United States Government Accountability Office

Report to the Honorable Bob Gibbs
House of Representatives

April 2017

AGRICULTURAL CONSERVATION

USDA's Environmental Quality Incentives Program Could Be Improved to Optimize Benefits

GAO-17-225

April 2017

AGRICULTURAL CONSERVATION

USDA's Environmental Quality Incentives Program Could Be Improved to Optimize Benefits

GAO Highlights

Highlights of GAO-17-225, a report to the Honorable Bob Gibbs, House of Representatives

Why GAO Did This Study

Agricultural production can have harmful effects on natural resources, such as when sediment, fertilizer, and animal waste run off into the nation's waterways. Conservation practices, such as installing structures to store animal waste or changing the amount of fertilizer applied to cropland, can help mitigate these effects. NRCS's EQIP provides financial and technical assistance to landowners who voluntarily implement conservation practices on agricultural land or certain forestlands. The Food Security Act of 1985, as amended, states that one purpose of EQIP is to optimize environmental benefits.

GAO was asked to review whether EQIP funds are targeted where they will deliver the greatest environmental benefit. This report examines the distribution of EQIP obligations for fiscal years 2009 through 2015 and the extent to which EQIP processes for allocating funding and selecting applications are sufficient to optimize environmental benefits. GAO reviewed NRCS documents, analyzed data for fiscal years 2009 through 2015 (the most recent data available), and interviewed NRCS officials.

What GAO Recommends

GAO is making four recommendations, including that NRCS direct EQIP program managers to coordinate with CEAP leaders to develop and use better information for targeting EQIP funds and modify guidance and ranking tools for evaluating EQIP applications. NRCS neither agreed nor disagreed with these recommendations but described steps it is planning or taking to address them.

View GAO-17-225. For more information, contact Steve D. Morris at (202) 512-3841 or morriss@gao.gov.

What GAO Found

For fiscal years 2009 through 2015, the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) obligated almost $5.7 billion under its Environmental Quality Incentives Program (EQIP) for 219 types of conservation practices to address a variety of environmental concerns in all 50 states. These concerns included water quality and grazing land degradation. By law, NRCS is directed to, among other things, spend at least 60 percent of EQIP funds on livestock-related practices. These practices include installing waste storage facilities to limit damage to water quality and drafting plans to alternate grazing land use between grazing and resting to reduce degradation to the land.

Although EQIP is to optimize environmental benefits, among other things, under the current law, NRCS processes for allocating EQIP funds are not sufficient to optimize such benefits. Based on its review of NRCS's national process and its analysis of agency data, GAO found that the process for allocating EQIP funds to state offices was not based primarily on environmental concerns. NRCS guidance says that allocations to state offices should be based on environmental concerns data, among other things. In practice, national allocations are influenced primarily by historical funding amounts, partly because relevant, practical data on environmental concerns are not always available. Studies by USDA's Conservation Effects Assessment Project (CEAP), a multiagency effort with partners within and outside of USDA, that attempt to quantify the environmental effects of conservation practices have provided data on some environmental concerns but have not generally considered practical constraints, such as budget and statutory requirements. So their results are not always practical for EQIP program managers to use. CEAP leaders said they are beginning to design studies with such constraints in mind. Under federal standards for internal control, management should internally and externally communicate the necessary quality information to achieve the entity's objectives. By having EQIP program managers coordinate with CEAP leaders to ensure that CEAP studies consider practical constraints, the studies could provide NRCS with better information to target EQIP funds to optimize environmental benefits.

NRCS processes for selecting EQIP applications vary by state office and are not all sufficient to optimize environmental benefits. By law, applications are to be prioritized based on factors including their cost-effectiveness. To evaluate applications, NRCS uses ranking tools with a standard formula to calculate an application's cost-effectiveness, which is worth 10 percent of the total points possible. NRCS state and local offices develop questions in EQIP ranking tools, which together account for 65 percent of an application's score, and these questions are sometimes unrelated to environmental benefits. Given its low percentage, cost-effectiveness has little effect on which applications are funded, according to some agency officials. In some cases, applications with a cost-effectiveness score of zero were funded in fiscal year 2015. For example, an Arkansas application was funded that scored 20 out of 1,000 points, cost $59,000, and had a cost-effectiveness score of zero. By modifying guidance and ranking tools so they more accurately value an EQIP application's anticipated environmental benefits relative to estimated costs, NRCS could better ensure that it funds the most cost-effective applications.

Contents

Tables

Figures

List of abbreviations, EQIP draft report (GAO-17-225)

2002 Farm Bill	Farm Security and Rural Investment Act of 2002
2008 Farm Bill	Food, Conservation and Energy Act of 2008
2014 Farm Bill	Agricultural Act of 2014
CEAP	Conservation Effects Assessment Project
CPPE	Conservation Practice Physical Effects
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
GIS	geographic information system
NRCS	Natural Resources Conservation Service
OIG	Office of Inspector General
ProTracts	Program Contracts System
SRA	State Resource Assessment
USDA	U.S. Department of Agriculture

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

April 13, 2017

The Honorable Bob Gibbs
House of Representatives

Dear Mr. Gibbs:

Agricultural production can have harmful effects on natural resources, such as when sediment, fertilizer, and animal waste run off into the nation's waterways. According to an Environmental Protection Agency (EPA) fact sheet, in the 2000 National Water Quality Inventory, states reported that agricultural nonpoint source pollution is the leading source of water quality impacts on surveyed rivers and lakes, the second largest source of impairments to wetlands, and a major contributor to contamination of surveyed estuaries and groundwater. According to EPA's website, as of November 28, 2016, states reported that nonpoint source pollution is the leading remaining cause of water quality impacts. In August 2014 a harmful algae bloom (i.e., an overgrowth of algae) in Lake Erie—caused in part by agricultural runoff—left 500,000 people in Toledo, Ohio, without drinking water when the local utility was forced to issue a "do not drink" advisory. In Iowa, dangerous levels of nitrates, chemicals found in fertilizer and soil, were threatening the water supply in Des Moines. In March 2015, the local water utility sued drainage districts in three counties,[1] claiming that the districts should be required to reduce the levels of nitrates allowed to reach the water. The role of agriculture in water quality problems has captured the public's attention in these and other regions, such as the Chesapeake Bay.

The U.S. Department of Agriculture (USDA) has several programs that work to address a large number of farming and ranching–related conservation issues, including drinking water protection, reducing soil erosion, wildlife habitat preservation, and preservation and restoration of forests and wetlands. The Environmental Quality Incentives Program (EQIP) provides technical and financial assistance to landowners—farmers and ranchers—who voluntarily implement conservation practices

[1]Under Iowa law, drainage districts' boards of trustees are responsible for control, management, and supervision of the drainage districts. Each drainage district has a network of pipes and ditches that move groundwater.

on agricultural lands, including certain forestlands.[2] The Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) and the Agricultural Act of 2014 (2014 Farm Bill) mandated funding for EQIP to be more than $1 billion in each fiscal year from 2008 through 2018.[3] EQIP funding supports technical assistance by USDA staff, among other things, to help farmers and ranchers develop conservation plans and advise them about implementing conservation practices. EQIP funding also supports financial assistance in the form of payments to eligible farmers and ranchers for planning and implementing conservation practices, improving their production systems, and changing certain activities to comply with environmental regulations. Conservation practices are designed to sustain food and fiber production while enhancing soil, water, and related natural resources—including grazing land, forestland, and wildlife—developing and improving wildlife habitat and conserving energy. Two types of conservation practices are structural and management practices. Examples of structural practices include building structures to store animal waste that can minimize waste water runoff and its effects on water quality and installing or improving irrigation systems to allow farmers to reduce the volume of water applied, which can make water available for other uses. Examples of management practices include changing the amount, timing, or placement of nutrients, such as fertilizer, on land to enhance yield and minimize the amount of nutrients entering surface or groundwater supplies and rotating livestock through a series of fresh pastures, which can lead to greater productivity, improve animal health, and decrease soil erosion.

USDA's Natural Resources Conservation Service (NRCS) manages EQIP. NRCS headquarters develops national conservation priorities; determines the amount of funding each state office receives for nationally established, targeted initiatives and for state offices' discretion; and develops guidance for the program. NRCS state offices identify the priority environmental concerns of their states and determine how to

[2]Owners of land in agricultural production or persons who are engaged in livestock, agricultural, or forest production on eligible land where there is a natural resources concern may participate in EQIP.

[3]EQIP is funded through USDA's Commodity Credit Corporation. While the 2008 and 2014 Farm Bills directed the Secretary of Agriculture to use more than $1 billion a year to carry out EQIP, Congress has annually capped funds available for EQIP at levels below those established in these farm bills.

distribute EQIP funds among the priorities and areas within the states.[4] NRCS headquarters, state, and local offices develop ranking tools for evaluating EQIP applications. NRCS local offices identify local priorities, working with farmers and ranchers to develop conservation plans, and screen and rank eligible applications. Eligible farmers and ranchers may apply and compete for EQIP financial assistance to implement conservation practices. If selected, the farmers and ranchers enter into contracts with NRCS to implement the practices.[5]

The Food Security Act of 1985, as amended by the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill), and the 2008 and 2014 farm bills, states that EQIP's purpose includes optimizing the environmental benefits achieved under the program, among other things. In September 2006, we found that NRCS may not be fully optimizing the environmental benefits of practices implemented using EQIP dollars because of weaknesses in NRCS's process for allocating EQIP funds to the states.[6] We recommended that NRCS revise its allocation formula to ensure that funds are directed to areas of greatest priority. NRCS disagreed with the recommendation. Since that review, NRCS has modified its methodology for allocating funds to the states. In July 2014, USDA's Office of Inspector General (OIG) reviewed NRCS state offices' processes for allocating EQIP funds within the states, among other things. The OIG found that state offices did not sufficiently base their allocations on environmental concerns and recommended that NRCS clarify its guidance to ensure that state offices' allocation methods relate to environmental concerns.[7]

You asked us to review whether EQIP funds are targeted where they will deliver the greatest environmental benefit. This report examines (1) the

[4]The Commonwealth of Puerto Rico, the U.S. Virgin Islands, and the Pacific Basin territories also receive EQIP assistance. For the purposes of this report, these are referred to as states, with Puerto Rico and the U.S. Virgin Islands considered a single entity under EQIP.

[5]USDA regulations define an EQIP contract as a binding agreement for the transfer of assistance from USDA to the participant to share the costs of implementing conservation practices. 7 C.F.R. § 1466.3.

[6]GAO, *Agricultural Conservation: USDA Should Improve Its Process for Allocating Funds to States for the Environmental Quality Incentives Program*, GAO-06-969 (Washington, D.C.: Sept. 22, 2006).

[7]U.S. Department of Agriculture, Office of Inspector General, *Environmental Quality Incentives Program*, Audit Report 10601-0001-31 (July 2014).

distribution of EQIP financial assistance obligations from fiscal years 2009 through 2015, (2) the extent to which NRCS's EQIP funding allocation processes are sufficient to optimize environmental benefits, and (3) the extent to which NRCS's application selection processes are sufficient to optimize environmental benefits.

To determine the distribution of EQIP financial assistance obligations, we analyzed obligations data from NRCS's data system for all participant contracts from fiscal year 2009 through fiscal year 2015, the most recent data at the time of our review. For EQIP, financial assistance obligations are the commitment of funds to contracts for payments that NRCS will make to farmers and ranchers for conservation practices.[8] We determined the distribution of EQIP financial assistance obligations by state. We also determined the total obligations for conservation practices in EQIP contracts for this period. We also determined the obligations for practices by environmental concern. For reporting, NRCS groups conservation practices by environmental concern: cropland soil quality, fish and wildlife habitat, forestland conservation, grazing land conservation, irrigation efficiency, and water quality. To assess the reliability of the information on contracts and obligations data from the agency databases, we reviewed available documents to determine the sources of the information, data entry steps, and the completeness of the data, and interviewed agency officials. We determined that the data were sufficiently reliable for our purposes of reporting information on EQIP obligations for contracts, including obligations by conservation practice, environmental concern, and state.

To determine the extent to which NRCS's EQIP funding allocation processes are sufficient to optimize environmental benefits, we reviewed relevant legislation, NRCS regulations, and EQIP policy documents, and interviewed NRCS headquarters officials. We reviewed studies from USDA's Conservation Effects Assessment Project (CEAP) and

[8]NRCS estimates the future cost of a planned practice when it initiates a contract with a farmer or rancher. Obligations are estimated until conservation practices are completed by farmers and ranchers and NRCS certifies the practices.

interviewed NRCS officials leading the project.[9] We selected a nonprobability sample of eight NRCS state offices (Arkansas, California, Colorado, Iowa, Mississippi, Ohio, Pennsylvania, and Texas) for review, and examined their procedures for allocating EQIP funds within the states and interviewed NRCS state officials regarding these procedures. We selected the states with the highest EQIP allocation amounts and volumes of agricultural production in each of NRCS's four regions.[10] We reviewed USDA OIG's July 2014 report on processes used by NRCS state offices to allocate EQIP funds and NRCS's March 2016 study of 12 state offices' methods for allocating EQIP funds. We reviewed information from NRCS's data collection tool for EQIP allocations on the amount of EQIP funds allocated to 20 state offices in fiscal year 2016. We selected the 19 states with the highest allocation amounts. Because 7 of the 20 states were in our nonprobability sample of 8 states, we added the remaining state from our sample of 8 states. We compared NRCS's data on fiscal year 2016 allocations to the agency's data on critical acres, or acres needing conservation, for these 20 states. We also compared fiscal year 2016 allocations with 3-year average historical allocation amounts for fiscal years 2013 to 2015 for the same 20 states.

To assess the extent to which EQIP application selection processes are sufficient to optimize environmental benefits, we reviewed statutory direction and NRCS policy. We interviewed NRCS headquarters, state, and local officials on application selection policies and the extent to which data on environmental concerns, expected environmental benefits, and project costs influence application selection decisions. We also reviewed tools NRCS uses to score, rank, and approve EQIP applications for

[9]CEAP is a multiagency effort to quantify the environmental effects of conservation practices and programs and develop the science base for managing the agricultural landscape for environmental quality. Project findings are to be used to guide USDA conservation policy and program development and help conservationists, farmers, and ranchers make more informed conservation decisions. Lead USDA agencies are NRCS, the Agricultural Research Service, the National Institute of Food and Agriculture, the Farm Service Agency, and the National Agricultural Statistics Service. Other federal partners include the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, the National Aeronautics and Space Administration, the USDA Economic Research Service, the USDA Forest Service, the U.S Environmental Protection Agency, and the U.S. Bureau of Land Management. Additional partners include colleges and universities and environmental organizations, such as The Nature Conservancy.

[10]Because this was a nonprobability sample, the results of the sample cannot be generalized to all states but can provide examples of state procedures for allocating EQIP funds.

funding in the 8 selected states. To select the ranking tools, we requested three examples from each state office.[11] For these states, we reviewed the application ranking scores of 2015 EQIP applications that were approved and signed into contracts. In addition, we reviewed USDA and academic publications related to targeting funds, measuring effects of conservation practices, and optimizing benefits. Additional information on our scope and methodology is in appendix I.

We conducted this performance audit from September 2015 to April 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

EQIP provides technical assistance to farmers and ranchers by having NRCS staff assess the environmental concerns and conservation opportunities on farms and ranches, develop conservation plans, and advise farmers and ranchers on installing practices. In addition, farmers and ranchers may apply and compete for financial assistance to install and maintain conservation practices on their land. If an application is selected, the farmer or rancher enters into a contract with NRCS and agrees to install one or more conservation practices using NRCS standards and specifications. Farmers and ranchers receive EQIP payments after the practice or practices have been installed, and NRCS certifies the practices' installation on the land. NRCS headquarters manages the program with assistance from its 53 state offices and over 2,600 local offices.[12] NRCS's processes for managing EQIP include establishing program priorities, allocating funds to state offices, allocating funds within the states, selecting conservation practices and establishing payment rates, and evaluating and ranking applications.

[11]Because this was a nonprobability sample, the results of the sample cannot be generalized to all ranking tools but can provide examples of ranking tools used to score and select EQIP applications.

[12]NRCS has a state office in each of the 50 states and in the Caribbean area, Puerto Rico, and the Pacific basin. During 2014, NRCS had 2,605 offices located across the country where they conduct mission-related activities.

Establishing Program Priorities

NRCS headquarters determines the national priorities of EQIP and must consider a number of statutory funding requirements when allocating EQIP financial assistance funds. The largest in terms of funding is that NRCS must target 60 percent of funding to practices relating to livestock production.[13] NRCS must also provide funding to all states. From 2009 to 2013, NRCS was required to provide a minimum of $15 million to each state. Beginning in 2014, the requirement changed so that NRCS must provide at least 0.6 percent of available EQIP funds to each state. The specific requirements for allocating EQIP financial assistance since 2009 are as follows.

- Each year, at least 60 percent of the financial assistance funds must be targeted to practices related to livestock production.
- Each year, to the maximum extent practicable, 5 percent of the financial assistance funds must be targeted to socially disadvantaged farmers or ranchers.
- Each year, to the maximum extent practicable, 5 percent of the financial assistance funds must be targeted to beginning farmers and ranchers.
- Each year, at least 5 percent of financial assistance funds must be targeted to practices that benefit wildlife habitats (added in 2014).
- Each year, funding must be provided for conservation practices related to organic production.
- Each year, from 2009 through 2013, $37.5 million was to be targeted for air quality. From 2014 through 2018, $25 million must be targeted for air quality.
- Each year, from 2009 through 2013, a minimum of $15 million was to be provided to each state. From 2014 through 2018, at least 0.6 percent of available funds must be provided to each state that can establish that it can use the funds.

In addition to meeting the statutory funding requirements, the following national priorities identified in NRCS regulations may be considered in implementing EQIP:

[13]In EQIP regulations, NRCS states that livestock includes all domesticated animals produced on farms or ranches. NRCS provides examples of domesticated animals eligible for EQIP in its EQIP manual, including cattle for beef and dairy, poultry, bees, deer, and emu.

- reducing nonpoint source pollution and point source pollution from agricultural operations,[14]
- conserving ground and surface water resources,
- reducing on-farm emissions that contribute to violations of air quality standards,
- reducing soil erosion and sedimentation,
- conserving energy, and
- promoting at-risk species habitat conservation.

To assess progress made with the program, NRCS annually tracks and reports the number of conservation practices implemented and acres treated for certain environmental concerns, such as water quality, irrigation efficiency, or forestland conservation. However, NRCS does not track outcomes—for example, the amount of pollution prevented from reaching water bodies, such as streams, rivers, or lakes. USDA's CEAP was launched in 2003 with a goal of quantifying such outcomes; in particular, its aim was to quantify the impacts of taxpayer investments in conservation programs, including EQIP. CEAP has five components, including one for cropland, which focuses on the impacts of cropland management and conservation practices on soil health and water quality.[15] For example, CEAP cropland studies estimate the amount of sediment and nutrients—including nitrogen and phosphorous from animal waste or fertilizer—that flows off of croplands; these nutrients can degrade the quality of nearby water bodies.

