

Conservation Innovation Grants Awards National Component Awards Fiscal Year 2007 (NRCS)

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Below is a list of the Fiscal Year 2007 Conservation Innovation Grants (CIG) National Component awardees. The information includes the State(s) in which the project will be carried out, the total amount of NRCS funding provided, the project title, and a brief project summary.

Multi-State Awards

IPM Institute of North America (Nationwide)

\$805,012.50

Comprehensive Pesticide Environment Assessment Tool for U.S. Agriculture

The IPM Institute will develop an innovative on-line tool that will rank pesticide products for impacts on soil, water, and air quality, avian and aquatic life, beneficial organisms, and worker and consumer health and safety. This tool will apply best available science to permit producers, advisors and regulatory professionals to compare different pest management scenarios for any commodity and select options with the fewest potential environmental and health hazards, and to identify mitigation options for products/uses selected.

Resources First Foundation (Nationwide)

\$160,000.00

On-Line NRCS Conservation Program Database and Program Finder Search Tool

Resources First Foundation (RFF) proposes to build an online Program Finder Search Tool enabling private landowners to access pertinent NRCS conservation and technical assistance program information based on their location, conservation objectives, and program availability in their region.

Heifer Project International, Inc. (AL, AR, LA, MS, OK)

\$237,732.00

Enhancement of Resource Management on Livestock Operations of Limited Resource Farmers through Training on Prescribed Grazing, Animal Habitat, and Animal Well-Being

This project will train limited resource farmers to be trainers for their communities, providing training and support on prescribed grazing, resource management, livestock health, and other topics. Through hands-on, practical trainings conducted at Heifer Ranch, illustrated manuals, and other training tools, and technical support from NRCS, Heifer, and additional professionals, the project will empower limited resource farmers in 5 States with the skills and tools needed to develop economically stable and environmentally sound livestock-based farming systems.

Alabama Beef Council (AL, MS, GA)

\$91,250.00

Introducing Clovers in Grazing Management Systems

The clover demonstrations in perennial pastures of the Coastal Plain region will show producers effective ways to include clovers, and where feasible, new perennial clover cultivars into their grazing systems. As a result, producers will learn which cultivars work for their particular conditions, how to effectively establish the clovers, how to implement successful prescribed grazing techniques needed for clover longevity, how to successfully manage soil fertility, and the many benefits that clovers provide. NRCS will be able to add new information to the Technical Guide resulting in improved technical and financial assistance to clients.

AP-Garm SC, LLC AgRefresh (CA, CO, IA, ID, IL, IN, KS, MI, MN, MO, NE, ND, NY, OR, SD, VT, WA, WI)

\$622,500.00

The Biofuels Acceleration Project (BAP)-Using Voluntary Markets for the sale of Biofuel-Sourced Projects "Credits" to Accelerate the Production of "High-Benefit" Liquid Biofuels

The project will accelerate the production of "high benefit" biofuels. "High benefit" biofuels have high net energy production values, large carbon

emissions reductions, sustainable methods of feedstock production, and drive substantial rural economic (farm sector) income, investment, and jobs multipliers. This project will use the voluntary buyer market for environmental credits, in an agricultural-sector specific manner, to leverage biofuel production economics, and accelerate the shift from fossil fuels to biofuels. AgRefresh, the applicant, is already employing a parallel strategy to leverage and accelerate farm methane projects through the creation and voluntary market sale of composite environmental credits called Pure Farm Energy™ Shares. Now, AgRefresh proposes to duplicate this business model within the emerging biofuels sector. AgRefresh, via the BAP Project, will monetize the positive benefits of farm-based energy systems in order to maximize the cash flow to farm-owned feedstock and liquid biofuels production projects. The creative use of market-based environmental credits allows private consumer demand to leverage and accelerate feedstock production volumes and liquid biofuel production volumes. This private sector, market-based approach to biofuels is fully complementary to existing Federal and State initiatives. The project has three components. Component one is the development of three environmentally rigorous, peer-reviewed standards. These standards will cover the measurement of impacts, the project specific accounting rules, and the establishment of a registry. The second component is the actual implementation of the project by AgRefresh, including the tracking of quantified results such as: tonnes of carbon emissions reductions, biofuel energy volumes, and incomes, investment, and jobs impacts for producers and the associated rural sectors. Project standards and concepts will be shared via the advocacy and education component, the final component.

Beartooth Capital Partners, LLC (CO, ID, MT, NE, WY)

\$169,098.00

Rangeland Carbon Sequestration Program: Market-Based Solutions for Conservation

Overwhelming scientific evidence linking the build-up of greenhouse gases to global warming and the resulting negative consequences have spurred efforts to reduce net emissions of greenhouse gases. Here in the United States, CCX was developed to broker voluntary yet legally binding transactions between these parties, thereby helping lower the net volume of CCX members'

greenhouse gas emissions. Rangeland has not been eligible for CCX sequestration programs in the past, but Beartooth is working with CCX to enable ranchers to generate carbon credits by taking steps to enhance the rate at which their land sequesters carbons. Beartooth is working with CCX to advance the science behind carbon sequestration on rangelands and to develop the Rangeland Carbon Sequestration Program. A panel of soil and rangeland scientists has developed sequestration rate estimates for use in the program, and Beartooth Capital's Rangeland Carbon Sequestration Program is currently the only CCX approved aggregator in the country to have received approval to generate revenue by implementing voluntary changes in management by a working cattle operation which improved range condition and thus, decreased atmospheric CO₂ levels. As a result of Beartooth and CCX's work, ranchers across the West will soon be able to profit from the sale of the carbon credits generated by implementing grazing management practices that restore rangeland health. Our overall goal is to apply market-based economic incentives to foster environmental enhancement and protection in conjunction with agricultural production.

Iowa Soybean Association (IA, DE)

\$750,000.00

Nitrogen Efficiency Project

This project focuses on enhanced nutrient management that involves farmer self-evaluation of nitrogen (N) fertilizer needs for corn with incentives to increase efficiency. Between Iowa and Delaware, 1,590 fields will be evaluated. To date, hundreds of Iowa producers have used remote sensing with replicated strip trials and/or guided stalk nitrate sampling to evaluate their N needs and new N management approaches, and the majority has found they can maximize profit and reduce N losses to the environment by applying far less fertilizer and/or by adopting different application strategies. The high corn prices and huge demand for ethanol made from grain has resulted in an increase in acres planted to corn. This increase in corn acres results in more acres with corn following corn. As a result, there is an immediate need to collect more information from fields that have corn following corn. The surge in ethanol production has raised questions about the energy balance of corn production. Nitrogen fertilizer is considered to be about 30-40% of the energy needs for corn. Improved efficiencies in N

management will have significant impacts on the energy balance of producing ethanol from corn. Differences in N requirements from different rotations will be compared and the energy differences can be accounted for.

