



ENVIRONMENTAL QUALITY INCENTIVES PROGRAM

Programmatic
Environmental Assessment
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1.0 BACKGROUND- FARM BILL PROGRAMS AND CONSERVATION PLANNING

From 1985 to the present, Farm Bill conservation titles have had an important role in food and agricultural policy. From the prevention of soil erosion, to wetland restoration, to water quality improvements, to wildlife and energy conservation efforts, Natural Resources Conservation Service (NRCS) conservation activities have helped to improve the quality of the environment for future generations.

U.S. agricultural policy, programs, and institutions were originally formed in the 1930s in response to the devastating effects of the Dust Bowl. In 1928, the United States Department of Agriculture (USDA) issued a circular entitled “Soil Erosion: A National Menace.” In 1935, Congress passed the Soil Conservation and Domestic Allotment Act that established the Soil Conservation Service (SCS), (the Agency currently known as NRCS), as a permanent agency of the Federal Government. The new agency focused the soil conservation work on direct assistance to farmers. The creation of local soil conservation districts was established through model State legislation distributed by President Roosevelt in 1937. SCS and the local conservation districts cooperated to deliver technical assistance on such important environmental issues as soil erosion and water quality protection in nearly every county of the United States.

Over the years, Farm Bill conservation programs have been instrumental in helping protect, restore, and enhance the environment. In 1936 for example, Congress amended the Soil Conservation and Domestic Allotment Act to provide payments to farmers through the Agricultural Conservation Reserve Program (ACP) to shift acreage from surplus crops to soil-conserving legumes and grasses. In the 1985 Farm Bill, the Nation’s largest conservation program, the Conservation Reserve Program (CRP), was created. The 1985 Farm Bill also contained the first Highly Erodible Lands and Wetland Conservation Compliance provisions. The 1990 Farm Bill created the Wetlands Reserve Program (WRP) and the Water Quality Incentives Program (WQIP) which focused on water quality protection as a primary objective of agricultural conservation programs. The SCS became the NRCS in 1994 as a result of a Federal agency reorganization act and to better reflect its evolving scope of duties and expanded role of helping to protect all natural resources, such as water, air, plants, and animals on private and tribal lands.

Other examples of the benefits of Farm Bill conservation programs can be seen in such programs as the Environmental Quality Incentives Program (EQIP); which consolidated ACP, WQIP; the Colorado River Basin Salinity Control Program, and the Great Plains Conservation Program under the 1996 Farm Bill. The 1996 Farm Bill also provided programs protecting farm lands through the Farm and Ranch Lands Protection Program (FRPP) and the creation and enhancement of habitat for wildlife through the Wildlife Habitat Incentives Program (WHIP). The 2002 Farm Bill enacted environmental

stewardship programs such as the Conservation Security Program (CSP) and programs to provide long-term protection and restoration of grassland through the Grassland Reserve Program (GRP). In essence, NRCS mission is to ensure the protection and restoration of our natural environment. The NRCS vision of “Productive Lands - Healthy Environment,” mission statement of “Helping People Help the Land,” and a recent campaign, “Conservation: Our Purpose. Our Passion.” truly exemplify how conservation technical and financial assistance translates into environmental improvements and protection.

In order to accomplish conservation goals on private and other non-Federal lands, NRCS is authorized through Farm Bill legislation to use a broad range of programs to encourage the voluntary conservation of natural resources. Accordingly, Congress and NRCS have recognized the importance of providing technical and financial assistance through conservation programs delivered at the State and local level. National Farm Bill legislation establishes that financial and technical assistance is to be provided to the areas with the most pressing environmental resource concerns.

Therefore, the focus of this Environmental Assessment (EA) is on the primary decision by NRCS for national rulemaking associated with Farm Bill conservation programs. Specifically, this EA analyzes the potential environmental effects associated with national rulemaking for the Environmental Quality Incentives Program (EQIP).

This EA provides the broad scale review and assessment of national rulemaking for Farm Bill programs and assists the Agency in compliance with the National Environmental Policy Act (NEPA) which is discussed in more detail in the next section.

State and local conservationists play a pivotal role in accomplishing the NRCS vision of “Productive Lands-Healthy Environment.” In each State, technical committees comprised of representatives from Federal, State, local, and Indian Tribal governments, as well as representatives of organizations knowledgeable about conservation and agricultural production issues and other interested individuals, advise and make recommendations to the NRCS State Conservationist on the implementation of NRCS-administered programs. This includes the prioritization of resource concerns and other issues related to how and where financial assistance funds will be used to address environmental resource concerns in the States.

Local NRCS conservation planners prepare conservation plans in consultation with private landowners. Conservation plans are designed to address environmental resource concerns on private, non-Federal, or Tribal lands. NRCS conservationists help individuals and communities take a comprehensive approach to planning the proper use and protection of natural resources on these lands through a nine-step planning process described in the NRCS “National Planning Procedures Handbook” (hereby incorporated by reference). As part of this conservation planning effort, individual environmental reviews called Environmental Evaluations (EE) are completed which inform the conservation planning effort and assist the Agency’s compliance with NRCS regulations that implement NEPA. The EE is a concurrent part of the planning process in which the

potential long-term and short-term impacts of an action on people, their physical surroundings, and the natural environment are, evaluated and alternative actions explored. The EEs and conservation plans are developed to assist the land-owner in making decisions and implementing the conservation practices identified in the conservation plan.

NRCS provides EQIP financial assistance to implement practices that meet NRCS conservation practice standards and specifications. These conservation practices are developed through a multi-disciplinary science-based process in order to maximize the success and minimize the risk of failure of the conservation practice. NRCS practice standards are established at the national level. A minimum level of acceptable quality for planning, designing, installing, operating, and maintaining a conservation practice is established. Each conservation practice standard includes the definition and purposes of the practice, identification of the conditions in which the conservation practice applies, and the criteria supporting each purpose. When a conservation practice standard is developed or revised at the national level, NRCS publishes a notice in the Federal Register of the availability of the standard for review and comment for a period of not less than 30 days from the date of publication. Standards from the “National Handbook of Conservation Practices” and interim standards are used and implemented by States, as needed, and may be modified to include additional requirements to meet Federal, State, Tribal, or local needs. Because of wide variations in soils, climate, and topography, States can revise these national standards and develop specifications to add special provisions or provide additional details in the conservation practice standards. State laws and local ordinances or regulations may also dictate more stringent criteria; in no case, however, is the quality of the national conservation practice standard to be reduced.

NRCS conservation practices are normally implemented as part of a conservation management system (CMS) that consists of two or more conservation practices to maximize environmental benefit to the identified natural resource concerns. This is done not only to address the identified natural resource concern, but also to avoid or minimize potential adverse ancillary impacts identified through the NRCS conservation planning process. When NRCS provides financial assistance for a single practice, it is because adverse impacts are not anticipated or because the landowner is progressively implementing a plan.

NRCS provides technical and financial assistance to implement conservation practices and systems to improve or mitigate natural resource concerns and public health problems that may exist on private or privately-controlled lands. Through programs like EQIP, NRCS has been able to meet a primary purpose of NEPA stated in Section 101 of the Act in that NRCS “use(s) all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.” NRCS accomplishes this through conservation plans and actions by providing information on environmental resource concerns and information on technical and financial assistance available to individuals, groups, Tribes, communities,

and other segments of the society, including those considered to be limited resource or socially disadvantaged.

1.1 Environmental Review Introduction

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies “ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken (1500.1(b)).” The NEPA process is “intended to help public officials make decisions that are based on (an) understanding of environmental consequences, and taking actions that protect, restore, and enhance the environment (1500.1(c)).” NEPA’s purpose is “not to generate paperwork-even excellent paperwork-but to foster excellent action (1500.1(c)).” NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. The regulations that govern the implementation of NEPA for the NRCS actions include those promulgated by the Council on Environmental Quality (CEQ) at 40 CFR Part 1500-1508 and the Agency’s own specific regulations implementing NEPA at 7 CFR Part 650.

An environmental review under NEPA is required when there is a “major Federal action” that an agency is proposing to take. The CEQ and NRCS regulations implementing NEPA define “major Federal action” to include activities over which Federal agencies have control, including promulgation of regulations in which they exercise discretion. An agency may prepare either an Environmental Impact Statement (EIS) or an EA to evaluate the potential environmental impacts of a proposed Federal action. Typically, an EIS is prepared when it is anticipated that the proposed Federal action will have potentially significant or adverse environmental impacts to the quality of the human environment. An EA can also be prepared to aid in an agency’s decision-making process when an EIS is not necessary or to assist with preparation of an EIS when it is determined that one is necessary.

Decisions to be Made and Subject to Review under NEPA

The proposed Federal actions being considered by NRCS are promulgating regulations to implement the EQIP, 16 USC 3839 aa-2 et seq.,. Thus, the national rulemaking associated with this program is the major focus of this EA.

Originally, EQIP was authorized by the Federal Agriculture Improvement and Reform Act of 1996, P.L. 104-127 (April 4, 1996) (“the 1996 Act”), and was amended by the Farm Security and Rural Investment Act of 2002, P.L. 107-171 (May 13, 2002) (“the 2002 Act”) and most recently by the Food, Conservation, and Energy Act of 2008, (P.L. 110-234) (May 22nd, 2008) (hereafter referred to as “the 2008 Act”).

Background to the Decisions to be Made

The 2008 Act resulted in changes to the program that are discussed below, including a provision that mandates the Secretary of Agriculture, within 90 days after the enactment of the 2008 Act, to promulgate regulations necessary to carry out these programs.

As the proposed action is rulemaking for a national program, the analysis herein is referred to as a Programmatic EA that evaluates the potential environmental impacts at a broad program scale. NRCS is utilizing this Programmatic EA to assist the Agency in determining whether promulgation of the interim final rule for implementation of EQIP will significantly affect the quality of the human environment such that NRCS must prepare an EIS. In accordance with CEQ regulations at 40 CFR Part 1508.9, this Programmatic EA “provides sufficient evidence and analysis for determining whether to prepare an environmental impact Statement or a finding of no significant impact.” In accordance with NRCS regulations that implement NEPA, this EA contains the following information: a brief discussion of the need for action or alternatives; a discussion of the anticipated environmental impacts; and a list of agencies and persons consulted (7 CFR Part 650.4(b)(2)).

Given that the proposed Federal action is rulemaking for a national program, NRCS has developed this Programmatic EA to evaluate the potential environmental effects of the proposed national program. The analysis herein analyzes potential environmental effects in a broad geographic and temporal context and evaluates the rulemaking for the national programs as a whole. Consequently, the scope and range of potential environmental impacts are more qualitative in nature than those in any subsequent site-specific analysis produced by a NRCS State or local field offices. Accordingly, the proposed Federal action involves no site-specific or ground-disturbing actions that will occur as an immediate or direct result of the proposed national rulemaking.

Other Federal actions that may occur or may be taken to further implement EQIP are subject to environmental review under NRCS regulations that implement NEPA. Accordingly, actions that may be taken by NRCS State and local field offices to further implement EQIP will be able to tier or incorporate by reference the general and broad scale analysis from this National Programmatic EA into more site-specific level analyses. Thus, any subsequent analyses that are prepared to implement EQIP at the NRCS State or local level will be meeting NEPA’s intent by focusing on the issues/concerns pertinent to that site-specific action.

Per NRCS regulations that implement NEPA at 7 CFR Part 650, site-specific EE are developed as part of the conservation planning process. The EE evaluates conservation planning options developed to address and mitigate potential environmental resource concerns that may exist on the property or conservation management unit. The EE also determines if protected resources exist on the property and if those resources have the potential to be affected by conservation practices outlined in the conservation plan. The

resources that are evaluated in the EE include, but are not limited to: wetlands; floodplains; sole source aquifers; threatened and endangered species and their critical habitat; cultural resources; coastal zones; riparian areas; scenic beauty; socioeconomic resources; and environmental justice issues. NRCS guidance on the site-specific environmental evaluation process and definitions of protected resources can be found in the NRCS “National Environmental Compliance Handbook” (USDA, 2006).

1.2 The New 2008 EQIP Statutory Requirements

EQIP is a voluntary program providing both technical and financial assistance to agricultural producers and nonindustrial private forest land owners across the Nation. The purposes of EQIP, as amended by the 2008 Act, are to promote agricultural production, forest management, and environmental quality as compatible national goals, and to optimize environmental benefits by:

- (1) assisting producers in complying with local, State and national regulatory requirements concerning:
 - (A) soil, water, and air quality;
 - (B) wildlife habitat; and
 - (C) surface and ground water conservation;
- (2) avoiding, to the maximum extent practicable, the need for regulatory programs by assisting producers in protecting soil, water, air, and related natural resources;
- (3) providing flexible assistance to producers to install and maintain conservation practices that sustain food and fiber production while-
 - (a) enhancing soil, water, and related natural resources; including grazing land, forestland, wetland, and wildlife; and
 - (b) conserving energy;
- (4) assisting producers to make beneficial, cost effective changes to production systems (including conservation practices related to organic production), grazing management, fuels management, forest management, nutrient management associated with livestock, pest or irrigation management, or other practices on agricultural and forested land; and
- (5) consolidating and streamlining conservation planning and regulatory compliance processes to reduce administrative burdens on producers and to reduce the cost of achieving environmental goals.

The purpose of EQIP has not changed, since the program's authorization. However, each Farm Bill emphasizes new objectives. For example, the 2002 Act established an emphasis on providing assistance for comprehensive nutrient management plans and providing assistance to producers to maintain and install conservation practices. The 2008 Act encourages more participation of beginning, limited resource, or socially disadvantaged farmer or ranchers. Also, the 2008 Act focuses on assisting producers, who want to implement conservation practices related to organic production or the transition to organic production. The full extent of the proposed changes are discussed in greater detail below and in Title II, Subtitle F of the 2008 Act that pertains to EQIP, which can be found in Appendix A.

Payments

To achieve the purposes of EQIP, NRCS (on behalf of the Secretary of Agriculture) is to provide technical services and financial assistance to producers who agree to implement and maintain one or more structural practices, land management practices, vegetative practices, forest management practices, comprehensive nutrient management plans, and other plans that the Secretary determines would further the purposes of the program.

As defined by Congress, EQIP payments mean financial assistance provided to a producer for performing or implementing conservation practices, including costs for: planning, design, materials, labor, management, maintenance, training, and the estimated income forgone by the producer. The 2008 Act requires that producers may receive: (A) up to 75 percent of the estimated costs incurred by implementing the conservation practice, or (B) 100 percent of the income foregone by the producer, or both (A) and (B), where a producer incurs both costs in implementing a conservation practice. Paying producers 100 percent of the estimated income foregone was a special rule added in the 2008 Act. When determining income foregone payments, a higher priority may be given to the following practices: residue management, nutrient management, air quality management, invasive species management, pollinator habitat development and improvement, animal carcass management technology, or pest management. The 2008 Act also increased payments to limited resource, beginning, or socially disadvantaged farmers or ranchers. Prior to 2008, NRCS provided up to 90 percent cost share for limited resource and beginning farmers or ranchers. In 2008, Congress enabled socially disadvantaged farmers and ranchers to receive cost share up to 90 percent of the estimated costs incurred. The 2008 Act also ensured that all three groups received no less than 25 percent above the applicable rate. Also, advanced payments up to 30 percent may be provided to a limited resource, beginning, or socially disadvantaged farmer or rancher for purchasing materials or services.

Under the 2008 Act, assistance for the application of conservation practices are limited, not only by the payment percentages described above, but also by the total aggregate amount that can be paid to a person or legal entity. Congress has mandated that NRCS

conservation practice assistance may not exceed the aggregate of \$300,000 during any six year period for any person or legal entity (with limited waiver authority). The 2002 Act allowed for the aggregate amount to not exceed \$450,000 during any six year period. A waiver up to \$450,000 may be applied for by a person or legal entity that wishes to implement a conservation project of special environmental significance, such as a methane digester, other innovative technologies, and other projects that result in significant environmental improvements

Funding

The initial 1996 Farm Bill authorization for the EQIP program was \$200 million per year. In the 2002 Farm Bill, total authorized funding for EQIP increased to \$5.8 billion. However, the annual appropriation was capped at roughly \$1 billion instead of \$1.3 billion annually. The 2008 Farm Bill authorized funding for EQIP at \$7.325 billion, with annual appropriations reaching \$1,750,000 in 2012. This increase in funding proportionally increases the potential environmental benefits.

Conservation Practice Assistance on Native American Lands

NRCS may provide for alternative funding arrangements with federally recognized Native American Indian Tribes and Alaska Native Corporations providing the goals and objectives of the EQIP program will be met. Tribes are also eligible for the applicable payment rate and an additional rate that is not less than 25 percent above the applicable rate, provided this increase does not exceed 90 percent of the incurred costs associated with the conservation practice.

Congressional Mandate for Conservation Practice Assistance for Confined Animal Livestock Operations

Under the 1996 Act, a producer who owned or operated a large confined livestock operation was not eligible for cost-share payments to construct an animal waste management facility. The 2002 Act removed that prohibition. The 2008 Act retains the statutory requirement from the 2002 Act requiring 60 percent of the funds to be made available for payments to be targeted at conservation practices related to livestock production.

Conservation Practice Assistance for Water Conservation and Water Efficiency

Another change from the 2002 EQIP regulatory requirements is that NRCS may provide payments for a water conservation or irrigation practice on newly-irrigated, incidental land, provided the producer is participating in an acceptable watershed-wide project that will effectively conserve water.

Conservation Practice Assistance to Organic Production

The 2008 Act has placed increased emphasis on producers who have adopted or who are transitioning to organic production. Under the 2008 Act, EQIP may provide payments for conservation practices related to organic production or for the transition to organic production. EQIP would be intended to support operations that meet certification requirements established by the Agricultural Marketing Service (AMS)."

NRCS conservation practice financial assistance may not exceed the aggregate of \$20,000 per year or \$80,000 during any six-year period for practices related to organic production.

Eligible Lands

As previously mentioned, the interim final rule, which reflects the 2008 Act's definition of eligible land, defines eligible land as: cropland, grassland, rangeland, pasture, nonindustrial private forest land, and other land (including cropped woodland, marshes, incidental lands included in the agriculture operation, and agricultural land used for the production of livestock) on which resource concerns related to agricultural production could be addressed through participation in EQIP.

Application Process

The provisions relating to the evaluation of EQIP applications are also changed by the 2008 Act. The 1996 Act required the Secretary to give a higher priority to payments made in conservation priority areas, payments that maximized environmental benefits per dollar expended, or payments made in areas in which State or local governments provided financial or technical assistance to producers for the same conservation or environmental purposes. In comparison, the 2002 Act stated that in evaluating applications for cost-share and incentive payments, the Secretary was directed to accord a higher priority to assistance and payments that:

- encourage the use of cost effective conservation practices; and
- address national conservation priorities.

In the 2008 Act, NRCS has been directed to develop criteria for evaluating applications that ensure national, State, Tribal, and local conservation priorities are effectively addressed. In order to do this, the 2008 Act required NRCS to prioritize conservation practice applications in the following manner:

- "based on their overall level of cost effectiveness to ensure that the conservation practices and approaches proposed are the most efficient means of achieving the anticipated environmental benefits;

- based on how effectively and comprehensively the project addresses the designated resource concern or resource concerns;
- that best fulfill the purpose of the environmental quality incentives program; and
- that improve conservation practices or systems in place on the operation at the time the contract offer is accepted or that will complete a conservation system.”

In addition, NRCS is directed, to the greatest extent possible, to group applications from similar crop or livestock operations for evaluation purposes. Otherwise, NRCS must evaluate and compare applications for similar farming operations.

Requirements of Producers

In order to receive financial assistance payments under EQIP, the 2008 Act stipulated that producers are to agree to all of the following:

- (1) to implement an EQIP plan of operation which describes conservation and environmental purposes to be achieved through one or more practices that are approved by NRCS;
- (2) to not conduct any practices on the farm, ranch, or forest land which would tend to defeat the purpose of the program;
- (3) to not violate the terms or conditions of the contract at anytime the producer has control of the land;
- (4) to notify NRCS of any transfer or anticipated transfer of lands;
- (5) to supply information as required by NRCS to determine compliance with the program plan and requirements of the program; and
- (6) to comply with such additional provisions as NRCS determines are necessary to carry out the program plan.

Plan of Operations

A producer is required to submit a plan of operation in order to be eligible to receive any financial assistance payments. The plan of operation:

- (1) specifies practices covered under EQIP;
- (2) includes such terms and conditions as the Secretary considers necessary to carry out the program, including a description of the purposes to be met by the implementation of the plan; and
- (3) in the case of a confined livestock feeding operation, provides for development and implementation of a comprehensive nutrient management plan; and

(4) in the case of forest land, is consistent with the provisions of a forest management plan that is approved by the Secretary, which may include—

(A) a forest stewardship plan, as specified in section 5 of the Cooperative Forestry Assistance Act of 1978 (16 U.S.C. 2103a);

(B) another plan approved by the State forester; or

(C) another plan determined appropriate by the Secretary.

(b) Avoidance of Duplication.—The Secretary shall—

- (1) consider a plan developed in order to acquire a permit under a water or air quality regulatory program as the equivalent to an EQIP conservation plan of operation, if the plan contains elements equivalent to those elements required by a plan of operation.

Statutory requirements, as well as the wide variety of agricultural operations and related environmental and social concerns across the U.S. require that EQIP be implemented with flexibility to address environmental resource issues for each State, Tribal and local situation. For example, each of the statutory purposes referenced above requires that national EQIP guidelines remain flexible so that differences among States, Tribes, and counties/parishes can be appropriately addressed without undue bureaucratic burdens. Thus, State Conservationists must be allowed a great deal of authority and flexibility to determine how EQIP should be implemented within each situation to ensure that the program effectively achieves its purposes. In addition to programmatic requirements, EQIP contracts administered by NRCS must additionally meet Appropriations law and other statutory fiduciary requirements.

Third Party Technical Service Providers

The 2002 Act language authorized the use of external providers for technical assistance.

Historically Underserved Producers

The interim final rule allows States the flexibility to provide additional payments for those farmers defined as “historically underserved producers,” which includes limited resource, socially disadvantaged, and beginning farmers and ranchers. The interim final rule specifies that NRCS will provide to historically underserved producers the applicable payment rate and an additional rate that is not less than 25 percent above the applicable rate, provided this increase does not exceed 90 percent of the incurred costs associated with the conservation practice.

2.0 NEED FOR ACTION AND ALTERNATIVES

2.1 Introduction

According to the 2008 Farm Bill legislation, NRCS is to promulgate regulations for reauthorizing and implementing EQIP. Accordingly, alternatives have been developed that address how EQIP may or may not be implemented. The alternatives characterize the aspects of EQIP in which the Agency has discretion to address and implement initiatives that Congress has initially outlined to be a part of the program for EQIP. Under NEPA, the alternatives analyzed help to inform the decision-maker and the public about the courses of action the Agency has considered in arriving at a particular decision. All alternatives excluding the no-action alternative must meet the purpose and need for action. The No-Action Alternative is required under NEPA to be evaluated to provide the baseline upon which to evaluate the relative merits and disadvantages of the action alternatives carried forward for analysis.

2.2 Purpose and Need for Action

The underlying need for action is to conserve and improve agricultural and nonindustrial private forest lands through technical and financial assistance provided by NRCS in applying conservation planning and conservation practices.

NRCS' need for action is also tied to Congress' passage of the amended EQIP provisions in the 2008 Act which require EQIP to be implemented in a manner that achieves the stated purposes.

The purposes or objectives of the underlying need for action are to promote agricultural production, forest management and environmental quality as compatible national goals, and to optimize environmental benefits by:

- (1) assisting producers in complying with local, State and national regulatory requirements
- (2) addressing the following resource concerns on agricultural and forest lands
 - (A) soil, water, and air quality;
 - (B) wildlife habitat; and
 - (C) surface and ground water conservation; and
 - (D) energy;
- (3) assisting producers including historically underserved producers to make beneficial, cost effective changes to production systems (including conservation practices related to organic production), grazing management, fuels management, forest management,

nutrient management associated with livestock, pest or irrigation management, or other practices on agricultural and forested land;

- (4) consolidating and streamlining conservation planning and regulatory compliance processes to reduce administrative burdens on producers and the cost of achieving environmental goals;

With regards to the development of the No-Action Alternative, CEQ guidance¹ states that the No-Action alternative for a program, plan, or policy can be a continuation of the existing management regime. As such, there are two no action scenarios considered in this Programmatic EA. Alternative 1 analyzes the effects if EQIP were not implemented at all. Alternative 2 would be no-change in the management of the program from that which previously existed (i.e., the 2002 Act requirements). These alternatives show the range of possible effects that could occur from the various courses of action.

2.3 ALTERNATIVES

2.3.1 Alternative 1 – No- Action to Implement the EQIP

The No Action Alternative involves not proceeding with the implementation of EQIP as required by Congress. Although this alternative is not feasible to consider because Congress has required NRCS to promulgate regulations for EQIP, this alternative provides a baseline which to compare the effects of the other alternatives considered. For EQIP, this no-action alternative would mean that NRCS conservation practices commonly applied to address and mitigate for environmental resource concerns would not be implemented. As a result, there would be continued degradation to environmental resources and the benefits to environmental resources would not be realized.

2.3.2 Alternative 2- No- Action- Continuation of Existing Program under 2002 EQIP Program Requirements

Alternative 2 is implementation of EQIP according to the statutory requirements and procedures provided under the 2002 Act. Under this no-action scenario, Alternative 2 represents continuation of the existing program requirements. Compared to Alternative 1, this no-action alternative would result in the continued application of conservation practices as required under the 2002 Act. This would mean that conservation practices would provide long-term beneficial impacts to environmental resources with potentially minor and temporary environmental impacts due to implementation of ground disturbing practices. Thus, there would be an overall beneficial impact for the majority of

¹ CEQ Forty Most Asked Questions (Question #3a) (<http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm>)

environmental resources. The full extent of the information pertaining to Congress' statutory requirements and NRCS program implementation requirements are incorporated by reference (40 CFR 1502.21) from the 2002 EQIP Programmatic Environmental Assessment on EQIP (May 2003). Table 2-1, however, presents a summary of the major requirements under EQIP as provided for under the 2002 Act.

TABLE 2-1
2002 EQIP PROGRAM REQUIREMENTS

Purpose of Program 515.13 (a) The EQIP objectives are to promote agricultural production and environmental quality as compatible national goals, and to optimize environmental benefits by: 1. Assisting producers in complying with local, state and national regulatory requirements concerning – soil, water and air quality – wildlife habitat – surface and ground water conservation 2. Avoiding, to the maximum extent practicable, the need for resource and regulatory programs by assisting producers in protecting soil, water, air and related natural resources and meeting environmental quality criteria established by Federal, State, tribal, and local agencies. 3. Providing flexible assistance to producers to install and maintain conservation practices that enhance soil, water, related natural resources, and wildlife habitat while sustaining production of food and fiber. 4. Assisting producers make beneficial, cost effective changes to cropping systems, grazing management, nutrient management associated with livestock, pest or irrigation management or other practices on Ag land. 5. Consolidating and streamlining conservation planning and regulator compliance procedures to reduce administrative burdens on producers and the cost of achieving environmental goals.	Maximum Payment Limitation 7 CFR Sec. 1466.23 (b) Total amount of cost-share and incentive payments paid to an individual or entity may not exceed: An aggregate of \$450,000 directly or indirectly for all contracts entered into during fiscal years 2002 through 2007 provided Starting in fiscal year 2003, the average adjusted gross income of the individual or entity for the previous three years does not exceed \$2.5 million.	Application Evaluation 7 CFR 1466.20 (e) NRCS will evaluate all applications using criteria that will consider: o (1) Optimizing environmental benefits o (2) Cost-effective conservation
	Funding Allocation 515.71 (a) The State Conservationist, with advice of the State Technical Committee, will determine how to focus EQIP funding. The State Conservationist will direct funds to identified priority resource concerns at the state and/or local level.	LRF and Beginning Farmer 7 CFR 1466.23 (a)(1) The maximum direct Federal share of cost-share payments to a Limited Resource Producer or Beginning Farmer and Rancher may be up to 90 percent, as determined by the State Conservationist.
	Funding Decisions 7CFR Sec. 1466.4 Program Requirements (e) Sixty percent of the available program funds will be targeted to livestock-related conservation practices.	Comprehensive Nutrient Management Plan 7 CFR Sec. 1466.6 (5) a provision for the development and implementation of a comprehensive nutrient management plan for plans of operation that contain an animal waste control or treatment facility

2.3.3 Alternative 3 – Agency Preferred Alternative- 2008 EQIP Program Requirements

Alternative 3 is the implementation of EQIP under the statutory requirements that Congress has placed on the program and the major discretionary change(s) as outlined by NRCS for the 2008 Act. The vast majority of the statutory requirements remained the same from 2002. However, the main discretionary action for NRCS concerns expanding the payment rate and set aside amounts for historically underserved producers (defined as limited resource, beginning farmer or rancher, and socially disadvantaged farmer or rancher). A full definition of these groups is provided below.

Under Alternative 3, of the funds made available for EQIP, NRCS will set aside 5% for beginning famers and ranchers and an additional 5% for socially disadvantaged farmers and ranchers. NRCS is required by the statutory language of the 2008 Act to provide this set aside amount for these groups.

In recognizing the demographic variation of these groups for each State, NRCS has proposed the following option to meet the statutory requirement and to maintain flexibility at the State level. At the State level, the State Conservationist is to set aside from their State EQIP allocation a total of 10 percent for socially disadvantaged and beginning farmers and ranchers. The State Conservationist has the ability to change the percentages within these groups based on the demand and need in that State. For example, a State Conservationist may choose to set aside 7 percent of the funds for beginning farmers and ranchers and set aside the remaining 3 percent for socially disadvantaged farmers and ranchers. NRCS will track the obligation of these funds to these participants at the national level to ensure the statutory objectives are met.

In addition to the total set aside amounts, Alternative 3 involves increasing the payments to historically underserved producers. Under Alternative 3, this group of participants may be awarded the applicable payment rate and additional rate that is not less than 25 percent above the applicable rate, provided this increase does not exceed 90 percent of the estimated incurred costs associated with the conservation practice.

Table 2-2 depicts the proposed change/major discretionary area for program implementation under the 2008 Act. Items underlined are the proposed changes and those that were not included in the original requirements specified by Congress for implementation of the program.

Although there are no direct impacts to environmental resources with this national rulemaking action, there are potential indirect and cumulative effects associated with the application of conservation practices applied under EQIP. Under Alternative 3, conservation practices would provide indirect long-term beneficial impacts to environmental resources with potentially only minor and temporary environmental impacts due to implementation of those practices that involve ground disturbance. Thus, there would be an overall long-term beneficial impact for the majority of the natural and

social/cultural resource concerns. Compared to Alternative 2, this alternative would potentially result in implementation of conservation practices by historically underserved producers on lands previously not enrolled in EQIP. In comparison to the overall participation rates, the increased payment rate and set aside amounts for historically underserved producers may potentially result in a slight to minimal increase in participation in EQIP and in the overall application of conservation practices.

Provisions are included in EQIP to assure that special consideration is given to limited resource, beginning, and socially disadvantaged farmers and ranchers in order that the most beneficial use of EQIP financial assistance may be obtained.

Historically underserved producers include all of the following participants (limited resource, beginning, and socially disadvantaged farmers and ranchers) defined below:

- 1) **Beginning Farmer or Rancher** means an individual or entity who:
 - (a) Has not operated a farm or ranch, or who has operated a farm or ranch for not more than 10 consecutive years. This requirement applies to all members of an entity that will materially and substantially participate in the operation of the farm or ranch.
- 2) **Limited Resource Farmer or Rancher means:**
 - (a) A person with direct or indirect gross farm sales not more than \$100,000 in each of the previous two years (which has been increased since FY 2004 to adjust for inflation using Prices Paid by Farmer Index) as compiled by National Agricultural Statistical Service (NASS), and
 - (b) Has a total household income at or below the national poverty level for a family of four, or less than 50 percent of county median household income in each of the previous two years (to be determined annually using Commerce Department data).
- 3) **Socially disadvantaged farmer or rancher** means a farmer or rancher who has been subjected to racial or ethnic prejudices because of their identity as a member of a group, without regard to their individual qualities.

TABLE 2-2 Alternatives Comparison for Historically Underserved Producers

Program Requirements	Alternative 1- No Action/No EQIP	Alternative 2-No Action/2002 EQIP	Alternative 3- 2008 EQIP
Payment Specifications	Program Not Implemented	1.) Up to 75% payment (cost share) for approved practices 2.) Incentive payments available for approved practices at a rate determined by the Secretary. 3.) \$450,000 cap may not be exceeded in any 6 year period 4.) Up to 90% cost share for limited resource or beginning producer for practices installed	1.) Up to 75% <u>of the estimated costs associated with planning, design, materials, equipment, installation, labor, management, maintenance, or training for performing an approved practice</u> 2.) Up to 100% of the <u>estimated income foregone, or Both 1 & 2, where a producer incurs both income foregone and costs incurred for implementing or performing a conservation practice</u> 3.) <u>\$300,000</u> cap may not be exceeded in any 6 year period for any person or legal entity, unless a waiver is granted 4.) <u>The applicable rate, and an additional rate not less than 25% above the applicable rate for limited resource, beginning, or socially disadvantaged producer, provided the payment does not exceed 90 percent of the estimated incurred costs associated with implementing the conservation practice of the EQIP funds made available for each of fiscal years 2009 through 2012, to the maximum extent practicable, NRCS will provide-</u>

Program Requirements	Alternative 1- No Action/No EQIP	Alternative 2-No Action/2002 EQIP	Alternative 3- 2008 EQIP
			5 percent to assist <u>beginning farmers or ranchers; and</u> 5 percent to assist <u>socially disadvantaged farmers or ranchers</u>

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS

3.1 Introduction –Scope of Analysis

The following section describes the potential impacts associated with the alternatives described in Section 2. The proposed Federal action with which NRCS has discretion concerns changes in the program implementation through national rulemaking. Recognizing that there will be subsequent decisions made by State and local NRCS field offices based on the national program requirements, there are no direct environmental impacts to the quality of the human environment resulting from the proposed action of National rulemaking (Alternative 3). However, there is the potential for direct socioeconomic impacts to historically underserved producers. There is anticipated to be slight to moderate indirect beneficial environmental impacts on those lands owned by historically underserved producers. It is anticipated there will be substantial indirect and cumulative beneficial effects associated with the application of EQIP conservation practices, by all participants, on lands enrolled in the program. Accordingly, the indirect and cumulative effects associated with the application of conservation practices under EQIP are also evaluated in this EA.

As required by Congress, this EA analyzes the implementation of EQIP. Specifically, this EA will address not only the major discretionary actions being proposed for historically underserved producers, but also evaluate at a broad scale the potential environmental impacts of the conservation practices as applied through implementation of EQIP (Appendix A). Although this section of the EA evaluates primarily the changes to the program and no action alternatives, a general discussion of the effects of conservation practices on environmental resources is presented in this analysis and in Appendix A.

