prior to enrolling it.

Land is only eligible if it is either suitable or can be made suitable for wildlife. This definition includes farmed wetlands, converted cropland, land that became a wetland due to flooding, lands adjacent to protected wetlands that contribute to wetland functions, and previously restored wetlands that need long-term protection.

Land that is ineligible includes wetland converted after December 23, 1985, and land where conditions exist that it makes it impossible to restore. Also ineligible is land under a Conservation Reserve Program contract that established timber stands and any Federal land.

Landowners with land in WRP still retain many uses of the land while under easement. Participants still control access and lease the land for hunting and fishing and other recreational activities that do not require land development. The key point to using the land is that a use does not impact any of the restrictions contained in the easement. This use may include hay cutting, livestock grazing, and harvest of wood products. However, these types of uses must only be done with the permission of the NRCS.

Previous work

At least two previous studies examined the tradeoffs between continual farming of land versus putting the land into a government sponsored conservation program. Ibendahl (2004) looked at whether farmers in Kentucky should move their land out of production and into CRP. This is a very similar problem to the one in this paper with the main difference being the type of conservation program. CRP makes a yearly payment while WRP is a lump-sum payment. Similarities include giving up the farm income and government payments in exchange for a guaranteed CRP payment over the life of the CRP contract.

Ibendahl only looked at the problem from a farmer's perspective. The question of whether the government paid more in government payments or in CRP payments was not

analyzed. In addition, Ibendahl included more stochastic elements than are examined here. WRP may give farmers more options for receiving income as the easement rules permit some farm uses and most recreational uses. CRP probably is not this flexible although some years have seen exceptions to harvest hay if a drought occurs.

Another similar paper by Anderson and Parkhurst (2004) specifically examines WRP payments in the Mississippi Delta. Like the paper by Ibendahl, Anderson and Parkhurst use stochastic simulation to examine the farmer's decision of whether to move land out of production. This paper was written just after the last farm bill came out and may not be current anymore. Also, the Anderson and Parkhurst model only looks at the problem from a farmer's perspective and does not consider if the government pays more money in WRP enrollment or as a yearly series of government payments.

Model

Figures 1 through 4 show the current situation with WRP. Figure 1 shows the number of acres cumulatively enrolled in WRP. As shown in the figure, the Mississippi delta is one of the leading areas for WRP as Mississippi, Louisiana, and Arkansas all have acreage enrollments in the top category. Figure 2 shows the dollar allocation by state and again, the Mississippi delta states are at the top for receiving funds. The only mild surprise in that the three states do not have the most WRP contracts (Figure 3). This probably occurs due to some larger farms in Arkansas and Mississippi.

Figure 4 shows the WRP easements for Mississippi. As can be seen in the figure, easements occur throughout the delta area. Given that the delta is a delta of the Mississippi river, it is not surprising that most of the land could be considered as potential WRP land. A particular section of Mississippi seems to have more easements than the rest of the delta though. This area

is along the Yazoo River, which is toward the lower delta and extends upward and to the right on the map.

The analysis for this paper examines the Mississippi counties of Humphreys, Sunflower, and Leflore. The analysis includes cotton and soybeans. This paper does not include very many stochastic elements. For net crop revenue, the 2008 crop budgets are used for the Mississippi delta. These budgets show a net return to cotton of $94.50 and a net return to soybeans of $198.40. This is a net return to land, labor, and management and does not include any government payments.

The government payments to a specific crop in a specific county come from a simulation of what direct, counter-cyclical, loan deficiency payments, and net crop insurance payments would be. This simulation is on an acre-by-acre basis within the county for five years. The number shown is the average for the county during the fifth year of the simulation (Keith Coble). Combining the net crop revenue with the government payments would give the expected net income a farmer could expect to receive by continuing to farm the land.