Midwest Forestry and Biofuels (IA, IL, MO)

\$325,450.00

*Utilization of *Maclura pomifera* as an Agroforestry Species for Energy Production, Carbon Sequestration, and Bioproduct Development*

Reducing dependence on energy from non-renewable and hostile sources and controlling greenhouse gas emissions are national priorities. Likewise, the loss of habitat for wildlife, reductions in perennial crops, and continued uncertainty about key farm programs like CRP need addressing. Bioenergy production potential is also critically limited by water resources that need to be managed more wisely starting with improved watershed management. As the United States frees itself from oil and nonrenewable dependency the opportunity to radically improve the rural economy presents itself. That opportunity is dependent on the development of species offering significant Value Added Product and carbon sequestration while providing continued soil water conservation. There is an excellent plant species and a production system to match that can be used to address the above issues *Maclura pomifera* (Osage orange), although in large part forgotten, has been extensively researched previously and shown to have these capabilities. In fact project, we will evaluate multiple NRCS practices in reference to bioenergy, bioproducts, and carbon sequestration issues while providing ecological services including wildlife habitat. A special focus will be on riparian management thanks to our excellent consultants and the nature of the demonstration farm. In addition, we will facilitate the beginning of a rural cooperative with development of biorefinery capability to take advantage of the Significant Value added products inherent in this species. As the political landscape in reference to global warming changes and provisions for realistic payments for carbon sequestration are made, we propose this model as a realistic replacement for the system beyond the initial establishment period.

United Egg Producers (IA, PA, KY)

\$812,998.00

Feeding and Altering Diets for Egg Laying Hens

UEP will administer this project under the direction of Mr. Chad Gregory, with management support from collaborative scientists at three land-grant universities, particularly Professor Gates at UK. Scientists from ISU and PSU will work with egg producers in Iowa and Pennsylvania. These producers will adopt specific diet modification strategies involving DDGS, certain FDA-approved feed supplements, enzymes, and probiotics. At these same farm locations, and under essentially identical production conditions, hens in the paired houses will be fed a standard "control" diet. Ammonia emissions, manure nutrient contents, hen production performance, and production costs for both the treated and control facilities will be measured, analyzed and compared. The economics of these diet manipulation strategies will be thoroughly evaluated and an economic analytical tool will be developed to help transfer this economic performance information to other producers. These findings will be featured prominently in an upcoming National Poultry Waste Management Symposium. Most importantly, UEP will disseminate these findings through its regular newsletters, reaching 90% or more of the egg laying industry and through 16 regional meetings held over the course of two years (two per region) where these results will be presented.

University of Maryland (MD, DE)

\$999,683.00

Agricultural Drainage Ditch Water Treatment to Remove Nutrients and other Pollutants

Agricultural drainage ditches, which are commonplace on Maryland's eastern shore and lower Delaware, represent a major transport pathway for nutrients, sediments, and other potential contaminants to surface-water bodies. These ditches also represent a possible intervention point in the system at which P derived from runoff and sub-surface flow generated across large acreages of agricultural soils can be prevented from entering the Chesapeake Bay at a single point. We propose the use of a phosphorus sorbing material (PSM) filled structure placed within drainage ditches to act as a P "filter". Such a P removal structure would allow the removal of P from the aquatic system when P saturated PSMs are removed from the structure.

Field prototypes of the proposed system have shown a high likelihood of success, removing approximately 99% of the P from treated water. In addition to removing P from ditch water these treatment systems have the potential to remove nitrogen, sediment, and other contaminants

Conservation Technology Information Center (MD, OH, VA)

\$152,505.00

Customized Training on Water Quality Trading for Agriculture and Wastewater Facilities

The Conservation Technology Information Center together with partners – Environmental Trading Network, the International Certified Crop Advisers and the Water Environment Federation – proposes to develop and deliver a detailed, intensive training program on water quality trading for agricultural operators, ag advisors, and municipal wastewater facilities. The training will introduce the concepts of trading, the benefits and challenges of trading and the steps involved in developing a trading program. Key to these trainings will be interactive sessions for participants – including working collaboratively to simulate a trading scenario – to encourage communication between point and non-point sources and to help them to better understand buyer and seller concerns, issues, and challenges.

Michigan State University (MI, CA, CO, GA, IN, IA, MD, MN, NE)

\$443,410.00

Development of a National Air Quality Self Assessment Tool

Livestock producers are under increasing pressure to mitigate air emissions, whether it is for regulatory purposes or as part of a 'good neighbor' plan. Mitigation strategies are expensive to implement so care must be taken in identifying if and where strategies are most useful. Because of management and structural variability in operations, these are site specific decisions. This project consists of three components:

1) Development of an on-farm air quality assessment tool for beef feedlot, dairy, swine, laying hen, turkey and broiler chicken operations that is designed to evaluate where mitigation strategies will have the greatest impact;

2) Field testing of the tool with NRCS staff, following in-service training on the tool; and

3) Refinement of the national tool as well as regionalization of the national tool where needed. As part of this effort resource materials will be developed as needed and as identified by NRCS staff.

The resulting tool will be available through venues with national exposure and its use can be incorporated to other efforts to address air quality and livestock production. This submission illustrates the commitment of the land-grant system to developing solutions as well as the commitment of the industry in implementing strategies to protect air resources. The livestock and poultry industries have pledged their commitment through their partnership agreements with this project and their commitment of matching funds to ensure the success of the proposal.

Environmental Credit Corp. (NC, NY)

\$1,000,000.00

Enhancing Air Quality and Providing Carbon Credit Incentives

ECC seeks to expand the development and implementation of an innovative, market-based carbon credit program to cover manure lagoons, reduce methane emissions, enhance air quality, and provide additional farm income to hog farms in North Carolina and dairies in New York. Leveraging CIG funds, the project will provide lagoon covers and carbon credit services including ongoing monitoring, documentation, verification, and registration for 8-10 hog farms in North Carolina and 6-8 dairies in New York. The program will link agriculture producers that have anaerobic manure treatment lagoons with the Chicago Climate Exchange, an active and highly successful voluntary U.S. framework for quantifying, verifying, registering, and trading greenhouse gas emission reductions. Farmers will receive reliable carbon credit revenues for the adoption of well-proven technologies. The proposed project will provide on-the-ground implementation, demonstration, evaluation, and refinement of a market-based incentive program with multiple production-related and environmental benefits. The will reduce greenhouse gas emission from these by 40,000 to 60,000 metric tons of CO₂ equivalents per year and will substantially reduce other emissions including

volatile organic compounds, ammonia, hydrogen sulfide, and particulate matter precursors. The project will also improve lagoon operation and liquid storage capacity, and will demonstrate how farmers and technology providers can obtain added revenue through carbon credit payments which, depending on future carbon prices, may range from \$160,000 to over \$250,000 per year for the participating farms combined.

Oregon State University (OR, ID, WA)

\$145,036.00

Regional Evaluation of Web-Based Irrigation Advisory Service

During the past the past two years Oregon State University have developed a Web-based irrigation advisory service for optimum irrigation planning, scheduling, and design. That program, referred to here as OISO (Oregon Irrigation Scheduling ~ On-line), links with existing weather station networks to provide individual farms with the following advisory services:

- 1) conventional irrigation scheduling, tailored to the circumstances of specific fields;
- 2) extended irrigation scheduling procedures to manage multiple fields simultaneously, taking into account farm water supplies, irrigation system capacities, and farm management strategies;
- 3) automatic data display and record keeping that support requirements of EQIP; and
- 4) advanced techniques for analysis of alternative irrigation strategies to maximize net economic returns when water supplies or system capacities are limited.

