NRCS
Natural Resources
Conservation Service

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# West National Technology Support Center

## FY2012 Report

## *A Message from the Director*

We are very happy to provide this end-of-year report for Fiscal Year 2012. This report continues the approach we have been following for a few years of providing in- depth articles by discipline area describing some of the more significant accomplishments of the year and looking ahead to what we anticipate for next year.

Overall, our tracking of direct assistance efforts indicates that we maintained a similar level of interaction and support to our customers as in prior years. We recorded 699 specific direct assistance projects. Of that number, 508 were what we call 'formal' assistance projects. These 'formal' projects involve more than twenty work hours, States must make a written request, and we provide a written report at the end of the project.

Training continued to be a big part of our assistance. We supported 134 training sessions and provided training to an estimated 3,856 students. Nearly 2,900 students received training through 101 classroom/field training courses. The remaining 1,000 students received training through 33 net-meetings or webinars. Detailed information on training can be found in the tables in this report. Many of the webinars can be viewed at the Science and Technology Training Library (https:// nrcs.sc.egov.usda.gov/st/ntsc_training/).

Some the highlights that I would draw your attention to are as follows:

- We spent a huge amount of time on practice payment schedules. We developed national scenario templates and cost component lists, assisted the various regional teams, and provided review comments on draft regional payment schedules.
- Energy conservation technology development and transfer continued to advance.
- We continued making progress on Sage Grouse conservation – developing guidance and providing training for field staff. New efforts were launched for Lesser Prairie Chicken and other species-specific initiatives.
- Our national project to provide assistance to the States on organic production systems through a partnership with a national organic certifying organization continues to be very successful.
- The partnership effort to develop technical materials on pollinator conservation expanded. We now have seven partner scientists providing assistance to NRCS across the country.

Staffing changes occurred with the retirements of Jeff Repp, Rangeland Management Specialist, and Kathryn Boyer, Fisheries Biologist, and the departure of Susan O'Neill, Air Quality Specialist. In addition, five specialists announced their plans to retire at the end of December. They are Stefanie Aschmann, Energy Team Leader, Meg Bishop, Environmental Compliance Specialist, Pat Shaver, Rangeland Management Specialist, Fred Theurer, Hydraulic Engineer, and Pat Willey, Wetland and Drainage Engineer.

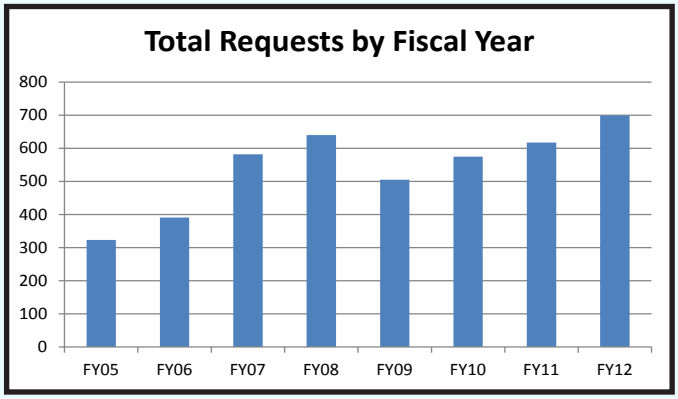
As always, we greatly appreciate the opportunity to provide technology assistance to you, our customers. Please don't hesitate to contact our specialists. And please let me know how we can better serve you.

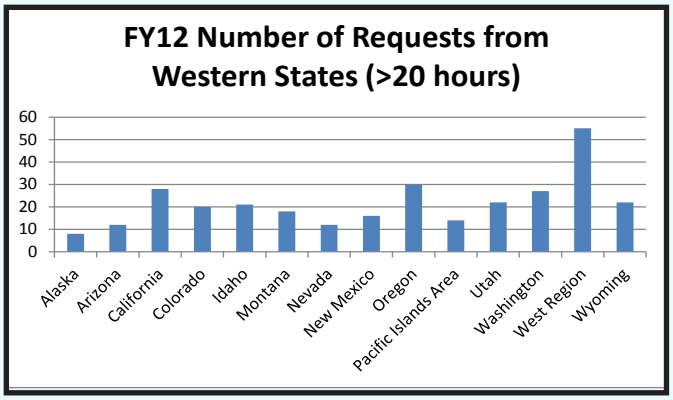
*- Bruce Newton*

*Helping People Help the Land*

# FY12 WNTSC
# Assistance Analysis

| FY12 Number of Requests by Region and Time Commitment | | | |
|---|---|---|---|
| WNTSC assistance provided to: | Number of Requests | | |
| | Informal (<20 hrs.) | Formal (≥20 hrs.) | Total |
| West Region States | 121 | 305 | 426 |
| Central Region States | 11 | 21 | 32 |
| East Region States | 14 | 51 | 65 |
| All States | 23 | 79 | 102 |
| National Headquarters | 22 | 52 | 74 |
| **Total** | **191** | **508** | **699** |




