Chapter 5
ENVIRONMENTAL CONSEQUENCES

Environmental Consequences—This section forms the scientific and analytic basis for the comparisons unde 1502.14 (Comparison of Alternatives) (40 CFR 1502.16).

The Purpose of the Proposed Action is to promulgate regulations to implement the reauthorized Conservation Reserve Program with the provisions defined in the 2002 Farm Bill.

The Need is to fulfill FSA responsibility as assigned by the Secretary of Agriculture to administer certain conservation provisions of the 2002 Farm Bill.

5.1 SOILS IMPACTS

5.1.1 Impacts of No Program (Baseline)

The No Program Alternative is the baseline for which to compare the other alternatives. The potential impacts to soils from the non-existence of CRP are assessed.

In addition to conserving and improving water resources, the other objective of CRP was to decrease the amount of soil erosion and improve soil quality in areas where agriculture practices were having an adverse impact on environmental resources. Since 1982, erosion on cropland and CRP land has been reduced by 38 percent. However, cropland and marginal pastureland continue to erode at a rate of 1.9 billion tons per year (NRI, 2001).

If CRP had never been implemented on highly erodible cropland, the results would most likely include a large loss of soil due to erosion, overall loss of soil quality and productivity in those areas currently enrolled in CRP, and it can be assumed that erosion rates would be much more than 1.9 billion tons per year. In addition, other positive impacts of the program such as improving water quality, improving wildlife habitat, and protecting threatened and endangered species habitat would not have been as great.

5.1.2 Impacts of No Action (Current Program)

The current estimated reduction in the total soil erosion on current active CRP acreage for the U.S. (33.9 million acres) stands at over 450 million tons (see Figure 5.1-1 for specific regions of the U.S.). CRP protects millions of acres of cropland from excessive erosion, improved soil quality, integrity, and productivity. The additional benefits achieved by reducing soil erosion contribute to keeping streams, lakes, and other water bodies clean through the reduction of sediment and by preventing nutrient and pesticide runoff carried by eroding topsoil. Producers who enroll acreage in CRP reduce their application of pesticides and nutrients and eliminate annual tillage, largely eliminating CRP lands as a source of pollution.

Historically, CRP was designed to assist producers and landowners in conserving and improving soil and water resources by converting highly erodible land devoted to the production of commodity crops to long-term vegetative cover. Theses practices focus on controlling the soil's surface exposure to wind and water through the establishment of grasses, forbs, shrubs, and trees as vegetative barriers. Physical erosion control structures such as diversions, dikes, and dams have also been implemented under CRP as a means for secondary control of soil erosion. On a national scale, over 86 percent of all active agricultural acres enrolled in CRP utilize conservation practices aimed at controlling erosion (NRCS, 2000).

Erosion control practices within CRP can be divided into two main categories, those that utilize vegetative covers to reduce soil erosion and those that implement erosion control structures to divert excess wind and water.

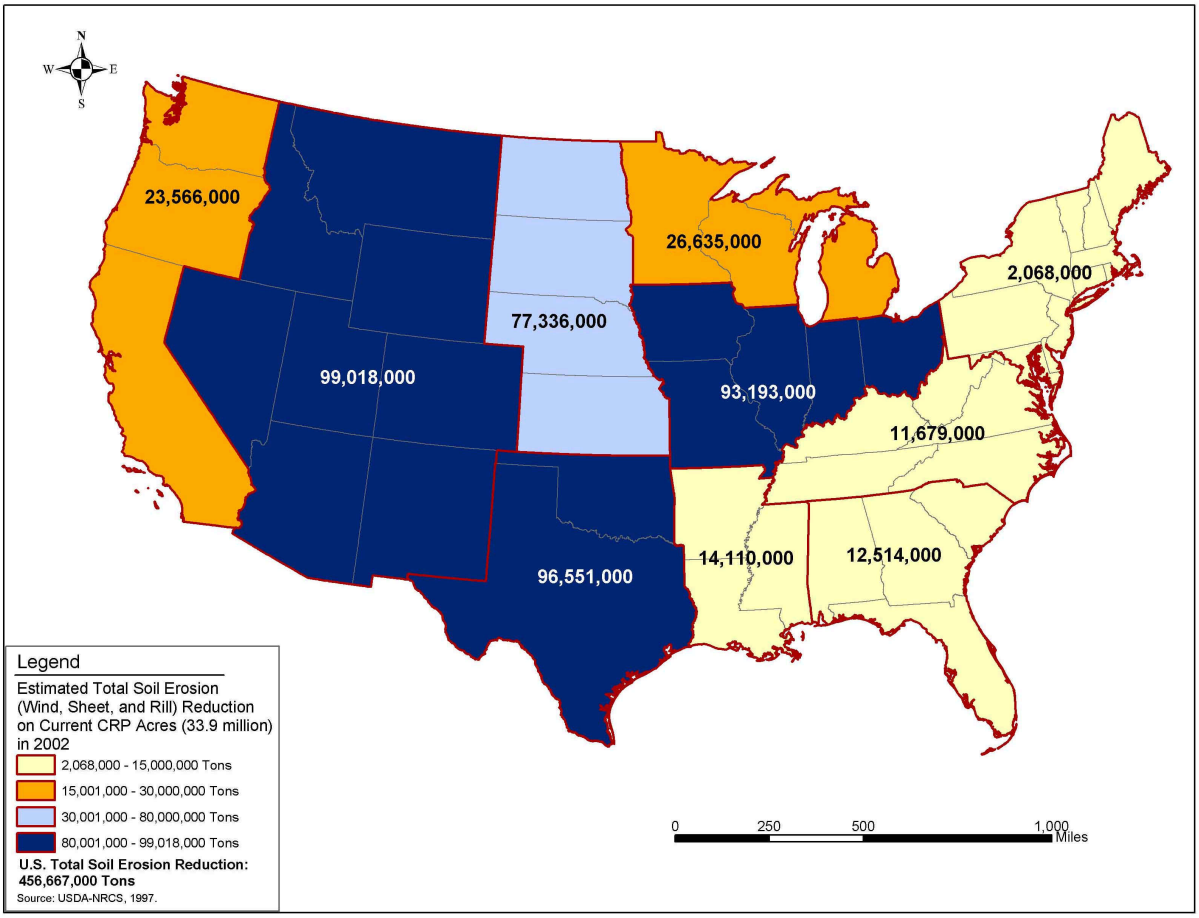

Fig. 5.1-1 Estimated Total Soil Erosion Reductions on Current CRP Acres (33.9 Million Acres)

Vegetative Cover

The majority of the current active CRP conservation practice acreage is specifically aimed at erosion control. However, since all CRP practices establish and maintain permanent vegetative cover, all CRP practices effectively control erosion. Some of the authorized practices include: establishing permanent areas devoted to grasses, legumes, and native grasses; establishing permanent wildlife habitat; and the creating filter strips and riparian buffers. Additional benefits of vegetative covers are the improvement of surface water quality, creating habitat for wildlife, and enhancing soil quality. Currently, there are over 33 million acres implementing vegetative cover conservation practices aimed at reducing erosion, which also focus on creating new or protecting existing vegetative areas.

Erosion Control Structures and Windbreaks

Erosion control structures in some agricultural areas require specific attention due to their unique physical characteristics. Some areas may be more prone to wind erosion, others could have problems with drainage, and some can be found on a rolling landscape where runoff can be the problem. Problems with water runoff may be severe enough in certain areas that, even with other conservation practices in place, physical erosion control structures may still be needed. One percent of current active CRP acreage with established erosion control conservation practices targets these site-specific soil erosion problems. Examples include: diversions, dams, dikes, grassed waterways, windbreaks, and shelterbelts (Figure 5.1-2).

Windbreaks and shelterbelts, unlike other vegetative covers, are planted in certain configurations so as to disrupt the flow of the wind from wind-prone agricultural areas, reducing wind erosion, evaporation, wind damage to crops, and also excess snow accumulation in certain areas. Trees, shrubs, and other vegetation used in these practices are grown in strips upwind from the agricultural lands prone to erosion. Shelterbelts are similar to windbreaks; however, they usually incorporate more rows of trees and shrubs and are usually grown entirely around the area to be protected. Other examples of these practices used in CRP are alley cropping and living snow fences.

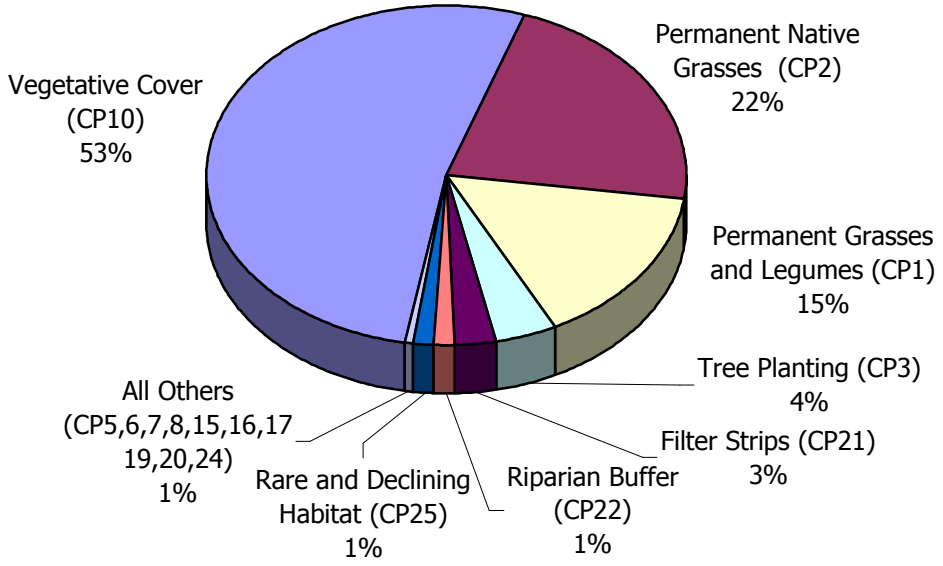

Fig. 5.1-2. Specific Erosion Control Practices (Percentage of Total Acres) as listed in DM-9500

Essentially, all lands under CRP effectively address soil erosion through the use of vegetative covers. However, some practices provide more benefits than others. As a way to specifically target soil erosion, the USDA has listed those practices, as defined in the DM-9500, that most effectively address soil erosion. Currently, based on USDA's DM-9500, some of the specific authorized CRP, CREP, FWP, and CCRP conservation practices aimed at erosion control include: establishing contour strips of permanent vegetative cover within cropped fields (CP 15A) and maintaining already established vegetative cover (CP 10), establishing introduced grasses and legumes (CP 1), establishing native grasses (CP 2), establishing permanent wildlife habitat (CP 4B & D), tree planting (CP 3 & 3A), shelterbelt establishment, noneasement (CP 16A), living snow fences (CP 17A), alley cropping (CP 19), alternative perennials (CP 20), and the creation of filter strips and riparian buffer zones (CP 21 & 22). Practices aimed at creating windbreaks (CP 5 & 24), are also used for the purpose of decreasing wind erosion and the overall important ecological functions they serve. CP 11, the maintenance and protection of already established vegetative cover in grasses, also effectively controls erosion, however it is not listed in the DM-9500.

As of this year, about half of all the active acreage enrolled in CRP implements conservation practices targeted towards reducing soil erosion by protecting and managing areas that were established in vegetative cover under CRP between 1986 and 1992 (Figure 5.1-3). As a result of this alternative, new acreage would continue to be enrolled that implements these common types of practices, along with the existing active acreage already targeting erosion reduction.

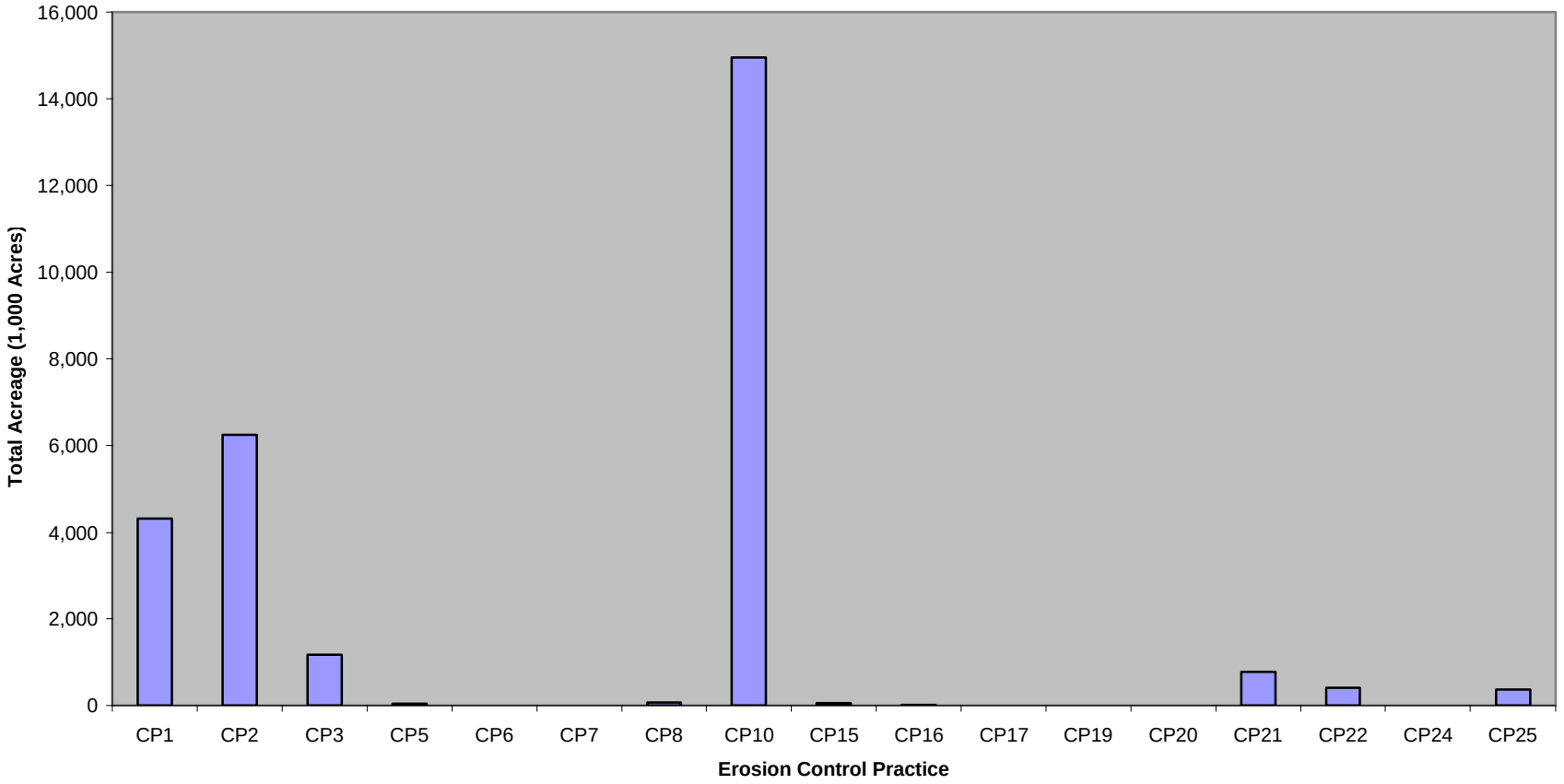

Fig. 5.1-3 Total Active CRP Acres Devoted to Erosion Control Practices Listed in DM-9500

5.1.2.1 General Sign-up

Certain agricultural practices, such as conventional tillage, pesticide application, and fertilizer use, have the potential to adversely affect soil quality. Under this alternative, some additional cropland would continue to be enrolled under erosion control conservation practices. CRP has been proven effective in the Great Plains and the Northwest, where erosion rates when lands were cropped (6 to 152 tons per acre) under crop management are high (Blackburn et al., 1991). Figure 5.1-4 shows a graphical representation of the estimated soil erosion on cropland before CRP in 1982, compared to the total soil erosion for cropland in 1997. As shown in the figure, there has been an overall decline in the soil erosion rate by almost one half. By creating erosion control structures such as diversions, dikes, dams, and levees, agriculture runoff can be better controlled, lessening the potential for erosion on enrolled highly erodible cropland. Under this alternative highly erodible cropland would continue to be enrolled in CRP and land would continue to expire from CRP. Gilley et al. (1997) concluded that a substantial amount of erosion occurred on cropland implementing certain tillage treatments compared to soil loss on CRP sites, where it was minimal. As land under production, which is implementing tillage treatment soil practices, comes out of production and is enrolled in CRP, a reduction in soil erosion on that contracted land can be expected.

5.1.2.2 CCRP

The establishment of permanent vegetative areas, permanent wildlife habitat, vegetative filter strips, buffer strips, field borders, grassed waterways, field windbreaks, and vegetated riparian zones implemented under CCRP trap sediment, organic matter, and other pollutants from runoff, while lowering the soil potential for erosion. The establishment of vegetative cover directly lowers both the flow velocity and transport capacity of the runoff, while the sediment is removed through filtration, deposition, and infiltration. This alternative would allow for decreased sediment transport rates to surface waters in highly sensitive environmental areas through the continued implementation of conservation buffers.

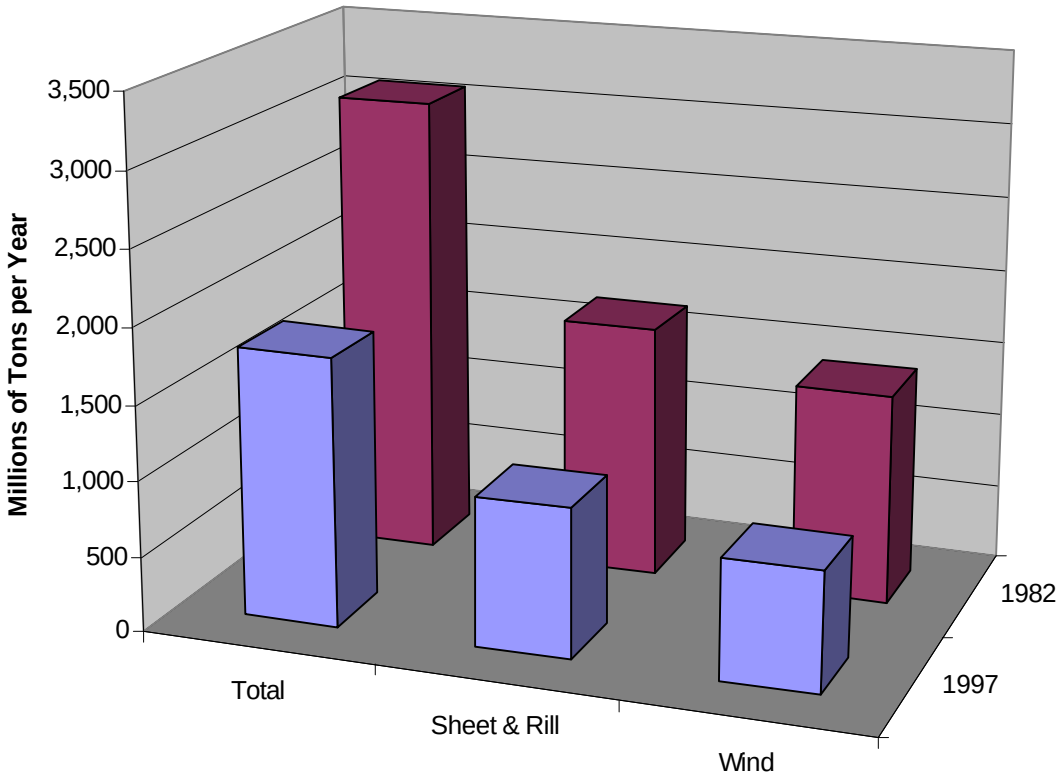

Fig. 5.1-4 Erosion on Croplands in 1982 and 1997

5.1.2.3 FWP

Under the current FWP (operated as a pilot program), a total of 16,534 acres of wetland restoration and 40,445 acres of wetland buffer have been enrolled within six States in the Prairie Pothole CPA (see Table 3.3-1 in Chapter 3 *Current Programs*). The majority of acreage is enrolled in Iowa followed by Minnesota, South Dakota, North Dakota, Nebraska, and Montana. Restoration of farmed or converted wetlands benefits soils by providing wetland vegetative cover that stabilizes soils and reduces potential erosion. Restoration of wetland hydrology changes soil chemistry by inundating or saturating the soils, creating anaerobic soil conditions. Most likely, the majority of wetland types restored have been prairie potholes, which are small, shallow water basins dotting the agricultural landscape. These basins would rely mainly on surface runoff for hydrology and would likely be seasonally inundated. Under FWP, every restored wetland also requires a vegetative buffer at a minimum of 30 feet wide to protect the wetland from sediment, nutrients, and pollutants from agricultural runoff. These buffers provide additional soil stabilization and reduce erosion within the buffer. Soil benefits would be 10 to 15 years in duration, and would be contained within individual tracts of up to 40 acres.

5.1.2.4 CREP

This alternative would continue to allow for CREPs to be proposed, approved, and implemented based on the available CREP acreage nationally allocated by FSA. The impact on soils would be

dependent upon which CPs are proposed and authorized under each State's CREP. Most CREPs currently authorize CPs that reduces soil erosion while improving water quality. However, if the land targeted for CREP enrollment is not HEL then the impact of this alternative on soil erosion rates and quality would be less.

Under CREP, the States have the option of placing the land in an easement after the contacted land has expired. Each State makes its own determination as to whether they will put this expiring land into easements, and if they choose to do this under this alternative, soil quality would be positively impacted. CRP has been shown to promote soil restoration, but 10 growing seasons (years) are not adequate for full recovery of soil quality (Baer et al., 2000). By placing the lands into easements, the long-term soil quality would continue to improve and provide associated benefits to the environment.

5.1.3 Impacts Under Proposed Action (2002 Farm Bill)

5.1.3.1 General Sign-up

Under the Proposed Action Alternative, additional benefits for soil quality would be expected throughout the Nation. The increased acreage cap of 39.2 million acres, along with the reauthorization of CRP through 2007, would allow more cropland to be enrolled, thus potentially increasing the amount of land protected by conservation practices aimed at controlling soil erosion by almost 3 million acres. This increase in acreage could potentially increase the reduction in total soil erosion by almost 40 million tons (see Figure 5.1-5). Table 5.1-1 shows a comparison between erosion reductions on current active CRP acres compared to projected erosion reduction of the Proposed Action Alternative's maximum acreage cap.

Table 5.1-1 Estimated Erosion Reduction On CRP (Based on Change from Estimated 1982 (Before CRP) Erosion)

	Current Active Acres (33.9 Million Acres)			Proposed Acreage Cap (39.2 Million Acres)		
	S&R	Wind	Total	S&R	Wind	Total
Region	(1,000 Tons)			(1,000 Tons)		
Northeast	2,067	1	2,068	2,752	2	2,754
Appalachian	11,672	7	11,679	12,575	14	12,589
Southeast	12,514	0	12,514	13,394	0	13,394
Delta States	14,110	0	14,110	15,059	0	15,059
Corn Belt	87,948	5,245	93,193	94,111	7,004	101,115
Lake States	10,748	15,887	26,635	11,820	19,194	31,014
No. Plains	32,263	45,073	77,336	34,605	48,957	83,562
So. Plains	10,368	86,183	96,551	10,956	90,223	101,179
Mountain	22,042	76,975	99,018	23,316	82,537	105,854
Pacific	14,507	9,059	23,566	16,416	9,980	26,396
U.S.	**218,237**	**238,431**	**456,667**	**235,006**	**257,911**	**492,917**

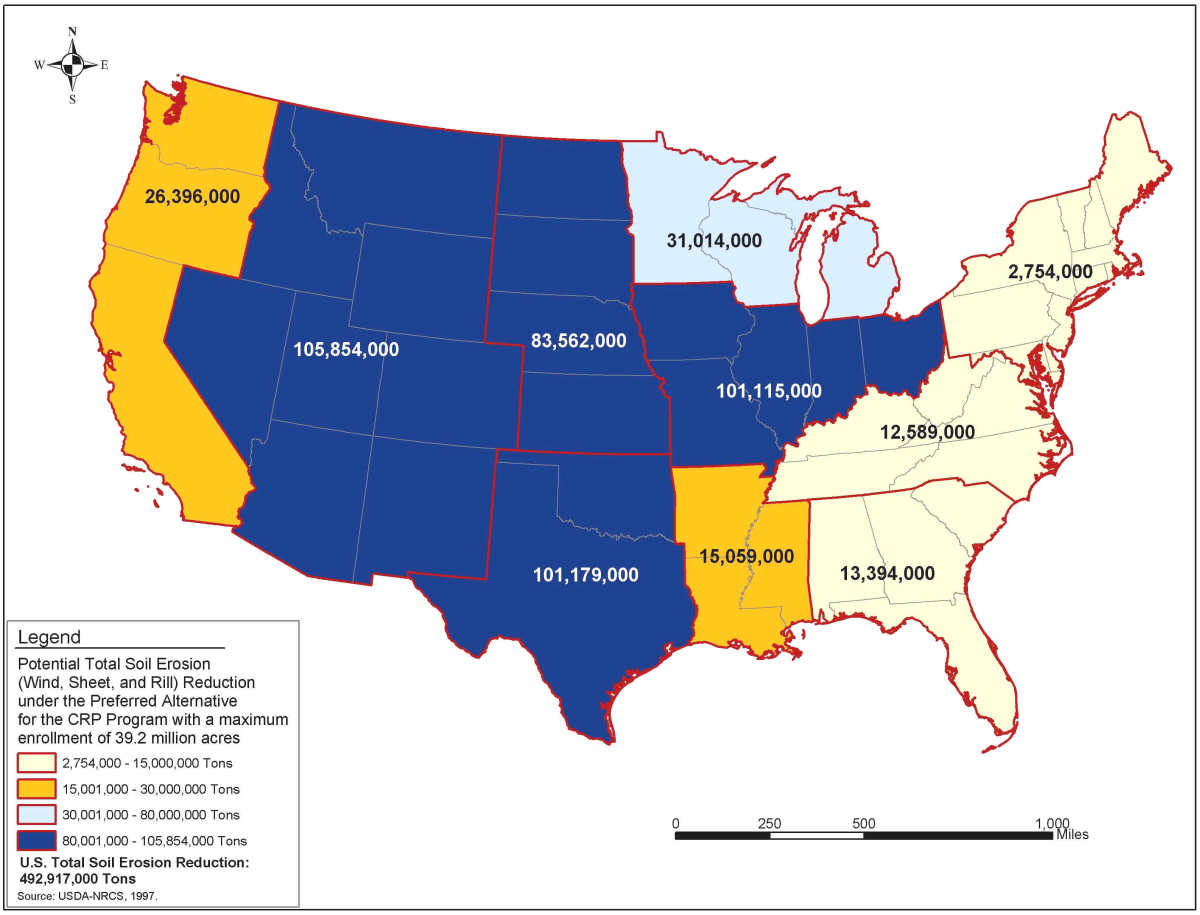

Figure 5.1-5. Potential Total Soil Erosion Reductions Under the Proposed Action Alternative

The Proposed Action should have a positive effect on soil quality. CRP has been suggested to be a valuable program to facilitate the restoration of soil quality degraded by cultivation (Baer et al., 2000), and under this alternative, soil quality would continue to improve for the length of the contract as additional acreage is targeted for enrollment around the Nation. In addition, certain lands placed under easements through State CREPs would provide permanent benefits in the restoration of soil quality.

The 2002 Act changed cropping history by locking in the eligible years. Eligible land for CRP must now have been planted or considered to have been planted for 4 of the 6 years prior to the date the Act was signed. The new 4 of 6 criteria does not noticeably change the total eligible acres. This provision prevents producers from cropping new land in order to become eligible for the program. The previous eligibility rules called for land to be planted 2 of the previous 5 years to be eligible for enrollment. This was a moving 5-year term in that the 5 years for cropping history purposes were moved forward each year. Now, under the new rule, the land must have been planted or considered to have been planted to an agricultural commodity during the crop

years 1996 through 2001. Also, under the statute, land in a conservation use is considered planted. This could produce positive impacts on soils.

The permitting of managed haying and grazing under this alternative would not produce any significant adverse impacts on soil quality if conducted using best management practices incorporated in the conservation plan required on all CRP contract land.

5.1.3.2 CCRP

Under the 2002 Farm Bill provision, producers may enroll entire fields through CCRP as buffers when more than 50 percent of the field is eligible for enrollment and the remainder of the field is infeasible-to-farm. Impacts of this new provision can potentially be either positive or negative. With the potential to almost double the size of the vegetative buffer, the amount of C sequestered and additional soil organic C could also double, increasing soil quality. This, however, is only possible if the infeasible portion of the field can sustain permanent vegetation and contribute to reduced soil erosion rates. The larger the size of a field to be buffered, the more area required for the conservation buffer. If the buffer is already at its maximum size in accordance with 2-CRP and the FOTG, then the less effective it will be when an additional 50 percent infeasible portion is incorporated (See page 2-26).

Marginal pastureland may be devoted to vegetation other than trees, including marginal pastureland converted to wetlands or established as wildlife habitat. This is another change to CCRP under this alternative, and will require these marginal lands be kept vegetated, which should effectively slow down the erosion process and decrease sediment entering water systems.

5.1.3.3 FWP

Proposed changes to FWP include expansion of the program from six States to nationwide and an increase in total allowable acreage from 500,000 to 1 million acres with a per-State enrollment limitation of 100,000 acres. This expansion would allow for an increased distribution and increase the acreage of wetland restoration and buffers nationwide and the associated soil benefits described under the No Action Alternative. The limitation of restored wetland size would also be increased from five acres to 10 acres, providing additional localized soil benefits from increased vegetative cover. The increased size could also allow larger buffers around wetlands, thus improving filtration of sediments and contaminants.

5.1.3.4 CREP

Under this alternative, the potential for soil runoff would continue to decline as more acreage is enrolled under previous State CREPs, and as the commitment of States to create more CREPs increases. This could allow soil to stabilize and topsoil erosion to decrease due to the establishment of vegetative cover, filter strips, and riparian buffers. The ability for States to purchase permanent easements after a producer's CREP contract has expired will produce soil benefits longer than general or continuous CRP as long as conservation is maintained on that land. CRP has been shown to promote soil restoration, but 10 growing seasons (years) are not adequate for full recovery of soil quality (Baer et al., 2000). By placing these environmentally

sensitive lands into easements, the long-term soil quality would continue to improve and provide additional environmental benefits associated with good soil quality.