OISO also provides a tool for design of irrigation systems to improve system sizing and enable more effective water management, resulting in water conservation and reduced non-point pollution. In July of 2006 NRCS personnel, several State extension specialists, the director of the BOR Agrimet system and others met at NRCS offices in Portland, Oregon, to review the program. There was unanimous agreement that this Oregon-

based advisory service should be extended to the other States of the Pacific Northwest for evaluation and testing under a wide range of conditions, and that it should ultimately be made available nationally.

Wildlife Habitat Federation (TX, CO, WA)

\$120,000.00

Demonstrate the Conservation and Producer-Based Benefits of Marketing and Restored Grasslands for Seed

Many landowners in South Central Texas have converted their pastures to non-native grasses, are pushing their land past its productive limit by overstocking cattle and are adversely impacting natural resources. Test plots have shown that ranchers can improve their bottom line and increase wildlife by converting pastures to native prairie grasses.

Although landowners want more wildlife and face higher costs for fuel, fertilizer, machinery by continuing to rely in introduced grasses, they are reluctant to implement worthwhile habitat and wildlife programs available through USDA agencies, U.S. Fish and Wildlife Service, Texas Parks and Wildlife, Audubon Texas. Wildlife management plans have been written for landowners on about 20,000 acres since the Wildlife Habitat Federation (WHF) was formed two years ago but less than 10 percent have adopted the recommendations suggested. A strong economic incentive is needed to achieve large scale restoration of native grasslands. More private sector involvement is needed to complement what is now being addressed by government wildlife/conservation agencies.

A priority zone will be created in the Texas Gulf Prairie Ecological Region for producing more native prairie grasses. Due to the soils, a mild climate and ample rainfall, this region has more potential than most for producing native grass. Tracts of relict prairie grass will be assembled to meet a fast growing demand for genetically suitable seed by helping landowners contract with select companies. Participants will also be selected to create a tract large enough to sustain populations of quail or be part of wildlife corridors that connect to areas with large native grass tracts. Landowners will be encouraged by the prospect of marketing native grass to coal-firing power plants and/or to an ethanol production facility. Participating landowners will

receive financial reimbursement for cost of restoration programs from this project and will have access to specialized equipment.

Board of Regents of the University of Wisconsin System (WI, MN, SD, IA, IL, MI)

\$750,000.00

*Energy*A*Syst Comp Farmstead Energy Self Assessment Tool Kit:
Continuation and Expansion*

Currently, EQIP and CSP call for producers to analyze and enact energy efficiency planning. Resources for producers have been limited even with great interest in the issue. The current project (06/07) is developing a comprehensive farm energy self-assessment tool and online resource center, Energy*A*Syst, for agricultural producers in the upper Midwest to conduct a customized energy analysis. Our project extension request has several components:

- 1) Expand the geographical scope of these energy tools to agricultural operations in the entire U.S.

- 2) We propose to tailor our on-line tool to assist agricultural producers assess opportunities for participation in the Section 9006 grants available through the 2002 Farm Bill authorizing funding to support renewable energy and energy efficiency.

- 3) In addition to the specific objectives of NRCS, there is intense interest at all levels on developing biofuels from agricultural production systems to offset oil imports.

We propose to expand this tool and integrate it with other NRCS developed tools so that it can be used to estimate the energy intensity of crop production (both direct oil, gas and electric as well as embodied energy in fertilizers, machinery, etc.) in all regions of the U.S. These tools will be useful in specific regional analysis of the energy input/output ratios of biofuels. Maximum use will be made of existing estimators such as the USDA tillage tool for calculating gas and diesel fuel requirements for field operations.

Single State Awards

Nathan Mudd (AK)

\$190,960.00

Implementation of an Innovative Grazing Management Solution

Grazing management is the foundation of grassland-based livestock production since it affects both animal and plant health and productivity. This project will develop and implement an innovative solution to overgrazing on remote islands in Alaska. A calculated prescription for annual harvest of livestock will be made available to producers for attaining proper management and conservation of remote island natural resources. Project will monitor rangeland healthy for results, create technical information useful for resources conservation, assist in creating eligibility for cost-share programs for producers, and encourage early adoption.

California Assoc. of Resource Conservation District (CA)

\$210,651.00

Dust Control Unit

A dust control unit (DCU) will be mounted on a 12-foot disk. The methodology for monitoring the PM emissions will follow the accepted protocol established by the Protocol Subcommittee of the Air District. The PM10 emissions will be monitored before and after the passage of the disk and before and after the DCU is in operation. Also monitored will be the temperatures of the soil, ambient air, and the PM-laden air; wind speed and direction; soil moisture, texture, structure, and organic matter. When the PM10 emissions are proved to be significantly reduced (>10%), the DCU will be listed as a Conservation Management Practice (CMP) by the SJVAPCD and available for use by farmers in their required CMP Plans.

California Sustainable Winegrowing Alliance CA

\$607,500.00

Breaking Through Adoption Barriers: Market-Based Conservation Sustainable Winegrowing Alliance and President, Sure Harvest

The California Sustainable Winegrowing Alliance (CSWA), Sure Harvest, the California Association of Wine Grape Growers (CAWG), and Wine Institute will work together to design, develop, test, implement, and evaluate a grower

education, training and outreach program and associated software to help growers learn about, gain access to, and benefit from market-based conservation opportunities for resources of concern including air and atmospheric resources, water resources, soil resources, and energy resources.

The project will build upon the Sustainable Winegrowing Program's (SWP) award-winning track record in sustainable practices education and outreach to help growers understand and use environmental services accounting tools that document conservation outcomes for use in market-based conservation approaches.

SWP's online software system for growers and processors will be enhanced to aggregate the results from environmental services accounting tools so growers can more easily manage information on water, air, soil, and energy resource conservation practices to participate in greenhouse gas and water quality trading opportunities, energy and water use reduction incentive programs, and alternative compliance with new regulatory programs addressing air and water quality.

The SWP is collaboration among CSWA, CAWG, and Wine Institute. Sure Harvest serves as a strategic advisor, professional services provider, and software developer for the SWP. Combining the SWP's core strength in grower education and outreach with a user-friendly "one-stop" online information management system for resource conservation measurements—the underpinning for market-based conservation approaches—is what makes this project truly innovative.

This project has a high likelihood for success because it simultaneously addresses training and outreach needs with technology needs in partnership with growers throughout the design, development, testing, refinement, and implementation phases. Project benefits will be significant, measurable, documented, and publicly reported (see e. Project Deliverables above). These benefits will extend to participating growers, other agricultural producers, their neighbors and communities.

The project has a high probability to transfer the grower education and outreach approach as well as the “one-stop” online software, particularly to other fruit, vegetable and nut and vine crop growers throughout the U.S. The majority of challenges to successfully execute the grower education and training program and deploy the software will be overcome during the implementation of this project making it much more efficient for other producers in other geographic regions to adopt the approach and technologies.