The expected WRP payments are calculated by looking at NRCS data for the number of WRP contract acres and payments for a given year. The last three years of WRP payments for Mississippi show payments of $1137, $1066, and $1395. Averaging these gives the $1200 WRP payment shown in Table 1.

Examining cost to the government

The question for the government is which farmer option costs the least. In other words, does the government pay less for a WRP easement of does it pay less in yearly government payments. This can be shown in equation 1.

$$EP < \left[\sum_{n=1}^{N} \left(\frac{1}{1+i} \right)^{n} \cdot GP_n \right] \quad (1)$$

Here EP is the cost of the easement and GP is the yearly government payment. The government payment includes direct payment, counter-cyclical payment, loan deficiency payment and any crop insurance payments net of cost. GP would normally be a stochastic variable. For the analysis here, the model was based on 30 years. A permanent easement examination would have to include more years although after 30 years the additional years do not add much more. The interest rate is represented by i. In this analysis, the interest rate is set to 8%.

Table 1 shows how the government fares under WRP versus continuing to farm. The results differ greatly depending upon the crop. For soybeans, WRP is much more expensive as the expected government payments are low each year due to high crop prices and the lower risk with growing soybeans. 30 years of a farmer growing soybeans only costs the government $300 or so (at an interest rate of 8%). Contrast this with the situation for cotton production. For cotton farming the cost picture is reversed for the government. The 30 years of payments amounts to $1500 which is above the WRP easement costs.

Examining benefits to the farmer

The farmer question of which choice is best expands upon the government model. This is modeled in equation 2.

$$EP + \sum_{n=1}^{N} \left[\left(\frac{1}{1+i} \right)^{n} \cdot (OI_n) \right] < \sum_{n=1}^{N} \left[\left(\frac{1}{1+i} \right)^{n} \cdot (GP_n + NI_n) \right] \quad (2)$$

The main difference in equation 2 is the addition of net crop income on the right hand side and other income on the left hand side. Other income is a net figure and could include

hunting and fishing fees, possible hay value each year (if permitted) and other yearly income. The OI value might include timber value but this would probably not occur until the end of the lease.

Table 1 shows the results for the farmer decision. In this table, continuing to farm is the best option. However, the analysis here has left off any additional income from hunting, fishing, and other sources. In many cases, this could be a significant amount and could easily reverse the decision.

Discussion

The results here show how farmers benefit from a WRP easement versus continuing to farm. The results also show the cost to the government for each option. In general, WRP enrollment is likely to save money for the government for crops with a high yearly government payment. This includes cotton but many also include rice. At the time this paper was written, we did not have any rice results.

For farmers, crop revenue must be balanced against other revenue options when an easement is given. Farmers are really looking for activities that generate more money than crop farming in order to give up land into an easement.

Further analysis should include adding more stochastic elements as well as a closer examination of alternative sources if farmers give up crop production. This analysis also used average county revenue numbers in the analysis. It is likely that the land being put into WRP has lower crop revenue than that of the rest of the county.

Table 1. Payments by County

	Mississippi					
Counties	**Humphreys**		**Sunflower**		**Laflore**	
Crops	**Cotton**	**Soybeans**	**Cotton**	**Soybeans**	**Cotton**	**Soybeans**
Expected cotton income	94.5		94.5		94.5	
Expected soybean income		198.4		198.4		198.4
Expected government payments	133	25	133	23	134	27
30 yrs crop + govt pmt	$2,561	$2,514	$2,561	$2,492	$2,572	$2,537
30 yr govt pmt only	$1,497	$281	$1,497	$259	$1,509	$304
Expected WRP payment	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200