For this analysis, potential environmental effects are analyzed according to soil, water, air quality, plants, animals, and human resources (SWAPA +H). Additionally, Special Environmental Concerns identified in NRCS regulations (7 CFR Part 650), environmental laws, and executive orders are included in the SWAPA + H analysis as appropriate and include the following resources:

- Prime and unique farmlands
- Clean water

- Floodplain management
- Wetlands
- Wild and scenic rivers
- Coral reefs
- Clean air
- Endangered and threatened species
- Invasive species
- Essential fish habitat
- Migratory birds
- Riparian areas
- Natural areas
- Cultural resources/historic properties
- Environmental Justice

3.1.1 Approach to Analysis

The analysis herein provides general information from a national perspective on what potentially may be the impacts (1) associated with national rulemaking that expands the payment rates for historically underserved producers and total EQIP set aside amounts for beginning, and socially disadvantaged farmers and ranchers and (2) indirectly associated with the application of conservation practices from a national perspective. A short description of the environmental baseline for each environmental resource analyzed is presented first and then an analysis of the potential environmental effect to that resource is addressed.

The analysis presents information in a quantitative manner where possible. Otherwise, qualitative best professional opinion and assessment has been provided by the interdisciplinary team preparing this EA concerning potential impacts to environmental resources based on a review of the best available relevant scientific studies and analyses and consideration of the permanence of an impact, the potential for natural attenuation of an impact; the uniqueness or replaceable nature of the resource; the abundance or scarcity of the resource; and the potential mitigation measures that can offset or reduce an anticipated impact. Accordingly, this analysis characterizes impacts in broad-scale terms consistent with national rulemaking and NEPA regulations and guidance. Also, consistent with CEQ and NRCS regulations implementing NEPA, NRCS will undertake additional environmental review at subsequent stages of program implementation.

The action and no action alternatives are evaluated to determine the potential impacts to the human and natural environments, including environmental, cultural, and socioeconomic resources. The potential impacts are described by the following characteristics: type; direct, indirect, or cumulative, and duration (short or long-term). The potential impacts can be direct, indirect or cumulative: range from no impacts to severe or major impacts; and be either beneficial or adverse for a particular natural resource condition.

Type of Potential Impacts

Direct, indirect, and cumulative impacts are defined at 40 CFR Part 1508.7 and 40 CFR Part 1508.8, and are presented below. These categories are used to describe the timing and proximity of potential impacts on the affected baseline environment only. They have no bearing on the significance of the potential impacts, as described below, and are used only to describe or characterize the nature of the potential impacts. Cumulative impacts are defined below, and are discussed in detail in Section 3.x.:

- **Direct Impact:** A potential impact caused by the proposed action that occurs at the same time and place of the action.
- **Indirect Impacts:** A potential impact caused or induced by the proposed action that occurs later in time, but is still reasonably foreseeable to occur.
- **Cumulative Impact:** The impact on the environment resulting from the incremental effect of the proposed action added to other past, present, or reasonably foreseeable actions.

Duration of Potential Impacts

The duration of potential impacts to the environmental resources can be defined as short-term and/or long-term. In general, the impacts of construction of conservation practices would be short-term, whereas implementing and maintaining the conservation practices would be long-term.

3.1.2 Adaptive Management

The NRCS conservation planning process employs the concept of adaptive management when conservation practices are implemented. Adaptive management is undertaken by conducting site visits and providing follow-up guidance and assistance to landowners as necessary during the EQIP contract and operation and maintenance (O&M) agreement timeframe to ensure conservation practices are applied, maintained, and effective. Adaptive management is important for financial assistance under EQIP for conservation planning and conservation practice implementation. The programmatic nature of NEPA documentation, such as this EQIP Programmatic EA, allows for the flexibility necessary

for a nationwide program to simultaneously maintain compliance, implement conservation practices, and streamline documentation. Project performance is ensured through site-specific environmental evaluations and by enabling corrective actions or modifications as necessary.

3.1.3 Incorporation by Reference Used in this Analysis

As allowed for under CEQ regulations that implement NEPA², Section 3 will also present (to the extent possible) summarized information that is incorporated by reference from various literature, journal, studies, and other scientific analyses to support environmental effect determinations. For example, currently available baseline information from other environmental analyses, websites, studies, or journals has been summarized and utilized in this programmatic EA. This baseline information presents a national characterization of environmental resources applicable to the assessment of environmental impacts associated with national rulemaking for EQIP. The baseline environment also presents the 2007 conservation practices installed or implemented designed to mitigate a particular resource issue or concern. Although an environmental baseline (affected environment) is not required for an EA, it helps to set the evaluation for potential environmental impacts and has therefore been incorporated into this analysis where possible.

NRCS has used issues and concerns raised through Farm Bill policy public meetings, hosted in 2005, to help identify and frame the issues to be analyzed in detail and of concern to the public. The following section contains a summary of the issues raised by the public and that are addressed in this Programmatic EA.

3.1.4 Public Participation and Scope of Issues to be Analyzed

In fulfilling the spirit and intent of NEPA “to encourage and facilitate public involvement in decisions which affect the quality of the human environment,” USDA, in 2005, held 52 public meetings throughout the United States on the future of Farm Bill policies and legislation. The comments provided on the programs and legislation has helped the Agency focus on the public’s concerns and issues. Consequently, NRCS has been able to use these public meetings to identify “what are and what are not the real issues” to be analyzed in this Programmatic EA (40 CFR Part 1500.5(d)). The issues raised by the public have helped NRCS fulfill one of NEPA’s goals which is to have environmental analyses evaluate “environmental issues deserving of study (and to) de-emphasize insignificant issues,” thereby “making the NEPA process more useful to decision-makers and the public (40 CFR Part 1500.4(g) and 1500.2B)).

² 40 CFR Part 1502.21

Issues raised by the public regarding the implementation of EQIP that were considered in the formulation of EQIP program alternatives are incorporated by reference from the USDA website³. Listed below are a few of the summarized issues presented:

Environmental and Social Resources Issues

Comment issues include:

- Increase the Federal cost share rate of 50 to 90 percent for American Indians/Alaska Natives.
- Focus EQIP funds on areas with substantial resource concerns such as watersheds, and encourage farmers and ranchers to work together to achieve greater, more synergistic environmental improvement.
- Enhance EQIP to address such issues as air quality, forest health on private lands, and transitioning to organic agriculture.
- Utilize EQIP to maximize wildlife benefits to include enhancing habitat, maintaining in-stream flows, and controlling invasive species.

3.1.5 Potential Environmental Effects of Alternatives

The implementation of EQIP involves the application of one or more conservation practices on private agricultural and nonindustrial forest lands with NRCS technical and financial assistance. Practices are implemented under a plan of operations that usually involves a system of practices to address multiple resource concerns. Indirect effects of implementing conservation practices with NRCS technical assistance alone or in combination with financial assistance through EQIP are anticipated to occur under all of the alternatives. The potential impacts of the most common practices planned and implemented under EQIP are summarized in Appendix A for cropland, grazing land, forest land, and animal feeding operations.

NRCS policy (incorporated here by reference⁴) requires that NRCS conservation planners must minimize adverse impacts to environmental resources when providing technical and financial assistance. As such, the conservation planning process is designed to implement conservation practices that address, improve, and mitigate for environmental resources concerns. The overall effects of implementing practices under a plan of operations should be beneficial to the environment.

³ Public Comment Summary for EQIP
(http://www.usda.gov/documents/ENVIRONMENTAL_QUALITY_INCENTIVES_PROGRAM.doc)

⁴ NRCS [General](#) Manual Title 190 Part 410.3
(<http://directives.sc.egov.usda.gov/viewerFS.aspx?id=666>)

Conservation Practice Standards applicable to the planning and implementation of each practice are found in the National Handbook on Conservation Practices Standards⁵ and Section IV of the electronic Field Office Technical Guide (eFOTG)⁶ for each State. The environmental benefits of conservation practices which are evaluated in detail in *Environmental Benefits of Conservation on Cropland and Fish and Wildlife Response to Farm Bill Conservation Practices* are incorporated by reference and summarized highlights have been utilized in this analysis⁷. NRCS has also summarized general effects of each conservation practice upon natural resource concerns in the Conservation Practices Physical Effects (CPPE)⁸. Network diagrams have also been developed for each of these conservation practices that depict the chain of natural resource effects resulting from practice implementation. Network diagrams for all of the conservation practices are available on the NRCS website⁹ and are hereby incorporated by reference. The practice standards, CPPE information, and network diagrams are incorporated by reference into the following discussion of impacts for each alternative.

Appendix B provides a table of the most common conservation practices to address resource concerns.

Section 3.2 Land Use/Prime and Unique Agricultural Lands and Forestland

Resource Characterization

In the 1970s, Federal assistance for large-scale construction projects became pervasive and concerns developed in several agencies that many projects were being undertaken without due regard to their effect on the productive capacity of the nation's agricultural lands. These concerns gave rise to a series of policy statements, issued by the U.S. Department of Agriculture, the Council on Environmental Quality and EPA (EPA Policy to Protect Environmentally Significant Agricultural Lands, signed by the Administrator on September 8, 1978), instructing Federal program managers to more carefully consider the effect of a project on agricultural land and to take alternative or mitigating measures, when appropriate, to ensure that valuable farmland is preserved.

⁵ National Handbook of Conservation Practices
(<http://www.nrcs.usda.gov/technical/standards/nhcp.html>)

⁶ eFOTG (<http://www.nrcs.usda.gov/technical/efotg/index.html>)

⁷ Environmental Benefits of Conservation on Cropland and Fish and Wildlife Response to Farm Bill Conservation Practices (<http://www.nrcs.usda.gov/Technical/nri/ceap/>)

⁸ CPPE (<http://www.nrcs.usda.gov/technical/standards/nhcp.html>)

⁹ Network Diagrams (http://www.nrcs.usda.gov/programs/ENV_Assess)

This policy direction culminated in 1981 with the passage of the Farmland Protection Policy Act, which was included in the 1981 Farm Bill (Agriculture and Food Act of 1981, 7 U.S.C. § 4201 et. seq.). In the Act, Congress directed Federal agencies to use criteria developed by the Department of Agriculture to identify the potential adverse effects of Federal programs on farmland and its conversion to nonagricultural uses, to mitigate these effects, and to ensure that programs are carried out in a manner that is compatible with the farmland preservation policies of state and local governments, and private organizations.

7 U.S.C. § 4202(b) requires all Federal agencies to use criteria under the Act to:

“... identify and take into account the adverse effects of Federal programs on the preservation of farmland; consider alternative actions, as appropriate, that could lessen such adverse effects; and assure that such Federal programs, to the extent practicable, are compatible with state, unit of local government, and private programs and policies to protect farmland”.

Baseline Environment

The Nation’s privately owned lands constitute a tremendous resource that yields food and fiber as well as the livelihood and recreation for private land users. About 71% of the 1.9 billion acres across the contiguous 48 States is held as non-Federal, rural land uses -- nearly 1.4 billion acres. Non-Federal rural lands are predominantly forest land (406 million acres), rangeland (405 million acres), and cropland (368 million acres).

Table 3-1 Major agricultural and other land uses in the U.S.

<i>Cropland</i>	<i>368 million acres</i>
<i>Pastureland</i>	<i>117 million acres</i>
<i>Rangeland</i>	<i>405 million acres</i>
<i>Hayland</i>	<i>Included in cropland</i>
<i>Forestland</i>	<i>406 million acres</i>
<i>Other lands (homesteads, feedlots, etc.)</i>	<i>82 million acres*</i>

* Includes 31.5 million acres under perennial vegetative cover in the Conservation Reserve Program (CRP).

Source: USDA-NRCS 2003 National Resources Inventory¹⁰

¹⁰ <http://www.nrcs.usda.gov/technical/NRI/nri03landuse-mrb.html>

Many of the lands cited above have natural resource problems and limitations that decrease their productive use, cause damages, and reduce efficiency in the agricultural sector. As such, there is a strong need for conservation practices to be applied to help address the resource problems. Lands that are converted to urban development represent, for all intents and purposes, an irreplaceable loss of the potential productive uses of that land. Urban development leads to increased resource concerns from pollutants in storm water runoff to increased vehicular use and resulting greenhouse gas emissions. Approximately 58% of America's county governments are seriously concerned over the loss of farmland due to expected growth in the future¹¹ (See Figure 3-1). (This baseline information has been incorporated by reference from the 2003 Programmatic Environmental Assessment on Farm and Ranch Lands Protection Program¹².

Forestlands, as well as trees and forests on other agricultural lands, provide clean air, carbon sequestration, climate change buffering; flood protection; wildlife habitat; recreation and aesthetic enjoyment. Healthy forestlands are also vital to clean and abundant supplies of water. Approximately two-thirds of the nation's freshwater resources originate on forested lands. Some 180 million people in over 68,000 communities rely on these forested lands to capture and filter their drinking water¹³. Water quantity and quality are threatened by changes in climate, population, and land use. Wildfires, insect outbreaks, and invasive species also affect the ability of forests to store and filter the water we drink. Forests and forest products also provide economic, energy and other benefits to the Nation.

Forestlands do not provide the full range of benefits they are capable of providing. Some of the risks to forestlands include¹⁴:

- **Development pressures.** Economic returns from commercial forestry are often insufficient and as a result landowners are increasingly pressured to convert their forest land to other uses. While total forest area has remained relatively stable for the past century, many acres of forest have been lost to development but have generally been balanced by gains, mainly from abandoned pasture.
- **Landscape fragmentation.** Fragmentation of landscapes and changes in land use will continue to stress forestland health.

¹¹ Maintaining Farm and Forest Lands on Rapidly Growing Areas, p.4

¹² http://www.nrcs.usda.gov/programs/Env_Assess/

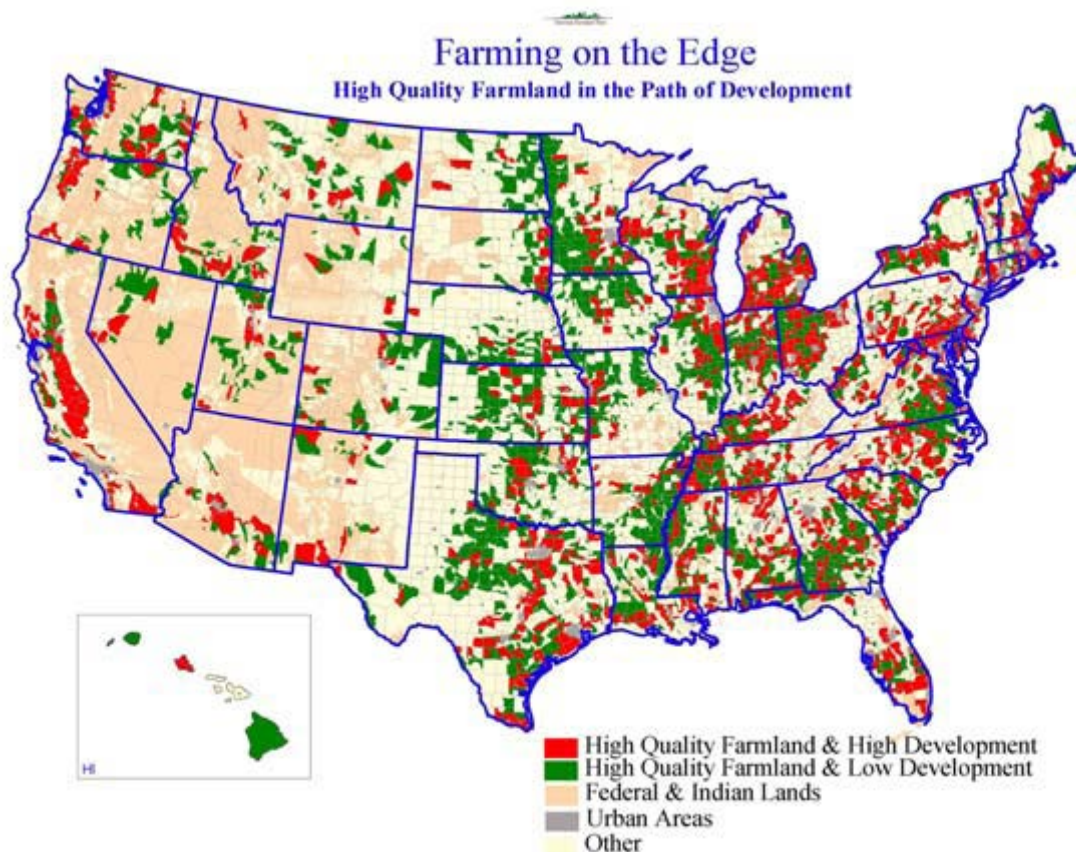
¹³ From Interim Update of the 2000 Renewable Resources Planning Act Assessment, FS-874, April 2007; and Butler, B.J.; Leatherberry, E.C. 2004. America's Family Forest Owners. Journal of Forestry. Oct/Nov: 4-14.

¹⁴ From Interim Update of the 2000 Renewable Resources Planning Act Assessment, FS-874, April 2007; and Butler, B.J.; Leatherberry, E.C. 2004. America's Family Forest Owners. Journal of Forestry. Oct/Nov: 4-14.

- **Increasing wildfires.** The area of all lands burned by wildfire in 2005 was the largest in the last 45 years (all lands). This threat is expected to continue due to many overly dense forests, increases in insect and disease susceptibility and mortality, a resulting build up of fuels, and climate change.
- **Increasing invasive species damage.** The spread of invasive insects, diseases, and plants is expected to continue as a result of travel and trade associated with the globalization of the world economy.
- **Climate change.** Climate change may lead to land cover and land use changes, increases in atmospheric pollutants such as ozone and nitrous oxides, and potential expansion of invasive species.
- **Trends toward smaller forest parcels and more owners.**
 - o Fifty-seven percent of America's forests are in private ownership and 90% of owners control small (less than 50-acre) tracts.
 - o 10.3 million family forest owners¹⁵ account for 42 percent of the Nation's forest lands (2003).

¹⁵ Family forests include lands that are at least 1 acre in size, 10% stocked, and owned by individuals, married couples, family estates and trusts, or other groups of individuals who are not incorporated or otherwise associated as a legal entity.

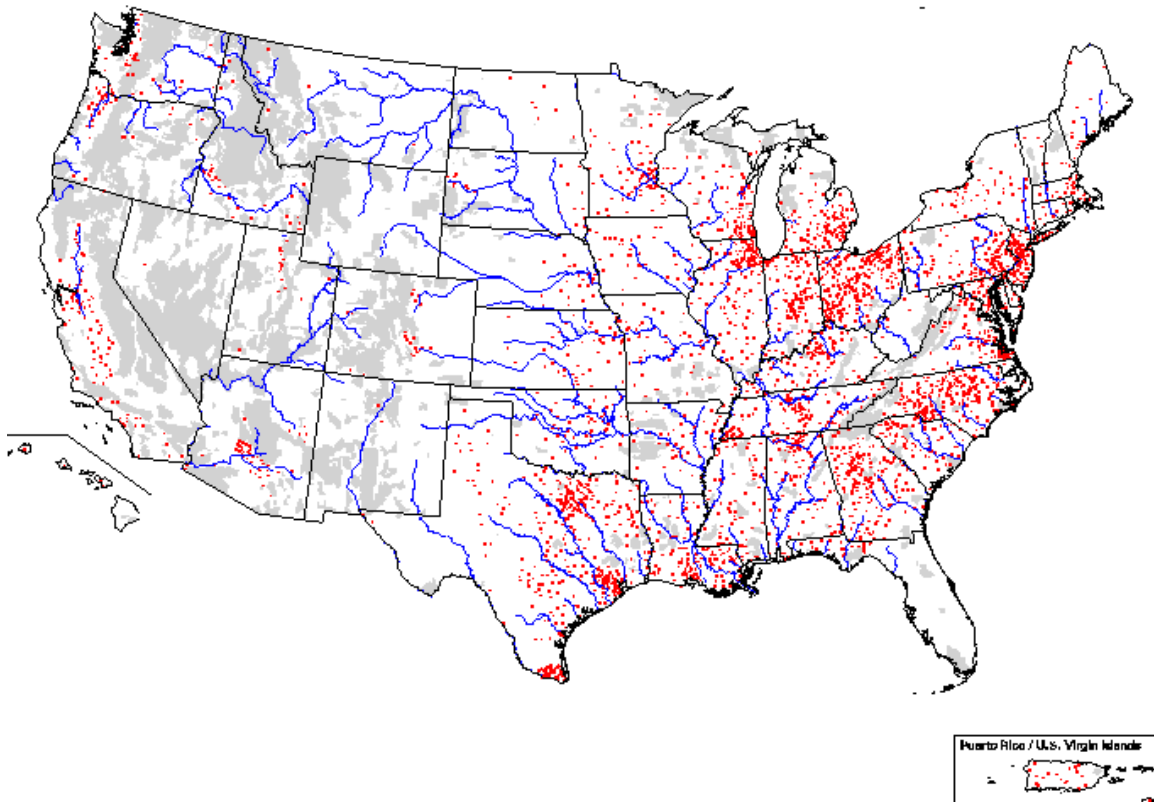
Figure 3-1
The Geographic Relationship between High Quality Farmland and Development Pressure



Source: (<http://www.farmland.org/farmingontheedge/downloads.htm>.)

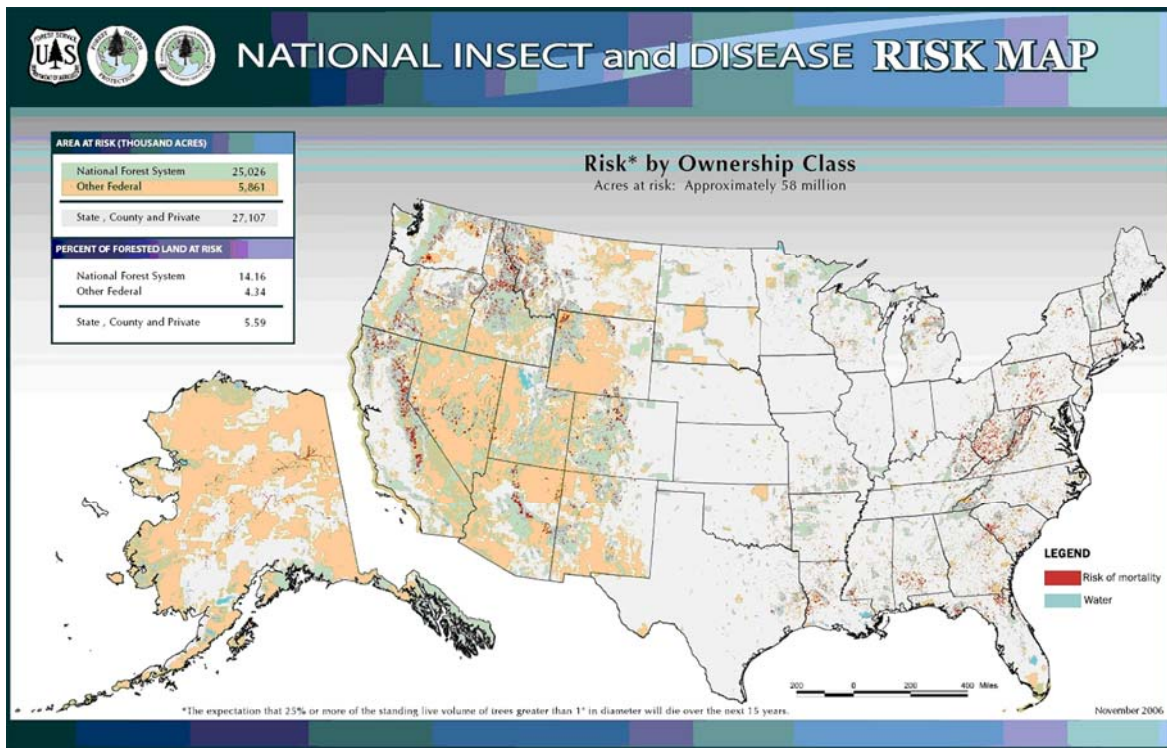
Note: High-quality farmland areas have relatively large amounts of prime or unique farmland. High-development areas have relatively rapid loss of high-quality farmland to development. Other areas do not meet the two threshold tests. The relative measures compare sub-county areas against their respective statewide averages. This map should be used to identify broad trends, not to make highly localized interpretations.

Figure 3-2
Acres of Prime Farmland Converted to Developed Land, 1982 – 1997
(Each red dot represents 2,000 acres of newly developed land)



A total of 7,347,000 acres of prime farmland were developed between 1982 and 1997. According to USDA's National Resources Inventory (NRI), urban and built-up areas increased from 65.3 million acres in 1992 to 79 million acres in 1997. The location of these acres correlates closely to those areas identified in Figure 3-2 as having high vulnerability for conversion because they are located near urban centers. In those areas where conversion occurs, farming operations may become less economically viable due to nuisance conflicts, fewer acres being available for leasing, and a loss of agricultural infrastructure for processing, marketing, etc.

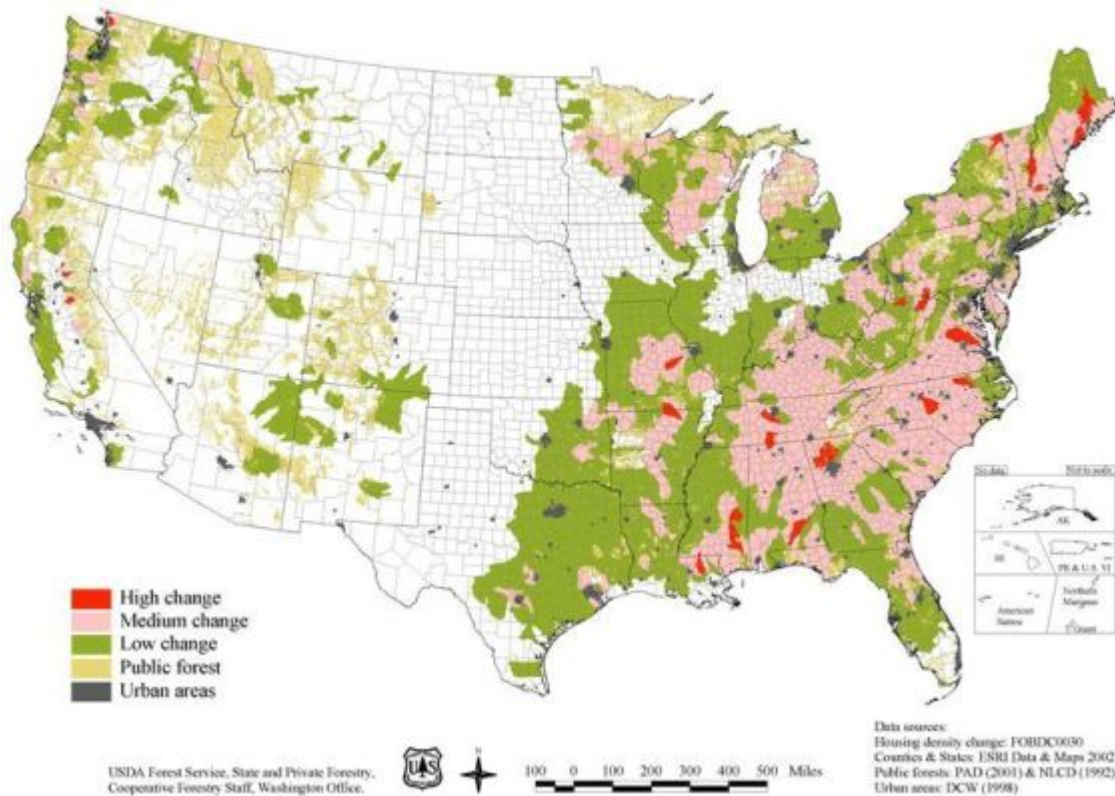
Figure 3-3
Acres of Forested Land at Risk of Mortality to Insects and Diseases



Source: (http://www.fs.fed.us/foresthealth/technology/pdfs/FHTET2007-06_RiskMap.pdf)

In 2006, the U.S. Forest Service completed a strategic assessment for risk of tree mortality due to major insects and diseases, which estimated that a total of 58 million acres in the contiguous United States (including about 27 million acres of private, State, county lands) are at risk from insects and diseases. Most of this risk can be attributed to 42 risk agents, including 13 non-native (exotic forest pest species already established in the contiguous United States and Alaska. The threshold for mapping risk in the assessment was: the expectation that, without remediation, 25 percent or more of the standing live basal area (BA) on trees greater than 1 inch in diameter will die over the next 15 years due to insects and diseases.

Figure 3-4¹⁶
Future Development Changes on Private Forest Lands in America's Watersheds



The figure above depicts the percentage of watersheds with private forests that are projected to shift from rural to exurban by 2030. A total of 22.5 million acres across the country are projected to shift from rural to exurban by 2030. Twenty-seven watersheds contain forests projected to experience this shift on more than 10 to 20 percent of their area. Hardest hit will be 12 States in the Northeast and the South.

Anticipated Environmental Effects

Impacts to prime and unique agricultural lands would be considered significant if the proposed activities resulted in substantial conversion of prime and unique agricultural lands to urban development of other detrimental land uses.

3.2.1 Alternative 1- No Action- No Implementation of EQIP

If EQIP were not implemented, there is an increased likelihood that prime, unique, farmland of statewide importance, and forestlands will be directly impacted by

¹⁶ *Forests on The Edge-Housing Development on America's Private Forests*, USDA Forest Service, General Technical Report PNW-GTR-636, May 2005

conversion to non-agricultural uses. While the Farmland Protection Policy Act makes direct inference to prime and unique soils, the current loss trend makes the fate of statewide important soils more significant. Without EQIP, many producers would not be able to implement the more costly conservation practices using their own personal financial resources. With development encroaching on many prime and unique agricultural and forest lands, the attraction to sell to development is often compelling. It is anticipated that the trend of prime and unique agricultural lands and forestlands shifting to urban and suburban development will continue at the current or an increased rate without implementation of EQIP.

3.2.2 Alternative 2- No Action- 2002 EQIP Requirements

There would be no direct impacts to prime and unique farmland and forestland associated with continuation of the current 2002 Act EQIP requirements which would still be subject to further implementation by State and local field offices of NRCS.

There is the potential for long term beneficial indirect impacts from Alternative 2 by applying conservation practices under EQIP to maintain and protect prime and unique agricultural land (Appendix A). Implementation of these practices should result in a more cost-effective agricultural operation and decrease the likelihood of land use conversion.

3.2.3 Alternative 3-Agency Preferred Alternative- 2008 EQIP Requirements

It is anticipated there would no direct impacts as an immediate or direct result of Alternative 3 concerning national rulemaking designating additional payments and set aside amounts for historically underserved producers. This provision would most likely be subject to further implementation by State Conservationists.

The same or similar long term indirect beneficial impacts are anticipated from Alternatives 2 and 3. There could be a proportional increase in impacts due to the increased funding available. There is the potential for more indirect long term beneficial impacts from Alternative 3 by providing financial assistance to additional participants. For instance, historically underserved producers could enter into the program. The additional payments to historically underserved producers may increase the amounts of conservation practices applied and the amounts of conservation benefits accrued from these practices. These long-term indirect benefits would be most prevalent in geographic areas where these groups live. Also, the increased assistance and total funding set aside amounts are anticipated to not only allow socially disadvantaged and beginning farmers and ranchers to address resource concerns, but also maintain their operations and lands.

As a further consequence, these participants would be applying additional conservation practices to prime and unique agricultural lands to help improve and conserve the environment. In comparison to Alternative 2, Alternative 3 potentially provides a greater

possibility for additional EQIP participation and indirectly a greater potential for protection and enhancement of prime and unique agricultural lands and forestlands.

From a national perspective, both Alternative 2 and Alternative 3 are anticipated to indirectly improve unique and prime agricultural land and forestland, soil, air, water quality and quantity, cultural resources, and fish and wildlife. EQIP technical and financial assistance will be provided to cropland, grazing land, nonindustrial private forestland, and other agricultural lands, which should indirectly contribute to retaining current agricultural land uses and forestland uses. Overall, it would be anticipated that there would be a net indirect benefit to prime and unique farmland, forestlands, and the Nation's natural resources. Alternative 3 provides a greater benefit by reaching additional participants who may not have received assistance under Alternative 2.

3.3 Soils

Resource Characterization

Soil resources for this analysis include those soils used for the normal production of agricultural commodities, forage, and livestock. Soil quality describes how well soil functions to sustain biological productivity, regulate and partition soil, water and solutes, filter and buffer organic and inorganic materials, store and cycle nutrients and carbon, and provide stability and support for plants or structures for human habitation (modified from Seybold et al, 1998¹⁷). Soil quality is evaluated using inherent and dynamic soil properties.

Inherent soil properties are generally not affected by human management and include soil texture, depth to bedrock, clay mineralogy, cation exchange capacity, and drainage class. In contrast, dynamic soil properties can change over months to years in response to management and land use. Dynamic soil properties include organic matter, soil structure, infiltration, and water and nutrient holding capacity. Dynamic soil properties are influenced by the type, diversity, and amount of vegetative cover. The use of high residue crops, cover crops and crop rotations on cropland, and management to maintain recommended minimum forage heights on grazing lands generally increase soil quality by providing protective soil cover and organic matter. Dynamic soil properties are also influenced by soil disturbance. For example, tillage accelerates decomposition of organic matter and prevents its accumulation, thereby reducing soil stability and soil quality, and increasing soil susceptibility to water and wind erosion. Conservation technical and financial assistance provided through EQIP implementation helps producers address these and other soil quality resource concerns.

¹⁷ Seybold, C.A., M.J. Mausbach, D.L. Karlen, and H.H. Rogers. 1998. Quantification of Soil Quality. In Soil Processes and the Carbon Cycle. R. Lal, J.M. Kimble, R.F. Follett, and B.A. Stewart, eds. CRC Press, Boca Raton, FL

Conservation tillage “continues to grow as a primary means of managing soil to reduce environmental damage” (Environmental Benefits of Conservation on Cropland, 2006). In 1990 conservation tillage was practiced on 26 percent (73 million acres) of U.S. cropland; no-till was used on 17 million acres. By 2004 use of no-till had grown to 62 million acres, and conservation tillage was practiced on 112 million acres, 40 percent of the U.S. cropland¹⁸.

Anticipated Environmental Impacts

Impacts to soil resources would be considered significant if proposed activities resulted in substantially increased erosion and sedimentation or that adversely affected unique soil conditions.

3.3.1 Alternative 1- No Action- Not Implementing EQIP

The potential to protect soils on private agricultural and non-Federal lands from erosion and degradation is reduced if Alternative 1 is selected. This is due in part to landowners not being willing or able to assume the full cost of implementation of conservation practices that are designed to protect soil resources. Without EQIP, soils and all other environmental resources are anticipated to be adversely impacted as conservation technical assistance and financial assistance would not be available. In part, technical assistance provides the landowner with the knowledge on where and how to apply conservation practices to address resource concerns. The financial assistance helps the landowner apply these practices to address the resource concern. Selection of Alternative 1 is anticipated to result in long term negative impacts to all environmental resource concerns. Thus, conservation practices, such as windbreaks that impede wind from blowing over fields to reduce wind erosion, or cover crops that protect soil from water erosion, might not be applied to these lands in the absence of EQIP technical and financial assistance.