Environmental Defense, Inc. (CA)

\$557,819.00

Creating and Quantifying Carbon Credits from Voluntary Practices on Rice Farms in the Sacramento Valley: Accounting for Multiple Benefits for Producers and the Environment

This project seeks to identify, refine, and develop innovative practices and technologies that reduce greenhouse gas emissions or otherwise sequester carbon on rice farms and that provide environmental benefits associated with water quality, air quality, and wildlife habitat. The practices and technologies will be field tested on rice farms in California’s Sacramento Valley. Net GHG emission reductions will be modeled and verified using recently developed GHG accounting protocols for the agriculture and land use sector.

With the enactment of Assembly Bill 32, the Global Warming Solutions Act, in late 2006, the time is ripe for this proposed project. California is now exploring the development of various GHG emission reduction strategies including the potential use of market-based mechanisms to create incentives for producers to adopt voluntary GHG emission practices.

In order for such strategies to be successful, GHG emissions reduction strategies and technologies in the agriculture sector must be tested and refined. Accounting protocols and systems must be credible, reliable, and quantifiable. This project offers the potential to test both voluntary on-the-ground GHG emission reduction strategies and technologies, and the associated accounting systems that facilitate participation of the agriculture sector in future emission reduction and emissions trading systems. Through this project we will also assess the economic feasibility for landowners

participating in voluntary GHG emission reduction programs under various policy and market-based scenarios.

California Dairy Campaign CA

\$103,045.00

Economic and Environmental Demo and Evaluation of Using Polymers

This project in the San Joaquin Valley of California will demonstrate and evaluate the economic and environmental feasibility of using polymers to flocculate and precipitate fine solids from the dairy waste water stream. Eighteen dairies will be directly involved with hundreds more in workshops/field days. Various treatment methods will be demonstrated and evaluated with over 70 samples of water and solids analyzed in the laboratory for volume and nutrient value. Solids retained will provide an added revenue stream for products to be sold off farm. The organic solids retained through this system will be in high demand for conventional row and field crops, but especially organic growers of orchards and vineyards. The project will be 16 months in duration with the final report due in December, 2008. An interagency, interdisciplinary technical advisory group will provide input into the project from the beginning. Coordination with the NRCS State Technical Guide Committee will be on going with several presentations made to the committee during the project. If this project proves to be feasible, many economic and environmental benefits would accrue to the dairy industry and the public as well.

University of Georgia Research Foundation GA

\$407,166.00

Demo and Evaluation of Precision Pivot Irrigation

The project will target dairy producers that have waste-applying center pivot (CP) irrigation systems in fields with either, known environmentally sensitive areas, overlapping conditions with adjacent pivots, or other soil/slope variations that create management problems by limiting useable areas for waste application. The University of Georgia has developed a Variable Rate Irrigation (VRI) precision pivot control that integrates GPS positioning into a control system. The control system cycles individual sprinklers or groups of sprinklers OFF and ON (seconds ON per minute) and varies travel speed to achieve desired application rates within management zones. VRI has the

potential to give dairy operators the ability to fine tune their waste water application, avoiding the environmentally sensitive "setback" areas as the CP makes its way around the field, eliminating over watering in overlap areas, and optimizing application in other areas. As part of the project, 6-8 suitable operators/systems (VRI-suitable, EQIP-eligible, interested producer) will be identified and have the VRI technology installed (90% from this grant, 10% from producer) on their waste-applying CP systems. Project members will coordinate all efforts of the identification and installation process between the vendor and the producer(s). Members will also monitor and evaluate the operational performance and effectiveness of the VRI systems. Field days and demonstrations will be held to disseminate information to producers on the benefits of using precision controls on their waste application pivots. Publications and other information that can be distributed and presented in various forms (i.e. Extension bulletins, newsletters, journal articles, flyers, web material, etc.) will be developed.

Albany State University GA

\$137,839.00

Technology-Based Benchmarking for Efficient Water Use and Conservation in Southwest Georgia: Implementing the Farmer Portal

Good management practices are knowledge-driven. This proposal seeks to provide farmers and water resource managers with the knowledge needed to improve water resource management. Recent droughts, litigation with neighboring States over water allocation, and endangered aquatic species have created a high level of concern over water resource availability in the Georgia.

A key barrier to better water resource management in Georgia is a lack of data on how water is used in the State, especially in the agricultural sector. This project will help to bridge this information gap through implementation of the Farmer Portal, an interactive, Internet-based technology that was developed by the Georgia Water Planning and Policy Center.

The Portal collects information on agricultural water use and crop yields and gives farmers immediate, practical, and customized feedback in return. It has been demonstrated that conservation adoption is more likely when potential

adopters understand their performance relative to others. The Portal provides such relative performance data to encourage the adoption of conservation practices. The Portal gives farmers a tool that can track water use and production against real-time benchmarks based on data from other farms operating under similar conditions in the same region or watershed.

This project will demonstrate the Portal through outreach and facilitate its adoption with direct technical assistance and incentive payments. The project area consists of two water-stressed sub-basins in southwest Georgia: the Ichawaynochaway and Spring Creek sub-basins. The Portal technology is fully developed, but successful implementation requires farmer participation. This project focuses on promoting farmer adoption of the Portal technology and securing adequate participation to support a reliable database.

The results will be transferable to other basins in Georgia as well as other irrigated agricultural lands across the U.S. We are also currently working to expand the applications of the Portal through cooperative arrangements with agencies such as the USDA Farm Service Agency.

University of Georgia (GA)

\$140,865.00

Extracting Energy from Poultry Waste and Fruit and Vegetable Waste

This project will demonstrate the use of anaerobic digestion as a means to convert agricultural waste into methane for energy purposes. Agricultural waste of interest in this demonstration project is liquid poultry waste. The use of the proven anaerobic digestion technology will allow the farmer to convert the organic fraction of flush water from a poultry operation into methane. This will be accomplished by completing the following objectives:

- 1) install an anaerobic digestion system at a poultry layer operation for treating flush water from a high-rise layer house for production of methane;
- 2) install an anaerobic digester for demonstrating co-digestion of poultry litter and fruit and vegetable waste;
- 3) monitor reactor inputs and outputs and use produced gas for on-site

operations; and

4) provide Extension education on the anaerobic digestion process, energy availability and operation.

Oahu Resource Conservation & Development, Inc. (HI)

\$690,000.00

Accelerating Cover Crop Technology Adoption through Field Demonstrations Using Sunn Hemp, Oats, and Buckwheat in Rotational Commercial Crops

Commercial scale cover crop demonstration plantings of 2 to 10 acres will be established at 14 sites over the first two years of the project. The size of plots varies due to different crops and crop rotations for different scale farms. Collaborators will counsel cooperators, monitor plantings and demonstrate the benefits of the cover crop to soil fertility, beneficial insects, pest reduction, the follow-on cash crops and business economics. Field Days will be held on all sites, advertised and supported with posters, informational handouts, and discussions. Site and crop specific field data (pest, agronomic and economic) from the project will be analyzed, summarized, and translated to optimize transferability to interested and targeted immigrant farmers. Finally, follow-up efforts will be used to maintain and increase current use by cooperators. The intent of maintaining and increasing the use of cover crops becoming a more visible cultural practice and advancing adoption and implementation across the State. This will allow NRCS field personnel to have field references to the practices.