The Food Security Act of 1985, as amended, states that the purposes of EQIP are to promote agricultural production, forest management, and

[14]Water pollution from diffuse, or nonpoint, sources—such as runoff from farms or construction sites—remains the leading cause of impairment of the nation's waters. Runoff from nonpoint sources, including many farms, managed forests, and urban areas, often carries harmful pollutants, such as fertilizers, pesticides, and sediment from fields and logging roads; metals and toxins from abandoned mines; and oils from roads and highways. Agricultural sources of nonpoint source pollution are an important contributor to U.S. water quality problems. Unlike nonpoint sources, a point source discharges pollutants from a discrete point, such as a pipe carrying effluent from a sewage treatment plant or an industrial facility.

[15]CEAP cropland studies integrate farmer surveys (conducted by the National Agricultural Statistics Service), natural resource information (land use and soils), and modeling to estimate the impact of conservation practices on nutrient and sediment loadings. The lead CEAP partners are USDA's NRCS and Agricultural Research Service and Texas A&M University's AgriLife Extension Services.

environmental quality as compatible goals, and to optimize environmental benefits by assisting farmers and ranchers in complying with national regulatory requirements, avoiding the need for regulatory programs, providing assistance to install and maintain conservation practices, and helping farmers and ranchers make cost-effective changes to production systems.

Allocating Funds to State Offices

According to NRCS officials and documents, NRCS allocates EQIP funds to its state offices using its State Resource Assessment (SRA) database tool. First, NRCS headquarters identifies, for each state, the number of critical acres—or acres needing conservation treatment—in categories based on environmental concern and enters this information into the SRA database tool. Next, state offices enter the number of acres they anticipate treating and the amount of funding needed to treat the acres in the SRA database tool, and these become the state offices' initial requests. Finally, NRCS headquarters makes adjustments to the requests based on states' historical allocation amounts and their records of obligating EQIP funds, to determine allocation amounts to state offices.

The allocations to the state offices include general EQIP funds to be allocated at the discretion of the state offices. Some state offices receive additional funds for headquarters-identified targeted initiatives.

Allocating Funds within States

NRCS's EQIP manual directs that each state office have a methodology for allocating funds within the state that is consistent with statutory direction and priorities.[16] For example, the manual directs state offices to target 5 percent of funds to socially disadvantaged farmers and ranchers. In addition, the manual states that state offices are to comply with the statutory mandate to nationally target at least 60 percent of funds to livestock-related practices.[17] The manual also specifies factors that must be reflected in the allocation methods, such as science-based background data on environmental status and needs, among other things, and the availability of human resources from public, private, and tribal

[16]U.S. Department of Agriculture, Natural Resources Conservation Service, *Environmental Quality Incentives Program Manual*, 1st ed. (February 2015).

[17]In its manual, NRCS directs its headquarters to nationally target at least 60 percent of available funds to livestock-related practices to meet the statutory requirement that at least 60 percent of financial assistance funds be targeted to practices related to livestock production. NRCS's manual also encourages states to meet this target.

sources. When making these allocation decisions, state NRCS officials are to consider the advice provided by locally led working groups and a state technical committee on priority environmental concerns in the state and region, according to the EQIP manual.

According to NRCS documents and officials, the state offices develop funding pools to group EQIP applications for evaluation. The funding pools allow the state offices to target EQIP funding to certain environmental concerns or locations within a state. For example, funding pools may be based on a specific environmental concern (e.g., improving water quality), a certain geographic area (e.g., a region, county, or watershed), or a type of agricultural operation (e.g., concentrated animal feeding operations). The Food Security Act of 1985, as amended, requires that applications of similar crop or livestock operations should be grouped together to the greatest extent practicable. NRCS groups applications for similar operations together for evaluation through the use of funding pools.

Selecting Practices and Establishing Payment Rates

NRCS state offices determine which conservation practices are eligible for financial assistance and the payment for the practices, according to the EQIP manual. To determine the payment amount, NRCS is to estimate the cost of implementing each approved conservation practice, including the income the farmer or rancher may give up by implementing the practice, according to NRCS's contracting manual. The estimate is for a typical cost implementation of the practice in a common setting. Then, NRCS pays farmers and ranchers a percentage of the estimated cost for practices implemented. The EQIP manual authorizes NRCS state offices to adjust the percentage that NRCS pays, the payment rate, up to a maximum limit established in statute.[18] By law, EQIP payment rates for farmers and ranchers to implement conservation practices may be up to 75 percent of the costs associated with planning, design, materials, equipment, installation, labor, management, maintenance, or training and up to 100 percent of income forgone. However, there are exceptions to these limits. Historically underserved farmers and ranchers—including limited resource, socially disadvantaged farmers or ranchers; veteran

[18]The Food Security Act of 1985, as amended, states that when establishing payment rates NRCS may accord greater significance to a practice that promotes soil health; water quality and quantity improvement; nutrient management; pest management; air quality improvement; wildlife habitat development, including pollinator habitat; or invasive species management.

farmers or ranchers; or beginning farmers or ranchers—must be awarded a rate that is at least 25 percent higher but does not exceed 90 percent of the estimated cost, according to statutory direction.

Evaluating and Ranking Applications

The law requires NRCS to prioritize applications for EQIP based on several factors, including the overall level of cost-effectiveness of proposed practices and the degree to which the proposed practices fulfill the purposes of EQIP. In its EQIP manual, NRCS also calls for applications to be evaluated based on the magnitude of expected environmental benefits; whether proposed practices assist the applicant in compliance with federal, state, local, and tribal regulatory requirements; and the willingness of the applicant to complete all practices in an expedited manner. The EQIP manual also suggests that state offices consider other locally defined pertinent factors, such as the location of the practice, and the extent of resource degradation.

NRCS officials develop ranking tools for each funding pool that assign a numerical score to each eligible application. Ranking tools include four sections from which points are given: questions on NRCS's national priorities, questions on state issues, questions on local issues, and a cost-effectiveness formula. The national priorities questions are the same for every ranking tool and evaluate the extent to which the application addresses those priorities. The state and local questions may vary for each funding pool and are developed by NRCS state and local officials.

To measure cost-effectiveness, NRCS developed a formula for estimating the cost-effectiveness of an application and bases 10 percent of the ranking score on this formula. According to agency guidance on developing ranking tools, using the cost-effectiveness score ensures that the applications selected for funding are providing the most benefit for the cost associated with the conservation practices to be implemented. NRCS local offices calculate an application's cost-effectiveness score by the formula, which considers the typical cost of proposed practices, typical environmental benefits resulting from the practices, and the usual duration of these benefits. For typical benefits, the formula uses information from NRCS's Conservation Practice Physical Effects matrix,

in which NRCS scientists assign numerical scores for each practice's effects on a series of environmental concerns.[19]

NRCS has not always evaluated applications for cost-effectiveness in this manner. Prior to the 2002 Farm Bill, EQIP was to target funds to conservation priority areas and maximize environmental benefits per dollar expended. When farmers and ranchers applied for EQIP, they could "bid down" in their applications, meaning they offered to accept a lower payment for carrying out a conservation practice. Bidding down was perceived by some to disadvantage farmers and ranchers who lacked sufficient resources to bid down. The 2002 Farm Bill eliminated the bid down language and added a prohibition on assigning a higher priority to an application only because it would present the least cost to the program. Also in the 2002 Farm Bill, Congress added optimization of environmental benefits as one of the purposes of EQIP.

For Fiscal Years 2009 through 2015, NRCS Spread EQIP Obligations Widely among Environmental Concerns and States

For fiscal years 2009 through 2015, NRCS distributed almost $5.7 billion in EQIP financial assistance obligations for contracts for 219 different conservation practices designed to address a number of environmental and agricultural production concerns, including water quality and grazing land degradation, in all states. EQIP obligations went to all states for state-identified priorities, and additional obligations went to certain states for targeted initiatives.

NRCS Distributed EQIP Obligations for Practices Addressing Water Quality, Grazing Land Degradation, and Other Environmental Concerns

For fiscal years 2009 through 2015, NRCS distributed almost $5.7 billion in obligations for EQIP contracts for 219 different conservation practices addressing water quality, grazing land degradation, and other environmental concerns. Our analysis of EQIP contracts for the period indicates that the 20 practices with the most obligations account for more than 60 percent of obligations, totaling almost $3.8 billion. The EQIP practices accounting for the highest obligations include a number of livestock-related practices. These practices help NRCS achieve the

[19]NRCS's Conservation Practice Physical Effects matrix is a system for assigning standard scores to conservation practices, designed to express the effects (in numerical terms) that the practices usually have on a number of environmental concerns, according to NRCS documents. According to agency documents and officials, the scores are not designed to account for site-specific conditions, such as the presence of other conservation practices done as part of a suite of practices or the magnitude of the environmental concern in the particular location where the practice is carried out.

statutory requirement that at least 60 percent of funds be spent on livestock-related practices. These practices include waste storage facilities (i.e., storage facilities for livestock waste) to limit damage to water quality, prescribed grazing (i.e., plans to alternate grazing land use between grazing and resting), and fences and brush management—three practices that improve ranchers' grazing land and the management of their livestock.[20] The 20 practices also include several irrigation practices to improve irrigation efficiency and conserve water, such as sprinkler systems, microirrigation systems (i.e., drip irrigation to frequently apply small amounts of water on or below the soil surface), and irrigation land leveling (i.e., leveling land prior to irrigation). Table 1 shows the EQIP practices in contracts from fiscal years 2009 through 2015 that have accounted for the highest total obligations. Appendix II provides a complete list of EQIP practices and additional data on obligations from 2009 through 2015.

Table 1: Environmental Quality Incentives Program Practices Receiving the Most Obligations, Fiscal Years 2009 through 2015

Dollars in millions

Practice name	Description	Obligations	Percentage of obligations
Waste storage facility[a]	Installing a storage structure for livestock waste	388.76	6.65
Fence[a]	Installing a fence/barrier	362.93	6.21
Sprinkler system	Installing or improving a system that applies water by means of nozzles operated under pressure	339.41	5.81
Brush management[a]	Managing or removing undesirable woody plants	319.28	5.46
Cover crop	Planting a crop between plantings of commodity crops	250.30	4.28
Livestock pipeline[a]	Installing a pipeline to convey water[b]	211.10	3.61
Microirrigation "drip" system	Installing a system that frequently applies a small quantity of water on or below the soil surface	205.95	3.52
Irrigation pipeline	Installing a pipeline for conveying water	185.40	3.18
Heavy use area protection[a]	Installing a stable, noneroding surface	180.12	3.08
Forage and biomass planting[a]	Planting suitable for pasture, hay, or biomass production	156.49	2.68

[20]Brush management is the management or removal of woody plants, including those that are invasive or noxious. Brush management is most commonly implemented to improve the quality of grazing land by improving forage accessibility, quality and quantity for livestock. Brush management can also help protect forest resources.

Practice name	Description	Obligations	Percentage of obligations
Nutrient management	Managing the timing and placement of nutrients, such as fertilizer, on land	138.04	2.36
Pumping planta	Installing a facility that delivers water, including a pump, power, and plumbing	133.04	2.28
Forest stand improvement	Cutting or killing selected trees or understory vegetation	130.86	2.24
Watering facility[a]	Installing a trough for drinking water	129.76	2.22
Combustion system improvement	Installing, replacing, or retrofitting an agricultural combustion system	114.78	1.96
Roofs and covers[a]	Installing a rigid, semirigid, or flexible manufactured membrane, composite material, or roof structure over a waste or agrichemical handling facility	111.70	1.91
Prescribed grazing[a]	Managing the harvest of vegetation with grazing animals, browsing animals, or both	108.91	1.86
Irrigation land leveling	Reshaping the surface of irrigated land prior to irrigation	101.80	1.74
Terrace	Installing an earth embankment, or a combination ridge and channel, across the field slope	89.00	1.52
Residue management – no tillage	Leaving residue from crops on the field and planting new crops without using a plow	87.42	1.50
Total		**3,754.28**	**64.07**

Source: GAO analysis of the U.S. Department of Agriculture's Program Contracts System data from fiscal years 2009 through 2015. | GAO-17-225

Note: Dollars reported are nominal dollars, which have not been adjusted for inflation. Obligations do not sum to total because of rounding.

[a]These are livestock-related practices.

[b]For livestock, this practice is applied as part of a resource management system to convey water from a source of supply to points of use for livestock.

From fiscal years 2009 through 2015, the practices receiving the most in obligations were typically the same. However, two practices have seen dramatic changes in funding during the fiscal year 2009 through 2015 period: cover crops and no tillage. NRCS increased its EQIP funding for farmers planting cover crops from $15 million in fiscal year 2009 to $56 million per year in both 2014, and 2015. Farmers plant cover crops (e.g., clover, field peas, and annual ryegrass) or a mixture of such crops to control soil erosion and improve soil health. Cover crops are usually grown over winter, between plantings of commodity crops that can be stored for a long time, and grown in large quantities, such as soybeans and corn. While payments for cover crops have increased, the payments for no-tillage, which improves soil health by reducing soil erosion and increasing the organic matter for soil, have decreased. With no-tillage,

farmers leave the residue from their crops on the field and plant new crops without plowing to turn the residue from the prior crop into the soil. NRCS's EQIP funding for no-tillage decreased from almost $20 million in fiscal year 2009 to $4 million in fiscal year 2015. According to a 2016 study by USDA's Economic Research Service, the shift to cover crops can be attributed to a variety of factors, such as increasing adoption of no-tillage by farmers even without EQIP payments and improving availability of cover crop seeds and educational materials.[21]

In reviewing the number of times EQIP practices were cited in contracts from fiscal years 2009 through 2015, we found that many of the practices receiving the most obligations were also the most frequently cited. These included practices such as installing fences and building watering facilities or water pipelines for livestock (representing 4 percent or more of all practices contracted). Additional practices that were frequently cited included nutrient management (i.e., activities such as managing the timing or placement of nutrients, such as fertilizer, on land) and irrigation water management, which includes controlling the volume, frequency, and application rate of irrigation water. Other frequently used practices include forest stand improvement, which is the cutting or killing of selected trees or understory vegetation to facilitate forest regeneration. Table 2 shows the practices most frequently cited in contracts from fiscal years 2009 through 2015. Appendix III provides a complete list of EQIP practices and their frequency in contracts from fiscal years 2009 through 2015.

Table 2: Conservation Practices Most Frequently Cited in Environmental Quality Incentives Program (EQIP) Contracts, Fiscal Years 2009 through 2015

Practice	Number of practices cited in contracts	Percentage of total practices
Fence	85,503	7.33
Watering facility[a]	66,711	5.72
Nutrient management	60,503	5.18
Cover crop	59,378	5.09
Livestock pipeline[b]	55,256	4.74
Brush management	53,571	4.59

[21]Maria Bowman, Stephen Wallander, and Lori Lynch, "An Economic Perspective on Soil Health," *Amber Waves* (Economic Research Service, September 2016), accessed November 21, 2016, https://www.ers.usda.gov/amber-waves/2016/september/an-economic-perspective-on-soil-health/.

Practice	Number of practices cited in contracts	Percentage of total practices
Forage and biomass planting	38,882	3.33
Prescribed grazing	38,426	3.29
Heavy use area protection	37,952	3.25
Forest stand improvement	32,179	2.76
Critical area planting	30,976	2.65
Irrigation water management	29,186	2.50

Source: GAO analysis of the U.S. Department of Agriculture's Program Contracts System data for fiscal years 2009 through 2015. | GAO-17-225

Note: Practices do not equal the number of EQIP contracts. A practice may occur multiple times in one contract.

[a]This practice involves installing a trough for drinking water.
[b]This practices involves installing a pipeline to convey water as part of a resource management system to convey water from a source of supply to points of use for livestock.

To identify the environmental concerns that the fiscal year 2009 through 2015 EQIP contracts were designed to address, we analyzed contract data for practices by environmental concern. Some conservation practices can address more than one environmental concern. For example, planting a cover crop can improve water quality and crop soil quality, so the obligations for cover crops would be included in both categories. According to NRCS data, from fiscal years 2009 through 2015, NRCS obligated almost $2.4 billion for practices that at least in part improved water quality. Of this amount, 75 percent, or about $1.8 billion, was for practices that addressed environmental concerns in addition to water quality. Also for this period, NRCS obligated an estimated $2.2 billion for practices that at least in part addressed grazing land conservation (i.e., the management, productivity, and health of grazing land). Of this amount, 60 percent, or $1.3 billion, also addressed other environmental concerns, such as water quality or forestland conservation. Other environmental concerns EQIP practices are designed to improve include irrigation efficiency, cropland soil quality, forestland conservation, and fish and wildlife habitat management. Table 3 shows the obligations for each EQIP practice by environmental concern the practice is designed to address. The table covers the period from fiscal years 2009 through 2015.