| Count of Requests by Western States FY05-FY12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | FY05 | FY06 | FY07 | FY08 | FY09 | FY10 | FY11 | FY12 |
| Alaska | 2 | 12 | 8 | 3 | 11 | 10 | 10 | 11 |
| Arizona | 1 | 6 | 16 | 15 | 24 | 18 | 15 | 16 |
| California | 15 | 17 | 31 | 33 | 32 | 25 | 15 | 34 |
| Colorado | 5 | 16 | 19 | 23 | 23 | 25 | 11 | 26 |
| Idaho | 55 | 16 | 15 | 24 | 27 | 18 | 16 | 36 |
| Montana | 7 | 10 | 12 | 14 | 27 | 18 | 11 | 27 |
| Nevada | 5 | 11 | 16 | 16 | 26 | 13 | 12 | 15 |
| New Mexico | 3 | 17 | 15 | 17 | 23 | 14 | 13 | 24 |
| Oregon | 31 | 49 | 56 | 58 | 60 | 49 | 32 | 57 |
| Pacific Islands Area | 9 | 18 | 26 | 16 | 17 | 13 | 16 | 20 |
| Utah | 2 | 15 | 25 | 23 | 25 | 16 | 16 | 23 |
| Washington | 11 | 26 | 27 | 17 | 36 | 31 | 20 | 41 |
| Wyoming | 2 | 11 | 20 | 14 | 12 | 25 | 35 | 27 |
| West Region | 38 | 60 | 63 | 85 | 77 | 88 | 13 | 69 |
| **Totals** | **136** | **284** | **349** | **358** | **420** | **364** | **235** | **426** |

# FY12 WNTSC Training Analysis

| NTSC Involvement | # of Training Sessions | # of Students |
|---|---|---|
| WNTSC designed and delivered | 93 | 2,583 |
| WNTSC supported NEDC course | 14 | 335 |
| WNTSC supported State/Partner training | 27 | 938 |
| **Total** | **134** | **3,856** |

| Training Method | # of Training Sessions | # of Students |
|---|---|---|
| Classroom/Field | 101 | 2,837 |
| Net-Conference | 33 | 1,019 |
| **Total** | **134** | **3,856** |

| Training Length | # of Training Sessions | # of Students |
|---|---|---|
| 1-3 Hours | 20 | 739 |
| 4-8 Hours | 26 | 821 |
| 2 Days | 27 | 664 |
| 3 Days | 18 | 576 |
| 4 Days | 33 | 825 |
| 5 Days | 10 | 231 |
| **Total** | **134** | **3,856** |

| Proficiency Level | # of Training Sessions | # of Students |
|---|---|---|
| Awareness | 53 | 1,443 |
| Understanding | 19 | 725 |
| Perform with Supervision | 31 | 849 |
| Apply Independently | 4 | 162 |
| Proficient/Train Others | 27 | 677 |
| **Total** | **134** | **3,856** |

| Subject | # of Training Sessions | # of Students |
|---|---|---|
| Agronomy | 21 | 419 |
| Air | 3 | 62 |
| Conservation Planning/FOTG | 21 | 711 |
| Economics & Social Sciences | 13 | 259 |
| Energy | 4 | 280 |
| Engineering-Construction | 4 | 128 |
| Engineering-Environment | 1 | 12 |
| Engineering-Irrigation | 7 | 182 |
| Environmental Compliance | 4 | 150 |
| Fish & Wildlife | 4 | 115 |
| Forestry | 3 | 37 |
| Geomorphology | 7 | 138 |
| Plant Materials | 1 | 30 |
| Range & Pasture | 13 | 691 |
| Soils | 14 | 298 |
| Water Quality | 14 | 344 |
| **Total** | **134** | **3,856** |

## WNTSC FY2012 Activities

The following information is the result of summary reports by members of the West National Technology Support Center (WNTSC) in which they discussed their key accomplishments in FY12 and what they see coming in the near future.