¹⁸ Conservation Technology Information Center. 2004. National Cover Crop Residue Management Survey. Conservation Technology Center, West Lafayette, Indiana. 61 pp.

3.3.2 Alternative 2- No Action- 2002 EQIP Requirements

There would be no direct impacts to soils associated with continuation of the current 2002 Act EQIP requirements which would still be subject to further implementation by State and local districts of NRCS.

Alternative 2 would be a continuation of the EQIP program as it currently exists: assisting farmers and ranchers in applying conservation planning and conservation practices to private and privately-controlled lands. In comparison to Alternative 1, Alternative 2 would indirectly benefit soil quality by providing technical and financial assistance, which results in conservation practice implementation that protects and enhances soil resources. Soil resources would be indirectly protected through application of the conservation practices, such as, cover crops, conservation tillage, windbreaks and shelterbelts to protect soil from erosion and improve soil quality on lands enrolled into EQIP.

Conservation practices applied by EQIP participants are designed to increase soil stability and decrease soil loss from wind and water erosion. Although there may be negative impacts to soils, such as compaction and soil loss, from implementing the conservation practices, these environmental impacts are considered to be short term, temporary, and/or localized. Indirect long term benefits of EQIP participation are realized when conservation practices are implemented to protect soils and improve soil quality by establishing, re-establishing and/or managing vegetation, managing nutrient and pesticide use, minimizing soil disturbance, developing water control structures and other practices that reduce wind and water erosion.

Appendix C contains a listing of the top twenty most frequently applied conservation practices to address soil concerns in 2007. Based on this information, it is anticipated that a continuation of the current 2002 requirements (Alternative 2) would result in approximately the same number and distribution of practices being applied. Accordingly, it is anticipated that there would be a total of 4,828,482 acres of lands protected from water induced sheet and rill soil erosion (see Appendix C).

The general effects of conservation practices as summarized above are incorporated by reference from the Conservation Practices Physical Effects (CPPE) and National Handbook on Conservation Practices. Appendix A also provides additional analysis of general effects of the indirect impacts resulting from application of conservation practices in different environmental settings (e.g., cropland, grazing land, etc.).

3.3.3 Alternative 3- Agency Preferred Alternative- 2008 EQIP Requirements

Potential impacts to soils associated with Alternative 3 are similar to those described for Alternative 2 (the 2002 EQIP requirements) with the exception that conservation practices could be implemented on lands not previously enrolled in EQIP. Expanding the payment rate and designated set aside amounts (5% beginning farmers or ranchers and 5% for socially disadvantaged farmers or ranchers) of total funding for historically underserved producers potentially provides for additional lands to be enrolled in EQIP. As a result, there is the potential for beneficial indirect impacts on soil resources. Also, there is the potential for short-term, minor, temporary, and/or localized negative impacts to the environment from the implementation of certain conservation practices that involve ground disturbing activities.

Adaptive Management and Mitigation

For soil resources, conservation practices are designed to lessen soil erosion and improve soil quality. Adaptive management is an integral part of the conservation planning process in that NRCS follows up throughout the life of the EQIP contract and for the life of the conservation practice to ensure that conservation practices applied are effective at addressing the resource concern(s).

Additional erosion control practices, such as the ones described below, may be considered appropriate on a site-specific basis when implementing the conservation practices, especially on lands designated as highly erodible lands (HEL). It is also important to note that as part of the conservation planning process, a site-specific environmental evaluation (EE) assists the Agency by identifying any site-specific mitigation needs.

General erosion control measures that may be utilized on a site-specific basis might include any of the following:

- Shorten the length of exposure of the erosive surface by utilizing temporary erosion control measures such as erosion control blankets and fabrics along with temporary seedlings;
- Prevent sediment from moving offsite by utilizing mulch, silt fences, gravel bags, vegetative barriers and other temporary sediment control devices that trap sediment;
- Clear smaller areas of vegetation at different intervals;
- Schedule excavation during low-rainfall periods;
- Cover disturbed soils with mulch or vegetation immediately after excavation is completed;

- Control concentrated water flows that form rills and gullies through the use of erosion resistant channel linings;
- Temporarily divert concentrated water flows from disturbed areas to stabilized areas to allow vegetation to establish on the disturbed area;
- Minimize the length and gradient of disturbed areas on slopes;
- Inspect and maintain all structural control measures;
Avoid soil compaction by restricting the use of heavy equipment and vehicles to limited areas; and
- Break up or till compacted soils prior to vegetating.

3.4 Water Resources- Surface Water, Ground Water, Wetlands, and Floodplains

Characterization of Resources

The Clean Water Act, the Safe Drinking Water Act, and the Water Quality Act are the primary Federal laws that protect the Nation's waters including lakes, rivers, aquifers, and wetlands. For this analysis, water resources include surface water, groundwater and sole source aquifers, wetlands, and floodplains.

Surface water includes streams, rivers, lakes, and reservoirs. Surface runoff, the part of the precipitation, snow melt, or irrigation water that appears in surface streams, rivers, drains or sewers (U.S. Geological Survey [USGS] 2005), can affect surface water quality by depositing sediment, minerals, or contaminants into surface water bodies. Surface runoff is influenced by meteorological factors such as rainfall intensity and duration, and physical factors such as vegetation, soil type, and topography.

Groundwater refers to subsurface hydrologic resources that are used for domestic, agricultural, and industrial purposes. Groundwater is stored in natural geologic formations called aquifers. In areas with few or no alternative sources to the groundwater resource, an aquifer may be designated as a sole source aquifer (also known as a well head protection area) by the Environmental Protection Agency (EPA), which requires EPA review of any proposed projects that are receiving Federal financial assistance within the designated areas (EPA 2006b).

Wetlands are defined by NRCS as "areas that have a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions, except lands in Alaska identified as having high potential for agricultural development and a predominance of permafrost soils." Wetlands can be associated with groundwater or

surface water and are identified based on specific soil, hydrology, and vegetation criteria defined by the U.S. Army Corps of Engineers (USACE) regional and 1987 manuals.

Floodplains are defined by the Federal Emergency Management Agency (FEMA) as those low lying areas that are subject to inundation by a 100-year flood, a flood that has a 1 percent chance of being equaled or exceeded in any given year. Federal agencies are required to avoid, to the extent possible, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development.

Wetland Conservation (Swampbuster) Provision of 1985 Farm Bill

The Wetlands Conservation (“Swampbuster”) provision established in the 1985 Farm Bill, and amended in the 1990 Farm Bill, requires all agricultural producers to protect the wetlands on the farms they own and operate if they wish to be eligible for certain USDA farm program benefits. Producers are not eligible if they have planted an agricultural commodity on a wetland that was converted by drainage, leveling, or any other means after December 23, 1985, or if they have converted a wetland for the purpose of agricultural commodity production, or for making such production possible, after November 28, 1990.

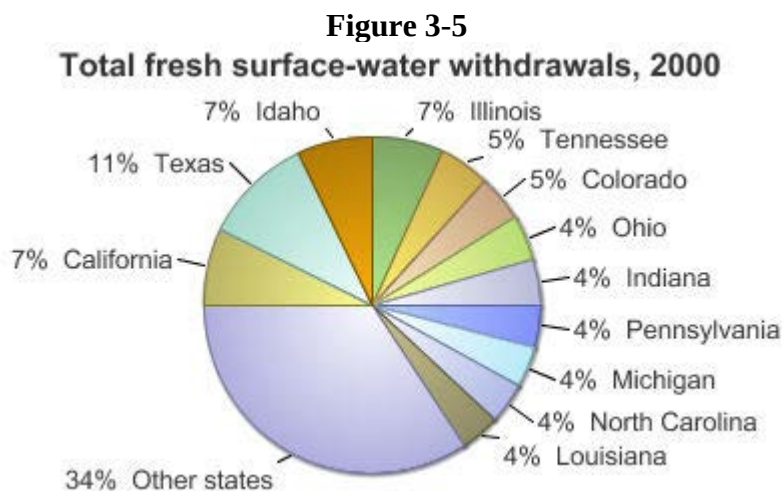
Agricultural Activities in Waters of the U.S. Exempt from Section 404 of the CWA (see Section 404(f))

Some agricultural activities are exempted from the Section 404 permitting process. Exempted activities include normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices. In order to be exempt, the activities must be part of an established farming, silviculture, or ranching operation. An operation ceases to be “established” when the area has been converted to another use or has been abandoned so long that modifications to the hydrologic regime are necessary to resume operations. (Note that unlike the provisions of the Food Security Act, prior converted cropland (PC), where wetland conditions have returned and the area has not been cropped for 5 successive years, is considered “abandoned” and may be subject to CWA jurisdiction.) Further, in order to be considered exempt, the proposed activity must not be a part of an activity that would convert any area of the waters of the U.S. to uplands or to a use to which it was not previously subject and impair the flow and circulation or reduce the reach of waters of the U.S. Deep ripping and other related activities are not exempt. Only the USACE can make exemption determinations.

Baseline Environment

Surface Water

Surface water in rivers, streams, creeks, lakes, and reservoirs supports everyday life through uses such as drinking water and other public uses, irrigation, and industrial uses. Of all the water used in the U.S. in 2000 (about 408 billion gallons per day), about 64 percent came from fresh surface water sources (USGS 2005). Figure 3-5 shows surface water withdrawals throughout the U.S. Texas uses the greatest amount of surface water relative to all other States.



Source: USGS 2005

Because of the large dependency on surface water for everyday use, surface water quality is of great importance. Runoff from farmlands may contain sediment, pesticides and fertilizers that can flow to surface waters, adversely affecting the water quality needed to support beneficial uses of the water body such as aquatic ecosystems, human uses of the water, and agriculture.

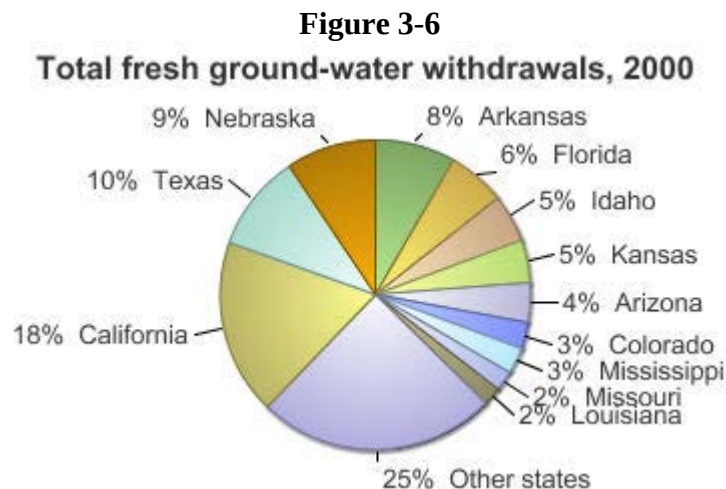
The Clean Water Act helps maintain water quality by giving the EPA authority to implement pollution control programs and by setting water quality standards for all contaminants in surface waters. Any CWA permit that would be required in conjunction with conservation practice implementation must be obtained by the producer prior to NRCS providing EQIP financial assistance.

Groundwater

Groundwater is an important resource as it supplies water to people in areas with insufficient surface water. In 2000, approximately 70 billion gallons of groundwater were consumed daily (USGS 2005a). The majority of groundwater withdrawals, 68 percent, were used for irrigation; 19 percent were used for public purposes, mainly to supply drinking water (USGS 2005a).

Figure 3-6 shows groundwater withdrawals throughout the U.S. California uses the greatest amount of groundwater relative to all other States.

Groundwater is also ecologically important because it supplies water to wetlands, and through groundwater-surface water interaction, groundwater contributes flow to surface water bodies.



Source: USGS 2005a

Groundwater levels vary seasonally and annually depending on hydrologic conditions. If withdrawals are greater than recharge, groundwater levels may decline. Maintaining groundwater levels at a sustainable level is an important management issue throughout the country.

Wetlands

Wetlands are defined by NRCS as “areas that have a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions, except lands in Alaska identified as having high potential for agricultural development and a predominance of permafrost soils.”

There are an estimated 108 million acres of wetlands in the continental U.S., comprising 5.5 percent of the surface area¹⁹ Regional and local differences in soils, topography, climate, hydrology, water chemistry, and vegetation determine wetland type. Wetlands are grouped into two general categories: coastal or tidal wetlands and inland or non-tidal wetlands (EPA 2006c).

Table 3-2 Net Change in Wetland Acres, 1992 to 2003

Change in Palustrine and Estuarine Wetlands on Non-Federal Land and Water Area, Gross Losses and Gains and Net Change, 1992 - 2003, in Acres per Year (percent margin of error in parentheses)

	1992 - 1997	1997 - 2001	2001 - 2003
Gross Loss	-99,000 (± 10%)	-53,000 (± 23%)	-30,000 (± 26%)
Gross Gain	71,000 (± 21%)	79,000 (± 21%)	102,000 (± 62%)
Net Change	-28,000 (± 72%)	26,000 (± 82%)	72,000 (± 90%)

Source: Natural Resources Conservation Service, 2003
Annual National Resources Inventory

Historically, wetland acreage has declined, with 28,000 acres lost in the five-year period between 1992 to 1997. Since 1997, this trend has reversed, with a net gain in wetland area occurring each year through 2003. The net gain in wetland area is attributed to wetlands created, enhanced or restored through regulatory and non-regulatory restoration programs on active agricultural lands, inactive agricultural lands, and other lands.

Wetlands support plant and animal life, provide flood protection, improve water quality as water filters through the wetland, and store carbon in plants and soil helping reduce effects of global climate change.

Wetlands are protected by Section 404 of the CWA and the Food Security Act of 1985.

¹⁹ Dahl, T.E. 2006. Status and Trends of Wetlands in the Conterminous United States 1998 to 2004. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 112 pp.

Floodplains

Floodplains are flat or nearly flat land that border rivers, streams, oceans, lakes, or other bodies of standing water and experience periodic flooding. Floodplains are important resources because they provide flood and erosion control, support plant and animal life, help maintain water quality, and contribute to sustaining groundwater levels. Floodplains also provide habitat for plant and animal species, recreational opportunities, aesthetic benefits, and agricultural and forest products.

Water Issues associated with Agriculture

Modern agriculture and the operations associated with the production of food, fiber and commodities can impact water resources. Conservation and mitigation measures are often invoked to minimize these anthropogenic activities and help safeguard the aquatic landscape. Although there are a myriad of water quality issues and the complexities and interconnections can be immense, the focus national resource concerns are:

- nutrient transport (Nitrogen , Phosphorus, etc) to streams and lakes, groundwater and wetlands;

- sediment transport and delivery into streams and lakes;

- pesticide transport to streams, lakes, groundwater and wetlands; and

- pathogens in the Environment.

Nutrient Transport

The two main agriculture nutrient issues are the application of nitrogen and phosphorus and the subsequent transport of these chemicals into water resources. Both nutrient constituents are applied in commercial form and as animal waste (manure). The rate of application, the timing and the form of nutrients are very important to the effectiveness of the nutrients and the ability of plants to absorb and utilize them. Water quality can be affected when nitrogen and/or phosphorus is transported from the agricultural operation setting and delivered to water resources (surface water, groundwater, wetlands, floodplains). Nutrients can be transported or dissolved in water and carried to water resources through the movement of excess water. These nutrients can also be transported by adsorbing to soil particles and moving toward water resources attached to soil particles.

Sediment Transport

The process of soil particle movement in or by water is known as sedimentation. This two-fold issue results in both a loss of soil from agriculture files and an accumulation of these same soil particles in streams and surface water resources. The transport of sediment from field to streams can change streams and the aquatic biota that inhabit them. As mentioned above, soil particles can have both nutrient and pesticides attached to them and delivered by sedimentation to water bodies. Excess sediment can deposit and affect native fish habitat (both rearing and spawning). Streams and rivers have an

innate capacity to maintain their channels through sediment transport. Pools and other geomorphic features are dependent upon the sediment balance they evolved with. Excess sediment can fill in pools and lead to the erosion of stream beds and banks. Furthermore, too much sediment can lead to incised channels that are not connected to floodplains and do not function properly in high flow events. Stream channels that are incised because of excess sediment can lower water tables and disconnect water sources from streams and rivers.

Pesticide Transport

Chemicals used in agriculture can enhance productivity but leave production operations and end up in rivers and water bodies if not managed properly. Pesticide movement away from target environments and into waterways can have effects on both human and aquatic health. These chemicals are transported both in solution and adsorbed on soil particles through sedimentation and wind driven erosion. Pesticides can have effects on all life histories and stages of aquatic biota.

Pathogens in the Environment

Pathogens can be transported through the irrigation and conveyance of water and contaminate food resources.. Food security is an imperatively important issue. Pathogens on food products have caused significant human health hazards in recent months. Ensuring food safety can be achieved through conservation and good water quality.

Concentrated Animal Feeding Operations (CAFO)

CAFOs have a unique set of water quality challenges associated with them. The CAFO environment by definition accumulates not only animals but the waste products of animals. Conservation practices and measures through a number of programs are focused on how to ensure water quality is not effected by animal waste or operation of a CAFO. Plans are designed to help aid in the timing, placement and distribution of animal waste. Typically these are known as Comprehensive Nutrient Management Plans.

Anticipated Environmental Impacts to Water Resources

Impacts to water resources would be considered significant if they exceed the water quality standards associated with conservation practices.

3.4.1 Alternative 1- No Action- Not Implementing EQIP

Under the No-Action Alternative, there is a potential for direct adverse impacts to surface water, groundwater, wetlands, and floodplains due to the conservation program not being implemented. Lands currently enrolled in EQIP could suffer from the potential impacts of agricultural production operations not implementing the conservation practices designed to avoid, mitigate, enhance, and improve the quality of surface water, ground water, wetland functions and values, and floodplain environments. This is particularly important for those agricultural lands located immediately adjacent to these resources. It is beyond the scope of this analysis to quantify the potential adverse impacts to these resources as producers may apply conservation practices regardless of whether financial assistance is provided to the producer. Producers may in fact use the conservation technical assistance provided by NRCS to employ conservation practices such as, nutrient management, filter strip, irrigation systems, etc. to help avoid, mitigate, enhance, protect, and improve the quality of the environment for these resources.

For each of the major identified water issues with agriculture there is a potential for direct adverse impacts to surface water, ground water, wetlands and floodplains due to the conservation programs not being implemented. More nutrients, sediment and pesticides may be transported to water courses and bodies without conservation programs implementing mitigation measures. Further, without conservation programs, pathogens would be in closer contact with water transportation routes and increase the potential for food product contamination.

3.4.2 Alternative 2- No Action- 2002 EQIP Requirements

There would be no direct impacts to surface water quality, ground water, wetlands, or floodplains associated with continuation of the current 2002 Act EQIP requirements which would still be subject to further implementation by State and local field offices of NRCS.

However, it is likely for there to be beneficial indirect effects on surface water quality, groundwater, wetlands functions and values, and floodplains, which could occur with implementation of conservation practices by EQIP participants according to the 2002 requirements. For example, the Riparian Forest Buffer conservation practice is designed to protect surface water quality by filtering out sediment, organic materials, fertilizers, pesticides, and other pollutants before they reach the adjacent water body. Other conservation practices designed to protect and restore surface water quality include Re-establishment of Permanent Vegetation that reduces the potential for wind and water erosion that could transport sediment to nearby waterways. Improved management through the implementation of practices such as Nutrient Management and Irrigation Water Management also reduce the likelihood of pollutant and sediment transport and improve the efficiency of nutrient and water use on agricultural lands.

Likewise, indirect beneficial effects to wetlands under Alternative 2 could occur through the implementation of such conservation measures as wetland enhancement, wind erosion control, and conservation buffers. The Council on Environmental Quality (CEQ) noted in their recently released report, "Conserving America's Wetlands 2008: Four Years of Partnering Resulted in Accomplishing the President's Goal," EQIP has restored "33,808 acres of wetlands, (and enhanced and improved) an additional 147,302 acres" since the program was established in 1986 (Conserving America's Wetlands, April 2008).

Appendix B contains a listing of the most frequently applied conservation practices to address water resource concerns in 2007. Based on this information, it is anticipated that a continuation of the current 2002 requirements (Alternative 2), would result in approximately the same number and distribution of practices applied. Accordingly, it is anticipated that there would be a total of 3,029,375 contracts implemented to benefit irrigation efficiency. This translates into over 2,000,000 acres of land where conservation practices are applied to protect water resources.

There is the potential, under Alternative 2, for minor indirect short term and localized impacts to surface water quality, groundwater, wetlands, and floodplains as it relates to the implementation of conservation practices, depending on the area of the country where the conservation practices are applied. However, the site-specific environmental evaluation that is prepared as part of the conservation planning process would take into account this potential impact and provide the means to avoid or mitigate any minor or temporary negative impacts to water resources. If there is a need for a water quality permit (402 or 404 permit), then NRCS policy requires the producer to obtain those permits that contain the measures to ensure protection of the resource prior to NRCS providing EQIP financial assistance. One primary objective and purpose of EQIP as authorized by Congress is "avoiding, to the maximum extent practicable, the need for resource and regulatory programs by assisting producers in protecting soil, water, air, and related natural resources and meeting environmental quality criteria established by Federal, State, Tribal, and local agencies." Therefore, it is not anticipated there will be any long term negative impacts to surface water quality, ground water, wetlands, or floodplains for the application of conservation practices under Alternative 2.

There would be no direct impacts to surface water quality, ground water, wetlands, or floodplains associated with continuation of the current 2002 Act EQIP requirements which would still be subject to further implementation by State and local field offices of NRCS. The current EQIP practices implemented as a whole would continue to contribute to conservation by reducing the movement of nutrients, sediment and pesticides from agricultural fields, orchards, vineyards, etc. to water courses, and bodies along with wetlands and floodplains. This would continue to build soil resources as well as protect and keep clean streams, rivers and lakes. Pathogens would continue to be less likely to be transported and thus come into contact with food products. This is due to the conservation measures of EQIP enhancing and mitigating agricultural operations and contributing to healthy ecosystems and clean water.

3.4.3 Alternative 3- Agency Preferred Alternative-2008 EQIP Requirements

Potential impacts to water resources associated with Alternative 3 are the same as those described for Alternative 2 (the 2002 EQIP requirements) with the exception that conservation practices could be implemented in areas where conservation practices have not been applied before. Expanding the payment rates and designated set aside amounts (5% for beginning farmers or ranchers and 5% for socially disadvantaged farmers or ranchers) of total funding for historically underserved producers potentially provides for additional lands to be enrolled in EQIP. As a result, there is the potential for beneficial indirect impacts on water resources. Also, there is the potential for short-term, temporary, and/or localized negative impacts to the environment from the construction of certain conservation practices that involve ground disturbing activities which may impact water resources.

In comparison to Alternative 2, Alternative 3 potentially provides a greater possibility for additional EQIP participation and indirectly a greater potential for long term beneficial protection and enhancement of water resources.

Thus, indirect impacts associated with the application of conservation practices in States receiving financial assistance are anticipated. From a national perspective, Alternative 3 will have long term indirect beneficial effects by improving water resources along with unique and prime agricultural lands, soils, air, cultural resources, and fish and wildlife.

The general effects of conservation practices as summarized above are incorporated by reference from the Conservation Practices Physical Effects (CPPE) and National Handbook of Conservation Practices (NHCP).

There would be no direct impacts to surface water quality, ground water, wetlands, or floodplains associated with the implementation of the 2008 Act EQIP requirements. There may be an increase in scope as the 2008 EQIP program is expanded to meet the needs of limited resource, beginning, and socially disadvantaged farmers and ranchers. The EQIP practices implemented as a whole would continue to contribute to conservation by reducing the movement of nutrients, sediment and pesticides from agricultural fields, orchards, vineyards, etc. to water courses, and bodies along with wetlands and floodplains. This would continue to build soil resources as well as protect and keep clean streams, rivers and lakes. Pathogens would continue to be less likely to be transported and thus come into contact with food products. This is due to the conservation measures of EQIP enhancing and mitigating agricultural operations and contributing to healthy ecosystems and clean water.

Mitigation and Adaptive Management

For water resources, conservation practices have many benefits. Some examples are: improve surface water quality, control excessive runoff, flooding, or ponding, improve water flows, reduce pollutant loadings of pesticides in ground and surface water, reduce pathogens in surface water and groundwater, and reduce suspended solids in surface water.

Adaptive management is an integral part of the conservation planning process. NRCS follows up throughout the life of the EQIP contract and operation and maintenance agreement to ensure that conservation practices applied are effective at addressing the resource concern.

As part of the conservation planning process, a site-specific environmental evaluation (EE) is prepared to address and ensure that the appropriate conservation practices are applied to enhance, improve, and conserve water resources. The EE further assists the Agency by identifying any other site-specific mitigation needs.

Permits

Depending on the extent of work conducted under the practices, several permits may be required from the State water quality department or EPA. The completion of a site-specific environmental evaluation would determine appropriate water quality permits that may be required to be obtained by the producer prior to receiving any financial assistance from NRCS. These water quality permits require that the applicant meet water quality standards. If there is a need for a water quality permit (402 or 404 permit), then NRCS policy requires the producer to obtain those permits that contain the measures to ensure protection of the resource prior to NRCS providing EQIP financial assistance. The possible permits that may be required include:

Section 402 of the Clean Water Act-National Pollutant Discharge Elimination System Permits

EPA currently regulates storm water discharges from construction sites that are 1 acre or larger. Documenting project compliance with the National Pollutant Discharge Elimination System (NPDES) general permit involves the preparation of a storm water Pollution Prevention Plan and submittal of a Notice of Intent to Discharge to EPA (please refer to www.epa.gov/ow/npdes for further details on the Section 402 permitting process).

Section 404 of the Clean Water Act- Dredge and Fill Permits

The US Army Corps of Engineers (USACE) regulates the placement of dredged or fill material in waters of the U.S., which includes wetlands, pursuant to 33 CFR Parts 320-3320. Work and structures that are located in, or that affect, navigable waters of the U.S, including work below the ordinary high water in non-tidal waters are also regulated by the USACE. Wetlands constructed from uplands typically do not require a 404 permit. The USACE

makes all determinations on whether a permit will be needed (see www.usace.gov for further details on the Section 404 permitting process).

Section 401 Water Quality Certification

Pursuant to Section 401 of the Clean Water Act, Federal permits for projects in wetlands or waterways must be certified by the State licensing or permitting agency to ensure that State water quality standards are met. Projects requiring a Section 404 or Section 402 also need a Section 401 permit (please refer to www.epa.gov/ow for further details on the Section 401 certification).

Coastal Zone Management Act Consistency Determinations

Coastal area protection is regulated under the Coastal Zone Management Act (16 U.S.C. §1451).

Under the Coastal Zone Management Act (16 U.S.C. §14569(c)(1)(A)) it is stated that:

“Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent, to the maximum extent practicable, with the enforceable policies of approved State management programs.”

The Act also requires Federal agencies undertaking such activities to provide a certification that the proposed activities will comply and be consistent with the State’s approved management plan to the appropriate licensing or permitting agency. This certification, also known as a consistency determination, should be presented in an application for a required Federal license or permit to conduct any activity affecting land or water uses in the coastal zone. The appropriate licensing or permitting agency is generally the State environmental agency’s office of coastal zone management or the equivalent.

The Act encourages each coastal State to develop a coastal zone management plan which provides for “increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, and improved predictability in governmental decision-making” (§ 303(3)). In effect, these plans regulate lands and water use specifically for the coastal zones. Federal agencies may not approve proposed projects which are judged to be inconsistent with a State’s approved management plan, unless this judgment is overridden by the Secretary of Commerce, who has principal authority over the Federal coastal zone management plan.

Floodplain Permits

There may also be the need for State or local floodplain permits. Federal policy designed to promote the prudent management of floodplains has been in effect since 1968, with the passage of the National Flood Insurance Act (P.L. 90-448, 42 U.S.C. §4001 et. seq.). By providing Federal subsidies for private flood insurance and requiring flood-prone

communities to have flood insurance as a condition to receiving Federal assistance, the law and the Flood Disaster Protection Act of 1973 (P.L. 93-234, 87 Stat. 939 [1973]), recognized the serious economic and environmental damage that can result from flooding in developed lowland areas.

Executive Order 11988 regulates the actions of Federal agencies that affect flood plains. This order requires all agencies undertaking, financing, or assisting proposed activities to determine whether they will occur in or affect a floodplain and to evaluate potential measures to avoid adversely affecting the floodplain. Location of floodplains can be determined by examining maps available from the U.S. Department of Housing and Urban Development, Federal Emergency Management Agency, and the U.S. Department of Agriculture, and State water resource planning agencies. Agencies should select, if they are available, viable alternative locations for undertakings that will not affect flood plains.

If construction or improvements will be undertaken or supported in an floodplain because no practicable alternative locations are available, and compliance with the EO has occurred, measures should be taken to minimize the risk of flood damage to or within the floodplain, such as flood proofing the facility to be constructed, elevating structures above base flood levels, or providing compensatory flood storage. In addition, public review may be required for each plan or proposal for action taking place within a floodplain.

3.5 Air Quality

Characterization of Resource

The Clean Air Act (CAA) is the primary Federal law that protects the Nation's air quality for the purposes of public health and welfare. NRCS, as a conservation agency, supports the CAA and the protection of air resources in general through our four air quality resource concern components: particulate matter (PM), ozone (O₃) precursors, greenhouse gases (GHGs), and odor.

National Ambient Air Quality Standards

The CAA requires the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS) for specific pollutants. These pollutants are known as criteria pollutants and are discussed further in the following section. The U.S. EPA has promulgated the current NAAQS in 40 CFR Part 50.

The NAAQS are intended to represent the maximum concentration of a particular pollutant in the ambient air (i.e., locations to which the general public has access) that will not adversely impact public health or welfare. The stringency of air pollution

regulations in a particular area is based upon whether that area is in attainment (i.e., is in compliance) or nonattainment (i.e., is not in compliance) with the NAAQS. Nonattainment areas will typically have more stringent control and permitting requirements than attainment areas.

Implications for agriculture: Agricultural operations are not currently exempt from compliance with the NAAQS. Therefore, if an agricultural operation is found to cause or contribute to an excess of the NAAQS, additional regulatory controls may be mandated for the agricultural source.

Criteria Pollutants

The term criteria pollutant is used to designate those air pollutants for which health-based criteria were used to establish NAAQS. The U.S. EPA has currently promulgated NAAQS for six criteria air pollutants:

- Ozone,
- Particulate matter (PM), regulated as:
 - o Fine PM - currently, PM_{2.5} (aerodynamic diameter less than or equal to 2.5 micrometers)
 - o Coarse PM – currently PM₁₀ (aerodynamic diameter less than or equal to 10 micrometers)
- Carbon monoxide (CO),
- Nitrogen dioxide(NO₂),
- Sulfur dioxide(SO₂), and
- Lead.

Ozone is not typically emitted directly from air pollutant emission sources. Rather, it is formed in the atmosphere via chemical reactions. As such, emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are regulated as precursors to ozone formation instead. Likewise, it is expected that emissions of NO_x and SO₂ will be regulated as precursors to PM_{2.5}, in addition to direct emissions of PM_{2.5}. Additionally, some areas are expected to regulate VOC and ammonia as precursors to PM_{2.5}, if it can be shown that these pollutants contribute to nonattainment of the PM_{2.5} standard for a particular area.

Implications for agriculture: The major criteria pollutant of concern for agriculture is particulate matter. Ozone is also a criteria pollutant of concern for agriculture but not to the degree/extent as PM. Agricultural operations can contribute to ozone and particulate matter concentrations via emissions of VOC, NO_x, direct PM, and ammonia. All biological organisms emit VOC, and VOC is also emitted during the breakdown or combustion of biological materials. NO_x is

generally associated with combustion, including farm vehicle, tractor, and irrigation engines, as well as with agricultural burning. Particulate matter may be either emitted directly (dust is a form of particulate matter) or formed in the atmosphere from other pollutants, such as ammonia from animal operations or fertilizer application. The other criteria pollutants (CO, NO₂, SO₂, and lead) are typically products of combustion.

Regional Haze Rule (RHR)

The Clean Air Act sets forth a national goal for visibility which is the “prevention of any future, and the remedying of any existing, impairment of visibility in Class I areas which impairment results from manmade air pollution.” There are 156 Class I areas across the country, including many well-known national parks and wilderness areas. Regional haze is visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area. In 1999 the EPA promulgated the Regional Haze Regulations under 40 CFR Part 51 to protect and improve the visibility at these Class I areas.

Implications for agriculture: Particulate matter is the major source of visibility impairment in Class I areas. Agricultural operations can contribute to particulate matter concentrations via direct emissions of PM and secondary formation of PM from precursor gases such as VOC, NO_x and ammonia.

State Implementation Plans (SIPs)

The U.S. EPA can delegate authority to implement the Clean Air Act requirements to State and local regulatory agencies on a more local level. In order to accomplish this purpose, State and local regulatory agencies are required to develop SIPs. A SIP is the collection of regulations a State or local regulatory agency will use to address air quality concerns in its area. SIP regulations that are developed with adequate public review and comment and that have been approved by the U.S. EPA are considered federally-enforceable.

Among other air quality regulations, SIPs generally include regulations regarding:

- Construction permits,
- Operating permits, and
- Emission standards for certain sources and pollutants.

SIPs may also contain other regulations that are not specifically required under the CAA (such as odor regulations), and these regulations do not necessarily have to be approved by the U.S. EPA. However, any SIP regulations that are not approved by the U.S. EPA are not considered federally-enforceable.

Implications for agriculture: A SIP is a mechanism by which State and local regulatory agencies can address local air quality concerns. The extent to which a particular SIP may impact agricultural operations in that area is directly related to the local air quality issues. For example, a State with a large population of animal feeding operations may have a SIP regulation that addresses odors from these operations. Alternatively, States with a significant amount of agriculture in a nonattainment area (such as California's San Joaquin Valley) may develop SIP regulations limiting the emissions from, or mandating regulatory controls for, agricultural sources. In fact, the San Joaquin Valley Air Pollution Control District has developed a SIP regulation whereby agricultural operations must select a certain number of specified conservation management practices to reduce emissions of PM₁₀.

General Conformity

Federal actions within a nonattainment or maintenance area must conform to the appropriate SIP requirements. Thus, the Determining Conformity of General Federal Actions to State or Federal Implementation Plans ("General Conformity") Rule was promulgated under 40 CFR Parts 6, 51, and 93. General Conformity applies to all actions supported, funded, or permitted by the Federal government within a nonattainment or maintenance area.

Implications for agriculture: Federal funds under programs such as EQIP are used to apply conservation practices on the ground and as such are subject to General Conformity if the conservation practices are applied in a nonattainment or maintenance area. Most conservation practices mitigate impacts to air resource and thus can be presumed to conform to General Conformity requirements.