5.1.4 Impacts Under Alternative 4 (Environmental Targeting)

Alternative 4 is an environmental targeting approach to CRP that focuses program resources on priority conservation goals on a State and Federal level, as described in Section 4 *Alternatives Including the Proposed Action*. Resource priority areas would be identified in each State and nationwide.

Under this alternative, general CRP signup would not exist. As a result, the national soil erosion benefits associated with these acres would be dramatically reduced. In addition, because this would be a voluntary program and there is no assurance that all allocated acres will be enrolled, it is possible that the overall enrollment would be reduced.

The existing CREP would not change the beneficial impacts on soil quality and would be the same as those under the Proposed Action Alternative. Please refer to the discussion in Section 5.1.3.4.

Continuous CRP would also address specific State environmental issues similar to CREP, through the identification of SETAs. However the program would be Federally funded with no additional State funds required. For example a SETA could be along the Upper Missouri River drainage where wind and water erosion has caused the loss of millions of tons of topsoil. By implementing those conservation practices aimed at halting erosion, the Upper Missouri River watershed would benefit by the improvement of their soil quality. These benefits would be incurred over the short-term, 10 to 15 years; however, re-enrollment of SETAs would be a high priority for the long-term continuation of established benefits.

Environmental targeting could be done on a large watershed scale through NETA's, such as the Mississippi River Basin, to address hypoxia in the Gulf of Mexico. The Mississippi River Basin encompasses the Northern Plains and Midwest regions and portions of the South Central, Southeast, and East regions of the U.S. Restoration of wetlands, riparian areas, and floodplains would be applicable conservation practices to reduce nutrient runoff and sediment from agricultural lands along the Mississippi River and its tributaries. These resources would produce national benefits on a larger scale than those in localized SETAs and could potentially provide a greater functional value by improving the water quality of the Mississippi River Basin and the Gulf of Mexico. This program would be Federally administered and funded; however, conservation goals and criteria would be developed with the cooperation of States and non-governmental organizations to encourage partnerships and continuity with other non-CRP conservation programs.

Conservation practices aimed at controlling erosion, like filter strips and the establishment of grasses, would be authorized for all cropland in the NETA that have been identified as possibly contributing to the hypoxic conditions in the Gulf. With decreases in nutrient and sediment-laden runoff, hypoxic conditions in the Gulf of Mexico could be expected to decrease and produce national environmental benefits for soil quality and erosion control.

Overall, enrollment in general CRP sign-up acreage would decrease under this alternative. As this enrollment declines, national benefits of soil erosion reduction could be significantly less. Benefits would be severely limited under this alternative.

5.2 WATER RESOURCES AND AQUATIC SPECIES IMPACTS

5.2.1 Surface and Groundwater Impacts

5.2.1.1 Impacts Under No Program (Baseline)

The No Program Alternative is the baseline for which to compare the other alternatives. The potential impacts to surface water, TMDLs, and groundwater from the non-existence of CRP are assessed.

Surface waters

The original goal of CRP was to conserve and improve soil and water resources. A direct result of the conservation practices authorized under CRP was the improvement of water quality. The majority of soil erosion practices focus on establishing vegetative cover that protects soil and reduces runoff. This vegetation also has the ability to absorb excess N and slow surface transport of pesticides. If CRP had never been established, the likely results would include a substantial increase in the number of impaired waters in the U.S. beyond the present situation (see Figure 2.2-6). An increase in the number of aquifers across the Nation contaminated with fertilizers and pesticides would also be likely, along with a decrease in the amount of suitable habitat for aquatic species as a result of these contaminants flowing uninhibited off agricultural cropland into streams, lakes, and other water bodies.

TMDLs

If CRP did not exist, and over 30 million acres of agricultural land had never implemented CRP conservation initiatives, we can expect that the amount of impaired waters in the U.S. would have increased. This assumption can be made based on the EPA's water quality inventory that identifies agriculture runoff as a major source of water quality degradation in the Nation (Figure 2.2-18). Runoff from cropland introduces sediment, nutrients, pesticides, and organic matter into local stream systems. These pollutants have the potential to produce a range of negative impacts on multiple aquatic ecosystems due to their potential to spoil habitat and remove macroinvertebrates from the food base.

Groundwater

Groundwater quality and drinking water sources would be adversely impacted due to increased contamination through the infiltration of excess pesticides and nutrients from land that would have been enrolled in CRP. Also, other benefits of CRP, such as increased groundwater recharge and decreased dependence on local aquifers for irrigation, would never accrue.

5.2.1.2 Impacts Under No Action (Current Program)

CRP contracts reduce erosion by hundreds of millions of tons each year. This reduction of erosion cleans streams, lakes, and other bodies of water by reducing sediment and preventing nutrient and pesticide runoff carried by eroded topsoil. Producers who enroll acreage in CRP reduce their application of pesticides and nutrients largely eliminating CRP lands as a source of pollution. Keeping chemicals out of water bodies decreases the risk of negative impacts to surface and groundwater quality.

Current active acres enrolled in CRP help reduce the amount of nonpoint source pollution entering surface waters. Reducing runoff containing sediments, nutrients, and pesticides is one of the main objectives of these practices and would continue to be such under this alternative.

Most of the lands under CRP provide benefits to water quality; however, some provide more benefits than others. As a way to specifically target water quality, the USDA has listed those practices in their DM-9500 that most effectively address nonpoint source pollution. The current specific authorized CRP, CCRP, FWP, and CREP CPs aimed at water quality improvement include, but are not limited to:

- Establishing permanent areas of vegetative cover (CP 15A)
- Maintaining already established vegetative cover (CP 10 & 11)
- Establishing introduced grasses and legumes (CP 1)
- Establishing native grasses (CP 2)
- Establishing permanent wildlife habitat (CP 4B & D)
- Establishing vegetative cover to reduce salinity (CP 18B & C)
- Creation of filter strips and riparian buffer zones (CP 21 & 22)
- Practices aimed at managing, restoring (CP 23), or creating wetlands (CP 5) are also used for the purpose of improving water quality due to their ability to effectively filter runoff.

In addition to the practices listed in DM-9500 that specifically address water quality, several other practices can also provide benefits to water quality conditions. These practices include tree planting (CP 3), establishing grassed waterways (CP 8), and maintaining already established grass areas (CP 11).

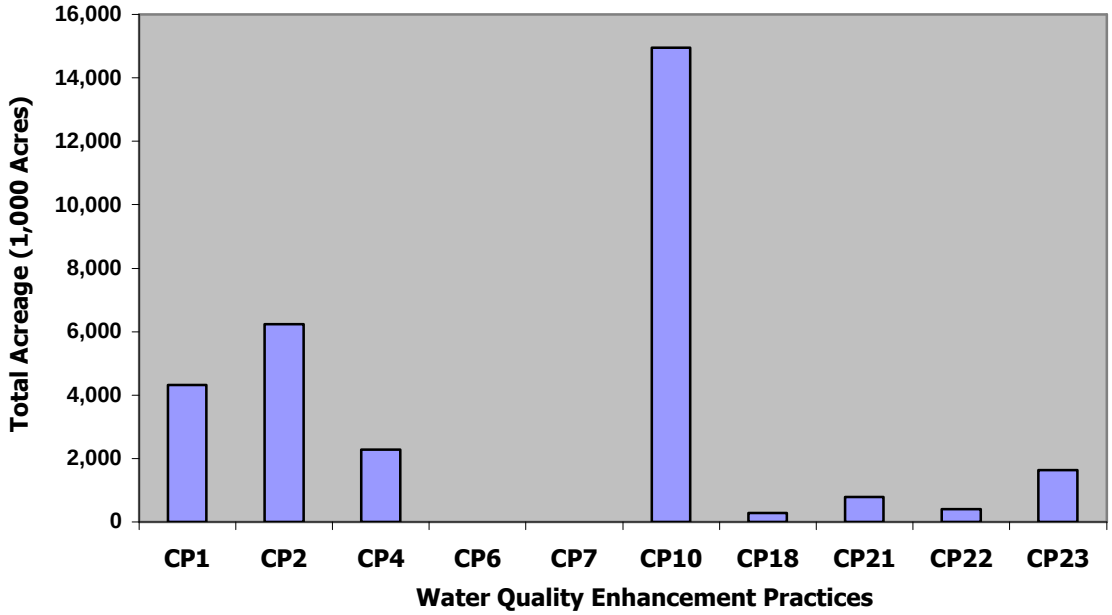

Fig. 5.2-1. Specific Water Quality Practices on Active CRP Acreage

Under the current CRP, almost all the active acreage enrolled implement conservation practices targeted towards improving water quality (Figure 5.2-1). As a result of this alternative, new acreage would be enrolled that continued implementing these types of practices, along with the current existing active acreage already targeting water quality improvement.

5.2.1.2.1 General Sign-up

Surface Water

Because agricultural practices have the potential to adversely affect water quality, under this alternative, some additional cropland would continue to be enrolled implementing water quality improvement conservation practices. By establishing additional vegetative grass and tree cover acreage and creating diversion and erosion control structures, enhanced surface water quality would continue through a reduction in sediment runoff and erosion rates on highly erodible and other environmentally sensitive cropland.

TMDLs

CRP has been a contributing factor in the overall improvement of water quality across the Nation. However, due to its diffuse nature of enrollment across large geographic areas, it cannot be specifically targeted at addressing localized TMDL issues. Under this alternative, the current CRP can serve to address State TMDLs due to the authority delegated to the STC to make land eligible by designating State CPAs.

Groundwater

Under this alternative, continued improvement in the overall groundwater quality throughout the U.S. would be expected, due to cropland coming out of production to enroll in CRP, thus decreasing pesticide and fertilizer use on those lands. This would be coupled with the role that areas of permanent vegetative cover play in groundwater recharge and denitrophication.

5.2.1.2.2 CCRP

Surface Water

Vegetative filter strips, buffer strips, field borders, grassed waterways, field windbreaks, and vegetated riparian zones implemented under CCRP trap sediment, organic matter, and other pollutants from runoff. Both the flow velocity and transport capacity of the runoff are directly lowered, and the sediment and associated pollutants are then removed through filtration, deposition, and infiltration. This alternative would allow for decreased sediment transport rates to surface waters with the continued implementation of these conservation buffers (Figure 5.1-3).

TMDLs

Despite the fact that CCRP does not focus specifically on addressing TMDLs, benefits to impaired waters do arise. Based upon the highly environmentally sensitive land targeted by CCRP, this alternative could produce moderate positive impacts on TMDLs across the U.S. This effect would be based upon the premise that CCRP is currently targeting cropland for enrollment to intercept high sediment and nutrient runoff.

Acreage enrolled under CCRP would continue to implement conservation buffer practices aimed at reducing impairment causing conditions associated with TMDL listings. This could produce a positive cumulative effect if CCRP acreage was enrolled in a county or a watershed within a county that currently has TMDL problems (Figure 5.2-2).

Acreage currently implementing other conservation measures and practices, such as those under general sign-up CRP, CREP, or FWP, combined with the eligible conservation practices of CCRP, would create the potential for adjacent lands to provide multiple environmental benefits by addressing local TMDLs. No single strategy is likely to be effective in restoring water quality conditions in streams suffering from diffuse source impacts (Osborne and Kovacic, 1993).

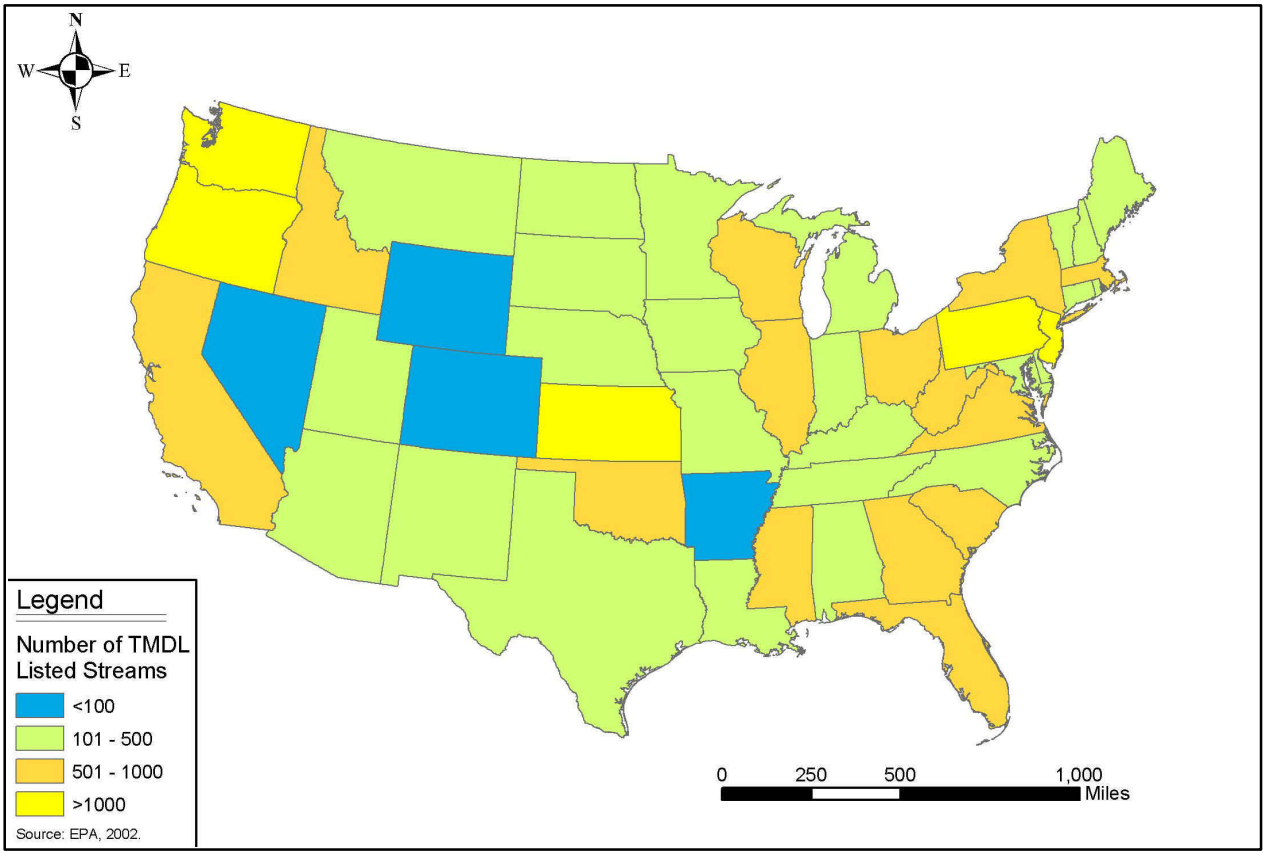

Fig. 5.2-2. TMDL Listed Streams by State

Groundwater

The retirement of cropland that overlies groundwater vulnerable to agricultural contamination is one way that CRP has helped to improve groundwater quality. Through the implementation of forest and grass buffer strips (like those established by CCRP), nitrate concentrations in shallow groundwater have been reduced by up to 90 percent (Osborne and Kovacic, 1993).

Under this alternative, a continual improvement in overall groundwater quality throughout the U.S. would be expected due to cropland coming out of production. This would account for a potential decrease in the overall pesticide and fertilizer use within a groundwater system. However, with the limited acreage enrolled in CCRP, coupled with the more difficult land eligibility requirements and a more focused environmental return expected, there would not be a significant increase in groundwater quality that could be attributed to CCRP on land classified as highly environmentally sensitive.

5.2.1.2.3 FWP

Under the current FWP (operated as a pilot program), a total of 16,534 acres of wetland restoration and 40,445 acres of wetland buffer have been enrolled within 6 States in the Prairie Pothole CPA (see Table 3.3-1 in Chapter 3 *Current Programs*). The majority of acreage is

enrolled in Iowa followed by Minnesota, South Dakota, North Dakota, Nebraska, and Montana. Restoration of farmed or converted wetlands benefits surface and groundwater and TMDLs. As described in Section 2, wetlands can improve water quality conditions of surface waters by intercepting and treating agricultural runoff. The wetland buffers provide additional treatment. Suspended sediments and contaminants in the water are trapped, retained, and/or transformed through a variety of biological and chemical processes before they reach downstream rivers, streams, and other water bodies contributing to the reduction in TMDLs from agricultural runoff. Water bodies within the prairie pothole region would benefit from improved water quality. Wetland restoration can also provide groundwater recharge depending on the physical factors of the region. Aquifers within the region would benefit. Water resource benefits would be 10 to 15 years in duration (CRP contract length).

5.2.1.2.4 CREP

Surface Water

CREP was created with the idea of addressing State environmental concerns in highly sensitive areas with selective conservation practices in a more targeted approach than general CRP. The highest potential impact to surface water quality under the current CRP is through the implementation and continuation of CREPs. Like Alternative 3, this alternative creates the potential for surface water quality improvement for States that currently have approved CREP agreements and for States that create CREPs. However, the national benefits under this alternative would be based on the amount of States with CREPs and the location of these States in relation to one another. The more States with CREP agreements in a watershed that are implementing water quality improvement practices, the greater potential for a national positive impact on surface water quality.

TMDLs

CREP projects have the highest potential to positively influence TMDLs due to the small geographic landscape and specific environmental resources they target. The current program allows for States and tribes to develop CREPs for agricultural areas that have been identified as major contributors to degraded water quality and TMDL issues within that State. The continuation of CREP under the current program would produce positive effects on water quality.

Groundwater

The No Action Alternative should affect groundwater quality in a similar manner to that described above for surface water quality for States that have CREPs. Refer to the discussion under surface water quality above for potential impacts to groundwater quality.

5.2.1.3 Impacts Under the Proposed Action (2002 Farm Bill)

5.2.1.3.1 General Sign-up

Surface Water

Under the Proposed Action Alternative, additional benefits on surface water quality would be expected throughout the Nation. The increased acreage cap of 39.2 million acres, along with the reauthorization of CRP up to 2007, would allow more cropland to be enrolled. This would aid in decreasing the amount of pesticides and nutrients delivered to stream systems by productive agricultural land. Even though current contracts will continue to expire under this alternative, the assumption is made that the new regulations promulgated by the 2002 Farm Bill will increase the effectiveness of the program and target even more highly sensitive environmental cropland for enrollment. This new programmatic focus and increased acreage allocated for enrollment could offset any contracts expiring and produce no adverse impacts to water quality.

Currently, emergency haying and grazing of CRP land is authorized when requested by the FSA COC and STC and approved by the FSA Washington Office. Under this alternative, this provision would continue for counties suffering from 40 percent or greater loss of normal hay and pasture production. However, the 2002 Farm Bill permits managed haying and grazing, along with the placement of wind turbines on CRP land if consistent with the conservation of soil, water quality, and wildlife habitat objectives of the program. The permitting of managed haying, grazing, and harvesting under this alternative would not produce any adverse impacts to water quality if conducted using best management practices incorporated in the conservation plan required on all CRP contract land. The improper use of CRP for grazing or haying can result in increased runoff compared to leaving the area in an undisturbed condition. However, if adequate canopy and basal cover is maintained, the use of CRP for grazing and haying would not be expected to result in excessive erosion (Gilley et al., 1996) contributing to degraded water quality. In the long-term, runoff should be reduced in most cases with managed haying and grazing.

The 2002 Farm Bill changed cropping history by locking in the eligible years. Eligible land for CRP must now have been planted or considered to have been planted for 4 of the 6 years prior to the date the Bill was signed. The previous eligibility rules called for land to be planted or considered planted 2 of the previous 5 years to be eligible for enrollment. This was a moving 5-year term in that the 5 years for cropping history purposes were moved forward each year. Under the 2002 Farm Bill, land must have been planted or considered to have been planted to an agricultural commodity during any 4 of the crop years 1996 through 2001. This could produce positive impacts on water quality.

TMDLs

A positive impact on TMDLs would be expected as more cropland is taken out of production and enrolled under CRP. However, due to the large geographic scale of this program, any positive effect on TMDLs will be minor if cropland within impaired watersheds is not specifically targeted and enrolled. This would be somewhat mediated where STCs have designated CPAs.

A new EBI could incorporate more points being awarded for cropland determined or possibly determined to be the contributing source of impairments causing TMDL within their water system. This idea would allow higher environmental benefits associated with reducing surface water contaminants, and thus create the potential for TMDL compliance.

Groundwater

The Proposed Action should affect groundwater quality in a similar manner to that of surface water quality. Refer to the above discussion under surface water quality and TMDLs for potential impacts to groundwater quality under this alternative.

5.2.1.3.2 CCRP

Surface Water

The reauthorization of CRP and an additional 2.8 million acres has the potential to produce continued positive cumulative impacts to surface water quality for an additional 10 to 15 years under CCRP. Newly enrolled acreage would continue to implement vegetative cover conservation practices to reduce runoff and nutrient loading. The extent to which this impact will be seen under this alternative is based upon the amount of acreage available for enrollment under CCRP. Even though current contracts will continue to expire under this alternative, the assumption is made that the new regulations promulgated by the 2002 Farm Bill will increase the effectiveness of the program and target even more highly sensitive environmental cropland for enrollment. This new programmatic focus and increased acreage allocated for enrollment could offset any contracts expiring and produce no adverse impacts to surface water quality.

The new provision in which producers may enroll entire fields through CCRP as buffers when more than 50 percent of the field is eligible for enrollment and the remainder of the field is infeasible-to-farm will likely have additional positive impacts to surface water quality (See Section 2.2.2 for a more detailed discussion on the effectiveness of buffers and water quality).

TMDLs

The impact to TMDLs under this alternative would be similar to that of TMDLs under general CRP. The geographic scale at which TMDLs can be effectively addressed is still somewhat unclear, but if multiple cropland parcels in a single impaired watershed are enrolled under this alternative, the potential for a positive impact on TMDLs is good if the cropland targeted for enrollment is actively contributing to the TMDL problems. However, due to the fact that CCRP

is voluntary and adjacent lands in a TMDL watershed that are not enrolled in CCRP are not obligated to participate, the potential for this alternative to positively impact TMDLs is minor. CCRP conservation practices like vegetative filter strips adjacent to streams, when combined with grass waterways, provide a stream buffer system capable of greatly reducing stream loadings of pervasive pollutants. Under this alternative, if vegetative filter strips are implemented in conjunction with grassed waterways in TMDL watersheds, the potential for a positive impact on TMDLs is created.

Groundwater

The Proposed Action should affect groundwater quality in a similar manner to that of surface water quality. The reauthorization of CRP and an additional 2.8 million acres has the potential to produce continued positive cumulative impacts to groundwater quality for an additional 10 to 15 years under CCRP. Refer to the above discussion under surface water quality and TMDLs for potential impacts to groundwater quality under this alternative.

5.2.1.3.3 FWP

Proposed changes to FWP include expansion of the program from 6 States to nationwide, and an increase in total allowable acreage from 500,000 to up to 1 million acres with a per-State enrollment limitation of 100,000 acres. This expansion would allow for an increased distribution and acreage of wetland restoration and buffers nationwide and the associated water resources benefits described under the No Action Alternative. The limitation of restored wetland size would also be increased from 5 acres to 10 acres, increasing the ability of the wetland to improve water quality and provide groundwater recharge.

5.2.1.3.4 CREP

Surface Water

The reauthorization of CRP and an additional 2.8 million acres has the potential to produce continued positive cumulative impacts to surface water quality for an additional 10 to 15 years under CREP. Newly enrolled acreage would continue to implement vegetative cover conservation practices to reduce runoff and nutrient loading. The extent at which the impact will be seen under this alternative is based upon the amount of acreage available for enrollment under CREP. Based on the premise that CREP targets regions within the respective State with specific conservation practices, the potential for positive surface water quality benefits is favorable but dependent upon enrollment.

TMDLs

The impact to TMDLs under this alternative would be similar to that of TMDLs under general CRP.

The geographic scale at which TMDLs can be effectively addressed is still somewhat unclear, but if multiple cropland parcels in a single impaired watershed are enrolled under this alternative, the potential for a positive impact on TMDLs is good if the cropland targeted for enrollment is actively contributing to the TMDL problems. However, due to the fact that CREP is voluntary and adjacent lands in a TMDL watershed that are not enrolled in CREP are not obligated to participate, the potential for this alternative to positively impact TMDLs is minor.

Groundwater

The Proposed Action should affect groundwater quality in a similar manner to that of surface water quality in that the reauthorization and an additional 2.8 million acres has the potential to produce continued positive cumulative impacts. Refer to the above discussion under surface water quality and TMDLs for potential impacts to groundwater quality under this alternative.

5.2.1.4 Impacts Under Alternative 4 (Environmental Targeting)

Alternative 4 is an environmental targeting approach to CRP that focuses program resources on priority conservation goals on State and Federal levels, as described in Section 4 *Alternatives Including the Proposed Action*. Resource priority areas would be identified in each State and nationwide.

Under this alternative, general CRP signup would not exist. As a result, the national soil erosion benefits associated with these acres would be dramatically reduced. In addition, because this would be a voluntary program and there is no assurance that all allocated acres will be enrolled, it is possible that the overall enrollment would be reduced.

The existing CREP would not change and beneficial impacts to water quality would be the same as those under the Proposed Action Alternative. Please refer to the discussion described in Section 5.2.1.3.2.

Continuous CRP, a solely Federally funded program, would also address specific State environmental issues similar to CREP, through the identification of SETAs. For example, a SETA could be in Illinois, and more specifically, the portion Upper Mississippi River drainage, where agriculture has caused an increase in nonpoint source pollution, affecting both ground and surface water. Restoration and protection of these sources of water would benefit the Upper Mississippi River watershed by improving the water quality for human consumption as well as improving aquatic and terrestrial wildlife habitat. These benefits would be incurred over the short-term, 10 to 15 years; however, re-enrollment of SETAs would be a high priority for the long-term continuation of established benefits.

The NETA would address those environmental issues that occur on a larger, national scale, and such issues that would result in cumulative impacts on many different systems. A NETA for water quality could encompass the Mississippi River Basin and address hypoxia in the Gulf of Mexico. The Mississippi River Basin encompasses the Northern Plains and Midwest regions and portions of the South Central, Southeast, and East regions of the U.S. The establishment of vegetative covers, riparian buffers, and filter strips, and the restoration of wetlands, riparian areas, and floodplains would be applicable conservation practices to reduce N, P, and sediment runoff from agricultural lands identified as possible contributors to the hypoxic condition linked to the Mississippi River and its tributaries. These resources would produce benefits on a larger scale than those in the SETAs and would provide a greater functional value by improving the water quality of the Mississippi River Basin and the Gulf of Mexico. This program would be Federally administered and funded; however, conservation goals and criteria would be developed with the cooperation of States and non-governmental organizations to encourage partnerships and continuity with other non-CRP conservation programs.

By focusing on reducing hypoxic conditions in the Gulf of Mexico, the overall impacts made to water quality would be positive. With conservation practices in place to address hypoxic conditions, one could expect a decrease in pesticides, nutrients, and fertilizers entering the watershed through agriculture runoff, which would cause water quality to improve for human consumption as well as for aquatic organisms. It would be expected that this improvement in water quality would also decrease the number of streams and rivers listed on State's impaired waters list, and the water quality in those streams and rivers currently 303(d) listed would begin to fall within acceptable water quality standards once the program is in place. The impacts it would have on groundwater would be similar, but to a lesser extent.

5.2.2 Impacts on Riparian Areas, Floodplains, and Wetlands

5.2.2.1 Impacts Under No Program (Baseline)

The No Program Alternative is the baseline for which to compare the other alternatives. The potential impacts to riparian areas, floodplains, and wetlands from the non-existence of CRP are assessed.

Overall, over 40 million acres of agricultural lands have been enrolled in CRP at one time or another, which has benefited associated wetlands, riparian areas, and floodplains through the reduction of soil erosion and sedimentation and contaminant runoff from agricultural lands. These benefits would not have occurred if CRP had not been in existence. The benefits attained through the enrollment of over 3 million acres of wetlands and associated lands in CRP would be lost. These wetlands and associated lands would most likely still be in crop production, causing degradation of wetland function and values from alteration of natural vegetation and hydrology and impairment of water quality from agricultural runoff.

In addition, gains in wetlands and riparian areas and other beneficial impacts to wetlands, riparian areas, and floodplains from associated CRP conservation practices would be lost. Wetland restoration through CRP has contributed to over 1.6 million acres of wetland restoration in the U.S. Over 400,000 acres of riparian areas have been restored due to CRP. Over 600,000 acres of filter strips and wetland buffers would also be lost that protect wetlands, riparian areas, and floodplains from sedimentation and other contaminants.

5.2.2.2 Impacts Under No Action (Current Program)

The current CRP program, including CREP and FWP, has beneficial impacts to wetlands, riparian areas, and floodplains. CRP focuses on farmed wetlands as well as wetland and riparian area conservation practices. CRP does not focus on floodplains; however, floodplains still benefit from CRP enrollment and conservation practices.

Overall, CRP has contributed to the reduction of soil erosion and pollutant runoff from agricultural lands by providing financial incentives to farmers to remove lands from crop production and implement soil and water conservation practices. Wetlands receiving agricultural runoff from lands enrolled in CRP have benefited from improved water quality, such as reduction in sedimentation and nutrient enrichment.

As described in Section 3, wetland eligibility in CRP has changed over the years since the inception of the program. For all eligible years, more than 3 million acres of wetlands and associated uplands were enrolled nationwide (Table 5.2-1), with more than 80 percent of the acres in North and South Dakota and Minnesota.

Table 5.2-1. Acreage of Wetland and Associated Uplands Enrolled in CRP by Year and Eligibility Category

Years	Cropped Wetland	Cropped Wetland Associate [1]	Noncropped Wetland Associate [2]	Total Acres
1989-1990	Not available	Not available	Not available	410,000
1998	232,598	852,062	787,727	1,872,387
1999	99,964	285,283	186,538	571,785
2000	160,072	377,502	143,302	680,876
2001	49,714	106,790	65,113	221,617
Totals	542,278	1,621,576	1,182,656	3,346,510

1. Cropped Wetland Associate refers to those upland areas that buffer the cropped wetland.
2. Noncropped Wetland Associate refers to those upland areas that buffer noncropped wetlands.