The WNTSC Core Team consists of seventeen specialists whose primary function is providing direct assistance to the Western States. Three National Technology Development Teams (Air Quality and Atmospheric Change, Energy, and Water Quality and Quantity) are also part of the WNTSC. Their staff may also provide direct assistance to States, however, their primary function is developing new technology and tools for the Agency as a whole.

Highlighting key discipline areas, the stories start with the Center's Core Team. Due to retirements, the team had vacancies for a portion of this fiscal year. As a result, fisheries biology is not addressed in this year's report. Following the activities of the Core Team, you will find reports from the Center's three Technology Development Teams.

If you are interested in more details on the activities mentioned here or other efforts of the WNTSC staff, feel free to contact them directly. For more information, please visit our website at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/wntsc

## Agronomy

2012 was a particularly active year for *Rick Fasching, Conservation Agronomist*. After the retirement of the National Wind Erosion Specialist, Rick was assigned collateral duties as the interim expert until a replacement was hired. The development of LMOD (Land Management Operations Database), coordinated efforts to make crop, operations, and management databases between the two erosion prediction tools Revised Universal Soil Loss Equation 2 (RUSLE2) and Wind Erosion Prediction System (WEPS) consistent, and delivering the updated databases for national use proved to be a lengthy process. Subsequently, all states have updated crop management zones (CMZ) files and implemented the latest WEPS database updates.

The year was peppered with several technical trainings and direct assistance to the West region. The most prevalent requests this year were nutrient management training including learning the MMP (Manure Management Planner) tool that assists in planning nutrient applications especially for animal feeding operations. Additionally, Rick assisted in presenting two webinars with nutrient management implications including the third Adaptive Nutrient Management webinar and a bio-security webinar with *Sally Bredeweg, Environmental Engineer*, WNTSC. Each webinar had between 150-200 participants.

With the release of the revised Nutrient Management 590 Practice Standard, Rick provided direct assistance to states in preparation for implementing the latest technology including the revision of the standard which included working with regulatory agencies in developing manure application guidelines, nutrient management specifications, and job sheets.

During a temperate week in May, Rick organized and delivered the NEDC Salinity Management Course for 31 participants from six states in Las Cruces, New Mexico. The training cadre for next fiscal year plans one or two sessions depending on the number of requests.

Rick provided 6 in-state training events pertaining to specific agronomic technology and technology transfer needs. The training sessions included classroom and in-the-field teaching methods.

At the request of Dr. Honeycutt, Deputy Chief for Science and Technology, Rick took on the leadership duties of the National Adaptive Nutrient Management Team in July. This team continues to be very active and several training opportunities are planned for FY 2013.

To close the fiscal year, Rick spent considerable time leading a team of agronomists in developing and refining national payment schedule cost-scenarios and completing QA review of regional scenarios.

*Giulio Ferruzzi, Conservation Agronomist,* devoted a considerable portion of his time to payment schedules, RUSLE, and training. In September 2011, Giulio provided refresher training to NRCS Oregon employees with current job approval authority for the Integrated Pest Management 595 Practice Standard. The relatively new policy and new national 595 standard was presented and discussed. Attendees were informed of impending changes to the state standard and introduced to a sample of jobsheets they would be using. Denise Troxell, Oregon State Agronomist, assisted the training by addressing state-specific concerns.

With Rick Fasching, Conservation Agronomist, Giulio provided a three day long RUSLE2 and WEPS training to NRCS Indiana employees. The training was held at the Indiana state office during February with approximately 20 staff members in attendance. The pair provided multiday "new agronomist training" to the newly hired Wyoming and California State Agronomists at the WNTSC in March and April, respectively. The state agronomists were trained in the many responsibilities of their new positions. They reviewed training on the tasks and tools (WEPS, RUSLE2, etc.) required to support and maintain their new roles. NRCS Wyoming received Module 7 of the "Pest Management Considerations in Conservation Planning" NEDC course in collaboration with Roger Stockton, State Agronomist. Rick delivered the Nutrient Management portion of the training.