Iowa State University of Science and Technology (IA)

\$500,000.00

Stewardship in the Bioeconomy: An Iowa Market-Based Model

This 3-year project will develop, test, and implement a model program that allows existing and emerging biomass industries to offer an environmentally sound market-based pricing and procuring Stewardship in the Bioeconomy: An Iowa Market-Based Model program for biomass with local farmers. It will demonstrate on-farm market-acceptable production and harvest practices and approaches that allow sustainable and profitable biomass production The project will identify emerging needs of Technical Service Providers and educators and provide targeted training for skill development and education

for use in future conservation planning. This project will deliver successful tools and approaches of market-based pricing and procuring to five biomass industries, train conservation planners, educate more than 2,500 farmers in Iowa, and deliver successful program components to 4 Midwestern States.

Western Ag Research (ID)

\$508,000.00

New Planter Tech for Improved Water in Irrigated Potato Production

A new innovative method of planting potatoes on flat-wide beds in contrast to the conventional practice of planting in hills has been shown to reduce sprinkler irrigation water requirements by 10 to 20%, increase tuber yield and quality, and increase gross return. The reduction in water requirements associated with planting potatoes on a flat-wide bed results from more uniform water infiltration into the potato root zone. Leaching losses are reduced, which means that N losses are also reduced. This new planting technology will be demonstrated on 10,000 acres of commercial potato production in southern Idaho to allow producers the opportunity to evaluate the new technology in their own farming operation. Water use, tuber yield, and quality and gross return will be determined at each demonstration location for both hilled and bed-planted potatoes using adjacent field comparisons with the same producer. This information will be used to evaluate water savings, potential yield and quality increases and on-farm economics of the new planting technology over a wide range of field conditions. On farm demonstration of the new planting technology and documentation of the on-farm benefits will initiate market-driven adoption of the technology. Adoption of the new planting technology will conserve water supplies and preserve water quality while sustaining agricultural production.

Solomon Valley Resource Conservation & Development Area, Inc.

(KS)

\$119,300.00

Incorporate the Cereal Grain, Teff, into a Market-Based Crop Rotation to Maximize Soil

Teff, a crop native to Ethiopia, has been proven to grow in northwest and north central Kansas. Two years of teff experimentation has also been conducted by Kansas State University at the Experiment Station near Colby,

Kansas and by the KBFA at Nicodemus, Kansas. Teff is also being commercially grown in both Oklahoma and Idaho and sold through out the United States to Ethiopian restaurants and health food stores. Teff is drought and flood tolerant, can be used as both forage and a grain, and is low in gluten. The Solomon Valley RC&D, in collaboration with the KBFA will select six to eight limited resources, EQIP eligible producers to incorporate and grow eighty acres of teff within existing crop rotations. Teff will maximize the efficient use of precipitation and soil moisture. With teff the innovative crop rotations will improve soil health, conserve moisture, and sustain productivity.

Maryland Department of Agriculture (MD)

\$250,000.00

Piloting Point source to Non-Point Source Nutrient Trading in the Upper Chesapeake Bay

This project is the development and pilot implementation of an agricultural nutrient raiding or offset program for the State of Maryland to use in managing nutrient loads from point and non-point sources. The approaches developed will provide opportunity and structure for intrastate, as well as, interstate trading in the Chesapeake Bay watershed. The project will build on the basic tenets contained in the 2001 EPA Chesapeake Bay Program Nutrient Trading Fundamental Principles and Guidelines and the 2003 EPA Water Quality Trading Policy.

The development of this program will require and include the participation of the affected communities, environmental organizations, and State and local elected officials prior to adoption. A second objective is to gain a better understanding of the quantitative issues surrounding nutrient trading in the agricultural sector. Issues of costs, efficiencies, incentives and returns will be analyzed in order to develop policy based on current market and economic forces. A further goal of the project is to demonstrate, through a pilot or demonstration project in the upper Chesapeake Bay, that trades can be part of a successful program to reduce nutrients to the Bay and its tributaries.

Maryland Department of Agriculture (MD)

\$604,794.00

Program Delivery & BMP Alternatives Targeted to Maryland Equine Industry

This project will target accelerated agricultural BMP implementation to horse operations addressing the Maryland Tributary Strategy plans and TMDL watersheds of the Piedmont, Appalachian Highlands, and Coastal Plain areas of the western shore of Maryland. The project will demonstrate an effective strategy for overcoming the barrier to adoption of the best management practices on equine operations to reduce excess nutrient loads.

Kennebec County Soil and Water Conservation District (ME)

\$119,440.00

Pilot Project for Energy Audit & Energy Conservation Practice Adoption

The proposed CIG project will 1) build on existing energy audits to create an audit system that encompasses all farm activities and puts more farmers in a position to use more USDA and other programs; 2) introduce more producers to the newest energy-saving technologies for a variety of farm types; and 3) deliver measurable energy cost savings and carbon reductions. Results: 1) At least 30 producers in Kennebec County will have undergone the Whole Farm Energy Audit. At a minimum the audit prepares farmers for the broadest slate of energy programs: State incentive programs for energy-saving technologies, the USDA 9006 program, as well as a number of EQIP farm practices (e.g., crop rotation, green manure). It is expected that the project will result in recommendation to adopt specific practices as NRCS standards and practices for future use in cost-share programs. A thorough assessment of the cost-efficiency of the pilot project, lessons learned, and feasibility for expansion will be included in the Final Report. The results and recommendations for expansion will be communicated to the farming communities in the State, the National and State USDA offices, and State energy programs throughout New England.

Coveyou Farms, LLC (MI)

\$87,300.00

Innovative Soil, Water, and Energy

The purpose of this project is to design, install, demonstrate, and evaluate a portable high tunnel growing system that improves soil quality as well as the management of irrigation water and fertilizer applications to vegetable crops. A novel design of a portable high tunnel will be demonstrated that uses a

bottom rail to allow movement of the tunnel between adjacent fields. Additionally, this project will demonstrate and apply to vegetable crops some of the latest commercially available technology in automated moisture sensing presently used in the floriculture and will demonstrate non electric powered pond to tunnel field water delivery systems. Small wind and solar electric systems are used to power the irrigation sensors and control systems. This production system is geared toward medium to small sized farms using high tunnels to accelerate spring market production and overall season extension in growing vegetable products for local sales and marketing.

Giziibii Resource Conservation & Development Association (MN)

\$229,700.00

Demo & Evaluation of Burning Waste Streams

Project will evaluate biomass produced on two demonstration farms and burned in a low water use gasification system for the production of syngas to generate electricity. This power will be used at the Northern Excellence seed processing facility in Williams, Minnesota. Northern Excellence Seed, LLC is a producer-owned cooperative made up of 30 members. All of these producers are eligible for EQIP. Installation of a 100-kilowatt gasifier at the Northern Excellence Seed, LLC will produce an estimated 744,600-kilowatts per year. Biomass sources include 2 million pounds of seed screenings per year from Northern Excellence Seed, LLC and producers growing perennial energy crops within a reasonable distance from the seed plant. Gasification of biomass for electricity is a proven technology. Long-term use and available demonstration sites are not readily available however. This project will resolve these issues and provide vital information to producers considering the value of perennial energy crops. The energy produced will improve atmospheric air quality in multiple ways. Perennial grass crops have been shown to capture and store carbon dioxide. These carbon sequestrations along with the replacement of coal generated electricity to a renewable energy source are the primary purposes of this project.