Table 3: Obligations for Environmental Quality Incentives Program Practices, by Environmental Concern, Fiscal Years 2009 through 2015

Dollars in millions

Environmental concern	Obligations	Obligations that address other environmental concerns (percentage)[a]	Practices receiving the most obligations contributing to the concern
Water quality	2,355	1,774 (75)	Waste storage facilities, cover crops, microirrigation “drip” systems, heavy use protection areas, nutrient management, prescribed grazing, terraces, no-tillage
Grazing land conservation	2,211	1,319 (60)	Fence, brush management, livestock pipeline, heavy use protection areas, forage and biomass planting, nutrient management, pumping plant, watering facility, prescribed grazing
Cropland soil quality	1,292	1,164 (90)	Cover crop, forage and biomass planting, nutrient management, terrace, no-tillage, grade stabilization structure, underground outlet, crop rotation, integrated pest management
Irrigation efficiency	1,159	455 (39)	Sprinkler system, microirrigation “drip” systems, irrigation pipeline, pumping plant
Forestland conservation	852	597 (70)	Brush management, forest stand improvement, tree/shrub establishment, integrated pest management
Fish and wildlife habitat management	199	165 (83)	Stream bank and shoreline protection, upland wildlife habitat management, shallow water development and management, access control, conservation cover

Source: GAO analysis of the U.S. Department of Agriculture’s Program Contracts System data from fiscal years 2009 through 2015. | GAO-17-225

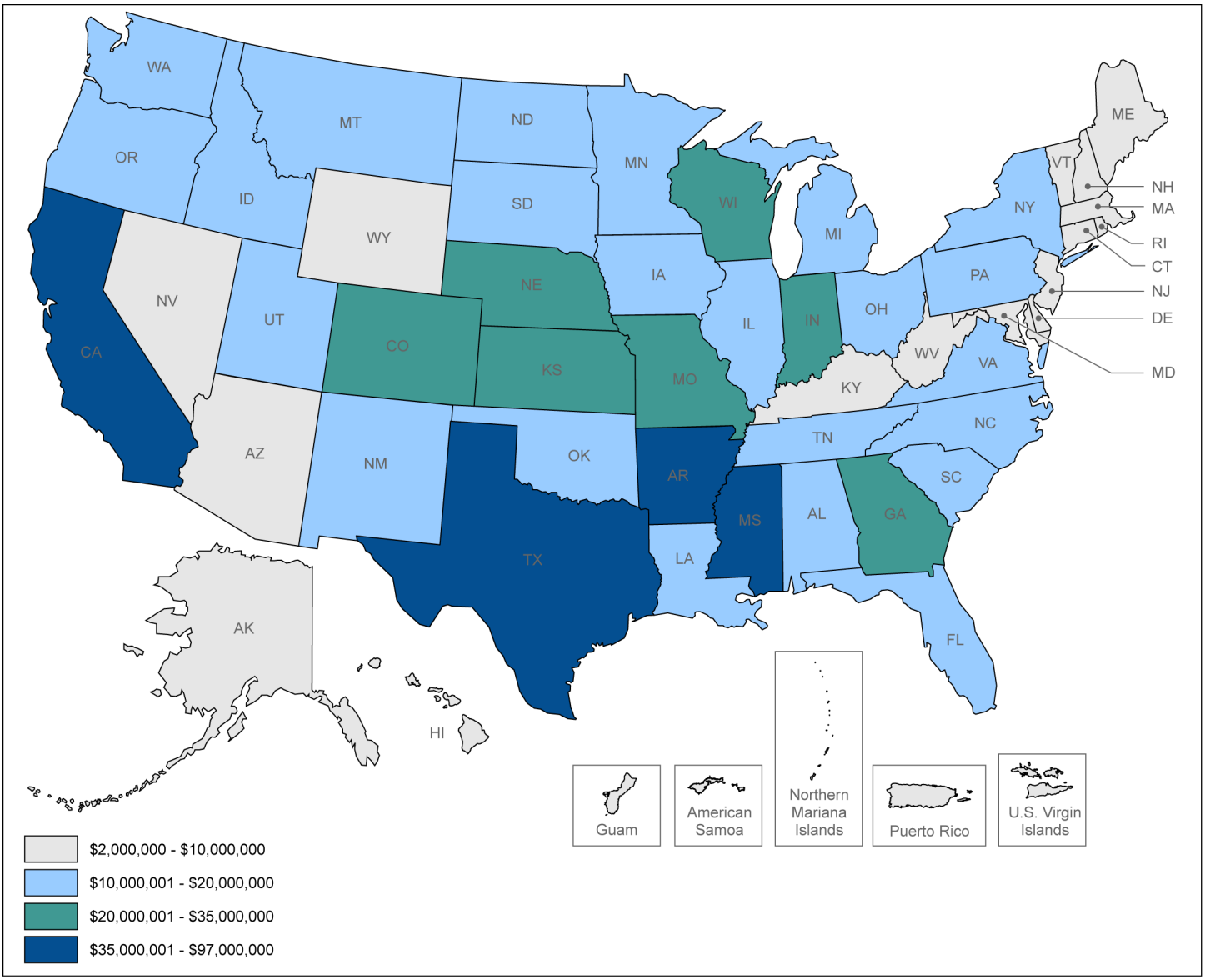
Note: Obligations are in nominal dollars, which have not been adjusted for inflation.

[a]Obligations and percentage of obligations that benefit other environmental concerns are for practices that benefit one or more other environmental concerns. For example, 75 percent of the obligations for water quality also benefitted other environmental concern categories in this table.

NRCS Distributed Obligations to All States for State-Identified Priorities and to Certain States for Targeted Initiatives

For fiscal years 2009 through 2015, NRCS distributed EQIP obligations for contracts with farmers and ranchers in all states, partly because of a statutory requirement to provide a minimum percentage of EQIP funds to every state and because of NRCS’s process for allocating EQIP funds. In fiscal year 2015, the most recent year for which data were available, of the $856 million in EQIP financial assistance obligations NRCS distributed, the agency distributed total obligations of more than $10 million each to 35 states. NRCS distributed the highest obligations in fiscal year 2015 in California, Texas, Arkansas, and Mississippi ($97 million, $72 million, $44 million, and $35 million, respectively). Figure 1 shows the distribution of 2015 EQIP financial assistance obligations by state. Appendix IV provides a complete list of EQIP financial assistance obligations by state.

Figure 1: Environmental Quality Incentives Program Financial Assistance Obligations by State, Fiscal Year 2015



Sources: GAO analysis of U.S. Department of Agriculture's Program Contracts System data; Map Resources (map). | GAO-17-225

NRCS's EQIP manual directs state offices to distribute general EQIP funds based on statutory direction, direction from headquarters, and state-identified priorities. NRCS provides certain state offices funds for initiatives established by headquarters for specific environmental concerns in targeted areas. Examples of these targeted initiatives include

addressing air quality concerns in designated regions, ongoing projects such as the National Water Quality Initiative and the Western Lake Erie Basin Initiative to improve water quality,[22] and the Sage Grouse Initiative to protect and conserve habitat.[23] According to NRCS officials, overall, from fiscal years 2009 through 2015, NRCS distributed obligations for almost $4.6 billion in general EQIP funds to all the state offices and approximately $1.1 billion for targeted initiatives to certain state offices. NRCS also targeted funds from fiscal years 2009 through 2013 to its Chesapeake Bay Watershed Initiative and identified the Chesapeake Bay watershed as one of eight priority areas to target for funds under a partnership program.[24] Appendix V provides a list of the targeted initiatives and participating states.

NRCS Processes for Allocating EQIP Funds Are Not Sufficient to Optimize Environmental Benefits

Although EQIP is intended to optimize environmental benefits, among other things, NRCS processes for allocating EQIP funds are not sufficient to optimize environmental benefits. Based on our review of the processes and our analysis of agency data, we found that NRCS's national process for allocating EQIP funds to state offices is not based primarily on environmental concerns. Some state offices do not use environmental concerns as the leading factor for allocating funds within their states, partly because NRCS guidance allows state offices substantial flexibility in determining how to allocate EQIP funds. Some state offices adjust payment rates to help optimize environmental benefits and others do not.

[22]In 2012, NRCS launched the National Water Quality Initiative, in collaboration with EPA and state water quality agencies, to reduce nonpoint sources of nutrients, sediment, and pathogens related to agriculture in small high-priority watersheds in each state. In 2016, NRCS started a new 3-year initiative (fiscal years 2016 to 2018) to provide accelerated conservation assistance for agricultural producers in the Western Lake Erie Basin, which includes land in Michigan, Indiana, and Ohio, as a significant portion of the phosphorous that is contributing to the harmful algal blooms in Lake Erie originates from surface and subsurface losses of commercial and organic fertilizer applied to agricultural land.

[23]Launched by NRCS in 2010, the Sage Grouse Initiative is a partnership of ranchers, agencies, universities, nonprofit groups, and businesses that embrace a common vision: wildlife conservation through sustainable ranching.

[24]The Regional Conservation Partnership Program promotes coordination between NRCS and its partners to deliver conservation assistance to farmers and ranchers.

National Process for Allocating EQIP Funds to State Offices Is Not Based Primarily on Environmental Concerns

Under statute, EQIP is intended to optimize environmental benefits, among other things. In NRCS's most recent Strategic Plan (2011-2015), the agency identifies one fundamental strategic goal, which is to "get more conservation on the ground." Given EQIP's fixed budget, getting more conservation on the ground, or implementing conservation practices on more acres, necessitates targeting funds where they can achieve the greatest environmental benefits per dollar. Cost-effectiveness is an important determinant of how much EQIP can accomplish. NRCS's EQIP manual directs NRCS headquarters to allocate EQIP funds to its state offices through a process that reflects national priorities and locally led priorities and uses available environmental concerns data. Specifically, headquarters is to consider (1) the extent and significance of environmental concerns and the opportunity for environmental improvement; (2) state assessments of priority environmental concerns, conservation targets, and assistance needed to address identified environmental concerns; (3) the ways EQIP can help farmers and ranchers comply with environmental laws; (4) the amount of agricultural land in different land use categories; and (5) other relevant information to meet the purposes of the program. Overall, the goal of the EQIP allocation process is to optimize environmental benefits, and the primary factor influencing EQIP allocations should be environmental concerns, according to agency officials.

This approach is supported by CEAP, which has been gathering data since 2003 on the locations of environmental concerns and the effects of conservation practices, such as the amount of sediment prevented from running off agricultural fields into water bodies. According to CEAP studies, targeting conservation efforts on high-needs acres, or acres with a high level of need for treatment, significantly improves their effectiveness.[25] For example, in some regions, implementing conservation practices on critical acres with a high need for additional treatment—acres most prone to runoff or leaching and with low levels of conservation practice use—can reduce sediment and nutrient per-acre losses by about twice as much on average as treatment of acres with a

[25]CEAP developed a classification system of treatment needs for cropland acres based on each site's inherent vulnerability, or level of environmental concerns, and the conservation practices that had been implemented affecting that site. CEAP classified acres as high, moderate, or low needs, with high needs acres showing the greatest imbalance between site vulnerability and current conservation. To determine inherent site vulnerability to sediment and nutrient loss, CEAP analyzed data on factors such as precipitation, slope, erodibility of the land, and susceptibility of the soil to leaching.

moderate level of need, according to CEAP studies.[26] Even greater efficiencies can be achieved when comparing treatment of high- or moderate-need acres to low-need acres, according to CEAP studies.

Based on our review of the funding process and analysis of agency data, we found that NRCS's fiscal year 2016 EQIP allocations to state offices are primarily influenced by historical funding amounts rather than environmental concerns or benefits. Regarding the funding process, NRCS headquarters uses its SRA database tool to manage the allocation process. For fiscal year 2016 allocations, NRCS headquarters recorded in the database tool the number of critical acres, or acres the agency identified as needing conservation, for several environmental concerns in each state. However, the data lacked location information, so their value for targeting was limited. Further, NRCS state offices entered allocation requests into the SRA database tool, according to agency officials, and could use the data on critical acres to calculate the requests, but they could also use other information. Agency officials in some state offices told us that they did not use the data on critical acres; for example, one state office used information on acres treated in previous years or the portion of applications funded, and such information might not have been related to the critical acres of environmental concerns in the states. Also, the allocation requests could not exceed caps that were based on historical allocation amounts, so there was a clear link between historical allocation amounts and the fiscal year 2016 allocations.

Agency officials said they modified the SRA process for fiscal year 2017 to increase the influence that environmental concerns have on allocations. Under the new process, if a state office identified a need for additional funding to address environmental concerns, it could request an allocation exceeding the cap based on historical allocations, with justification, according to agency guidance for the fiscal year 2017 SRA process. The guidance says that NRCS headquarters may consider these requests if additional funds become available and possibly adjust caps in future years. In addition, for some targeted initiatives, such as the National Water Quality Initiative and the Sage Grouse Initiative, agency officials used data on environmental concerns to help identify priority

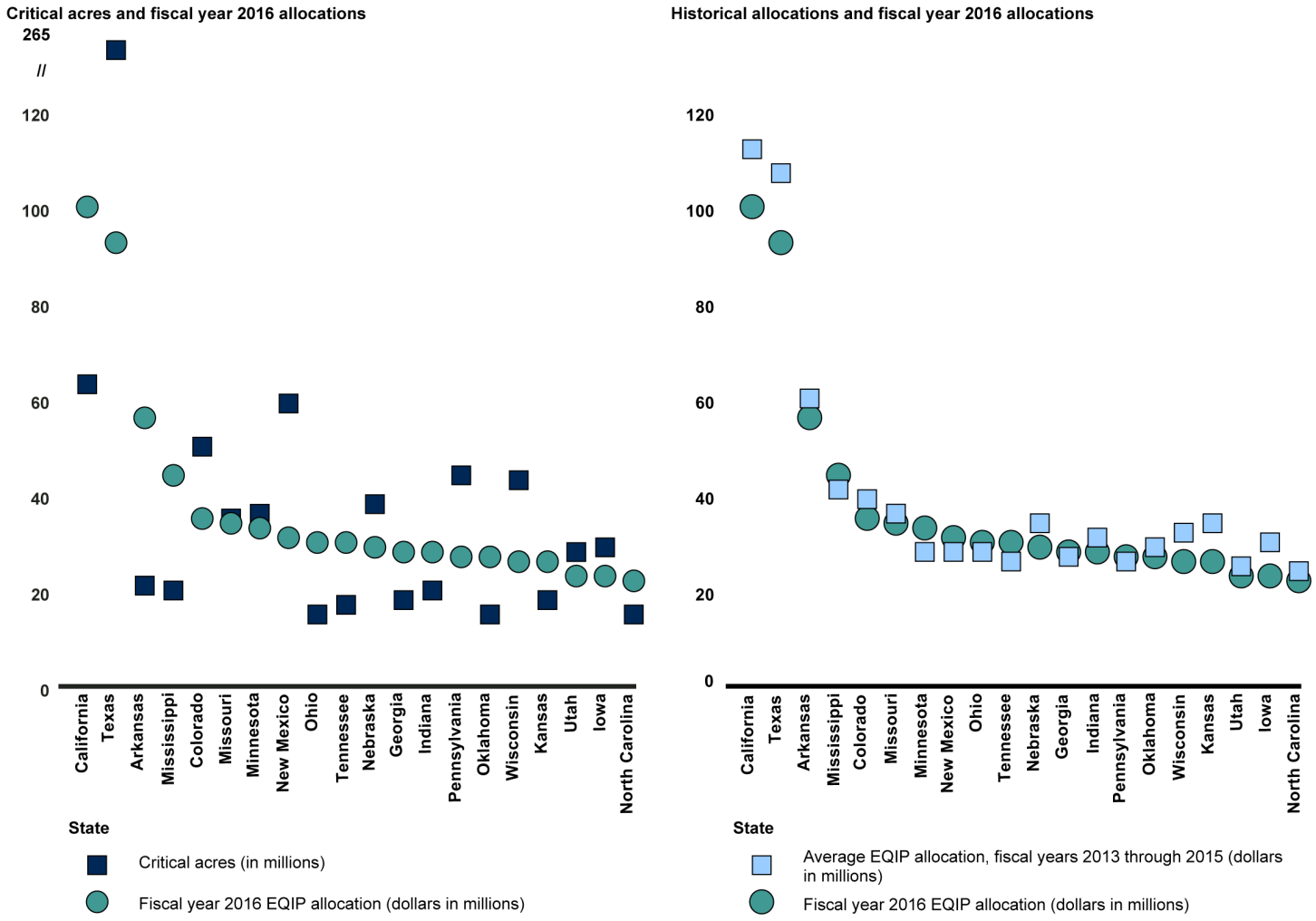
[26]U.S. Department of Agriculture, Natural Resources Conservation Service, Conservation Effects Assessment Project, *Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Great Lakes Region* (August 2011), and *Summary of Findings: Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Upper Mississippi River Basin* (August 2012).

locations within states where EQIP funds should be targeted and to influence decisions about allocation amounts to state offices.

Our analysis of NRCS data also shows that historical allocation amounts, rather than NRCS's data on critical acres, were closely related to fiscal year 2016 allocations. We compared fiscal year 2016 SRA data on the number of critical acres in each state with fiscal year 2016 EQIP allocations to state offices and found that for the 20 state offices we reviewed, fiscal year 2016 EQIP allocations ranged from 36 cents (in Texas) to $2.62 (in Arkansas) per critical acre.[27] We also compared fiscal year 2016 EQIP allocations with 3-year average allocation amounts for fiscal years 2013 to 2015 for the same 20 state offices and found that they were closely related. Figure 2 shows that fiscal year 2016 EQIP allocations to state offices were more closely related to historical allocation amounts than to the number of critical acres NRCS identified as needing conservation treatments, suggesting that data on environmental concerns may play a secondary role in allocation decisions.

[27]We conducted this analysis for the 19 state offices that received the highest EQIP allocations in fiscal years 2013 to 2015, and 1 additional state office. Of the 19 state offices, 7 were in our sample of 8 state offices that we selected for review of their EQIP allocation processes. We included in this analysis the eighth remaining state office from that sample, bringing the total number of state offices in this analysis to 20.

Figure 2: Environmental Quality Incentives Program (EQIP) Fiscal Year 2016 Allocations Compared to Critical Acres and Historical Funding Levels (Fiscal Years 2013 to 2015), for 20 Selected States



Source: GAO analysis of Natural Resources Conservation Service data. | GAO-17-225

Note: We analyzed data for the 19 state offices with the highest average EQIP allocations in fiscal years 2013 to 2015, and one additional state office. Of the 19 state offices, 7 were in our sample of 8 state offices that we selected for review of their EQIP allocation processes. We included in this analysis the eighth remaining state office from that sample, bringing the total number of state offices in this analysis to 20.

Some NRCS officials we interviewed agreed that data on critical acres should be linked to allocation amounts but said that the relationship should be generally evident rather than precisely correlated, because various factors can affect the per-acre cost of treating an acre—including

types and magnitude of environmental concerns and conservation practices used to address them, geography, agricultural practices, and local supply costs. Other agency officials said that it was not appropriate to assess the link between critical acres and allocations because of these factors. However, if this is the case, it raises questions about why critical acres are used in the SRA process.

In addition, agency officials said that data on environmental concerns do not have more influence on EQIP allocation decisions for three primary reasons. First, according to NRCS officials, the agency has many goals to balance when making allocation decisions, including statutory requirements to direct certain percentages of EQIP funds to specific environmental concerns and certain participant groups and to involve state and local stakeholders in priority-setting decisions. For example, Arkansas is among the top three states for EQIP allocations partly because the state has a large number of poultry producers, so by entering into contracts with those producers, the state office helps the agency meet its requirement to spend at least 60 percent of EQIP funds on livestock-related practices (which include poultry-related practices), according to agency officials. By law, NRCS must direct 5 percent of EQIP funds to beginning farmers and ranchers and 5 percent to socially disadvantaged farmers and ranchers, and these populations are not always colocated with the highest-priority environmental concerns, according to agency officials. Also, both the Food Security Act of 1985 and the EQIP manual direct NRCS to consult with state committees and consider local conservation priorities when identifying priorities and allocating funds, so NRCS headquarters provides state offices with discretion to target funds to these priorities, according to agency officials.[28]

Second, according to NRCS officials, it is important to consider staff availability and performance history, which vary across state and local offices. Officials told us that there may not be sufficient staff in every local office to conduct large volumes of conservation work, even if data on environmental concerns suggest there is a need for such work. To

[28]The 2014 Farm Bill directs NRCS to consult with state technical committees when making decisions about how to target funding. These committees are made up of stakeholders, such as farmers and ranchers representing the variety of crops and livestock raised in the state; tribes; state agencies with responsibilities related to agriculture, fish and wildlife, forestry, and water; and nonprofit organizations with conservation expertise. The agency's EQIP manual says that the allocation process should reflect national priorities and locally led conservation priorities.

illustrate this point, the officials stated that some state offices have requested more funding than they can obligate or have higher-than-average percentages of contracts that are not completed as planned. Also, because EQIP is a voluntary program, NRCS can only fund conservation work where there is demand from farmers and ranchers, which might not always correspond to the critical acres of conservation needs identified by the data.[29]

Third, data on environmental concerns do not have a greater influence on EQIP allocations to state offices because these data are not always available, up-to-date, or presented in a format that is practical for use by headquarters program managers. For example, NRCS did not provide data on critical acres of inadequate habitat for fish and wildlife or insufficient energy use in the 2016 SRA database tool because nationally standard estimates were not available for these environmental concerns. To identify critical acres for some environmental concerns, NRCS headquarters relied on data from the Conservation Effects Assessment Project (CEAP). CEAP's studies to date include a nationwide cropland study as well as more than 50 regional and watershed studies, some of which classify conservation treatment needs of each acre as high, moderate, or low. NRCS headquarters used the data on moderate- and high-needs acres for water quality to define critical acres. However, most of CEAP's studies are based on data from 2003 through 2006, so the information has become outdated, and the studies have been focused on cropland, not grazing lands, which limits their usefulness in allocation decisions to the 40 percent of EQIP funds available for practices that are not related to livestock, according to agency officials.