Sources: ERS, 1997 and FSA, 2002b

These wetlands and associated areas have been taken out of crop production. This can restore natural wetland function to cropped wetlands and protect existing and cropped wetlands from agricultural runoff. CRP has likely contributed to the decline in wetland conversion caused by agriculture by providing farmers the financial incentive to conserve wetlands. Average annual rates of wetland conversion have decreased since the first reliable scientific inventories were taken in the mid-1950s, as shown in Table 5.2-2.

Nationally, wetland conversion has decreased substantially since the mid-1950s from an annual average of 729,600 acres to 32,600 acres by 1997. Data from 1997 to 2002 was not available for this analysis. Agriculture accounted for over 80 percent of wetland conversion from 1954 to 1974 and steadily decreased to 20 percent from 1982 to 1992. The primary cause of the recent trend in wetland conversion has shifted from agriculture to urban development. Other contributors to the decrease in wetland loss are most likely the cumulative effects of wetland

regulations, such as Swampbuster and Section 404 of the CWA; the decline in profitability of converting wetlands for agriculture; and the increase in public interest and education.

Table 5.2-2. Average Annual Wetland Conversion in the U.S. on Non-Federal Lands from 1954 to 1997

Wetland Conversion	1954 – 1974[1]		1974 – 1983[1]		1982 – 1992[1]		1992 – 1997[2]	
	1,000 acres/yr.	Percent	1,000 acres/yr.	Percent	1,000 acres/yr.	Percent	1,000 acres/yr.	Percent
Agriculture	592.8	81	234.8	53	30.9	20	8.4	26
Urban development	54.4	8	14	3	88.6	57	16	49
Other	34.6	5	168.1	38	16.4	10	4.2	13
Deepwater	47.8	6	29	6	20.2	13	4	12
Total	729.6	100	445.9	100	156.1	100	32.6	100

[1] Source: Derived from ERS, 1997 [2]Source: 1997 National Resources Inventory

CRP also focuses on wetland, riparian area, and associated conservation practices, including: shallow water areas for wildlife (CP 9), filter strips (CP 13 & 21), wetland trees (CP 14), riparian buffers (CP 22), and wetland restoration (CP 23). CP 14 emphasized restoration of wetland trees and was discontinued after passage of the 1990 Farm Bill because of the introduction of the WRP. More than 81,000 acres were enrolled in CP 14, principally in Louisiana, Mississippi, and other Southeastern States (ERS, 1997), which benefited the riparian areas, wetlands, and floodplains of the lower Mississippi River. These acres have mostly expired or may have been re-enrolled under new contracts as CP 11 and CP 23. CP 13 ended after signup 13 in 1995 and was replaced by CP 21, which began with signup 14 in 1996, the first "continuous signup."

Table 5.2-3 presents a summary of CRP (including CREP and FWP) wetland, riparian area, and associated conservation practice acreages by State. Nearly 3 million acres of wetland, riparian area, and associated conservation practices are actively enrolled in CRP. About 86 percent of the total acreage is within the Midwest and Northern Plains regions, where agriculture is the dominant land use. The Eastern region has the least amount of acreage enrolled. In terms of conservation practices, CP 23 has the greatest acreage of enrollment at over 1.5 million acres, with over 70 percent located in the Northern Plains region, where the prairie potholes are the dominant wetland type benefiting from restoration. The next greatest acreage is enrolled in CP 21 at approximately 784,000 acres and CP 22 at approximately 420,000 acres, primarily in the Midwest. The dominant States of enrollment nationwide are North and South Dakota, as shown on Figure 5.2-3. This data indicates that prairie pothole wetlands, riparian areas, and floodplains along the streams and rivers within the Northern Plains and Midwest regions are receiving the greatest benefit from CRP.

Table 5.2-3. Summary of Wetland and Associated Practice Acreages for Active Contracts for All CRP Program Years (1987-2003)

State	CP 9	CP 13	CP 21	CP 22	CP 23	CP 27	CP 28	State Totals
Connecticut	0.0	0.0	19.7	63.1	0.0	0.0	0.0	82.8
Delaware	357.4	0.0	1,289.9	144.1	193.5	0.0	0.0	1,984.9
Maryland	1,011.7	957.5	21,338.5	13,432.2	1,459.9	0.0	0.0	38,199.8
Massachusetts	0.2	46.9	14.6	5.0	0.0	0.0	0.0	66.7
Maine	0.0	0.0	138.4	180.6	0.0	0.0	0.0	319.0
New Hampshire	0.0	0.2	162.1	22.2	0.0	0.0	0.0	184.5
New Jersey	2.8	9.0	130.7	17.8	1.0	0.0	0.0	161.3
New York	84.5	141.6	299.8	7,521.5	51.5	0.0	0.0	8,098.9
Pennsylvania	55.4	6.5	989.5	3,733.9	195.4	0.0	0.0	4,980.7
West Virginia	0.0	0.0	12.3	213.1	0.0	0.0	0.0	225.4
Vermont	0.0	0.0	10.7	816.0	0.0	0.0	0.0	826.7
Regional Total	1,512.0	1,161.7	24,406.2	26,149.5	1,901.3	0.0	0.0	55,130.7
Alabama	87.3	112.3	541.5	13,498.1	72.6	0.0	0.0	14,311.8
Florida	0.0	4.8	0.0	67.5	0.0	0.0	0.0	72.3
Georgia	27.8	881.3	431.8	513.1	326.7	0.0	0.0	2,180.7
Kentucky	1,987.2	633.6	25,176.6	7,282.3	34.7	0.0	0.0	35,114.4
Mississippi	596.0	485.9	5,880.9	53,399.3	12,371.8	0.0	0.0	72,733.9
North Carolina	2,756.2	37.3	6,486.8	17,322.2	1,161.0	0.0	0.0	27,763.5

Table 5.2-3. Summary of Wetland and Associated Practice Acreages for Active Contracts for All CRP Program Years (1987-2003)

State	CP 9	CP 13	CP 21	CP 22	CP 23	CP 27	CP 28	State Totals
South Carolina	1,839.7	1,823.7	4,339.4	26,340.8	283.6	0.0	0.0	34,627.2
Tennessee	76.8	356.0	6,302.9	2,049.1	861.8	0.0	0.0	9,646.6
Virginia	75.0	51.5	1,855.5	11,620.8	174.5	0.0	0.0	13,777.3
Regional Total	7,446.0	4,386.4	51,015.4	132,093.2	15,286.7	0.0	0.0	210,227.7
Arkansas	642.0	122.7	3,464.6	9,051.6	13,943.9	0.0	0.0	27,224.8
Louisiana	362.4	47.1	482.5	1,380.1	23,697.9	0.0	0.0	25,970.0
Oklahoma	84.1	169.1	673.0	831.3	1,369.6	0.0	0.0	3,127.1
Texas	78.9	102.4	1,220.7	4,755.2	8,820.8	0.0	0.0	14,978.0
Regional Total	1,167.4	441.3	5,840.8	16,018.2	47,832.2	0.0	0.0	71,299.9
Illinois	4,131.1	5,474.9	122,436.4	85,471.5	41,919.8	0.0	0.0	259,433.7
Indiana	1,206.0	1,737.8	42,219.9	3,458.7	6,423.4	0.0	0.0	55,045.8
Iowa	14,053.9	3,833.0	203,144.7	51,015.3	16,437.7	8,297.0	21,453.6	318,235.2
Michigan	1,322.7	886.9	29,164.2	2,407.5	7,604.4	0.0	0.0	41,385.7
Minnesota	969.0	8,521.9	126,356.1	33,386.8	286,090.2	4,177.4	9,804.7	469,306.1
Missouri	2,155.8	532.4	35,074.1	14,534.2	4,043.5	0.0	0.0	56,340.0
Ohio	781.3	1,032.8	33,712.1	3,253.7	3,307.3	0.0	0.0	42,087.2
Wisconsin	3,708.6	460.6	14,205.4	8,967.3	11,616.9	0.0	0.0	38,958.8
Regional Total	28,328.4	22,480.3	606,312.9	202,495.0	377,443.2	12,474.4	31,258.3	1,280,792.5

Table 5.2-3. Summary of Wetland and Associated Practice Acreages for Active Contracts for All CRP Program Years (1987-2003)

State	CP 9	CP 13	CP 21	CP 22	CP 23	CP 27	CP 28	State Totals
Colorado	49.2	96.0	301.9	667.0	706.0	0.0	0.0	1,820.1
Kansas	510.4	1,193.5	17,593.0	3,782.2	4,427.5	0.0	0.0	27,506.6
Montana	11.2	26.0	95.1	1,771.7	5,111.0	33.7	49.2	7,097.9
Nebraska	155.1	313.9	15,464.1	2,880.4	15,249.9	834.6	1,435.3	36,333.3
North Dakota	35.1	424.9	6,942.6	450.6	769,864.4	991.4	2,717.1	781,426.1
South Dakota	294.1	612.3	5,007.9	2,067.5	389,303.5	2,763.9	6,284.9	406,334.1
Wyoming	0.0	0.0	9.4	1,814.5	0.0	0.0	0.0	1,823.9
Regional Total	1,055.1	2,666.6	45,414.0	13,433.9	1,184,662.3	4,623.6	10,486.5	1,262,342.0
Arizona	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
California	1,229.6	0.0	0.0	2,821.6	5,109.4	0.0	0.0	9,160.6
Idaho	89.0	5.9	972.7	5,063.3	1,401.8	0.0	0.0	7,532.7
Nevada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Mexico	0.0	0.0	0.0	940.1	0.0	0.0	0.0	940.1
Oregon	16.7	0.0	1,894.6	8,530.5	461.4	0.0	0.0	10,903.2
Utah	0.0	0.0	12.2	50.3	0.0	0.0	0.0	62.5
Washington	61.4	711.5	47,926.7	12,606.1	3,748.6	0.0	0.0	65,054.3
Regional Total	1,396.7	717.4	50,806.2	30,011.9	10,721.2	0.0	0.0	93,653.4
National Total	**40,906**	**31,854**	**783,796**	**420,202**	**1,637,847**	**17,098**	**41,745**	**2,973,446**

CREP acreage accounts for approximately 8 percent of the national total acreage for wetlands, riparian areas, and associated conservation practices (Table 5.2-4). Regionally, CREP acreage ranges from 0 (zero) in the Northern Plains to 143,654 in the Midwest. The States with the greatest acreage in CREP include Illinois and Maryland (FSA, 2002c). Regionally, wetlands, riparian areas, and floodplains within the Midwest are receiving the greatest benefit from CREP.

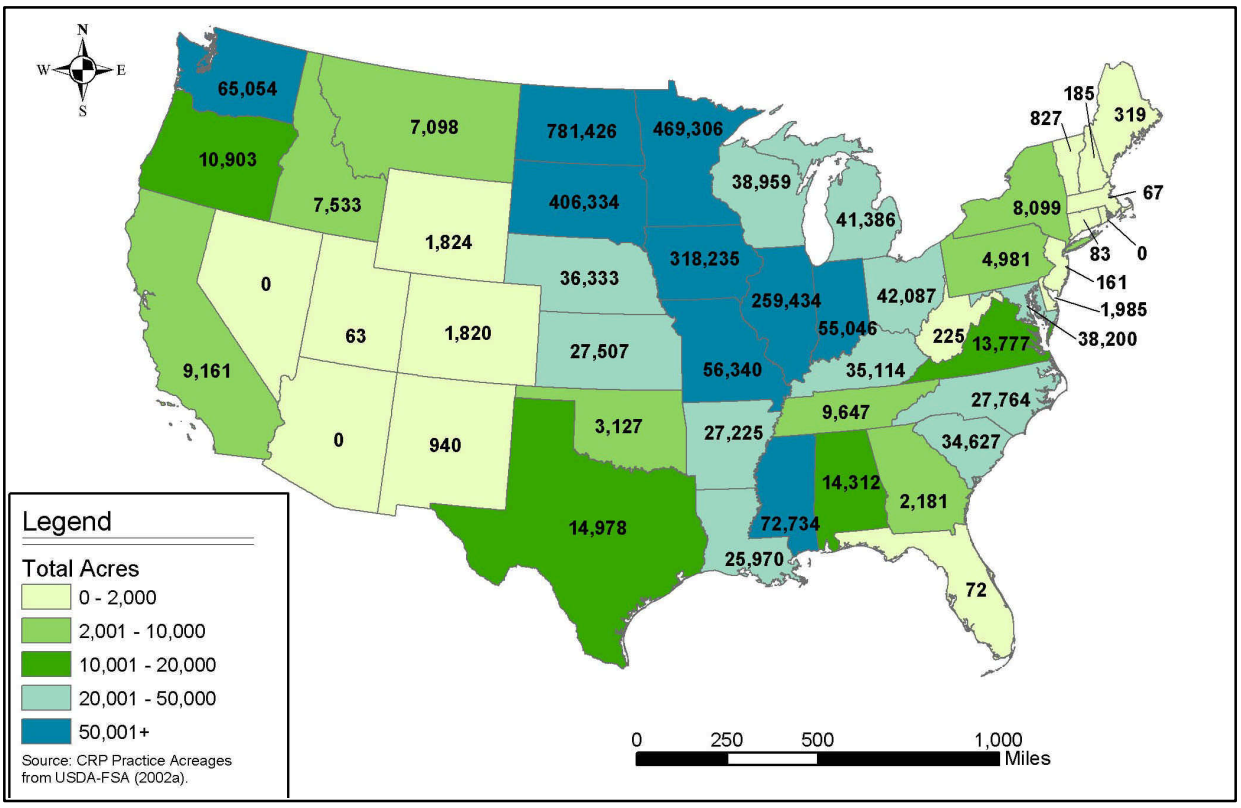

Fig. 5.2-3. Total Acreage of Wetland and Associated Practices Enrolled in CRP by State

Table 5.2-5 below describes the purpose of each current wetland, riparian area, and associated conservation practice.

Table 5.2-5 Purpose of CRP Wetland, Riparian Area and Associated Conservation Practices

Conservation Practice	Purpose
CP 9 Shallow Water Areas for Wildlife	Provide open water and moist soil areas for waterfowl resting and feeding and habitat for reptiles, amphibians, and other aquatic species that serve as important prey species for waterfowl, raptors, herons, and other wildlife.
CP 21 Filter Strips	Reduce sheet, rill, and ephemeral gully erosion; manage water flow; stabilize steep slopes; reduce transport of sediment and other water-borne contaminants downslope, on-site, or off-site; and enhance wildlife habitat. Reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff and surface irrigation tailwater; reduce dissolved contaminant loadings in runoff; restore, create, or enhance herbaceous habitat for wildlife and beneficial insects; and maintain or enhance watershed functions and values.
CP 22 Riparian Buffer	Provide suitable habitat for desired aquatic species and diverse aquatic communities, and channel morphology and associated riparian characteristics important to desired species. Create shade to lower water temperatures to improve habitat for aquatic organisms; provide sources of detritus and large woody debris for aquatic and terrestrial organisms; create wildlife habitat and establish wildlife corridors; reduce excess amounts of sediment, organic material, nutrients, and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow groundwater flow; provide protection against scour erosion within the floodplain; and, restore natural riparian plant communities. Help stabilize the channel bed and streambank, maintain the flow or storage capacity of the water body or reduce the off-site or downstream effects of sediment resulting from bank erosion.
CP 23 Wetland Restoration	Restore hydric soil conditions, hydrologic conditions, hydrophytic plant communities, and wetland functions that occurred prior to modification to the extent practicable. Modify the hydrologic condition, hydrophytic plant communities, and/or other biological habitat components of a wetland for the purpose of favoring specific wetland functions or values. Maintain, develop, or improve habitat for waterfowl, fur-bearers, or other wetland associated flora and fauna.
CP 27 FWP Wetland	Restore the function and values of wetlands that have been devoted to agricultural use. Hydrology and vegetation must be restored to the maximum extent possible.
CP 28 FWP Buffer	Provide a vegetated buffer around wetlands (CP 27) to remove sediment, nutrients, and pollutants from impacting the wetland.

Conservation practices involving the creation of new wetland habitat and the restoration of wetlands drained or modified by farming have contributed to wetland gains in the U.S. Conversion of agricultural land back to wetlands provided approximately 10 percent of wetland gains between 1982 and 92 (ERS, 1997). As shown in Figure 5.2-3, the greatest acreage of wetland creation and restoration has occurred in the Midwest and Northern Plains regions, where the greatest acreage of farmed wetlands also occurs (see Figure 2.2-23, Section 2.2.2.3).

Wetland conservation practices benefit wetlands directly by restoring the wetland functions and values that occurred prior to agricultural modification or conversion. These functions and values are described in detail in Section 2.2.2.3 and include fish and wildlife habitat, improved water quality, and flood control. Wetland gains and improved conditions are thought to be major factors in the recent increase in waterfowl populations (EPA, 1995). Wetland restoration and creation can also benefit riparian areas and floodplains if it occurs in association with these areas. A farmed wetland restored in a riparian area and/or floodplain would also improve the condition and function of the riparian and/or floodplain ecosystems as well.

CP 22 directly benefits riparian areas and floodplains by restoring the natural riparian plant community and its functions, such as protecting the floodplain from scour erosion. The regions with the greatest riparian area include the Midwest and Southeast, primarily in Illinois, Mississippi, and Iowa. Filter strips (CP 13 & 21) benefit wetlands, riparian areas, and floodplains by reducing runoff to these resources from agricultural lands. As discussed in Section 2.2.2.3, agricultural runoff can contain sediment, nutrients, pesticides, salt, and pathogens that degrade the quality and function of receiving wetlands, riparian areas, and floodplains. The Midwest, by far, has the greatest acreage of filter strip conservation practices enrolled in CRP. The primary States include Iowa, Minnesota, and Illinois. CP 28 provides benefits to restored wetlands (CP 27) to reduce sediment, nutrient, and other pollutant loads from impacting the wetland. This conservation practice is associated with FWP and is restricted to the Midwest and Northern Plains regions. The greatest acreage occurs in Iowa.

5.2.2.3 Impacts Under Proposed Action (2002 Farm Bill)

The Proposed Action is the changes to CRP, including CREP and FWP proposed in the 2002 Farm Bill, as discussed in Section 4 *Alternatives Including the Proposed Action*. Overall, the changes to CRP increase the beneficial impacts to riparian areas, floodplain, and wetlands.

The 2002 Farm Bill will authorize CRP through 2007, extending the beneficial impacts to riparian areas, floodplains, and wetlands as discussed under the No Action Alternative for an additional 5 years. The program acreage limitation will also be increased to 39.2 million acres, increasing the potential acreage of beneficial impacts by 2.8 million acres. Eligibility for CRP re-enrollment for land already enrolled in CRP will also extend these beneficial impacts for another 10 to 15 years.

Riparian areas would benefit from devoting marginal pastureland to improved vegetation, such as trees in or near riparian areas. Trees would improve the natural function of riparian areas, especially in those riparian areas where woody vegetation is ecologically consistent, as described in Section 2.2.2.3. Permanent vegetation also includes marginal pastureland converted to wetlands, which would increase the potential for gains in wetland acreage.

New eligibility criteria for conservation of ground or surface water that would provide a net savings in ground or surface water resources on the producer's agricultural operation would beneficially impact the water quality of any receiving wetlands. Water conservation would decrease the volume of runoff from agricultural lands that often contains pollutants, such as

sediment, nutrients, and pesticides. Benefits also include aquatic species and other wildlife that would be affected by the improvement in water quality.

Entire fields may be enrolled through continuous CRP as buffers when more than 50 percent of the field is eligible for enrollment and the remaining acreage in the field is infeasible-to-farm at general sign-up rates. Riparian areas would benefit from this change in terms of an increase in potentially eligible acreage for buffer establishment and enrollment.

The provision of one-year contract extensions for hardwood tree practices that expired in September 2002, would continue to benefit riparian areas, floodplains, and wetlands as trees that were planted would remain unharvested for an additional year.

Permitting existing cover to continue where practicable and consistent with wildlife benefits of CRP would continue to reduce erosion rates, benefiting receiving wetlands by reducing sedimentation and other contaminant loading. This would be a direct result of not having to break established sod to plant new vegetation that may take an extended period to become established, thus leaving soil exposed to erosion albeit at a loss of desirable wildlife habitat.

Changing the criteria for land eligibility from lands cropped for two of the past five years to lands cropped for four of the past six years may cause impacts to riparian areas, floodplains, and wetlands. This new eligibility criteria introduces a date-certain aspect that would prevent new environmental degradation from being enrolled in CRP.

Permitting haying and grazing in upland areas in response to a drought or other emergency could degrade the water quality of wetlands receiving runoff from these areas. Haying and grazing increases the potential for soil exposure and erosion compared to cover that is not harvested or grazed. The livestock associated with grazing can contribute to nutrient contamination and accelerate upland and streambank erosion from trampling soil-stabilizing vegetation. In order to prevent or limit adverse impacts occurring from haying or grazing, FSA requires proper conservation planning as a condition of this use.

A major change in CRP that could have beneficial impacts on wetlands and associated riparian areas and floodplains is the expansion of FWP from six states to nationwide. Total allowable acreage is also increased from 500,000 to up to 1 million with a per-state enrollment limitation of 100,000 acres. The maximum wetland size allowed is expanded from five acres to 10 acres with not more than five acres being eligible for payment. Currently, over 55,000 acres are enrolled in FWP within six states in the Prairie Pothole CPA. Any FWP expansion would allow for an increased distribution and acreage of wetland restoration and buffers nationwide. The increase in allowable wetland acreage could also allow for increased wetland function, such as water quality improvement, wildlife habitat, etc. Associated buffers for restored wetlands would still be required to protect the wetland from sedimentation and other contaminants in runoff and to provide additional wildlife habitat. Restoration and protection of additional wetlands would also provide positive impacts in the area of reducing flooding intensity.

5.2.2.4 Impacts Under Alternative 4 (Environmental Targeting)

Alternative 4 is an environmental targeting approach to CRP that focuses program resources on priority conservation goals on a State and Federal level as described in Section 4 *Alternatives Including the Proposed Action*. Resource priority areas would be identified in each State and nationwide.

Under this alternative, general CRP signup would not exist. As a result, the national soil erosion benefits associated with these acres would be dramatically reduced. In addition, because this would be a voluntary program and there is no assurance that all allocated acres will be enrolled, it is possible that the overall enrollment would be reduced.

The existing CREP would not change and beneficial impacts to riparian areas, floodplains, and wetlands would be the same as those under the No Action Alternative described in Section 5.2.2.2. These benefits would be incurred over the short-term, 10 to 15 years, or over the long-term through permanent easements.

Continuous CRP would also address specific State environmental issues similar to CREP, through the identification of SETAs. However, the program would be Federally funded with no additional State funds required. For example, a State Priority Area in Louisiana could be the Lower Mississippi River drainage, where farming in the floodplain has caused the drainage and alteration of floodplains and wetlands and the clearing of forested riparian areas. Restoration of these ecosystems would benefit the Lower Mississippi River watershed by restoring its natural function, improving water quality, and improving aquatic and terrestrial wildlife habitat. These benefits would only be incurred over the short-term, 10 to 15 years, contingent upon re-designation of the State Priority Area.

This environmental targeting approach would also identify NETAs at a larger watershed scale, such as the Mississippi River Basin, to address hypoxia in the Gulf of Mexico. The Mississippi River Basin encompasses the Northern Plains and Midwest regions and portions of the South Central, Southeast, and East regions of the U.S. Restoration of wetlands, riparian areas, and floodplains would be applicable conservation practices to reduce nutrient runoff from agricultural lands along the Mississippi River and its tributaries. These resources would benefit at a larger scale than those in the State Priority Areas and would provide a greater functional value by improving the water quality of the Mississippi River Basin and the Gulf of Mexico. This program would be Federally administered and funded; however, conservation goals and criteria would be developed with the cooperation of States and non-governmental organizations to encourage partnerships and continuity with other non-CRP conservation programs.

To achieve maximum wetland, riparian area, and floodplain benefits, acreage limitations on restoration would be based on the type and functional potential of the resource. For example, restoration of a prairie pothole wetland would not require much acreage because they are naturally relatively small, shallow basins. Although prairie potholes are small, they still provide critical habitat for waterfowl and other prairie and aquatic birds. In contrast, floodplain wetlands associated with major rivers are extensive linear wetlands that require large areas of restoration to provide flood control and other functions.

5.2.3 Aquatic Species Impacts

5.2.3.1 Impacts Under No Program (Baseline)

The No Program Alternative is the baseline for which to compare the other alternatives. The potential impacts to aquatic species from the non-existence of CRP are assessed.

The EPA's water quality inventory identifies agricultural runoff as the largest source of water quality degradation in the Nation. Runoff from farmlands introduces sediment, nutrients, pesticides, and organic matter. These pollutants have the potential to have severe negative impacts on a wide range of aquatic ecosystems because of their potential to spoil habitat and remove the food base.

The aquatic species most affected by agricultural impacts are those fishes, mollusks, and aquatic invertebrates that require clean water and a substrate free of excessive organic material. A substrate clear of excessive sediment is an essential component for the habitat of many aquatic species. A clean substrate made up of gravel or cobble-sized stones provides areas for spawning and habitat for clams, mussels, and other species of mollusks, as well as for a large number of aquatic insects, which are an important source of food for many higher organisms. Fertilizers, waste from farm animals, sediment, and pesticides are carried by runoff into streams, creating problems for the plants and fish in downstream rivers and bays. Grazing animals may also harm areas near streams and rivers, creating erosion problems and other impacts on aquatic habitat. If CRP had never existed, it is probable that there would be a substantial increase in the number of impaired waters in the U.S., which would result in a decrease in the amount of suitable habitat for aquatic species.

5.2.3.2 Impacts of No Action (Current Program)

5.2.3.2.1 General Sign-up

CRP contracts reduce erosion by hundreds of millions of tons each year. This directly affects the quality of streams, lakes, and other bodies of water by reducing sediment and preventing nutrient and pesticide runoff carried by eroded topsoil. Producers who enroll acreage in CRP reduce their application of pesticides and nutrients, largely eliminating CRP lands as a source of pollution. Keeping sediment, nutrients, and pesticides out of water bodies decreases the risk of negative impacts to aquatic species (Figure 5.2-4).

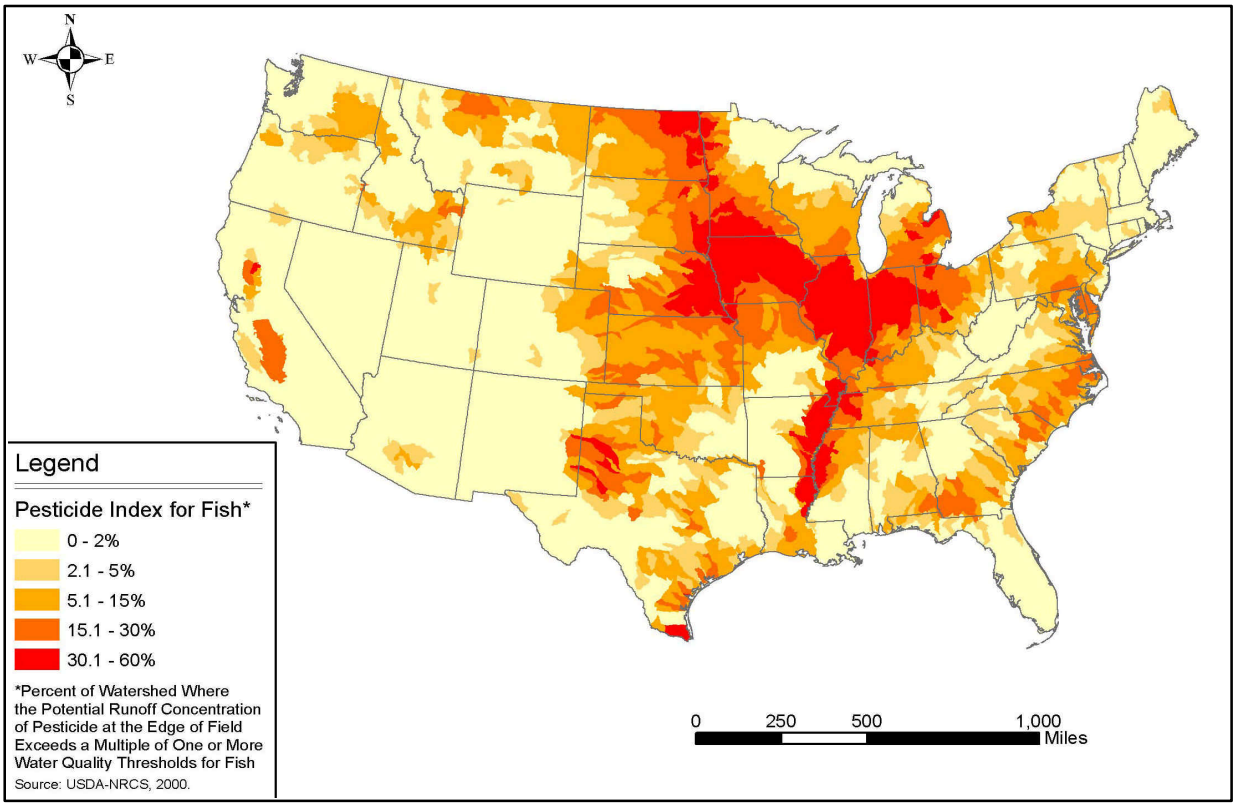

Fig. 5.2-4. Pesticide Index for Fish

All current active acres enrolled in CRP that employ conservation practices aimed at improving water quality utilize vegetative areas as buffers to help reduce the amount of nonpoint source pollution entering surface waters. Reducing runoff containing sediments, N, P, and pesticides is a way to improve habitat for aquatic species. Presently, almost 50 percent of all the active acres enrolled in CRP are implementing conservation practices targeted towards improving water quality (Figure 5.2-1).