Greenhouse Gases and Carbon Sequestration

Greenhouse gas emissions are a global concern and while agricultural emissions of GHGs are minor compared to other sectors such as industry, transportation and electric generation, agriculture is also both a source and an important means of reducing GHGs. Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are the primary greenhouse gases of concern from agricultural operations. However, agriculture is also an important means of reducing greenhouse gases through soil carbon sequestration. Anthropogenic sources of CO₂ in agriculture are from combustion processes and soil tillage. Nitrous oxide is emitted due to nitrogen conversion processes in the soil and manure piles, and methane is primarily from animal production and manure storage. Conservation Tillage practices, Nutrient Management, Manure Management, and Anaerobic Digesters are some of the conservation practices that can mitigate these emissions. Conservation Tillage practices will in particular enhance soil carbon sequestration. Although GHGs are not currently regulated under the CAA, State, local, and tribal governments may develop regulations concerning emissions of GHGs.

Odors

Odors are also not specifically regulated under the CAA. However, State, local, and tribal governments may develop regulations regarding odors. The main classes of odorous compounds produced by agricultural sources are VOCs, odorous sulfur compounds, and ammonia. Agricultural odors typically arise from animal operations, manure management, and land application of manure. Conservation practices such as feed management, nutrient management, manure management, lagoon covers, and anaerobic digesters can reduce the production and emission of odorous compounds.

Baseline Environment

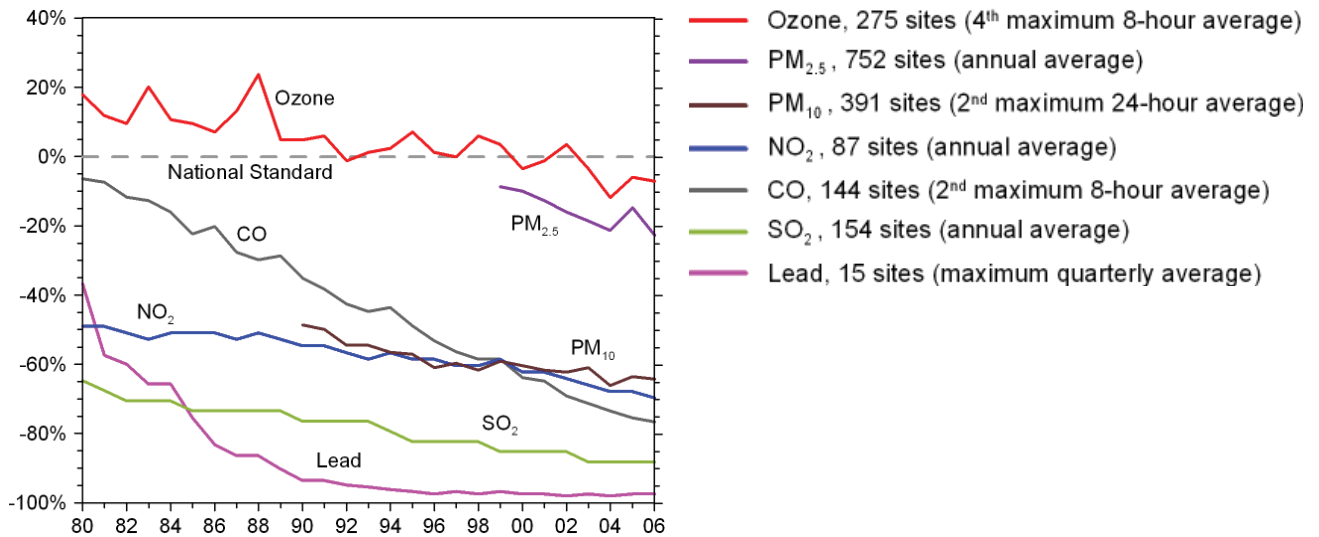
Cleaner cars, industries, and consumer products have contributed to cleaner air for much of the United States. Since 1980, nationwide air quality, measured at more than a thousand locations across the country, has improved significantly for all six criteria pollutants.

Figure 3-7 shows national trends in the criteria pollutants relative to their air quality standards, as measured by monitors located across the country. Most pollutants show a steady decline throughout the time period with a couple of exceptions. Ozone declined in the 1980s, leveled off in the 1990s, and showed a notable decline after 2002.

Most of the pollutants show a smooth, gradual trend from year to year, while ozone and PM_{2.5} trends are not smooth and show year-to-year influences of weather conditions which contribute to their formation.

All of the six principal pollutants show improvement over the 27-year period. While progress has been made nationally, there are still areas that have local air quality problems caused by one or more pollutants. Ozone and fine particle pollution continue to present air quality concerns throughout much of the U.S., with many monitors measuring concentrations above, or close to, national ambient air quality standards.

Figure 3-7 Comparison of national levels of the six principal pollutants to national ambient air quality standards, 1980-2006.



National levels are averages across all sites with complete data for the time period.

Note: Air quality data for PM₁₀ and PM_{2.5} start in 1990 and 1999, respectively.

Source: <http://www.epa.gov/air/airtrends/2007/>

Anticipated Environmental Impacts

Impacts to air resources would be considered significant if they exceeded the national ambient air quality standards for particulate matter, ozone precursors, greenhouse gas emissions, or odor.

3.5.1 Alternative 1- No Action- Not Implementing EQIP

Under Alternative 1, it is anticipated that air quality resource concerns for agriculture (PM, ozone precursors, GHGs, and odors) could be either improved or degraded, depending on the local conditions. For example, in areas with air quality problems, regulations may require agricultural sources to install additional controls that improve air quality, while in other areas; a minor level of air quality degradation may be tolerated. In areas where agricultural sources are not required to install additional controls (i.e., the area has good air quality), not implementing EQIP would remove a beneficial incentive for improving and/or maintaining air quality, which could lead to a minor degree of air quality degradation.

3.5.2 Alternative 2- No Action- 2002 EQIP Requirements

There would be no direct impacts to air quality associated with continuation of the current 2002 Act EQIP requirements. Current EQIP requirements would still be subject to further implementation by State and local agencies of NRCS.

However, it is likely that a beneficial indirect effect on air quality with implementation of conservation practices by EQIP participants according to the 2002 requirements. Although a more complete list of conservation practices that can improve air quality is included in Appendix B, a few examples are shown below:

- Conservation tillage practices such as combining operations to reduce trips across a field, mulch till, no-till, direct seed, and strip till will enhance soil carbon sequestration and reduce PM and ozone precursor emissions.
- Feed, manure, and nutrient management can be implemented to reduce emissions of ammonia, oxides of nitrogen (NO_x), and nitrous oxide (N₂O) to address the PM, ozone precursors, GHGs, and odor air quality resource concerns.

Table 3-3 shows the application of a few conservation practices for 2007.

Conservation Practice	Applied on	Number of applications
Residue Management	2.2 million acres	44,000
Atmospheric Resource Quality Management	173,000 acres	186
Feed Management	14,000 animal units	41
Nutrient Management	2.7 million acres	79,000
Windbreaks	9.6 million acres	1100

Source: NRCS Performance Reporting System, July 2008

It is anticipated that implementation of Alternative 2 will result in short term localized minor impacts to air quality as the impacts relate to the implementation of conservation practices and depending on the area of the country where the conservation practices are applied. However, the site-specific environmental evaluation that is prepared as part of the conservation planning process would take into account this potential impact and provide the means to avoid or mitigate any minor or temporary negative impacts to air quality. Furthermore, one of the primary objectives and purposes of the EQIP as authorized by Congress is “avoiding, to the maximum extent practicable, the need for resource and regulatory programs by assisting producers in protecting soil, water, air, and related natural resources and meeting environmental quality criteria established by Federal, State, Tribal, and local agencies.” Therefore, it is not anticipated for there to be any long term negative impacts to air quality from the application of conservation practices under Alternative 2.

Appendix C contains a listing of the most frequently applied conservation practices to address air resource concerns in 2007. Based on this information, it is anticipated that a

continuation of the current 2002 requirements (Alternative 2), would result in approximately the same number and distribution of practices applied. Accordingly, it is anticipated that there would be a total of 37,686,466 acres of land where conservation practices are applied to protect air quality.

If there is a need for an air quality permit which would be identified as part of the conservation planning effort and in the development of the site-specific environmental evaluation, then NRCS policy requires the producer to obtain those permits that contain the measures to ensure protection of the resource prior to NRCS providing EQIP financial assistance to the producer.

Appendix A provides additional analysis of general effects of the indirect impacts resulting from application of conservation practices in different environmental settings (e.g., cropland, grazing land, etc.).

3.5.3 Alternative 3- Agency Preferred Alternative-2008 EQIP Requirements

Potential impacts to air quality associated with Alternative 3 are the same as those described for Alternative 2 with the exception that conservation practices could be implemented in areas where conservation practices have not been applied before. Expanding the payment rate and designated set aside amounts (5% for beginning farmers or ranchers and 5% for socially disadvantaged farmers or ranchers) of total funding for designated participants potentially provides for additional lands to be enrolled in the EQIP program. Furthermore, Conservation Innovation Grant (CIG) funds under EQIP have been increased to \$37.5 million/yr specifically for air quality, whereas in 2007, approximately \$2.6 million in CIG grants were air quality focused. As a result, there is the potential for additional beneficial indirect impacts for air quality, beyond what is discussed in Alternative 2 above.

Mitigation and Adaptive Management

For air quality, conservation practices are designed to improve air quality by mitigating the impact of, or reducing the emission of: PM, ozone precursors, GHGs, and odorous compounds.

Adaptive management is an integral part of the conservation planning process in that NRCS follows up throughout the life of the EQIP contract to ensure that conservation practices applied are effective at addressing the resource concern(s).

It is important to note that as part of the conservation planning process, a site-specific environmental evaluation (EE) is prepared to address and ensure that the appropriate conservation practices are applied to enhance, improve, and conserve air quality

resources. The EE further assists the Agency by identifying any other site-specific mitigation needs.

Permits

Depending on the extent of work conducted under the practices, air quality permits may be required from the State or EPA. The completion of a site-specific environmental evaluation would determine the appropriate air quality permit that may be required to be obtained by the producer prior to receiving any financial assistance from NRCS.

Permit Programs

There are two main types of permits that are used to regulate air pollutant emission sources – construction permits and operating permits.

Construction Permits

As mentioned previously, construction permits are used to regulate new air pollutant emission sources or changes to existing sources. As such, they are also referred to as New Source Review (NSR) permits. Certain construction permits are federally-mandated. Air pollutant emission sources that are not required to obtain Federal construction permits are typically subject to a State or local construction permit system. In either case, both Federal and State/local construction permits are typically issued by the State or local regulatory agency.

The level of construction permitting required depends considerably on the potential to emit (PTE) pollutants from the sum of all air pollutant emission sources at a site. Most agricultural operations do not qualify as major sources under the Federal guidelines and are subject instead to State or local construction permitting. However, because air pollutant emissions of agricultural sources are still being quantified, large operations, especially in nonattainment areas may be determined as major sources.

State or Local Construction Permits

Projects for which Federal construction permits are not required must still typically obtain some form of authorization prior to initiating construction. This authorization is usually received in the form of a State or local construction permit. The type, complexity, and stringency of these authorizations/permits varies widely among regulatory agencies and is dependent upon the types of air pollutant emission sources under review and the type and amount of emission increases associated with the proposed project.

Implications for agriculture: Most agricultural operations are not major sources and are therefore not required to obtain Federal construction permits. However, depending upon the SIP regulations in effect for the area in which the operation is located, many agricultural operations are now required to obtain some form of State or local permit or authorization prior to initial construction or initiating a modification of an

existing source. For example, a dairy that is considering the installation of an anaerobic digester may be required to obtain a permit for the digester and any other modifications associated with that project. Additionally, many State and local regulatory agencies now require permits for animal feeding operations prior to constructing the facility.

Operating Permits

Operating permits are used to authorize the operation of air pollutant emission sources following the completion of construction or modification of the sources. Additionally, existing sources may also be required to obtain an operating permit in order to authorize continued operation of the site. As with construction permits, certain sites may also be required to obtain a Federal operating permit. Air pollutant emission sources that are not required to obtain a Federal operating permit are typically subject to a State or local operating permit system. Most agricultural production operations are not currently subject to these regulations.

State or Local Operating Permits

Sites for which a Federal operating permit is not required must still typically obtain some form of authorization to operate. This authorization is normally received in the form of a State or local operating permit. As with State and local construction permits, the type, complexity, and stringency of State and local operating permits varies widely among regulatory agencies and is dependent upon the types of air pollutant emission sources, as well as the type and amount of pollutants emitted from those sources, at the site.

Implications for agriculture: Agricultural operations that are required to obtain construction permits are typically required to obtain operating permits upon completion of the new construction or modification. Additionally, larger operations, especially in nonattainment areas, may be determined to be major sources and therefore subject to Federal operating permit requirements. For example, several dairies in the South Coast Air Quality Management District in California have been required to obtain Federal operating permits.

3.6 Biological Resources- Vegetation, Wildlife, and Protected Species and Habitats

Characterization of Resources

Biological resources include plant and animal species and the habitats in which they occur. For this analysis, biological resources are divided into the following categories: plants, wildlife, and protected species. Protected species is inclusive of the definition provided in EQIP legislation for at risk species which means any plant or animal species as determined by the State Technical Committee to need direct intervention to halt its

population decline. Plants and wildlife refer to the plant and animal species, both native and introduced that characterize a region. Protected biological resources refers to migratory birds protected under the Migratory Bird Treaty Act of 1918 (MBTA), as amended,²⁰ threatened and endangered species and their critical habitats, protected under the Endangered Species Act (ESA),²¹ and essential fish habitats protected under the Magnuson-Stevenson Fishery Management and Conservation Act.²²

Baseline Environment

Vegetation and Wildlife

Vegetation is often described in terms of ecoregions, areas of relatively homogenous soils, vegetation, climate and geology (Bailey 1995). There are four levels of ecoregions: domain, division, province and section (also called subregion). There are three domains in the continental U.S. which are large scale areas of similar climates: humid temperate, Dry, and humid tropical. Within domains, there are a number of divisions, delineated by finer-scale climatic differences. Divisions are subdivided into provinces which are differentiated based on vegetation. Each ecoregion is characterized by wildlife common to that habitat. A description of each division and the associated vegetation and wildlife is incorporated by reference from the SEIS on the Emergency Conservation Program (June 2008).

Protected Species

Protected species for this analysis covers migratory birds, endangered and threatened species and their critical habitat, and essential fish habitat. The primary laws protecting these species are the MBTA, the ESA, and the MSFMCA.

Baseline information for migratory birds, endangered and threatened species, and critical habitat is incorporated by reference from the United States Fish and Wildlife (USFW) websites at <http://www.fws.gov/endangered/federalregister/1998/s980810b.html> and <http://www.fws.gov/endangered/wildlife.html>.

Appendix D provides a description and listing of conservation practices that can be used to promote and enhance pollinator habitat. Based on the new 2008 Act, applications for EQIP funding are given priority if they promote pollinator habitat.

There are 609 species of animals and 744 plants that are listed as endangered or threatened in the United States (Table 3.4-6/23/08 USFWS) under the ESA.

²⁰ Migratory Bird Treaty Act - <http://www.law.cornell.edu/uscode/16/ch7.html>

²¹ The Endangered Species Act - <http://www.fws.gov/endangered/ESA/content.html>

²² Magnuson-Stevenson Act of 1996 - http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/stat_reg_a.htm

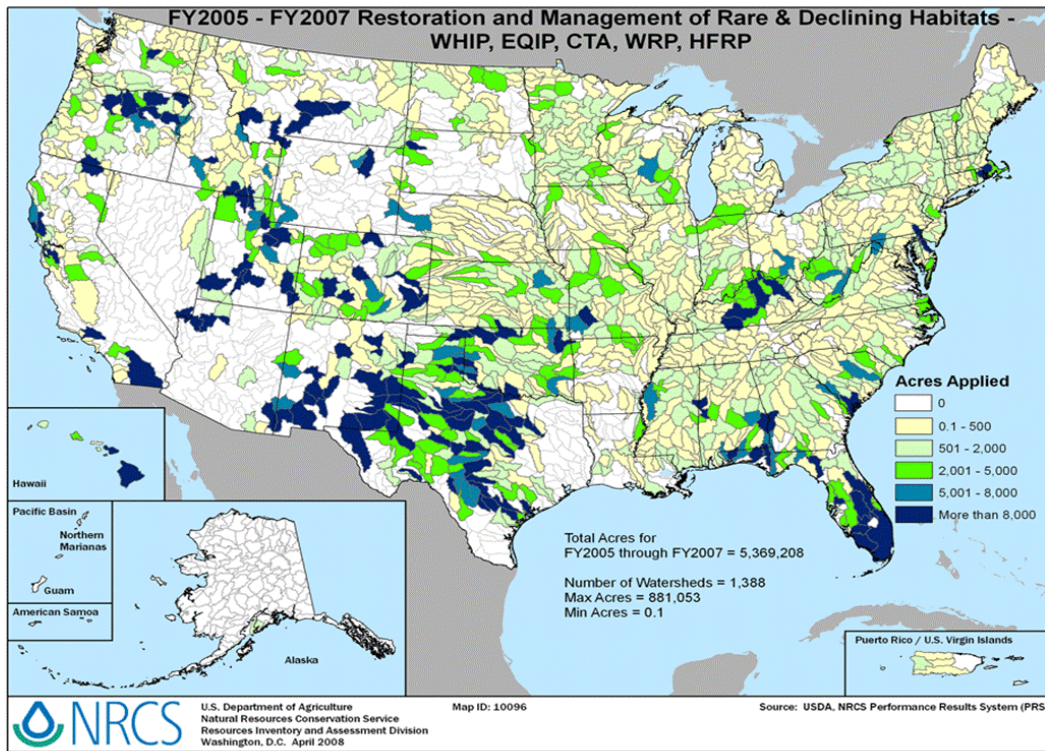
The conservation planning process involves site-specific environmental evaluations that help NRCS and the landowners determine the presence or absence of these species and applicable critical habitats on private and privately-controlled lands. If species are present, the NRCS planner determines whether an impact to the species or critical habitat may result from the planned activities. Where possible impacts are identified and financial assistance is planned; applicable procedures for interagency consultation under the ESA are followed.

Table 3-4 Listing of Endangered and Threatened Species

Summary of Listed Species Listed Populations ¹ and Recovery Plans ² as of 06/23/2008								
Group	United States			Foreign			Total Listings (US and Foreign)	US Listings with active Recovery Plans ³
	Endangered	Threatened	Total Listings	Endangered	Threatened	Total Listings		
Mammals	69	13	82	256	20	276	358	56
Birds	75	15	90	179	6	185	275	85
Reptiles	13	24	37	66	16	82	119	38
Amphibians	13	10	23	8	1	9	32	17
Fishes	74	65	139	11	1	12	151	101
Clams	62	8	70	2	0	2	72	70
Snails	64	11	75	1	0	1	76	69
Insects	47	10	57	4	0	4	61	38
Arachnids	12	0	12	0	0	0	12	12
Crustaceans	19	3	22	0	0	0	22	18
Corals	0	2	2	0	0	0	2	0
Animal Subtotal	448	161	609	527	44	571	1180	504
Flowering Plants	570	143	713	1	0	1	714	630
Conifers and Cycads	2	1	3	0	2	2	5	3
Ferns and Allies	24	2	26	0	0	0	26	26
Lichens	2	0	2	0	0	0	2	2
Plant Subtotal	598	146	744	1	2	3	747	661
Grand Total	1046	307	1353	528	46	574	1927	1165

¹A listing has an E or a T in the "status" column of the tables in [50 CFR 17.11\(h\)](#) or [50 CFR 17.12\(h\)](#) (the "List of Endangered and Threatened Wildlife and Plants"). Source: http://ecos.fws.gov/tess_public/

Figure 3-8
Map of Restoration and Management of Rare and Declining Habitats



As shown in figure 3.8, conservation practices have been used under a variety of conservation programs, including EQIP, to improve, enhance, and restore habitat for rare and declining endangered and threatened species.

Anticipated Environmental Impacts

Impacts to biological resources would be considered significant if there are severe adverse environmental impacts to fish and wildlife, endangered and threatened species, and/or critical habitat for biological resources.

3.6.1 Alternative 1- No Action- Not Implementing EQIP

Under the No-Action Alternative, there is a potential for minor direct adverse impacts to vegetation, wildlife, and protected species due to the conservation program not being implemented. Lands currently enrolled in the program could suffer from the potential impacts of agricultural production operations not implementing the conservation practices designed to avoid, mitigate, enhance, and improve biological resources, including:

- increasing the quality of plant diversity and productivity,
- control of invasive species,
- enhancement of pollinator habitat (Appendix D contains information on the conservation practices applied to enhance creation and protection of pollinator habitat),
- protection and restoration of endangered and threatened plant and animal species and their critical habitats,
- enhancement of habitat for fish and wildlife, and
- reduction in the potential for habitat fragmentation.

It is beyond the scope of this analysis to quantify the potential adverse impacts to these resources as producers may apply conservation practices regardless of whether financial assistance is provided to the producer. Producers may in fact use the conservation technical assistance provided by NRCS to employ conservation practices such as, Early Successional Habitat Development, Upland Wildlife Management, and Wetland Enhancement, to avoid, mitigate, enhance, protect, and improve the quality of the environment for these resources.

3.6.2 Alternative 2- No Action- 2002 EQIP Requirements

There would be no direct impacts to vegetation, wildlife, or protected species with continuation of the current 2002 Act EQIP requirements which would still be subject to further implementation by State and local field offices of NRCS.

However, it is likely for there to be beneficial indirect effects on vegetation, wildlife, and protected species and habitats from the implementation of conservation practices by EQIP participants according to the 2002 requirements. The following practices, for example, are designed to improve, protect, enhance, and restore habitat for endangered, threatened, and declining species: Early Successional Habitat Development (647),

Restoration and Management of Rare and Declining Habitats (643), Upland Wildlife Management (645), and Wetland Restoration (657), to name just a few.

The Wildlife Society (TWS) in conjunction with NRCS Conservation Effects Assessment Project (CEAP) released a joint report on the findings of multiple studies that evaluated the effects of conservation practices on fish and wildlife in September 2007. The findings of the Fish and Wildlife Response to Farm Bill Conservation Practices” September 2007 and 2000-2005 reports are summarized below and incorporated by reference (40 CFR Part 1502.2) from the reports and website at (<http://www.nrcs.usda.gov/Technical/nri/ceap/wildlife.html>). There are numerous other scientific journals and studies further supporting the conservation benefits associated with EQIP conservation practices located on the website.

Primary Conclusions

- Wildlife consideration in planning conservation practices is essential to achieving wildlife benefits.
- Wildlife response to grass establishment is significant, but variable by species, cover, and management.
- Linear practices such as fencing and riparian buffers provide high wildlife use and with proper planning and management, conservation practices can result in substantial landscape biodiversity benefit.
- Wetland establishment practices are associated with substantial wildlife benefit.
- Aquatic conservation practices have shown benefits to species, but landscape factors must be considered.

Effects of Cropland Conservation Practices on Fish and Wildlife Habitat

- Agricultural intensification has historically negatively impacted grassland, wetland, forestland wildlife, water quality, and aquatic habitats. Soil and water conservation practices provide some habitat on cropland landscapes.
- Conservation practices that reduce soil erosion and sediment delivery or that otherwise improve the quality of runoff water play significant roles in improving aquatic habitat quality.
- Filter strips and field borders are shown to increase wildlife use of crop fields.
- Grass-backed terraces provide some nesting cover and add to biodiversity in cropland.

Grassland Establishment for Wildlife Conservation

- Change from cropland to grassland use has had a positive influence on grassland wildlife. Grassland bird benefits have been well documented.
- Wildlife response to grassland establishment is a multi-scale phenomenon dependent upon vegetation structure and composition within the planting, practice-level factors, such as size and shape of the field, and its landscape context, as well as temporal factors such as season and succession.
- Grassland succession makes management an important aspect of wildlife habitat conditions.
- Benefits for a particular species of any management scenario will depend, in part, on the management of surrounding sites, and may benefit additional species but exclude others. Thus, the benefits of grassland establishment and management are location and species specific.

Agricultural Buffers and Wildlife Conservation: A Summary About Linear Practices

- Buffer width, vegetative composition and structure, and landscape context all affect wildlife communities benefitted.
- Positive effects are associated with longer and wider buffers, buffers associated with or connecting other habitat conservation practices such as blocks of cover or food plots, and with conservation practices that are grouped on the landscape.
- With careful planning and management, applying linear conservation practices widely within an agricultural landscape could be expected to have positive wildlife benefits compared with continued intensive row cropping.

Benefits of Farm Bill Grassland Conservation Practices to Wildlife

- Rangeland conservation practices (prescribed grazing, prescribed burning, range planting, and restoration of declining habitats) can provide wildlife benefits.
- Range planting and restoration of declining habitats have been shown to benefit wildlife, but determining appropriate comparisons can be problematic. Undisturbed grassland ecosystems have greater heterogeneity and diversity, making comparisons between managed and native conditions complex.
- Rangeland practices can be used to maintain, enhance, and restore needed plant communities and habitat conditions.

Fish and Wildlife Benefits Associated with Wetlands Establishment Practices

- The majority of published studies describe bird response to wetland restoration, with most reporting bird communities in restored wetlands to be similar to those of natural reference wetlands.

- Studies indicate that invertebrates and amphibians generally respond quickly to and colonize newly established wetland habitats.
- Key factors reported as correlated with wildlife species richness include wetland size, availability of nearby wetlands habitats, diversity of water depths and vegetation, wetland age, and maintenance and management.

Effects of Conservation Practices on Aquatic Habitats and Fauna

- Primary conservation goals in agricultural watersheds have been to (a) control non-point source pollutants such as nutrients, sediments, and pesticides; (b) maintain adequate water supplies for crop and animal production; and (c) maintain stream/river channel stability.
- Stream bank vegetation establishment has been documented to improve aquatic habitat.
- Fish passage, stream habitat restoration, and livestock use exclusion conservation practices have been shown to improve aquatic habitat quality.
- Grassed waterways, riparian forest buffer, and other buffer conservation practices designed to improve water quality have been shown to benefit aquatic habitat conditions through removal of contaminants from surface water runoff, providing shade, and promoting stream integrity.

It is anticipated, based on these reviews and studies, that there will be indirect beneficial impacts to biological resources. In particular, the potential indirect effects to vegetation/plants, wildlife, and protected species and habitats would be an overall beneficial or positive impact by the conservation practices helping to ensure that these resources and their habitat are protected, enhanced, improved, and restored.

Appendix B contains a listing of the most frequently applied conservation practices to address biological resource concerns in 2007. Based on this information, it is anticipated that a continuation of the current 2002 requirements (Alternative 2), would result in approximately the same number and distribution of practices applied. Accordingly, it is anticipated that there would be a total of 2,111,482 acres of land where conservation practices are applied to protect biological resources.

3.6.3 Alternative 3- Agency Preferred Alternative-2008 EQIP Requirements

Potential impacts to biological resources (vegetation, wildlife, and protected species) from implementation of Alternative 3 would be the same as those described for Alternative 2 (the 2002 EQIP requirements) with the exception that conservation practices could be implemented in areas where conservation practices have not been applied before.

Expanding the cost share rate and designated set aside amounts (5 percent beginning farmers or ranchers and 5 percent for socially disadvantaged farmers or ranchers) of total funding for

historically underserved producers potentially provides for additional lands to be enrolled in the EQIP program. As a result, there is the potential for beneficial indirect impacts for biological resources.

If there is a need for any permit or authorization related to the ESA and the application of conservation practices, it would be identified as part of the conservation planning effort and in the development of the site-specific environmental evaluation. It is not anticipated for there to be any long term indirect negative impacts to biological resources from the application of conservation practices under Alternative 3.

Appendix A provides additional analysis of general effects of the indirect impacts resulting from application of conservation practices in different environmental settings (e.g., cropland, grazing land, etc.).

Mitigation and Adaptive Management

As part of NRCS conservation planning and site-specific environmental evaluation process, NRCS will consult on a State or site-specific level as needed and appropriate, to ensure EQIP program actions do not adversely affect endangered or threatened species, essential fish habitat, or any other protected resources. NRCS will also implement practices in a manner that is consistent with the NRCS policy to avoid, mitigate or minimize adverse effects to the extent feasible.

For example, State Conservationists may invite representatives of the USFWS and the National Marine Fisheries Service (NMFS), as applicable, to all State Technical Committee meetings and encourage their involvement in the development of program criteria within the State.

For ESA compliance involving EQIP activities, NRCS will also conduct Section 7 interagency consultations at a site-specific level when endangered or threatened species are determined to be present on a property. Through the Section 7 process, NRCS will determine whether the proposed action(s) may result in a “no effect,” “not likely to adversely affect”, or is “likely to adversely affect”, endangered or threatened species. As appropriate, determinations will also be made regarding impacts to designated critical habitats.

If a State has developed a Section 7 Programmatic Consultation, then certain conservation practices may have been determined to be within a category of actions that result in “no effect” or, in some cases, a “beneficial effect” to the endangered or threatened species. If so, there would be no need to further consult with USFWS under Section 7 to implement the conservation practice(s). However, it is important to note that the Section 7 Programmatic Consultation that has been concurred to by USFWS may delineate reasonable and prudent conservation measures that may need to be implemented in conjunction with conservation practice, even for actions determined to have “no effect” to endangered and threatened species.

If the Section 7 Programmatic Consultation determines that the proposed conservation practice(s) is (are) determined to be actions that either are “not likely to adversely affect”

or “likely to adversely affect” an endangered or threatened species, then a site-specific Section 7 consultation would be required. This may involve additional analysis and documentation (Biological Assessment and Biological Opinion) and possible issuance of an incidental take permit by USFWS and/or NMFS.

Permits

Depending on the extent of work conducted under the conservation practices, Section 7 consultation and an incidental “take” permit under ESA may be required if there are endangered and threatened species or designated critical habitats present on the property. Likewise, there may be a need for the property owner to obtain any necessary permits under MBTA for the presence of any migratory bird prior to receiving EQIP financial assistance. The completion of a site-specific EE would determine if consultation under ESA would be required and whether any permit or authorization would need to be obtained from the USFWS and/or NIMS.

3.7 Cultural Resources/Historic Properties

Characterization of Resource

Cultural resources are not defined in any of the historic preservation legislation nor NEPA however, the term is used throughout the Federal government to refer to historic, prehistoric, traditional, aesthetic and cultural aspects of the human environment (see also the definition of human environment in NEPA). In NRCS, the term is generally used to refer to any historic or archaeological property that has been identified during planning or to refer to “historic properties” as defined by the Advisory Council on Historic Preservation (ACHP) for implementation of Section 106 of the National Historic Preservation Act.²³

Cultural resources that are listed in or eligible for listing in the National Register of Historic Places (National Register) are called Historic Properties under the National Historic Preservation Act (NHPA), as amended.²⁴

Eligibility evaluation criteria for historic properties are defined by the regulations for the NHPA’s National Register of Historic Places program²⁵ and expanded in the ACHP regulations as: “any prehistoric or historic district, site, building, structure, or object, included on, or eligible for inclusion on the National Register of Historic Places.” This term includes artifacts, records, and remains that are related to and located within such

²³ NHPA, 36 CFR Part 800

²⁴ 16 U.S.C. 470w, definitions

²⁵ 36 CFR Part 60.4, criteria for evaluation

properties. The term also includes historic and cultural landscapes, properties, and places of traditional and cultural importance to an American Indian Tribe or Native Hawaiian organization, and that meet the National Register criteria.

To be eligible for inclusion in the National Register, a Historic Property should demonstrate significance in American history architecture, archeology, engineering, and culture and be present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- (a) are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) are associated with the lives of persons significant in our past; or
- (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) have yielded, or may be likely to yield, information important in prehistory or history.

Criteria considerations. Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of eligible districts.

Evaluating the effects to such historic properties that are protected under Section 106 of the NHPA, and other cultural resources protected under related authorities and NEPA itself, must be addressed under the NEPA process.²⁶ The regulations that implement Section 106 of the NHPA, requires Federal agencies to consider the effects of proposed actions on properties listed in or eligible for listing in the National Register in consultation with State Historic Preservation Officers, American Indian Tribal governments (and their Tribal Historic Preservation Officers (THPOs), Native Hawaiian Organizations, and other identified consulting parties that have interest in the lands on which the action is to take place. Many cultural resources have been identified and historic properties have been identified and evaluated in advance of construction projects, particularly since the passage of the NHPA. However, many areas, especially in regions that have rural agricultural communities, have never been inventoried to determine what cultural resources and historic properties may be present.

²⁶ 40 CFR Part 1502.25

Baseline

The baseline cultural environment includes a complex and extensive array of historic and prehistoric districts, sites, buildings, structures, landscapes, and objects. This environment encompasses and represents the full timeframe, range and diversity of human occupation in the United States. These cultural and historical foundations of the Nation are protected, appropriately, as a living part of our community life and heritage development in order to give a sense of place and orientation to all American people.

As Sections 1 and 2 of the NHPA States, "...[protection] of this irreplaceable [human] heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic and energy benefits will be maintained and enriched for future generations of Americans...It shall be the policy of the Federal Government, in cooperation with other nations and in partnership with the States, local governments, Indian tribes, and private organizations to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations...provide leadership...in partnership with States, Indian tribes, Native Hawaiians, and local governments...contribute to the preservation of non-federally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private mean".

This baseline cultural environment may be best protected by identification of its component parts (districts, buildings, structures, sites and landscapes), consultation with appropriate parties, and treatment through the NEPA and NHPA review processes as a dynamic and adaptive part of our current human environment.

Anticipated Environmental Effects

A significant effect on historic properties listed in or eligible for listing in the National Register is one that alters the characteristics that make it eligible for the National Register. Adverse effects are described in 36 CFR 800.45, the ACHP regulations for compliance with Section 106 of the NHPA. Effects may be direct, indirect, or cumulative and must be assessed by qualified historic preservation personnel in consultation with SHPOs, THPOs and Tribal governments in accordance with the ACHP regulations and NRCS must make decisions about subsequent actions, if any, in consultation with mandatory consulting partners.

3.7.1 Alternative 1- No Action- Not Implementing EQIP

Under Alternative 1, it is possible that there could be direct and/or indirect impacts to historic properties. If EQIP were not implemented, then lands that contain historic properties could be adversely impacted due to the lack of knowledge of their presence, significance, and protection under the NHPA.

Given that NRCS does conduct site-specific environmental evaluations and Section 106 reviews on EQIP eligible lands, the lack of such a program and no requirement for a site-specific environmental review could result in inadvertent adverse effect to historic properties by the landowner.

It is beyond the scope of this analysis to quantify the potential adverse impacts to historic properties due to lack of extant knowledge concerning the presence or absence of these important heritage resources on private lands.

3.7.2 Alternative 2- No Action- 2002 EQIP Requirements

There would be no direct impacts to historic properties associated with continuation of the current 2002 Act EQIP requirements which would still be subject to further implementation by State and local levels of NRCS.