To update its studies, CEAP is collecting a new set of data reflecting 2015 and 2016 environmental conditions and conservation practices, and future studies will analyze these data, according to CEAP documents and officials. CEAP has not done more studies on grazing lands because of the scarcity of information on benefits of conservation practices done on

[29]In December 2013, we reviewed the voluntary nature of an EPA program. See GAO, *Clean Water Act: Changes Needed If Key EPA Program Is to Help Fulfill the Nation's Water Quality Goals*, GAO-14-80 (Washington, D.C.: Dec. 5, 2013).

rangelands, according to a CEAP study.[30] Rangelands are diverse, complex ecosystems, and there is little agreement on how to estimate the negative impacts that have been avoided or the positive impacts that have been realized through conservation practices. Also, on rangelands, the impacts might not be evident for decades because they are influenced by long-term changes in plant diversity, invasive species, and climate, including drought, according to a CEAP study and a CEAP official. To help address this data gap, the new 2015 and 2016 CEAP data sets will include information about pasturelands, which make up about 23 percent of non-forested grazing lands, so future CEAP studies will have some information about livestock-related practices, according to a CEAP official.[31]

Furthermore, CEAP studies have not generally considered practical limitations and trade-offs, including budget constraints and statutory requirements for EQIP, so their results are not always practical for program managers to use, based on our review of CEAP studies and interviews with CEAP officials. For example, some CEAP studies included qualifications on the treatment scenarios they analyzed, saying that the scenarios were not designed to represent actual program or policy options. According to agency officials, this approach reflects the original purpose of CEAP—to document the effects of conservation practices—and over time, the purpose has evolved to be broader and more future oriented.

CEAP leaders said they are beginning to design studies with real-world constraints in mind and develop models to reflect actual policy options and trade-offs that program managers face. For example, a March 2016 CEAP study on the Western Lake Erie Basin provided concrete information about trade-offs between various environmental benefits and between environmental benefits and crop yields that resulted from

[30]Grazing land includes pastureland, rangeland, and some forested grazing land. Rangeland is covered primarily in native grasses, forbs, or shrubs suitable for grazing, and management includes practices such as rotational grazing, with little or no chemicals or fertilizer being applied. Pastureland is managed primarily for producing introduced (rather than native) vegetation for grazing, and management includes treatments such as fertilization and weed control.

[31]According to USDA's most recent National Resources Inventory, there were about 121.1 million acres of pastureland and 405.8 million acres of rangeland in 2012, in the contiguous 48 states, Hawaii, Puerto Rico, and the U.S. Virgin Islands.

different combinations of conservation practices.[32] According to a CEAP leader, an ongoing CEAP study on the Chesapeake Bay used a model that considered cost and found that achieving a 40 percent reduction in nitrogen loss from croplands will cost twice as much as achieving a 30 percent reduction. Such results are a first step toward CEAP developing nationwide data that can be used to better inform EQIP allocation decisions and help NRCS maximize the environmental benefit achieved per dollar spent, consistent with the agency's fundamental strategic goal of getting more conservation on the ground. However, EQIP program managers do not currently coordinate with CEAP leaders about the practical limitations and trade-offs they face. Under federal standards for internal control,[33] management should internally and externally communicate the necessary quality information to achieve an entity's objectives. By having EQIP program managers coordinate with CEAP leaders about the practical limitations and trade-offs they face to ensure that CEAP studies consider these issues, the studies could provide program managers with better information to target EQIP funds where they will optimize environmental benefits. EQIP program managers and CEAP leaders agreed that coordination on these efforts could help NRCS target EQIP funds more effectively.

Some State Offices Do Not Use Environmental Concerns as the Leading Factor for Allocating Funds

At the state level, NRCS's manual calls for each state office to allocate EQIP funds within the state based on the following factors:

- priority environmental concerns,
- statutory requirements,
- goals and solutions for environmental concerns to optimize environmental benefits,
- science-based background data on the nature and extent of environmental concerns,
- the availability of human resources,

[32]U.S. Department of Agriculture, Natural Resources Conservation Service, Conservation Effects Assessment Project, *Effects of Conservation Practice Adoption on Cultivated Cropland Acres in Western Lake Erie Basin, 2003-06 and 2012* (March 2016).

[33]GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

- the existence of nationally established initiatives and regional collaborative efforts,
- program performance and results,
- the degree of difficulty that farmers and ranchers face in complying with environmental laws, and
- the presence of specialized farming operations.

In July 2014, USDA's OIG found that three of the six NRCS state offices in its sample did not consider environmental concerns when allocating EQIP funds within the state.[34] Without a selection process that focuses on identifying and addressing these concerns, the overall environmental benefits obtained by the program are reduced, the OIG report said. The OIG report concluded that as a result, projects with the greatest impact on the environment may be passed over for projects with less impact. To ensure that identified environmental concerns are the primary factor for allocating EQIP funding, the OIG recommended that NRCS schedule and conduct an analysis of state offices' allocation formulas. To ensure that state offices' allocation methods relate to environmental concerns, the OIG also recommended that NRCS implement controls and clarify guidance to state offices in the EQIP manual. In June 2014, NRCS agreed to update EQIP policy to revise and clarify state offices' responsibility to develop and implement robust and meaningful allocation formulas to provide assurance that funding is appropriately targeted to priority environmental concerns, but according to agency officials, NRCS has not done so.

In response to the OIG's first recommendation, NRCS conducted its own review of state offices' allocation methods in March 2016. Like the OIG, NRCS's review team found that 6 of the 12 state offices it reviewed did not use environmental concerns as the primary factor influencing EQIP allocations. According to NRCS's review team, state offices' methods varied considerably because the agency's guidance on state allocation methods allows state offices substantial flexibility in format and content. The NRCS review team recommended that the agency consider developing more specific state allocation policy; the policy would provide states with guidance regarding what should be included in their formal allocation formulas and examples of documentation that should be

[34]U.S. Department of Agriculture, Office of Inspector General, *Environmental Quality Incentives Program*.

available to verify the allocation formula. NRCS has not taken action in response to this recommendation, according to agency officials.

Under federal standards for internal control, management is to remediate identified internal control deficiencies on a timely basis.[35] It has been more than 2 years since the OIG found that half the offices in its sample did not consider environmental concerns when allocating EQIP funds and made its recommendation to clarify guidance. In February 2017, NRCS officials said they would review current EQIP policy for state allocations, make any revisions needed, and implement any policy updates in fiscal year 2018. By revising guidance to state offices on the EQIP allocation processes to specify that data on environmental concerns, where available, should be a primary factor influencing allocations within states, NRCS could have better assurance that its state offices are consistently treating environmental concerns as the primary factor influencing EQIP allocations.

Consistent with the OIG's and NRCS's findings, we found that four of the eight state offices in our sample (which included two of the same states as the NRCS review) did not use environmental concerns as the primary factor for allocating EQIP funds in 2016. Three of the four state offices' allocation methods were primarily based on land use type, and one was primarily based on past funding levels.[36] In addition, as called for in NRCS guidance, all eight of the state offices considered input from state and local stakeholders, according to officials in those offices.

Arkansas and Pennsylvania were two of the state offices we examined that used environmental concerns as the primary factor in their allocation processes. In Arkansas, the state office allocated fiscal year 2016 EQIP funds within the state based on the percentage of at-risk or high-needs acres in each county for each environmental concern, according to agency officials. To identify the at-risk acres, the office collaborated with a university to develop models for each environmental concern using multiple, weighted factors—such as soil type, slope, impaired streams, depth to water table, and flooding frequency—and data sources for each.

[35]GAO-14-704G.

[36]Specifically, NRCS's Colorado, Mississippi, and Ohio state offices' allocation methods were based primarily on land use type, and the Texas state office's allocation method was based primarily on historical funding levels. The Arkansas, California, Iowa, and Pennsylvania state offices' allocation methods were based primarily on environmental concerns.

They used the models to create geographic information systems (GIS) maps that identify at-risk acres for each environmental concern.[37] To make EQIP allocation decisions, the Arkansas state office first determined the portion of funding to allocate to each environmental concern based on input from state and local stakeholders. Next, the office used the GIS maps to target funds to at-risk acres in each county for each environmental concern, according to agency officials. The Pennsylvania state office's fiscal year 2016 EQIP allocation process was also based primarily on environmental concerns, and its allocations were guided by the state's NRCS strategic plan, according to agency officials. The state's strategic plan identified existing conditions and priority environmental concerns for each land use category and strategies to address them. To identify priorities and strategies, Pennsylvania NRCS officials analyzed data on the location and magnitude of environmental concerns and solicited input from state and local stakeholders.

Four other state offices in our sample did not use environmental concerns as the primary factor in their allocation processes, and they provided various reasons for not doing so. For example, the Colorado NRCS office allocated 2016 EQIP funds to each of its 10 major watersheds using a formula that considered data on the number of farms, acres of private land, acres of irrigated land, wildlife species affected by conservation practices, emerging issues, and the number of approved applications not funded the previous year. According to Colorado NRCS officials, they did not use data on environmental concerns as the primary factor because such data were not available. Instead, NRCS local offices in each watershed identified priority environmental concerns in consultation with local stakeholders, and the state office targeted the funds accordingly. In addition, since 2013 the Colorado state office has directed a portion of EQIP funds to targeted conservation efforts in small geographic areas, based on priorities identified by local working groups representing

[37]A GIS consists of systems of computer software, hardware, and data used to capture, store, manipulate, analyze, and graphically present a potentially wide array of geospatial data. The primary function of a GIS is to link multiple sets of geospatial data and display the combined information as maps with different layers of information. Assuming that all of the information is at the same scale and has been formatted according to the same geospatial standards, users can potentially overlay geospatial data about any number of specific topics to examine how the data in the various layers interrelate.

agricultural interests and natural resource issues, according to agency officials.[38]

In addition, the Texas state office allocated fiscal year 2016 EQIP funds to its local offices based on the average allocation amount over the previous 3 years, with adjustments for changing circumstances, according to agency officials. In addition, the office allocated a share of the funds to each county that receives EQIP applications. The Texas state office has maps identifying critical acres of environmental concerns, but Texas NRCS officials said they do not use them to influence allocation decisions because they have been in the Texas state office long enough to know where the environmental concerns are without consulting the maps. Also, they said that data on environmental concerns, environmental benefits, and costs are considered in the application selection process.

Some NRCS State Offices Adjust Payment Rates to Optimize Benefits

Some NRCS state offices have helped increase the environmental benefits attained per dollar spent by adjusting payment rates, or the percentage of the estimated costs that NRCS pays for a practice. According to NRCS guidance on payment rates, state offices should consider the least-costly percentage needed to encourage participation in EQIP and may provide a higher payment rate to priority practices and a reduced payment rate to low-priority practices. Since EQIP is subject to budget constraints, to maximize the environmental benefits that the program can achieve, several studies indicate that payments to individual program participants would need to be just large enough to encourage adoption of practices.[39]

[38]According to NRCS's *Conservation Program Delivery Manual*, local working group membership should be diverse and include agricultural producers representing the variety of crops, livestock, and poultry raised within the local area; owners of private forestland; and representatives of agricultural and environmental organizations, among others.

[39]See, for example, Roger Claasen, Andrea Cattaneo, and Robert Johansson, "Cost-effective Design of Agri-environmental Payment Programs: U.S. Experience in Theory and Practice," *Ecological Economics*, vol. 65, no. 4 (2008); U.S. Department of Agriculture, Economic Research Service, *Additionality in U.S. Agricultural Conservation and Regulatory Offset Programs*, Economic Research Report Number 170 (July 2014); Mariano Mezzatesta, David Newburn, and Richard Woodward, "Additionality and the Adoption of Farm Conservation Practices," *Land Economics,* vol. 89, no. 4 (2013); and Roger Claassen and Marc Ribaudo, "Cost-Effective Conservation Programs for Sustaining Environmental Quality," *Choices*, vol. 31, no. 3 (2016).

In recognition of this point, some of NRCS's state offices used payment rates in fiscal year 2016 to adjust incentives for certain conservation practices and stretch available EQIP funds. For example, the Iowa state office generally paid 50 percent of NRCS's estimated cost for most EQIP practices but paid 75 percent for practices adopted in certain high-priority watersheds, according to agency officials. The California state office used a similar approach, paying 50 percent for most practices and a higher rate for practices that provided few, if any, economic benefits to farmers but significant environmental benefits to the public, according to an agency official and agency documents.[40] One such practice calls for maintaining wetland wildlife habitat, which enhances habitat for wildlife species, such as migrating waterfowl. According to a California NRCS official, this practice helps the United States meet its commitments under international treaties to protect migratory birds,[41] and paying 75 percent resulted in success at reaching NRCS's goal of improving critical waterbird habitat on more than 10,000 acres in California—the amount needed to mitigate the impacts of prolonged drought on these agricultural lands. For farmers installing a certain irrigation practice typically used on vineyards and orchards, the California state office paid a lower rate—generally from 15 to 38 percent. The practice is particularly expensive, has been adopted by some farmers without financial assistance, and provides fewer benefits to the public, so the state office decreased the rates in an effort to have more funds available to support other conservation practices, according to the agency official.

Fourteen of NRCS's 53 state offices paid the highest payment rate (generally 75 percent) for all EQIP practices in fiscal year 2016,[42] and at least 13 other state offices provided the highest rate for nearly all EQIP

[40]NRCS's Iowa and California state offices used these payment rates for general EQIP participants. For historically underserved participants, they used higher rates.

[41]According to a California NRCS official, this practice and EQIP's Waterbird Habitat Enhancement Project help fulfill aspects of a Migratory Bird Treaty with Canada (Convention Between the United States and Great Britain (for Canada) for the Protection of Migratory Birds, U.S.-Can., Aug. 16, 1916; 39 Stat. 1702), as amended, and the Migratory Bird and Game Mammal Treaty with Mexico (Convention between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, U.S.-Mex, Feb. 7, 1936; 50 Stat. 1311), as amended.

[42]The Food Security Act of 1985, as amended, specifies that EQIP payment rates for a practice may not exceed 75 percent of estimated costs and 100 percent of forgone income, except for historically underserved and veteran farmers and ranchers. For these groups, payment rates must be at least 25 percent higher but may not exceed 90 percent of the estimated cost for the practice.

practices. As a result, these state offices could not fund as many practices as they could have if they used lower payment rates for some practices. Also, in some cases, farmers in neighboring states received different payments for implementing the same conservation practice. For example, a farmer could receive

- about $35,000 for installing a certain irrigation practice in New Mexico and about $23,000 for the same practice in Texas,
- about $4,900 per acre for installing a type of grassed waterway in Illinois and about $3,200 per acre for the same practice in Iowa, and
- about $27,000 for installing a pumping plant for removing animal waste in Pennsylvania and about $18,000 for the same practice in New Jersey.

There may be sound reasons for using different rates in neighboring states, according to NRCS officials. For example, agency officials said that differences in economic conditions, topography, type of farming operations, and climate can influence the rate needed to encourage participation. However, currently, no headquarters or regional NRCS official above the state level reviews the payment rates to evaluate the reasons for state offices' decisions about payment rates. NRCS had an instruction in its December 2013 contracting manual, calling for review and concurrence by the regional office of payment rates greater than 50 percent, but the instruction was removed in the most recent version of the manual because it was no longer needed to ensure that state offices were complying with statutory requirements, according to agency officials.[43] In addition, headquarters officials said that state offices have the local knowledge and information needed to make decisions about payment rates.

Under federal standards for internal control, management is to design control activities to achieve objectives, such as reviews by management at the functional level.[44] There are, however, thousands of payment rates,

[43]According to agency officials, NRCS used the December 2013 instruction to ensure that state offices complied with previous statutory direction. Currently, the officials said NRCS conducts a quality review to ensure that the agency is in compliance with updated statutory requirements, which specify that EQIP payment rates for a practice may not exceed 75 percent of estimated costs and 100 percent of forgone income, except for historically underserved and veteran farmers and ranchers. For these groups, payment rates must be at least 25 percent higher but may not exceed 90 percent of the estimated cost for the practice.

[44]GAO-14-704G.

and NRCS has not determined a threshold of such rates that would trigger a review. Without establishing a review process at the regional level for review and concurrence of EQIP payment rates above a threshold (e.g., rates greater than 50 percent with justification), no agency officials above the state level can consider the rationale for state offices' decisions about the rates and whether they meet the agency's standard for using the least costly percentage needed to encourage participation in EQIP. NRCS officials in two of the state offices that used the highest rate for all EQIP practices said they did so because there would be numerous complaints from farmers if they lowered the rates, and in one of the offices, officials also said they were concerned that using lower rates would disproportionately affect less-wealthy EQIP participants. However, according to NRCS officials, the agency uses rates in all states that are at least 25 percent higher for beginning, socially disadvantaged, and limited-resource farmers and ranchers, as required by statute. In addition, NRCS allocated $50 million in 2016 EQIP funds to 26 state offices, through USDA's targeted Strike Force Initiative designed to better serve persistently impoverished communities and historically underserved farmers and ranchers, including those with limited resources. Under this USDA initiative, NRCS targets funds to high-poverty counties, according to agency officials. With the statutory requirement for higher payment rates and the Strike Force Initiative in place, NRCS helps ensure that EQIP is accessible to less-wealthy applicants. In this context, using the highest payment rates only where they are needed to encourage participation in EQIP—consistent with NRCS guidance on payment rates—would give state offices opportunities to stretch EQIP financial assistance funds further and, consequently, achieve greater environmental benefits per dollar spent.

NRCS Processes for Selecting EQIP Applications Are Not Sufficient to Optimize Environmental Benefits

NRCS's processes for selecting EQIP applications vary from one state office to another and are not all sufficient to optimize environmental benefits. Some state offices organize EQIP applications into numerous, smaller groups, or funding pools, for evaluation and ranking, and others use fewer, broad groups. Application ranking scores may not reliably reflect the value of environmental benefits or the cost-effectiveness of applications. As a result, applications may be funded that do not achieve the greatest benefits per dollar spent.

Some NRCS State Offices Separate EQIP Applications into Hundreds of Groups for Evaluation

The Food Security Act of 1985, as amended, generally requires NRCS, to the greatest extent practicable, to group EQIP applications of similar crop or livestock operations together for evaluation purposes. To do so, NRCS state offices create funding pools where applications are scored and ranked against each other. NRCS's EQIP manual provides that state offices should limit funding pools to the minimum number needed to effectively rank and approve applications but otherwise allows state offices discretion to determine how to group applications. Some state offices group applications into fewer funding pools for evaluation, while other state offices use numerous funding pools. For example, in our sample of eight state offices, the number of funding pools in fiscal year 2016 ranged from 42 (in Ohio) to 571 (in Mississippi), as shown in table 4. In states that use numerous smaller funding pools, the competition among applications may be reduced, raising questions about whether EQIP applications representing the highest priorities statewide are always selected.