Almost all CRP conservation practices enhance water quality; however, some of the specific authorized CRP and CCRP conservation practices aimed directly at water quality improvement, as defined in DM-9500, include but are not limited to: establishing permanent areas of vegetative cover (CP 15A) and maintaining already established vegetative cover (CP 10 & 11), establishing introduced grasses and legumes (CP 1), establishing native grasses (CP 2), establishing permanent wildlife habitat (CP 4B & D), establishing vegetative cover to reduce salinity (CP 18B & C), and the creation of filter strips and riparian buffer zones (CP 21 & 22). Practices aimed at managing, restoring, or creating wetlands (CP 23) are also used for the purpose of improving water quality due to their ability to effectively filter runoff and the overall important ecological functions they serve.

5.2.3.2.2 CCRP

Those CCRP practices aimed at improving water quality are the practices most likely to influence the quality of habitat for aquatic species. Vegetative filter strips (CP 21), riparian

buffer strips (CP 22), grassed waterways (CP 8A), and areas devoted to vegetated cover (CP1, CP 2, CP3, CP 10, and CP 11) implemented under CCRP trap sediment, organic matter, and other pollutants from runoff, while also creating aquatic habitat. The volume, flow, velocity, and transport capacity of the runoff are directly lowered, and the sediment and associated pollutants are then removed through filtration, deposition, and infiltration. This alternative would allow for decreased sediment transport rates to surface waters with the continued implementation of these conservation buffers, thus benefiting fish and macroinvertebrates within the aquatic system.

5.2.3.2.3 FWP

Under the current FWP (operated as a pilot project), a total of 16,534 acres of wetland restoration and 40,445 acres of wetland buffer have been enrolled within 6 States in the Prairie Pothole CPA (see Table 3.3-1 in Chapter 3 *Current Programs*). The majority of acreage is enrolled in Iowa followed by Minnesota, South Dakota, North Dakota, Nebraska, and Montana. Restoration of farmed or converted wetlands in this region would benefit aquatic species by increasing aquatic habitat for aquatic invertebrates, fish, amphibians, and aquatic birds. Although the individual size of the wetland restoration is limited to five acres, it would still provide significant benefits to species dependent on prairie potholes for habitat. The wetland buffers with trees would provide shading that keeps the water cool and increases dissolved oxygen, which provides optimal conditions for the growth of beneficial algae and aquatic insects. Leaf litter and large woody debris from the buffer would also provide food sources and habitat diversity for aquatic invertebrates, amphibians, and fish. Aquatic species benefits would be 10 to 15 years in duration.

5.2.3.2.4 CREP

CREP was created with the idea of addressing State and National environmental concerns in highly sensitive areas with selective conservation practices in a more targeted approach than general CRP. One of the greatest beneficial impacts of CREP is the improvement of water quality. The potential to improve overall water quality is good under the current program, but a better statement would be that CREP currently has the greatest potential to improve stream impairments contributing to poor water quality.

Under this alternative, surface water quality would continue to improve as more acreage is enrolled under previous State CREPs, and as more CREPs are created. CREPs, like Oregon's, which directly target the restoration of aquatic habitat and water quality for the benefit of salmon, have the greatest potential to positively impact aquatic species.

5.2.3.3 Impacts Under Proposed Action (2002 Farm Bill)

5.2.3.3.1 General Sign-up

Under the Proposed Action Alternative, additional benefits for aquatic wildlife would be expected throughout the Nation. The increased acreage cap of 39.2 million acres, along with the reauthorization of CRP up to 2007, would allow more cropland to come out of production, thus

decreasing the amount of pesticides and nutrients delivered to stream systems by commodity croplands.

The Proposed Action should have a positive effect on aquatic species due to the overall positive effect on surface water quality through the implementation and establishment of vegetative cover on environmentally sensitive agricultural land targeted by CRP.

5.2.3.3.2 CCRP

Impacts on aquatic species and their habitat from CCRP under the Proposed Action should be similar manner to those described under general CRP above. Refer to the above discussion for these impacts.

5.2.3.3.3 FWP

Proposed changes to FWP include expansion of the program from six States to nationwide and an increase in total allowable acreage from 500,000 to up to 1 million acres with a per-State enrollment limitation of 100,000 acres. This expansion would allow for an increased distribution and acreage of wetland restoration and buffers nationwide and the associated aquatic species benefits described under the No Action Alternative. The limitation of wetland size would also be increased from five acres to 10 acres, increasing the potential acreage of aquatic habitat.

5.2.3.3.4 CREP

CREP was created with the idea of addressing State and national environmental concerns in highly sensitive areas with selective conservation practices in a more targeted approach than general CRP. Under this alternative, surface water quality would continue to improve as more acreage is enrolled under previous State CREPs and as more CREPs are created. Currently, most of the goals established by States with approved CREPs focus on water quality enhancement within a localized region of the State (Table 3.5-1). Since water quality and aquatic species are directly related, this alternative would produce a positive impact on aquatic species as additional States obtain CREP agreements. However, this alternative would only produce an increased positive impact for aquatic species if additional acreage is allocated to CREP based on the small-targeted geographic scale of the program.

5.2.3.4 Impacts Under Alternative 4 (Environmental Targeting)

Under this alternative, existing CREP would not change and beneficial impacts to aquatic species habitat and would be the same as those under the Proposed Action Alternative. Refer to the discussion described in Section 5.2.3.3.4.

Under this alternative, general CRP signup would not exist. As a result, the national soil erosion benefits associated with these acres would be dramatically reduced. In addition, because this would be a voluntary program and there is no assurance that all allocated acres will be enrolled, it is possible that the overall enrollment would be reduced.

CRP, a Federally funded program, would also address specific State environmental issues similar to CREP, through the identification of SETAs. For example, a SETA in Virginia could be the Clinch River drainage, where agriculture and associated land uses have caused an increase in nonpoint source pollution, affecting the State's highly diverse population of freshwater mussels, which require extremely clean water and substrate to survive. Restoration and protection of the habitat of these mussels would benefit the Clinch River watershed by improving the water quality for human consumption, as well as improving habitat for other aquatic and terrestrial wildlife species. These benefits would be incurred over the short-term, 10 to 15 years; however, re-enrollment of SETAs would be a high priority for the long-term continuation of established benefits. This SETA could then be combined with adjacent SETAs or established CREPs within the Powell River watershed, the Guest River, and the Tennessee River to form a NETA that would ultimately produce enhanced environmental benefits for water quality in the Mississippi River Basin.

The NETA for aquatic species would address hypoxic conditions in the Gulf of Mexico. This NETA would identify SETAs at a larger watershed scale, such as the Mississippi River Basin, to address hypoxia in the Gulf of Mexico. The Mississippi River Basin encompasses the Northern Plains and Midwest regions and portions of the South Central, Southeast, and East regions of the U.S. The establishment of vegetative covers, riparian buffers, and filter strips, and the restoration of wetlands, riparian areas, and floodplains would be applicable conservation practices to reduce nutrient runoff from agricultural lands along the Mississippi River and its tributaries. These resources would benefit at a larger scale than those in the SETA and would provide a greater functional value by improving the water quality of the Mississippi River Basin and the Gulf of Mexico. This program would be Federally administered and funded; however, conservation goals and criteria would be developed with the cooperation of States and non-governmental organizations to encourage partnerships and continuity with other non-CRP conservation programs.

By focusing on reducing hypoxic conditions in the Gulf of Mexico, the overall impacts to aquatic species would be, in general, positive. With conservation practices in place to address hypoxic conditions, one could expect a decrease in pesticides, nutrients, and fertilizers entering the watershed through agriculture runoff, which would result in improved water quality and habitat conditions for those aquatic organisms within the Mississippi River basin and its subwatersheds. Improvements include decreased sediment and debris accumulating on the benthic substrate, increased dissolved oxygen in the water, increased and healthier habitat for aquatic invertebrates that serve as a food base for higher trophic species, and decreased bioaccumulation in higher species. These improvements would most greatly benefit those aquatic species in and around the Mississippi Delta, where the effects of hypoxia are most greatly felt.

5.3 VEGETATION IMPACTS

5.3.1 Impacts Under No Program (Baseline)

The No Program Alternative is the baseline for which to compare the other alternatives. The potential impacts to grasslands, forestlands, and invasive plant species from the non-existence of CRP are assessed.

Grasslands

CRP utilizes areas devoted to vegetative cover for the majority of its conservation practices. Conservation practices aimed at controlling erosion, protecting water quality, and improving wildlife habitat all utilize the use of vegetative covers in one form or another. The total amount of land that is devoted specifically to native and introduced grasses and legumes totals more than 25 million acres. Without CRP, these 25 million acres most likely would not have been planted to vegetative conservation cover, and it might be assumed that the realized positive impacts would be considerably less.

Forestlands

CRP acreage currently devoted to forestlands totals approximately 1.8 million acres (USDA, 2002). Without CRP, these forested lands potentially might not have been protected, and the benefits attained from these vegetated areas may not be fully realized.

The most noticeable impact of the No Program Alternative on forestlands would be in the Longleaf Pine CPA (Figure 5.3-1), where 1.6 million active tree practice acres are currently under contract (Table 5.3-1). The longleaf pine region of the U.S. is a rare ecosystem providing valuable habitat for wildlife, helps to control soil erosion, and enhances water quality in the region. Only 180,000 acres of the 1.6 million active tree acres are longleaf pine.

Table 5.3-1. Longleaf Pine CPA States Tree Practice Acreage

State	Tree Practice Acreage	Non-Tree Practice Acreage
MISSISSIPPI	681,027	867,500
ALABAMA	332,462	480,315
GEORGIA	292,640	313,400
SOUTH CAROLINA	186,576	218,507
LOUISIANA	155,647	205,362
TOTAL	**1,648,353**	**2,085,085**

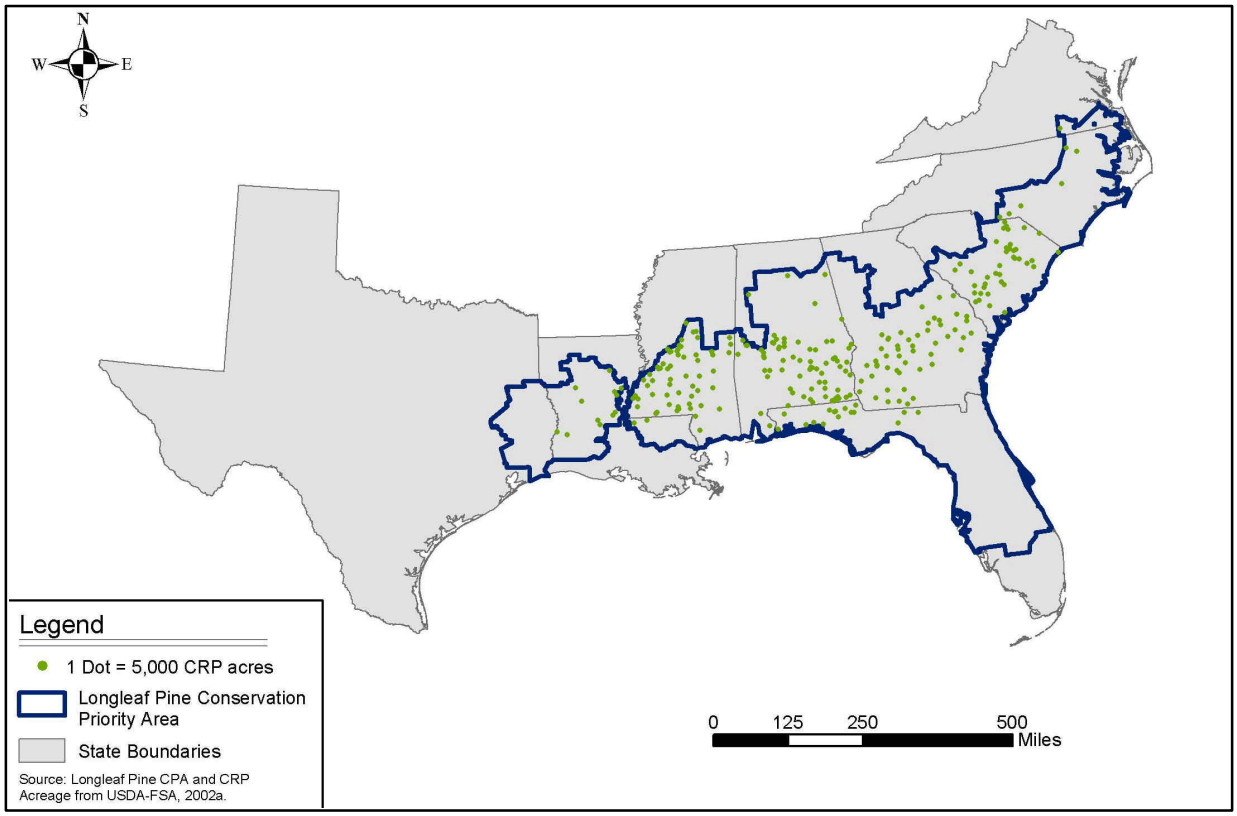

Fig. 5.3-1 Longleaf CPA

Invasive Species

Predicting the impacts of invasive species in the absence of CRP would be very difficult. While many CRP practices inhibit the spread of invasive species by protecting areas of native vegetation, many conservation practices utilize introduced species to meet the goals of the program. Determining whether this alternative would have a positive or negative impact on invasive species cannot be determined with any accuracy given the scale of the study and the scope of this program.

5.3.2 Impacts Under No Action (Current Program)

5.3.2.1 General Sign-Up

Grasslands

The No Action Alternative would continue enrolling eligible cropland acreage implementing conservation practices targeted at the establishment of various types of vegetative cover.

Essentially, most lands under CRP utilize areas of permanent vegetative cover; however, some are more focused towards the use of native and introduced grasses than others. As a way to target these specific types of vegetative cover, the USDA has listed those practices in the DM-9500 that most effectively address grasslands. The current specific authorized CRP, CCRP, and CREP conservation practices aimed at maintaining and enhancing grassland habitats include: establishing introduced grasses and legumes (CP 1), establishing native grasses (CP 2), and establishing vegetative cover (CP 10).

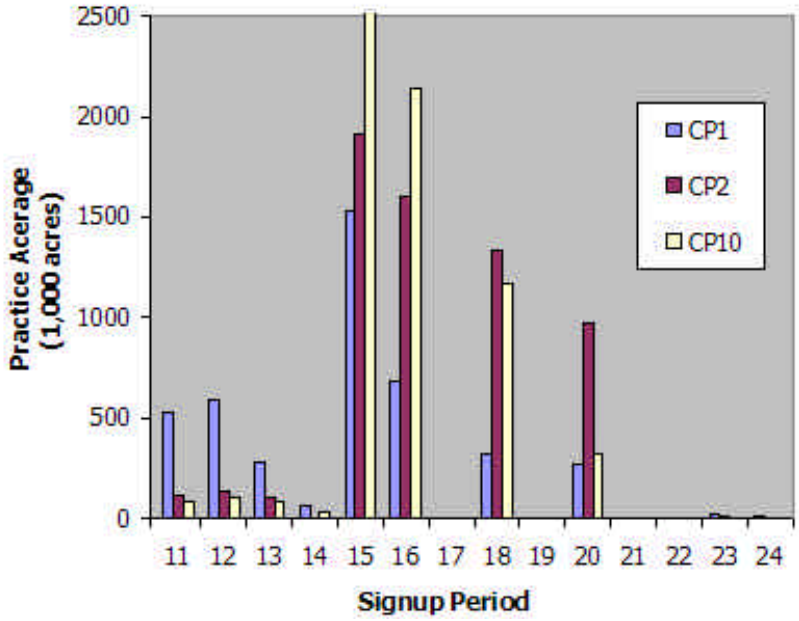

Fig. 5.3-2. Current Active Grass Practice CRP Acreage

Currently, CP 1 and CP 2 account for 32 percent of the total active CRP contract acreage enrolled to date at 10,565,226 combined acres, while established grass vegetation (CP 10) accounts for roughly 14.9 million acres. Grass planting conservation practice enrollment started to become an integral part of the conservation effort with Signup 11, and has continued. Signup 15 proved to be the largest ever CRP enrollment under both CP 1 and CP 2, where 3,441,608 acres were enrolled, which accounted for about 32 percent of the combined current active acreage in that one sign-up period (Figure 5.3-2).

Between Signup 11 and 14, introduced non-native grasses were the dominant grass cover planted, but after the 1997 Farm Bill (Signup 15), that dramatically changed with a shift to native grasses being the predominate choice for grass cover establishment.

The two main historic grassland ranges or prairies affected by CP 1 and CP 2 under the current program are the tall grass and short grass prairies (Figure 2.2-24), which account for over 50 percent of the established grass planting conservation practices under CRP.

The total tall grass prairie CRP acreage for Signups 4 thru 24 is somewhat less than that of the short grass prairie, but the real dramatic difference is in the relationship between CP 1 and CP 2 within each of the respective historic prairies. The highest percent of any one State's total CRP acreage planted to native grass species in the tall grass prairie is only 32 percent (Table 5.3-2) with the average percent of native species planted on CRP land in the entire grassland range being less than one quarter of the total CRP native grass acreage, or 24 percent. This is quite a contrast to that of the CRP short grass prairie acreage planted to native grasses, which, on

average, accounts for about 72 percent of the total native grass CRP acreage planted in the short grass prairie between Signups 4 thru 24.

Table 5.3-2. Percent of Active CRP Acreage Planted to Native and Introduced Grasses by Historic Prairie

Grassland Type	States Located Within the Historic Range*	Total CP1 Acreage for Signups 4 thru 24	Total CP2 Acreage for Signups 4 thru 24	Total CRP Grassland Practice Acreage	Percent of Total CRP Acreage Planted with Native Grass Species
Tall Grass Prairie	Iowa	417,216	138,540	555,756	25
	Illinois	252,227	32,344	284,571	11
	Missouri	467,074	189,152	656,226	29
	Indiana	86,868	23,457	110,325	21
	Minnesota	286,220	136,683	422,903	32
Short Grass Prairie	Montana	753,560	826,791	1,580,351	52
	Wyoming	58,886	7,032	65,918	11
	Colorado	56,547	549,916	606,463	91
	New Mexico	970	183,468	184,438	99
	Texas (Panhandle)	185,057	1,685,045	1,870,101	90
	Oklahoma (Panhandle)	35,253	381,686	416,939	91

*The criteria for listing the State was determined by examining historic grassland range maps and the areas encompassed in those historic ranges contain over 75% of the State's CRP acreage.

This alternative would not modify the current regulations regarding the planting of native or introduced grasses, but would continue under the current CRP regulations where grass species types for CRP contract acreage and eligible CP's are not explicitly defined.

> *"Eligible practices are those practices in the conservation plan that meet all standards needed to cost-effectively: establish permanent vegetative or water cover, including introduced or natives species of grasses and legumes, forest trees and permanent wildlife habitat"* 7 CFR §*1410.23 (a) & §1410.23(a)(1).*

The CRP Regulations provide the general framework for eligible conservation practices with further guidelines being created by the CRP Handbook 2-CRP (Rev.3) Amend. 12, Par. 41, p. 2-32. This section of the CRP Handbook defines the responsibilities of the NRCS Field Office with regards to conservation planning. A few of the responsibilities assigned to NRCS at this level include assisting producers with developing a conservation plan containing all appropriate practices and applying assigned NRCS conservation practices to ensure they meet FOTG standards.

Establishing required cover on the CRP acreage is mandated in 2-CRP, but grass seed type is not directly addressed. According to 2-CRP (Rev.3) Amend. 18, Par. 210, p. 9-5, NRCS shall encourage the participant to:

- Plant perennial seeding and planting mixes that achieve the highest environmental benefits for each CRP practice, where appropriate;
- Use State-certified seed, when practical, but common seeds, especially for natives, may be used when certified seed is not available;
- Where appropriate, avoid the use of single, introduced species; and
- Use native legumes, forbs, shrubs, and plant mixes.

Although under the current program, the planting of introduced monocultures is discouraged and the use of native seed, when State-certified seed in unavailable, is encouraged; planting native or introduced species is not explicitly recommended or discouraged in 2-CRP. However, the EBI does provides a ranking sub-factor (N1a) that encourages landowners to plant specific grass cover species on contract acreage based on what species will prove to be the most beneficial to wildlife.

> *"The State Conservationist shall consult with adjoining States to ensure consistency for various seeding and cover options. Before signup begins, STC shall finalize seed rates, planting recommendations (species), establishment criteria, and maintenance requirements" 2-CRP (Rev.3) Amend. 16, Exhibit 19 (Par. 127,128,155), pg. 7.*

The EBI institutes a CP cover matrix based upon cover expected to become established with the presumption that NRCS is only allowing those cover types that are best suited for the site designed for the proposed contract offer. This matrix assigns standard EBI sub-factor point values for CP 1 and CP 2. For CP 2, States shall present a recommended list of various native planting mixes for wildlife based on diversity. The EBI points for this sub-factor range from 10 to 50 points, with the lower point scores awarded for introduced species and higher point scores given for diverse planting of native species.

By incorporating grass seed species selection into the EBI, FSA has created the current program system in which native grass species selection is favored but not mandatory. In awarding more points for native species conservation practice selection (CP 2), they are increasing the opportunity for native grass establishment in the historic grassland ranges and prairies on cropland in the U.S. and no adverse impact would occur under this alternative.

Forestlands

Currently, CP 3 and CP 3A account for some active CRP acreage in every State in the U.S.. Tree planting practices CP 3 and CP 3A currently account for about 8 percent (2,673,199 acres) of all active CRP contract acreage in the U.S., with 62 percent of that located solely in the Southeast and Longleaf Pine CPA (Figure 5.3-3).

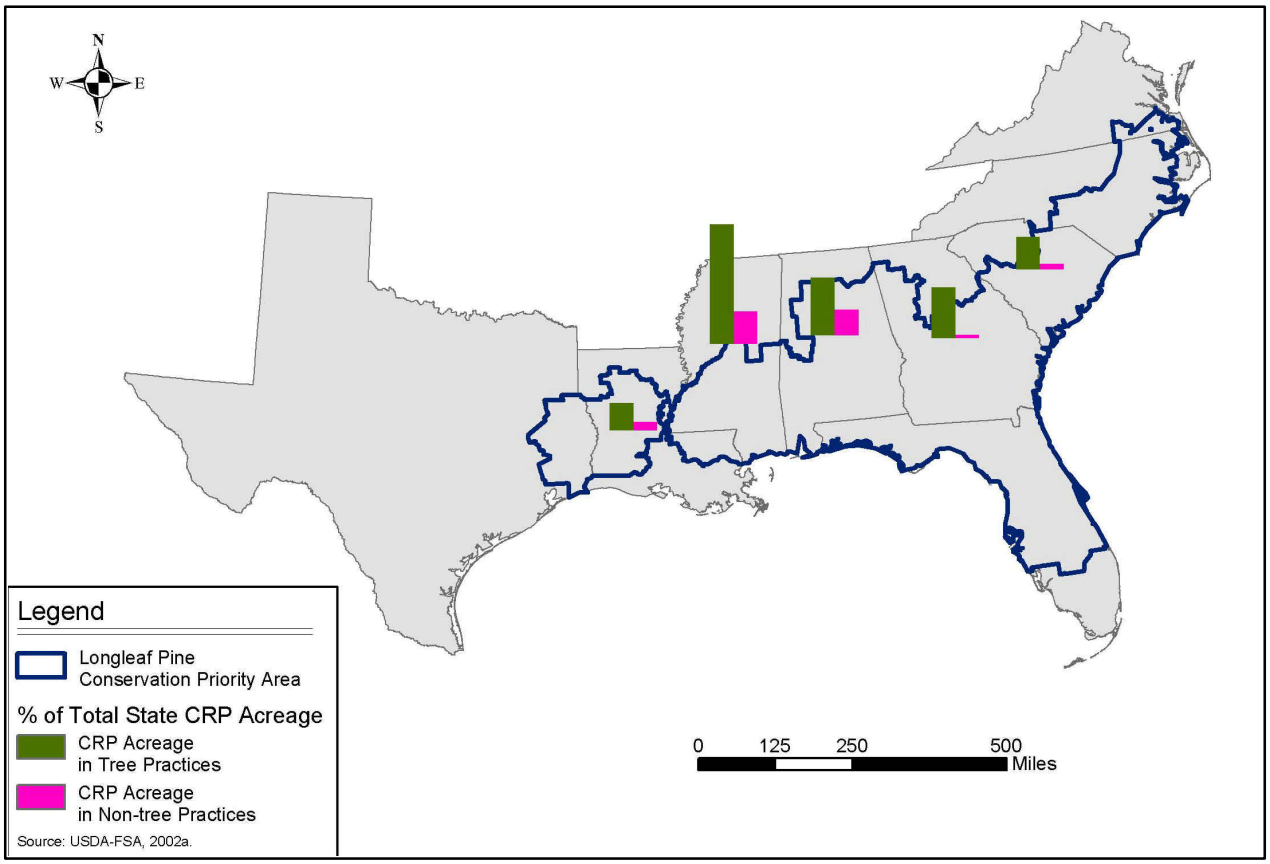

Fig. 5.3-3 Percent of Total State CRP Acreage Planted to Trees

About 2 million acres were enrolled from 1986-1995 in tree plantings, making CRP one of the Federal Government's largest tree planting programs. During Signup 15, almost 1 million acres were enrolled as tree planting acres. This signup currently accounts for 33 percent of the total active CRP tree planting acreage (Figure 5.3-3) in the U.S.

Although some CRP soils are considered marginal for crop production, the southeastern soils of Mississippi, Georgia, Alabama, South Carolina, and Louisiana have proven to be an area of CRP success in pine plantation management. About 80 percent of the total active CRP contract acres in those five States are enrolled under tree planting, with Georgia having the highest percentage (93 percent) of its total active CRP acreage enrolled as tree practices (Figure 5.3-4).

Under the No Action Alternative, CRP forestlands would continue to cleanse silt and pollutants from runoff water, thereby protecting and improving streams while at the same time providing food and shelter for wildlife. CRP tree practices also provide needed tree cover, reduce flooding, replenish water tables, conserve and stabilize soil, enhance many species of both game and nongame wildlife habitat, and sequester massive amounts of C. However, despite the fact that many participants after harvesting will replant in timber, due to the large geographic scale of this program and other forestland conservation programs, this alternative is limited in terms of

enduring positive environmental impacts received from tree planting practices, if after contract expiration, the timber is harvested and the land returned to production.

The planting of new forests on farmland has the potential to abate C emissions in the U.S. and enough farmland with the appropriate physical characteristics exists to sequester up to ten percent of the U.S. C emissions in an average population growth year (Hardie, 1996). Under this alternative, tree planting conservation practices would continue to be implemented and the benefits of this practice in sequestering C would continue as well. Hardie (1996) estimates that one percent of U.S. C emissions may be removed at rates experienced in the existing CRP. Therefore, a moderate positive impact in C sequestration would occur under the No Action Alternative.

The planting of trees in the Great Plains, however, has the potential to have negative impacts on native grassland ecosystems. Many times, when trees are planted as windbreaks and shelterbelts, they can fragment native grassland habitats, out-compete the surrounding native vegetation for space, water, and light, and disrupt the natural progression of grasslands due to the added fire suppression needed to protect areas planted with trees. However, most frequently, trees planted in former grassland areas are planted on croplands, which increases species diversity among areas planted in soybeans, corn, and wheat.

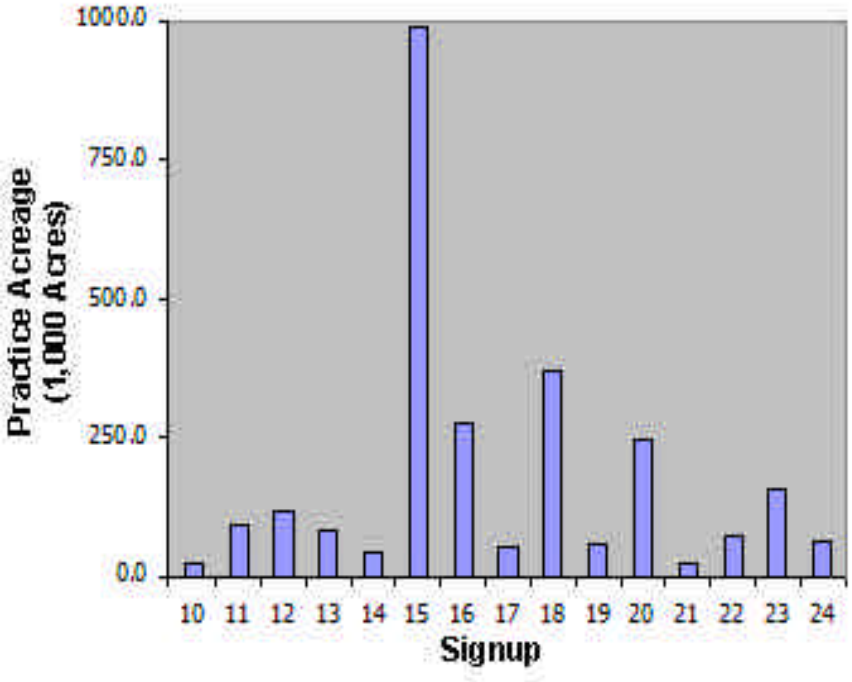

Fig. 5.3-4. Current CRP Acreage Implementing Tree Practices by Sign-up (CP 3)

Introduced/Invasive Species

Introduced species are those that evolved elsewhere and have been transported and purposely or accidentally disseminated by humans. Appendix E provides a list of common introduced and invasive species some of which are currently authorized for planting under CP 1. Many terms describe these species: alien, exotic, non-native, and nonindigenous. The spread of non-native species during the past century has been extraordinary, with the rate and scale of these infestations being more rapid than natural incursions. The spread of non-native species in human-disturbed habitats is a direct reflection of urban and agricultural development.

Introduced and invasive species are a nationwide problem for farmers and conservationists alike. Noxious weeds may become interspersed in crops or in conservation areas, such as grassland or wetland conservation areas. Control of weeds (including noxious weeds) is mandatory on CRP contract land, and weed control practices are required to be incorporated in the Conservation Plan, which is necessary before the CRP contract is finalized (See Section 3.1 for a detailed discussion on the adverse effects of invasive species on the natural landscape).

Not all introduced species have negative impacts; many species are utilized as wildlife forage and habitat, and the planting of some introduced species can provide a quicker and more reliable cover to decrease erosion potential on disturbed ground. NRCS has established an approved list of introduced grasses and legumes to be used in CP 1, The Establishment of Permanent Introduced Grasses and Legumes. The total active acreage utilizing CP1 in the U.S. is almost 4.5 million acres. Unfortunately, many of the species on the NRCS list are considered to be invasive species. Many times, plants used in CP 1 will go beyond the areas where they have been planted and out-compete native species.