However, it is likely for there to be beneficial indirect effects to historic properties from the conservation planning process and site-specific environmental evaluation process because some of these important heritage resources would be identified and delineated. The environmental evaluation and Section 106 review processes should be able to determine the need for consultation with SHPO, Tribes and THPOs under Section 106 of the National Historic Preservation Act (NHPA) in order to ensure the appropriate measures are taken to address and take into account possible effects to historic properties.

There is the potential for indirect impacts from the application of conservation practices on private and non-Federal lands. However, these indirect impacts would be addressed (avoided, treated, mitigated) and dealt with on a case by case basis through the Section 106 compliance process for NHPA. NRCS would ensure compliance with the NHPA Section 106 process and associated authorities through NRCS State Offices following the procedures outlined in the Advisory Council on Historic Preservation's (ACHP) regulations (36 CFR Part 800) or NRCS alternate procedures (nationwide Programmatic Agreement), if applicable. In these agreements, NRCS may invite the SHPO and federally recognized Tribes (or their designated Tribal Historic Preservation Officers) to enter into long term consultation agreements that focus review and consultation, in accordance with the requirements stipulated in the nationwide PA.

In cases where there are no State-level agreements or tribal consultation protocols for tribes that have an interest in the EQIP project, NRCS must comply with the provisions of the ACHP Section 106 regulations prior to proceeding to implementation of the action.

Even though NRCS will consult on a site-specific level for compliance with Section 106 NHPA and the ACHP implementing regulations, it is probable that in general there are several conservation practices that can result in beneficial effects to National Register properties. For example, wind erosion control conservation practices that retard topsoil

depletion can also result in beneficial effects (stability) for archaeological sites that are National Register listed or eligible properties. Archaeological sites subject to wind erosion may be deflated into a thin layer thereby destroying their data or interpretive value. Another example could be the replanting of vegetation through the conservation practice of windbreaks or shelterbelts that may have originally been a contributing element of a farmstead or other property being eligible for or listed on the National Register and, as a result, the replanting might restore the long term integrity of the property.

There is also the likelihood for short term localized indirect negative impacts from conservation practices such as any ground disturbing activities. However, it is important to note that the site-specific environmental evaluation and NHPA Section 106 compliance review processes would address the appropriate means for mitigating impacts to historic properties.

3.7.3 Alternative 3- Agency Preferred Alternative- 2008 EQIP Requirements

Potential effects to historic properties from implementation of Alternative 3 would be the same as those described for Alternative 2 (the 2002 EQIP requirements) with the exception that conservation practices could be implemented in areas where conservation practices have not been applied before. There would be no direct effects from the national rulemaking, but there may be indirect effects from the application of the conservation practices.

Expanding the payment rate for historically underserved producers and designated set aside amounts (5 percent beginning farmers or ranchers and 5 percent for socially disadvantaged farmers or ranchers) of total funding for designated participants potentially provides for additional lands to be enrolled in EQIP. This could result in either long term beneficial or short term negative indirect effects to historic properties. However, it is important to note that the site-specific environmental evaluation and NHPA Section 106 compliance review processes would address the appropriate means for mitigating impacts to historic properties.

The need for compliance with Section 106 of NHPA for the application of conservation practices shall be identified during the conservation planning effort, site-specific review and consultation under the ACHP regulations, and in the development of the site-specific environmental evaluation. Thus, Alternative 3 is not likely to cause long-term adverse effect to historic properties because NRCS policy requires that conservation plans satisfy identified needs and at the same time minimize adverse effects of planned actions on the human environment through interdisciplinary planning before providing technical and financial assistance.²⁷ Further, the site-specific EE and any applicable Section 106 compliance process would ensure that adverse impacts are avoided, treated, or mitigated.

²⁷ (General Manual Title 190 Part 410.3- <http://directives.sc.egov.usda.gov/viewerFS.aspx?=666>)

Appendix A provides additional analysis of general effects of the indirect impacts resulting from application of conservation practices in different environmental settings (e.g., cropland, grazing land, etc.).

Mitigation and Adaptive Management

As mentioned previously, a site-specific environmental evaluation and Section 106 review and consultation should identify the likely presence or absence of historic properties that need further consideration under the NHPA. In such cases, historic preservation professionals who meet the Secretary of Interior's professional qualification standards may need to conduct on-site identification and evaluation studies to determine whether there are or are not historic properties within the area of potential effect. If historic properties exist, these same historic preservation professionals must recommend to NRCS whether there will be an effect and if so, define the nature of the effect; if there is an adverse effect, NRCS must determine whether the undertaking (practice or system) may be moved or modified to avoid effects.

If an historic property is present and would be affected by the proposed practice or system (undertaking), the STC, SHPO, American Indian Tribes/THPOs and other consulting parties would consult on the need for project-specific mitigation measures or treatments, including avoidance of adverse effects by slight movement or redesign of the practice or system, if feasible. If there is an adverse effect anticipated, the NRCS must submit documentation to the ACHP as part of the Section 106 process. This documentation may include comments from all the consulting parties and a proposed Memorandum of Agreement (MOU) agreed upon by all the consulting parties that outline the steps that will be taken to avoid, treat, minimize or mitigate the adverse effects and afford the Counsel an opportunity to participate in resolution of any potential adverse effects.

3.8 Socioeconomic Resources

Characterization of Resource

Socioeconomic analyses generally include detailed investigations of the prevailing population, income, employment, and housing conditions of a community or area of interest. The socioeconomic conditions of a region of influence (ROI) could be affected by changes in the rate of population growth, changes in the demographic characteristics of a ROI, or changes in employment within the ROI caused by the implementation of the proposed action.

Socioeconomic resources within this Programmatic EA include general information from a national perspective on total population, rural population, and farms receiving EQIP financial assistance for 2007. These areas identify the components essential to describe the broad-scale demographic and economic components of the national agricultural operator population.

Baseline Environment

Socioeconomic Resources

Between 1997 and 2006, the number of farms in the U.S. increased 8.99 percent; of this, between 1997 and 2002, the number of farms increased 11.36 percent, while a decline in the number of farms was recorded between 2002 to 2006 (2.13 percent).²⁸

The number of family forest landowners in the coterminous United States increased from 9.3 million in 1993 to 10.3 million in 2003, and these owners now control 42 percent of the Nation's forestland. The reasons why people own forestland are diverse. Some of the more common ones are aesthetic enjoyment; the tract is part of a farm or home site, and to pass the land on to their heirs. Half of the family forest landowners have harvested trees, but only 3 percent of them have a written forest management plan.²⁹

USDA Agricultural Resource Management Survey (ARMS) data indicates that approximately 44.3 percent of all farms in 2006 received at least one type of government payment associated with agriculture. Table 3-5 illustrates the average government payment per farm by region. Only farms receiving government payments in Appalachia had an adjusted gross income (AGI) less than the national mean household income (\$66,570) in 2006. All other regions, excluding Mountain and Pacific, had AGI less than \$200,000 in 2006 for farms receiving government payments. Average government

²⁸ USDA 2002

²⁹ Butler, B.J.; Leatherberry, E.C. 2004. America's Family Forest Owners. *Journal of Forestry*. Oct/Nov: 4-14.

payments ranged from a low of \$7,163 in the Appalachia region to a high of \$23,192 in the Pacific region.

Table 3-5 2006 Farms Receiving Government Payments by Production Region

	All	Northeast	Lake States	Corn Belt	Northern Plains	Appalachia	Southeast	Delta	Southern Plains	Mountain	Pacific
Farms receiving government payments	923,636	37,696	123,053	233,509	140,960	149,099	32,977	39,409	94,895	48,297	23,743
Percent of all farms (%)	44.3	32.1	55.6	60.2	77.9	48.1	21.7	32.7	31.1	36.4	15.3
Average gross cash income (\$)	154,835	196,556	144,517	148,896	171,384	64,743	138,489	122,864	135,966	258,821	607,644
Average government payments (\$)	12,687	12,908	10,587	13,396	13,932	7,163	18,746	16,023	12,303	16,586	23,192
Percent of gross cash income (%)	8.2	6.6	7.3	9.0	8.1	11.1	13.5	13.0	9.0	6.4	3.8
Combined Average Government Payment by Program (\$)											
Direct payments	4,691	2,630	3,886	5,565	6,392	1,172	5,525	7,778	4,800	4,536	9,129
Counter-cyclical payments	3,024	2,509	2,554	3,923	2,589	923	6,211	4,592	3,923	2,659	3,342
Loan deficiency payments	547	343	824	453	734	416	1,058	192	263	770	642

¹ Source: USCB 2002

² Source: USDA 2002

Table 3-5 2006 Farms Receiving Government Payments by Production Region (cont'd.)

	All	Northeast	Lake States	Corn Belt	Northern Plains	Appalachia	Southeast	Delta	Southern Plains	Mountain	Pacific
Milk income loss contract payments	434	2,728	1,284	100	78	150	131	89	66	446	1,996
Disaster and emergency assistance payments	364	336	122	42	648	1	2,247	881	643	406	753
Conservation Program payments	2,626	3,282	1,603	3,179	3,271	718	1,462	2,251	2,338	6,044	6,018
Tobacco Transition Program payments	594	120	21	33	0	3,212	1,356	0	0	105	233
Other Federal program payments	238	116	229	66	149	373	287	165	185	860	857
State and local program payments	169	845	63	34	72	197	468	75	86	760	221

¹ Source: USCB 2002

² Source: USDA 2002

Anticipated Environmental Impacts

For this analysis, socioeconomic impacts would be considered significant if a large percentage of gross income from farming operations was lost due to program changes or the farming operations were unrecoverable due to financial burdens wholly borne by the farm operators due to program changes.

3.8.1 Alternative 1- No Action- Not Implementing EQIP

Under Alternative 1, there is anticipated to be an adverse impact on socioeconomic resources if EQIP were not implemented. EQIP provides financial assistance to farmers and ranchers, and Non-Industrial Private Forestland (NIPF) owners for the implementation of conservation practices to help maintain, enhance, restore, and improve private and non-Federal lands. Without the financial assistance of EQIP funds, landowners may not be able to afford to implement conservation practices on these lands. The direct and primary beneficial socioeconomic impact of the program is to provide conservation practice financial assistance into the local economy.

The local community benefits indirectly from the program through the conservation and maintenance of the productive capability of the land, through off-site environmental benefits, and through the money spent locally. With the assumption that EQIP funds are spent in the local community, the local trade and service sector of the economy can be expected to experience some effect in terms of the realization of additional income from

sales of products and services. As a result, Alternative 1, without EQIP being implemented, would result in potential long-term negative impacts to local economies.

3.8.2 Alternative 2- No Action- 2002 EQIP Requirements

Under Alternative 2, there is anticipated to be minor long-term negative impacts to socio-economic resources due to EQIP not having socially disadvantaged participants as a defined group eligible for higher-cost share rates, as provided under Alternative 3. Current overall funding for EQIP is approximately \$1 billion a year and this would not be expected to change with a continuation of the 2002 EQIP requirements. As such, financial assistance would continue to benefit local communities indirectly through the expenditure of these funds for the purchase of goods and services for implementation of the conservation practices. Further, it is noted that conservation program payments would be provided in the same manner as depicted in Table 3-5 with the Pacific region receiving the most conservation program dollars (6,018) and the Appalachia region receiving the least (718) conservation program dollars.

3.8.3 Alternative 3- Agency Preferred Alternative- 2008 EQIP Requirements

The potential impacts associated with the proposed 2008 EQIP requirements to provide higher payment rates and specified set aside amounts of total EQIP funding for historically underserved producers is anticipated to provide for long-term benefits for local economies and underserved communities. The increased payment rates and total EQIP set aside amounts for historically underserved producers would conceivably result in an increase in the number of eligible producers some of which may also be NIPF owners. As a result, there is the potential for long-term positive benefits associated with the proposed action.

Setting aside five percent of the funds for beginning farmers or ranchers and five percent of the funds for socially disadvantaged farmers or ranchers may create spending problems for States that do not have a large number of eligible EQIP participants meeting the beginning or socially disadvantaged farmer or rancher definitions. Therefore, it may be appropriate to set an overall 10 percent target and give State Conservationists the discretion to designate money to these specified groups based on potential. For example, a State may provide seven percent of the funds to beginning farmers and ranchers and three percent of the funds to socially disadvantaged farmers and ranchers. This option provides State Conservationists flexibility, while maintaining the national statutory targets.

Under Alternative 3, the total EQIP funding cap per participant over a six year period was reduced from \$450,000 to \$300,000 by Congress. Total program funding for EQIP

remains at \$1 billion per year. It is anticipated that there would be little to no effect from the required change given total program funding would not change.

There is also anticipated to be multiple beneficial indirect effects on the environment from implementation of Alternative 3 compared to continuation of the old program (Alternative 2). Based on the EQIP Benefit Cost Analysis, it is anticipated for there to be the following benefits of Alternative 3 compared to Alternative 2: soil loss reduction on 11,453,432 acres under the new EQIP program requirements and funding from 2008-2012 compared to 7,710,220 acres of soil loss reduction under the 2002 EQIP program funding requirements; grazing improvement on 50,830,114 acres for Alternative 3 compared to 34,217,807 acres under Alternative 2; irrigation improvement/water savings on 5,733,405 acres under Alternative 3 compared to 3,859,613 acres under Alternative 2; air quality improvements on 11,482,389 acres under Alternative 3 compared to 7,729,713 acres under Alternative 2; non-waste nutrient management improvements on 16,241,123 acres under Alternative 3 compared to 10,933,196 acres under Alternative 2; wildlife improvements on 8,084,841 acres under Alternative 3 compared to 5,442,552 acres under Alternative 2; carbon sequestration on 59,313,446 acres under Alternative 3 compared to 39,928,615 acres under Alternative 2; and energy savings on 10,635,881 acres under Alternative 3 compared to 7,159,861 acres under Alternative 2.

Other potential long term benefits to the implementation of EQIP program using Alternative 3 concern off-site benefits. The general categories of benefits along with a select set of socioeconomic benefits include, but are not limited to the following list. Note that qualitative or quantitative values for each of the listed resource issues, can be aggregated to measure societal benefits. However, this would require a more in depth examination than required for this concise analysis.

Income

- Increased net income to farmers
- Lower production costs
- Increased crop yields
- Increased farming efficiency and associated decreased use of personal and environmental resources
- Increased property value
- More available capital for investment

Human Health

- Meeting local standards for clean drinking water
- Improved air quality

Animal and Plant Health

- Decreased animal sickness
- Decreased animal morbidity
- Decreased animal mortality
- Increased wildlife habitat
- Increased pest control

Community Viability and Farm Economy

- Maintenance of agricultural businesses
- Maintenance of agricultural services
- Maintenance of local tax structure impacting school budgets, road maintenance
- Improved property values

Infrastructure

- Decreased costs in road surface maintenance
- Reduction in ditch maintenance costs
- Decreased costs in sewage treatment plant maintenance

Water Quality and Water Quantity

- Improvement in drinkable, fishable, swimmable waters
- Improvement in fish health and populations, resulting in recreational sport fishing
- Increased ability to meet TMDL goals
- Increase in water sport recreation, boating, canoeing, etc.
- Improvement in navigable waters
- Reduced costs of dredging
- Improvement in groundwater recharge
- Increased tourism revenues
- Decreased flooding

Aesthetics

- Improvements in rural landscape
- Improvements in water and air clarity, resulting in aesthetic improvement

Air Quality

- Improvements in air quality

Social Psychology

- Emotional satisfaction with viable rural economy and family farms
- Improvement in land stewardship value

3.9 Environmental Justice

Characterization of Resource

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires a Federal agency to “make achieving Environmental Justice part of its mission by identifying and addressing as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” A minority population can be defined by race, ethnicity, or by a combination of the two classifications.

According to CEQ, a minority population can be described as being composed of the following groups: American Indian or Alaska Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (CEQ 1997). The U.S. Census Bureau (USCB) defines ethnicity as either being of Hispanic origin or not being of Hispanic origin. Hispanic origin is further defined as “a person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin regardless of race” (USCB 2001).

Each year the USCB defines the national poverty thresholds, which are measured in terms of household income and are dependent upon the number of persons within the household. Individuals falling below the poverty threshold are considered low-income individuals. USCB census tracts, where at least 20 percent of the residents are considered poor, are known as poverty areas (USCB 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract is considered an extreme poverty area.

Baseline Environment

Environmental Justice- Socially Disadvantaged, Limited Resources and Beginning Agricultural Operators

In this section, a characterization of Beginning, Limited Resource and Socially Disadvantaged Farmers is presented along with baseline participation rates and a discussion of the implication of EQIP funding for these groups.

Beginning Farmers

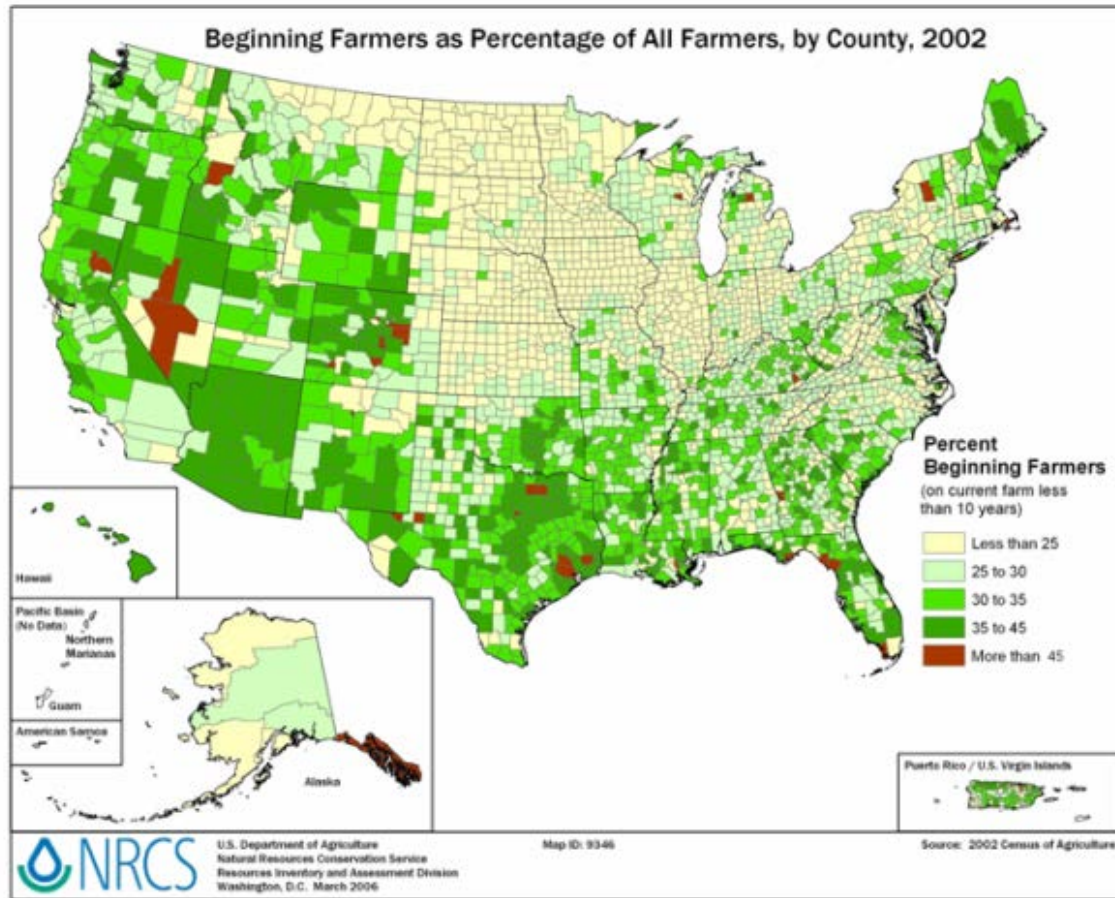
Trends

There are unique challenges of farmers and ranchers who are just beginning their agricultural businesses. These “beginning farmers and ranchers” are given special recognition in the Farm Bill in order to encourage the expansion in the number of farms and ranches across the nation, a number which has been declining for several years.³⁰

The following map (Figure 3-10) illustrates the general locations of beginning farmers across the U.S. As the map shows, the majority of beginning farmers and ranchers are grouped in the West and South. Some of the percentages depicted on the maps may be a result of a combination of low initial populations and expanding suburban areas, particularly in the western U.S. In general, however, this map gives a good general idea of the location of beginning farmers and ranchers.

³⁰ US Census of Agriculture,
<http://www.nass.usda.gov/census/census02/volume1/us/index1.html>

Figure 3-10
Percentages of Beginning Farmers and Ranchers Nationally



The 2002 Census of Agriculture reported roughly 2,112,000 principal operators of farms and ranches across the United States. The 2002 Census of Agriculture also captured information on how long principal operators have been on their current farms or ranches.

Of the more than two million principal operators reported in the 2002 Census of Agriculture, 593,139 were listed as being on their present farm or ranch for less than 10 years. The number of principal operators is used in this analysis, rather than total number of operators, to more accurately reflect the actual number of beginning agricultural operations, rather than the number of persons involved.

There is a lack of historical data on the trend in numbers of beginning farmers and ranchers nationally. Based on the 2002 Census of Agriculture, however, a general picture of beginning farmers and ranchers can be formed. Table 3-6 shows the self-identified racial distribution of principal operators as beginning farmers and ranchers nationally.

Table 3-6 Racial Characteristics of Principal Operator Beginning Farmers and Ranchers

RACE	NUMBER	PERCENTAGE
White	572,486	97%
Black or African American	8,560	1%
American Indian or Alaska Native	5,978	1%
Native Hawaiian or other Pacific Islander	411	<1%
Asian	3,048	<1%
MTORR*	2,656	<1%

*MTORR-More Than One Race Reported

(All data taken from 2002 Census of Agriculture, Table 52.)

Additionally, 18,619 individual beginning farmer or rancher principal operators (roughly 3% of all beginning farmer or rancher principal operators) identified themselves as being of Spanish, Hispanic, or Latino origin, according to the 2002 Census of Agriculture. This is an increase of about 33% from the levels reported in the 1997 Census of Agriculture. This indicates an upward trend in the number of Hispanics who are beginning farmers and ranchers, even though the numbers remain relatively low nationwide.

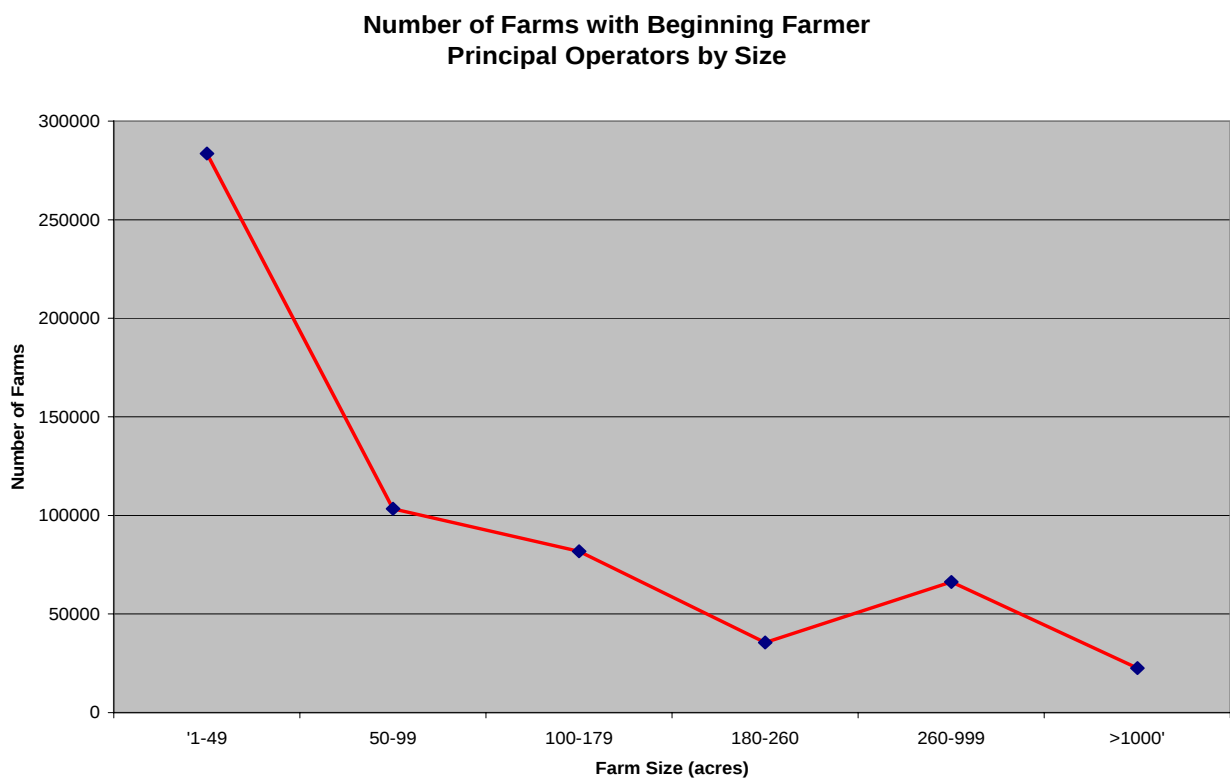
It should be noted that individuals of any race may self-identify as being of Spanish, Hispanic, or Latino origin, which is an ethnic and cultural designation. In other words, most Hispanics in the 2002 Agricultural Census identify their “race” as “white” (93%), but also consider themselves to be of “Hispanic” ethnicity.

The 2002 Census of Agriculture also identifies 90,523 beginning farmer or rancher principal operators as female. This is roughly 15% of all beginning farm and ranch principal operators. This number is up from 68,244 in 1997, also indicative of an upward trend in numbers of female beginning farmers and ranchers.

The majority of principal operators who are beginning farmers and ranchers have operations of less than 50 acres in size (See Figure 3-11, below). This may indicate that most beginning farmers and ranchers do not rely solely on their agricultural operations for a living, but instead farm or ranch part time. The 2002 Census of Agriculture shows that of all agricultural operations less than 10 acres in size (179,346), 42 percent (75,354) were operated by beginning farmers or ranchers. These are relatively small operations that would probably not be a sole source of income for the operators. Some may even be retirees or hobby farmers who use agriculture to supplement their incomes.

The number and percentage of beginning farmers and ranchers drops as operation size increases. For agricultural operations over 1,000 acres in size, roughly 13 percent of all principal operator were on their current operations less than 10 years. This inverse proportional relationship between operation size and number of beginning principal operators may indicate lower initial capital for investment, lower reliance on the operation as a sole source of income (as with retirees or hobby farmers), or a focus on niche market production, such as organically grown produce or livestock, which might be done successfully on smaller acreages.

Figure 3-11
Distribution of Farms by Size for Beginning Farmer and Rancher Principal Operators.



Source: All data taken from 2002 Census of Agriculture, Table 55

As noted earlier, the Farm Bill provided specific consideration for beginning farmers and ranchers. NRCS has responded to this part of the Farm Bill through a number of means, including technical assistance for natural resource planning, the Environmental Quality Incentives Program (EQIP), the various reserve (CRP, WRP, etc.) programs, and a variety of individual state level efforts.

NRCS has recognized that many beginning farmers and ranchers may not be familiar with many of the Federal, state and local financial and technical assistance programs.

Many NRCS State and field offices have launched outreach and educational efforts targeted at new, beginning, and small farmers and ranchers, in an effort to provide service to these groups.

NRCS has done a good job of addressing the needs of beginning farmers and ranchers under EQIP, which is the primary source of agency financial assistance for on-farm conservation planning. Table 3-7 shows the number of EQIP applications, contract approval rates, and dollars committed, for fiscal years 2003 - 2005.

Table 3-7 Beginning Farmer and Rancher Activity under EQIP, FY 2003-2005

	#. Applications	Contracts Approved	Percent Approved	Total Contract \$
FY 2003	2973	2301	77%	\$43,483,148
FY 2004	2879	2274	79%	\$47,336,750
FY 2005	6665	4135	62%	\$92,193,219

Although the percentage of total contracts approved for FY 2005 fell, the actual number of contracts almost doubled, and the dollars committed in those contracts went up 49 percent, a dramatic increase over earlier years. NRCS is providing a sound basis for the support of new and beginning agricultural operations and operators.

Limited Resource Farmers

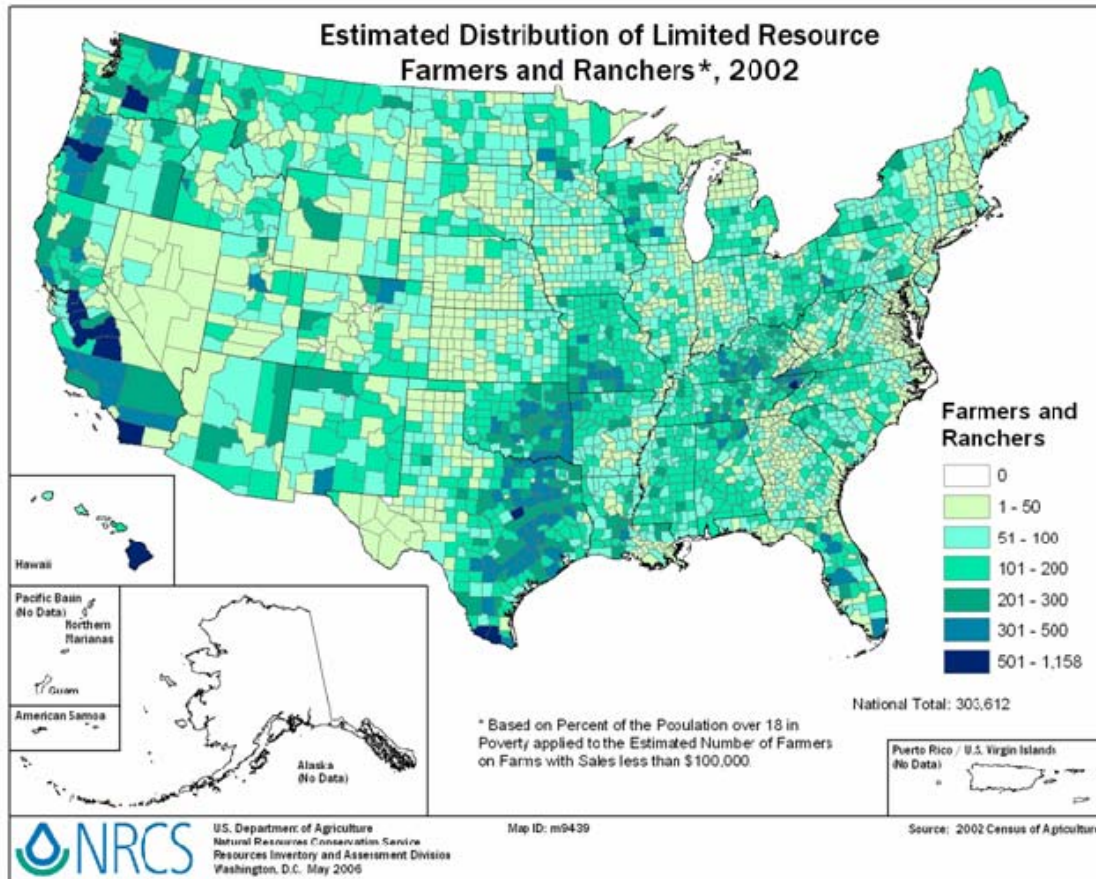
Trends

Based on 2000 US Population Census and 2002 Census of Agriculture data, Limited Resource Farmers and Ranchers (LRF) and minority farmers are increasing in number throughout the U.S.

Increasing numbers of LRF control increasing amounts of natural resources. These individuals have a greater need for low-cost, technically sound, approaches to natural resource conservation. Many of these individuals are also beginning farmers, new to agriculture, and may need expanded technical and financial assistance to build sustainable operations.

The numbers of farms owned and operated by LRF are increasing across the nation (Figure 3-12). This increase in number of farms may translate into more acres of natural resources controlled by LRF than ever before.

Figure 3-12
Number and Distribution of Limited Resource Farmers and Ranchers



According to Census of Agriculture data, the number of farms in the United States with annual sales of less than \$100,000 has increased from 1,565,839 in 1997 to 1,832,127 in 2002, an increase of roughly 17 percent.

Over the last several decades, NRCS has recognized that there are increasing numbers of LRF. As a result, several measures have been taken to address this change in the agricultural customer base.

LRF, by definition, have limited capital, and therefore tend to acquire lands that are lower in price, and/or lower in production potential. Because of the lower production potential, there may be greater potential for unintended natural resource problems to arise when trying to develop these lands for agricultural purposes. Areas with poor soil quality, for example, may be subject to increased fertilizer application, which may result in increased levels of nutrient runoff. Similarly, farming on sloping lands may result in increased runoff and soil erosion. However, these are only logical inferences since we do not have data that directly correlates LRF with increased environmental degradation.

Accordingly, the funding provided under EQIP provides LRF the capability to install conservation practices that improve, enhance, restore, and protect natural resources.

Many LRF are not full-time farmers. Small farm size and lack of capital to invest in necessary equipment often make it necessary for these individuals to work off the farm for wages in other economic sectors to make a living. For part-time farmers of this kind, NRCS can offer vital technical and planning assistance at low or no cost. For these operators, the services and programs offered by NRCS are of great value.

NRCS administers several programs that assist LRF to conserve natural resources on the Nation's private lands. As evident in Table 3-8, the funding levels in EQIP increased substantially in FY-2006. As part of the FY - 05 funds, \$6,000,000 was specifically targeted to Small and LRF in eleven southern states and Puerto Rico. Expanding funding levels to allow financial as well as technical assistance enhances the ability of NRCS to assist LRF.