Giulio provided direct assistance to all the Western region states with meeting the requirements of national bulletin 190-11-14 (RULSE2 Database Update Task) that required the review and update of every management record in the RUSLE2 database. Some state assistance was limited to just a final review of their process while many others required more training to identify what was necessary, assisting in implementing the changes and then reviewing the final submitted work. The bulletin asked each CMZ leader to check each record in their CMZ database for accuracy and to edit each record to include typical sprayer and fertilizer passes. More than 3,500 individual records were reviewed as part of this process.

Further state assistance included Giulio delivering a presentation on the proper use of WIN-PST at the California - Nevada Soil and Water Conservation Society meeting. The meeting was held in Pacific Grove, California and was opened by then State Conservationist, Ed Burton. In Washington, Giulio along with Rick Fasching, visited several fields in the Palouse and surrounding area with NRCS Washington employees, Conservation District employees and members of the Pacific Northwest DirectSeed Association (PNDSA) to evaluate the effects of some controversial tillage equipment being used. The PNDSA requested NRCS to consider and evaluate if the equipment meets the requirements outlined in the Residue and Tillage Management- No Till/Strip Till/ Direct Seed 329 Practice Standard.

Giulio dedicated considerable time to the national payment schedule scenario development and regional QA reviews. He collaborated with numerous national, regional and state level agronomists in the development of national payment schedule scenarios for several agronomy practices (386, 393, 601, 595, etc.). Upon completion of the development of the scenarios, efforts shifted to the review of the regional modifications that were posted by the different regions.

Giulio is serving as the national lead for water erosion. Giulio supported the RUSLE2 technology development by testing the newest versions and managing the multiple agreements between NRCS and ARS. Giulio attended numerous meetings, teleconferences and developed documentation in support of the Integrated Erosion Tool Development (EIT) and its LMOD database for the Conservation Delivery Streamlining Initiative (CDSI). Giulio coordinated with the CDSI's effort to develop a new EIT that incorporates the R2 and WEPS models while using a single database to source (LMOD) management information but maintaining all the functionality of the current tools.

## Organic Conservation

During FY12, organic assistance shifted from fewer in-person trainings to increased support related to the development of technical materials. Despite this trend, *Sarah Brown, Joint Organic Conservation Specialist,* delivered 17 training sessions addressing organic conservation in agricultural landscapes. These training sessions occurred in 9 States and ranged from 1-hour webinars to 2-day conservation planning on organic farm workshops. Sarah was invited to speak at a number of producer conferences including the Ecological Farming Conference, the Northeast Organic Farming Association Annual Summer Conference, and the National Small Farms Conference. Over 280 NRCS employees received in-depth organic training in FY12, as well as 200 additional partners or potential clients. In addition, approximately 1,100 NRCS staff and 600 external partners have attended webinars coordinated or presented by Sarah and the East NTSC. The combined total represents more than 2,100 people who

received direct training on NRCS organic conservation assistance and programs in the past fiscal year.

One of the most significant projects of the year for Sarah was working closely with NRCS Oregon and Oregon State University to develop guidance related to the implementation of the Nutrient Management 590 Practice Standard on organic farms. This project was the result of Oregon 590 job approval authority trainings earlier in the year. The job sheet places a greater emphasis on N-mineralization from organic matter (manure, cover crops, and compost) and provides additional guidance related to plant-available nitrogen of organic fertilizers. Numerous other states have expressed interest in adapting this document to their needs.

*NRCS employees in Idaho visit a geo-thermally heated high tunnel during an organic training in April.*

Due to the contribution agreement between Oregon Tilth and the WNTSC, USDA's Sustainable Agriculture Research and Education Program (SARE) has committed to support trainings and work on the development of organic technical documents. This support is in collaboration with NRCS in Oregon, Idaho, California, and Nevada where feedback was recently collected from over 100 NRCS planners to identify priority topic areas. Sarah will work closely with project partners (Northwest Coalition for Alternatives to Pesticides, National Center for Appropriate Technology - National Sustainable Agriculture Information Service, Extension, and NRCS) to select five topics for development. Preference seems to lean towards organic nutrient and pest management, conservation planning with transitional producers, beneficial insects on organic farms, and organic cover cropping. SARE will provide funding for twelve 2-day trainings on these topics during fiscal years 2013 and 2014.

This winter, Sarah will be taking maternity leave. Carrie Sendak was hired to substitute for Sarah during that time. Carrie's strong background in conservation and farming will ensure no interruption in providing technical assistance and deliverables. Aside from the SARE project, funding has been secured to provide a more in-depth review and support of organic payment schedules as well as the development of additional technical documents. Sarah and Carrie look forward to hearing from states regarding their priorities and how organic technical assistance might best be created and disseminated to the states.