Many introduced and invasive species have been identified over the years and some of the major kinds can be found practically all over the Nation (Figures 2.2-2.3). Because a number of these transplanted plants are not acclimated to climate patterns and tend to die off, they leave the soil bare during the harshest months and fail to protect the soil from erosion.

5.3.2.2 CCRP

Grasslands

The impact on grasslands under this alternative for CCRP would be similar to that of general CRP. A majority of the acreage would continue to be enrolled implementing grass planting conservation practices based on the availability of allocated program acreage with the continued objective of targeting the most highly environmentally sensitive cropland. Although CCRP implements mostly vegetative cover conservation practices, the smaller scale of this program, when compared to general CRP, would indicate that it would have a minor to negligible impact on grasslands and prairies. This is because CCRP mainly targets water quality improvements and a majority of the historic grassland prairies are located in large semi-arid ranges.

Forestlands

Marginal pastureland is eligible for enrollment under CCRP when planted to trees for use as a riparian buffer (CP 22). Under this alternative, we would continue to see some enrollment of marginal pastureland and additional tree practice acreage enrolled along with other continuous practices that involve tree plantings such as: shelter belts, field windbreaks, and living snow fences implemented on sensitive cropland enrolled.

The implementation and establishment of trees as riparian buffers or conservation buffers would continue under this alternative and should continue to provide increased benefits to water quality in those systems. Due to the small parcel size of these buffers and the limited acreage allocated

to this program, coupled with the limited amount of marginal pastureland actually eligible for enrollment, the additional benefits should be considered somewhat limited.

Introduced/Invasive Species

This alternative has similar impacts on invasive species as the general CRP in the previous section due to the fact that both programs authorize the planting of non-native or introduced grass species. However, because CCRP mostly targets water quality improvement through the implementation of vegetative cover, filter strips, and buffers, the impact of invasive plants can be considered as great as under general CRP. This moderate impact would continue as new land is enrolled in CCRP.

5.3.2.3. FWP

Under the current FWP, a total of 16,534 acres of wetland restoration and 40,445 acres of wetland buffer have been enrolled within six States in the Prairie Pothole CPA (see Table 3.3-1 in Section 3 *Current Programs*). The majority of acreage is enrolled in Iowa followed by Minnesota, South Dakota, North Dakota, Nebraska, and Montana. Restoration of farmed or converted wetlands benefits natural wetland vegetation. Prairie pothole wetlands are dominated by emergent marsh vegetation, such as sedges and rushes that can tolerate seasonally inundated conditions. This type of vegetation would receive the greatest benefit from wetland restoration. Invasive species should not be impacted unless restoration practices encourage their establishment. Wetland buffers would provide additional vegetation benefits from the establishment of various types of vegetation within a 30- to 150-foot buffer around the wetland. Grasslands would most likely not be impacted unless natural grassland was established as part of the wetland buffer. Forestland would only be impacted if the wetland buffer were planted in trees; however, it would not provide an extensive forest habitat. Vegetation benefits would be short-term, 10 to 15 years in duration, and would be contained within individual tracts of up to 40 acres.

5.3.2.3 CREP

Grasslands

The restoration of the native grass prairies is a critical aspect of the conservation movement, but under this alternative, the potential impact to some historic prairies by CREP is minimal. This can be attributed to the fact that the historic short grass prairie currently has no CREP acreage located within its range and over 90 percent of the grass practices currently implemented in the range are already planted to native species.

The potential for impact under this alternative is in the tall grass prairie, where less than 32 percent of the grass establishment conservation practices are planted to native grasses. The tall grass prairie can be considered a rare and declining ecosystem; therefore, the potential for greatest positive restorative impact can occur under this alternative. CREPs proposed and approved in the tall grass prairie could potentially implement massive native grass species planting practices in the hopes of restoring this rare and valuable ecosystem.

Forestlands

There are currently no CREPs with the specific environmental goals of creating or establishing forest stands. However, over half of the current States with CREPs do authorize tree planting practices (CP 3 or 3A) as a means to help address their environmental objectives (See Chapter 3.1).

Due to the relatively small scale of CREP, the environmental impact of this alternative on forestlands is directly correlated with the number of States having CREPs, the amount of acreage enrolled in each CREP, the authorized practices for each CREP, and the environmental objective of the individual programs themselves. CREP will continue to address local environmental conditions but will have no impact on forestlands or forestland ecosystems unless a State develops a CREP proposal specifically targeted at creating long-term forests.

Introduced/Invasive Species

Invasive species impacts should be similar to those described under CCRP for this alternative.

5.3.3 Impacts Under Proposed Action (2002 Farm Bill)

5.3.3.1 General Sign-Up

Grasslands

Under the Proposed Action Alternative, additional benefits for the amount of area devoted to natural vegetation would be expected to increase throughout the Nation. The increased acreage cap of 39.2 million acres, along with the reauthorization of CRP up to 2007, would allow more cropland to be enrolled, thus decreasing the amount of pesticides and nutrients delivered to stream systems by productive agricultural land.

The 2002 Farm Bill changed cropping history by locking in the eligible years. Eligible land for CRP must now have been planted or considered to have been planted for 4 of the 6 years prior to the date the Farm Bill was signed. This could produce limited positive impacts for grasslands because newly cropped lands are no longer eligible for enrollment. The permitting of managed haying, grazing, and harvesting under this alternative would not produce any adverse impacts to grassland quality because such actions would be conducted using best management practices incorporated in the conservation plan required on all CRP contract land. These land management practices are expected to have positive impacts on natural vegetation rejuvenation and wildlife species associated with native grasslands due to increased plant vigor and diversity caused by introduced disruptions necessary for grassland ecosystems.

The new provision for general CRP would have positive impacts on those lands currently enrolled in CRP and eligible for re-enrollment by permitting existing cover to continue where practicable and consistent with wildlife benefits of CRP. These provisions protect those areas already enrolled in CRP and would continue to result in the multiple environmental benefits

associated with natural vegetation. However, these wildlife benefits would be limited through re-enrollment if the previous vegetative cover was of limited quality.

Forestlands

The only new provision geared towards forestlands under this alternative would provide one-year extensions for hardwood tree contracts that expired September 2002. This provision would continue to result in the positive ecological impacts on tree species for another year until new regulations and a new signup are implemented.

The addition of "customary forestry practices" to the authorizing statute could encourage more CRP participants to do a better job of managing and enhancing the value of the trees and forests they own. The result may well be that once the CRP practice is completed and the rental contract has expired, they will continue to manage their trees and forests to economic maturity. This could help producers to generate more income from their land by selling trees for harvesting (after the CRP contract expires) that may have substantial economic value. The potential environmental and economic benefits from better-managed trees and forests under this new CRP provision could produce a moderate impact to forestlands and their success.

The impacts of planting trees for windbreaks and shelterbelts in native forestlands would be the same as in the No Action Alternative. Refer to Section 5.3.2.1 for discussion.

Introduced/Invasive Species

The conservation practices implemented on those additional acres that utilize introduced species will be the same as under the No Action Alternative, only on a larger scale, and may cause the same negative impacts on native plant species. Refer to discussion on invasive species in Section 5.3.2.1. Because NRCS's approved list of plants for use in conservation practices includes plants considered to be invasive, it can be assumed that these plants would be used in various practices. If these plants are used, the potential for out-competition with native plant species is increased and could result in a negative long-term impact on native prairies, forests, and grasslands.

5.3.3.2 CCRP

Grasslands

The impacts on grasslands under this alternative are similar to those under CCRP discussed for the No Action Alternative above.

Forestlands

The new provision states that marginal pastureland must be devoted to vegetation, including marginal pastureland converted to wetlands or established as wildlife habitat and those riparian areas where trees have been established. Marginal pastureland is eligible for enrollment under CCRP when planted to trees for use as a riparian buffer (CP 22). Under this alternative, we

would continue to see some enrollment of marginal pastureland and additional tree practice acreage enrolled along with other continuous practices that involve tree plantings, such as shelterbelts, field windbreaks, and living snow fences implemented on sensitive cropland. However, the new provision would now allow grasses, forbs, and shrubs to be planted on marginal pastureland along with trees. This could produce a positive impact if implemented on marginal pastureland currently planted to trees by creating habitat from which a variety of species may benefit.

The implementation and establishment of trees as riparian buffers or conservation buffers would continue under this alternative and should continue to provide increased benefits to water quality in those systems, but possibly at a reduced rate compared to the No Action Alternative. This would be contributed to the fact that some producers enrolling would elect to plant grasses rather than trees and, even though that choice would still produce a positive impact, it would decrease the amount of trees planted under this alternative.

Due to the small parcel size of these buffers and the limited acreage allocated to this program coupled with the limited amount of marginal pastureland actually eligible for enrollment, the cumulative benefits to forestland should be considered somewhat limited.

Introduced/Invasive Species

The conservation practices implemented through CCRP on those additional acres that utilize introduced species may have a negative impact on native species of plants. Because NRCS's approved list of plants for use in conservation practices includes plants considered to be invasive, it can be assumed that these plants would be used in various practices. If these plants are used, there is the potential for out-competition with native plant species.

The new provision in which producers may enroll entire fields through CCRP as buffers when more than 50 percent of the field is eligible for enrollment and the remainder of the field is infeasible-to-farm can potentially almost double the size of the vegetative buffer. If, however, those parts of the field are not suitable for natural vegetation habitat, or consist of land that has been disrupted due to poor farming practices or natural disasters, they may be more susceptible to invasive species, which could ultimately negatively affect native flora and agricultural species.

5.3.3.3. FWP

Proposed changes to FWP include expansion of the program from 6 States to nationwide and an increase in total allowable acreage from 500,000 up to 1 million acres with a per-State enrollment limitation of 100,000 acres. This expansion would allow for an increased distribution and acreage of wetland restoration and buffers nationwide and the associated vegetation benefits described under the No Action Alternative. The limitation of wetland size would also be increased from 5 acres to 10 acres, increasing the potential acreage of wetland vegetation.

5.3.3.4 CREP

The reauthorization of CRP and an additional 2.8 million acres has the potential to increase the total acreage of protected natural vegetation and its associated benefits for an additional 10-15 years under CREP. Newly enrolled acreage would continue to implement vegetative cover conservation practices to reduce runoff and nutrient loading within the State designated CREP region. The extent to which the impact would be seen under this alternative is based upon the amount of acreage available and allocated for enrollment under CREP. This alternative should have impacts similar to that of CCRP in the previous discussion.

5.3.4 Impacts Under Alternative 4 (Environmental Targeting)

The existing CREP would not change and the beneficial impacts on natural vegetation would be the same as those discussed under the Proposed Action Alternative provided enrollment goals are met. Please refer to the discussion described in Section 5.3.3.4.

Under this alternative, general CRP signup would not exist. As a result, the national soil erosion benefits associated with these acres would be dramatically reduced. In addition, because this would be a voluntary program and there is no assurance that all allocated acres will be enrolled, it is possible that the overall enrollment would be reduced.

Continuous CRP, a Federally funded program, would also address specific State environmental issues similar to CREP, through the identification of SETAs. A SETA could be in Nebraska, for example, encompassing the Platte River watershed, where agriculture and associated land uses has caused a decrease in native grasslands. Restoration and protection of these grasslands would benefit this watershed by improving and protecting soil quality, water quality, and upland wildlife habitat and creating more opportunities to enjoy nature. These benefits would be incurred over the short-term, 10 to 15 years; however, re-enrollment of SETAs would be a high priority for the long-term continuation of established benefits.

By focusing on reducing hypoxic conditions in the Gulf of Mexico through the creation and implementation of a NETA, the overall impacts to natural vegetation would be generally positive. In attempting to address the factors that cause hypoxia in the Gulf, the total acreage of natural vegetative areas within the watershed would increase dramatically due to the enrollment of additional lands in this targeted area within the watershed. These additional lands would have a positive impact on the number acres of natural vegetation within the Mississippi watershed by utilizing permanent vegetative areas, riparian buffers, and wetlands to address hypoxic conditions. The potential for problems associated with invasive species arise with the use of conservation practices that utilize introduced species.

5.4 WILDLIFE IMPACTS

5.4.1 Impacts Under No Program (Baseline)

CRP utilizes areas devoted to vegetative cover for the majority of their conservation practices. The total amount of land that is specifically devoted to vegetative cover with native species and/or introduced grasses and legumes total more than 25 million acres, while areas devoted to tree cover total another 1.8 million acres. If CRP did not exist, these almost 27 million acres would not be protected, and the benefits attained from these vegetated areas wound most likely not be realized.

Threatened and Endangered Species

While CRP does not target the creation or management of essential habitat specifically for T&E species, it does provide protection for valuable habitat for these species (CP 9, 21, 22, 23, 25). The use of wildlife habitat enrolled by CRP by these threatened or endangered species has to be considered incidental. With over 25 million acres currently enrolled in CRP wildlife habitat practices, it is likely that some threatened and endangered species are also utilizing that habitat. Under this alternative, if there were 25 million less acres protected, it can be assumed that it may have a minor adverse impact on those threatened and endangered species associated with the protected habitat.

Wildlife-based Recreation

Wildlife-based recreation opportunities, such as viewing, hiking, hunting, and fishing, are just some of the actions in which Americans participate that are directly related to wildlife populations and habitat. If there was no CRP program, over 25 million acres currently enrolled in CRP would not be protected. This loss in protected wildlife habitat could have a moderate, adverse impact on wildlife-based recreation.

5.4.2 Impacts Under No Action (Current Program)

5.4.2.1 General Sign-Up

CRP contracts have created millions of acres of wildlife habitat critical to upland and wetland species, game species, neotropical migrants, and those species considered threatened or endangered. Areas devoted to permanent vegetation, wildlife habitat, and wetlands all provide critical elements essential for these species to survive. Producers who enroll acreage in CRP increase wildlife habitat by providing those essential elements needed for certain species to survive.

Conservation practices used in CRP that positively affect wildlife habitat are those practices that are devoted to maintaining permanent native vegetation; creating, maintaining, or restoring wetted habitats for aquatic species; and creating wildlife corridors.

Essentially, all lands under CRP provide some benefits to wildlife; however, some are more beneficial than others. As a way to maximize wildlife benefits the USDA has defined practices in the DM-9500 that most effectively benefit wildlife by providing and protecting suitable food bases and essential habitat. The current specific authorized CRP, CCRP, FWP, and CREP conservation practices aimed at wildlife habitat improvement include: CP 1, 2, 4, 5, 8-12, 5, and 20-25.

Permanent areas devoted to introduced grasses, native grasses, legumes, trees, and other herbaceous vegetation (CP 1, 2, 4, 5, 8-12, 15, 20-25) account for 26 million active acres enrolled in CRP conservation practices (Figure 5.4-1). These areas provide nesting and brood cover for upland birds, such as bobwhite quail, meadowlarks, and other ground-nesting birds, along with their necessary food base. Other species, such as rabbits, voles, larger mammals, and a variety of butterflies and other valuable insects rely on similar habitat conditions. Nonetheless, annual bird surveys indicate that many grassland birds have fared poorly, even with the added habitat acreage of CRP, and continue to decline in numbers.

Negative impacts of woody vegetation on native grassland areas have caused a decline in populations of many grassland bird species. These impacts include:

- The reduction or fragmentation of the total area of grassland habitat;
- Invasion of woody vegetation into grassland areas, making these areas unsuitable for some bird species;
- Trees and shrubs provide perches for raptors, other avian predators, and cowbirds, and provide travel lanes for mammalian predators, increasing predation of grassland bird species;
- Species attracted to the woody vegetation may forage in adjacent grasslands and compete with prairie species; and
- The introduction of trees often times attracts “generalist” bird species that are able to make use of many types of habitats. A few of these species include the brown thrasher, gray catbird, song sparrow, American robin, and common grackle. The problem with these species is their ability to out-compete native grassland species for available resources, and forcing them from their native home range.

Wildlife enhancement practices focused on wet areas account for only a little over 1.6 million active acres enrolled in CRP conservation practices (CP 9, 23), the majority of those acres being devoted to wetland restoration (see Figure 5.4-1). These practices provide habitat for waterfowl, aquatic mammals, and insects, and include grass waterways, shallow water areas for wildlife, and wetland restoration. The remaining acreage is devoted to enhancement and/or creation of wildlife corridors (CP 4B&D, 22, 25). Wildlife corridors are important because they serve as travel paths for wildlife as they wander throughout their home range in search for food, water, mates, and for dispersing juveniles. Individual practices include permanent wildlife habitat corridors, riparian buffers, and various types of filter strips.

The objective of CRP's wildlife enhancement conservation practices is to provide those necessities required for a healthy wildlife habitat on those areas that have been altered by agriculture. Practices aimed at accomplishing this objective include providing sources of food and water; providing areas for sleeping, resting, shelter and breeding; and establishing corridors between fragmented habitats. Through the use of various conservation practices, the availability of permanent cover habitat has grown significantly. Table 5.4-1 takes a specific look at each practice and qualitatively shows the impacts of approved CRP wildlife habitat enhancement practices on selected species. The emergency haying and grazing provision under CRP has had little to no impact on ground-nesting birds because it is no longer authorized during the primary nesting and brood rearing season.

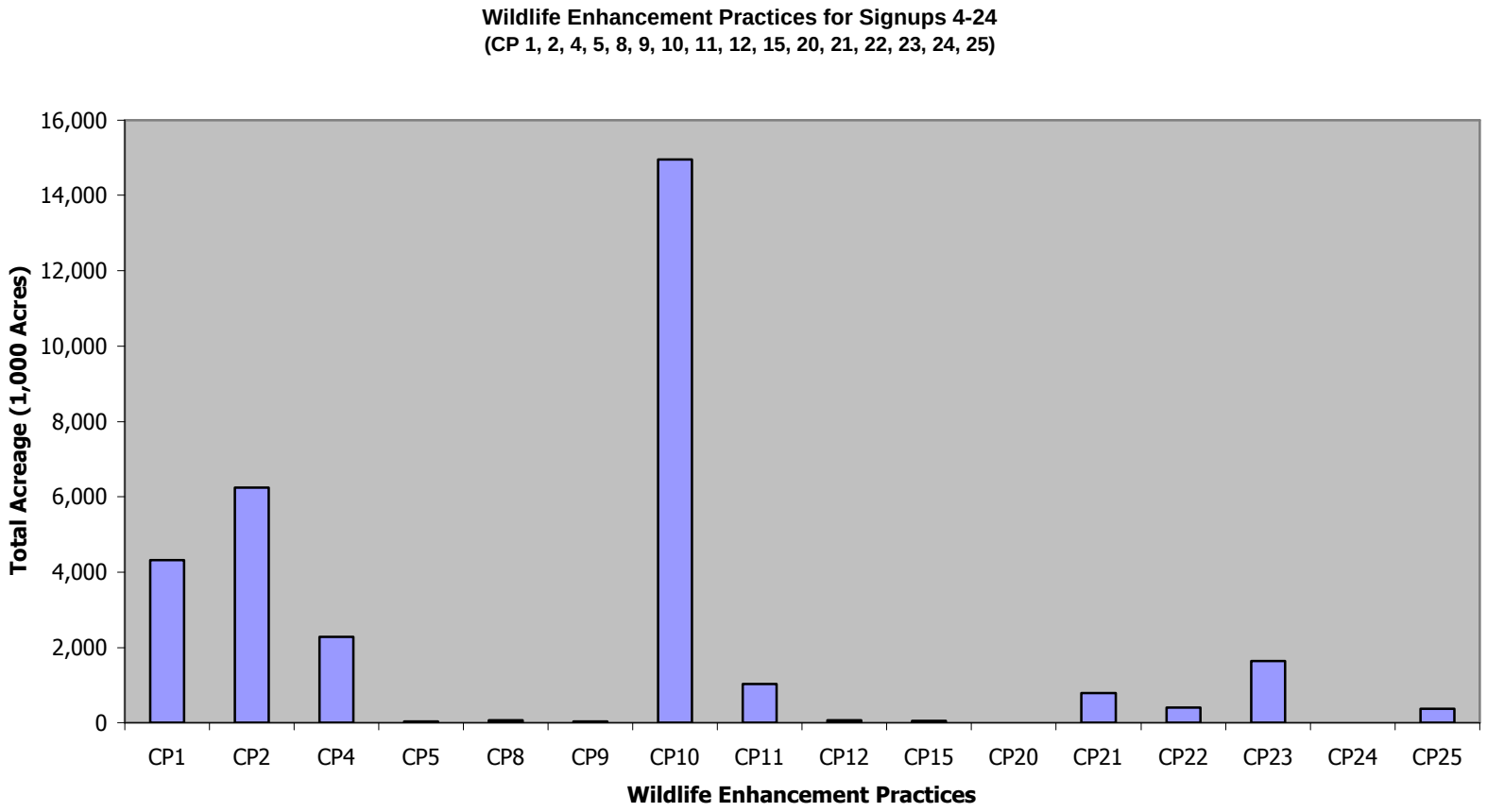

Fig. 5.4-1. DM-9500 Listed Wildlife Enhancement Practice Acreage by Sign-up

Table 5.4-1. Impacts of Approved CRP Wildlife Habitat Enhancement Practices for Selected Species

	Species										
Practice	**Ring-Necked Pheasant**	**Gray Partridge**	**Bob-White Quail**	**Sharp-Tail Grouse**	**Prairie Chicken**	**Upland Nesting Waterfowl**	**Neotropical Migrant Birds**	**Deer**	**Eastern Cotton tail**	**Grass Land Birds**	**Predators**
Tame Grasses:											
Northern Great Plains	+	+	+	+	+	+	+	+	+	+	+
Southern Great Plains	-	-	-	-	-	-	-	-	-	-	+
Native Grasses:											
Northern Great Plains	+	+	-	+	+	+	+	+	+	+	+
Southern Great Plains	+	+	+	+	+	+	+	+	+	+	+
Trees	-	-	-	-	-	-	+	+	+	-	+
Wildlife Plantings	+	+	+	+	+	-	+	+	+	-	+
Field Windbreaks	+	+	+	+	-	-	+	+	+	-	+
Already in grass	+	+	+	+	+	+	+	+	+	+	+
Shelterbelts	+	+	+	+	-	-	+	+	+	-	+
Small fields	+	+	+	-	-	-	+	+	+	-	+
Large (> 80 acres)	+	-	-	+	+	+	-	+	-	+	-
Grassland adjacent to:											
Wetlands	+	+	+	+	+	+	+	+	+	+	+
Woodlands	+	+	+	-	-	-	+	+	+	-	+
Shelterbelts/Windrows	+	+	-	+	-	-	+	+	+	-	+
Cropland	+	+	+	+	+	-	+	+	+	-	+

"+" Implies a positive effect and "-" implies a negative effect. Source: AERI (2000) from Allen (1993).

Threatened and Endangered Species

While there are no provisions in CRP dealing with habitats specific to threatened and endangered species, many of these species do utilize these habitats. Agriculture is thought to affect the survival of around half of the species listed by the Federal Government as threatened or endangered in the continental U.S. (AREI, 2000). Based on a 1997 Risk Assessment produced for FSA, the percentage of T&E species taxa affected by agricultural development ranges from amphibians (most affected) to mammals (least affected), with agricultural development listed the most frequent cause of habitat loss or alteration leading to classification as threatened or endangered. While the current CRP benefits some endangered species through taking cropland out of production; restoring habitat, creating wildlife corridors and wetlands, and creating riparian buffers, there are some practices that can limit those beneficial impacts. These practices include:

- Planting non-native species on CRP lands;
- Failing to control invasive species;
- Installing practices on CRP lands that destroys valuable existing native habitat; and
- Installing practices that are inappropriate to the ecosystem (such as planting trees in native grasslands).

There are 517 species of animals (birds, fish, mammals, insects, reptiles, and amphibians) and 744 species of plants in the U.S. listed as threatened and endangered by the FWS (USFWS, 2002). The distributions of threatened and endangered species throughout the U.S. vary for each particular taxon. Taxa are used as a way to classify groups of similar species. The taxons used by the EPA to develop the following maps were: Fish and Clam Species, Amphibians and Reptiles, Plants, Birds, and Mammals.

Fish and Clam Species (Figure 2.2-35)

The most widespread area of threatened and endangered fish and clam species are found in the southwestern States and along the Missouri and Mississippi River Valleys. The highest concentrations (most number of T&E species per county), however, are found in Southwestern Virginia and Northeastern Tennessee within the Tennessee River Watershed.

Amphibian and Reptile Species (Figure 2.2-35)

The most widespread areas with the highest concentrations of threatened and endangered species of amphibian and reptile species are located in the deserts of Southern California and Nevada, and also in the wetlands and salt marshes of Florida and north along the eastern seashore.

Bird Species (Figure 2.2-36)

The distribution of threatened and endangered bird species is fairly uniform across the Nation except for areas along the entire Pacific Coast and most of Florida, where the number of species per county is highest.

Mammal Species (Figure 2.2-36)

Threatened and endangered mammals occur sporadically across the Nation, with areas within Southern California and Florida having the highest concentrations.

Plant Species (Figure 2.2-37)

The distribution of threatened and endangered plant species throughout the U.S. is fairly sporadic, and often, those areas with the highest concentrations are associated with drier and alpine environments, along with the fragile wetland and scrub ecosystems of Florida.

Wildlife-based Recreation

While there are no programs aimed specifically at wildlife-based recreation, CRP has created or protected almost 25 million acres of prime wildlife habitat, which has increased the chances for those people who enjoy viewing wildlife, hiking, hunting, fishing, and enjoying nature to benefit substantially. Wildlife-based recreation is an important aspect to, not only the CRP participants and the U.S. economy, but also the American people.

5.4.2.2 CCRP

The impact on wildlife habitat, threatened and endangered species, and wildlife-based recreation under this alternative for CCRP would be similar to that of general CRP. A majority of the acreage would continue to be enrolled to implement wildlife habitat conservation practices based on the availability of allocated program acreage with the continued objective of targeting the most highly environmentally sensitive cropland.

Under this alternative, the potential impact to threatened and endangered species would increase minimally. Since CCRP targets the most environmentally sensitive cropland for enrollment, if that land contains threatened and endangered species or potential habitat for threatened and endangered species, then the potential impact of this alternative increases. Another contributing factor in this impact would be whether the species within the ecosystem being targeted are already in a state of instability due to the pressures of current agricultural practices.

5.4.2.3 FWP

Under the current FWP, a total of 16,534 acres of wetland restoration and 40,445 acres of wetland buffers have been enrolled within 6 States in the Prairie Pothole CPA (see Table 3.3-1 in Chapter 3 *Current Programs*). The majority of acreage is enrolled in Iowa, followed by Minnesota, South Dakota, North Dakota, Nebraska, and Montana. Restoration of farmed or

converted wetlands benefits wildlife, including threatened and endangered species. The FWS estimates that up to 43 percent of threatened and endangered species rely directly or indirectly on wetlands for their survival (EPA, 1995). Prairie pothole wetlands are important waterfowl breeding habitat and are heavily used by spring migrant waterfowl (Kantrud et al., 1989) and other birds such as rails, sandhill cranes, and shorebirds. Wetland restoration would benefit the recruitment of these species and provide valuable habitat. The wetland buffers would provide additional habitat and protection from human disturbance in the surrounding area. Wildlife benefits would last 10 to 15 years in duration.

5.4.2.4 CREP

CREP projects have a high potential to influence threatened and endangered habitat due to the small geographic landscape and specific environmental resources they target within a State. The current program allows for States and tribes to develop CREPs for agricultural areas that have been identified as major contributors to degraded water quality and TMDL issues within the State and CREP region. The continuation of CREP under the current program would produce positive effects on water quality and best serve the attainment of TMDL standards within each State and CREP region.

5.4.3 Impacts Under Proposed Action (2002 Farm Bill)

5.4.3.1 General Sign-up

Under the Proposed Action Alternative, additional benefits on wildlife habitat would be expected throughout the Nation. The increased acreage cap of 39.2 million acres, along with the reauthorization of CRP up to 2007, would allow more cropland to be enrolled, thus potentially increasing the amount of land converted to wildlife habitat by almost 3 million acres.

Currently, emergency haying and grazing of CRP land is authorized when requested by the FSA COC and STC and approved by the FSA Washington Office. Under this alternative, this provision would continue for counties suffering from a 40 percent or greater deviation from normal hay and pasture production, where precipitation levels average a 40 percent or greater deviation of normal precipitation for the four most recent months, plus the days in the current month before the request. The 2002 Farm Bill allows for managed haying, grazing, and the utilization of wind turbines when consistent with the conservation of soil, water quality, and wildlife habitat. If done correctly these practices would have little or no impact on resident wildlife, and may, in fact, be beneficial to grassland species by increasing plant diversity and vigor. However, there is the potential to put undue stress on those upland species that utilize the habitat when they are forced to compete with cattle for food and water. If properly managed, haying and grazing will not cause adverse impacts to these species.

The 2002 Farm Bill will permit existing cover to continue, where practicable and consistent with wildlife benefits of CRP and will continue to have lasting positive impacts on wildlife habitat on already established vegetative plots. CRP land seems to benefit most species of nongame birds by providing nesting and brood-rearing habitat where there previously was none (King, 1991).

Thus, as additional acreage is made available and existing vegetative cover is not removed, the impacts felt by nongame bird species would be moderate.

Threatened and Endangered Species

The effects that the 2002 Farm Bill would have on threatened and endangered species would be, in general, positive. There would be the potential for almost three million additional acres of protected land to be used as habitat, while those areas that are already deemed as wildlife habitat could be eligible for re-enrollment and could continue to serve as habitat. The provision for haying and grazing would have to be managed carefully if threatened and endangered species also utilize the same area. In some instances, managed haying and grazing would benefit threatened and endangered species by creating disturbances that help maintain grass species diversity.

While CRP does not specifically address the creation or preservation of wildlife habitat associated with threatened and endangered species within the program, new rule changes could promulgate additional regulations that address this issue. If it is found that if the land improvements created by CRP conservation practices provide a net conservation benefit for threatened and endangered species, then the landowner could enter into a Safe Harbor Agreement with the FWS. These agreements benefit threatened and endangered species, while giving the landowners assurances from additional restrictions. Following the development of an agreement, the FWS issues an "enhancement of survival" permit to authorize any necessary future incidental take to provide participating landowners with assurances that no additional restrictions will be imposed as a result of their conservation actions.