Table 4: Number of Funding Pools Used in Sample States to Group Applications for Ranking in Environmental Quality Incentives Program, Fiscal Year 2016

Natural Resources Conservation Service (NRCS) state office	Number of fiscal year 2016 funding pools
Mississippi	571
Iowa	230
Texas	221
Arkansas	187
Pennsylvania	112
California	100
Colorado	72
Ohio	42

Source: NRCS state offices. | GAO-17-225

According to Ohio NRCS officials, the office previously used multiple funding pools for each of its 88 counties, so there were more than 200 funding pools, and they became difficult to manage. NRCS headquarters issued guidance encouraging state offices to reduce the number of funding pools, and the Ohio state office reduced its funding pools to 42, the officials said. In fiscal year 2016, Ohio had funding pools based on land use (crop, pasture, and forest) for four regions and based on the population of livestock for two regions. The remaining funding pools were for state and national priorities, and applicants competed statewide. The Colorado state office had 72 funding pools in fiscal year 2016, according

to agency officials. Specifically, the officials said that there were 31 funding pools covering locally identified priority environmental concerns in Colorado's 10 major watersheds; 32 funding pools for state and national priorities; and 9 funding pools for targeted conservation efforts in small geographic areas. According to Colorado NRCS officials, they previously had more funding pools but reduced that number to support a more targeted approach.

In contrast to the Ohio and Colorado state offices, the Mississippi state office had hundreds of funding pools—571 in fiscal year 2016—including specific categories such as one for farmers of small ruminants in each of several regions. According to a Mississippi NRCS official, the state office allocated 73 percent (about $23 million) of its fiscal year 2016 EQIP financial assistance funds to statewide and nationally established, targeted initiatives, and applicants for these initiatives competed in regional or statewide funding pools. The Mississippi office allocated 25 percent of financial assistance funds, or about $8 million, to 488 county-level funding pools in 62 local offices in the state. According to a Mississippi NRCS official, the reason the state office has so many funding pools is that many stakeholders are competing for a share of EQIP funds, and using numerous funding pools ensures that no one is left out. The Mississippi state office directs local offices to put a minimum of 1 percent of their EQIP funds into each county-level funding pool, many of which are structured around environmental concerns (e.g., wildlife habitat) or land use categories (e.g., grazing lands). This way, there is always money for people representing every environmental concern and land use, and the local offices do not have to turn anyone away, according to the Mississippi NRCS official.

However, with so many funding pools, each pool may receive fewer applications, and NRCS might approve some with lower ranking scores than if the pools were larger. For example in fiscal year 2015, Mississippi had 45 funding pools for sedimentation, and the average number of approved applications in each was 7.5. Of these 45 funding pools, 13 funded 100 percent of applications. Some of these fund pools had only a single application, and it was approved.[45] For grazing land, Mississippi had 70 funding pools with contracts, and on average, each had about $30,000 in obligations and 3 approved applications. In contrast, Ohio had

[45]According to NRCS officials, EQIP applicants can submit the same application to multiple funding pools, so the number of applications submitted may be overstated and the percentage of applications approved may be understated.

5 funding pools for livestock, with an average of $685,000 in obligations and 30 approved applications in each. According to agency officials, some state offices may have numerous funding pools to encourage participation in EQIP and to incorporate state and local stakeholders' ideas about funding pools.

Ranking Scores May Not Reliably Reflect Environmental Benefits or Adequately Weigh Cost-Effectiveness of Applications

The Food Security Act of 1985, as amended, directs NRCS to develop evaluation criteria for EQIP applications that will ensure that national, state, and local priorities are addressed. It specifies that applications shall be prioritized based on the following factors:

- their overall level of cost-effectiveness to ensure that the conservation practices proposed are the most efficient means of achieving the anticipated environmental benefits of the project;
- how effectively and comprehensively the project addresses the designated environmental concern or concerns;
- the degree to which practices in the application fulfill the purposes of EQIP; and
- whether the application improves practices or systems already in place.

NRCS evaluates and prioritizes applications using ranking tools developed for each funding pool. According to NRCS's EQIP manual, the ranking tools should also assess the magnitude of anticipated environmental benefits that will result from the proposed practices in the application; whether the practices in the application will help the applicant meet regulatory requirements, such as water quality regulations; and other locally defined pertinent factors, among other things. In addition, NRCS's manual calls for ranking criteria to be size neutral to avoid bias toward any size of farming operation.

EQIP ranking tools award points to each application, based on responses to a uniform set of national questions and additional questions developed by NRCS state and local offices. For all ranking tools, cost-effectiveness is calculated using a standard formula and is worth 10 percent of the total points possible (or 100 out of 1,000 points) for an application's ranking score, as shown in table 5. Given this low percentage, cost-effectiveness has little effect on which applications are funded, according to agency officials in several state offices. In some cases, applications with a cost-effectiveness score of 0 were funded in fiscal year 2015. NRCS officials said that the rationale for the 10 percent weighting of the cost-

effectiveness score was not readily available but that the factor had been consistently used in the ranking process since fiscal year 2006, when it was developed by economists.

Table 5: Point Values for Example Ranking Tool Used to Select Applications for Environmental Quality Incentives Program (EQIP)

Section of ranking tool	Points available
National questions	250
State questions	250
Local questions	400
Cost-effectiveness score	100
Total	**1,000**

Source: Natural Resources Conservation Service EQIP ranking tool, Texas. | GAO-17-225

The national ranking questions, which account for 25 percent of an application's score, are broad, covering seven environmental concerns (water quality, water conservation, air quality, soil health, wildlife habitat, plant and animal communities, and energy conservation), and equivalent point values are awarded for an affirmative answer to most questions. For example, the air quality questions ask whether the application includes practices that will reduce on-farm emissions of particulate matter or greenhouse gases, and a soil health question asks if proposed practices will reduce erosion to tolerable limits. According to NRCS officials, these questions are intended to ensure that national priorities are addressed, as required by statute.

For the state and locally developed questions in EQIP ranking tools, which together account for the majority (65 percent) of the application's score, ranking tools vary considerably. In part, this is because NRCS's guidance on ranking tools allows state and local offices discretion, and NRCS headquarters does not routinely review ranking questions developed by state and local offices, even though they account for 65 percent of the points—far exceeding the percentage of the cost-effectiveness score. Some ranking tools include state and local questions that rely on data about environmental concerns and potential environmental benefits, and others include questions that are less specific or not related to environmental concerns or benefits at all, such as whether an applicant had a previous contract in the past 3 years and failed to complete contract items on schedule, as shown in table 6.

Table 6: Examples of Questions Used to Score and Rank Fiscal Year 2016 Applications for the Environmental Quality Incentives Program (EQIP)

Type of question	Question	Relevant environmental concern	Potential environmental benefit
Relies on data about environmental concerns and benefits	• Will the conservation treatment minimize and mitigate water quality impacts associated with sediments in runoff water from the treatment unit to a surface water body on the 303(d) list for the pollutant category "Sediments?"[a]	Water quality	Sediment reduced in an impaired water body
	• Will the proposed project reduce wind erosion on the treated area by greater than 50 percent (as estimated by the Wind Erosion Prediction System software), and total annual soil loss is estimated to not exceed a sustainable threshold after treatment?	Soil erosion	Soil loss decreased to sustainable level
	• Does the application include implementation of an irrigation system that results in water savings of 8.1 inches per acre or greater?	Water quantity	Water savings of at least 8.1 inches per acre
Unrelated to environmental concerns or benefits	• Is this an existing or expanding operation?	None	None
	• Does any practice to be implemented through EQIP for this application have a 1-year practice life span?	None	None
	• Has applicant had a previous contract in the past 3 years and failed to complete contract items on schedule?	None	None

Source: Natural Resources Conservation Service EQIP ranking tools, 2016. | GAO-17-225

[a]Under section 303(d) of the Clean Water Act, states are required to develop lists of impaired water bodies that do not meet state water quality standards.

In Arkansas, the state office relied on scores from NRCS's matrix of conservation practices and benefits to inform many of its fiscal year 2016 state ranking tool questions. For each conservation practice, the matrix, called the Conservation Practice Physical Effects (CPPE) matrix, has standard scores (from -5 to 5) for a series of effects that the practice typically has on various environmental concerns. For example, a sprinkler system has CPPE scores including a 2 for soil erosion (wind) because wetting the soil reduces the amount of soil that blows away, a -1 for soil quality degradation (compaction) because the sprinkler system's wheels compress the soil when it is moved, and a 5 for addressing inefficient use of irrigation water.

The Arkansas ranking tools awarded progressively more points for higher CPPE values. According to Arkansas NRCS officials, they used this approach because it is a way to emphasize environmental concerns, score applications consistently statewide, and increase transparency and

simplicity for clients and NRCS staff. Although CPPE scores provide consistency and simplicity in ranking tools, they do not account for site-specific aspects of the practices—such as location or whether other conservation practices have been implemented previously—and, consequently, may not accurately value an application's benefits. Further, the Arkansas state office's questions did not account for any negative effects that might result from conservation practices, even though they are part of the CPPE matrix. NRCS state officials acknowledged the shortcomings of their approach but said that local questions should cover such detailed, site-specific factors.

In one California ranking tool we reviewed, two-thirds of state and local points were awarded based on data about environmental concerns and benefits. For data on benefits, several of the questions relied on NRCS planning tools that estimate conditions of environmental concerns before and after implementing conservation practices. For example, a series of questions relied on NRCS's wind erosion simulation tool to ask whether the practices proposed in the application would reduce soil erosion by greater than 50 percent, from 20 to 49 percent, or less than 20 percent, and awarded points accordingly.[46] In other cases, the questions relied on data from outside agencies. For example, some questions asked whether practices in the application would minimize transport of pollutants into water bodies identified as impaired, or if the practices were in areas identified by a state water board as vulnerable.[47]

In contrast, a ranking tool from Mississippi awarded two-thirds of state and local points for factors unrelated to environmental concerns or benefits, such as questions about the applicant's history. For example, it included state-level questions asking whether the applicant had failed to complete a contract on schedule or been required to pay recovery costs. According to agency headquarters officials and guidance documents on ranking tools, such questions are appropriate to ask when screening applicants before applications are submitted, rather than in ranking tools.

[46]NRCS uses the Wind Erosion Prediction System, which is a tool for predicting the effects of management practices and crop rotations on wind erosion for an individual field. To do so, it simulates weather, field conditions, crop growth, hydrology, and wind erosion.

[47]The questions relied on a list of impaired water bodies, or water bodies that do not meet state water quality standards, which states are required to identify under section 303(d) of the Clean Water Act, and on the California State Water Resources Control Board map, which identified hydrogeologically vulnerable areas and high-use groundwater basin areas.

The ranking tool had only one local question, asking if it was the first time the applicant had applied for EQIP assistance, and it was worth 250 points, or 25 percent of the application's score. Some ranking tools we reviewed did not include any questions that relied on data about environmental benefits. For example, they asked questions about the life span of proposed practices, whether specific conservation practices or other practices designed to address certain environmental concerns were in the application, or the applicant's history of contract compliance. Such tools do not prioritize applications based on the factors in the Food Security Act of 1985, as amended, concerning whether the conservation practices proposed are the most cost-effective means of achieving the anticipated environmental benefits of the project or how effectively and comprehensively the project addresses the designated environmental concern or concerns.

Our review of some EQIP applications that were funded in fiscal year 2015 added further support, suggesting that ranking tools may not always prioritize the most cost-effective applications. In NRCS's current application selection processes, applications with low scores and high costs can be funded, such as an Arkansas application that scored 20 out of 1,000 points and had an estimated cost of $59,000, and a Colorado application that scored 71 out of 1,000 points and had an estimated cost of $125,000. The cost-effectiveness score of the Arkansas application was zero. Funding applications with such low scores raises questions about whether EQIP applications elsewhere could achieve greater benefits for the same cost or whether the ranking tool is adequately valuing the practices in the application. More information about our review of some fiscal year 2015 EQIP applications is in appendix VI.

By modifying guidance and ranking tools for scoring EQIP applications so that they more accurately value an EQIP application's anticipated environmental benefits relative to estimated costs, NRCS would have better assurance that it funds the most cost-effective applications.

Conclusions

Potentially harmful effects of agriculture on the nation's natural resources, including water and soil, continue to be a concern for Americans, and EQIP conservation efforts show promise in mitigating such effects. The Food Security Act of 1985, as amended, calls for EQIP, among other things, to optimize environmental benefits, and CEAP studies have shown that targeted efforts can amplify the environmental benefits achieved per dollar spent. In recognition of this point, NRCS targets a portion of EQIP funds to high-priority environmental concerns through its nationally

established, targeted initiatives. Allocating the remaining EQIP funds to optimize benefits for multiple environmental concerns while also meeting statutory requirements is more challenging, and will likely continue to involve difficult decisions and trade-offs that cannot be resolved with data alone. To date, NRCS has relied primarily on historical funding amounts to influence national allocation decisions for EQIP funds. Unless CEAP leaders and EQIP program managers coordinate to design studies that model environmental benefits in the context of practical limitations, and NRCS draws on the results to inform allocation decisions, the agency may miss opportunities to achieve greater benefits with available funds.

At the state level, NRCS state offices do not consistently use environmental concerns as a primary factor when allocating EQIP funds, partly because agency guidance provides state offices with considerable discretion to determine how to allocate the funds. The OIG and NRCS's review team both recommended that NRCS clarify its guidance, but to date, the agency has not taken action. As a result, NRCS may not be targeting EQIP funds where they are needed most. Some state offices have helped increase environmental benefits attained per dollar by using lower payment rates for EQIP conservation practices except where higher ones were needed to encourage participation in EQIP. Other state offices use the highest payment rates broadly for all conservation practices, and NRCS gives them wide latitude to do so. NRCS lacks a threshold of payment rates that would trigger a review as well as a review process above the state level. Without establishing a review process at the regional level for review of and concurrence on EQIP payment rates above a threshold (e.g., rates greater than 50 percent with justification), no agency officials above the state level can consider the rationale for state offices' decisions about the rates and whether they meet the agency's standard for using the least costly percentage needed to encourage participation in EQIP.

Prioritizing the most cost-effective EQIP applications, as called for by the Food Security Act of 1985, as amended, requires accurate information about the expected benefits and costs of proposed practices in applications. However, NRCS uses a ranking tool that does not accurately value environmental benefits and gives cost-effectiveness a weight that is too low to have a meaningful impact on which applications are selected. By modifying guidance and ranking tools so that they more accurately value an EQIP application's anticipated environmental benefits relative to estimated costs, NRCS would have better assurance that it funds the most cost-effective applications.

Recommendations for Executive Action

To help achieve EQIP's purpose of optimizing environmental benefits, we recommend that the Secretary of Agriculture direct the Chief of the Natural Resources Conservation Service to take the following four actions:

- direct EQIP program managers to coordinate with the leaders of USDA's CEAP to help ensure that CEAP studies consider the practical limitations and trade-offs faced by program managers and to provide program managers with better information to target EQIP funds where they will optimize environmental benefits;
- revise guidance on state offices' EQIP allocation processes, stipulating that data on environmental concerns, where available, should be a primary factor influencing allocations within states;
- establish a review process at the regional level for review and concurrence of EQIP payment rates above a threshold (e.g., rates greater than 50 percent, with justification); and,
- modify guidance and ranking tools so that they more accurately value an EQIP application's anticipated environmental benefits relative to estimated costs.

Agency Comments and Our Evaluation

We provided USDA a draft of this report for its review and comment. NRCS provided written comments, which are reproduced in appendix VII, and summarized below. In its comments, NRCS did not state whether it agreed or disagreed with our recommendations, but described steps taken and planned to address some of them.

Regarding our recommendation that EQIP program managers coordinate with CEAP leaders to provide better information to target EQIP funds where they will optimize environmental benefits, NRCS stated that CEAP scientists and EQIP leadership have coordinated on an ongoing basis since CEAP's inception in 2003. The agency said this coordination will continue, with renewed focus on how CEAP studies may increase the availability of information for EQIP program managers to optimize the environmental benefits achieved through EQIP implementation consistent with the EQIP statutory framework. Such focused coordination could help NRCS better target EQIP funds and increase the environmental benefits achieved under the program.

Regarding our recommendation to revise guidance on state offices' EQIP allocation processes, NRCS stated that the agency has used the SRA database tool at the national level to allocate funding to states based on priority resource needs and document field level workload associated with

conservation planning and Farm Bill program implementation, that state conservationists use the SRA to identify and prioritize state level resource concerns and treatment needs, and that states use state and local data to prioritize resource concerns. The agency also stated that it is reviewing current EQIP policy for state level allocations and will make any revisions to improve guidance to state conservationists and implement any updates in fiscal year 2018. In particular, NRCS stated that the policy will provide specific guidance regarding the utilization of information from the SRA in the state allocation formulas. NRCS did not, however, indicate whether the guidance would stipulate that data on environmental concerns, where available, should be a primary factor, as we recommended. Consistent with the OIG's July 2014 recommendation to NRCS, discussed in our report, and federal standards for internal control calling for management to remediate any identified internal control deficiencies on a timely basis, we continue to believe that NRCS should revise guidance on state offices' EQIP allocation processes, stipulating that data on environmental concerns, where available, should be a primary factor. To the extent that such data are available through the SRA database tool, we support NRCS state offices' use of the SRA tool.

Regarding our recommendation to establish a process at the regional level for review of EQIP payment rates above a threshold (e.g., rates greater than 50 percent, with justification), NRCS stated that (1) the nationally-guided payment schedule process establishes the necessary controls to assure that payment requirements are met; (2) NRCS state conservationists are in the best position to determine what rates are required to encourage producers to adopt priority conservation practices on their operations; and (3) regional and national level staffs are not in regular communication with the state and local working groups, and therefore a review at the regional or national level provides little to no further benefit for the targeting of program resources. We agree that NRCS's current process is sufficient to ensure that payment rates are consistent with statutory requirements and that state offices are in the best position to determine payment rates. However, as we stated in the report, under the current process, no official above the state level reviews whether payment rates set by state offices meet NRCS's standard for using the least costly percentage needed to encourage participation in EQIP. We recognize that regional officials are not in regular communication with state technical committees and local working groups but continue to believe that they should review payment rates above a threshold to verify that such rates are used only where they are needed to encourage participation in EQIP. Doing so would give state offices opportunities to stretch EQIP funds further and, consequently, achieve greater environmental benefits per dollar spent.

Regarding our recommendation to modify guidance and ranking tools, NRCS commented that any changes to its method for calculating the cost-effectiveness of an application would need to be fully vetted to ensure that it does not discriminate against producers based on the size of their operation or otherwise sacrifice NRCS being able to meet the myriad of statutory program goals associated with project prioritization and selection. We agree. NRCS also stated that it is currently upgrading its software which would include a new ranking tool and that as part of this process, the agency will re-evaluate the way cost-effectiveness is scored. As NRCS takes these steps, we continue to believe that any new ranking tool should more accurately value an EQIP application's anticipated environmental benefits relative to its estimated costs, and related guidance should be modified to support this approach.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the appropriate congressional committees, the Secretary of Agriculture, and other interested parties. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If your or your staff have any questions about this report, please contact me at (202) 512-3841 or morriss@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VIII.