## Rangeland Management

As in previous years, *Pat Shaver, Rangeland Management Specialist*, spent most of his time this year working on some aspect of Ecological Sites. Along with Homer Sanchez, Rangeland Management Specialist, National Grazing Lands Team, Pat developed, organized, and led a two day workshop at the annual Society for Range Management (SRM) Conference in Spokane, Washington. The workshop was primarily focused on uses of Ecological Site Descriptions (ESD) and featured presentations from NRCS, Bureau of Land Management, university, and private contractors discussing various ways ESD's are used in their work. Pat and Homer have organized a similar workshop to be presented at the Oklahoma City SRM Conference in February 2013.

Working with SRM, NRCS has developed a prototype ESD workshop and presented it at least twice in the each of the last 3 years. This year, the two workshops were held in Florida and Nevada. Pat presented at both workshops which were attended by a variety of individuals from several agencies and partner groups. Over 60 participants attended the workshop held in Winnemucca, Nevada in June. Participants included NRCS, Agriculture Research Service, BLM and US Forest Service employees, individuals from the Great Basin Initiative, University of Nevada at Reno, Oregon State University, and private contractors.

In April, Pat traveled to Mongolia for a Millennium Challenge Corporation project with ARS to help develop the framework for an ecological site system in that country. The Mongolians developed and are currently conducting a national level inventory similar to our National Resources Inventory. The ecological site frameworks will allow for better interpretation of the inventory and monitoring data they are collecting. Future plans include pilot studies to use ecological site descriptions and working with nomadic herders to develop grazing management plans with their livestock herds.

*Pat Shaver enjoying mutton soup with a Mongolian herder in his ger.*

Pat conducted a follow-up Prescribed Burning course in Colorado this spring. This course included an employee-conducted prescribed burn. This provided valuable training to NRCS employees to achieve and maintain their job approval authority in Prescribed Burning. Fire ecology, effects and behavior were major sections of the classroom training as well as planning considerations, including environmental conditions, smoke management and safety issues. In the field, safety and proper execution of the burn were stressed as all employees had the opportunity to participate in all phases of the prescribed burn.

Pat and *Marcus Miller, Wildlife Biologist*, completed a six month Sage Grouse Initiative (SGI) training program for 24 newly hired partner biologists and range cons. The SGI was designed to provide an integrated approach to conserving sage grouse and sustaining working ranches in the sagebrush biome. NRCS combined resources with 35 conservation partners to hire 24 biologists and range conservationists who were placed in key SGI areas to meet technical assistance needs. In January Tim Griffiths, Sage Grouse Initiative Coordinator, and Randy Gray of the Inter Mountain West Joint Venture requested the assistance of the WNTSC in training the new SGI hires. Pat and Marcus designed a curriculum that maximized the use of distance learning methods due to budget and time constraints. The curriculum started with ARS videos on techniques for conducting inventories and monitoring rangeland resources. Students also studied Indicators of Rangeland Health on the Bureau of Land Management's training web site. The training plan included interactive webinars concerning Water for Wildlife, The Use of Ecological Site Descriptions as Decision Support for Improving Sage Grouse Habitat, and Grazing Systems for Wildlife Habitat Improvement. An on-site training and field experience session in Pinedale, Wyoming, concluded the training.

Feedback from the states indicated that this hybrid training approach of a highly structured curriculum of self-study, interactive webinars, and a field/classroom training session was very successful.

Three Interpreting and Measuring Indicators of Rangeland Health workshops were held in Utah, Idaho and South Dakota this year with approximately 60 participants each in attendance. Pat was an instructor in all three of these workshops. Others included Jeff Printz, NRCS; Dave Pyke, US Geological Survey; Jeff Herrick, ARS; Fee Busby, Utah State University; Greg Riegel, USFS; and Mike Pellant, BLM. Attendees included employees from NRCS, BLM, USFS, USGS, US National Parks Service, Bureau of Indian Affairs, Great Basin Initiative, universities, tribal representatives, private consultants and landowners.