Wildlife-based Recreation

The potential for an increase of almost three million acres of wildlife habitat increases the potential for wildlife-based recreation. Increases in the amount of upland game habitat, habitat used by birds and neotropical migrants, and the amount of protected wetlands all proportionally increase the recreation opportunities for those people who like to bird-watch, hunt, fish, and enjoy nature. Conservation programs that establish perennial grass cover, such as CRP, seem to provide many benefits for grassland birds, including several species for which conservation is a great concern (Best et al., 1997). Under this alternative, wildlife-based recreation would be positively impacted by the additional acreage allocated to CRP.

5.4.3.2 CCRP

The most influential aspect of the Proposed Action for wildlife habitat is the provision for marginal pastureland. The provision states that marginal pastureland must be devoted to vegetation, including marginal pastureland converted to wetlands or established as wildlife habitat. This Proposed Action would effectively increase the amount of quality habitat for upland and wetland species. Also, producers would be allowed to enroll entire fields through the continuous CRP as buffers when more than 50 percent of the field is eligible for enrollment and the remainder of field is infeasible-to-farm at general sign-up rates. This proposed rule change has the potential to almost double the amount of buffers on a parcel, thus increasing the amount

of potential habitat that is associated with these buffers and provide a moderate positive impact on wildlife.

Threatened and Endangered Species

The Proposed Action should affect habitat utilized by threatened and endangered species in a similar manner as the general CRP alternative. Refer to the discussion above for these impacts.

Wildlife-based Recreation

CCRP impacts on wildlife-based recreation under the Proposed Action should be similar to those discussed for general CRP. Refer to the discussion above for these impacts.

5.4.3.3 FWP

Proposed changes to FWP include expansion of the program from six states to nationwide and an increase in total allowable acreage from 500,000 to up to 1 million acres with a per-state enrollment limitation of 100,000 acres. This expansion would allow for an increased distribution and acreage of wetland restoration and buffers nationwide and the associated wildlife benefits described under the No Action Alternative. The limitation of wetland size would also be increased from 5 acres to 10 acres, increasing the potential acreage and function of wildlife habitat.

5.4.3.4 CREP

The potential impact to threatened and endangered species could be considered moderate under this alternative, especially for aquatic species and game fish (See Chapter 2.2.3). Since half of the currently listed threatened and endangered species are dependent upon aquatic habitat, the additional acreage allocated under this provision could potentially allow more sensitive habitat required by threatened and endangered species to be enrolled.

Under this alternative, minor impacts on wildlife recreation would occur due to the smaller parcel size of CREP contracts targeted for enrollment. These smaller acreages do not benefit large ungulate game species due to the limited habitat diversity associated with small cropland plots like those in CREP. However, some upland game bird species would benefit from this small habitat patch size because of the low predator-to-prey relationship associated with small habitat ecosystems. This would be especially true if the habitat was established using grass and vegetative conservation practices.

5.4.4 Impacts Under Alternative 4 (Environmental Targeting)

The existing CREP would not change under this alternative, and the beneficial impacts to wildlife would be the same as those under the Proposed Action Alternative. Please refer to the discussion described in Section 5.3.3.4.

Under this alternative, general CRP signup would not exist. As a result, the national soil erosion benefits associated with these acres would be dramatically reduced. In addition, because this would be a voluntary program and there is no assurance that all allocated acres will be enrolled, it is possible that the overall enrollment would be reduced.

CRP, a Federally funded program, would also address specific State environmental issues similar to CREP, through the identification of SETAs. For example, in Nebraska there could be a SETA located in the Platt River watershed, where agriculture and associated land uses have caused a decrease in native grasslands. Restoration and protection of these grasslands would benefit this watershed by improving and protecting soil quality, water quality, and upland wildlife habitat and creating more opportunities to enjoy nature. These benefits would be incurred over the short-term, 10 to 15 years; however, re-enrollment of State Priority Areas would be a high priority for the long-term continuation of established benefits.

By focusing on reducing hypoxic conditions in the Gulf of Mexico through the creation and implementation of a NETA, the overall impacts to wildlife would be minimal. In attempting to address the factors that cause hypoxia in the Gulf, the total acreage of natural vegetative areas within the watershed would increase dramatically due to the enrollment of additional lands in CREP within the watershed. These would benefit upland wildlife that utilizes this type of habitat, but other wildlife would not receive such benefits. These additional lands would have a positive impact on the number acres of wildlife habitat created through the implementation of natural vegetation within the Mississippi watershed by utilizing permanent vegetative areas, riparian buffers, and wetlands to address hypoxic conditions. The potential for adverse impacts from this alternative arises due to the variation of wildlife species and wildlife habitat endemic from State-to-State and region-to-region.

5.5 Economic Impacts

5.5.1 Rural Economy

5.5.1.1 Impacts of No Program (Baseline)

Under the No Program Alternative there would be no Federally funded, long-term land retirement program. Producers would be able to use formerly enrolled CRP land for crop production or other agricultural uses. The economic effects that are most likely to occur would be the result of placing this land back into production. The primary impacts expected are:

Job Gains in the Agricultural Services Sector and On-Farm Employment

Land retirement is one of many factors contributing to changes in on- and off-farm, agriculture-related employment. Other factors include imports from overseas, improvements in yield, land diversion programs, urban pressures, availability of off-farm income sources, and commodity support programs. Several studies have estimated the impact of CRP on production and jobs in the agricultural services sector, while others have estimated the impact of ending CRP on production and jobs. The findings include:

- Young and Osborn (1990) use an annual econometric simulation model to forecast economic changes of enrolling 45 million acres in the CRP. By examining the impacts of CRP implementation, it is possible to infer the impacts of ending CRP.

  They use the FAPSIM model for their analysis. FAPSIM contains livestock and crop submodels that balance commodity prices and quantities under various policy assumptions. It calculates how changes in farm programs affect farm income, consumer prices, and government expenditures. In summary, they forecast that agricultural production would fall 3 percent nationally by the time 45 million acres were enrolled in 1999. Fertilizer use declined by more than 12 percent (Young and Osborn, 1990).

  One can generally infer from the results that a decline in demand for agricultural inputs and production would cause a decline in on- and off-farm employment. Declines are pronounced in all regions except the northeast, southeast, and western regions. The smaller the region at which these losses are measured, the more pronounced the losses. For instance, northeast Montana was forecast to lose about 20 percent of its agricultural output, compared with 10 percent for the entire State of Montana, and 4 percent for the Mountain States. Some of the decline in agricultural input purchases is offset by land brought into production to compensate for the loss of the enrolled land.

  Their analysis incorporates program assumptions that are no longer in effect. For instance, commodity programs involved land diversion and set aside programs, as well as deficiency payments. The assumed enrolled acreage was never cut and the authorized CRP acreage limitation is lower than in the study. Thus, part of the production decline forecast is not due solely to the CRP, and would have occurred regardless (Young and Osborn, 1990).

- Hyberg, Dicks, and Hebert (1991) examine the economic and employment links between agriculture and other industries using IMPLAN, an input-output model of the economy that looks at the flow of commodities from producers to intermediate and final consumers, and the flow of money between institutions (e.g., households, government, and businesses). Specifically, they examine how changes in the agricultural sector due to the CRP affect income and employment in the rest of the economy. In summary, they found the effects of CRP to be the greatest in farm-dependent economies. Currently, these economies are concentrated in the panhandle of Texas and Oklahoma; southwestern Kansas; southeastern and northeastern Colorado; southwestern Nebraska; north central, south central, and northeastern North Dakota; northeastern Montana; and southeastern Washington.

Their analysis is divided into three stages:

1. Establishment of a cover crop, during which time there is some demand for agricultural inputs, albeit at a reduced rate, and producers receive CRP rental payments;
2. Stabilized enrollment, when the maximum 45 million acres are enrolled and there is a further decline in agricultural input demand, and producers receive CRP rental payments; and
3. The expiration of all of the CRP contracts and the return of some of the CRP land to production. During this period, the producer no longer receives rental payments and 50 percent of the CRP grassland is assumed to be used for haying and pasture.

Compared with output levels in 1982, prior to the commencement of the CRP program, there is a net decline in each sector, even after the contracts have expired. The largest decline is in agricultural production, affecting on-farm employment. Agricultural processing is least affected since crop stocks are assumed to be available for processing.

The results may not be as adverse, however, if the assumption on the nature of the land use post-CRP were different. The authors assume that 50 percent of the enrolled land is returned to haying and pasturing. As other studies have shown, it is estimated that, on average, 50 to 70 percent of CRP grassland would return to production, and that only 10-15 percent of tree planted land would return to crop production (Aines, 1963; Kurtz et al., 1980; Gustafson and Hill, 1993; Dodson et al., 1994; Diebel et al., 1996; Kurtz et al., 1996). Crop production requires the purchase of a greater amount of agricultural inputs than does haying and pasturing. Hence, their projection of the effects of ending the program may be low.

Their study relied on several assumptions that could affect the impacts at the local and regional levels. First, it is assumed that there are sufficient grain stocks available to substitute for the supply that would have been produced on the CRP land. If this were not the case, grain may be imported to ensure the continuity of processing activities and the adverse impact on the processing sector could be larger (Hyberg et al., 1991). Second, it is assumed that a decline in production does not cause an increase in commodity prices. If prices were to increase, farm income would also increase, offsetting some of the losses from not producing. Third, it is assumed that local economies are not able to reallocate land, labor, and capital resources between agricultural and non-agricultural sectors. In some communities, people may be retrained and capital invested in other sectors. There could also be a net loss in labor and income, as labor and capital leaves the area.

- Jansssen et al. (1997) examined the impact of ending CRP in South Dakota. Farming-dependent regions of the State with high CRP enrollments are the northwest, north central, and northeast. The determination of post-CRP land use was based on comparing the projected net returns for CRP used as pasture and in crop production.

Value-added (payments made by industry to workers, interest, profits, and business taxes) declines for the four agricultural dependent areas of the State with high CRP enrollments were positive for three areas and negative for one, ranging from a 1.45 percent decline to a 1.59 percent increase.

- The ERS studied the economic impacts of running out the existing CRP contracts (Dodson et al., 1994). The authors found that the overall economic impact of ending the CRP program would be a $1.4 billion decrease in net farm income nationally, and the loss of 94,000 jobs nationwide. Based on 1994 net farm income, this would represent a 3.7 percent decrease (ERS-Income, 1994). About one-half of the new jobs would be in farming, an increase of less than 1 percent of the 22 million persons employed in farming and agricultural-related businesses in the U.S. (ERS-Employment, 1994). Increased farm output would stimulate additional employment as more workers are hired to manage the crops and there are increased purchases of manufactured inputs such as fertilizers, chemicals, and fuel. Employment increases were projected to be largest in multi-county areas with high CRP enrollment and where more than 12 percent of the jobs are in agriculture. Returning CRP acreage to production is projected to result in job increases ranging from less than 0.1 percent in the Macon, Georgia, and Tupelo, Mississippi areas to 1.8 percent in the Pocatello, Idaho area and 1.5 percent in regions of Montana, Kansas, and Texas. Job increases in multi-county areas of Iowa and Missouri ranged from 0.4 to 1 percent.

- The economic impacts of ending CRP in North Dakota were studied by Bangsund et al. (1994). The greatest impacts of terminating the program were projected to accrue to the retail trade sector, particularly those businesses that supplied production inputs such as seed, fuel, fertilizer, and herbicide. On a Statewide level, an estimated total of 2,416 jobs would be directly created by terminating the program. In all economic sectors of the economy, including the indirect effects of household spending, the total number of full-time jobs created from termination was projected to be 3,865.

The end of the CRP is more likely than not to have positive effects on off- and on-farm employment. Assuming that competition from imports and crop price declines do not make returning land to crop production unprofitable, it is likely that the land will be used for some productive use rather than left idle. Whether the land were to be placed back into crop production, used for haying or grazing, or used as pasture, it is more likely than not to be producing income that requires some sort of agricultural inputs at a level equal to or higher than what could be received by retiring the land under CRP. On an aggregate regional or State level, the effect on agricultural employment is not expected to be significant. At the county or local level, the ending of the program could result in a beneficial increase in on- and off-farm employment, particularly in farm-dependent communities with high concentrations of CRP (see Table 2.3-3 in Section 2.3.1.3). If market conditions make a return to crop production unprofitable, the end of the CRP would likely have only a nominal beneficial impact on off- and on-farm employment from livestock production.

Job Losses in the Recreation Sector of the Economy

As discussed in Section 5.5.2.1, there could be a loss of recreational opportunities if there were no program and a high percentage of the land was returned to crop production. The job losses would be highest in those regions of the Nation along migratory bird routes. This would mean fewer non-resident/tourist dollars spent in the local economy on recreation services and in related sectors, such as lodging, eating and drinking establishments, and retail trade, and a potential decline in employment and income in the these sectors. Some studies of post-CRP land use intentions have found that a small percentage of land would be retained in cover crop and/or as wildlife habitat. As with other land use decisions, the decline in tourism expenditures would be a function of how profitable it is to produce on the land, versus maintaining it in a cover crop and benefiting from either the hunting and fishing revenue that could be generated on the land. There has been insufficient research in this area to make a definitive conclusion. Some of the loss would be offset by an increase in agricultural employment.

Increased Uncertainty of Producer Income

A producer makes the decision to enroll land in CRP if the opportunity costs of enrolling the land are greater than those foregone by keeping it in agricultural production. If the program were to end, a producer would make the decision of whether to plant this acreage to crops, use it for haying or grazing, let it revert to woodland or grassland, retain the existing tree cover for later harvest, or simply not produce on it. With the exception of land enrolled in CRP through the Water Bank Program and marginal pastureland enrolled in continuous practices, all of the land enrolled in CRP was once used as cropland.

In the current decoupled price support environment, a producer would have to reevaluate the opportunity costs of alternative uses. In some cases, if expected revenue exceeds the variable costs of production, a farmer would put the land back into production. There is increased uncertainty in this strategy, however, due to the possibility of losing money versus receiving an almost guaranteed rental payment from the Federal Government (assuming the contract conditions are met). Alternately, the land could be left idle, producing no income, which would certainly result in economic loss.

Ending the CRP program would mean the end of CRP rental payments and the partial replacement of this income with income from agricultural production. Hyberg et al. (1991) modeled the economic shock caused by the loss in CRP rental payments if none of the land were returned to production and the CRP program ended, and if 50 percent of the grassland were returned to haying and grazing. The decline in gross output in the agricultural production and household expenditure sectors is projected to be greater than the loss in output caused by enrolling 45 million acres in the CRP. If 50 percent of the land is returned to haying and grazing, the decline in agricultural production output improves only slightly while declines in spending on household expenditures exceeds what would have occurred if the rental income were received.

Based on these findings, the greatest decline in agricultural production, and by extension, the greatest increase in producer income uncertainty, would occur at the county and community levels, that is, in regions where there are high concentrations of land enrolled in the CRP.

It is highly probable that at least some of the acreage would either be cropped by its owner or leased to a tenant (see the discussion of post-CRP land use in Section 5.5.2.1, Increased Supply of Planted Cropland). However, if the land is less profitable to farm, the landowner has now transferred a share of the uncertainty to a tenant. If a tenant cannot farm the land profitably, the landowner is more likely not to be paid rent or not to receive rent in a timely manner.
If CRP were to terminate, there would likely be increased uncertainty of producer income, particularly for those landowners who do not farm their own land or for landowners that are not full-time farmers and who cannot achieve economies of scale by spreading fixed production costs over a greater number of acres. The magnitude of the uncertainty is likely to be greater at a county or community level, than at a regional or national level.

5.5.1.2 Impacts under No Action (Current Program)

Under the No Action Alternative, there would be no change in the program's operation. The economic effects that have occurred in the past are likely to continue into the future. As discussed in Chapter 2 *Affected Environment*, the primary impacts of CRP on the rural economy are:

- Job loss in the agricultural service sector and on-farm employment; and
- Uncertainty and/or decreased profitability of tenant farm operations.

It should be noted that not all changes in rural economic conditions are solely or marginally attributed to CRP enrollment. For instance, Flora and Flora (1987), in a study of farming-dependent communities in the Great Plains and West, found that other social changes were occurring at the same time as CRP (e.g., malling/Wal-Marting of the retail sector, the level of transfer payments in the form of commodity support payments from the Federal Government, and the diversity of the economy). Other forces at work include increased imports from low-cost producing countries, competition in the export market from these same low-cost producing countries, pressures of urbanization, and the diversity of the local economy.

Job Loss in the Agricultural Sector of the Economy

CRP is a land retirement program. In an agricultural economy, land is one of the major production inputs. The quality of land as an input is a function of soil characteristics and weather conditions. Thus, not all land is of similar quality due to differences in topsoil depth, composition, land capability class, erodibility, and yield. Other production inputs include labor, machinery, agricultural chemicals, and petroleum products. There is a certain level of substitutability between inputs. For instance, if a tractor breaks down, another owned or leased tractor can be used as a substitute. Assuming that a landowner is farming to maximize profits using his or her most productive land, there is no substitute for land of similar quality. In the absence of technological improvements, other inputs may be substituted on the existing land, but

this may result in decreasing marginal returns. A substitute for hired labor on-farm may be the contracting out of service work, such as chemical applications, harvesters, and processing, to third-party firms. Thus, a decline in on-farm employment can be offset by an increase in off-farm employment. Operators may also opt to hire these outside firms to take advantage of technological advances in planting, harvesting, and farm management that an individual farmer may not be able to afford on his or her own. Ultimately, a landowner decides to enroll land in the CRP if it is more profitable to do so, or if the same level of profit can be earned as farming it and then he or she places a value on the positive environmental benefits of idling the land that occur on-site and/or off-site.

Economic impact models typically analyze the effect of a change in expenditures in an industry on employment and earnings in that industry (Bangsund et al., 1994; Leistritz, 1998). Controlling for technological change over time, a change in production expenditures on crop inputs should affect employment in the agricultural input businesses and in on-farm employment. When CRP land is retired, crop production expenditures are lost. Some land may be brought into production to compensate for this loss but it almost never equals in production the land that was retired. Agricultural inputs and labor are used only to the extent needed to establish the cover crop and maintain it. Lower demand for inputs means fewer employees are needed to man the stores and provide farm services, and fewer employees are needed to plant and harvest the crop.

The higher the level of analysis (e.g., regional is higher than county, and county is higher than township), the less likely it is that analysis will indicate an adverse impact on the agricultural input sector. It was forecast that at the national level, CRP would cause a 2 percent decline in gross output, total income, and employment in the agricultural input industry (Young and Osborn, 1990). However, impacts target the local level. In one study, the local economic impacts of shifts in local spending patterns were estimated for 10 multi-county regions where more than 15 percent of the land was enrolled in CRP (ERS, 1991). Local economic activity dropped by 0.3 to 3.5 percent in the Great Plains, West, and Southeast areas, and by 3.2 to 5.7 percent in the Corn Belt area. The decline was attributed to the flow of money outside of the local economy. On a regional level, these drops are not huge, nor are they significant. It is at the county and township levels that the economic impacts are concentrated, as was found by Hyberg et al. (1991) and Hamilton and Levins (1998), and suggested by Schultz and Lambert (1999).

The economic impacts of CRP on the agricultural input sector are expected to be the greatest in regions of the Nation where enrollment is highest and where there is agricultural dependency, such as the Northern Plains. Three studies of the impact of the CRP enrollment on the North Dakota economy found that there were negative impacts on the agricultural input sector, represented by the retail trade and business and personal services sectors (Mortensen et al., 1990; Bangsund, et al., 1994; Leistritz, 1998). Mortensen et al. (1990) found that the total impact from the CRP land retirement was about $141 million, 0.5 percent of the State's economic baseline. One of the reports (Leistritz, 1998) puts the losses into perspective. If CRP were ended, the change in economic activity in these two sectors and the change in employment would be less than one percent. He acknowledges, as do other researchers, however, that Statewide and regional averages may obscure more acute adverse impacts at the township and community levels. A similar analysis done for South Dakota found that *ending* the CRP program would cause an increase in input use in the regions of the State with high agricultural dependency

(Janssen et al., 1997). The already-mentioned results from Hyberg et al. indicate fairly significant impacts on agricultural production in northeast Montana. These results may be transferable to other agriculturally dependent regions that are not near metropolitan areas where there are job opportunities.

Uncertainty and/or Decreased Profitability of Tenant Farm Operations

There has been very little research of the effect of CRP on cropland rental rates. Public comments indicated that high CRP enrollments could decrease the amount of cropland available for rent and make the remaining leasable acres more expensive to rent. There has been some work done in North Dakota (Schultz and Lambert, 1999; Hodur et al., 2002). Schultz and Lambert (1999) found that real rental rates in North Dakota have remained flat or increased over the prior 10 years, in spite of declining farm incomes. Some of the reasons hypothesized for this are that CRP creates a floor for rental values, interest rates are low, and the economy is diversified. Their results indicate that the land rent increase due to the average increase in the number of CRP acres enrolled in a county each year is about 5.6 percent. Hodur et al. (2002) surveyed CRP landowners and local leaders on what they thought the impact of CRP was on cropland rental rates in North Dakota. Eighty-four percent of local leaders felt that the CRP had reduced the availability of land to rent, and had increased cash rents an average of 17 percent. One-half of that amount of landowners, 42 percent, thought CRP had reduced the availability of land to rent; 28 percent thought it had no effect; and 28 percent did not know. On average, landowners thought that CRP had increased cash rents the same 17 percent as the local leaders. However, this average is not representative, since 69 percent of the contract holders though CRP had no effect on cash rents, versus 27 percent of the local leaders.

It may be possible to trace the prevalence and distribution of this issue through a detailed examination of rental rates and CRP payment rates at the local or county level. This would require a comparison of local rent studies and CRP rents by county, by State. This level of detail is beyond the scope of the PEIS, since there is no one source for rents on the local level. As one example of this type of analysis, the average cash rents in 1998 by crop reporting district in Illinois (Bullen, 1998) were spot-checked with the average CRP rental rate, by county, for the 18th signup (which took place October 26 through December 11, 1998). The results were not consistent, with some CRP rents being above the average for the reporting districts, and some below. A spot check was also done for the same years in North Dakota (NDSUE, 2002). Again, the results were inconsistent but in general CRP rents tended to reflect cash rents. In the eastern side of the States the CRP rents tended to be 10 to 20 percent less than the cash rent. In the western portion, rents tended to be from 0 to 10 percent less. In all States, the maintenance and incentives paid by CRP would also influence the size of the difference between cash rents and CRP rents.

There have been several studies indicating that farm program payments are capitalized into land values, and thus would influence cash rents (Barnard et al., 1997; Barnard et al., 2001; Morehart et al., 2001; Ryan et al., 2001; Feather, 2002). According to research done by the ERS, "farmland values, in the absence of government payments, would have been about 4 percent lower during 1972-1981 and almost 19 percent lower during 1982-1989. This figure declined to about 13 percent during 1990-1997 and could be as much as 25 percent [during] 1999-2001"

(Morehart et al., 2001; Ryan et al., 2001). In the case of CRP, if program rents are comparable to cash rents, there would be no extra value to capitalize into land values.

CRP enrollment may also prompt tenants to be displaced from land they once rented, and not receive a share of CRP rent. As was evidenced in public scoping meetings, this displacement is more likely to occur in areas where there is not a lot of cropland to begin with, or agricultural land uses are being replaced with non-agricultural uses. This is more apt to be the case in areas with active CREPs, in which the combination of State and Federal incentive payments make renting the land less profitable than enrolling in CRP.

5.5.1.3 Impacts under Proposed Action (2002 Farm Bill)

The primary 2002 Farm Bill changes with the potential to impact local rural economies are the increases in enrolled acres and expansion of the eligibility requirements for enrollment. The FWP is expanded to all States and marginal pastureland is now eligible. This could effectively cause adverse economic impacts in new areas and beneficial impacts in areas with lowered CRP enrollments. The primary impacts on the rural economy are expected to be the following:

Job Change in the Agricultural Sector of the Economy

The 2.8 million-acre increase in the enrollment cap could have adverse impacts on output, income, and employment in the agricultural service and production sectors of the economy. The magnitude of the adverse impact depends on where the new land is enrolled, if there are regional shifts based on changes in eligibility, the agricultural dependency of the regions, the intensity of CRP enrollment, and how much of the land is enrolled with haying and grazing. Based on studies done by others and discussed in previous sections, higher levels of adverse impacts may occur in communities that are agriculturally dependent, that do not have a diverse economic base, and where relatively high percentages of the cropland is enrolled in CRP. The haying and grazing provisions may offset some of the decline in demand for agricultural processing services. Tourism-related employment may also offset some of the decline. Input suppliers are likely to be negatively impacted in communities where whole farms enroll in CRP or where the 25 percent acreage limit in a county is exceeded (Flora and Flora, 1987).

The decline in income and spending in areas with high CRP enrollment varies. A study of 10 local economies in the West, Great Plains, Corn Belt, and Southeast with high CRP enrollment found that the potential impacts were less than 1 percent in Billings, Montana, but more than 3.5 percent in the Lubbock, Texas area. Impacts in the Corn Belt region were the greatest, with potential declines of 5.7 and 3.2 percent in Kirksville, Missouri and Ottumwa, Iowa. Declines in economic activity in the Southeast communities were all less than 1 percent (USDA-ERS, 1991).

The expansion of eligibility for environmentally sensitive acreage through the nationalization of the FWP and the eligibility of marginal pastureland may cause some shifts in enrollment. General enrollment acreage should continue to be concentrated in areas where enrollment is already high. The enrollment of environmentally sensitive land is more likely to occur through continuous enrollment. These types of land are smaller in size, typically along watercourses, or at field edges. This type of land is likely to increase enrollment in the more populated areas of

the Nation where enrollment has been low, to consist of small parcels of land, and to involve livestock farmers with marginal cropland. The agricultural input and processing demand foregone from enrolling these lands should be lower than if cropland used to produce one of the eight major crops was enrolled. Thus, even with the shift in acreage, the impact on agricultural employment is not expected to be significant.

Increase in CRP Acreage Cap Leads to an Increase in Agricultural Rents

In areas of the Nation on the urban fringe, and where CREP and continuous CRP enrollment has been high, some tenants have indicated that the government is competing with them for agricultural land, and decreasing the supply of land available for them to rent (see discussion under Section 5.5.1.2, Uncertainty and/or Decreased Profitability of Tenant Farm Operations). The combination of Practice Incentive Payments (PIPs), Signing Incentive Payments (SIPs), and State bonuses makes the effective rental rate received by the landowner higher than what could be received for renting it as dry cropland. There is scant empirical evidence of this occurring. Shultz and Lambert (1999) found that in North Dakota, the agricultural land rents increase of about 5.6 percent is due to an increase in the number of CRP acres.

To test this hypothesis, a statistical relationship between cash rental rates and CRP enrollment was examined. In no case did the change in CRP acreage result in an increase in cash rents. Again, this impact may be more significant at the local or county level, and would be examined using the same techniques discussed in Section 5.5.1.2.

Based on this analysis, it is unlikely that an increase in the CRP acreage cap would cause agricultural land rents to increase at the regional or national level. Given the scarcity of empirical studies on this issue, the impact at the county or township level cannot be ascertained.

Diversity of Producer Income and Reallocation of Income within the Local Economy

There are tradeoffs inherent in the increased land use flexibility provisions of the 2002 Farm Bill. Some producers may be able to maximize profits by allowing haying and grazing on their enrolled land. This could improve the financial situation of the producer/landowner. Whole farm enrollment or the enrollment of a greater number of eligible acres by a single producer could increase given the new provisions that allow for haying and grazing. If the land is owned by a livestock producer, the land could continue to be grazed in rotation and the producer would reduce the financial risk of pricing variability in the purchased feed grain market. If the owner has no use for the land, it can be rented out. The combined reduced CRP payment and the grazing fee could result in a higher income stream from the enrolled land than if it were simply leased out or solely grazed. Aines (1963) found that a program allowing grazing at one-half of the current rental rate would be attractive to livestock farmers enrolled in CRP.

On a national level, hay users could benefit from the reduction in hay price, offsetting the adverse impact of additional hay supply on non-CRP enrolled producers. On a local level, hay purchasers would also benefit. For purchasers, however, hay is one input used to produce a product. For sellers, it can be their primary source of income, and the effect of a price change could be more adverse and not fully offset by the community benefit.

The CRP rental income would most likely be spent on household consumption expenditures, such as private and public services, recreation, and durable goods (Hyberg et al., 1991; Woods and Sanders, 1987). This spending would increase agricultural output and income in non-agricultural sectors of the economy. The same would hold true for rental income, if the land were rented for haying and grazing. If the land were used by the livestock-producing landowner, additional expenditures may be spent on agricultural inputs to support the livestock, not on household expenditures. Whether the land is rented or not, there would be a decline in tourism expenditures by nonresidents, since wildlife habitat would be altered and may not be as supportive of game species that attract hunters (Harmon, 1987).

Even if there is no change in the total amount of income being received by the landowner from enrollment in CRP with haying and grazing, the reallocation of income between sectors would not only affect output and income in each sector, but the amount of money that is likely to leak out of the economy. Money spent on agricultural goods and services is more likely to be respent in the local economy than money that is spent on retail goods and services (Woods and Sanders, 1987).

In comparison with the baseline No Program Alternative, a landowner with land enrolled in CRP should help to diversify income and make farmer income less dependent on crop production. Government payments provide some stability against variable market conditions in the commodity markets. The local economy would also be slightly more diversified due to tourism expenditures.

5.5.1.4 Impacts under Alternative 4 (Environmental Targeting)

The economic impacts of the Environmental Targeting Alternative would be caused by the shift in acreage enrolled. Large tracts of land may no longer be enrolled due to the elimination of the general CRP sign-up. However, the same economic effects as described under the three previous alternatives could occur, depending on the criteria for enrollment and the amount of land enrolled in CRP by community. The focus on enrollment of land in SETAs would tend to shift enrollment to smaller acreages, particularly if lands in watersheds are targeted for enrollment to reduce agricultural runoff, or along wildlife corridors. However, unlike the No Action and Proposed Action Alternatives, smaller tracts of land that may not be as productive are more likely to be enrolled, given the new emphasis on practices common to the CCRP and FWP (e.g., those involving the establishments of buffers and wetlands restoration).