Sincerely yours,

Steve D. Morris
Director, Natural Resources and Environment

Appendix I: Objectives, Scope, and Methodology

We reviewed whether the Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP) funds are targeted where they will deliver the greatest environmental benefit. We examined (1) the distribution of EQIP financial assistance obligations from 2009 through 2015, (2) the extent to which NRCS's EQIP funding allocation processes are sufficient to optimize environmental benefits, and (3) the extent to which NRCS's application selection processes are sufficient to optimize environmental benefits.

To determine the distribution of EQIP financial assistance obligations, we analyzed obligations data from NRCS's data systems for all participant contracts from fiscal year 2009 through fiscal year 2015 (the most recent data available). For EQIP, financial assistance obligations are the commitment of funds to contracts for payments that NRCS will make to farmers and ranchers for conservation practices.[1] We determined the distribution of EQIP obligations by conservation practice, environmental concern, and state, using data from NRCS's Program Contracts System (ProTracts) from fiscal years 2009 through 2015. To determine the distribution of obligations by environmental concern, we used NRCS's groupings. For reporting, NRCS groups conservation practices by environmental concerns, including cropland soil quality, fish and wildlife habitat, forestland conservation, grazing land conservation, irrigation efficiency, and water quality. Some EQIP practices may address more than one of these environmental concerns. For example, planting cover crops can improve both water quality and crop soil quality, so the dollars spent on cover crops would be included in both categories. To account for the dollars spent on practices that address two or more environmental concerns, we also calculated for each environmental concern the dollars that overlapped with other environmental concerns. We report the percentage of dollars for each environmental concern that is also counted in another environmental concern.

We assessed the reliability of data from NRCS's ProTracts database. To assess the reliability of the data on contracts and obligations from the ProTracts database, we reviewed available documents to determine the source of the information, data entry steps, and the completeness of the data, and interviewed agency officials. We determined that the data were sufficiently reliable for our purposes of reporting information on EQIP

[1]NRCS estimates the future cost of a planned practice when it initiates a contract with a farmer or rancher. Obligations are estimated until conservation practices are completed by farmers and ranchers and NRCS certifies the practices.

financial assistance obligations for contracts, including obligations by conservation practice, environmental concern, and state.

To determine the extent to which NRCS's EQIP funding allocation processes are sufficient to optimize environmental benefits, we reviewed relevant legislation, NRCS regulations, and EQIP policy documents to determine how funds should be allocated. We reviewed studies from the U.S. Department of Agriculture's (USDA) Conservation Effects Assessment Project (CEAP) on the magnitude and location of environmental concerns and the effects of conservation practices. We interviewed CEAP leaders about the studies and the studies' design. We interviewed NRCS headquarters and state officials about the processes they used to allocate funds. We also reviewed USDA's Office of Inspector General's July 2014 report on processes used by NRCS state offices to allocate EQIP funds and NRCS's March 2016 study of 12 state offices' methods for allocating EQIP funds. We selected a nonprobability sample of eight NRCS state offices (Arkansas, California, Colorado, Iowa, Mississippi, Ohio, Pennsylvania, and Texas) for review and examined their procedures for allocating EQIP funds within the states.[2] Our findings about these state offices are not generalizable to all NRCS state offices.

We interviewed state office officials regarding these procedures and about the extent to which data on environmental concerns, expected environmental benefits, and project costs influence allocation decisions. To select the state offices, we chose those with the highest EQIP allocation amounts and volumes of agricultural production in each of NRCS's four regions. We reviewed information from NRCS's State Resource Assessment database tool on the amount of EQIP funds allocated to 20 state offices in fiscal year 2016. We selected 19 states with the highest allocation amounts from fiscal years 2013 through 2015. Because 7 of the 20 states were in our nonprobability sample of 8 states, we added the remaining state from our sample of 8 states. We compared the fiscal year 2016 allocations to data on the number of critical acres, or acres NRCS identified as needing conservation, for these 20 states. We also compared fiscal year 2016 allocations with 3-year average historical allocation amounts for fiscal years 2013 to 2015 for the same 20 states. We also reviewed the payment rates used by NRCS's state offices for EQIP practices to determine if they were adjusted to optimize benefits.

[2]Because this was a nonprobability sample, the results of the sample cannot be generalized to all states but can provide examples of state offices' methods for allocating EQIP funds.

To assess the extent to which EQIP application selection processes are sufficient to optimize environmental benefits, we reviewed statutory direction and NRCS policy for evaluating and selecting applications. We interviewed NRCS headquarters, state, and local officials on application selection policies and the extent to which data on environmental concerns, expected environmental benefits, and project costs influence application selection decisions. We reviewed sample ranking tools from each of the 8 states to assess compliance with statutory direction and NRCS policy and to get a more thorough understanding of the questions used for various funding pools. To select the ranking tools, we requested three examples from each state office and selected additional ranking tools based on our analysis of cost per ranking point, as discussed below.[3] We also reviewed the number of funding pools NRCS uses to score, rank, and approve EQIP applications for funding in the eight selected states and analyzed NRCS data on applications, ranking scores, and obligations for each funding pool. In addition, we reviewed USDA and academic publications related to targeting funds, measuring effects of conservation practices, and optimizing benefits.

For the 8 selected states, we reviewed the ranking scores of 2015 EQIP applications that were approved and signed into contracts. For selected states, we identified two funding pools and several contracts within the pools to discuss with NRCS state or local officials. We selected funding pools that had a range of costs and ranking scores. In each funding pool, we selected one or two contracts with a relatively high cost and a relatively low ranking score and one or two contracts with a lower cost and higher ranking score. To further evaluate the costs relative to benefit points awarded in ranking tools, we analyzed the percentage of all costs for a group of animal feeding operation funding pools that accounted for the percentage of all benefit points for the same funding pools. Our findings about these funding pools are not generalizable to all EQIP funding pools. Because this was a nonprobability sample, the results of the sample cannot be generalized to all ranking tools but can provide examples of ranking tools used to score and select EQIP applications.

We conducted this performance audit from September 2015 to April 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain

[3]Because this was a nonprobability sample, the results of the sample cannot be generalized to all ranking tools but can provide examples of ranking tools used to score and select EQIP applications.

sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Environmental Quality Incentives Program Obligations by Practice, Fiscal Years 2009 through 2015

Table 7: Environmental Quality Incentives Program Obligations by Conservation Practice, Fiscal Years 2009 through 2015

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Waste storage facility	388,757,071	50,210,422	6.65
Fence	362,925,003	55,391,798	6.21
Sprinkler system	339,408,081	50,137,801	5.81
Brush management	319,284,657	51,457,014	5.46
Cover crop	250,304,959	56,391,178	4.28
Livestock pipeline	211,102,280	28,143,651	3.61
Irrigation system, microirrigation	205,950,141	32,857,976	3.52
Irrigation pipeline	185,629,721	36,788,619	3.18
Heavy use area protection	180,122,757	19,938,188	3.08
Forage and biomass planting	156,491,662	26,634,543	2.68
Nutrient management	138,041,227	13,628,049	2.36
Pumping plant	133,043,690	23,453,488	2.28
Forest stand improvement	130,857,299	23,210,487	2.24
Watering facility	129,762,440	18,987,588	2.22
Combustion system improvement	114,778,515	19,126,504	1.96
Roofs and covers	111,695,739	24,824,980	1.91
Prescribed grazing	108,917,899	13,901,456	1.86
Irrigation land leveling	101,795,501	13,555,767	1.74
Terrace	88,995,362	12,087,698	1.52
Residue management – no-tillage	87,418,473	4,070,864	1.5
Water well	82,966,173	11,652,564	1.42
Seasonal high tunnel system for crops	82,360,830	15,817,352	1.41
Grade stabilization structure	81,305,875	10,410,265	1.39
Underground outlet	81,266,037	12,540,486	1.39
Conservation crop rotation	75,181,820	10,794,303	1.29
Tree/shrub establishment	75,165,217	15,228,744	1.29
Structure for water control	74,295,843	12,047,617	1.27
Integrated pest management	66,610,879	1,860,758	1.14
Waste transfer	59,692,196	8,071,407	1.02
Streambank and shoreline protection	56,475,406	9,458,582	0.97
Tree/shrub site preparation	53,026,160	9,683,280	0.91
Irrigation reservoir	48,965,765	6,103,097	0.84
Pond	48,834,377	6,837,672	0.84

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Irrigation water conveyance, high pressure underground pipeline	43,971,225	0	0.75
Engine replacement	43,235,314	0	0.74
Farmstead energy improvement	41,405,253	9,677,880	0.71
Upland wildlife habitat management	39,970,117	4,525,788	0.68
Comprehensive nutrient management plan	39,360,476	6,140,703	0.67
Irrigation water management	35,976,720	7,600,691	0.62
Grassed waterway	35,352,765	3,842,792	0.61
Range planting	34,817,235	6,292,843	0.6
Woody residue treatment	32,766,382	7,931,531	0.56
Access road	32,603,342	3,832,330	0.56
Water and sediment control basin	32,273,106	5,270,771	0.55
Agrichemical handling facility	31,929,767	2,456,701	0.55
Animal mortality facility	31,222,736	8,125,510	0.53
Mulching	29,690,745	5,343,303	0.51
Residue management, reduced till	29,527,572	5,921,531	0.51
Irrigation water conveyance, low pressure underground pipeline	28,236,099	0	0.48
Composting facility	27,994,613	1,013,617	0.48
Stream crossing	23,981,729	3,773,145	0.41
Subsurface drain	22,568,817	4,253,823	0.39
Prescribed burning	22,545,988	5,638,657	0.39
Shallow water development and management	20,835,632	218,833	0.36
Access control	20,624,665	688,348	0.35
Herbaceous weed control	20,228,607	5,772,922	0.35
Dike	20,204,920	3,341,881	0.35
Pond sealing	18,418,788	3,856,670	0.32
Waste facility closure	17,185,530	3,198,298	0.29
Amendments for treatment of agriculture waste	16,090,952	2,305,525	0.28
Critical area planting	15,994,518	1,852,862	0.27
Irrigation system, surface and subsurface irrigation	15,092,493	2,177,003	0.26
Firebreak	14,742,131	4,148,145	0.25
Forest management plan - written	14,638,336	1,863,670	0.25
Waste separation facility	13,314,477	1,720,462	0.23
Waste recycling	12,763,910	3,300	0.22
Conservation cover	12,633,368	3,755,730	0.22

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Trails and walkways	12,568,473	1,797,311	0.22
Restoration and management of rare and declining habitat	12,342,601	1,752,673	0.21
Windbreak/shelterbelt establishment	12,206,772	760,357	0.21
Irrigation ditch lining	12,189,614	1,942,067	0.21
Obstruction removal	11,638,256	1,921,398	0.2
Early successional habitat development and management	11,302,524	3,339,555	0.19
Roof runoff structure	10,720,687	1,830,740	0.18
Waste treatment	9,219,036	621,017	0.16
Diversion	9,056,335	1,185,752	0.16
Windbreak/shelterbelt renovation	8,955,256	1,002,904	0.15
Lined waterway or outlet	8,870,819	1,774,698	0.15
Fuel break	8,530,198	2,108,776	0.15
Forest trails and landings	8,120,032	797,904	0.14
Building envelope improvement	6,762,644	6,401,673	0.12
Aquatic organism passage	6,264,110	1,524,168	0.11
Spring development	6,121,969	961,560	0.1
Irrigation water conveyance, plain concrete canal lining	5,848,848	0	0.1
Channel bed stabilization	5,704,427	1,164,661	0.1
Agriculture energy management plan, headquarters written	5,526,777	0	0.09
Tree/shrub pruning	5,382,648	1,054,909	0.09
Precision land forming	5,374,610	1,172,096	0.09
Wetland wildlife habitat management	5,062,886	1,351,045	0.09
Stream habitat improvement and management	5,038,276	1,405,616	0.09
Technical assistance design	5,033,955	285,193	0.09
Irrigation system, tailwater recovery	5,023,068	0	0.09
Land smoothing	4,610,044	709,842	0.08
Riparian forest buffer	4,331,840	617,410	0.07
Anaerobic digester	4,123,704	1,266,015	0.07
Edge-of-field water quality monitoring data collection and evaluation	3,372,996	834,570	0.06
Sediment basin	3,163,269	121,919	0.05
Agricultural containment facility	3,084,187	0	0.05
Atmospheric resource quality management	3,027,487	0	0.05
Forage harvest management	2,931,919	259,681	0.05
Aboveground, multioutlet pipeline	2,897,996	0	0.05

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Dust control on unpaved roads and surfaces	2,895,338	751,081	0.05
Vegetated treatment area	2,852,502	474,185	0.05
Technical assistance application	2,801,037	183,915	0.05
Fueling facility, aboveground storage	2,668,740	0	0.05
Monitoring and evaluation	2,632,678	0	0.05
Residue management, seasonal	2,359,240	0	0.04
Water harvesting catchment	2,288,534	186,748	0.04
Hedgerow planting	2,222,295	347,933	0.04
Water well decommissioning	2,074,899	137,008	0.04
Nutrient management plan - written	2,065,406	955,732	0.04
Lighting system improvement	2,056,407	1,652,117	0.04
Waste treatment lagoon	2,047,648	612,498	0.04
Irrigation regulating reservoir	2,034,717	0	0.03
Deep tillage	1,981,095	74,895	0.03
Open channel	1,838,363	125,947	0.03
Agricultural energy management plan - written	1,737,501	1,737,501	0.03
Technical assistance checkout	1,665,849	91,123	0.03
Surface drain, field ditch	1,472,931	101,597	0.03
Dam, diversion	1,445,130	219,419	0.02
Clearing vegetation and snags from channels or streams	1,427,995	20,210	0.02
Grazing land mechanical treatment	1,395,063	121,660	0.02
Land clearing	1,391,671	485,747	0.02
Fish and wildlife structure	1,372,012	0	0.02
Spill prevention, control and countermeasure	1,316,182	0	0.02
Livestock shelter structure	1,303,203	1,303,203	0.02
Renewable energy system	1,243,061	0	0.02
Field border	1,224,332	152,858	0.02
Irrigation water management plan - written	1,208,677	211,838	0.02
Amending soil properties with gypsiferous products	1,207,071	1,207,071	0.02
Invasive plant species control	1,173,531	0	0.02
On-farm secondary containment facility	1,123,415	1,123,415	0.02
Toxic salt reduction	1,091,327	120,808	0.02
Conservation plan supporting organic transition	1,058,275	228,609	0.02
Precision pest control application	1,054,424	0	0.02

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Bivalve aquaculture gear and biofouling	1,028,775	49,349	0.02
Silvopasture establishment	1,024,962	289,101	0.02
Wetland restoration	979,133	191,698	0.02
Agriculture energy management plan, landscape written	976,185	0	0.02
Spoil spreading	933,189	97,811	0.02
Vegetative barrier	876,686	106,020	0.02
Aquaculture ponds	868,735	117,310	0.01
Drainage water management	823,704	45,558	0.01
Grazing management plan - written	822,204	85,084	0.01
Edge-of-field water quality monitoring system installation	807,282	73,497	0.01
Surface drain, main or lateral	749,376	78,087	0.01
Multistory cropping	617,713	77,144	0.01
Integrated pest management herbicide resistance weed conservation	560,926	54,549	0.01
Feral swine management	544,387	544,387	0.01
Pond sealing and lining, soil cement	489,364	35,420	0.01
Riparian herbaceous cover	481,377	115,043	0.01
Feed management	475,215	7,200	0.01
Residue management, ridge till	461,003	0	0.01
Waste gasification facility	450,000	0	0.01
Dam	437,601	0	0.01
Channel bank vegetation	434,666	0	0.01
Filter strip	431,261	39,329	0.01
Wetland creation	414,227	152,524	0.01
Anaerobic digester, ambient temperature	393,242	0	0.01
Road/trail/landing closure and treatment	387,741	33,993	0.01
Irrigation field ditch	382,310	13,392	0.01
Controlled traffic farming	380,201	0	0.01
Livestock shade structure	378,179	0	0.01
Structures for wildlife	366,175	366,175	0.01
Orchard and vineyard air quality management	363,512	0	0.01
Stormwater runoff control	319,302	14,870	0.01
Denitrifying bioreactor	316,946	120,051	0.01
Fish and wildlife habitat plan - written	296,099	50,192	0.01
Livestock confinement facility	285,270	100,398	0

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Irrigation water conveyance, steel pipeline	276,987	0	0
Drainage water management plan - written	272,905	77,778	0
Karst sinkhole treatment	270,602	43,088	0
Reduced water and energy coffee conveyance system	263,695	23,516	0
Strip cropping	262,982	9,078	0
Field operations emissions reduction	227,775	76,326	0
Irrigation water conveyance, nonreinforced concrete pipeline	225,864	0	0
Contour farming	221,776	6,801	0
Transition to organic production	208,797	0	0
Integrated pest management plan - written	198,346	30,724	0
Dust control from animal activity on open lot and surfaces	178,496	0	0
Wetland enhancement	166,524	64,069	0
Hillside ditch	160,749	11,303	0
Pollinator habitat plan - written	160,388	49,588	0
Constructed wetland	158,623	62,233	0
Shellfish aquaculture management	134,987	0	0
Individual terrace	97,944	0	0
Herbaceous wind barriers	87,053	904	0
Amending soil properties with gypsum products	86,122	86,122	0
Contour buffer strips	83,477	2,972	0
Fish raceway or tank	78,912	0	0
Technical assistance planning	78,789	2,844	0
Vertical drain	65,979	425	0
Row arrangement	62,072	3,265	0
Surface roughening	56,297	0	0
Prescribed forestry	56,114	0	0
Contour orchard and other perennial crops	41,337	4,695	0
Groundwater testing	40,882	14,036	0
Drainage ditch covering	39,254	0	0
Irrigation canal or lateral	38,701	0	0
Irrigation water conveyance, corrugated metal pipeline	35,966	0	0
Waterspreading	35,263	0	0
Irrigation water conveyance ditch and canal lining with flexible membrane	28,970	0	0
Irrigation water conveyance, on ground aluminum pipeline	21,522	0	0

Practice name	Obligations from fiscal year 2009 through 2015	Obligations for fiscal year 2015	Percentage of obligations from fiscal year 2009 through 2015
Prescribed burning plan - written	21,077	19,813	0
Anionic polyacrylamide application	18,748	4,895	0
Alley cropping	16,801	9,253	0
Waste field storage area	16,498	0	0
Monitoring well	13,984	0	0
Dry hydrant	9,893	2,396	0
Mine shaft and adit closing	8,736	0	0
Bedding	7,848	0	0
Well plugging	7,669	0	0
Structure sediment removal	7,404	0	0
Infiltration ditches	5,688	0	0
Crosswind ridges	3,202	0	0
Fish screen	3,150	0	0
Conservation plan supporting transition	2,364	0	0
Irrigation water conveyance, corrugated, ribbed or profile wall thermal pipeline	661	0	0
Rock barrier	0	0	0

Source: GAO analysis of the U.S. Department of Agriculture's Program Contracts System data. | GAO-17-225

Note: Dollars reported are nominal dollars, which have not been adjusted for inflation.