The Nature Conservancy (MN)**\$132,250.00***Murphy Creek Two-Stage Ditch*

Project partners will design and construct a two-stage ditch within the existing channel of a ditch scheduled for maintenance. Researchers will conduct water quality and quantity monitoring throughout the project to evaluate effects on nutrients, sediment and flows. Information on the design and implementation of this approach to drainage, along with the conservation effects, will be provided to landowners, agency staff, county ditch inspectors and the general public via field days, presentations, and publications.

Albert Wayne Jones (MS)**\$244,725.00***Methane Capture on Broiler Poultry Farm for Renewable Energy and Environmental Protection*

The overall goal of this project is to implement a unique and innovative, market-based solution, for effectively managing energy generation on a small broiler poultry farm with four houses, while addressing the highly critical issue of broiler litter disposal. Mississippi, which is the fourth largest poultry producing State in the U.S., generates about 2.2 billion pounds of litter annually. New environmental regulations and health concerns related to mad cow disease and watershed are putting increasing pressure on poultry growers to curb the practice of conventional litter spreading on pasturelands or for cattle feeding. Additionally, the significantly higher energy costs of a poultry operation today are placing a tremendous financial burden on the farmers. An on-farm anaerobic digester is an innovative approach to conserve water, soil and atmospheric resources while generating bio-based renewable energy and eliminate the problems of litter disposal as well as dead birds. Additionally the market for carbon credits is emerging in the U.S. and since methane qualifies for 21 times the credits for each unit of carbon dioxide, the returns on investment in digester projects may become a respectable revenue source for the farmers. Even though the science behind anaerobic digestion is well understood, using an anaerobic digester to manage broiler litter is a truly innovative approach and has only become feasible due to a recent change in poultry raising practices as described in the narrative. A very important element of the proposed system is that this

project will be a scaled-down, user-friendly, production-oriented version of an experimental poultry litter digester that is currently operational on a ten-house farm in Mississippi and was funded in large part by the State of Mississippi. A smaller scale digester on a farm with four broiler houses will also lend itself to the study of a modular approach to constructing digesters for larger farms in the poultry belt States.

Confederated Salish and Kootenai Tribes (MT)

\$179,000.00

Improving conservation of Wetland and Riparian Habitat through Enhanced NWI Updates, Aquatic Weed Mapping, and Reed Canary grass Control Demonstration Projects

Conservation of wetland and riparian habitat on the Flathead Indian Reservation (FIR) of western Montana is complicated by 'checkerboard' land ownership. Lands containing wetland and riparian lands are owned, managed, or regulated by numerous tribal, Federal, State, or local government, or private stockholders. The Confederated Salish and Kootenai Tribes (CSK) and other agency stakeholders often share common conservation goals and objectives that can not be effectively achieved independently. The resources conservation and management community on the Reservation is in need of accurate, up-to-date mapping of wetland and riparian resources for effective planning and coordination. In addition to land-use and development pressures, invasion and spread of invasive aquatic species pose a major threat to the health of aquatic ecosystems on grazing and forest lands within the Reservation. This project will improve conservation of wetland and riparian habitat through:

- 1) enhanced National Wetland Inventory (NWI) and riparian mapping;
- 2) identification and mapping of aquatic weed infestations from 1m CIR and NAIP imagery;
- 3) implementation of demonstration projects for RCG control in representative wetland and riparian areas, and

4) development of technical guidance, and improved planning and management tools.

**North Carolina Department of Environment and Natural Resources
Division of Soil and Water Conservation (NC)**

\$216,000.00

Innovative Mortality Management Tools for Animal Agriculture Industries

The Division will produce an educational brochure and distribute it to all Soil and Water Conservation Districts throughout North Carolina informing them of the innovative mortality management tools available and the associated environmental and long-term economic benefits. The districts will then share the brochure and information with dairy and swine producers. The Division will install these innovative technologies on 10-11 commercial farms across the State. The use of forced aeration composting and gasification for swine, dairy, and poultry mortalities will assist in reducing surface and ground water pollutants from animal agriculture operations and in reducing energy consumption for managing mortalities.

North Carolina State University (NC)

\$929,918.00

Supporting Adoption of Innovative Conservation Practices of Hog Production

In response to growing consumer demand and increased production of outdoor-raised (marketed as “pasture-raised”) pork in North Carolina, this project will demonstrate and evaluate a comprehensive set of innovative conservation practices on outdoor hog production systems throughout three distinct regions of the State—the Mountains, Piedmont and Coastal Plain—that represent major production characteristics and soil types throughout the Southeast. Through the oversight of a technical steering committee, model farms, and demonstration sites will be established to demonstrate and evaluate the effectiveness, environmental impacts and economic implications of implementing different conservation practices on outdoor hog production systems. Farmer participants will be supported to maintain comprehensive records, engage in project planning, and host outreach and educational events, including field days, training workshops, and informal gatherings. Regional support teams will be developed that include farmer mentors,

District Conservationists, and extension agents as a means of increasing the likelihood of adoption of conservation practices, and specifically utilization of EQIP, particularly on small and limited resource farms. A variety of deliverables will be developed, including a technical guidance document for use by NRCS staff and District Conservationists to foster expansion of EQIP to outdoor hog production systems.

North Carolina State University (NC)

\$190,887.00

Innovative Drainage Water Management in North Carolina

Drainage Water Management or Controlled Drainage has been installed on over 400,000 acres of cropland in North Carolina. It is conservatively estimated that under proper operation, these systems will reduce N loads to streams and estuaries by about 4,000,000 lbs annually. However the original contracts for management have expired and the systems are, in many cases, no longer functioning as designed. Further, most of the control structures have been installed on open ditches with little application of the more recently developed structures for controlling drainage in subsurface or "tile" mains. This project will support the installation of these new structures in subsurface mains on 15 to 20 sites. If successful, this demonstration could lead to application on thousands of additional acres in the middle Coastal Plain. The project will also develop and implement a web-based system for encouraging and assisting users in the proper application of drainage water management on both old and new systems. The goal is to revitalize and improve the management of controlled drainage systems in North Carolina. A web-based system will be developed and implemented on a pilot scale with 15 farmers in at least 6 Coastal Plain counties. The system will provide crop, soil, and location sensitive advice and reminders on management of the control structures. DRAINMOD simulations to evaluate soil water conditions and provide guidance on managing the structures based on current and forecasted weather conditions and the status of receiving waters will be conducted and updated at least monthly through the year. Brochures will be developed to promote Drainage Water Management and field days will be held to demonstrate the practice and present results of its effect on crop yields, drainage outflows and nutrient losses to the environment.

Ryan Reker (NE)**\$500,000.00**

Improving Conservation Planning, Design, and Delivery for South Central Nebraska through Integration of GIS Spatial Modeling and LIDAR Tech.