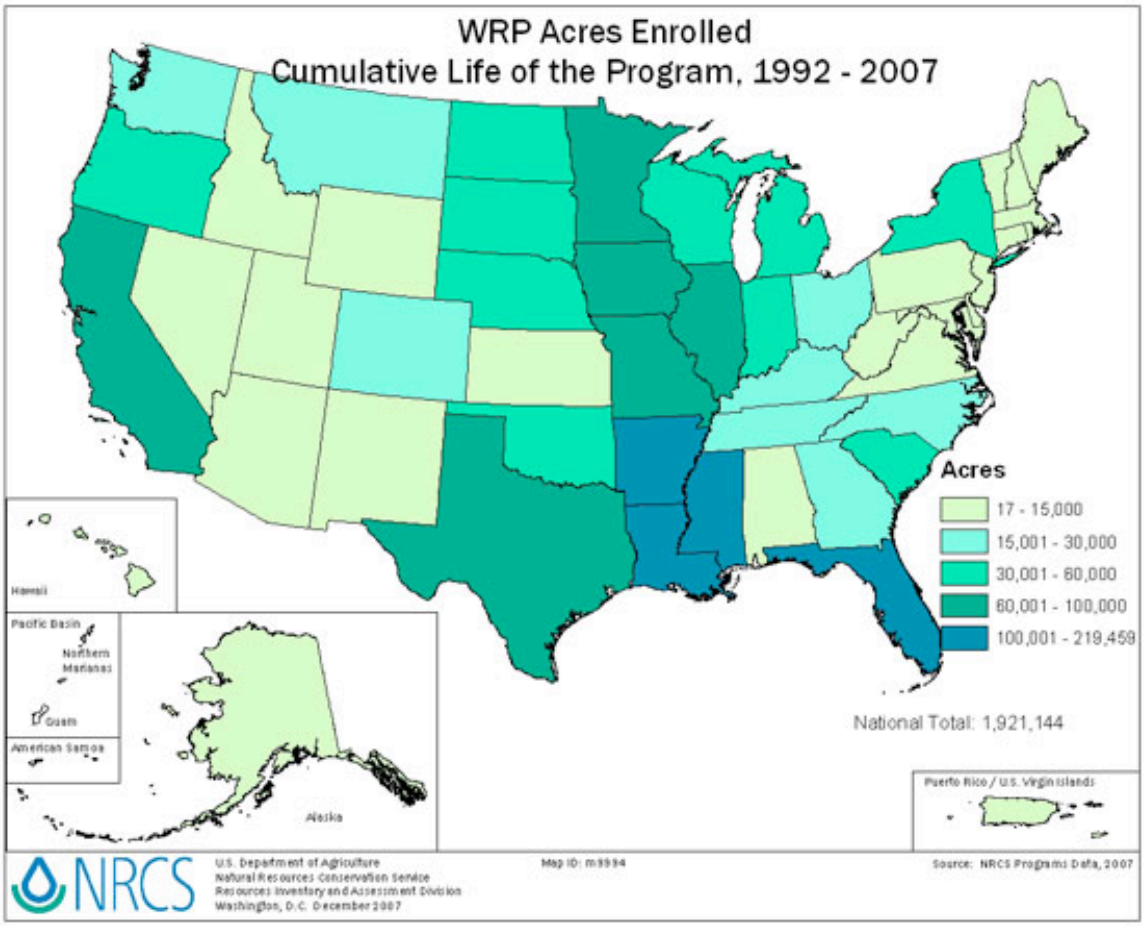