There have been several studies that have examined changing the emphasis of CRP away from having a goal of preventing soil erosion more towards having goals of improving water quality and wildlife habitat. Young and Osborn (1990) examined such a targeting scheme during a time that HEL enrollment was the primary purpose of CRP, and CCRP and CREP did not exist. Under this scenario, more land would be retired in the Corn Belt and Lake States, and in the Chesapeake Bay drainage basin. There would be improved water quality and wildlife habitat benefits. The primary crop grown in these areas is corn, so greater CRP enrollment could increase corn prices. Producer income for enrollees and non-enrollees would benefit from this increase in corn price, assuming their land is suitable for growing corn. Babcock et al. (1996)

found that in maximizing the environmental benefits of CRP relative to cost, water erosion and surface water quality would achieve a greater share of benefits than wind erosion. Wildlife benefits, particularly to waterfowl, are less sensitive to the targeting scheme. Feather et al. (1999) found that the highest environmental benefit-cost ratio, measured using an EBI, results by targeting CRP acreage near population centers. The idea is, the more people recreating in an area, the greater the benefit. Freshwater-based recreation and wildlife viewing benefits in the southeastern and northeastern States would increase the most. Under the scenario they constructed, enrollment would decline about 3 percent in the Pacific/Mountain and Southern Plains States and 10 percent in the Northern Plains States. It would increase about 17 percent in the southeastern States and 8 percent in the northeastern States. Although the Environmental Targeting Alternative does not include use of an EBI, the direction of change in the redistribution of enrolled acreage would likely be a combination of what Young and Osborn (1990) and Feather et al. (1999) found: enrollment would shift from an emphasis on land west of the Mississippi to land east of the Mississippi.

Job Change in the Agricultural Sector of the Economy

The impact on agricultural jobs is highly dependent on the distribution of enrollment. If enrollment were to shift, there could be a modest increase in agricultural employment in counties in the Northern and Southern Plains States, as well as in the Mountain and Pacific States with traditionally high CRP enrollment. The impacts should be comparable to those impact described for the No Action Alternative. The magnitude of this positive effect is likely to be somewhat smaller, however, since enrollment in the program would still be an option. Terminated contract land is more likely to be used for some productive use rather than to be left idle. Whether the land is placed back into crop production, used for haying or grazing, or used as pasture, it is more likely than not to be producing income that requires some sort of agricultural inputs at a level equal to or higher than what could be received by retiring the land under CRP. At an aggregate regional or State level, this is not expected to be significant. At the county or local level, the decline of land enrolled in CRP could be beneficial. The increase would be partially offset by a decrease in tourism-related employment.

There would be a lag time for these impacts to occur since the shift would be gradual, as contracts expire and are not renewed and land is converted to cropland. Although CRP land may not be the most productive land, it is likely to be returned to production if there are profits to be made from producing crops and receiving income support payments (e.g., decoupled payments, marketing loan gains, and crop insurance subsidies that reduce production risk).

Job losses, if any, in the eastern and Midwestern States are likely to be minor as more land is enrolled. Emphasis would be on smaller acreages, so that farms are more likely to remain in production. There is not likely to be an adverse impact on agricultural jobs in these areas, unless cumulative enrollments under the NETA's, CREPs, CPA's and SETAs are higher than under the existing program. In fact, these areas might benefit from an increase in recreation-related jobs.

Increased Uncertainty of Producer Income

In areas with traditionally high CRP enrollment, land is more likely to leave CRP at the end of its contract. The economic shock caused by having the stability of CRP rental payments removed from the landowner's revenue stream could be similar to what was found by Hyberg et al. (1991), depending on the amount of acreage enrolled in CRP pre-environmental targeting and under the Environmental Targeting Alternative.

5.5.2 Land Allocation

5.5.2.1 Impacts of No Program (Baseline)

If there is no program, the set of alternative uses to be considered by a landowner becomes smaller. The producer can still decide to idle the land or plant it in a cover crop, but there would be no income from doing so. The potential impacts to be examined are:

- Increased supply of planted cropland;
- Increased supply of cropland available for rent, and a decrease in rental rates and land values; and
- Loss of recreational opportunities.

Increased Supply of Planted Cropland

Active farmers are more likely to return acreage to crop production (Dodson et al., 1994). Several studies have examined the use of CRP land after retirement, either in the context of the contract expiring or the program ending. Post-retirement land use intentions have been consistent across studies. Land use post-CRP has been examined in terms of physical characteristics of the land and the profitability of crop production, past behavior, and through surveys of CRP contract holders.

The retention of tree plantings under land retirement programs has been examined through an analysis of past behavior. Conversion is less likely if the land has been planted to trees. Post-land use decisions by retired land program enrollees with established tree cover indicate a higher retention rate than for grassland and vegetative covers. For instance, retained tree plantings ranged from 91 to 98 percent, 10 to 15 years after planting under the ACP. This retention rate is as high as those achieved in Soil Bank pine plantations and CCC plantations (Kurtz et. al., 1980). Tree cover, whether established under CP 4 or maintained under CP11, is prevalent in the southeastern States of Georgia, Florida, South Carolina, North Carolina, Virginia, and Alabama and the Delta States of Mississippi, Arkansas, and Louisiana (Table 5.5-1), where tree planting comprises more than 50 percent of the CRP acreage. Tree planting, as a percentage of total enrolled acres, is also high in the northeastern States. If CRP were to end, high tree cover retention rates are highly probable and the supply of planted cropland is not likely to increase.

Aines (1963) studied land uses intentions of farmers with expiring Soil Bank Program acreage in the early 1960s. The Soil Bank Program's CRP had 3-year contracts if suitable cover was

already established or 5 to 10-year contracts otherwise. Trees had to be under contract for 10 years. Annual rental and cost sharing payments were made. From 1956 to 1960, 28.3 million acres were placed under contract. A national mail survey and a personal interview survey in six areas of three States (Minnesota, North Dakota, and Texas) were used to obtain data. These States were chosen because about 50 percent of the Soil Bank land was in the Northern and Southern Plains States. Post-enrollment, owner intentions were to crop 55 percent of the land and maintain the remaining 45 percent in grass cover. Some of the to-be-cropped land was to be placed in the wheat and feed grain diversion program, so it would not be cropped at least initially.

Table 5.5-1. Tree Plantings, as a percent of Total CRP Acreage as of August 2001

U.S.	8 %			
NEVADA	0 %		OHIO	6 %
UTAH	0 %		MICHIGAN	7 %
NEW MEXICO	0 %		ARIZONA	11 %
MONTANA	0 %		INDIANA	12 %
COLORADO	0 %		TENNESSEE	13 %
OKLAHOMA	0 %		NEW YORK	14 %
NORTH DAKOTA	0 %		MINNESOTA	14 %
KANSAS	0 %		ILLINOIS	17 %
TEXAS	0 %		WISCONSIN	17 %
WYOMING	1 %		CONNECTICUT	20 %
WASHINGTON	1 %		MARYLAND	24 %
SOUTH DAKOTA	1 %		WEST VIRGINIA	30 %
IDAHO	1 %		DELAWARE	30 %
NEBRASKA	1 %		RHODE ISLAND	32 %
CALIFORNIA	2 %		VIRGINIA	50 %
OREGON	2 %		NORTH CAROLINA	67 %
MISSOURI	3 %		ALABAMA	69 %
PENNSYLVANIA	3 %		ARKANSAS	72 %
KENTUCKY	3 %		VERMONT	72 %
MASSACHUSETTS	4 %		MISSISSIPPI	80 %
IOWA	4 %		SOUTH CAROLINA	85 %
MAINE	5 %		LOUISIANA	87 %
NEW JERSEY	5 %		FLORIDA	93 %
NEW HAMPSHIRE	5 %		GEORGIA	93 %

A major project was undertaken by the North Central-214 Committee to study the economic and environmental implications of expiring CRP contracts in the Great Plains States (Diebel et al., 1996). The results of their survey are summarized as follows:

- 52 percent of North Dakota respondents intended to return their CRP land to crop production, while 18 percent would use it for livestock. The proportion of CRP land expected to return to crop production is highest in the eastern portion of the State and lowest in the western portion.

- 52 percent of South Dakota respondents intended to return their land to crop production, while 29 percent would use it for livestock. The proportion of CRP land expected to return to crop production is highest in the eastern portion of the State and lowest in the western portion.
- 36 percent of Nebraska respondents would return their land to crop production, while 23 percent would leave it in grass production. The proportion of CRP land expected to return to crop production is highest in the eastern portion of the State and lowest in the western portion.
- 29 percent of Kansas's respondents indented to return their CRP land to crop production, while approximately 35 percent expected to keep their land in grass production for livestock grazing or wildlife habitat.
- A majority of Oklahoma respondents intended to use their land for pasture or hay.
- Texas respondents planned to return 64 percent of their land to crop production, 34 percent to haying and grazing, and 2 percent to wildlife refuge.
- Most of the non-irrigated land in New Mexico would be used as rangeland, while the irrigated land would be used for crop production.
- Montana respondents were expected to convert about 65 percent of their land to crop production.

A national survey of post-CRP land use intentions was made by the Soil and Water Conservation Society (Osborn et al., 1994). The results of that survey are summarized as follows:

- Approximately 63 percent of CRP acreage may return to crop production.
- About one-third of the CRP acres in the Northern and Southern Plains may remain in grass production for haying, grazing, and wildlife habitat.
- The highest percentage of re-cropped CRP land should occur in the Cornbelt, Lake, and Pacific States.
- 60 to 70 percent of CRP acreage planted to trees, particularly in the Southeast and Delta States, should remain in trees.
- About two-thirds of CRP acreage has a crop base history and over 90 percent is planted in grasses, indicating a higher likelihood of a return to crop production.
- A survey of North Dakota CRP enrollees indicated that 57 percent of the acres currently enrolled would be returned to crop production. The remaining 43 percent would use for hay, pasture, or permanent cover (Hodur et al., 2002).
- Post-CRP land use would be influenced by agricultural prices, input costs, government support payments, and financial incentives (Diebel et al., 1996). Thus, any of the survey results presented are likely to vary, depending on market conditions at the time of expiration.

CRP acreage comprises approximately eight percent of cropland nationwide. On a national basis, if all of this land were to return to crop production there could be a moderately significant increase in planted acreage. As discussed above, this is not likely to occur. About 75 percent of the acreage planted to trees is likely to be retained in trees. Tree planting involves around 8

percent of the CRP acreage, so that leaves 92 percent of the land planted to grasses or wooded vegetation, with the potential for return to crop production. Based on stated intentions in the past, about one-third of the land planted to grasses would likely be used for livestock grazing, haying, or pasture. The remaining two-thirds is likely to be returned to planted acreage, depending on market conditions and government programs.

Expansion of planted acreage is more likely to be noticeable as a change in land use at the community and county levels, rather than at the State or regional level. In particular, counties with 20 to 30 percent of their cropland enrolled in CRP could experience significant increases in planted acreage. The regions with the greatest concentrations of counties at or near the 25 percent county cap include southeastern and northeastern Colorado, the panhandles of Oklahoma and Texas, north central and northeastern Montana, west central Mississippi, southeastern Idaho, eastern New Mexico, and southeastern Washington. There are smaller concentrations in northwestern Wisconsin, northwestern Missouri, south central Iowa, northwestern and southeastern Utah, and north central Oregon.

The primary crops produced in the regions with the greatest concentration of CRP land are cotton (Texas and Mississippi), barley (Idaho), and wheat (Montana, Idaho, Colorado, New Mexico, Texas, and Oklahoma) (see Figures 2.1-1 and 2.1-2). The decision to plant these crops would largely hinge on the commodity support payments offered under the 2002 Farm Bill (direct and counter cyclical payments and marketing loan rates) and crop prices. On a national level, the change in acreage planted to these crops is not expected to be significant (FSA, 2002). At the local or regional level, there could be a moderate increase in planted acreage, leading to beneficial increases in demand for farm employment and agricultural inputs and services.

Increased Supply of Cropland Available for Rent, and a Decrease in Rental Rates and Land Values

If a landowner decides to idle the land, he or she would help maintain the productivity of the soil and reduce erosion. In the long-term, the value of the land for agricultural purposes would be preserved. Since the loss in productivity is nominal on an annual basis, most sellers and buyers do not figure in a premium or discount for the land having been in cropland use prior to the sale. Assuming there is no offsetting supply increase, land coming out of the expiring CRP program could have higher values than currently cropped land. A high value would depend on the geographical distribution of the expiring land and the amount of other CRP land entering the market at the same time.

The supply of cropland would be expanded so that, assuming a stable demand, land values and rents should decline. Aines (1963), in his study of land use intentions after the expiration of conservation reserve contracts under the Soil Bank program, found that 55 percent of land would be returned to crop production, with the remainder being kept in grass cover. Land to be kept in grass was more likely to be used by the owner and land to be cropped was more likely to be rented out.

An expansion of cropland supply would be beneficial for tenants, although it could hurt landowners with mortgages, where the rental rate may no longer cover the financing costs. In

the short-term, the increased supply of cropland from the returning CRP land could bring a premium in the rental market because the land has not been cropped in many years and the soil is apt to be highly productive. In other areas, CRP land is not expected to influence land rents because it was marginally productive land when it was enrolled in CRP, and it would only compete with other marginally productive land for rent.

Loss of Recreational Opportunities

The reversion of CRP land to cropland could have adverse impacts on recreational opportunities through a change in ambient water quality and wildlife habitat. Even with conservation compliance, there would be an increase in soil erosion and agricultural runoff. Concentrations of nutrients and sediments affect the health of a water body and its ability to be a livable environment for many species. Ribaudo (1989) estimated the value of the recreational benefits of CRP from the avoidance of water quality degradation. Based on the 45 million acres projected to be enrolled between 1986 and 1989 and the present value of the benefits enrolled in the first five signups, there was no benefit. The best estimate of the value of freshwater fishing, in 1986 dollars, is $229 million. Benefits are estimated by forecasting changes in fishing days attributed to CRP, and then multiplying this change by the average economic value of a fishing day taken from other studies in the economics literature. The current value of the benefits using the BLS would be $390 million.

In another study of CRP-related water quality improvements, Douglas and Johnson (2001) estimate the program's annual non-market angling benefits. The main conclusions are that:

- Annual recreation water quality benefits due to CRP and other factors in the Lower Klamath River basin are $241 million.
- Annual CRP recreation water quality benefits nationally are $3.199 billion.
- Annual CRP recreation angling benefits in rivers, lakes, the Great Lakes, and salt water are $1.372 billion.

The change from established vegetation to monoculture cropping would result in the loss of wildlife habitat, a reduction in the number of harvestable animals for hunters, and the loss of non-consumptive uses, such as bird watching and nature photography. CRP improves nesting and winter cover for game and nongame birds, replacing the traditional nesting in roadside ditches that leaves nests vulnerable to predators that travel along the corridors. Wetland restoration helps waterfowl nests (Bogenschutz et al., 1998).

Young and Osborn (1990) estimated the present net value of the hunting benefits, using changes in consumer surplus, at $3.848 billion, in 1990 dollars. Over one-third of the benefits accrued to the Lake States (Minnesota, Michigan, and Wisconsin), and 22 percent to the Corn Belt States (Iowa, Missouri, Illinois, Indiana, and Ohio).

A more current measurement of recreation benefits due to CRP was prepared in 1999 (Feather et al., 1999). The results are summarized in Table 5.5-2. Freshwater-based recreation (fishing, swimming) comprises the smallest percentage of recreation benefits attributable to CRP. These

benefits, measured using travel cost, are the highest in the most densely populated region of the U.S., the northeastern States. On a national and regional level, the benefits attributable to CRP are a small proportion (less than one percent) of the total benefits people receive from freshwater-based recreation. Therefore, the ending of CRP should have only a nominal effect. The reason that the water quality-related recreation benefits of CRP are small is because CRP is not the only source of erosion reduction. Others are conservation tillage and acreage reduction programs. Much of the CRP land is in sparsely populated areas and is subject to wind erosion, not sheet and rill erosion. Wind erosion is not assumed to have any impact on water quality (Feather and Hellerstein, 1997).

Table 5.5-2. Recreation Benefits of CRP per Year (millions of dollars, 1990 $)*

Region	Freshwater-Based Recreation		Pheasant Hunting	Wildlife Viewing
	Lake	River		
Pacific/Mountain	1.27	0.42	2.70	-34.98
Northern Plains	2.13	0.34	26.69	26.75
Southern Plains	1.34	0.13	**	62.35
South Eastern	8.90	1.87	**	4.89
North Eastern	17.33	2.61	50.865	288.70
Total	**30.98**	**5.37**	**80.28**	**341.71**

* Benefit is defined as the change in consumer surplus due to CRP.
** Not measured due to negligible value.
Source: Feather et al., 1999

Approximately 50 percent of the total annual benefits of pheasant hunting are due to CRP. The ending of CRP would most likely cause a significant decline in pheasant habitat and recreational benefits nationally and in each region. The value of the lost benefits would exceed $80 million, versus $36 million for freshwater-based recreation.

The largest component of recreational benefits accrues to "wildlife viewing," an activity that includes photography, feeding, birding, and observing wildlife (USFWS, 1996). Almost 85 percent of wildlife viewing benefits are incurred in the northeastern States, again due to the concentration of population. The authors explain that the negative benefit in the Pacific/Mountain States is because of the contrast with the Northeastern region. California, which contains the greatest proportion of the region's population, has a small amount of CRP-enrolled land, so it appears, through a statistical anomaly, that there is an inverse effect of CRP land and wildlife benefits.

On a national level, the lost wildlife viewing benefits due to CRP comprise about 5 percent of total benefits. This varies by region. The ending of CRP could cause a significant 22 percent decline in wildlife viewing benefits in the Northern Plains and 20 percent in the Southern Plains. A modest decline would be incurred by the Northeastern region (8 percent) if CRP were ended.

5.5.2.2 Impacts under No Action (Current Program)

Under the No Action Alternative, there would be no change in the program. The land use and value effects that have occurred in the past are likely to continue into the future. As discussed in Section 2 *Affected Environment*, the primary impacts of CRP on land use and value are:

- Decreased supply of cropland and supply of cropland available for rent;
- Conversion of non-cropland to cropland; and
- Maintenance or improvement of recreational opportunities.

Decreased supply of cropland and supply of cropland available for rent

The acreage planted to the 8 major crops (sorghum, corn, cotton, rice, barley, oats, wheat, soybeans) consistently comprised 75 to 78 percent of all cropland planted in the U.S. from 1982 to 1997 (Table 5.5-3).

Table 5.5-3. Percent of Total Cropland Planted to the Eight Major Crops

	Major Crop Acreage	Percent Of All Crop Planted Acreage	All Crop Planted Acreage
1982 Total	242,193,231	78 percent	310,188,736
1987 Total	198,437,883	75 percent	265,056,748
1992 Total	214,819,709	77 percent	280,666,357
1997 Total	222,547,628	76 percent	293,618,437

Sources: Census, 1997; Census, 1992

While this percentage has remained consistent, there have been changes in the acreage of the specific crops. With the exception of cotton, all of the major crops experienced large declines in planted acreage between 1982 and 1987. In total, there was a decline of approximately 43 million acres planted to the major crops. During this same period, approximately 15 million acres was enrolled in CRP. Assuming no slippage (see Section 5.5.2.3), the maximum contribution of CRP to the decline in land planted to the major crops is 35 percent. The remaining drop of 28 million acres, 65 percent of the total decline, would not be attributed to CRP. Most of the drop can be attributed to the broader farm economy where prices were low, farms were going out of business, and agricultural land values had declined.

The supply of cropland is determined by landowner decisions on land use. The land use allocation decision has two components: whether the use contemplated is profitable, and how the use impacts the future value of the land. To determine profitability, the farmer needs to have knowledge or expectations of the average yield per acre, crop prices, and input prices. Aside from development pressures and external economic forces, soil productivity is the key characteristic in forecasting future value of agricultural land. Soil productivity is a function of erosion rates and current uses of and inputs applied to the land. For instance, how much fertilizer is being used, what nutrients are extracted from the soil by the particular crop to be grown, and what tillage method will be used.

To further examine the impact of CRP on cropland supply, a statistical analysis was developed for general land conditions prior to CRP and subsequent to it. The relationships are estimated using a series of observations from before and after CRP began in 1986. Much of the information is from the Census of Agriculture years 1982, 1987, 1992, and 1997. These four years describe general land market conditions prior to CRP (1982), through Signup 5 (1987), through Signup 12 and after the initial use of the EBI to rank eligible applications (1992), and subsequent to changes in the EBI in 1995 that incorporated wildlife benefits and may include some of the changes affected in the 1996 Farm Bill in Signups 14 and 15 (1997). The 1996 Farm Bill eliminated other land idling programs, with the exception of the WRP, and decoupled commodity support payments from acreage and type of crop planted.

The results indicate that as land is enrolled in CRP, other land is converted to cropland to take its place. The amount of acreage enrolled in CRP does not significantly affect cropland supply, although it does tend to decrease it unless there is 100 percent slippage.

As discussed in Section 5.5.1.2, there has been little research on the impact of CRP on cropland supply. Based on the mostly qualitative analysis on CRP in North Dakota and the above analysis, the enrollment of acreage in CRP does not in and of itself reduce cropland supply. Coupled with the many other factors that influence cropland supply, there is insufficient evidence to conclude a significant impact of CRP on cropland supply. Relative to the baseline, the No Program Alternative, the supply should be only nominally impacted through a reduction in land to rent.

Conversion of Non-Cropland to Cropland

Slippage has been a problem with land retirement programs for the past 45 years. Study results have not always been consistent, and an accurate measurement of slippage has not yet been developed. Slippage can be attributed to any farm support program that reduces the supply of available land. Evidence of slippage is presented both qualitatively and quantitatively.

Table 5.5-4. General Slippage Indicators					
(Acres, millions)					
	Total Cropland	**Diverted + CRP**	**CRP Only**	**Total Harvested**	**Major Crop**
1982	444.96	8.41	0	326.12	242.19
1987	442.92	43.15	15.42	282.04	198.44
1992	434.99	6.80	34.08	295.78	214.82
1997	430.76	0	32.79	309.26	222.55
Change			32.79	(16.86)	(19.65)
Slippage				49 %	40 %
Proportion of Total Cropland					
	Total	Diverted + CRP	CRP Only	Total Harvested	Major Crop
1982	100.00 %	1.89 %	0.00 %	73.29 %	54 %
1987	99.54 %	13.16 %	3.47 %	63.39 %	45 %
1992	97.76 %	9.19 %	7.66 %	66.47 %	48 %
1997	96.81 %	7.37 %	7.37 %	69.50 %	50 %
Change	3.19 %		7.37 %	3.79 %	4 %
Slippage				49 %	40 %

If there is no slippage, the amount of cropland retired should decrease the amount of cropland. However, there are many other factors that influence slippage beyond CRP, so it is not possible to attribute all of the changes in cropland acres shown in Table 5.5-4 to CRP. If there were not other factors, all of the reduction in Total Harvested Cropland and Major Crop Acres from 1982 to 1997 would equal the CRP Enrolled Acres. Agricultural prices can be variable, and they were extremely so during the time period analyzed. Producers reacted by harvesting less land when prices declined during the 1980s. Weather, imports, and price supports also played a role. In addition, there were large increases in the set-aside land during the mid-1980s due to recession in the agricultural economy. Much of the land that was diverted under the set-aside program was eventually enrolled in CRP. Set aside acreage was 8.41 million acres in 1982, and increased to 27.73 million in 1987 (43.15– 15.42 million acres = 27.73 million acres). Thus, the net amount of land retired under CRP that was not previously retired equaled 5.06 million acres (32.79 – 27.73 million acres = 5.06 million acres). This represents less than a 1.2 percent increase in retired land under CRP.

Both the qualitative and quantitative analysis of others indicates the potential for slippage in the CRP. Slippage is beneficial in that cropland supply is largely maintained. Slippage is adverse, however, to the extent that environmental benefits of retiring the land long-term are reduced. Land that replaces the CRP-enrolled land may have lower productivity than the CRP land. If it did not, it would have been cropped previously. Slippage would occur only if market conditions changed substantially subsequent to CRP enrollment, making it more profitable to crop the land under current market conditions, compared to those that existed during the CRP enrollment period. If it were not, there would be no incentive to farm it either pre- or post-CRP enrollment. In a period of rising prices, cropland supply may increase regardless of whether or not there was CRP. Isolation of the effect of CRP on slippage is not clear, due to confounding market condition factors, particularly prices and technological improvement.

Maintenance or Increase in Recreational Opportunities

The No Action Alternative would maintain the recreational benefits of CRP described in Section 5.5.2.1.

5.5.2.3 Impacts Under Proposed Action (2002 Farm Bill)

The primary Farm Bill changes with the potential to impact land allocation decisions are the increase in enrolled acres and expansion of the eligibility requirements for enrollment. The FWP is expanded to all States and marginal pastureland is now eligible. However, the regional distribution of land that meets the EBI cutoff could shift given these new eligibility factors. This could effectively cause changes in land use in both the new and old areas. The primary impacts on land use expected are the following:

- Increase in agricultural land values from reduction in land supply;
- Change in slippage;
- Change in land use efficiency; and
- Increase in recreational opportunities.

Increase in Agricultural Land Values from Reduction in Land Supply

Given a slippage rate of less than 100 percent, a reduction in the supply of cropland could lead to an increase in agricultural land value. Canning (1991) estimated that all farmers benefited from a rise in farmland value of between $11 and $22 per acre, as a result of CRP. Using the agricultural land to value ratios published in the Agricultural Land Value Survey to estimate the value of non-irrigated land, this increase would represent less than a 1 percent increase in land value for highly productive land in the Midwest, and up to about 5 percent on less productive land in the Northern Plains. As discussed in Section 5.5.1.2 (No Action Alternative), if CRP rents are comparable to cash rents, there would be no increase in land values. Additional research is necessary to examine if there is a significant impact at the local level.

It should be noted that agricultural land values could also be increased due to the long-term improvement in soil productivity. Soil productivity is only improved in the short-run, however, by the build-up of nutrients in the soil during retirement. Yields may be unusually high in the initial years of crop production on former CRP lands returned to production, but this is not an inherent characteristic of the soil. Poe (1999) found that losses in productivity occur over a period of 50 to 100 years. Since the loss of soil is gradual, it may not be capitalized into land values in the short-run. In a study of farmland values in North Carolina, Palmquist and Danielson (1989) found that the potential erodibility of a soil had a significant impact on land value. Land retirement does not affect the potential erodibility of a soil.

Change in Slippage

Slippage occurs when total production goes down proportionately less than the number of acres idled under a short- or long-term land retirement program. Slippage can occur through an

increase in the number of acres cropped, or through an increase in the yield on existing land. Acreage slippage, the conversion of non-cropland to cropland, is examined in this section of the PEIS. Acreage slippage can involve the conversion of land by the CRP contract holder (Wu, 2000) or by non-enrolled operators who want to fill the reduction in agricultural production and take advantage of any increase in commodity price.

FSA has projected the acreage, by crop, that would be planted from 2002 to 2007 for the duration of the 2002 Farm Bill (FSA, 2002a). The sum of the acreage for the 8 major crops is shown in Table 5.5-5.

Table 5.5-5. Projected Major Cropland Acreage

Year	Major Crop Acreage (Millions of acres)
2002	252.8
2003	254.7
2004	255.0
2005	254.2
2006	254.6
2007	256.0

Source: FSA, 2002a

The CRP acreage cap increases by 2.8 million under the 2002 Farm Bill. CRP enrollment is forecast to increase by 5.3 million acres, from 33.9 million acres enrolled through FY 2003 (FSA, 2002a; FSA, 2002b). Acreage planted to the 8 major crops is projected to increase by approximately 5.2 million acres, from 249,417,500 acres in 2002 (NASS, 2002) to 254,600,000 acres in 2006 (FSA, 2002a). At the national level, the increase in CRP enrollment is offset by an almost 1:1 increase in cropland acreage. One cannot conclude a 100 percent slippage, however, for several reasons. First, some of the newly planted acreage may be cropland used for other crops or purposes (e.g., haying and grazing). Second, total cropland acreage might have increased even if CRP did not exist and none of CRP land was planted to the 8 major crops. It is reasonable to conclude that at least some of CRP land would have been planted to the crops and that some slippage would continue to occur as a result of the increased CRP acreage cap. The Proposed Action could increase the cumulative slippage rate since CRP's inception, although by how much is not predictable. In comparison with the No Program Alternative, slippage rates with CRP are expected to be slightly higher, since land is being retired.

Slippage rates may be influenced by eligibility changes under the 2002 Farm Bill. Marginal pastureland with no cropping history is now eligible for enrollment on a limited basis. This could have both a beneficial and an adverse impact. The beneficial impact is that environmentally important non-cropland acreage is not eligible for enrollment. If all of the new land enrolled were marginal pastureland, there would be no decrease in available cropland. However, a different type of slippage, an adverse impact, could result. As the supply of pastureland decreases, there could be slippage from non-cropland to pastureland. This could mean a more environmentally damaging use of the land.

The other eligibility change has to do with history of crop production. Prior to 2002, land had to be used for crop production in two of the past five years. The five-year period was a moving one

in that the five years for cropping history was moved forward each year. The new land eligibility requirements involve land that was under production in four of the six years between 1996 and 2001. This could be a beneficial impact under the Proposed Action if it prevents farmers from placing less productive land in production to become eligible for CRP. It may, in fact, reduce slippage attributable to CRP.

Change in Land Use Efficiency

Under the 2002 Farm Bill, operators will be able to enroll entire fields as buffers when more than 50 percent of the field is eligible and farming is infeasible on the remainder of the field. This will allow landowners to receive income on land that was not farmable due to the location of any CRP enrolled acreage. Prior to the 2002 Farm Bill, this land became infeasible to use, effectively lowering the rental rate the landowner received on the remaining acres in the field that were enrolled in CRP. This raised the opportunity cost of enrolling land, and most likely prevented some landowners from enrolling in the program. The new rule will improve the efficiency of land use, which would be beneficial.