Table 3-8 EQIP Funding for Limited Resource Farmers and Ranchers in FY 2003 through FY 2006

Program	FY 2003	FY 2004	FY 2005	FY 2006
Environmental Quality Incentives Program funding amount	\$31,794,286	\$18,313,110 ³¹	\$29,910,036	\$54,233,362
Percent of LRF applicants approved	73%	50%	62%	66%

³¹ See

<http://www.usda.gov/wps/portal/!ut/p/.s.7.0.A/7.0.10B?contentidonly=true&contentid=2005/05/0176.xml>

Socially Disadvantaged Farmers

Trends:

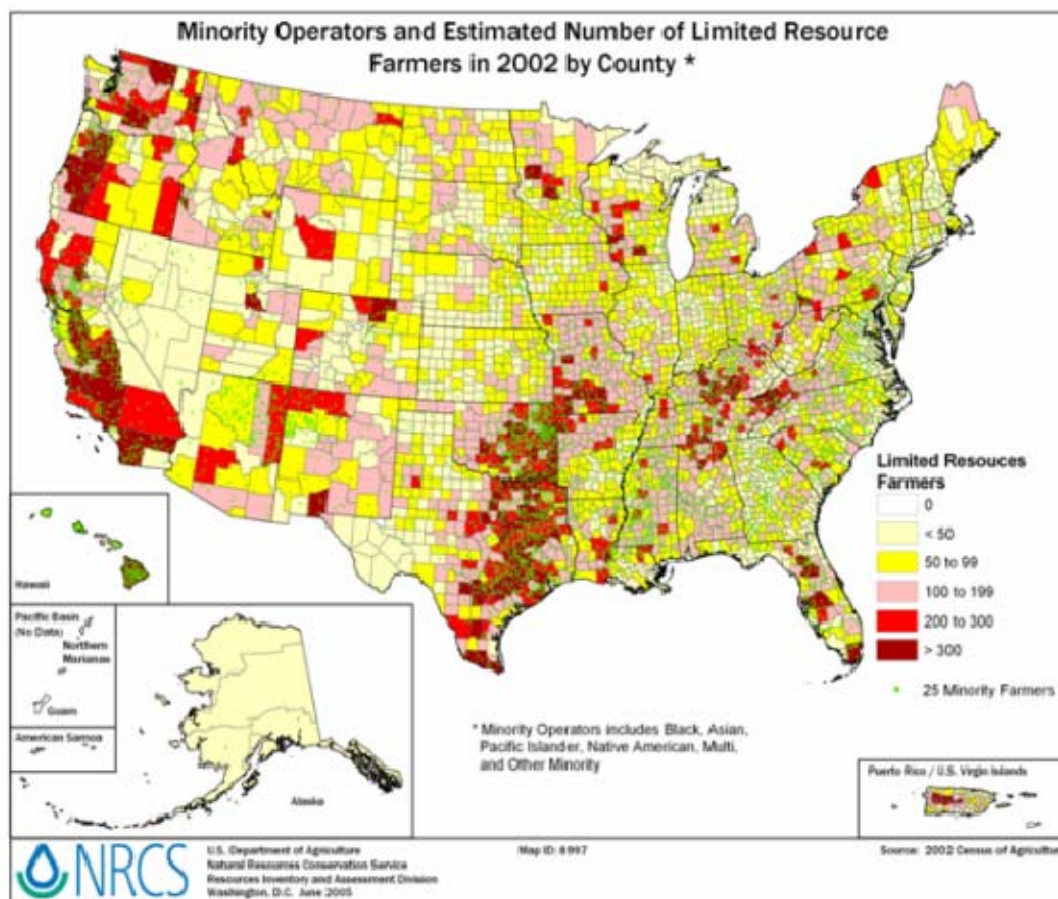
Based on the 2002 agriculture census, the overall number of socially disadvantaged farmers³² increased to 112,195, and represents 5.1 percent of U.S. farmers. Socially disadvantaged farmers operate almost 80 million acres, which is 8.4 percent of U.S. farm land, an 8 million acre increase from 1997 to 2002.

These numbers indicate that socially disadvantaged farmers control increasing amounts of natural resources. These individuals probably have a need for low-cost, technically sound, approaches to natural resource conservation. Many of these individuals may need expanded technical and financial assistance to build sustainable operations.

Sometimes, but not always, LRF are also members of socially disadvantaged groups, such as American Indians, African Americans, Asians, and Hispanics. LRF is a designation based on economic status, while socially disadvantaged affiliation is determined by an individual's self-designation, and on definitions found in Federal Civil Rights law.

³² In this section, minority refers to racial and ethnic status and not gender.

Figure 3-13
Location of Socially Disadvantaged Operators and Limited Resource Farmers



For this map (Figure 3-13) and the following maps, the existence of socially disadvantaged farmers does not necessarily mean that they are also LRF. The designation of socially disadvantaged status in NRCS is made by visual recognition or local knowledge and in the case of an LRF, by a farmer's self determination. In contrast, the census determines socially disadvantaged status through the decennial survey. This map assessed LRF status through the manipulation of census data³³.

Figure 3-13 shows there is an overlap between the number of LRF and minorities in NRCS Eastern region (parts of Florida, Louisiana, South Carolina, Pennsylvania, New York, and the Appalachian States), Central region (parts of Texas, Oklahoma, Missouri, Wisconsin, and Minnesota) and the Western region (parts of New Mexico,

³³ For the method used to calculate LRF's, go to <http://ftp-fc.sc.egov.usda.gov/ENTSC/> , click on sst, Limited Resource Farmers, and M8961_metadata.doc

Arizona, Wyoming, California, Oregon, and Washington). Texas, Oklahoma, and California seem to have the largest coincidence of LRF and socially disadvantaged farmers.

The next 3 maps provide geographic representations of LRF and specific socially disadvantaged groups --Black/African American, Hispanic, and Native American farmers. Unfortunately, we do not have a map for Asian-American farmers.

Figure 3-14
Black Operators and Limited Resource Farmers

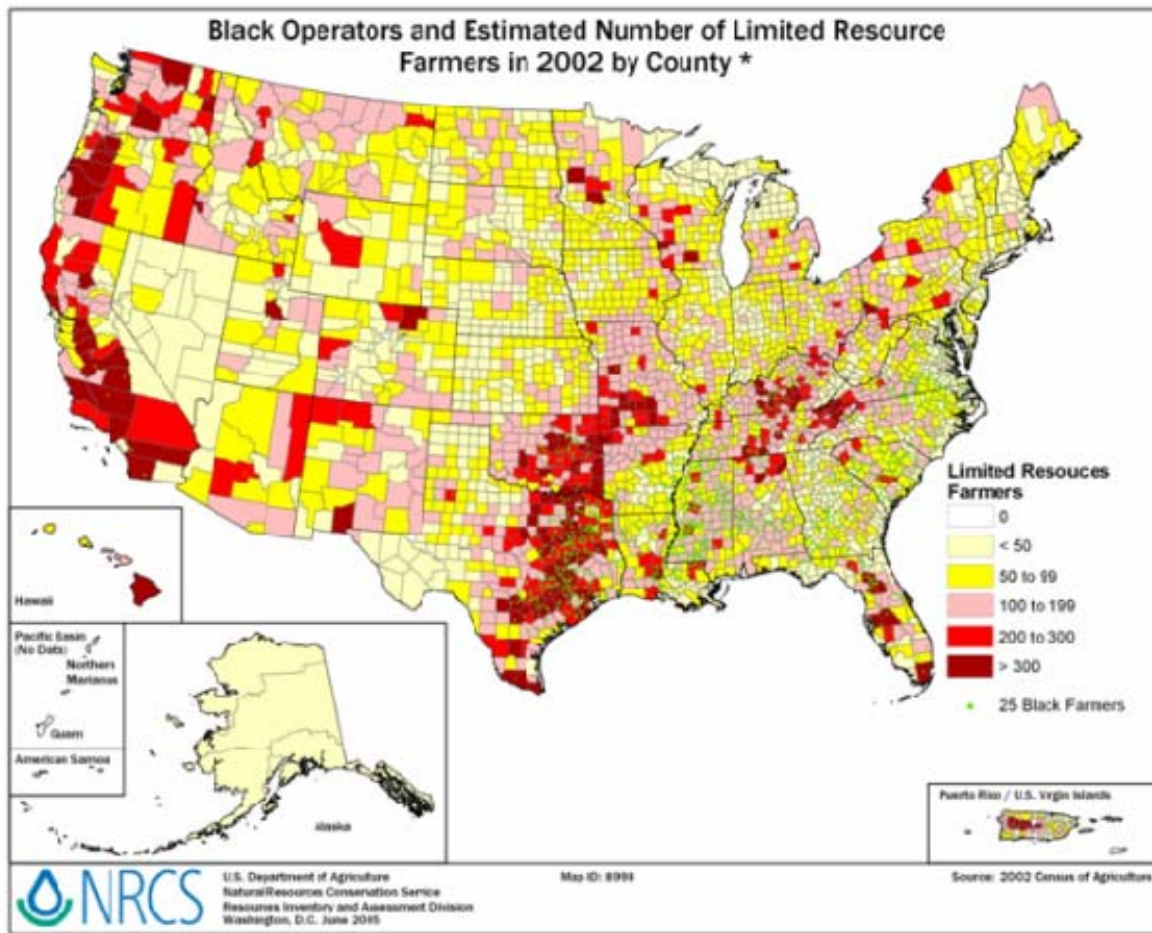


Figure 3-14 indicates the largest correlation between LRF's and Black farmers are in a portion of Southern states in NRCS's Eastern and Central region. Estimates vary, but over 95 percent of the Black farmers operate their farms in the Southern part of the U.S. This map shows parts of Texas, Oklahoma, Kentucky, Tennessee, Mississippi, South Carolina, and Florida have the largest intersection of LRF and Black farmers. Table 3-9 indicates the number of Black/African American farmers over the last several agricultural censuses have increased to 29,090 farmers, an increase of 7.9 percent from 1997 to 2002.

The next map, Figure 3-15, shows the location of Hispanic farm operators and LRF. Table 3-9 reveals that Hispanic farmers are the largest group of socially disadvantaged farm operators at 50,592, and are also the fastest growing group. This group increased 33 percent from 1997 to 2002.

Figure 3-15
Hispanic Operators and Limited Resource Farmers

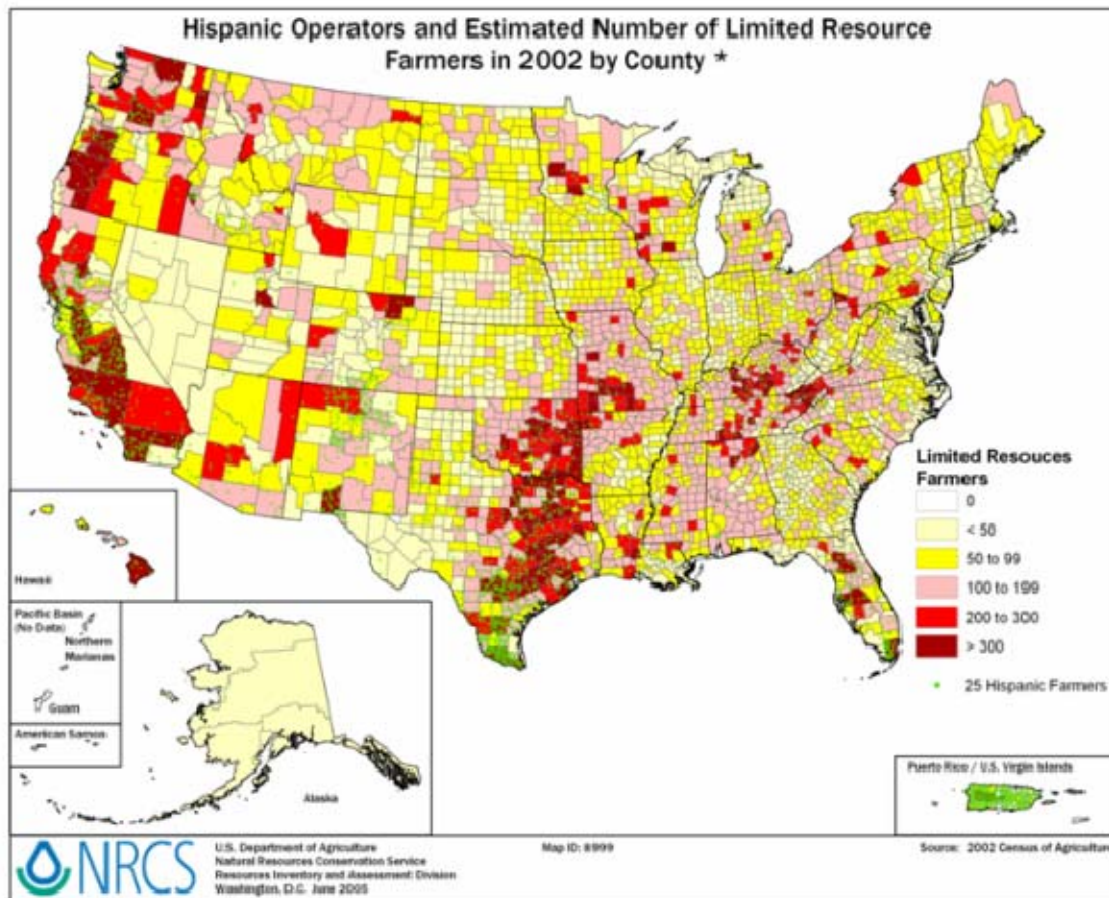
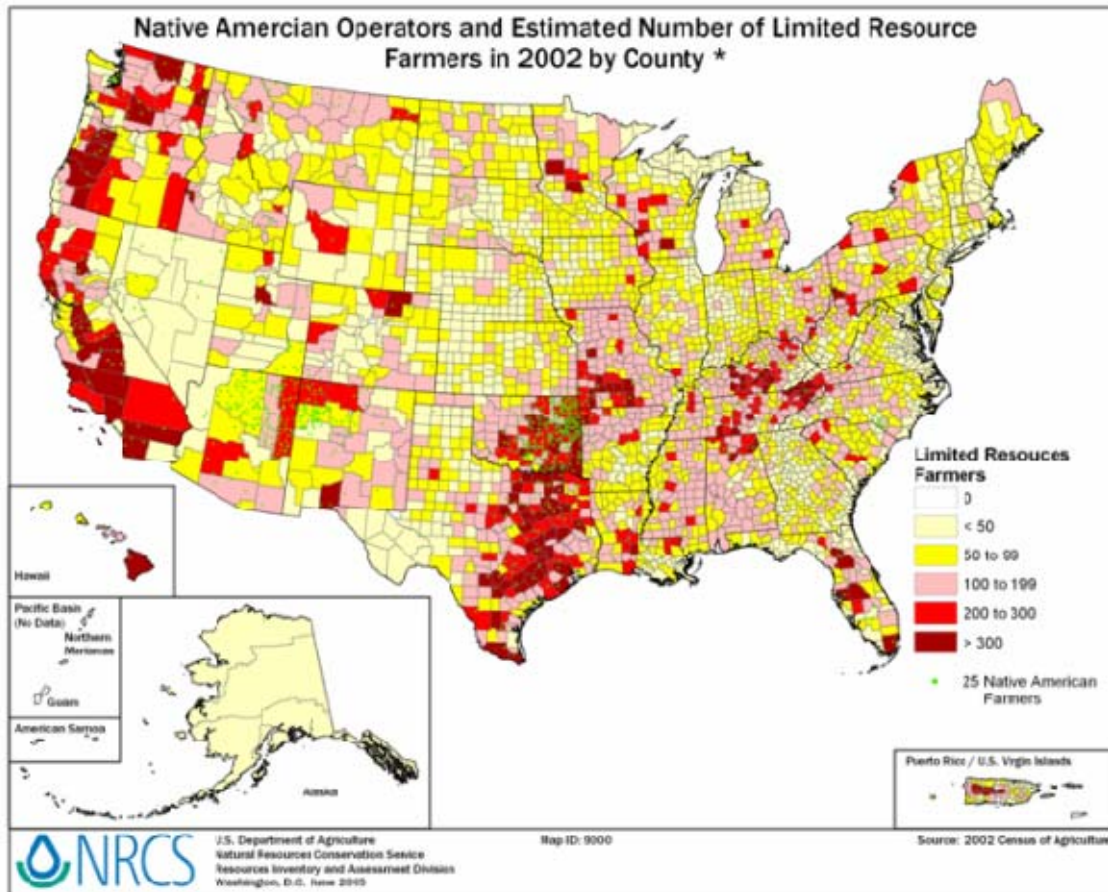


Figure 3-15 indicates the intersection of LRF and Hispanic farmers' peak in California, Texas, Oklahoma and Florida. To a lesser extent, a correlation exists in Hawaii, Washington, Oregon, Tennessee, Missouri, and Kentucky. The states/territories that have a large number of Hispanic farmers, but not a high incidence of LRF status, include: Puerto Rico, New Mexico, Arizona, and Colorado.

Figure 3-16 shows the location of Native American Operators and LRF. Oklahoma, Texas, California, New Mexico, Arizona, Washington and Oregon appear to have the highest intersection of Native American and LRF. When simply looking at numbers of Native American farmers, Oklahoma, Arizona and New Mexico appear to have the highest figures.

Figure 3-16
Native American Operators and Limited Resource Farmers



Although not as spectacular an increase as Hispanic farmers, Native American farmers have increased in numbers to 15,494 in 2002, about a 17 percent increase from 1997. The map information for Alaska was garnered from the Census data and appears to severely under represent the number of Native American and Alaska Natives in agriculture. One needs to exercise extreme caution when viewing these numbers for Alaska, since approximately half of the federally recognized Tribes reside in Alaska.

Table 3-9 shows numerical trends for socially disadvantaged farmers. From 1997 to 2002, there was a 33 percent increase in the numbers of Hispanic farmers; 17 percent increase in American Indian (AKA Native American) farmers; 8 percent increase in Black/African American farmers; and a slight decrease in Asian American farmers. Table 2 shows the land in farms by socially disadvantaged group.

Table 3-9 Number of Principal Operators -- African American, Hispanic, Asian American and American Indian in 1992, 1997, and 2002

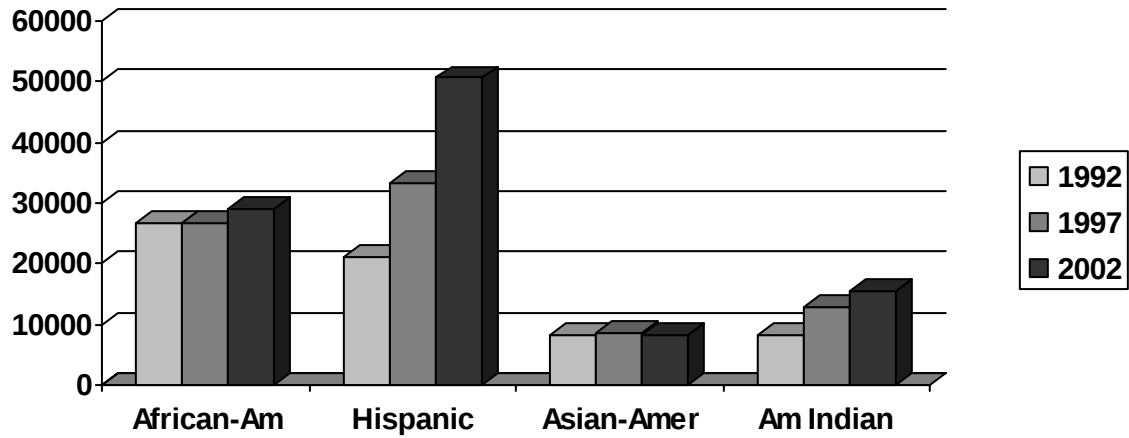


Table 3-10 Land in Farms by Socially Disadvantaged Group

Land in Farms By Minority Group

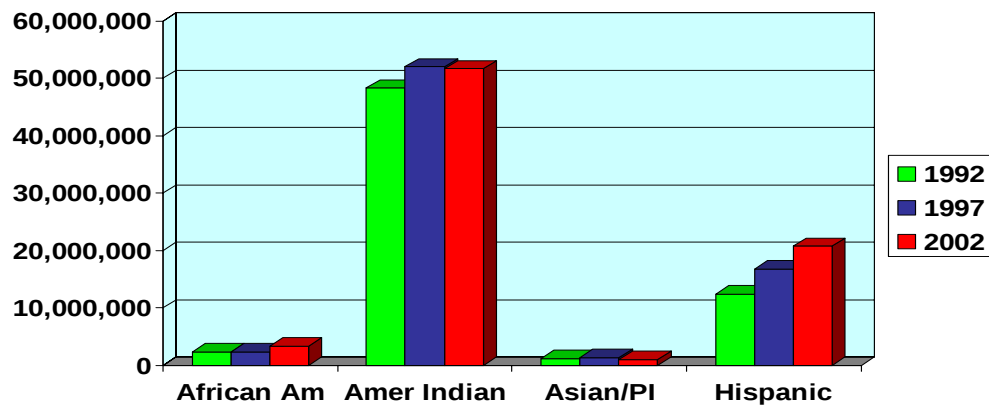


Table 3-10 shows that although African American and Hispanic farmers had the largest percentile increase in farm land at approximately 29 percent and 19 percent, respectively, American Indian farmers control the most acreage at 51.7 million acres. Asian American farmers control the least number of acres and also experienced a 34 percent decrease from 1997 to 2002. However, this may be due to Hawaiian farmers being counted separately from Asian American farmers in the 2002 census.

Past Participation in NRCS Conservation Activities and Programs

Table 3-11 shows the percentage of minorities in FY 2005 who have been reported by NRCS staff to have participated in various programs and also in conservation technical assistance activities.

Table 3-11 Participation by Minorities in Conservation Technical Assistance and Programs for FY-2005 ³⁴

Conservation Activity	Total ³⁵	Number of Minorities	Percentage of Minorities
Conservation Technical Assistance	27,513	1156	4.2%
Conservation Reserve Program	14,547	145	1%
Conservation Security Program	1,256	16	1.3%
Environmental Quality Incentives Program	15,303	1071	7%
Farmland Protection Program	47	0	0
Grassland Reserve Program	420	8	2%
Wildlife Habitat Incentive Program	1,733	59	3.4%
Wetland Reserve Program	750	20	2.7%

The percentage in the last column can be compared with the 5.1 percent of minorities who are principal U.S. farm operators. The EQIP program has a representation of socially disadvantaged farmers at 7 percent, which may reflect the success of the Agency's outreach efforts and the increased cost share rate (up to 90 percent) that is available to LRF through EQIP. Although all other NRCS programs have a lower percentage of socially disadvantaged farmers who participate, CTA has a similar percentage of participants (4.2 percent), which, although lower percentagewise, is comparable to the number of socially disadvantaged farmers.

³⁴ Data calculated through the NRCS Performance Results System (PRS)

³⁵ The numbers listed under the category "Total" represents about half the actual participation for each category due to lack of self identification by customers in order for NRCS employees to report the information on the minority status of their customers in PRS.

Table 3-12 National Program Participation Summary – FY-2004³⁶

Group Representation	Applicant (Numbers)	Recipient (Dollars)	Percentage Accepted
American Indian/Alaska Native Female Non-Hispanic	144	1,955,091	55%
American Indian/Alaska Native Female Hispanic	6	49,240	16%
American Indian/Alaska Native Male Hispanic	50	704,358	60%
American Indian/Alaska Native Male Non-Hispanic	989	17,971,407	64%
Asian Female Non-Hispanic	39	699,392	59%
Asian Male Hispanic	12	70,859	50%
Asian Male Non-Hispanic	322	6,219,424	56%
Black or African American Female Hispanic	3	6,176	67%
Black or African American Female Non-Hispanic	176	670,033	41%
Black or African American Male Hispanic	14	49,268	29%
Black or African American Male Non-Hispanic	1,205	5,999,140	47%
Hawaiian Native/Pacific Islander Female Hispanic	2	397,838	100%
Hawaiian Native/Pacific Islander Female Non-Hispanic	24	310,372	67%
Hawaiian Native/Pacific Islander Male Hispanic	7	256,061	100%
Hawaiian Native/Pacific Islander Male Non-Hispanic	149	2,414,532	68%
White Female Hispanic	211	4,859,603	55%
White Male Hispanic	1,125	10,820,623	56%
White Female Non-Hispanic	12,213	100,506,207	46%
White Male Non-Hispanic	101,057	999,265,154	45%

³⁶ Data gathered from PRS

Table 3-12 shows a summary for all programs of the number of applicants, the percentage accepted, and the money received. Most socially disadvantaged sub-populations have high acceptance rates based on the number of applicants; in fact, most percentage rates are higher than White Non-Hispanic males (45 percent) and females (46 percent). One major difference, however, is the amount of money received by different sub-groups. The White Non Hispanic males and females received about \$1.1 billion compared to \$53 million received by all other groups combined. The dollar amount socially disadvantaged recipients received represents about 4 percent of all program dollars. This percent is low, considering that 8.4 percent of all U.S. farm land is operated by socially disadvantaged farmers. However, based on the high percentage of minorities accepted in the program, it seems that people who apply for program dollars are treated fairly. The challenge seems to be to get more minorities to apply.

NRCS Responses

Over the last several decades, NRCS has recognized that there are increasing numbers of socially disadvantaged, beginning, female, and limited resource farmers and ranchers. Several measures have been taken to address this change in the agricultural customer base. Some of these measures include:

- Development of a separate Outreach Division in Washington D.C., along with outreach coordinators serving the states.
- Development of a NRCS outreach training course that is scheduled for release in 2008.
- Funding the Environmental Quality Incentive Program so that Socially Disadvantaged, Limited Resource and Beginning Farmer receive cost share rates up to 90 percent.
- Total EQIP funding set aside amounts for Socially Disadvantaged and Limited Resource Farmers or Ranchers.
- Developing informational materials in English and Spanish.
- Civil Rights reviews have added “Outreach” reviews when appraising state activities.
- Recognition of growing numbers of “new” or “beginning” farmers, who may require more basic forms of technical assistance.

- High acceptance percentage of socially disadvantaged farmers who apply for programs.

Methods to Increase Participation

NRCS maintains a wide array of technical practices to address conservation problems. These practices have been developed over time by working with owners and operators on a wide variety of lands. As such, these practices often assume a depth of experience and knowledge that many socially disadvantaged, beginning or limited resource farmers may not have. NRCS must be willing and able to develop explanatory materials and methods that do not assume a great deal of experience on the part of the customer.

In a similar way, NRCS planners must be able to explain the uses and variations of particular practices in ways that are appropriate to different experience and knowledge levels. Many new socially disadvantaged farmers may not have the experience, knowledge, or equipment to implement practices that long time farmers might take for granted.

NRCS is already addressing the degree which technical standards for certain practices (fencing, for example) may be altered to allow people of different cultural backgrounds and limited economic means to participate in conservation cost-share programs. Technical adequacy will not be compromised, but there should be a greater willingness to amend or expand technical standards to include less-costly options.

Table 3-13 Farm Bill Responses to the Trends of Socially Disadvantaged Farmers

Trends	Farm Bill Response
American Indian farmers control more than 50 million acres throughout the U.S.	Continue to provide financial and technical assistance to tribes for adoption of conservation and for establishing Conservation Districts on tribal lands.
Hispanic farmers have the highest number of socially disadvantaged farmers at just over 50,000 farmers and their numbers are increasing at a rapid rate.	Informational materials in English should include visual representations. Spanish needs to accompany English on informational material in heavily populated Hispanic areas.
The number of socially disadvantaged farm operators is increasing.	Provide up to 90 percent payment rates for socially disadvantaged farmers, LRF and/or beginning farmers; ensure the use of demonstrations.
Socially disadvantaged operators may also fall under the category of limited resource farmers	Provide up to 90 percent payment rates for limited resource farmers; ensure the use of demonstrations. EQIP also provides a total of 10 percent of total funding as a set aside amount for socially disadvantaged and beginning farmers and ranchers
Socially disadvantaged operators are farming smaller acres and planting non-traditional crops.	Continue to develop low cost conservation practices for small and medium size farmers.
Many Asian American operators grow vegetables for internal distribution to U.S. Asian communities and for export to Asian communities abroad.	Develop special provisions and incentives for Asian vegetable growers to reward reduced agrichemical inputs.
Set-aside programs (CRP, GRP, and WRP) have extremely low participation rates for socially disadvantaged farmers.	Analysis combined with increased outreach efforts in those programs need to occur.

Anticipated Environmental Impacts

Environmental Justice impacts would be considered significant if any adverse environmental effects occurred that would disproportionately affect minority and low-income populations.

3.9.1 Alternative 1- No Action- Not Implementing EQIP

Under Alternative 1, there is anticipated to be a long term socioeconomic adverse impact on historically underserved producers if EQIP were not implemented. Specifically, lands acquired by traditionally underserved communities may be of low value and may be experiencing natural resource concerns. Without EQIP, these lands would continue to degrade. The lands affected would be primarily in the Southern and Western states where participation by minorities and limited resource farmers or ranchers is the highest (see Figures 3-10, 3-12, 3-13, 3-14, 3-15, and 3-16). EQIP currently provides financial assistance to farmers and ranchers for the implementation of conservation practices to help maintain, enhance, restore, and improve private and privately-controlled lands. Without the financial assistance of EQIP funds, historically underserved producers may not be able to afford to implement conservation practices on these lands. Lands would then be indirectly, negatively impacted due to the lack of conservation planning and practice implementation.

As a result, Alternative 1, without EQIP being implemented, would result in potential long-term negative impacts to historically underserved producers.

3.9.2 Alternative 2- No Action- 2002 EQIP Requirements

Under the current program, overall, the potential impacts to the natural environment are considered to primarily result in long-term beneficial impacts. As the trend information indicates, a continuation of the current 2002 requirements would result in a continued 7% participation rate among minorities (See Table 3-11). The conservation practices applied by minority and limited resource farmers and ranchers would be primarily in the Southern and Western states where these groups reside (see Figures 3-12, 3-14, 3-15, and 3-16). There is the potential for short-term and minor localized negative impacts for some conservation practices, but these impacts are evaluated through site-specific environmental evaluations and mitigation can be identified to reduce any potential short-term negative impacts. A primary purpose of EQIP as defined by Congress is to assist historically underserved producers (i.e., limited resource and beginning, farmers and ranchers). Alternative 2 is anticipated to economically impact, to a minor degree, socially disadvantaged farmers and ranchers as they are not identified as currently eligible for the increased payment rate. No long-term disproportionate adverse impacts to the natural or human environment are expected to occur through continuation of the current program; therefore, there are no environmental justice concerns.

3.9.3 Alternative 3- 2008 EQIP Requirements

The proposed increased payment rate and total EQIP set aside amounts for historically underserved producers could possibly make EQIP financial assistance available to more producers and help conserve additional lands not previously in the program. The data from the 2002 Agriculture Census found that there are 1,832,127 farms operated by limited resource producers (see page 85). Therefore, there is the potential for the additional payment and total EQIP set aside amounts to provide historically underserved producers the means to

maintain their operations and implement conservation measures which may have been too costly for these groups to previously implement. The same effects as Alternative 2 would be anticipated with increased potential for additional participants in EQIP and additional conservation of lands. As a result, the 2008 EQIP provisions provide a low income producer with the financial means to implement conservation practices they may not be financially able to afford. The end result of the increased payment and total EQIP set aside amounts is the potential increased participation by historically underserved producers to implement conservation practices that would improve water quality, stabilize soil, and reestablish permanent vegetation.

As noted in the 2008 EQIP Cost Benefit Analysis, Alternative 3 increases the appeal to producers with limited means to install conservation practices; however, since this group also has limited access to capital, Alternative 3 may increase the chance that contracts may be cancelled. This group of producers is inherently more at risk because of the relatively constrained financial resources available to them. Contract size, dollars obligated per contract, and practices installed will tend to be smaller, affecting the overall technical and administrative efficiencies of the program. There may also be a need for more specialized needs for staff to overcome language or cultural barriers.

The risks to the overall program costs are small. Even if the number of limited resource applicants increases over 10 percent of total applications (unlikely), their small contract size will minimize the overall impact on EQIP. Qualifying as a Beginning Farmer or LRF has a greater significant effect on the farmer than on the Federal costs. Qualifying as a Beginning Farmer or LRF could reduce the farmer's costs of participating in the EQIP program by 60 percent; but would only increase USDA's costs by 15 percent. See the example below, which assumes a potential \$10,000 EQIP contact.

Contract Cost	\$10,000
Federal TA Costs	\$ 2,800
Total EQIP Cost	\$12,800

	With Normal 75% Cost Share	With 90%Cost Share	Savings	% Savings
Farmer Costs	\$ 2,500	\$ 1,000	\$1,500	60.0%
NRCS Costs	\$10,300	\$11,800	-\$1,500	14.6%
Total Costs	\$12,800	\$12,800	\$0	

Source: EQIP Cost Benefit Analysis July 2008

No long-term disproportionate adverse impacts to the natural or human environment are expected to occur with the proposed expansion of the program; therefore, there are no Environmental Justice concerns. However, there are anticipated to be long-term beneficial socioeconomic and environmental benefits associated with Alternative 3 due to increase payment and total EQIP set aside funds being available for historically underserved producers.

3.10 Cumulative Effects

CEQ regulations (40 CFR Part 1508.7) stipulate that the cumulative effects analysis consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present and reasonably foreseeable actions regardless of what agency or person undertakes such other actions.” Cumulative effects most likely arise when a relationship exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Effects of actions which are overlapping with, or in proximity to, other proposed actions would be expected to have more potential for a cumulative effect relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time tend to have potential for cumulative effects.

For purposes of this analysis, other conservation assistance programs are the primary sources of information used in identifying past, present, and reasonably foreseeable future actions.

OTHER FEDERAL AND STATE CONSERVATION ASSISTANCE PROGRAMS

In addition to EQIP, there are several other conservation laws that help to conserve, enhance, protect, and improve private and non-Federal lands. A brief overview of the relevant Federal programs is provided below. Other programs described below could be used in adjacent tracts and therefore can lead to overlapping cumulative effects for environmental resources with varying geographical ranges. Further, other cumulative effects might result from corridor conservation projects that may affect more than the site in which the conservation project may be applied.

It is important to note that land enrolled in other conservation programs is eligible for EQIP provided:

- (i) EQIP does not pay for the same practice on the same land like other USDA conservation programs.

- (ii) Land enrolled in CRP and CREP may only be offered for enrollment during the last year of the contract and no EQIP practice shall be applied on that land until after the CRP contract has expired or has been terminated.
- (iii) The EQIP practices do not defeat the purpose of either EQIP or the other conservation program.

Conservation Reserve Program (CRP)/Conservation Reserve Enhancement Program (CREP)

The CRP and CREP are programs designed to establish vegetative cover on environmentally sensitive lands. These programs have also been characterized as land idling programs, designed to idle existing cropland for varying amounts of time. The intent of the programs is to retire marginally productive lands that also contribute significant amounts of pollutants to surface waters when used for agricultural production or provide significant wildlife benefits if idled, with appropriate vegetative cover, or both.

The intended impact of these programs is to reduce the amount of low productivity land used to produce crops in the United States, provide a source of steady reliable income to owners of the enrolled cropland, reduce agricultural non-point source pollution, and provide habitat for wildlife species.

Land enrolled in CRP or CREP is eligible for EQIP, provided the practices contracted through EQIP are applied after the CRP or CREP contract expires. There is very little CRP acreage with EQIP contracts on them, and this is not expected to change with the implementation of the new Farm Bill.

Wetlands Reserve Program (WRP)

This program offers incentives to landowners to enhance and restore degraded wetlands in exchange for retiring marginal land from agricultural production. A limited amount of adjacent land can be included as a buffer.

The program offers landowners three options including a permanent easement, a 30-year easement, and a restoration cost share agreement only. The financial assistance offered to landowners varies with each of the options. A permanent easement offers 100 percent of the value of an easement (development rights are not included in the valuation of the easements), and 100 percent of the restoration costs. A 30-year easement offers 75 percent of the value of the same easement along with 75 percent of the restoration costs. A cost share agreement only provides 75 percent of the costs of restoration. There is no easement involved with this option; however, the cost share agreement is normally for a period of ten years.