Appendix III: Number of Practices in Environmental Quality Incentives Program Contracts, Fiscal Years 2009 through 2015

Table 8: Number of Practices in Environmental Quality Incentives Program Contracts by Practice, Fiscal Years 2009 through 2015

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Fence	85,503	12,371	7.33
Watering facility	66,711	9,180	5.72
Nutrient management	60,503	5,332	5.18
Cover crop	59,378	12,822	5.09
Livestock pipeline	55,258	7,627	4.74
Brush management	53,576	8,476	4.59
Forage and biomass planting	38,882	5,449	3.33
Prescribed grazing	38,431	7,843	3.29
Heavy use area protection	37,952	6,541	3.25
Forest stand improvement	32,179	4,321	2.76
Critical area planting	30,976	4,169	2.65
Irrigation water management	29,186	4,688	2.5
Integrated pest management	27,122	925	2.32
Pumping plant	26,593	3,935	2.28
Residue management - no-tillage	22,172	1,955	1.9
Structure for water control	19,984	3,174	1.71
Underground outlet	19,693	2,552	1.69
Tree/shrub establishment	18,271	2,809	1.57
Mulching	16,691	3,360	1.43
Tree/shrub site preparation	15,790	2,652	1.35
Conservation crop rotation	15,469	2,153	1.33
Water well	15,197	1,889	1.3
Irrigation pipeline	15,029	2,773	1.29
Herbaceous weed control	14,344	3,750	1.23
Grade stabilization structure	13,899	1,680	1.19
Sprinkler system	13,336	1,505	1.14
Terrace	13,136	1,322	1.13
Seasonal high tunnel system for crops	12,474	1,926	1.07
Prescribed burning	12,134	2,473	1.04
Grassed waterway	10,762	1,178	0.92
Forest management plan - written	10,022	1,440	0.86
Pond	9,813	1,124	0.84

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Access control	9,395	662	0.81
Upland wildlife habitat management	9,092	817	0.78
Microirrigation “drip” system	8,935	1,346	0.77
Waste storage facility	8,697	1,262	0.75
Woody residue treatment	8,082	1,491	0.69
Water and sediment control basin	7,931	1,248	0.68
Firebreak	7,280	1,537	0.62
Irrigation land leveling	6,912	803	0.59
Windbreak/shelterbelt establishment	6,691	605	0.57
Comprehensive nutrient management plan	6,572	704	0.56
Range planting	6,096	760	0.52
Subsurface drain	6,050	776	0.52
Conservation cover	5,689	1,318	0.49
Access road	5,416	733	0.46
Stream crossing	5,361	632	0.46
Waste transfer	5,339	728	0.46
Residue management, reduced till	5,290	798	0.45
Roof runoff structure	5,100	837	0.44
Technical assistance checkout	4,722	170	0.4
Technical assistance design	4,660	207	0.4
Technical assistance application	4,516	191	0.39
Irrigation water conveyance, high pressure underground pipeline	4,422	0	0.38
Roofs and covers	4,371	1,122	0.37
Diversion	4,173	492	0.36
Shallow water development and management	3,890	102	0.33
Early successional habitat development and management	3,854	782	0.33
Spring development	3,494	452	0.3
Obstruction removal	3,446	388	0.3
Amendments for treatment of agriculture waste	3,342	381	0.29
Farmstead energy improvement	3,285	575	0.28
Combustion system improvement	3,232	550	0.28
Tree/shrub pruning	2,926	506	0.25
Agriculture energy management plan, headquarters written	2,789	0	0.24
Streambank and shoreline protection	2,744	440	0.24

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Irrigation system, surface and subsurface irrigation	2,706	507	0.23
Forest trails and landings	2,608	241	0.22
Waste recycling	2,495	9	0.21
Windbreak/shelterbelt renovation	2,450	208	0.21
Trails and walkways	2,294	289	0.2
Animal mortality facility	2,243	422	0.19
Forage harvest management	2,242	216	0.19
Lined waterway or outlet	2,165	389	0.19
Restoration and management of rare and declining habitat	2,107	145	0.18
Land smoothing	2,025	230	0.17
Irrigation water conveyance, low pressure underground pipeline	2,011	0	0.17
Land clearing	1,789	232	0.15
Wetland wildlife habitat management	1,561	258	0.13
Field border	1,452	135	0.12
Dike	1,329	179	0.11
Composting facility	1,308	75	0.11
Water well decommissioning	1,298	98	0.11
Hedgerow planting	1,262	172	0.11
Fish and wildlife structure	1,242	0	0.11
Irrigation reservoir	1,222	237	0.1
Riparian forest buffer	1,207	165	0.1
Waste treatment	1,085	81	0.09
Residue management, seasonal	1,066	0	0.09
Waste facility closure	1,045	138	0.09
Drainage water management	1,005	138	0.09
Agrichemical handling facility	993	76	0.09
Vegetated treatment area	970	99	0.08
Engine replacement	934	0	0.08
Fuel break	876	177	0.08
Nutrient management plan - written	812	298	0.07
Filter strip	776	73	0.07
Spill prevention, control and countermeasures	764	0	0.07
Agricultural energy management plan - written	755	755	0.06
Pond sealing	752	121	0.06

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Amending soil properties with gypsiferous products	751	751	0.06
Contour farming	742	72	0.06
Invasive plant species control	713	0	0.06
Deep tillage	674	69	0.06
Structures for wildlife	595	595	0.05
Atmospheric resource quality management	582	0	0.05
Waste separation facility	573	71	0.05
Sediment basin	553	31	0.05
Groundwater testing	548	201	0.05
Aboveground multioutlet pipeline	538	0	0.05
Monitoring and evaluation	529	0	0.05
Stream habitat improvement and management	526	100	0.05
Precision land forming	523	121	0.04
Lighting system improvement	520	479	0.04
Irrigation ditch lining	516	93	0.04
Conservation plan supporting organic transition	514	75	0.04
Agricultural containment facility	477	0	0.04
Feral swine management	419	419	0.04
Vegetative barrier	418	56	0.04
Building envelope improvement	405	375	0.03
Spoil spreading	380	57	0.03
Toxic salt reduction	376	48	0.03
Agriculture energy management plan, landscape - written	374	0	0.03
Dust control on unpaved roads and surfaces	360	91	0.03
Channel bed stabilization	338	68	0.03
Riparian herbaceous cover	325	42	0.03
Irrigation water management plan - written	306	46	0.03
Irrigation system, tailwater recovery	306	0	0.03
Multistory cropping	301	57	0.03
Contour orchard and other perennial crop	298	39	0.03
Grazing management plan - written	290	49	0.02
Grazing land mechanical treatment	268	34	0.02
Strip cropping	268	19	0.02
Water harvesting catchment	247	24	0.02

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Livestock shelter structure	246	246	0.02
Irrigation water conveyance, plain concrete canal lining	243	0	0.02
Fueling facility, aboveground storage	227	0	0.02
Integrated pest management, herbicide resistance weed conservation	225	17	0.02
Irrigation water conveyance, steel pipeline	208	0	0.02
Irrigation regulating reservoir	206	0	0.02
Surface drain, field ditch	193	23	0.02
Edge-of-field water quality monitoring data collection and evaluation	186	30	0.02
Aquatic organism passage	181	34	0.02
Wetland restoration	180	26	0.02
Precision pest control application	179	0	0.02
Residue management, ridge till	165	0	0.01
Channel bank vegetation	164	0	0.01
Hillside ditch	163	7	0.01
Silvopasture establishment	161	35	0.01
Row arrangement	150	18	0.01
Stormwater runoff control	140	42	0.01
Drainage water management plan - written	130	32	0.01
Individual terrace	127	0	0.01
Irrigation field ditch	122	6	0.01
Open channel	120	24	0.01
Livestock shade structure	116	0	0.01
Wetland creation	115	40	0.01
Prescribed forestry	114	0	0.01
Fish and wildlife habitat plan - written	110	21	0.01
Transition to organic production	110	0	0.01
Dam, diversion	107	10	0.01
Surface drain, main or lateral	101	8	0.01
Integrated pest management plan - written	98	14	0.01
Bivalve aquaculture gear and biofouling	97	6	0.01
Karst sinkhole treatment	93	7	0.01
Herbaceous wind barriers	92	7	0.01
Waste treatment lagoon	90	15	0.01
Feed management	87	3	0.01

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Road/trail/landing closure and treatment	86	15	0.01
On-farm secondary containment facility	82	82	0.01
Clearing vegetation and snags from channels or streams	81	10	0.01
Contour buffer strips	56	3	0
Bedding	52	0	0
Field operations emissions reduction	52	22	0
Pollinator habitat plan - written	50	16	0
Wetland enhancement	47	12	0
Renewable energy system	46	0	0
Shellfish aquaculture management	44	0	0
Denitrifying bioreactor	42	9	0
Irrigation water conveyance, corrugated metal pipeline	35	0	0
Controlled traffic farming	33	0	0
Orchard and vineyard air quality management	32	0	0
Livestock confinement facility	30	9	0
Technical assistance planning	28	1	0
Prescribed burning plan - written	27	25	0
Edge-of-field water quality monitoring system installation	26	2	0
Infiltration ditches	24	0	0
Pond sealing and lining, soil cement	21	2	0
Anaerobic digester	20	4	0
Dam	18	0	0
Reduced water and energy coffee conveyance system	17	1	0
Anionic polyacrylamide application	16	2	0
Aquaculture ponds	15	5	0
Vertical drain	15	1	0
Alley cropping	13	1	0
Irrigation water conveyance, on ground aluminum pipeline	13	0	0
Irrigation canal or lateral	11	0	0
Well plugging	11	0	0
Irrigation water conveyance, nonreinforced concrete pipeline	9	0	0
Monitoring well	7	0	0
Waste field storage area	7	0	0
Surface roughening	6	0	0

Practice name	Number of practices, Fiscal years 2009 through 2015	Number of practices, Fiscal year 2015	Percentage of total practices, Fiscal years 2009 through 2015
Waterspreading	6	0	0
Constructed wetland	6	1	0
Drainage ditch covering	6	0	0
Amending soil properties with gypsum products	4	4	0
Dry hydrant	4	1	0
Dust control from animal activity on open lot and surfaces	3	0	0
Irrigation water conveyance ditch and canal lining with flexible membrane	3	0	0
Anaerobic digester, ambient temperature	2	0	0
Cross wind ridges	2	0	0
Structure sediment removal	2	0	0
Conservation plan supporting transition	1	0	0
Fish raceway or tank	1	0	0
Mine shaft and adit closing	1	0	0
Rock barrier	1	0	0
Fish screen	1	0	0
Waste gasification facility	1	0	0
Irrigation water conveyance, corrugated, ribbed or profile wall thermal pipeline	1	0	0

Source: GAO analysis of the U.S. Department of Agriculture's Program Contracts System data. | GAO-17-225

Note: Practices do not equal the number of EQIP contracts. A practice may occur multiple times in one contract.

Appendix IV: Environmental Quality Incentives Program Financial Assistance by State, Fiscal Years 2009 through 2015

Table 9: Environmental Quality Incentives Program Financial Assistance Obligations by State, Fiscal Years 2009 through 2015
Obligations in dollars

State	Obligations from fiscal years 2009 through 2015	Obligations for fiscal year 2015	Percentage of total obligations from fiscal year 2009 through 2015
Alabama	84,614,636	12,311,053	1.48
Alaska	37,690,341	5,150,902	0.66
Arizona	83,154,486	9,258,545	1.46
Arkansas	243,858,276	43,777,457	4.28
California	549,390,811	97,344,970	9.64
Caribbean Region	28,813,173	4,389,099	0.51
Colorado	182,930,855	28,051,498	3.21
Connecticut	28,212,839	4,170,588	0.5
Delaware	37,382,057	6,017,992	0.66
Florida	95,610,222	12,063,477	1.68
Georgia	134,687,529	22,080,217	2.36
Hawaii	33,146,766	4,208,633	0.58
Idaho	87,725,922	13,713,412	1.54
Illinois	77,252,654	10,753,473	1.36
Indiana	119,197,122	20,245,210	2.09
Iowa	146,989,295	16,193,366	2.58
Kansas	148,748,219	20,136,711	2.61
Kentucky	71,716,652	9,858,231	1.26
Louisiana	116,294,464	17,519,643	2.04
Maine	72,328,642	10,598,176	1.27
Maryland	48,795,922	7,124,485	0.86
Massachusetts	27,380,626	3,157,409	0.48
Michigan	114,949,069	13,725,554	2.02
Minnesota	142,307,720	17,825,015	2.5
Mississippi	174,670,412	35,043,233	3.06
Missouri	159,279,852	24,931,419	2.79
Montana	110,910,549	13,093,873	1.95
Nebraska	159,558,132	20,406,950	2.8
Nevada	52,274,063	7,427,070	0.92
New Hampshire	27,636,986	4,123,672	0.48
New Jersey	29,037,007	4,339,772	0.51
New Mexico	131,280,731	19,825,780	2.3
New York	82,755,141	11,186,365	1.45

State	Obligations from fiscal years 2009 through 2015	Obligations for fiscal year 2015	Percentage of total obligations from fiscal year 2009 through 2015
North Carolina	113,672,706	17,898,560	1.99
North Dakota	105,354,997	12,403,109	1.85
Ohio	113,934,589	13,240,934	2
Oklahoma	127,558,615	17,483,595	2.24
Oregon	98,797,265	16,326,869	1.73
Pacific Island Area	7,580,320	2,199,493	0.13
Pennsylvania	110,347,483	19,880,867	1.94
Rhode Island	15,606,209	2,263,984	0.27
South Carolina	71,694,648	12,818,988	1.26
South Dakota	94,077,730	10,730,547	1.65
Tennessee	109,710,908	19,833,299	1.92
Texas	490,079,620	71,514,944	8.6
Utah	107,992,245	16,894,166	1.89
Vermont	50,046,115	8,275,633	0.88
Virginia	82,552,450	13,240,247	1.45
Washington	90,787,806	12,954,106	1.59
West Virginia	49,229,907	7,507,997	0.86
Wisconsin	142,899,921	21,772,877	2.51
Wyoming	76,963,077	9,158,926	1.35

Source: GAO analysis of the U.S. Department of Agriculture's Program Contracts System data. | GAO-17-225

Appendix V: Environmental Quality Incentives Program Financial Assistance by Nationally Established Initiatives

When allocating Environmental Quality Incentives Program (EQIP) funds to the Natural Resources Conservation Service (NRCS) state offices, NRCS headquarters provides specific funds for certain initiatives. NRCS has two types of initiatives—landscape and programmatic. Table 10 shows the EQIP obligations for NRCS targeted landscape initiatives during fiscal years 2010 through 2016.[1] The table also includes the states that received allocations for contracts in each initiative and each state's allocation as a percentage of the total obligations. Table 11 shows EQIP obligations for NRCS targeted programmatic initiatives during fiscal years 2010 through 2016, including the states that received allocations for contracts in each initiative and each state's allocation as a percentage of the total obligations.

Table 10: Environmental Quality Incentives Program Financial Assistance Obligations for Nationally Established Landscape Initiatives by State, Fiscal Years 2010 through 2016

Obligations in dollars

Initiative	Obligations	States (percentage of obligations)
Bay Delta	65,427,406	California (100)
Bog Turtle Initiative	12,694	Massachusetts (96), New Jersey (4)
Driftless Area Landscape Conservation	9,463,938	Illinois (9), Iowa (7), Minnesota (32), Wisconsin (52)
Everglades Initiative	12,705,186	Florida (100)
Golden-Winged Warbler Initiative	3,033,699	Maryland (7), New Jersey (7), New York (2), North Carolina (2), Pennsylvania (71), Tennessee (4), Virginia (4), West Virginia (3)
Gopher Tortoise Initiative	9,039,370	Alabama (38), Florida (24), Georgia (22), Louisiana (8), Mississippi (9)
Gulf of Mexico Initiative	8,331,499	Alabama (16), Florida (35), Louisiana (30), Mississippi (14), Texas (5)
Honey Bees	7,632,184	Michigan (6), Minnesota (20), Montana (8), North Dakota (19), South Dakota (21), Wisconsin (27)
Illinois River/ Eucha-Spavinaw Watersheds Initiative	21,266,142	Arkansas (78), Oklahoma (22)
Joint Chiefs Landscape Restoration Partnership (with the U.S. Forest Service)	44,501,797	Arizona (1), Arkansas (11), California (16), Colorado (1), Georgia (<.5), Hawaii (1), Idaho (1), Illinois (1), Indiana (2), Kentucky (<.5) Louisiana (<.5), Minnesota (1), Mississippi (9), Missouri (2), Montana (1), New Hampshire (5), New Mexico (5), New York (17), Ohio (1), Oklahoma (<.5), Oregon (4), South Carolina (1), South Dakota(<.5), Texas (<.5), Washington (4), West Virginia (12), Wisconsin (3)
Lesser Prairie-Chicken Initiative	24,724,679	Colorado (8), Kansas (11), New Mexico (27), Oklahoma (17), Texas (37)

[1]NRCS targeted initiatives began in fiscal year 2010.

Initiative	Obligations	States (percentage of obligations)
Longleaf Pine Initiative	44,703,498	Alabama (27), Florida (7), Georgia (29), Louisiana (4), Mississippi (8), North Carolina (7), South Carolina (16), Texas (1), Virginia (1)
Migratory Bird Habitat Initiative	13,211,408	Alabama (5), Arkansas (6), Florida (<.5), Georgia (<.5), Louisiana (41), Mississippi (7), Missouri (16), Texas (25)
Mississippi River Basin Healthy Watersheds Initiative	55,037,897	Arkansas (29), Illinois (3), Indiana (4), Iowa (2), Kentucky (3), Louisiana (4), Minnesota (1), Mississippi (23), Missouri (15), Ohio (3), South Dakota (1), Tennessee (11), Wisconsin (3)
Monarch Butterflies	1,685,203	Illinois (4), Indiana (3), Iowa (8), Kansas (1), Missouri (26), Ohio (6), Oklahoma (32), Texas (17), Wisconsin (2)
National Water Quality Initiative	123,856,081	Alabama (2), Alaska (<.5), Arizona (2), Arkansas (4), California (7), Caribbean Region (<.5), Colorado (2), Connecticut (1), Delaware (<.5), Florida (2), Georgia (2), Hawaii (1), Idaho (3), Illinois (2), Indiana (2), Iowa (3), Kansas (2), Kentucky (1), Louisiana (3), Maine (2), Maryland (<.5), Massachusetts (1), Michigan (<.5), Minnesota (1), Mississippi (4), Missouri (3), Montana (1), Nebraska (2), Nevada (1), New Hampshire (<.5), New Jersey (1), New Mexico (1), New York (1), North Carolina (4), North Dakota (1), Ohio (2), Oklahoma (2), Oregon (2), Pennsylvania (3), Rhode Island (<.5), South Carolina (2), South Dakota (2), Tennessee (2), Texas (6), Utah (1), Vermont (<.5), Virginia (1), Washington (5), West Virginia (1), Wisconsin (4), Wyoming (2)
New England Cottontail	1,521,858	Connecticut (44), Maine (17), Massachusetts (11), New Hampshire (19), New York (1), Rhode Island (6)
New England-New York Forestry Initiative	10,587,571	Connecticut (9), Maine (34), Massachusetts (12), New Hampshire (19), New York (10), Rhode Island (4), Vermont (12)
Northern Plains Migratory Birds Habitat Initiative	3,975,564	Iowa (13), North Dakota (57), South Dakota (30)
Ogallala Aquifer Initiative	76,895,759	Colorado (4), Kansas (17), Nebraska (31), New Mexico (8), Oklahoma (6), South Dakota (<.5), Texas (33), Wyoming (1)
Prairie Pothole Wetland and Grassland Retention Project	22,506,759	Iowa (5), Minnesota (40), Montana (12), North Dakota (37), South Dakota (6)
Red River Basin Initiative	6,081,519	Minnesota (78), North Dakota (20), South Dakota (1)
Sage Grouse Initiative	120,571,601	California (10), Colorado (2), Idaho (11), Montana (13), Nevada (5), North Dakota (2), Oregon (18), South Dakota (4), Utah (16), Washington (3), Wyoming (14)
Southwestern Willow Flycatcher Initiative	3,240,457	Arizona (25), California (57), Colorado (10), Utah (8)
Western Lake Erie Basin Initiative	20,454,200	Indiana (6), Michigan (10), Ohio (84)

Source: U.S. Department of Agriculture's Program Contracts System data from fiscal years 2010 through 2016. | GAO-17-225

Note: Natural Resources Conservation Service landscape initiatives began in fiscal year 2010.