Increase in Recreational Opportunities

Under the Proposed Action Alternative, there could be some losses and some gains in the recreational benefits of CRP described in Section 5.5.2.1, due to shifts in enrollment. The primary effect would result from the change in land eligibility. The expansion of FWP and expanded enrollment of marginal pastureland could produce land covers supportive of wildlife and along waterways used for fishing and swimming.

5.5.2.4 Impacts under Alternative 4 (Environmental Targeting)

There are three primary land use impacts under this alternative:

- Change in regional distribution of enrolled land;
- Decreased Probability of Whole Farm Enrollment
- Increased Supply of Cropland

Change in Regional Distribution of Enrolled Land

The land use impacts of this alternative would result from a change in enrollment distribution. The reader is referred to Section 5.5.1.4, Impacts under Environmental Targeting (Ecosystem-based Management), for an introduction to the topic.

Environmental targeting of land retirement programs has been studied by Yang et al. (2001), Hoag (1999), Feather et. al. (1999), Babcock et al. (1996), and Ribaudo et al. (1990). The biggest effect of any change in the regional distribution of enrolled land would most likely result from improved water quality and wildlife habitat that benefit people near population centers through the impact on consumptive and non-consumptive water quality and wildlife uses.

Two studies have examined regional enrollment shifts that result from environmental targeting. In both cases, benefits to people are measured through non-market valuation techniques, such as contingent value surveys, and travel cost models. The recommendations of these studies have already been partially incorporated in the EBI.

Ribaudo et al. (1990) examined two scenarios:

- Forestry Scenario: Land is targeted so that it is planted with trees after retirement.
- The Environmentally Sensitive Scenario: environmentally sensitive land is targeted (e.g. CCRP, CREP).

Under both scenarios, more land would be enrolled east of the Mississippi River. In the forestry scenario, additional enrollment is allocated based on the proportion of cropland planted to trees in each region through 1987. This means more land enters CRP in the East region. In the environmentally sensitive scenario, additional enrollment is allocated to watersheds with water quality problems and with less than five percent of cropland in CRP, and to areas with groundwater decline, salinity problems, or excessive wetlands. The result is that the Northeast, Delta, and Corn Belt regions see greater increases than the Plains and Mountain regions, when compared with the No Program or Proposed Action Alternatives.

In the baseline scenario, where CRP enrollment continued under the land and producer eligibility rules in effect in 1986-87, the largest share of benefits (40 percent) was from improved wildlife habitat, followed by improved surface water quality (37 percent). In the environmentally sensitive and forestry scenarios, wildlife habitat and surface water quality benefits increase over the baseline, while the benefits of improved soil productivity, air quality, and groundwater quality remained constant. This is because these scenarios enroll more land from east of the Mississippi River, where wind erosion and groundwater supply problems are not as acute.

The Northeast and Lake States had the highest per-acre benefits. These areas have the highest population density and most intense, multiple use of natural resources by industry, municipalities, recreational users, and wildlife. By contrast, the Northern Plains and Mountain States had the lowest per-acre benefits.

Table 5.5-6. Selected Benefits for 1992 Land Enrolled in the CRP				
	Freshwater-based Recreation	Pheasant Hunting	Wildlife Viewing	Total
Total Benefits due to CRP (millions of $)	36.35	80.28	347.71	464.34
Annual Benefits per Acre ($)	1.07	2.36	10.02	13.45
Region with Greatest Benefit Increase	Southeast, Northeast	Northeast, Northern Plains	Northeast, Southern Plains	Northeast, Southern Plains
Behavioral Data Source	1995 NSRE[1]	1991 FHWAR[2]	1991 FHWAR[2]	---
Natural Resource Data Source	1992 NRI[3]	1992 NRI[3]	1992 NRI[3]	---
Sample Size	1,510	5,851	18,000+	---
[1] National Survey of Recreation and the Environment [2] National Survey of Fishing, Hunting, and Wildlife-Associated Recreation [3] Natural Resources Inventory Source: Feather et al., 1999.				

Feather et al. (1999) examined what happens to the distribution of benefits by type and region if alternative specifications of the EBI are used to target CRP acreage. While the EBI would not be used under the Environmental Targeting Alternative, the type of land targeted in their study and by the alternative should be similar. Feather et al. (1999) estimated the changes by analyzing the causal relationship between CRP acreage characteristics, water quality, and wildlife habitat. The premise is that people are impacted by this relationship as it affects the quality of their recreational experiences. Nonmarket valuation models are used to estimate these relationships.

To examine environmental targeting of the EBI, a simulation is run in which an EBI is calculated for all 800,000 NRI points. The NRI points with the highest EBI scores were 'entered' into CRP, and the benefits calculated. The selected NRI points may not necessarily reflect the distribution of land under environmental targeting, but they are likely to be closer than what exists under the No Action Alternative. The results are shown in Table 5.5-7 and reflect benefits using the current EBI (i.e., that in the No Action Alternative). The study concludes that the highest environmental benefit-cost ratio results by targeting CRP acreage near population centers: the more people recreating in an area, the greater the benefit.

Table 5.5-7 Current Estimated Annual Benefits				
	Freshwater-based Recreation	Pheasant Hunting	Wildlife Viewing	Total
Increase in Benefits (millions of $)	92.62	-10.05	287.28	+369.85
% Change	+255	-13	+83	+79.65
Region with Greatest Benefit Increase	Southeast, Northeast	None - all lost benefits	Southeast, Northeast	Southeast, Northeast
Source: Feather et al., 1999.				

Under the Environmental Targeting Alternative, the recommendations of these two studies would be more fully incorporated in CRP and the benefits could increase. The distribution of enrolled land should significantly differ from the No Action and Proposed Action Alternatives.

A comparison with the No Program baseline is meaningless since there would be no land enrolled in the program.

Decreased Probability of Whole Farm Enrollment

Eligibility for enrollment would most likely involve smaller pieces of land than under the No Action or Proposed Action Alternatives.

Increased Supply of Cropland and Lower Slippage Rates

By focusing enrollment on land that can be enrolled as buffers or using continuous practices, it becomes more feasible to keep in production land that was previously retired. It is highly probable that the supply of cropland available for production or rent would increase, assuming no other confounding changes, such as technological improvements, increased competition from exports and low cost overseas producers, and changes in agricultural product demand. If the supply of productive cropland increases, the potential for the conversion of non-cropland to cropland is lowered, indicating a lower slippage rate. The slippage rate would likely be lower than under the No Program Alternatives, No Action, and Proposed Action since more land is kept in production.

As discussed previously, the magnitude of slippage that can be attributed to CRP is uncertain and variable by location.

5.6 SOCIAL IMPACTS

The assessment of socioeconomic impacts identifies and evaluates those elements of the human social environment that may be affected by the action. Socioeconomic effects are evaluated through the use of a comparative method (Burdge, 1995; ICGPSA, 1995). The potential for impact is based on the comparison of existing social conditions with those that are reasonably expected to occur following implementation of each alternative. That is, the likely changes that may be caused by the Proposed Action, or its alternatives, are compared with the social setting, as it currently exists. An impact is defined as a change (either quantitative or qualitative) in some aspect or characteristic of the socioeconomic environment. Any resulting impacts identified are then evaluated as to whether they may have a significant adverse or beneficial consequence for the local community.

5.6.1 Impacts Under No Program (Baseline)

The No Program Alternative implies that no CRP, or other incentive payment, land retirement program would be available to owners of cropland. In the absence of the CRP program, land idling and crop surplus maintenance programs would be effectively disconnected from consideration of the environmental consequences of agriculture and would be entirely commodity-driven and market-based. Land use decisions by producers and owners would be based on the intense planting of the most productive land available or maximizing income by

converting land to non-agricultural uses. Agricultural production and farm income would be increasingly subject to normal demand cycles of boom and bust.

The resulting situation would be similar to that which existed prior to the approval of CRP in 1985. During the decade of the 1970s, agricultural producers were induced by record level agricultural exports to expand rapidly, bringing additional land into production. By the early 1980s, when the boom subsided, the agricultural producers were confronted by excess capacity and insufficient markets. Additional problems existed with respect to a widespread farm credit crisis with declining land values and with excessive rates of erosion on marginal land that had been converted to cropping as a result of the increased market demand (CRS, 2001).

In the absence of a longer-term land retirement program that would provide both income support and conservation benefits, farmers' land use decisions would be based on cost-benefit analysis driven by alternatives that maximize income from the land. However, there would be little or no incentive to establish conservation practices. Conservation practices installed on agricultural land would be minimal and applied only where they contributed to production efficiency, thereby reducing public benefits associated with water quality, soil productivity, and biodiversity. Rural communities with vulnerable water supplies would be especially affected (RPRI, 1995).

Landowners might also consider conversion of existing agricultural land to other uses in order to increase rental or other income from the land. Especially in urban or metropolitan areas, where one-third of all U.S. farms are located, higher land values resulting from development pressures may provide a substantial inducement to pursue other activities that provide returns similar to what might be available from development uses (Heimlich and Anderson, 2001). In more rural areas, landowners may convert crop acreage to other non-agricultural uses, may sell less productive acreage, or simply allow the land to remain idle and pursue other avenues of income derived from off-farm sources of employment.

These decisions may have a moderately significant impact on rural communities. Where land is allowed to remain idle, either in fallow or permanent retirement, no additional income is contributed to the local community, either through crop production and it's associated labor and supply requirements or through alternate uses of the land. In the absence of installed conservation measures similar to those incorporated into CRP, open spaces and additional wildlife habitat would not be created. Rural communities that have diversified to include tourism or other public uses related to enhanced hunting, fishing, wildlife and water recreation may be negatively impacted (RPRI, 1995). Both rural and urban communities may be impacted by decreased water and air quality in the absence of conservation measures.

5.6.2 Impacts Under No Action (Current Program)

The most immediate consequence of CRP is the idling of agricultural acreage that might otherwise be used for crop production. In addition to providing a range of direct environmental benefits, such as reduced sedimentation, water quality improvements, and enhanced wildlife habitat, cropland retirement also contributes to protecting the Nation's longer-term agricultural capability. The CRP program contributes to the control of surplus agricultural commodity

production and provides a mechanism for income support to sustain the operations of agricultural producers and maintain the agricultural production capability of the Nation.

CRP is voluntary and, like other economic incentive programs, allows a greater flexibility than do regulatory-based approaches to conservation. Landowners are able to evaluate the potential benefits of land retirement and installed conservation practices against the risk and economic return available from crop production or other productive use of the land (Classen et al., 2001). Long-term land retirement programs, such as CRP, are considered favorably by participating landowners (see Appendix , Scoping for the PEIS) and provide a combination of supply control and environmental benefit (Hodur, 2002), as well as income support to individual operators through a guaranteed return on participating acreage.

In general, individual farmers, the rural economy, and the social structure of agricultural communities (both rural and urban) have benefited from CRP. The most direct impacts of the program would be experienced at the local level. Landowners who install conservation practices can benefit from both the environmental improvements to their acreage, as well as the guaranteed income support available where CRP payments equal or exceed the rental rates or yield value of the land under consideration. Participants benefit from the program in at least four distinct ways (Hughs et. al., 1995):

- Reduced production results in a smaller commodity stock, leading to increased prices and an increased rate of return on remaining productive acres;
- Decreases in the number of acres cropped contribute to reduced variable production costs;
- Rental payments provide a steady income to farm operators; and
- Guaranteed returns and higher prices contribute to stabilizing, and in some cases, increasing land values for landowners.

A secondary effect associated with CRP rental payments is the contribution to wealth creation for the farm household. The wealth effect occurs when CRP payments are higher than the opportunity costs associated with the acreage in agricultural production.

The program has also had positive impacts on agricultural communities, especially in rural areas. Communities benefit from reductions in soil erosion through improved surface water quality and correspondingly enhanced water-based recreation opportunities, improved soil productivity, and decreased costs to municipalities, industry, and other public and private sector entities. Reduced wind erosion lowers the levels of airborne dust, contributing to improved human health, increases scenic visibility, and potentially lowers costs for local industries and households. The estimated 'non-market' value of these benefits ranges from $700 million to over $1 billion (Classen et al., 2001; Zin, 2001).

However, the effects of the program on agricultural communities are mixed, especially in areas with high concentration levels. Although benefits accrue to agriculture, in general, and the environment from supply management and conserving uses, agricultural communities have experienced both adverse and beneficial changes. Benefits have also not been uniformly

distributed across all segments of the agricultural community. The potential effect of the program depends greatly on the profitability of crop production, the CRP land uses/conservation practices installed, and the total farmland acreage enrolled in any given community.

As a result, some interests within the community would benefit from the increased discretionary income and leisure time afforded to owners by CRP payments. Farm operators also benefit from the indirect supply management effect. Alternatively, other interests, especially farmers who rent land or merchants who supply agricultural input products and experience lower sales volume, would be more adversely affected (RPRI, 1995).

Viability of Agriculture

Participation in CRP is not universal to all owners of cropland in the U.S. In 1997, only an estimated 13.8 percent of all farms participated in the program (USDA, 1997). In 2000, the USDA distributed approximately 1.4 billion in rental payments to 462,855 participants across the Nation, or about 22 percent of all farms in the U.S. (FSA, 2000). Land retirement programs accounted for 90 percent of all cash conservation payments made directly to farmers in FY 2000. Cumulatively, land retirement programs have accounted for approximately half of all USDA conservation spending since 1986 (Claassen, 2002).

CRP payments have remained fairly constant throughout the 1990s. For all farm types, total government payments (including all programs) continue to represent only a small portion of gross cash income (about 11 percent in 2001), indicating that the marketplace, not government subsidy, is the primary source of farm earnings. CRP payments account for approximately 9 percent of all government subsidies to farmers (Westcott and Young, 2000).

As with agricultural production, in general, farm subsidy payments tend to be concentrated in high sales farms and larger family farms. However, for small farms of all types, government payments represent a substantially greater portion of total farm income (see Figure 5.6-1).

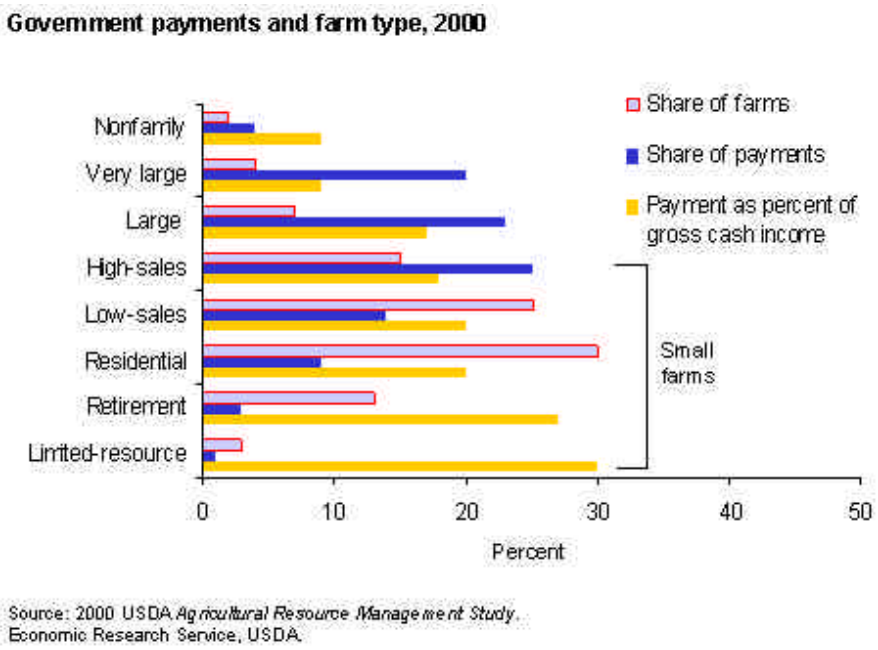

Figure 5.6-1. Government Payments and Farm Type, 2000

For the FY 2000, CRP participation included approximately 33.5 million acres. Participation in the program is concentrated in the drier portions of the Great Plains. Similarly, payments made under the program also tend to be highly concentrated into a few States. For the most part, CRP enrollments have followed a pattern that is a direct result of variations in geography and agricultural cropping decisions, leading to a tendency for CRP payments to be more concentrated in several States (Hamilton and Lewis, 1998).

In 2000, 4 States received CRP payments in excess of $100 million: Iowa ($153 million), Montana ($107 million), North Dakota ($104 million), and Texas ($137 million). Texas, Montana, and North Dakota are also included among the States with the larger total acres enrolled. The distribution of CRP payments throughout the U.S. is illustrated in Figure 2.3-1.

Payments to individual participants range from $50 to $50,000; however, through partnerships or joint holdings, some recipients may receive additional payments. FSA has reported that average rental rates for accepted bids were $39 per acre in the 15th signup, $45 in the next two regular signups, and almost $53 in the 20th signup (Zin, 2001).

Although the balancing of conservation and production restrictions has worked very well in most areas of the Nation, some concerns exist for local, and potentially adverse, impacts to agriculture. The potential for increased land value associated with CRP rental payments that exceed existing land rents in the local community has been frequently noted as potentially discouraging to new farm start-ups. Thus, the creation of a new generation of farmers would be limited, potentially affecting the resources necessary for future agricultural production. Higher land values may also have a potentially adverse impact on smaller existing farms and tenant farmers who seek to

acquire additional acreage to increase production efficiencies, or may accelerate the current trend toward concentration of land ownership in larger-family partnerships or corporate farms.

A second concern with respect to tenant farmers exists in those circumstances where a landowner places a portion of a field in CRP, leaving the remainder of the field infeasible-to-farm for the existing tenant. A potential for impact to the tenant's continuing agricultural operations may exist if the tenant is unable to acquire, through lease or purchase, a sufficient acreage to maintain cost-effective operation.

Changes in land use that may result from the expiration of existing contracts represent another source of potential impact from CRP. As contracts expire, Federal payments for the land will terminate, leaving the owner with no further obligation to maintain conservation practices under the contract, unless the owner decides to restart cropping on the acreage.

In the first years after expiration of the contract, land that was once marginal may be highly productive as a result of the conservation practices installed. Owners may be induced to return the land to cropping upon termination of the contract. On the basis of existing research, it is expected that upon expiration of CRP contracts, about 18 percent of CRP land will remain in CRP uses (trees or wildlife habitat), 42 percent will revert to cropping, and 33 percent will change to livestock production (RPRI, 2001). However, future land use decisions on the part of expiring CRP participants will depend on a number of factors including, but not limited to, soil erodibility and economics.

The Social Community

A range of market and social forces affect the overall well being of farming communities in U.S. These may include the effects of international commodities markets, changes in the technology or approach to farming (reduced labor and increased productivity), regional demographic shifts in the U.S. population, and changing consumer demand for agricultural products.

In general, CRP is a benefit to the structure and viability of agriculturally based communities in that it creates an incentive for farmers to engage in environmental practices which benefit the rest of the community. Although providing substantial benefits to local communities surrounding enrolled acreage, CRP also presents some potential for adverse impacts, especially in those communities that continue dependency on agriculture as the basis for their economy.

The social structure of agricultural production as the historic center of the rural social community has increasingly diminished as the numbers of farms and farm populations have decreased. Farm populations are no longer able to provide the level of support to local business enterprises and government services that was once characteristic of agricultural communities. As a result, agricultural communities have become smaller, as population outmigrations occur in response to decreasing opportunities in the local area, and increasingly more integrated with the larger economy and social structure.

The potential for change in social communities affected by CRP in both rural and urban environments is the indirect result of decreased economic activity and change in land ownership

impacts associated with land retirement. In high CRP enrollment areas, the reduction in agricultural inputs from purchase of fuel, fertilizer, chemicals, farm labor and machinery has been a concern (Hodur et al., 2002). In conjunction with lower volumes of crops marketed, such changes could have an adverse effect on the local farm and supply service businesses, as well as to the provision of local social services that depend on revenues from these industries as their support base.

One of the benefits of CRP enrollment, especially in the more densely populated suburban and urban fringe areas is the preservation of open space. Approximately 3 percent of the land in the U.S. is officially designated as urban, but as much as 17 percent of farmland is urban influenced (Barnard, 2000). The proximity of urbanized areas may encourage agricultural landowners to seek alternative uses for their land that offer a return on their investment that is more in line with what may be obtained by using the land for development (Heimlich and Anderson, 2001).

In addition to its initial primary purpose of soil conservation and associated environmental benefits, CRP enrollment has the effect of holding land in open space uses for at least 10 years, thereby forestalling other potential development options (Barnard, 2000). Participation in the CRP program effectively supports land values at higher levels and may offset development pressures in certain areas by reducing the amount of land available for development. A beneficial effect to the local community is derived from additional support from CRP enrollment for the maintenance of the aesthetic qualities associated with open space preservation.

However, if development pressures are extremely high, land that may otherwise have been enrolled in CRP may be converted to other non-agricultural uses. Although lands eligible for CRP are marginally productive for agriculture, they are, in many cases, attractive as residential spaces (Johnson and Maxwell, 2001). Some evidence exists that strong development pressure may result in a decrease in CRP enrollment. Parks and Schorr (1997) found that increasing development pressure and a high proportion of recreational farms, commonly found in urban influenced agricultural areas, are negatively correlated with CRP enrollment. In some instances, potential developers may find CRP eligibility for certain lands increases the attractiveness of adjacent lands for development, with the resulting effect that development is accelerated rather than inhibited in these areas.

Environmental Justice Populations

E.O. 12898, requires that Federal agencies consider as a part of their action any disproportionately high and adverse impacts to minority or low-income populations. A primary objective of the USDA is the equitable administration of its programs, both in terms of the accessibility to project benefits and in the consequences of program implementation.

In order to evaluate the potential for a disproportionate effect to environmental justice populations resulting from the current CRP program, two factors are considered influential: (1) the highly concentrated geographical pattern of CRP participation, and (2) the tendency of CRP payments to be concentrated in larger and higher-income farms. Both of these factors could potentially limit access to the benefits of the program on the part of minority or limited resource farmers who own cropland. Since the community as a whole derives a general benefit from

reductions in soil and wind erosion and improved individual segments of the community population.

As indicated in Figure 5.6-2, those counties with the highest rates of CRP participation are located primarily in the Northwest and central portions of the Midwest. These areas do not, however, contain high numbers of minority owned farms. This would indicate that access to program benefits might not be as readily available to minority farm owners. However, a regression analysis based on the percentage of total acreage in CRP and the percentage of total acreage owned by minority farmers on a county-by-county basis does not indicate a relationship between patterns of high CRP participation and low minority farm ownership across all counties.

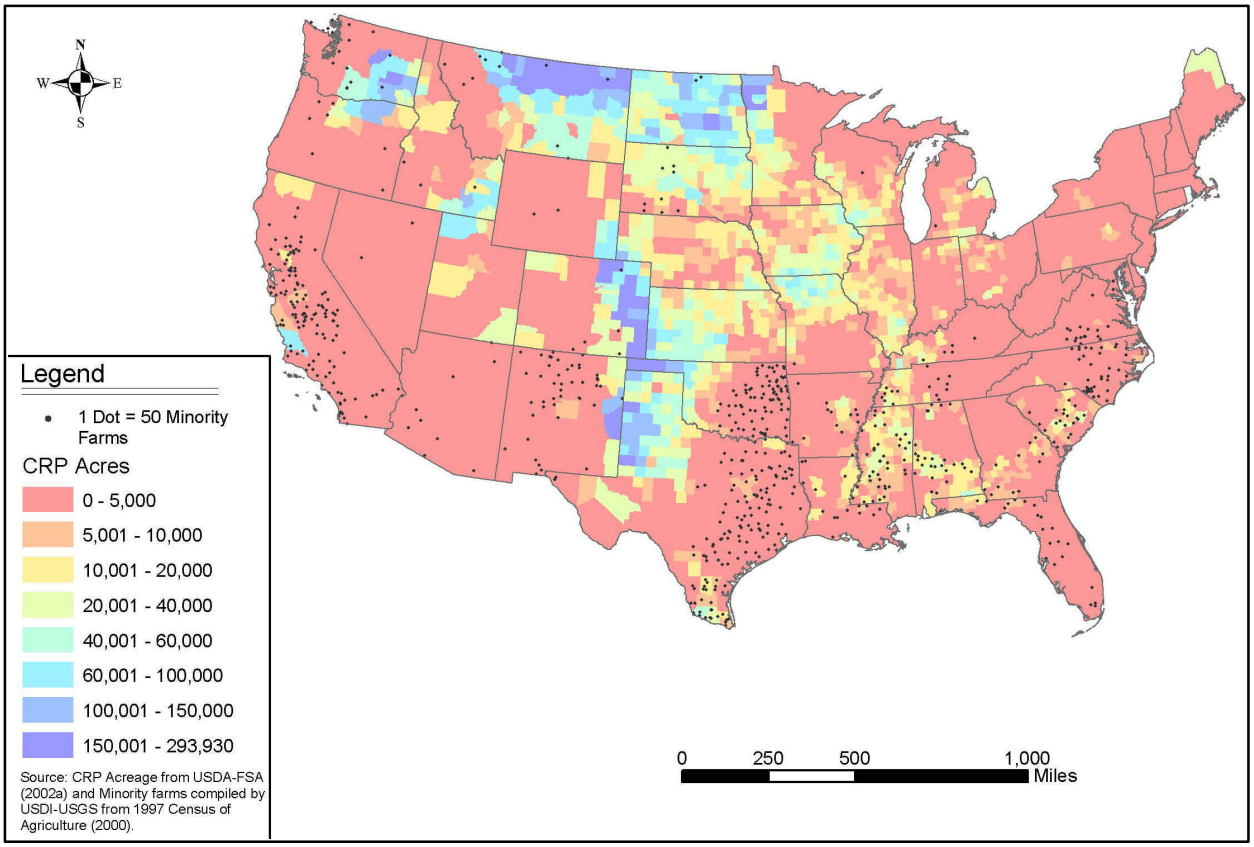

Figure 5.6-2. CRP and Minority Owned Farm Acreage – U.S.

The concentration of land ownership into a relatively small number of larger family-owned and corporate farms might indicate some potential for the exclusion of smaller limited resource farms from participation in program benefits. In 2000, CRP payments constituted approximately 49 percent of the total government payments received by limited resource farms (USDA, 2001). Limited resource farms represented 5.9 percent of all farms and 4.3 percent of the total land enrolled in CRP or WRP programs (see Table 2.3-4 in Section 2.3.1.4). Correspondingly, these farms received 3.7 percent of total CRP and WRP payments, with an average payment per farm of $2,862, as compared with a $5,078 average for all farms.

A number of factors, both geographic and structural, may account for the lower participation rates of minority and limited resource farms in CRP. CRP participation is voluntary and tends to be higher in those counties with large quantities of agricultural acreage and highly erodible soils. With the exception of Texas and Oklahoma, these counties are heavily represented in States with traditionally low minority populations.

A recent study of the adoption of conservation practices by minority and limited resource farmers (Molnar et al, 2001) indicated that CRP was the most frequently cited government program in which these groups participated. However, these farmers were generally less likely to participate in conservation related programs of any type than owners of larger farms. To some extent, differences in participation can be attributed to the smaller average size of minority and limited resource farms, their lower average crop yields, and their greater likelihood not to plant program crops. These farms also tend to incorporate less sophisticated technology, and are more likely to have lower incomes, as well as lower cash flow and credit problems (Molnar, 2001).

USDA has instituted both internal and outreach programs to insure increased contact and to provide necessary information to minority and limited resource farm owners. Additional research on the minority status of program participants is necessary to assure that minority landowners are not disproportionately excluded from program participation.

5.6.3 Impacts Under Proposed Action (2002 Farm Bill)

The potential for impact to agricultural viability, agricultural communities, and environmental justice populations under the Proposed Action would not be expected to be dissimilar from those described for the No Action Alternative. Changes in CRP under the 2002 Farm Bill improve the performance of the program and increase flexibility for potential participants. However, these changes would not be expected to alter the overall national or local effect of the program on the social environment of affected communities.

The 2002 Farm Bill extends CRP through 2007 and increases the acreage cap from its present 36.4 million acres to 39.2 million acres, an increase of 2.8 million acres. In conjunction with approximately 2.6 million acres that were authorized under the 1996 legislation but remain unused, the total increase in CRP acreage authorized under the Proposed Action is 5.4 million acres (Claassen, 2002). Although this represents a potential increase of 15 percent in CRP acreage over the 5-year life of the program, the increase represents only about 2 percent of harvested cropland in the U.S. The overall effect of this increase is expected to be modest (Claassen, 2002).

To the extent that the program is successful, smaller communities, especially those in rural areas, could be adversely affected by the proposed acreage increases through reduced input sales and the reduced requirement for labor and material involved in the handling of output (crops). Tenant farmers could also be potentially affected by proposed changes that allow whole farm enrollment when more than 50 percent of the field is eligible for enrollment and the remainder of the field is infeasible-to-farm. This change has the potential to reduce the amount of land available for lease and correspondingly increase rental rates.

Retiring additional land from production has the general effect of increasing access to program benefits for individual landowners or producers, as well as enhancing the environmental benefits of the program for surrounding communities. Over the past two decades, communities heavily dependent on agriculture have experienced losses in economic and employment levels (CAST, 2002). These losses are attributable to a number of factors not related to CRP. Among these are shifts in the international commodities market, changing demographic and residency patterns in the U.S, and the general transformation of the technology and patterns of production in the domestic U.S. economy. In addition to environmental benefits, CRP provides a stable source of income to individual participants and to local communities that is independent of market supply and demand cycles, thus contributing to the economic support and stability of farming communities, especially those that are dependent on agriculture as the basis for their economy.

5.6.4 Impacts Under Alternative 4 (Environmental Targeting)

Targeting new CRP enrollment based on an evaluation of the best environmental impact may exclude some communities that currently benefit from the program. In these communities, existing CRP contracts would expire with no foreseeable alternative program available to maintain or expand the benefits currently provided by CRP. Income support provided directly to local farm owners and indirectly to other individuals and businesses in the community would be lost as individual contracts expire. Land values would also be potentially affected, as the source of guaranteed income from CRP acreage rental payments is lost. Alternatively, both the beneficial and potentially adverse effects of the program would become increasingly concentrated in a smaller and more geographically confined number of communities.