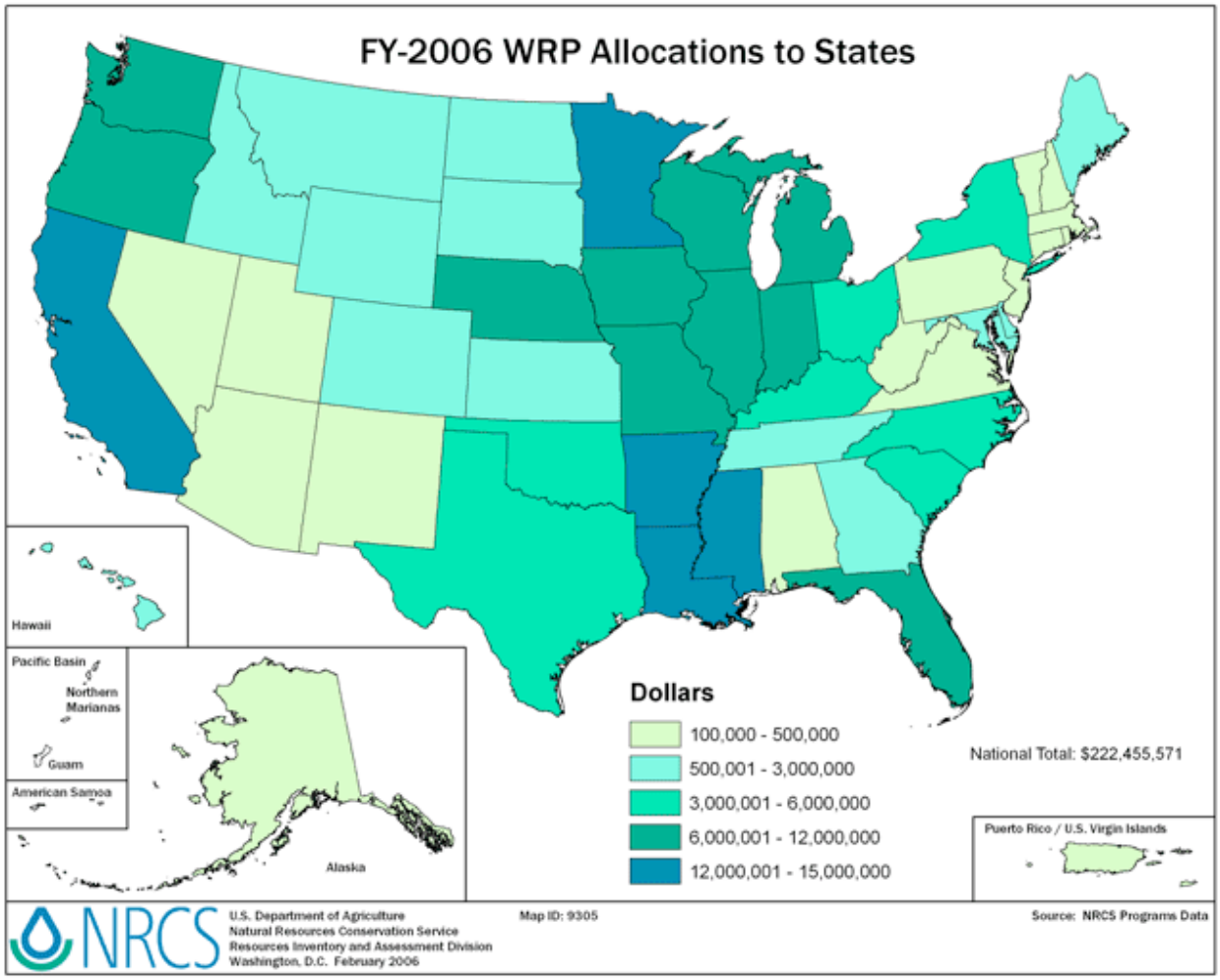