Impacts of the program include an immediate payment to the successfully enrolled landowner, a reduction in the production of agricultural commodities, improved wildlife habitat, especially for those species specifically associated with wetland environments, and other wetland functions and values.

Wildlife Habitat Incentives Program (WHIP)

The purpose of the WHIP program is to create high quality wildlife habitats. Special priority is given to projects that support wildlife species of Federal, State, local, or tribal importance.

Privately owned agricultural lands, nonindustrial private forest lands and tribal lands are eligible. This program is not primarily a land idling program since very little cropland is enrolled in WHIP. However, WHIP may be used to enhance wildlife habitat on working forest and range lands. The major impact of the program is the creation of habitat for species of importance in each State. The majority of projects have been involved with improving upland wildlife habitats.

Farm and Ranch Lands Protection Program (FRPP)

The intent of FRPP is to help farmers keep their land in agricultural use and protect associated conservation values. FRPP achieves this by purchasing conservation easements to protect farmland from conversion to non-agricultural uses. The landowners also agree to implement a conservation plan for any highly erodible land identified in the easement area. EQIP could potentially be used by landowners to help address specific resource concerns.

Eligible lands are currently part of a farm or ranch that is large enough to be a viable agricultural enterprise, include prime, unique, or other productive soil, and be under threat of development for non-agricultural uses.

This program not only retains farmland in agricultural uses, but also maintains green space in areas subject to development pressures.

Conservation Security Stewardship Program (CSP)

The CSP, a new program established in the 2008 Farm Bill, is designed to encourage agricultural producers to address resource concerns in a comprehensive manner by improving, maintaining and managing existing conservation activities and undertaking additional conservation activities. Privately owned and tribal agricultural lands and associated forested lands, including nonindustrial private forest lands, are eligible for enrollment in CSP. Participants enter into contracts for a period of five years, during which they agree to continue existing conservation activities to address at least one resource concern and install or adopt other conservation activities to meet or exceed

stewardship thresholds for at least one additional resource concern. In return, payments are provided for installing and adopting these additional conservation activities.

EQIP will be used by some producers to enable them to move to greater levels of resource protection, and allow the producers to receive greater payments under CSP in order to qualify for enrollment in CSP. In both, Federal program implementation and on-farm assistance, the current EQIP rules are setting standards that will probably be adopted as the CSP implementation rules are finalized. The expectation of obtaining longer-term payments for maintaining conservation practices may increase the number of EQIP applications through the life of this Farm Bill. The interaction of these two programs will benefit each and succeed in obtaining more conservation on the ground.

Participation in CSP provides incentives for producers to continue the conservation activities that were started under EQIP and to address additional resource concerns.

Grassland Reserve Program (GRP)

The GRP is targeted toward protecting grassland and shrub land under threat of conversion to other uses. Landowners may enroll in permanent or 30-year (or the maximum allowed under State law if different) easements or the landowner may enroll in a rental agreement for 10, 15, 20, or 30 years. With a permanent easement, the landowner is offered the appraised value of the land, less the grazing value. Thirty-year easements, or the maximum allowed under State law, receive 30 percent of the appraised value. The rental agreements receive up to 75 percent of the grazing value in an annual payment for the length of the contract. Eligible lands may be in any current land use, if the land was historically grassland, and capable of being restored to a grassland use. Grasslands may be grazed when enrolled in GRP.

The GRP can fund any needed conservation practices under its existing authority, however, the funding for the program may be somewhat limited. The easements to maintain lands in a grassland use may be relatively costly and use the bulk of the funds available to the program. EQIP could provide assistance with installing any needed conservation practices and help the GRP achieve its goals.

State and Private Forestry Programs (U.S. Forest Service)

The U.S. Forest Service, through its State and Private Forestry (S&PF) mission area provides expert advice, technology, and financial assistance to help landowners and resource managers sustain the Nation's forests and protect communities and the environment from wildland fires.

Through grants and cooperative agreements, State forestry agencies and other partners deliver the majority of this landowner assistance through three State and Private Forestry "umbrella" program areas that receive annual Federal appropriations: Forest Health Management; Cooperative Fire Protection; and Cooperative Forestry. Forest Health

Management assistance includes conducting suppression, prevention, and management activities on native and non-native insect and disease forest pests and invasive plants.

Cooperative Fire Protection programs focus on the urgent need to reduce the threat of wildland fires in wildland-urban interface areas. Assistance is provided to complete community wildfire protection plans and to implement high priority hazard mitigation projects identified in those plans, which often includes nonindustrial private forestlands.

Cooperative Forestry programs provide technical and financial assistance to complete a long-term multi-resource forest stewardship plan. Assistance is provided to forest landowners for conservation easements and other mechanisms to conserve private forests. From 2003 to 2006 the Forest Land Enhancement Program (enacted with 2002 Farm Bill) provided cost-share assistance to private landowners for forestry and agroforestry practices. However, new funding for the program ended in Fiscal Year 2006.

Cooperative Forestry Programs include the Forest Stewardship Program and the Forest Legacy program. The Forest Stewardship Program provides technical and financial assistance to States to encourage the long-term stewardship of nonindustrial private forest lands. Long-term multi-resource forest stewardship plans provide landowners with the information they need to achieve their unique objectives while sustaining a variety of environmental goods and services including clean air and water, biodiversity, and wildlife habitat. Forest stewardship plans enable landowners to keep their forests in a healthy condition to reduce the risk of wildfire and pest/disease infestations. Forest stewardship plans also contribute to the future supply of forest products from private lands and thus, the health of our rural economies.

The Forest Legacy Program helps protect environmentally important forest areas that are threatened by conversion to non-forest uses. The program uses conservation easements and other mechanisms to conserve private forests and operates on a "willing seller and willing buyer" basis. Eminent domain or adverse condemnation is not authorized.

Summary of EQIP Interaction with Other Programs

Some of the conservation programs contained in the new Farm Bill are essentially land-idling programs. Included in this category are CRP/CREP and WRP. FRPP, GRP, CSP, WHIP, and EQIP are oriented towards working agricultural lands. It is expected that for the most part, EQIP will have little or no direct overlap with most of the other conservation programs contained in the Farm Bill. EQIP will likely assist producers who enroll in the GRP address their conservation needs, and in some individual cases may be utilized by participants in the FRPP. It is envisioned that EQIP will also provide a means for agricultural producers to address resource concerns in order to become eligible for participation in the CSP.

CUMULATIVE EFFECTS ANALYSIS

All programs offered through USDA NRCS and other Federal agencies for conservation assistance are voluntary and enrollment cannot be predicted. These programs provide additional money into local economies which could result in an increase in economic spending in rural areas. Many programs have a cap on the amount one producer can receive for each program; therefore, the slight financial increase to the local economy would be considered minor.

These programs provide financial and other technical assistance to producers to restore the farm to normal agricultural production. Expanding the payment rates and set aside funds for historically underserved producers may allow more conservation practices to be applied by farmers and ranchers who historically have not been able to participate in the programs for a variety of reasons. The activities associated with some conservation practice implementation could have short-term, localized impacts to the natural environment, but overall long-term impacts are expected to be beneficial. It is anticipated that the cumulative effect of expanding the cost share rates and total set aside amounts for designated participants would not result in any cumulative adverse impact. There could be a long term positive impact on water quality, soils, and wildlife habitat as a result of additional participation, by historically underserved producers, in conservation practices being applied in areas where conservation is needed but has not been applied before.

Unavoidable Adverse Impacts

The proposed action (Alternative 3) is not anticipated to cause any direct adverse effects on any resources due to the nature of the action being national rulemaking to expand the payment rate and total EQIP set aside funding amounts as previously described. Alternative 3 is also not anticipated to result in any indirect or cumulative adverse effects on any resources from implementation of conservation practices which are designed to enhance, protect, mitigate, and improve resource issues.

NRCS policy also requires that conservation plans mitigate and avoid adverse environmental impacts to environmental resources. Some resources could experience minor short term localized impacts from the implementation and construction of certain conservation practices, as described in previous sections, but these impacts would be identified through the site-specific environmental evaluation process and mitigated through selection of alternative conservation practices or selection of other conservation practices to further mitigate resource concerns.

Thus, per 40 CFR Part 1502.16, the conservation planning process and financial assistance provided to producers for implementation of conservation practices would mitigate the potential adverse environmental effects that existed on the landowners site

associated with agricultural operations and the conservation planning process should result in the selection of environmentally superior alternatives. Any potential impacts from the construction and implementation of conservation practices would be considered short-term and minor. Thus, the conservation practices implemented would reduce any minor or moderate adverse effects from agricultural operations and the conservation planning process should result in beneficial impacts to environmental resources.

3.11 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed action (Alternative 3) would, in general, affect short-term impacts to many resources because of short-term construction and implementation activities. However, the short-term impacts and uses would lead to long-term environmental benefits. The long-term productivity would result from conservation planning efforts designed to promote habitat restoration, prevent land fragmentation, improvement to air, water, and soil quality. Indirect results would be from public education on conservation planning and programs.

3.12 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effect that the use of these resources has on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. For the proposed action, the use of gasoline for operating equipment would be the only irreversible or irretrievable resource commitment expected from the implementation of the proposed action.

Section 4 Persons and Agencies Consulted

David Buland	Economist, NRCS, Central Technology Support Center, Texas
Steven Brady	Wildlife Biologist, NRCS, Central Technology Support Center, Texas
Sarah Bridges	Cultural Resource Specialist, NRCS, Washington, D.C.
Frank Clearfield	Social Sciences Division Director, NRCS, East Technology Support Center, North Carolina
Denise Coleman	Financial Assistance Division, NRCS, Washington, D.C.
John Copeland	Resource Conservationist, NRCS, West Technology Support Center, Oregon
Howard Hankin	National Aquatic Biologist, NRCS, Washington, D.C.
Terrell Erickson	National Biologist, NRCS, Washington, D.C.
Abigail Letzer	Rule Writer, Financial Assistance Division, NRCS, Washington D.C.
Matt Harrington	National Environmental Coordinator, NRCS, Washington, D.C.
Andrew Mason	Forester, USFS/NRCS, Washington D.C.
Kimberly McCracken	Resource Conservationist, NRCS, North Carolina
Chris Jones	State Resource Conservationist, NRCS, Maine
Mark Parson	EQIP Program Specialist, NRCS, Washington, D.C.
Paul Ray	Resource Conservationist, NRCS, New York
Charlie Rewa	Natural Resource Inventory and Assessment Specialist, NRCS, Maryland
Mickey Shockley	Strategic Planning and Accountability Division, NRCS, Washington, D.C.
Harry Slawter	Director, Financial Assistance Program Division, NRCS, Washington, D.C.
Kristin Smith	Ecologist, NRCS, East Technology Support Center, North Carolina
Dennis Thompson	Agronomist, NRCS, Washington D.C.
Russell Mader	Natural Resource Specialist, NRCS, Strategic Planning and Accountability Division, Washington, D.C.

APPENDIX A- CONSERVATION EFFECTS DIAGRAMS AND GENERAL NATIONAL EFFECTS ASSESSMENT

Conservation Effects Diagrams

To assist in the analysis of environmental impacts, NRCS developed network diagrams depicting the chain of natural resource effects resulting from the application of each practice. Each of the diagrams first identifies the typical setting to which the practice is applied. This includes identification of the predominating land use and the environmental resource concerns that trigger use of the conservation practice. The diagrams then identify the conservation practice used to mitigate or address the resource concerns. This section of the Programmatic EA provides general information concerning effects of the most frequently applied conservation practices in EQIP. The network effects diagrams for the 30 most frequently applied conservation practices are attached to this EA. All of the available network effects diagrams incorporated by reference can be viewed at the following website: www.nrcs.usda.gov/programs/Env_Assess/index.html.

Following identification of the conservation practice there is a description of the physical activities that are carried out to implement the practice. From there, the diagrams depict the occurrence of the direct, indirect and cumulative effects of the practice. Effects are qualified with a "+" or a "-" which qualitatively denotes an increase ("+") or decrease ("-") in the effect. Pluses and minuses do not equate to good and bad or positive and negative. Impacts are characterized in this manner due to the fact that site-specific conditions can influence the degree or intensity of the potential environmental impact. Thus, only the general effects that are considered the most important ones from a national perspective are illustrated. In addition to the network diagrams, a photo and summary description about how each of these practices is intended to be used, and the general effects of using the practice is found in Appendix B. Therefore, the analysis presented hereafter provides a synopsis and assessment of the general effects to environmental resources under each alternative.

The effects of the practices may vary somewhat depending on the local ecosystem(s), methods of practice installations, and presence of special resources of concern in a particular State. Examples of special resources concerns are the presence of a coastal zone, endangered or threatened species, and historic or cultural resources. While effects on these resources may be described in general terms at the national level, they must be addressed at the State and local level. Accordingly, NRCS does evaluate at a site-specific level through an environmental evaluation what are potentially the environmental resource concerns on private agricultural lands and how a conservation plan may help to resolve or mitigate those concerns.

As provided for under CEQ regulations that implement NEPA, this Programmatic EA hereby incorporates by reference (40 CFR Part 1502.21) the general findings of the network effects diagrams for conservation practices. The following link provides all the

network effects diagrams that have been prepared on conservation practices: www.nrcs.usda.gov/programs/Env_Assess.

As many of the same conservation practices will be implemented regardless of which alternative is selected, this appendix presents an overview of the potential environmental effects of the most frequently implemented EQIP practices. A description of the most frequently applied conservation practices under EQIP is discussed in the following section.

This is particularly true for endangered and threatened species, historic preservation, historic and cultural resources, and essential fish habitat and other resources that are protected by special authorities that require consultation with other Federal or State agencies with authority over those resource issues. NRCS will consult on a State or site-specific level as needed and appropriate to ensure EQIP program actions do not adversely affect endangered or threatened species, essential fish habitat, cultural resources, or any other protected resources. NRCS will also implement practices in a manner that is consistent with NRCS policy to avoid, mitigate, or minimize adverse effects to the extent feasible.

For example, to ensure compliance with the ESA, State Conservationists may invite representatives of the U.S. FWS and the NMFS, as applicable, to all State Technical Committee meetings and encourage their involvement in the development of program criteria within the State. NRCS will also conduct additional programmatic consultations with USFWS and NMFS at the State level as needed to ensure EQIP program implementation is not likely to adversely affect species listed as endangered or threatened or species proposed for listing as endangered or threatened or designated critical habitat. Such consultation will also be used to identify ways that the EQIP program might further the conservation of protected species and identify situations in which no site-specific consultation would be needed³⁷. Site-specific consultation will also be conducted as needed to avoid adversely affecting any protected species or habitat.

To ensure compliance with the NHPA and associated authorities, NRCS State Offices will follow the procedures outlined in the ACHP regulations (36 CFR Part 800) or, in accordance with NRCS alternate procedures (nationwide Programmatic Agreement), invite SHPO and federally recognized Tribes (or their designated Tribal Historic Preservation Officers) to enter into consultation agreements that highlight and focus review and consultation on those resources and locations that are of special concern to these parties. In addition, if no State-level agreements are developed with the SHPO or Tribes, and/or if other consulting parties are identified, they will be afforded, as appropriate, an opportunity to advise the NRCS State office during project-specific planning about their historic and cultural resource concerns so that they may be taken into

³⁷ In addition to situations in which NRCS determined there would be no effect on protected species or habitat, site-specific consultation should not be needed when NRCS and FWS or NMFS agree a category of proposed actions is not likely to adversely affect a protected species or habitat and NRCS obtains an incidental take statement based on that agreement.

account in accordance with the ACHP regulations. Similar processes will be followed, as needed and appropriate, to address other special requirements for the protection of the environment.

Table A-1 Top 30 EQIP Conservation Practices Planned for 2007

EQIP Fiscal Years 1997-2007		
Top 30 Practices by Cumulative Cost Share Dollars Approved		
Practice Name	Cost Share** (\$)	Frequency*
Waste Storage Facility	\$486,315,367	20,307
Irrigation System, Sprinkler	\$337,333,091	25,409
Fence	\$328,849,834	120,336
Brush Management	\$189,796,385	55,908
Pipeline	\$186,510,540	68,918
Irrigation Pipeline, High Pressure U-G Plastic	\$168,452,795	22,733
Nutrient Management	\$164,164,911	180,011
Pasture & Hayland Planting	\$154,173,380	81,131
Residue Management, No Till & Strip Till	\$153,115,670	62,752
Irrigation System, Trickle	\$126,476,320	7,516
Prescribed Grazing	\$122,584,745	84,788
Trough or Tank	\$120,611,832	89,245
Heavy Use Area Protection	\$115,428,584	26,104
Pest Management	\$108,035,474	107,492
Grade Stabilization Structure	\$93,532,193	26,094
Irrigation Pipeline, Low Pressure U-G Plastic	\$79,863,321	10,729
Well	\$75,294,150	20,902
Pond	\$75,119,022	26,817
Terrace	\$72,766,967	20,494
Irrigation Land Leveling	\$70,488,230	9,489
Manure Transfer	\$57,872,257	6,045
Structure for Water Control	\$57,599,010	22,459
Residue Management, Mulch Till	\$49,899,767	18,544
Pumping Plant for Water Control	\$49,459,041	13,055
Composting Facility	\$43,913,937	4,077
Underground Outlet	\$40,132,959	15,604
Grassed Waterway	\$39,592,026	18,917
Conservation Crop Rotation	\$39,270,521	15,609
Irrigation Water Management	\$38,647,883	30,129
Streambank & Shoreline Protection	\$36,008,500	4,568
Water & Sediment Control Basin	\$35,247,108	10,207
Waste Utilization	\$35,137,845	17,353
Forest Stand Improvement	\$32,705,852	12,645
Irrigation Ditch & Canal, Nonreinforced Concrete	\$30,151,856	2,767
Source: FSA System 36 (9/30/2004), NRCS Protracts (9/30/2007)		
*Frequency indicates the number of times a practice is used		
**Cost share dollars can be utilized for practices that affect more than one resource concern		

Most Frequently Applied Conservation Practices by Land Use

The conservation practices expected to be used most commonly in EQIP address environmental resource concerns related to either animal feeding operations (AFO's), cropland, grazing land or nonindustrial private forestland.

Conservation Practices Applicable to Animal Feeding Operations

The conservation practices that are most commonly used with AFO's under the EQIP program are identified in Table 2.

Table 2: Most Frequently Used AFO Practices

Practice Name	Practice Number³⁸
Composting Facility	317
Heavy Use Area Protection	561
Manure Transfer	634
Roof Runoff Structure	558
Waste Storage Facility	313
Waste Treatment Lagoon	359
Waste Utilization	633

Collectively, these practices provide a means of minimizing the potential harm to water quality from nutrients and pathogens associated with animal manure and at the same time, using the positive properties of manure to enhance soil fertility.

The primary physical change as a result of these practices often includes the construction of a structure to store and/or treat animal manure and the purchase and use of equipment for handling and moving the animal manure. The direct effects include the costs associated with this infrastructure, including operation, maintenance and energy costs. Benefits include: compost that can be used on-farm or sold; the storage of manure that can be applied at the appropriate time and amounts to crops and pastures; and the reduction in pollutants (nutrients, organics, pathogens and pesticides) in runoff because the material is stored rather than direct discharged to waterways. To some, the presence of

³⁸ Practice numbers are assigned by NRCS for ease of reference and are found in the NRCS National Handbook of Conservation Practices at www.nrcs.gov.

AFOs and the associated practices are a perceived nuisance. Odors are associated with some of the practices, such as waste storage lagoons kept under anaerobic conditions.

The direct effects provide indirect effects, such as enhanced plant productivity because of improvement in soil nutrients and soil tilth. Farms need less commercially purchased fertilizer as a result of manure utilization. Increased plant productivity and less cost for fertilizers are an economic benefit to farms. Supporting agribusiness, such as harvesting-associated business may be enhanced by increase plant production by farmer, although certain sectors, such a fertilizer company may not. The reduced flow of pollutants to streams and other water bodies reduces noxious algal growth, enhances dissolved oxygen, thereby meeting water quality standards.

The cumulative effects in general lead to better water quality of streams, which benefits both the biotic community of the streams and for humans, domestic and wild animals that rely on them as a source of water. Income stability of the farmer and the community are enhanced because manure represents a valuable by-product that is utilized to the greatest extent. Without the collection of practices to process and utilize the manure by-product of AFO, the cumulative effects would weigh strongly toward environmental degradation.

Conservation Practices Applicable to Cropland

The practices used most commonly on cropland under the EQIP program are identified in Table 3.

Table 3: Most Frequently Used Cropland Practices

Practice Name	Practice Number³⁹
Conservation Crop Rotation	328
Contour Buffer Strip	332
Contour Farming	330
Cover Crop	340
Critical Area Planting	342
Diversion	362
Filter Strip	393
Grade Stabilization Structure	410
Grassed Waterway	412
Irrigation Water Conveyance (AA-EE)	430
Irrigation Water Management	449
Nutrient Management	590
Pest Management	595
Residue and Tillage Management, Mulch Till	345
Residue and Tillage Management, No Till/Strip Till	329
Residue and Tillage Management, Ridge Till	346
Residue Management, Seasonal	344
Riparian Forest Buffers	391
Terrace	600
Upland Wildlife Habitat Management	645
Wetland Restoration	657
Wetland Wildlife Habitat Management	644
Windbreak/Shelterbelt Establishment	380

³⁹ Practice numbers are assigned by NRCS for eases of reference and are found in the NRCS National Handbook of Conservation Practices.

These practices are generally designed to reduce erosion, redirect water flow, enhance crop production, enhance wildlife food and cover and/or reduce runoff that may carry contaminants to receiving water. They perform these functions by creating channels, covering the soil with live vegetation or crop residues, creating barriers, planting crops or other vegetation with specialized characteristics, or adjusting the techniques used to apply fertilizers or pesticides.

In addition to the primary effects mentioned above, other effects, both positive and negative, may occur. Livestock feed production, soil organic matter, and biodiversity may increase. Nutrient cycling may be improved and the corresponding need for purchased nutrients may decrease. Target pests and the corresponding need for pesticides may be reduced, and aesthetics may be improved. Snow trapping may occur, saline seeps may be reduced, and water use efficiency by crops may be improved. Many of the practices will also result in an initial up-front cost and increase in fuel use when they are installed. However, the total costs and fuel used on the cropland may eventually be decreased because of increased efficiencies resulting from the installation. Many of the practices will also decrease runoff while correspondingly increasing infiltration, which may result in both positive and negative effects.

The direct effects lead to indirect effects. Improved wildlife habitat should lead to increased wildlife, reduced runoff and erosion should lead to reduced loss of soluble and sediment-bound contaminants to receiving water bodies, snow trapping should lead to increased water storage, leading to healthier crops in many cases. Reduced need for nutrient and pesticide applications will reduce farmer costs, leading to increased net income. Other indirect effects may also occur.

Indirect effects lead to cumulative effects such as income stability for farmers and communities, water quality, habitat suitability and environmental health. These effects occur when the practice is applied within the same region on many farms or fields, as might be expected when the EQIP program is implemented.

Conservation Practices Applicable to Grazing Lands

Grazing lands include a myriad of land uses: rangelands, pasturelands, haylands, grazed forestlands, grazed croplands, and naturalized pastures. The practices most commonly implemented under EQIP to improve the quality of grazing land are identified in Table 4.

Table 4: Most Frequently Used Grazing Land Practices

Practice Name	Practice Number⁴⁰
Animal Trails and Walkways	575
Brush Management	314
Critical Area Planting	342
Fence	382
Forage Harvest Management	511
Pasture/Hayland Planting	512
Pipeline	516
Pond	378
Practice Name	Practice Number⁴¹
Prescribed Burning	338
Prescribed Grazing	528
Range Planting	550
Spring Development	574
Use Exclusion	472
Watering Facility	614

These practices are generally designed to provide feed and water for livestock production; enhance wildlife food and habitat; enhance plant biodiversity; protect air, soil, and water resources; and provide a basis for diversification for farm income.

Practices frequently used to carry out these functions provide for management of livestock numbers, grazing intensity, duration, and distribution. Other practices used to augment these are clipping, crop rotation, drainage, fertilization, and addition of soil amendments, heavy use protection areas, irrigation, pest management, spring development, stream crossings, and wildlife habitat management.

⁴⁰ Practice numbers are assigned by NRCS for eases of reference and are found in the NRCS National Handbook of Conservation Practices.

⁴¹ Practice numbers are assigned by NRCS for eases of reference and are found in the NRCS National Handbook of Conservation Practices.

In addition to these primary effects mentioned above, other effects, both positive and negative, may occur. Improved plant growth and condition can result from controlling erosion on steep slopes and around feed areas. The increase in plant cover protects streams, ponds, and other water supplies from sediment and other possible contaminants, as well as providing food for livestock and wildlife. Soil condition may be improved, resulting in increased nutrient cycling, organic matter, and carbon sequestration. Equipment, labor, materials, and maintenance may result in added costs to the producer in order to provide water, erosion control, and other associated conservation measures and controls.

The direct effects can lead to indirect effects. Controlled access to sensitive areas should lead to a reduction in contaminants, pathogens, and sediments in receiving waters, as well as protection and productivity of desired plant species. Development of water facilities and mechanisms for providing source water for livestock leads to an increase in animal health and production. These same practices may interfere with natural water flow and/or enhance saltwater intrusion and possibly allow potential contaminants into water bodies. Some wildlife species may also be negatively affected.

Indirect effects lead to cumulative effects such as income stability for producers and communities, water quality, habitat suitability, and human and animal health.

Conservation Practices Applicable to Forest Land, Grazing Land and Agroforestry Settings

The practices used on grazed and ungrazed forestlands and in agroforestry settings under the EQIP program are identified in Table 5. Statistics for these practices for fiscal year 2007, the most recent full year of data available, can be obtained through the NRCS Performance and Results Measurement System (PRMS) at <http://pmproductsvr.nrcs.usda.gov/prmsproducts/conservationtreatments.asp>. These practices and other facilitating and associated practices are part of the base of practices used to develop resource management systems on grazed and ungrazed forestlands, cropland, and other lands. A subset of these practices is referred to as "agroforestry" practices which are used principally on agricultural lands. The subset consists of Alley Cropping, Riparian Forest Buffer, Windbreak/Shelterbelt Establishment, and Windbreak/Shelterbelt Renovation.

Many farmers and ranchers with grazed or ungrazed forestland on all or part of their operating units are included in an ownership group referred to as Nonindustrial Private Forest Land (NIPF) owners, an ownership group that comprises 300,000 million acres in the United States. The 2008 Act defines NIPF as rural land "(A) has existing tree cover or is suitable for growing trees; and (B) is owned by any nonindustrial private individual, group, association, corporation, Indian Tribe, or other private legal entity that has definitive decision-making authority over the land."

On forestlands, NIPA owners typically use all forestry practices in Table 5 except the agroforestry practices. Producers with cropland typically use only the agroforestry practices. In addition, a great deal of U.S. grazing lands has potential for tree

establishment providing an opportunity to grow, manage and harvest forage and wood fiber concurrently using grazing, forestry and agroforestry practices.

Table 5: Most Frequently Used Forestry Practices

Practice Name	Practice Number ⁴²
Alley Cropping	311
Firebreak	394
Tree/Shrub Site Preparation	490
Forest Site Preparation	490
Forest Stand Improvement	666
Forest Trails and Landings	655
Forest Slash Treatment	384
Multi-Story Cropping	379
Prescribed Burning	338
Silvopasture Establishment	381
Riparian Forest Buffer	391
Tree/Shrub Establishment	612
Tree/Shrub Pruning	660
Use Exclusion	472
Windbreak/Shelterbelt Establishment	380
Windbreak/Shelterbelt Renovation	650

On forestland, the practices are employed chronologically and, starting with currently non-forested conditions, include Tree/Shrub Site Preparation, Tree/Shrub Establishment, Forest Stand Improvement (thinning), Access Roads and Forest Trails and Landings, and Forest Stand Improvement (harvest). Riparian Forest Buffers are utilized on all forestland having water bodies, watercourses and wetlands. On agricultural land, Windbreak/Shelterbelt Establishment (and Windbreak/Shelterbelt Renovation), Riparian Forest Buffer, Silvopasture Establishment and Alley Cropping are the primary "agroforestry" practices that are strategically located as integral parts of cropland and

⁴² Practice numbers are assigned by NRCS for eases of reference and are found in the NRCS National Handbook of Conservation Practices.

pastureland systems to optimize pollution mitigation, aesthetics and habitat, and to provide wood crops in addition to traditional farm crops.

Direct effects of forestry systems on forestland include the establishment and growth of woody vegetation that quickly alters the characteristics of habitat on a spatial and vertical basis, accumulates marketable and renewable wood fiber in the boles of trees, and sequesters large amounts of carbon in biomass and the soil profile. If and when a forest stand is harvested, roads, trails, landings and cutover are created which can permanently or temporarily alter local hydrology, wildlife movement types of wildlife, forage growth and accessibility, and risk of wildfire. Various practices are employed to mitigate any direct and indirect effects from harvesting considered to be adverse, e.g., Firebreak, Forest Slash Treatment, Critical Area Planting, Sediment Basin, and Structure for Water Control.

Other effects such as increased forage growth from forest stand improvement and animal accessibility from harvest trails and landings may stimulate the use of livestock and trigger the need for Silvopasture Establishment, and Prescribed Grazing and related practices. Opening the canopy also has wildlife effects such as fewer "closed canopy" species and more "open habitat" species with species richness being augmented by the increase of "edge effect" from a mosaic of harvested, regenerated and older forested areas being in close proximity.

Effects of agroforestry practices on agricultural land are similar to forestry/forest land effects but are more pronounced for increasing wildlife habitat ("refuge" effect) and less so for generating wood-fiber products (tree/shrub "agroforestry" areas are typically of small extent in the overall agricultural landscape). In addition, mitigation of wind, water, and farm-related pollutants are a primary focus of agroforestry systems.

Effects from both forestry and agroforestry systems lead to cumulative effects such as income stability for farmers and communities, water quality improvements, habitat suitability and environmental health. These effects occur when the systems and practices are applied within the same region on many forests, farms or fields, as might be expected when EQIP is implemented over a period of years. Without the proper application of forestry and agroforestry practices, cumulative effects would weigh strongly toward environmental degradation.