The project will provide the Rainwater Basin Joint Venture and conservation partners with accurate elevation data derived from LIDAR. The elevation data will then be integrated with detailed spatial data to create models and decision support tools to improve natural resource planning, design, and implementation of conservation practices in the Rainwater Basin Wetland Complex, Central Platte River Corridor, Republican River, and NRCS-Major Land Resource Area – 75. Integrated LIDAR will enable all conservation partners to plan and prioritize conservation efforts for specific programs such as WRP, EQIP, WHIP, and CRP. It will also allow for better planning and prioritization for specific natural resource issues such as: improving water quality through better site selection of riparian buffer strips or waterways or improving wildlife habitat by targeting grassland improvements. The elevation data will also be used by partners to improve their effectiveness and increase the number of conservation projects. Shrinking NRCS and partner engineering staffs are creating a significant backlog of projects in Nebraska. Much of the survey and design data could be obtained through LIDAR elevation data. Many design features could be accessed from the office on the computer. Increasing design efficiency would allow increased numbers of conservation projects throughout all conservation programs requiring engineering input.

Farmers Conservation Alliance (OR)**\$529,216.00**

Farmers Screen Project

Farmers Conservation Alliance (FCA) is requesting funding for the Farmers Screen Project in order to stimulate the development and adoption of the Farmers Screen as well as demonstrate the benefits for agricultural production, environmental enhancement, and environmental protection. The Farmers Screen is a diversion screen that is designed to allow water to flow from the river into an irrigation system while keeping fish and debris from being trapped. The Farmers Screen prevents clogging, protects fish at all life stages, ensures consistent water flow, and saves farmers and irrigation

districts thousands of dollars annually in avoided operation and maintenance costs. FCA will use project funds to host an extensive outreach campaign, develop a market-based distribution system for the Farmers Screen, create streamline, permitting processes, install at least 56 screens throughout Oregon, become a NRCS technical service provider, become an EQIP-approved technology and for evaluation the agricultural and environmental benefits of the Farmers Screen.

Willamette Partnership (OR)

\$656,536.00

Building a Transparent and Trusted Accounting System

The focus of the proposed project is to provide cropland and forestland managers with the tools and resources they need to make conservation incentives part of their land management strategies. In particular, the project will make ecosystem service markets more available and accessible to farmers and foresters. The project has three ways in which this objective will be achieved. First, ready access to ecosystem service markets depends on having a structured market where buyers and sellers of goods can easily connect and transactions can occur in a common, uniform currency. The Willamette Partnership is committed to creating this framework and is developing many components of the marketplace through existing EPA grants. The proposed project will focus on obtaining acceptance from regulatory agencies on the common currency. This aspect of the project will build upon a significant amount of currency development work accomplished by the Oregon Department of Transportation over the past three years. Second, for a wide range of farmers and foresters to be able to access the market, the tools used in that market must be user-friendly. Accordingly, the second component of the project is development of a user friendly database interface for the accounting method (the currency). The development of this interface will help standardize the currency, make it less subject to error and make it more usable by private individuals. Third, in addition to an easy to use interface, farmers and foresters will benefit from additional user friendly tools that allow them to make decisions about using market incentives as part of their land management approach. The need for these tools will be identified through coordination with the farmers and foresters that comprise the ultimate user group. Examples of some anticipated tools that will be

developed include a rapid assessment approach that allows land owners to easily assess the financial desirability of pursuing market incentive strategies and a tool to help them understand the available market incentives and the advantages/disadvantages of those various incentive programs.

Pacifica: A Garden in the Siskiyou (OR)

\$307,341.00

Pacifica's Irrigation Conservation and Agriculture Chemical Recovery Project

Pacifica is establishing a 422-acre botanical garden and nature center and school of practical horticulture— a culture stock repository of more than 7,000 different taxa. This repository will support Oregon's horticulture industry through plant accessioning, research, monitoring, and education. As a working botanical garden, Pacifica intends to operate a production plant nursery as a major element of both its education program for the horticulture trades, plant research, and organizational sustainability through the sale of containerized nursery stock. Based on the nursery's location within Pacifica's property, — the site is within 800 linear feet of Williams Creek which is a major salmonid bearing stream — the soil composition, and Pacifica's desire to practice water conservation through reuse and to meet any current and all future regulation of chemical pathogens associated with agriculture production, the organization is seeking funding to construct and monitor a closed loop irrigation system that will recover not only water, but nitrates, herbicides, and pesticides for recycling. This work includes the construction of:

- 1) an off-channel irrigation reservoir;
- 2) plant growing areas that first irrigate and then recapture any unused water and the associated water-borne chemical pathogens used in the production of nursery stock;
- 3) a water return system to the reservoir;
- 4) bio-intervention/remediation to capture the chemical pathogens;

5) data collection/monitoring regarding the effectiveness of the system and associated economics; and

6) publication and distribution of project findings.

Forest Restoration Partnership (OR)

\$93,800.00

Oregon Aspen Project

The Forest Restoration Partnership seeks funds to assist private landowners to improve condition of aspen stands in Eastern Oregon. Aspen throughout the western United States has declined by 50-90%. Aspen provide outstanding wildlife habitat and high levels of forage production for livestock, and are important in groundwater recharge. Funding would launch the first phase of the Oregon Aspen Project; a collaborative effort to facilitate technology transfer related aspen management to private landowners. Phase 1 activities include:

1) Development of a user –friendly aspen management manual;

2) Provision of technical assistance and funding to complete 4 aspen stewardship demonstration projects on private lands throughout eastern Oregon; and

3) Organization of tour and workshop for each project site to disseminate restoration techniques and build support for active management of aspen resources.

Oregon Department of Agriculture (OR)

\$265,576.00

Grower Assisted Inspection Program

Invasive species are one of the greatest threats to forest health in the United States today.

One that has garnered much attention is the fungus-like pathogen *Phytophthora ramorum*, the cause of sudden oak death and related diseases. This invasive pathogen attacks more than 100 plant species and kills mature

oaks, tanoaks, and beech trees. *P. ramorum* has killed hundreds of thousands of trees in California where it is established in the natural environment. This has led to increased fire risk and to increased soil erosion from deforestation. Riparian areas near streams inhabited by endangered coastal salmon have also been adversely affected. This program will serve as a tool for nurseries to monitor for *P. ramorum* and other *Phytophthora* species in a cost-effective manner with minimal impact on their plants, soil, and water resources. Thus, the program will have these benefits:

- 1) It will minimize the risk of *P. ramorum* being introduced to new forest environments;
- 2) It will be a tool for growers to improve disease management on their property particularly within their soil and water resources; and
- 3) It will become a marketing tool nurseries can use to.

To our knowledge, this is the first attempt at developing a grower assisted inspection program for plants for planting. This program may also be adapted to other farming operations.