Figure 1. WRP Acres Enrolled by state

http://www.nrcs.usda.gov/programs/wrp/2007_ContractInfo/WRPAcresCumul07.jpg



Firgue 2. Dollar Allocation to WRP by State

http://www.nrcs.usda.gov/programs/2006_allocations/2006Allocationstostatesbyprog/m9305wrp06alloc.gif

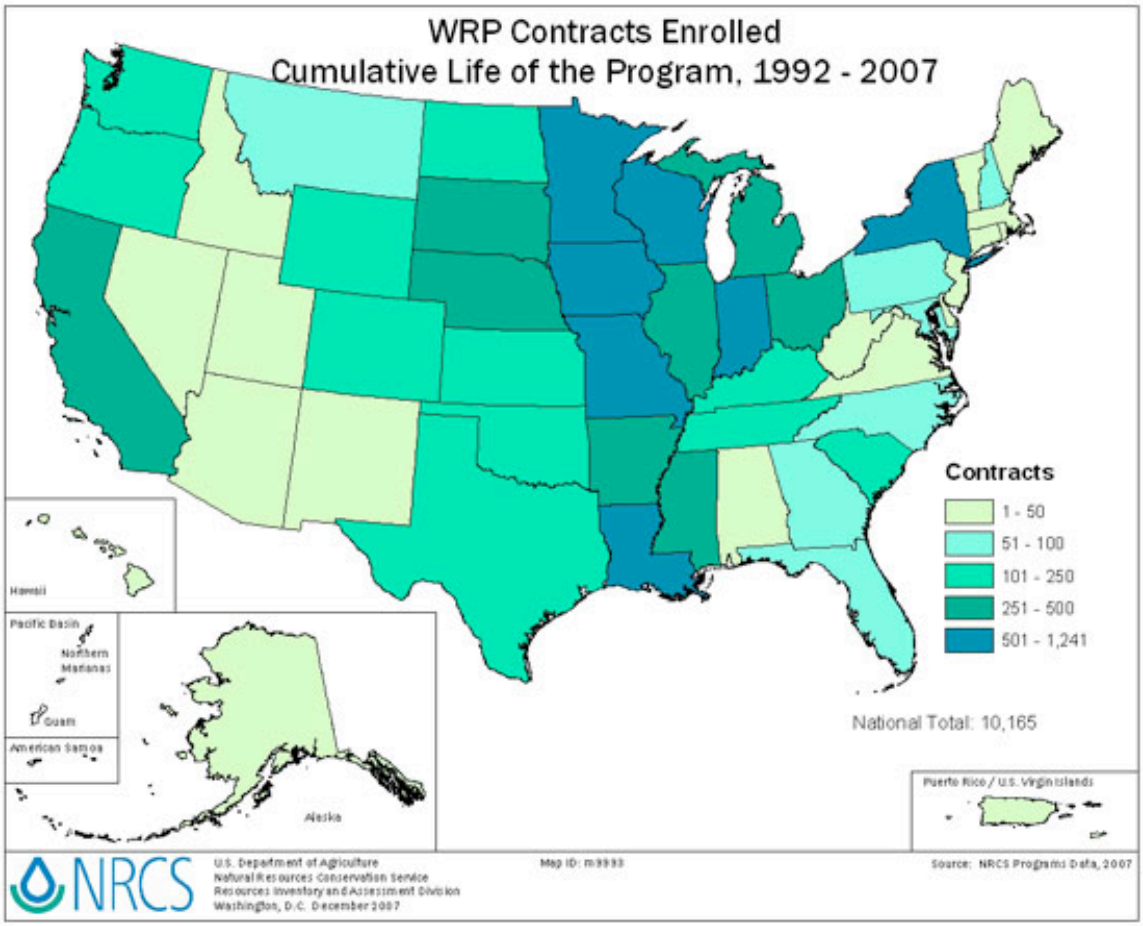


Figure 3. WRP Number of Contracts by State

http://www.nrcs.usda.gov/programs/wrp/2007_ContractInfo/WRPCumulContracts07.jpg

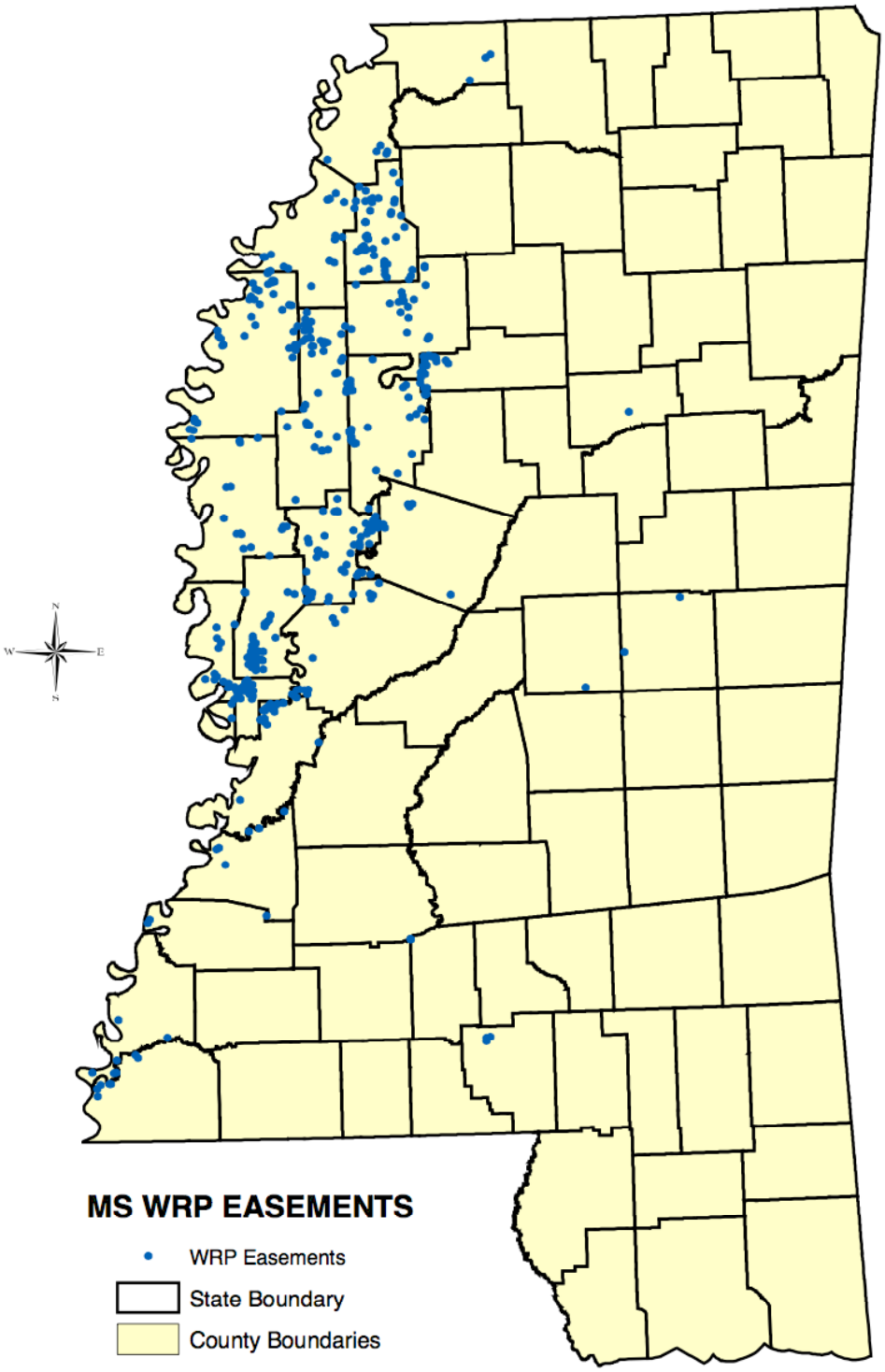


Figure 4. WRP Easements in Mississippi

http://www.ms.nrcs.usda.gov/programs/images/WRP_easements.pdf

Anderson, J., & Parkhurst, G. (2004). Economic comparison of commodity and conservation program benefits: an example from the Mississippi delta. *Journal of Agricultural and Applied Economics, 36*(2), p. 415-p. 424.

Ibendahl, G. (2004). Risk-Adjusted comparison of conservation reserve program payments versus production payments for a corn-soybean farmer. *Journal of Agricultural and Applied Economics, 36*(2), p. 425-p. 434.