*Workshop participants at the Boise, ID 'Interpreting and Measuring Indicators of Rangeland Health' workshop, conducting a rangeland health assessement.*

*Gene Fults, Rangeland Management Specialist*, spent considerable time interacting with state game and fish departments, Federal agencies, universities, and other technical specialists to develop the monitoring plan, protocols, and reporting requirements for the Lesser Prairie Chicken Initiative. This resulted in 3 training sessions for the five states where the Prairie Chicken occurs and an interview on the AG News radio.

The on-site grazing land study National Resources Inventory (NRI) got Gene out in the field where he trained numerous NRCS personnel and contractors. The Handbook of Instructions was completely revised for clarity and precision. Gene was a co-author on two publications: Hierarchy Revisions Working Group (FGDC) Classification and Description of World Formation Types; and A Landscape Approach to Rangeland Conservation Practices. He also became

a member of the Grazing Resource Analysis System (GRAS) team which is part of the CDSI effort. Gene was also actively involved with the Quality Assurance phases of the National Scenario Payment Schedule effort.

## Economics

During FY12, *Hal Gordon, Economist,* spent much of his time working with the multi-state teams and the national core team on the challenging task of transitioning from "state" to "national" payment schedules. Leadership's goal of "consistency" in methodology, cost data and program payments is becoming closer to reality. A web-based tool is in development for next year which will make the existing payment schedule spreadsheet obsolete and improve efficiency, simplify quality assurance, and reduce workload. Hal has also developed the cost data and practice/activity payments for the national Conservation Stewardship Program (CSP) program and is developing additional material for the next CSP signup.

Hal was the lead instructor and national coordinator for the NEDC Economics of Conservation Planning Course. Hal was able to teach a half-dozen courses with assistance from state economists. Two of the students attending the economics course summed the course up best: "I enjoyed the practical exercise where we developed our own conservation plans and worked out the budget to implement those plans", and "I now know what farmers go through when determining whether to sign up for our programs or implement a certain conservation practice."

Mr. Gordon was also the national Conservation Practice Physical Effects (CPPE) coordinator and led the transition from the old to the new Resource Concerns in the CPPE, which is currently available for conservation planning activities and for financial assistance ranking programs beginning summer of 2013.

## Environmental Compliance

It was another busy year for *Meg Bishop, Ecologist and Environmental Compliance Specialist* at the WNTSC. Along with prioritizing direct assistance to the states and servicing the needs of National Headquarters, Meg provided formal and informal training sessions to states. Delivered in either a traditional classroom method or via a webinar, Meg's training and direct assistance focused on helping the field better integrate NRCS environmental compliance requirements with conservation planning activities.

Assistance and training activities addressed a variety of topics integral to NRCS activities, including:

- Civics and National Environmental Policy Act (NEPA) 101 targeted for all NRCS field employees to enhance their ability to fully integrate all compliance requirements into their planning/ contracting activities and to understand how NEPA crosswalks with the NRCS conservation planning process.
- Conducting a thorough Environmental Evaluation for NRCS proposed actions and providing appropriate documentation on the NRCS-CPA-52.
- Effective coordination with Federal, State, and Tribal entities when contemplating actions that cross jurisdictional boundaries and how to use partnerships to streamline the NEPA process.
- Development of a FAQ addressing the increasing number of questions regarding the 'adoption' of NEPA documents, the benefits of becoming a 'cooperating agency,' coordinating compliance requirements of State and Tribal entities.
- Ensuring adequate compliance for the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA) that benefit wildlife species nationwide.
- Preparation of defensible NEPA documents (EA and EIS) to provide appropriate levels of analysis and consider the interests of all stakeholders.
- The review and analysis of inter and intrastate infrastructure projects to ensure NRCS interests are met on easement properties.

While providing assistance to the field is a priority, Meg also provided support and assistance to NHQ on a variety of issues, leading the effort to update and revise the National CPA-52 to reflect policy changes and the newly revised resource concerns. She also provided assistance with preparing draft NEPA documents for the proposed changes to the Farm Bill, worked with CDSI to ensure adequate inclusion of compliance requirements, and is currently working to complete the revision to the NRCS NEDC course Areawide Planning.

## Wildlife Biology

For *Marcus Miller, Wildlife Biologist,* training and technology development for wildlife habitat was the focus for most of FY12. Three issues in particular dominated the year – developing and implementing a training curriculum for the sage grouse initiative

strategic action team (SGI SWAT), assisting with the development of materials for the southwestern willow flycatcher initiative (part of Working Lands for Wildlife) and integrating wildlife factors into Ecological Site Descriptions.