Klamath Basin Rangeland Trust (OR)

\$210,925.00

Enhancing Incentives Programs in the Klamath Basin

Water resources in the Klamath Basin are in great demand from a variety of competing interests. This has led to frequent conflicts over how water is distributed for conservation, tribal trust obligations, recreation, farming, and ranching. In addition, some land use practices contribute to poor water quality, increased stream temperatures, and reduced habitat for endangered and sensitive aquatic and terrestrial species. KBRT's mission is to restore and conserve the quality and quantity of water in Oregon's Wood River Valley and the Upper Klamath Basin in order to enhance the natural ecosystem and supply needed water for downstream native fish and wildlife populations, as well as agriculture and ranching. KBRT works with ranchers in the Wood River Valley (the headwaters of Upper Klamath Lake) encouraging the adoption of sustainable land and water management practices. KBRT's efforts

up to now have resulted in 12,000 ac of private grazing land in transition from flood irrigation to dry land grazing, over 67,000 acft of water left in stream each year, increased stream flows, improved water quality, protected riparian areas, improved pasture conditions, and the list goes on. This proposal requests support to allow KBRT to redouble its efforts to increase acreage enrolled in NRCS programs and take the landowners to the next step to assure they can fully transition from flood irrigation into permanent dry land scenarios. KBRT also aims to develop a water market or leasing program so that once the producers graduate from Federal "transition" programs they are able to lease their water in stream and assure it stays where it is needed. KBRT will continue to carry out the ecological monitoring established in 2002 to assess impacts of the management changes. Additionally, KBRT would like to share this proven approach with other NRCS offices and private groups working in high-priority areas.

Pennsylvania Environmental Council (PA)

\$212,048.00

Use of Excess Manures for Mine Reclamation and Biofuel Production

The project partnership will implement a commercial-scale demonstration project using composted poultry manure from EQIP eligible poultry farms located in nutrient impaired watersheds in the Susquehanna Basin in Pennsylvania. Manure will be applied as a soil amendment on parallel plots on nutrient deficient mine lands in Schuylkill County Pennsylvania. The parallel plots will be used for the cultivation of switch grass and native grassland perennials for biomass production on a minimum of 40 acres. Nutrient and carbon sequestration fluxes and biomass production will be monitored throughout the 3-year term of the project.

Belle Fourche River Watershed Partnership (SD)

\$500,000.00

Online Irrigation Scheduling Consultant for the Belle Fourche Irrigation District

This project will develop and implement a Web-based, interactive irrigation scheduling calculator that is customized to each producer's crop, planting date, soil type, rainfall, and irrigation amounts, and method of irrigation. The calculator will allow any producer with internet access to create a

personalized Web page with irrigation information for a particular field. To accomplish this, an extensive real-time weather network will be implemented. This weather network will monitor rainfall and provide the inputs to calculate daily evapotranspiration (ET) using the American Society of Civil Engineers (ASCE) Penman method. Irrigation delivery amounts will be retrieved from an existing database and added to the rainfall estimates for that location to determine the daily increase in the soil water balance. Producers will be able to track the estimated soil water balance for their individual fields and obtain a recommended irrigation schedule. Readings from installed soil moisture instruments will be transmitted via an existing radio network and provided online as a means to track relative soil water changes throughout the irrigation season. Weekly ET values and rainfall will also be published in local print media.

South Dakota State University (SD)

\$493,109.00

Precision Conservation Using Multiple Cellulosic Feedstocks

The project is designed to demonstrate and evaluate precision conservation practices that integrate and compliment biomass production for cellulosic ethanol production from multiple feedstocks'. Ethanol production in South Dakota is currently based on corn grain using a dry or wet milling process. However in the near future (3-5 years) a cellulosic process based on enzymatic processing of pretreated biomass will begin to enter the biofuel markets and co-exist with production of ethanol from corn grain. Initially corn stover will be the feedstock of choice but this will soon begin to include other feedstock such as perennial grasses. Guidelines for stover/straw removal, annual – perennial biomass rotations, fertilization, and other agronomic practices need to be developed that are site specific. Precision conservation applies conservation practices to optimize protection of natural resources, sustain soil productivity, and protect ecological goods and services within the landscape. This project will evaluate precision conservation practices applied to typical landscapes in Eastern South Dakota that are most likely to be involved in intensive biofuels production. The proposed project will be conducted on cooperating producer fields. Evaluation of management practices involving multiple cellulosic feedstocks will be conducted in MLRAs 102A, 102B/C, 55B, and 55C of South Dakota where much of the biomass

production is expected to occur. Measurements will be made of biomass and grain production, biomass removed, biomass energy potential, residue cover, soil quality, carbon balance, erosion and sediment loss potential, nutrient distribution within the landscape, and leaching potential. Comparisons will be made of contrasting management practices to include variation in biomass removal, and landscape specific location of biomass crops including prairie cordgrass, switch grass, and corn. The evaluations will be used to develop site specific technical guidelines, fact sheets, and technical specifications for use by NRCS and the SD Extension service.

Northwest Natural Resource Group (WA)

\$200,000.00

Promoting Small Landowner Access to Emerging Carbon Sequestration Markets through Forest Certification, Aggregation, and Market Development

This project aims to provide access and market development for small forest landowners in Western Washington to allow them access to emerging markets for carbon sequestration in addition to their existing access to market for sustainable wood products. Working through all levels of the supply chain, NNRG (with Earth Economics and Pacific Forest Trust) will apply existing research and models by develop protocols for determining carbon sequestration on land certified as sustainable managed by the Forest Stewardship Council and the additionally of this sequestration over traditional management practices. This can be packaged into marketable verifiable carbon credits for sale in voluntary or regulatory markets. NNRG and the Nisqually River Council will work through a variety of outreach methods to recruit landowners into the program and assist them with the development of long term management plans meeting certification requirements. NNRG will develop methods of aggregating the carbon credits and sustainable wood streams produced by participating landowners to allow them to access larger scale markets at premium prices. NNRG will also be working with regional and State decision markets to develop carbon registries in advance of regulatory requirements and build a regional and then State-wide carbon market, compatible with other developing markets in other States, in which landowners can participate. The ability of landowners to access the emerging market for carbon sequestration services (and other ecosystem services) will contribute to their ability to remain financially stable while sustainable

managing their forestlands, keeping this land as part of a functioning ecosystem and encouraging practices that lead to greater carbon sequestration and, therefore, improved health of Earth's atmosphere.

Washington State University (WA)

\$398,454.00

Phosphorous and Solids Removal from Anaerobic Digested Effluent through Electrochemical Technology

Anaerobic digester offers a great potential for harvesting renewable energy and reduce greenhouse gas emission from animal manures. Farmers, especially large animal feeding operations (CAFOs), will be much more motivated to adopt the technology if anaerobic digesters can also help with nutrient management to address the water quality regulation concerns. Unfortunately, nutrient recovery is a major missing component from the current anaerobic digesters marketed by the major technology providers. The ultimate goal of this project is to develop and demonstrate the necessary nutrient recovery process to fill this technology gap. The specific objectives are to: (1) design a new process for P recovery and solids removal from dairy manure, (2) demonstrate the process and technologies at a pilot scale (3) conduct market and cost/benefit analysis of the process and resulting rich-P fertilizer, and (4) disseminate the technology and information. The project results will be disseminated to various audiences through publishing fact sheets, process illustration on the web and DVD, site visits, and workshops. The measurable project impacts include the technology adoption, publications of refereed and extension materials, the number of people connected by the project, and an increased number of anaerobic digesters built because the results of the project will make it possible for the anaerobic digesters to address nutrient and water quality problems in addition to harvesting bioenergy.