Appendix B

Common Conservation Practices to Address Resource Concerns

Common Conservation Practices to Address Soil Resource Concerns

Resource Concern	Conservation Practices To Address Concern
Soil	
Soil Erosion – Sheet and Rill	Alley Cropping (311); Conservation Cover (327); Contour Buffer Strips (332); Contour Farming (330); Contour Orchard and Other Fruit Area (331); Cover Crop (340); Critical Area Planting (342); Heavy Use Area Protection (561); Mulching (484); Pasture And Hay Planting (512); Prescribed Grazing (528); Range Planting (550); Residue Management (329, 344, 345, 346); Row Arrangement (557); Stripcropping (585); Terrace (600); Vegetative Barriers (601)
Soil Erosion - Wind	Alley Cropping (311); Conservation Cover (327); Cover Crop (340); Critical Area Planting (342); Cross Wind Ridges (589A); Field Border (386); Heavy Use Area Protection (561); Herbaceous Wind Barriers (603); Mulching (484); Pasture and Hay Planting (512); Prescribed Grazing (528); Range Planting (550); Residue Management (329, 344, 345, 346); Surface Roughening (609); Stripcropping (585); Windbreak Shelterbelt Establishment and Renovation (380, 650)
Soil Erosion –Ephemeral and Classic Gully	Alley Cropping (311); Cover Crop (340); Critical Area Planting (342); Diversion (362); Field Border (386); Grade Stabilization Structure (410); Grassed Waterway (412); Heavy Use Area Protection (561); Lined Waterway or Outlet (468); Mulching (484); Pasture And Hay Planting (512); Precision Land Forming (462); Prescribed Grazing (528); Range Planting (550); Roof Runoff Structure (558); Stripcropping (585); Terrace (600); Tree and Shrub Establishment (612); Underground Outlet (620); Water and Sediment Control Basin (638); Vegetative Barriers (601)
Soil Erosion – Streambank and Shoreline	Access Control (472); Channel Bank Vegetation (322); Channel Stabilization (584); Critical Area Planting (342); Fence (382); Fish Passage (396); Grade Stabilization Structure (410); Heavy Use Area Protection (561); Prescribed Grazing (528); Riparian Forest Buffer (391); Riparian Herbaceous Cover (390); Stream Crossing (578); Stream Habitat Improvement (395); Streambank And Shoreline Protection (580); Watering Facility (614)
Soil Erosion – Irrigation Induced	Aboveground Multi-Outlet Pipeline (431); Irrigation Water Conveyance (430); Irrigation Water Management (449); Irrigation Land Leveling (464); Mulching (484); Residue Management (329, 344, 345, 346); Row Arrangement (557)
Soil Condition – Organic Matter Depletion	Conservation Cover (327); Conservation Crop Rotation (328); Cover Crop (340); Critical Area Planting (342); Mulching (484); Pasture And Hay Planting (512); Prescribed Grazing (528); Range Planting (550); Residue Management (329, 344, 345, 346); Silvopasture Establishment (381); Stripcropping (585); Tree And Shrub Establishment (612); Waste Utilization (633); Windbreak Shelterbelt Establishment And Renovation (380, 650)
Soil Condition – Compaction	Access Control (472); Conservation Cover (327); Critical Area Planting (342); Deep Tillage (324); Grazing Land Mechanical Treatment (548); Prescribed Grazing (528); Range Planting (550); Residue Management (329, 344, 345, 346)
Soil Condition – Contaminants (Salts, Pesticides and Other Chemicals)	Agrichemical Handling Facility (309); Conservation Crop Rotation (328); Field Border (386); Filter Strip (393); Irrigation System, Sprinkler (442); Irrigation Water Management (449); Nutrient Management (590); Pasture and Hay Planting (521); Pest Management (595); Salinity and Sodic Soil Management (610); Subsurface Drain (606)
Soil Condition – Nutrient Cycling (Animal Manures and Other Organics, Commercial Fertilizer)	Agrichemical Handling Facility (309); Alley Cropping (311); Conservation Cover (327); Conservation Crop Rotation (328); Feed Management (592); Nutrient Management (590); Pasture and Hay Planting (521); Prescribed Grazing (528); Waste Storage Facility (313); Waste Treatment Lagoon (359)

Conservation Practices Applied to Address Water Resource Concerns

Resource Concern	Conservation Practices To Address Concern
Water	
Water Quantity: Excessive Water	Cover Crop (340); Dam (402); Dam, Diversion (348); Dike (356); Diversion (362); Drainage Water Management (554); Grassed Waterway (412); Hillside Ditch (423); Land Smoothing (466); Lined Waterway Or Outlet (468); Open Channel (582); Precision Land Forming (462); Pumping Plant (533); Spring Development (574); Surface Drainage, Field Ditch (607); Surface Drainage, Main or Lateral (608); Structure For Water Control (587); Subsurface Drain (606); Underground Outlet (620); Water and Sediment Control Basin (638); Wetland Creation, Enhancement and Restoration (658, 659, 657)
Water Quantity: Insufficient Water	Cover Crop (340); Dike (356); Diversion (362); Irrigation Storage Reservoir (436); Irrigation System, Microirrigation (441); Irrigation System, Sprinkler (442); Irrigation System, Tailwater Recovery (447); Irrigation Water Conveyance (428 and 430); Irrigation Water Management (449); Mulching (484); Obstruction Removal (500); Pumping Plant (533); Spring Development (574); Structure For Water Control (587); Water Harvesting Catchment (636); Water Spreading (640); Water Well (642); Watering Facility (614)
Water Quantity: Inefficient Use of Water	Aboveground, Multi-Outlet Pipeline (431); Dam (402); Dam, Diversion (348); Irrigation Land Leveling (464); Irrigation Regulating Reservoir (552); Irrigation Storage Reservoir (436); Irrigation System (441, 442, 443, 447); Irrigation Water Management (449); Land Smoothing (466); Mulching (484); Pond Sealing or Lining (521A-D); Pumping Plant (533); Residue Management (329, 344, 345, 346); Row Arrangement (557); Spring Development (574); Structure For Water Control (587); Water Well (642); Windbreak Shelterbelt Establishment and Renovation (380, 650)
Water Quality: Pesticides In Surface and Ground Water	Agrichemical Handling Facility (309); Conservation Cover (327); Cover Crop (340); Filter Strip (393); Irrigation System, Microirrigation (441); Irrigation System, Tailwater Recovery (447); Irrigation Water Management (449); Pest Management (595); Prescribed Grazing (528); Riparian Forest Buffer (391); Riparian Herbaceous Cover (390); Strip-cropping (585); Vegetated Treatment Area (635)
Water Quality: Nutrients and Pathogens in Surface and Ground Water	Agrichemical Handling Facility (309); Anaerobic Digester (365, 366); Animal Mortality Facility (316); Composting Facility (317); Contour Farming (330); Cover Crop (340); Feed Management (592); Filter Strip (393); Heavy Use Area Protection (562); Irrigation Water Management (449); Manure Transfer (634); Nutrient Management (590); Riparian Forest Buffer (391); Riparian Herbaceous Cover (390); Stream Crossing (578); Strip-cropping (585); Waste Storage Facility (313); Waste Treatment (629);
Water Quality: Suspended Sediment In Surface Water	Conservation Cover (327); Contour Orchard and Other Fruit Area (331); Cover Crop (340); Critical Area Planting (342); Filter Strip (393); Irrigation Water Management (449); Lined Waterway or Outlet (468); Mulching (484); Prescribed Forestry (409); Prescribed Grazing (528); Residue Management (329, 344, 345, 346); Riparian Forest Buffer (391); Riparian Herbaceous Cover (390); Sediment Basin (350); Stream Crossing (578); Streambank And Shoreline Protection (580); Strip-cropping (585); Terrace (600); Tree and Shrub Establishment (612); Vegetative Barriers (601); Vegetated Treatment Area (635); Water and Sediment Control Basin (638)
Air Quality: Particulate Matter	Anionic Polyacrylamide (PAM) Erosion Control (450); Atmospheric Resources Quality Management (370); Conservation Cover (327); Cover Crop (340); Feed Management (592); Firebreak (394); Forest Slash Treatment (384); Forest Stand Improvement (666); Fuel Break (383); Hedgerow Planting (4222); Herbaceous Wind Barriers (603); Irrigation Water Management (449); Mulching (484); Nutrient Management (590); Prescribed Burning (338); Prescribed Grazing (528); Pumping Plant (533); Residue Management (329, 344, 345, 346); Strip-cropping (585); Surface Roughening (609); Waste Facility Cover (367); Waste Treatment (629); Windbreak/Shelterbelt Establishment and Renovation (380 and 650)

Conservation Practices Applied to Address Air Resource Concerns

Resource Concern	Conservation Practices To Address Concern
Air	
Air Quality: Ozone Precursors	Atmospheric Resource Quality Management (370); Nutrient Management (590); Firebreak (394); Forest Slash Treatment (384); Forest Stand Improvement (666); Fuel Break (383); Nutrient Management (590); Pest Management (595); Prescribed Burning (338); Pumping Plant (533)
Air Quality: Greenhouse Gases (CO ₂ , N ₂ O, CH ₄)	Anaerobic Digester (365, 366); Atmospheric Resources Quality Management (370); Conservation Cover (327); Cover Crop (340); Feed Management (592); Firebreak (394); Forest Stand Improvement (666); Forest Slash Treatment (384); Fuel Break (383); Nutrient Management (590); Residue Management (329, 344, 345, 346); Riparian Forest Buffer (391); Stripcropping (585); Waste Facility Cover (367); Waste Treatment (629)
Air Quality: Ammonia and Objectionable Odors	Amendments For Treatment of Agricultural Waste (591); Anaerobic Digester (365, 366), Animal Mortality Facility (316); Atmospheric Resources Quality Management (370); Composting Facility (317); Conservation Cover (327); Cover Crop (340); Feed Management (592); Hedgerow Planting (422); Nutrient Management (590); Solid/Liquid Separation Facility (632); Waste Facility Cover (367); Waste Storage Facility (313); Waste Treatment (629); Waste Treatment Lagoon (359); Waste Utilization (633); Windbreak/Shelterbelt Establishment and Renovation (380 and 650)
Plant Condition: Quantity, Diversity, Health and Vigor	Access Control (472); Brush Management (314); Conservation Crop Rotation (328); Early Successional Habitat Development/Management (647); Field Border (386); Fuel Break (383); Firebreak (394); Forage Harvest Management (511); Forest Stand Improvement (666); Fuel Break (383); Hedgerow Planting (422); Irrigation System, Microirrigation (441); Irrigation System, Sprinkler (442); Irrigation Water Management (449); Mulching (484); Nutrient Management (590); Pasture And Hay Planting (512); Pest Management (595); Prescribed Burning (338); Prescribed Forestry (409); Prescribed Grazing (528); Range Planting (550); Salinity And Sodic Soil; Silvopasture Establishment (381); Tree and Shrub Establishment (612); Management (610); Tree/Shrub Pruning (660); Tree/Shrub Site Prep (490); Upland Wildlife Habitat Management (645); Wetland Creation, Enhancement and Restoration (658, 659, 657); Wetland Wildlife Habitat Management (644)
Plant Condition: Threatened, Endangered and Declining Species	Pest Management (595); Prescribed Burning (528); Prescribed Grazing (528); Restoration and Management Of Rare And Declining Habitats (643); Upland Wildlife Habitat Management (645); Wetland Enhancement (659); Wetland Restoration (657); Wetland Wildlife Habitat Management (644)

**Conservation Practices Applied to Address Biological Resource Concerns
(continued)**

Resource Concern	Conservation Practices To Address Concern
Animals	
Terrestrial Wildlife: Adequate Cover, Food, Connectivity and Water	Access Control (472); Brush Management (614); Conservation Cover (327); Early Successional Habitat Development/Management (647); Field Border (386); Forage Harvest Management (511); Forest Stand Improvement (666); Hedgerow Planting (422); Pasture And Hay Planting (512); Pest Management (595); Prescribed Burning (338); Prescribed Forestry (409); Prescribed Grazing (528); Range Planting (550); Restoration and Management of Rare And Declining Habitats (643); Riparian Herbaceous Cover (390); Riparian Forest Buffer (391); Shallow Water Development And Management (646); Silvopasture Establishment (381); Stream Habitat Improvement and Management (395); Tree and Shrub Establishment (612); Upland Wildlife Management (645); Watering Facility (614); Wetland Creation, Enhancement And Restoration (658, 659, 657); Wetland Wildlife Habitat Management (644); Windbreak/Shelterbelt Establishment and Renovation (380 and 650)
Aquatic Animals: Structure, Cover, Food, Connectivity and Favorable Water Temperatures	Access Control (472); Channel Bank Vegetation (322); Fish Passage (396); Nutrient Management (590); Pest Management (595); Prescribed Grazing (528); Restoration and Management of Rare and Declining Habitats (643); Riparian Forest Buffer (391); Riparian Herbaceous Cover (390); Shallow Water Development and Management (646); Stream Habitat Improvement and Management (395); Streambank and Shoreline Protection (580); Wetland Creation, Enhancement And Restoration (658, 659, 657); Wetland Wildlife Habitat Management (644); Windbreak/Shelterbelt Establishment (380)
Fish and Wildlife: Threatened, Endangered and Declining Species	Access Control (472); Brush Management (314); Early Successional Habitat Development (647); Fish Passage (396); Prescribed Forestry (409); Prescribed Grazing (528); Restoration and Management of Declining Habitats (643); Shallow Water Management For Wildlife (646); Stream Habitat Improvement and Management (395); Streambank and Shoreline Protection (580); Tree/Shrub Establishment (612); Riparian Forest Buffer (391); Upland Wildlife Habitat Management (645); Wetland Enhancement (659); Wetland Restoration (657); Wetland Wildlife Habitat Management (644)

Appendix C

Most Frequently Applied Conservation Practices to Address Resource Concerns

Conservation practices reducing water induced sheet and rill soil erosion (RUSLE).

Practice Definition		Units	Contracts	Units	Acres ^b Protected
329A	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	Ac.	10,014	3,686,312	3,686,312
410	Grade Stabilization Structure	No.	7,738	13,279	10,214
600	Terrace	Ft.	6,277	60,327,152	138,492
329B	Residue and Tillage Management, Mulch Till	Ac.	3,007	1,438,961	1,438,961
328	Conservation Crop Rotation	Ac.	3,096	321,957	321,957
340	Cover Crop	Ac.	4,247	1,022,399	1,022,399
412	Grassed Waterway	Ac.	5,856	196,316	196,316
342	Critical Area Planting	Ac.	12,707	100,718	100,718
386	Field Border	Ft.	1,924	10,842,604	164,282
327	Conservation Cover	Ac.	1,257	23,716	23,716
344	Residue Management, Seasonal	Ac.	166	86,195	86,195
635	Vegetated Treatment Area	Ac.	556	20,245	20,245
330	Contour Farming	Ac.	170	3,316	3,316
329C	Residue and Tillage Management, Ridge Till	Ac.	30	13,073	13,073
586	Stripcropping	Ac.	119	6,492	6,492
393	Filter Strip	Ac.	1,380	4,371	4,371
311	Alley Cropping	Ac.	123	763	763
331	Contour Orchard and Other Fruit Area	Ac.	102	513	513
450	Anionic Polyacrylamide	Ac.	8	2,981	2,981
332	Contour Buffer Strips	Ac.	25	1,406	1,406
Totals					4,828,482***

Average per acre (based on implemented)

**Baseline for Implemented Contracts based on FY 2007 payment data multiplied by 5 years.

***Total acres protected is sum of individual practice acres, divided by 1.5, to reflect that EQIP plans typically use more than one of the listed practices is generally included in the treatment plan.

Units implemented excludes those for which no cost sharing was given

Source: NRCS Performance Reporting System and 2008 EQIP Cost Benefit Analysis

FY 2007 Historical EQIP practices benefiting irrigation efficiency.

Implemented Contracts (excludes contract units not cost shared)**

Practice Code and Name	Units ^a	Number of		Cost Share
			Units	
442	Irrigation System, Sprinkler	No. and Ac.	1,692,857	\$ 251,098,059
441	Irrigation System, Microirrigation	No. and Ac.	140,049	\$ 92,939,663
464	Irrigation Land Leveling	Ac.	994,351	\$ 56,478,055
449	Irrigation Water Management	Ac.	1,597,519	\$ 36,353,644
449	Irrigation System, Surface and Subsurface	No. and Ac.	46,457	\$ 11,299,004
466	Land Smoothing	Ac.	29,453	\$ 3,646,486
610	Salinity and Sodic Soil Management	Ac.	22,284	\$ 1,938,558
462	Precision Land Forming	Ac.	21,091	\$ 1,351,092
Associated Practices ^b				
430DD	Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	Ft.	17,755,945	\$ 117,514,494
430EE	Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic	Ft.	9,059,577	\$ 48,079,707
436	Irrigation Storage Reservoir	No. and Ac-Ft	23,592	\$ 11,082,342
447	Irrigation System, Tailwater Recovery	No.	34,455	\$ 8,095,884
552	Irrigation Regulating Reservoir	No.	11,760	\$ 6,248,182
430CC	Irrigation Water Conveyance, Pipeline, Nonreinforced Concrete	Ft.	176,676	\$ 3,493,003
430FF	Irrigation Water Conveyance, Pipeline, Steel	Ft.	27,867	\$ 378,609
388	Irrigation Field Ditch	Ft.	187,759	\$ 178,541
320	Irrigation Canal or Lateral	Ft.	15,515	\$ 170,089
428B	Irrigation Water Conveyance, Ditch and Canal Lining, Flexible Membrane	Ft.	8,494	\$ 133,778
430AA	Irrigation Water Conveyance, Pipeline, Aluminum Tubing	Ft.	17,051	\$ 67,834
	Totals ^c		3,029,375	\$ 650,547,023

Averages

*Baseline for analysis is based on FY 2007 contract data multiplied by 5 years.

**Baseline for Implemented Contracts based on FY 2007 payment data multiplied by 5 years.

^aAssumed the "no & ac" are in terms of acres, since values seem reasonable.

^bThese practices could not be converted to "treated acres" from the available data, but it seemed reasonable to assume that they were part of the systems installed on treated acres, hence their costs are included here.

^cTotals for units include only the upper set of per-acre practices, divided by 1.5 to account for more than one practice per acre

FY 2007 Historical EQIP data on practices benefiting air quality.

Implemented Contracts (excludes contract units not cost shared)**							
	Practice Definition	Units	Units	Acres	cost share	total cost	Total Cost per acre
370	Atmospheric Resource Quality Management	Ac.	1,440,087	1,440,087	\$ 10,763,839	\$ 18,271,975	12.69
327	Conservation Cover	Ac.	258,047	258,047	\$ 1,928,757	\$ 3,274,130	12.69
328	Conservation Crop Rotation	Ac.	3,646,647	3,646,647	\$ 27,256,641	\$ 46,269,054	12.69
340	Cover Crop	Ac.	3,190,765	3,190,765	\$ 23,849,175	\$ 40,484,767	12.69
342	Critical Area Planting	Ac.	1,440,713	1,440,713	\$ 10,768,520	\$ 18,279,922	12.69
589A	Cross Wind Ridges	Ac.	14,366	14,366	\$ 107,377	\$ 182,276	12.69
589C	Cross Wind Trap Strips	Ac.	40	40	\$ 299	\$ 508	12.69
422	Hedgerow Planting	Ft.	10,728	325	\$ 428,469	\$ 727,340	2237.32
422A	Herbaceous Wind Barriers	Ft.	9,398	142	\$ 375,346	\$ 637,161	0.00
550	Range Planting	Ac.	2,509,511	2,509,511	\$ 18,757,187	\$ 31,840,948	12.69
329A	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	Ac.	16,325,781	16,325,781	\$122,026,048	\$ 207,143,274	12.69
329B	Residue and Tillage Management, Mulch Till	Ac.	5,807,713	5,807,713	\$ 43,409,391	\$ 73,688,885	12.69
329C	Residue and Tillage Management, Ridge Till	Ac.	54,699	54,699	\$ 408,846	\$ 694,030	12.69
344	Residue Management, Seasonal	Ac.	219,031	219,031	\$ 1,637,135	\$ 2,779,090	12.69
586	Stripcropping	Ac.	52,173	52,173	\$ 389,967	\$ 661,982	12.69
612	Tree/Shrub Establishment	Ac.	2,723,053	2,723,053	\$ 20,353,291	\$ 34,550,388	12.69
380	Windbreak/Shelterbelt Establishment	Ft.	193,388	2,930	\$ 7,723,677	\$ 13,111,198	4474.63
650	Windbreak/Shelterbelt Renovation	Ft.	29,202	442	\$ 1,166,295	\$ 1,979,825	4474.63
Total				37,686,466	\$291,350,259	\$ 494,576,754	

*Baseline for analysis is based on FY 2007 contract data multiplied by 5 years.

**Baseline for Implemented Contracts based on FY 2007 payment data multiplied by 5 years.

^aFor wind breaks and other strips in feet, assume 2 per 40 acre square field, so 1320 linear foot protects 20 acres, or 66 feet of windbreak per acre. Hedgerow is along one side of 80 acre field.

^bThe proportion of national conservation tilled acreage occurring in the Mountain, N.Plains, Pacific, and S.Plains where wind erosion is a concern.

FY 2007 Historical EQIP practices benefiting wildlife.

Implemented Contracts
(excludes contract units not cost shared)**

			Number	Number	Cost
Practice Code and Name	Units	Contracts	Units	Share	
561	Heavy Use Area Protection	Ac.	932,460	\$ 85,902,213	\$ 145,821,864
666	Forest Stand Improvement	Ac.	187,055	\$ 25,699,148	\$ 43,625,158
490	Tree/Shrub Site Preparation	Ac.	205,851	\$ 23,088,464	\$ 39,193,435
612	Tree/Shrub Establishment	Ac.	262,268	\$ 20,353,291	\$ 34,550,388
412	Grassed Waterway	Ac.	196,316	\$ 18,152,815	\$ 30,815,008
338	Prescribed Burning	Ac.	747,034	\$ 8,068,589	\$ 13,696,698
645	Upland Wildlife Habitat Management	Ac.	581,249	\$ 6,999,049	\$ 11,881,119
643	Restoration and Management of Rare and Declining Habitats	Ac.	21,609	\$ 2,755,759	\$ 4,677,993
327	Conservation Cover	Ac.	23,716	\$ 1,928,757	\$ 3,274,130
391	Riparian Forest Buffer	Ac.	2,843	\$ 1,185,397	\$ 2,012,251
659	Wetland Enhancement	Ac.	782	\$ 588,834	\$ 999,565
657	Wetland Restoration	Ac.	883	\$ 556,791	\$ 945,171
644	Wetland Wildlife Habitat Management	Ac.	4,762	\$ 334,689	\$ 568,145
322	Channel Bank Vegetation	Ac.	395	\$ 140,248	\$ 238,076
Associated Practices:					
580	Streambank and Shoreline Protection	Ft.	1,028,945	\$ 28,318,863	\$ 48,072,211
380	Windbreak/Shelterbelt Establishment	Ft.	9,120,176	\$ 7,723,677	\$ 13,111,198
386	Field Border	Ft.	10,842,604	\$ 2,496,303	\$ 4,237,557
650	Windbreak/Shelterbelt Renovation	Ft.	1,328,671	\$ 1,166,295	\$ 1,979,825
422	Hedgerow Planting	Ft.	453,751	\$ 428,469	\$ 727,340
Totals (Acres Treated sum excludes those with FT units)			2,111,482	\$ 235,887,650	\$ 400,427,131

*Baseline for analysis is based on FY 2007 contract data multiplied by 5 years.

**Baseline for Implemented Contracts based on FY 2007 payment data multiplied by 5 years.

^a Excludes contract units with zero cost share.

Appendix D

Common Conservation Practices for Enhancement of Pollinator Habitat

The tables below provide details on how current conservation practices can be used to benefit pollinators, particularly crop-pollinating native bees. Native pollinator

conservation practices provide natural or seasonal habitat to 1) increase the abundance of pollen and nectar by ensuring that plants are in flower from early in the spring (e.g., willow) through late fall (e.g., goldenrod); 2) add or protect potential nest sites; and 3) provide a refuge from pesticides. Most of the conservation practices outlined below allow field office planners to include diverse flowering plants that provide sequential bloom throughout the growing season. Some practices allow for creation or protection of nest sites, such as snags or stable untilled ground for solitary bees, or small cavities (usually created by rodents) for bumble bees. Any practice that increases areas of natural habitat that are not sprayed with pesticides or implements buffers to reduce pesticide drift will minimize harm to native pollinators. (Please see the Xerces Society publication *Farming for Bees: Guidelines for Providing Native Bee Habitat on Farms* for more information.)



Creation of hedgerows at Butler Farm in Winters, CA will provide pollinator nest sites, refuge, and forage. Photo by MaceVaughan.

Table 1 lists conservation practices alphabetically and describes the potential for each practice to supply or improve habitat for pollinators. The Pollinator Notes column describes pollinator habitat components that can be provided by each practice, and offers recommendations for management practices that require careful timing of management activities (for example, mowing or fire) to benefit or reduce harm to pollinators. Table 2 presents the general habitat requirements of pollinators and lists the conservation practices that can be used to supply these requirements.

Table 1-. Conservation practices that can be used to create or enhance pollinator habitat.

Conservation Practice Name (Units)	Code	Pollinator Notes
Alley Cropping (Acres)	311	Can include native trees, shrubs and vines (e.g., black locust (<i>Robinia pseudoacacia</i>), <i>Rubus</i> spp., etc.) or row covers (e.g., various legumes) that provide nectar or pollen. NOTE: Black locust should be used with care because it is invasive in certain habitats outside of its natural range.
Channel Bank Vegetation (Acres)	322	Can include diverse flowering trees, shrubs, vines, and forbs. Channel banks provide a unique opportunity to supply early-flowering willow and, in dry areas, late flowering native forbs (e.g., goldenrod (<i>Solidago</i> spp.)). These stable areas of habitat also may support solitary bee ground-nests where the soil surface is accessible, or bumble bees where vegetation becomes dense or duff layers accumulate.
Conservation Cover (Acres)	327	Can include diverse forbs (e.g., various legumes) to increase plant diversity and ensure flowers are in bloom for as long as possible, providing nectar and pollen throughout the season.
Conservation Crop Rotation (Acres)	328	Cover crops used during conservation crop rotations can include forbs (e.g., various legumes, buckwheat (<i>Eriogonum</i> spp.), phacelia (<i>Phacelia</i> spp.), etc.) that provide abundant forage for pollinators. Insecticides should not be applied to these conservation covers. Moving insect-pollinated crops no more than 800 feet during the rotation may help maintain local populations of native bees that have become established because of a specific crop or conservation cover.
Constructed Wetland (Acres)	656	Can include stable soil as nesting substrate in more upland areas, as well as plants that provide pollen and nectar for native bees and other pollinators. Possible plant genera with obligate or facultative wetland species include: <i>Asclepias</i> , <i>Bidens</i> , <i>Cephalanthus</i> , <i>Cornus</i> , <i>Crataegus</i> , <i>Epilobium</i> , <i>Eupatorium</i> , <i>Hibiscus</i> , <i>Hypericum</i> , <i>Iris</i> , <i>Juncus</i> , <i>Ledum</i> , <i>Lobelia</i> , <i>Ludwigia</i> , <i>Lysimachia</i> , <i>Mimulus</i> , <i>Ranunculus</i> , <i>Rhexia</i> , <i>Rhododendron</i> , <i>Ribes</i> , <i>Rosa</i> , <i>Rubus</i> , <i>Salix</i> , <i>Solidago</i> , <i>Spiraea</i> , and <i>Vaccinium</i> . Look for appropriate wetland plants from these and other genera for your region.

Contour Buffer Strips (Acres)	332	Can include diverse legumes or other forbs that provide pollen and nectar for native bees. In addition, mowing only every two or three years to benefit wildlife also will benefit nesting bumble bees. To protect bumble bee nests, mowing should occur in the late fall when colonies have died for the year and queens are overwintering.
Cover Crop (Acres)	340	Can include diverse legumes or other forbs that provide pollen and nectar for native bees. Look for a diverse mix of cover crop plant species that come into bloom at different times and provide a sequence of bloom throughout the year. Some examples include clover (<i>Trifolium</i> spp.), phacelia (<i>Phacelia</i> spp.), and buckwheat (<i>Eriogonum</i> spp.). Many “beneficial insect” cover crop blends include plant species that will also provide forage for pollinators.
Critical Area Planting (Acres)	342	Can include flowering plant species that provide abundant pollen and nectar for native bees and other pollinators. Planted areas may support stable soil for ground-nesting solitary bees, or dense vegetation under which bumble bee queens may hibernate or build nests.
Early Successional Habitat Development/Management (Acres)	647	This management practice is important for maintaining open and sunny habitat for pollinators. NOTE: To minimize damage to pollinator populations, disturbance practices should be implemented only every two to three years in rotation and, ideally, on only 30 percent or less of the overall site. This allows for habitat heterogeneity and opportunities for recolonization of non-treated habitat. For example, managers could mow or burn a small portion of the habitat (less than 1/3 of the site each year or two) on a three to six year cycle. Alternatively, they could treat one-fifth of the site each year, on a five-year cycle. In addition, when possible, disturbance practices should be implemented when most pollinators are inactive, such as from late fall to early spring. For details, see the Xerces Society publication <i>Pollinators in Natural Areas: A Primer on Habitat Management</i>.
Field Border (Feet)	386	Can include diverse legumes or other forbs that provide pollen and nectar for native bees. Strive for a mix of forbs, vines, and shrubs that come into bloom at different times throughout the year. Site management (for example, mowing) should occur in the late fall to minimize impacts on pollen and nectar sources used by pollinators. Alternatively, allowing field borders to become overgrown may provide nesting habitat for bumble bees, as well as abundant forage. Stable (untilled) field borders may provide opportunities for solitary bees to nest in the soil.

Filter Strip (Acres)	393	Can include legumes or other forbs that provide pollen and nectar for native bees. Look for a diverse mix of cover crop plant species that come into bloom at different times and provide a sequence of bloom throughout the year. Site management (for example, mowing or burning) should occur in late fall to early spring to minimize impacts on pollinators.
Grassed Waterway (Acres)	412	Can include diverse legumes or other forbs that provide pollen and nectar for native bees. In dry regions, these sites may be able to support flowering forbs with higher water requirements and thus provide bloom later in the summer.
Hedgerow Planting (Feet)	422	Can include forbs, vines, and shrubs that provide pollen and nectar for native bees. Look for a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year. Bee nesting sites also may be incorporated, including semi-bare ground or wooden block nests. Including strips of unmowed grasses and forbs along the edge of the hedgerow may provide nesting opportunities for bumble bees. This practice also can help reduce the drift of pesticides into areas of pollinator habitat.
Herbaceous Wind Barriers (Feet)	603	Can include diverse forbs and shrubs that provide pollen and nectar for native bees. Look for a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year.
Multi-Story Cropping (Acres)	379	Can include woody plants carefully chosen to supply pollen and nectar for pollinators. Look for mixes of plants that flower at different times throughout the growing season and can support populations of pollinators over time.
Pasture and Hay Planting (Acres)	512	Can include diverse legumes (e.g., alfalfa) or other forbs that, when in bloom, provide pollen and nectar for native bees.
Pest Management (Acres)	595	In general, implementing Integrated Pest Management (IPM) for a crop reduces the use and impact of pest control chemicals on pollinators. In addition, plant species commonly used in IPM to support the beneficial insects that help manage pests also can support bees. Examples of these plants include: phacelia (<i>Phacelia</i> spp.), sunflowers (<i>Helianthus</i> spp.), buckwheat (<i>Eriogonum</i> spp.), and yarrow (<i>Achillea</i> spp.). Pest management practices also can include replacement of invasive or exotic plant species with flowering native trees, shrubs, vines, legumes, or other forbs that provide pollen and nectar for native bees. Look for a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year.

Prescribed Burning (Acres)	338	Can greatly benefit pollinators by maintaining a diverse mix of open, early successional habitat in various stages of habitat maturity. NOTE: It is best if: 1) only 30% or less of a site is burned at any one time to allow for recolonization by pollinators from adjacent habitat; 2) burning occurs only every three to six years; and 3) burning occurs when pollinators are least active, such as when most plants have senesced or in the fall.
Prescribed Forestry (Acres)	409	Can help maintain open understory and forest gaps that support diverse forbs and shrubs that provide pollen and nectar for pollinators. Standing dead trees may be kept or drilled with smooth 3- to 6-inch deep holes to provide nesting sites for bees.
Prescribed Grazing (Acres)	528	Can help maintain early successional habitat and its associated flowering plants. Ensure that grazing objectives include a diverse plant community that incorporates legumes, forbs, and appropriate flowering woody species to create floral and structural diversity.
Range Planting (Acres)	550	Can include diverse legumes, other forbs and shrubs that provide pollen and nectar for native bees.
Residue and Tillage Management, No-Till/Strip Till/Direct Seed (Acres)	329	Can protect bees that are nesting in the ground at the base of the plants they pollinate. Soil tillage digs up these nests (located 0.5 to 3 feet underground) or blocks emergence of new adult bees the proceeding year.

Restoration and Management of Rare and Declining Habitats (Acres)	643	Can be used to provide diverse locally grown native forage (forbs, shrubs, vines, and trees) and nesting resources for pollinators. Many specialist pollinators that are closely tied to rare plants or habitats may significantly benefit from efforts to protect rare habitat. In addition, certain rare plants require pollinators to reproduce. NOTE: Pollinator plants should only be planted if they were part of the rare ecosystem you are trying to restore.
Riparian Forest Buffer (Acres)	391	Can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. The stable habitat may supply nest sites to solitary ground and wood-tunnel nesting bees, as well as bumble bees. This practice also can help reduce drift of pesticides onto areas of pollinator habitat.
Riparian Herbaceous Cover (Acres)	390	Can include diverse forbs that provide pollen and nectar for native bees. In drier parts of the U.S., many of these forbs flower in the late summer and fall, when pollinator forage is needed most.
Silvopasture Establishment (Acres)	381	If grazing intensity is low enough to allow for plants to flower, this practice can include legumes and other forbs that provide pollen and nectar for bees. Trees and shrubs that provide pollen and nectar also can be planted.
Stream Habitat Improvement and Management (Acres)	395	Plants chosen for adjoining riparian areas can include trees, shrubs, and forbs that provide pollen and nectar for pollinators. Maximizing plant diversity along riparian corridors will result in more pollinators and other terrestrial insects to feed fish in the streams.
Streambank and Shoreline Protection (Feet)	580	If vegetation is used for streambank protection, plants can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Good candidates include willow (<i>Salix</i> spp.), dogwood, (<i>Cornus</i> spp.) and goldenrod (<i>Solidago</i> spp.).
Stripcropping (Acres)	585	Can include diverse legumes or other forbs that provide pollen and nectar for native bees. If insect pollinated crops are grown, plants used in adjacent strips of vegetative cover may be carefully chosen to provide a complementary bloom period to the crop, such that the flowers available in the field are extended over a longer period of time.

Tree/Shrub Establishment (Acres)	612	Can include trees, shrubs and vines especially chosen to provide pollen and nectar for pollinators. Woody plants with pithy stems (e.g., elderberry (<i>Sambucus</i> spp.), boxelder (<i>Acer negundo</i>), and raspberries (<i>Rubus</i> spp.) also may be chosen to provide potential nest sites for solitary bees that nest in wood stems.
Upland Wildlife Habitat Management (Acres)	645	Can include managing for pollinator forage or pollinator nest sites, such as including nest blocks or snags for solitary bees that nest in tunnels in wood, access to bare soil for ground-nesting solitary bees, and small mammal burrows or overgrown grass cover for bumble bees. NOTE: Please see Early Successional Habitat Development/ Management (647) and Prescribed Burning (338) for management techniques that minimize the disruption of pollinator communities.
Vegetative Barriers (Feet)	601	Can include plants that provide pollen and nectar for pollinators.
Wetland Enhancement (Acres)	659	Wetland and adjacent upland can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Snags can be protected or nest blocks for bees erected.
Wetland Restoration (Acres)	657	Wetland and adjacent upland can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Snags can be protected or nest blocks for bees erected.
Wetland Wildlife Habitat Management (Acres)	644	Wetland and adjacent upland can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Snags can be protected or nest blocks for bees erected. NOTE: Please see Early Successional Habitat Development/Management (647) and Prescribed Burning (338) for management techniques that minimize the disruption of pollinator communities.
Windbreak/Shelterbelt Establishment (Feet)	380	Can include trees, shrubs, vines, and forbs especially chosen to provide pollen and nectar for pollinators. Windbreaks and shelter belts are a good place to put nesting structures for native bees, and they can help reduce drift of insecticides onto a site.
Windbreak/Shelterbelt Renovation (Feet)	650	Can include trees, shrubs, vines and forbs especially chosen to provide pollen and nectar for pollinators. If appropriate, dead trees and snags may be kept or drilled with holes to provide nesting sites for bees.

Table 2- Pollinator requirements and the conservation practices that can be used to provide them in the field.

Pollinator Resource	Code and Conservation Practice Name (Units)
Forage (diverse sources of pollen and nectar that support pollinators from early in the spring to late in the fall)	311 - Alley Cropping (Acres) 322 - Channel Bank Vegetation (Acres) 327 - Conservation Cover (Acres) 328 - Conservation Crop Rotation (Acres) 656 - Constructed Wetland (Acres) 332 - Contour Buffer Strips (Acres) 340 - Cover Crop (Acres) 342 - Critical Area Planting (Acres) 386 - Field Border (Feet) 393 - Filter Strip (Acres) 412 - Grassed Waterway (Acres) 422 - Hedgerow Planting (Feet) 603 - Herbaceous Wind Barriers (Feet) 379 - Multi-Story Cropping (Acres) 512 - Pasture and Hay Planting (Acres) 595 - Pest Management (Acres) 409 - Prescribed Forestry (Acres) 528 - Prescribed Grazing (Acres) 550 - Range Planting (Acres) 643 - Restoration and Management of Rare and Declining Habitats (Acres) 391 - Riparian Forest Buffer (Acres) 390 - Riparian Herbaceous Cover (Acres) 381 - Silvopasture Establishment (Acres) 395 - Stream Habitat Improvement and Management (Acres) 580 - Streambank and Shoreline Protection (Feet) 585 - Stripcropping (Acres) 612 - Tree/Shrub Establishment (Acres) 645 - Upland Wildlife Habitat Management (Acres) 601 - Vegetative Barriers (Feet) 659 - Wetland Enhancement (Acres) 657 - Wetland Restoration (Acres) 644 - Wetland Wildlife Habitat Management (Acres) 380 - Windbreak/Shelterbelt Establishment (Feet) 650 - Windbreak/Shelterbelt Renovation (Feet)

Nest sites (stable ground, holes in wood, cavities for bumble bees, or overwintering sites for bumble bee queens)	322 - Channel Bank Vegetation (Acres) 656 - Constructed Wetland (Acres) 332 - Contour Buffer Strips (Acres) 342 - Critical Area Planting (Acres) 386 - Field Border (Feet) 422 - Hedgerow Planting (Feet) 409 - Prescribed Forestry (Acres) 329 - Residue & Tillage Management, No-Till/Strip Till/Direct Seed (Acres) 643 - Restoration and Management of Rare and Declining Habitats (Acres) 391 - Riparian Forest Buffer (Acres) 612 - Tree/Shrub Establishment (Acres) 645 - Upland Wildlife Habitat Management (Acres) 659 - Wetland Enhancement (Acres) 657 - Wetland Restoration (Acres) 644 - Wetland Wildlife Habitat Management (Acres) 380 - Windbreak/Shelterbelt Establishment (Feet) 650 - Windbreak/Shelterbelt Renovation (Feet)
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