Marcus assisted NRCS state biologists from Arizona, California, Colorado, Nevada, New Mexico, and Utah and the US Fish and Wildlife to develop a biological assessment and opinion to implement the Working Lands for Wildlife Southwestern Willow Flycatcher Initiative. Additionally, the group developed a habitat evaluation guide for the flycatcher as a tool for assessing habitat quality and determining the existing condition of habitat and future casting scenarios to predict their efficacy in improving habitat for the flycatcher.

Marcus also worked with the Soil Quality and Ecosystems Team to incorporate wildlife concerns into Ecological Site Description Standards.

## Irrigation Engineering

Developing national scenarios for irrigation-related payment schedules was a priority for *Peter Robinson, Water Management Engineer*. When calculating the cost of irrigation pipeline based on the weight of pipe rather than the length became an option, Peter decided an Excel-based tool could help employees quickly make this calculation. He borrowed several ideas from states that already price irrigation pipe this way, and developed the "Pipe Weight Calculator" to save field level employees both time and aggravation. Conveniently, the Pipe Weight Calculator takes less than five minutes of training before one can begin calculating.

As usual, training was an important aspect of Peter's work in 2012. The hands-on Micro Irrigation class continues to be a popular request from the states. Due to an increase in installations of center pivot systems in California, Peter and *Clare Prestwich, Irrigation Engineer*, travelled to Davis in April to deliver formal classroom training for 15 participants from California, Arizona, Nevada, and Oregon.

## Civil Engineering

Support of the agency's payment schedule initiative was cited by *Kip Yasumiishi, Civil Engineer,* as a significant activity for FY12. Development of national payment scenarios, component lists, and quality assurance required a consistent investment of time throughout the fiscal year.

Direct assistance to West Region states in FY12 included design review and consultative assistance on stream related structures and bank protection jobs in Montana, Wyoming, and Oregon. Design and construction review assistance continues on the Devil's Lake flood control project in North Dakota. Devil's Lake is located in a closed basin and lake levels have risen more than 25 feet since 1993, flooding homes and businesses, roads and railways, and thousands of acres of farmland. During the past decade, the lake has expanded from 70 square miles to over 195 square miles.

Kip was requested to provide technical assistance on the Devil's Lake flood control project as part of an NRCS IEPR (Independent External Peer Review) to review the work being performed by the US Army Corps of Engineers. FY12 work included review of the $9 million Tolna Outlet structure completed in July 2012. The Tolna Outlet structure provides flood control for downstream communities along the Sheyenne River.

*Devil's Lake – Tolna Outlet - Construction March 2012*

*Devil's Lake Tolna Outlet - July 2012 Ribbon Cutting Cememony*

Yasumiishi continues to be involved with state and local university workshops on river restoration, surveying, and soil mechanics.

## Environmental Engineering

The animal waste systems funded through EQIP comprise a significant portion of NRCS contracts and technical assistance workload. During her first year as the WNTSC *Environmental Engineer, Sally Bredeweg* worked to transfer the skills necessary to design animal waste systems when requested by the WNTSC service area customers. She also works with the other specialists such as range management specialists, agronomists and others at the national technical centers to improve and streamline the planning and design tools available for animal waste systems.

In addition to providing engineering assistance to state staff, Sally is building a communication network with the environmental engineering contacts in the West. Networking between the states will facilitate the transfer of knowledge and improve the tools used by NRCS engineers. The opportunity to combine these resources and technical specialists makes NRCS uniquely qualified when it comes to animal waste system design.

Like many of her colleagues during FY12, Sally worked with staff across the country developing the 2013 national scenarios for program payments related to environmental engineering. The goal was to ensure an adequate variety of scenarios were available along with the cost components to support the practice as applied nationally. As this process was concluding, regional team members expressed their appreciation for the payment scenario data that was developed. The range of national scenario situations described and cost data prepared provided regional teams with rapidly adoptable alternatives.

## Plant Materials

*Jim Briggs, Plant Materials Specialist,* worked with plant materials program staff throughout the region including Arizona, California, Montana, New Mexico, Oregon , and Washington. In addition to providing support by telephone and e-mail, Jim provided on-site technical support and individual training to Plant Materials Center staff. Additionally, Jim provided information to field office employees on riparian planting techniques as part of the Fluvial Geomorphology Workshop held in Ennis, Montana.