Table 11: Environmental Quality Incentives Program Financial Assistance Obligations for Nationally Established Programmatic Initiatives by State, Fiscal Years 2010 through 2016

Obligations in dollars

Initiative	Obligations	States (percentage of obligations)
High Tunnel System Initiative	49,587,473[a]	Alabama (2), Alaska (2), Arizona (<.5), Arkansas (4), California (4), Caribbean Region (1), Colorado (1), Connecticut (<.5), Delaware (1), Florida (1), Georgia (5), Hawaii (<.5), Idaho (1), Illinois (1), Indiana (1), Iowa (3), Kansas (2), Kentucky (9), Louisiana (1), Maine (3), Maryland (2), Massachusetts (1), Michigan (4), Minnesota (2), Mississippi (3), Missouri (4), Montana (1), Nebraska (1), Nevada (<.5), New Hampshire (1), New Jersey (1), New Mexico (1), New York (3), North Carolina (2), North Dakota (1), Ohio (3), Oklahoma (<.5), Oregon (2), Pacific Island Area (<.5), Pennsylvania (2), Rhode Island (1), South Carolina (2), South Dakota (1), Tennessee (1), Texas (2), Utah (2), Vermont (1), Virginia (3), Washington (3), West Virginia (1), Wisconsin (4), Wyoming (<.5)
National On Farm Energy Initiative	84,306,879	Alabama (8), Alaska (<.5), Arizona (<.5), Arkansas (12), California (1), Caribbean Region (1), Colorado (<.5), Connecticut (5), Delaware (3), Florida (<.5), Georgia (6), Hawaii (<.5), Idaho (1), Illinois (<.5), Indiana (<.5), Iowa (6), Kansas (<.5), Kentucky (3), Louisiana (1), Maine (1), Maryland (3), Massachusetts (1), Michigan(<.5), Minnesota (<.5), Mississippi (4), Missouri (2), Montana (<.5), New Hampshire (<.5), New Jersey (1), New Mexico (<.5), New York (1), North Carolina (4), North Dakota (1), Ohio (<.5), Oklahoma (4), Oregon (1), Pennsylvania (1), Rhode Island (<.5), South Carolina (5), South Dakota (<.5), Tennessee (5), Texas (<.5), Utah (<.5), Vermont (1), Virginia (2), Washington (13), West Virginia (1), Wisconsin (2), Wyoming (<.5)
Organic Program Initiative for Certified Organic Producers	35,158,633[a]	Alabama (<.5), Alaska (<.5), Arizona (<.5), Arkansas (1), California (14), Colorado (3), Connecticut (1), Delaware (<.5), Florida (1), Georgia (3), Hawaii (<.5), Idaho (1), Illinois (1), Indiana (1), Iowa (6), Kansas (<.5), Kentucky (1), Louisiana (<.5), Maine (7), Maryland (1), Massachusetts (1), Michigan (3), Minnesota (2), Mississippi (<.5), Missouri (2), Montana (1), Nebraska (2), Nevada (<.5), New Hampshire (2), New Jersey (1), New Mexico (1), New York (5), North Carolina (1), North Dakota (4), Ohio (2), Oklahoma (1), Oregon (5), Pennsylvania (4), Rhode Island (<.5), South Carolina (1), South Dakota (2), Tennessee (1), Texas (<.5), Utah (1), Vermont (1), Virginia (1), Washington (3), West Virginia (<.5), Wisconsin (6), Wyoming (3)
Organic Program Initiative for Producers Transitioning to Organic	29,117,686[a]	Alabama (5), Alaska (<.5), Arizona (<.5), Arkansas (1), California (11), Caribbean Region (<.5), Colorado (2), Connecticut (1), Delaware (<.5), Florida (<.5), Georgia (4), Hawaii (1), Idaho (2), Illinois (1), Indiana (2), Iowa (6), Kansas (1), Kentucky (2), Louisiana (<.5), Maine (5), Maryland (2), Massachusetts (<.5), Michigan (4), Minnesota (2), Mississippi (1), Missouri (4), Montana (3), Nebraska (2), Nevada (<.5), New Hampshire (1), New Jersey (1), New Mexico (1), New York (2), North Carolina (2), North Dakota (1), Ohio (2), Oklahoma (1), Oregon (5), Pennsylvania (3), South Carolina (3), South Dakota (1), Tennessee (1), Texas (1), Utah (<.5), Vermont (<.5), Virginia (2), Washington (3), West Virginia (3), Wisconsin (2), Wyoming (1)

Source: U.S. Department of Agriculture's Program Contracts System data from fiscal years 2010 through 2016. | GAO-17-225

Note: Natural Resources Conservation Service (NRCS) programmatic initiatives began in fiscal year 2010.

[a]This number includes targeted funds from NRCS headquarters and additional funds from some NRCS state offices' general Environmental Quality Incentives Program allocations.

Appendix VI: Information about Some EQIP Applications Selected for Funding, Fiscal Year 2015

In the Natural Resources Conservation Service's (NRCS) current application selection processes, applications with low scores and high costs can be funded as the following cases demonstrate.

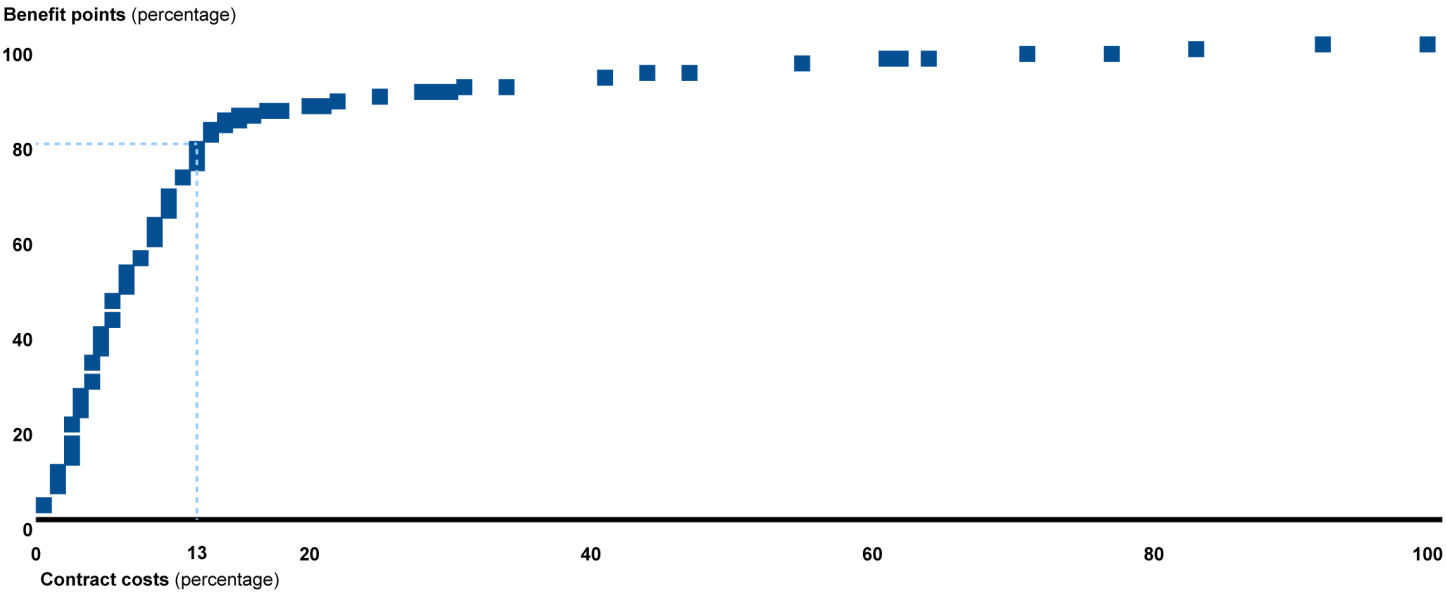
In a fiscal year 2015 funding pool in Arkansas, the NRCS state office funded an application that cost about $59,000 and scored 20 out of 1,000 points on the ranking tool. It scored 10 points for having a planned contract length of 3 years or less and 10 points for having had no contract compliance problems, according to an agency official. The cost-effectiveness score was zero. According to an Arkansas NRCS official, the application was funded even with this low score because the state office had no minimum score for approval and available funding was sufficient to pay for nearly all of the applications, including 4 that each scored 10 points. Also, any conservation work provides benefits, the official said. While this may be true, funding applications with such low scores raises questions about whether Environmental Quality Incentives Program (EQIP) applications elsewhere could achieve greater benefits for the same cost or whether the ranking tool is adequately valuing the practices in the application.

In a Colorado funding pool, an application with an estimated cost of about $4,600 and a score of 380 points was funded in a contract; at the other end of the spectrum, an application with an estimated cost of about $125,000 and a score of 71 points was also funded in a contract. According to Colorado NRCS officials, these applications were in a grazing land health funding pool, and the first application included management practices (e.g., prescribed grazing) that tend to be less expensive practices with higher benefits. The second application included only structural practices (a pond and livestock pipeline to transport water for livestock). These practices are more expensive relative to their benefits but can sometimes be necessary to make some of the less expensive management practices feasible, the officials said.

This contrast in costs relative to benefit points is further illustrated in Iowa's fiscal year 2015 animal feeding operation funding pools, which include contracts with low costs and high benefit points at one end of the spectrum and contracts with high costs and low benefit points at the other end. For these funding pools, the state office obligated a total of about $1.8 million to 58 approved applications, which were signed into contracts. About 13 percent of EQIP contract costs accounted for more than 80 percent of the benefit points awarded in ranking tools. The remaining 87 percent of costs accounted for less than 20 percent of benefit points (see fig. 3). This could mean that 13 percent of the costs for

these funding pools achieved significantly more benefits per dollar spent, that these contracts were highly cost-effective, and that the remaining contracts were less cost-effective. According to agency officials, some contracts that appeared to be less cost-effective may have been funded because they address a statutory priority other than cost-effectiveness, such as whether the application improves practices or systems already in place. If so, it could mean that the ranking tool did not accurately account for those benefits. Either interpretation suggests that NRCS's process for ranking and selecting applications may not always identify and fund the most cost-effective applications.

Figure 3: Percentage of Costs Relative to Percentage of Benefit Points for Certain Environmental Quality Incentives Program Contracts in Iowa, Fiscal Year 2015



Source: GAO analysis of Natural Resources Conservation Service data. | GAO-17-225

Note: Fig. 3 shows the percentage of obligated costs relative to the percentage of benefit points awarded in application ranking tools for 58 contracts in Iowa's animal feeding operation fund pools. Thirteen percent of contract costs accounted for about 80 percent of benefit points.

According to agency officials, expensive EQIP practices may be justified for several reasons. Some conservation practices that tend to be more expensive (e.g., cost $100,000 or more) are structural practices, such as waste storage facilities that can reduce the amount of livestock waste that runs off or leaches into nearby water bodies, and structural practices can

have life spans as long as 20 years, but life span is not always adequately reflected in benefit points.[1] Some practices are expensive because they are installed over a large area and consequently cost more but can also have greater benefits, according to agency officials. Some NRCS officials said that ranking tools do not award more points for practices that achieve environmental benefits on more acres because ranking questions are required to be size neutral, meaning that they must not give preference to applicants based on the size of their farms or ranches. Also, some of these practices are done as part of a comprehensive conservation plan on a farm or ranch, and implementing more expensive structural practices sometimes enables farmers and ranchers to implement less expensive management practices that yield significant benefits, according to agency officials. For example, installing a livestock watering facility and fencing—which tend to be relatively expensive practices—might enable a rancher to implement prescribed grazing (a plan for managing periods of grazing and rest to promote plant health), which is less expensive. Without some of the less cost-effective contracts, some of the more cost-effective contracts might not have been possible, according to agency officials.

[1]Some EQIP practices do not have a reported life span in NRCS's contracts database, so we were unable to adjust for the duration of benefits in our analysis. Life span is accounted for in NRCS's calculation of the cost-effectiveness score, which is worth 10 percent of the total ranking score, and is reflected in our analysis.

Appendix VII: Comments from the U.S. Department of Agriculture

USDA
United States Department of Agriculture

MAR 17 2017

SUBJECT: Natural Resources Conservation Service (NRCS) Agency Response – Audit Report – GAO-17-225, Job 100307 Draft Report, Agriculture Conservation: USDA's Environment Quality Incentives Program Could Be Improved to Optimize Benefits—

TO: Steve D. Morris
Director, Natural Resources and Environment
U.S. Government Accountability Office
Washington, D.C. 20548

Attached are NRCS' responses for Environmental Quality Incentives Program (EQIP) Could Be Improved to Optimize Benefits – Audit Number GAO-17-225

The attached responses addresses the actions taken and planned for audit recommendations #1 through 4.

If you have questions, please contact Leon Brooks, Director, Compliance Division, at (301) 504-2190, or email: leon.brooks@wdc.usda.gov.

for Leonard Jordan
Acting Chief

Enclosures

Natural Resources Conservation Service
Post Office Box 2890
Washington, D.C. 20013

An Equal Opportunity Provider and Employer

RESPONSES FOR GAO AUDIT NUMBER GAO-17-225

GAO Recommendation:
Direct EQIP program managers to coordinate with the leaders of USDA's Conservation Effects Assessment Project (CEAP) to help ensure that CEAP studies consider the practical limitations and trade-offs faced by program managers, and to provide program managers with better information to target EQIP funds where they will optimize environmental benefits.

NRCS Response:
CEAP scientists and EQIP leadership have coordinated on an ongoing basis since the inception of CEAP in 2003. We continue to seek ways to better integrate CEAP findings into NRCS and EQIP decision making. This coordination will continue, with renewed focus on how CEAP studies may increase the availability of information for EQIP program managers to optimize the environmental benefits achieved through EQIP implementation consistent with the EQIP statutory framework. For example, NRCS anticipates that data and modeling from the CEAP national cropland farmer survey (CEAP-2), currently underway, will provide new insights for targeting EQIP investments in the coming years.

GAO Recommendation:
Revise guidance on state offices' EQIP allocation processes, stipulating that data on environmental concerns, where available, should be a primary factor influencing allocations within states.

NRCS Response:
The State Resource Assessment (SRA) has been utilized at the national level to allocate funding to states based on priority resource needs and document field level workload associated with conservation planning and Farm Bill program implementation. The SRA is the basis for allocation of financial assistance (FA) funds for AMA, EQIP, CSP, and easement programs and establishing work-load based technical assistance (TA) needs.

State Conservationists use the SRA to identify and prioritize state level resource concerns and treatment needs to determine their estimated workload and estimated FA needs. States use State and local level data to prioritize resource concerns within their State.

Programs leadership is coordinating efforts with the Regional Conservationists to strengthen the ability for States to utilize SRA data to further develop State-level allocations. Additionally, Programs leadership is reviewing current EQIP policy for State level allocations and will make any revisions to improve guidance to State Conservationists when developing State-specific allocation formulas. In particular, the policy will provide specific guidance regarding utilization of information from the SRA in the State allocation formulas. Any policy updates will be implemented in FY 2018.

Page 2 **RESPONSES FOR GAO AUDIT NUMBER GAO-17-225**

GAO Recommendation:
Establish a review process at the regional level for review and concurrence of EQIP payment rates above a threshold (e.g., rates greater than 50 percent, with justification).

NRCS Response:
As described in the EQIP regulation supplementary information, the 2008 Farm Bill eliminated authority for cost-share and incentive payments and established maximum payment limitations of 75 percent of estimated incurred costs and up to 90 percent of estimated incurred costs for historically underserved participant program payments. As a result, the need for establishing cost-share percentages to calculate contract payments was eliminated.

Currently, the National office guides the payment schedule process in the development of payment costs for practice implementation. These payment schedules ensure that the statutory maximum payment rates are met. States must ensure that any further payment adjustments are within these payment schedules and obtain input from State and local work groups about how to prioritize program enrollment to best meet the resource needs of the State.

Therefore, the nationally-guided payment schedule process establishes the necessary controls to assure that payment requirements are met. Further, the NRCS believes that the State Conservationist are in the best position to determine what rates are required to encourage producers to adopt priority conservation practices on their operations. Regional and National level staffs are not in regular communication with the State and local working groups, and therefore a second level review at the regional or national level provides little to no further benefit for the targeting of program resources.

GAO Recommendation:
Modify guidance and ranking tools so that they more accurately value an EQIP application's anticipated environmental benefits relative to estimated costs.

NRCS Response:
The current process used to derive an applications cost effectiveness is in keeping with the statutory and regulatory requirements. While NRCS recognizes that there may be other ways that cost effectiveness can be derived, any changes would need to be fully vetted to ensure that it does not discriminate against producers based on the size of their operation or otherwise sacrifice NRCS being able to meet the myriad of statutory program goals associated with project prioritization and selection.

It should be noted that the NRCS is currently working to upgrade our contracting software which would include a new ranking tool. As part of this process, the NRCS will re-evaluate the way cost-effectiveness is scored.

Appendix VIII: GAO Contact and Staff Acknowledgments

GAO Contact

Steve D. Morris, (202) 512-3841 or morriss@gao.gov

Staff Acknowledgments

In addition to the contact named above, Thomas M. Cook (Assistant Director), Kevin S. Bray, Mark Braza, Greg Campbell, Barbara El Osta, Christine Feehan, Mitch Karpman, Sara Sullivan, Vasiliki Theodoropoulos, and Leigh White made key contributions to this report.