Jim was also involved in coordinating and summarizing regional results of several multi-PMC plant trials that are reviewing new technology or testing existing technology to allow field office staff to make better recommendations to NRCS customers. California, Washington and 4 other PMCs are part of a national trial to evaluate and document the effect of mixed species cover crops on soil health. NRCS Soil Survey Research Laboratory in Lincoln, Nebraska and Dr. Richard Haney with ARS in Temple, Texas are collaborating on the trial. Independent of the national cover crop study, plant materials staff in Arizona, Oregon and Montana has similar studies underway.

The Plant Materials Centers in Idaho, Colorado, and Nevada are comparing recent and potential releases of bottlebrush squirreltail (Elymus elymoides), a grass used in reclamation work throughout the Great Basin region. Results so far indicate that on drier sites (8-10 inches annual precipitation), represented by the Aberdeen Plant Materials Center in Aberdeen, Idaho, Wapiti Germplasm would be the preferred choice. On wetter sites, Fish Creek Germplasm and Toe Jam Germplasm would be wise choices. The Idaho PMC staff has completed their evaluations and Colorado and Nevada will continue their trials for another 2 years with the resulting analysis refining recommended areas of use of the several released lines.

The Plant Materials Centers in Arizona, California, New Mexico, and Texas are comparing alkali sacaton (Sprorobolus airoides) releases to determine relative performance in different environments. This highly saline tolerant grass used in revegetation projects, is in its final year of evaluations. A final report is expected within the next 6 months.

## Forestry

*Craig Ziegler, Forester,* found 2012 to be another busy year assisting states with ecological site descriptions (ESD). He assisted many state ESD field specialists with the development of forest ecological site descriptions in previously mapped soil surveys and in new survey projects. In the state of Washington, Craig provided training to ESD staff, soil scientists and the state forester on ecological site definition, content of a forest ESD, how to develop a state and transition model (STM), and identifying plant communities. In a follow-up visit later in the year, time was spent in the field, going through data collection methods and forms, collecting data at identified sites and interpreting data.

In Oregon, Craig assisted Misty Seaboldt, State

Forester, with identifying ecological sites in the Cascade mountain range, on the western and eastern sides. On the west side, as part of the Willamette National Forest soil survey, Ziegler and Seaboldt conducted vegetation transects at the lowest elevations of the project area, identified ecological sites, potential number of plant communities and developed a draft STM. On the east side, while working with the Northern Klamath county soil survey project leader, transects were completed over a large area to determine how many ecological sites were in need of being developed.

*This Old growth-stand of Douglas-fir, with younger shade tolerant western hemlock, shows the makeup of a reference plant community.*

*In easern Oregon Old growth Ponderosa pine stands, are being invaded by shade tolerant trees. Left alone, these forests will move from the historic state to another state.*

Craig also provided forestry planning assistance during the year. A highlight was providing assistance to the Pacific Islands Area and Michael Constantinides, Forester for the PIA. Craig provided windbreak evaluation assistance, evaluated design widths and species planted on the island of Oahu. Craig and Michael worked on planning and design criteria for a new windbreak to protect an organic goat dairy. They also traveled to Guam, providing assistance on forest restoration issues and conservation planning.

## Soils

*Steve Campbell, Soil Scientist,* provided a wide variety of assistance to the West Region States in FY 2012. Assistance was provided to Washington State in the development of a nitrate leaching potential soil interpretations in the National Soil Information System (NASIS) for both irrigated and nonirrigated conditions. Climate and soil properties are used to rate soil map unit components for inherent nitrate leaching potential. These interpretations are now available for Washington soil survey areas on Web Soil Survey.

Campbell assisted Colorado in the development of a NASIS selenium leaching potential interpretation. A draft interpretation is currently being tested. Selenium is a surface water quality concern in many areas with irrigated cropland in the arid and semi-arid West, especially in areas with Cretaceous marine sedimentary bedrock.

Campbell assisted Hawaii in the development of criteria for the land capability classification system. This system is designed to group soils primarily on the crops and pasture plants without deteriorating over a long period of time. He created a NASIS report that calculates land capability classes and subclasses for soil mapunit components, based on Hawaii criteria.

Campbell is assisting California in the development of an interpretation to rate soils for the potential to produce PM-10 dust emissions from off-road vehicles. This is a joint project with the NRCS California Soil Staff, Bureau of Land Management, and University of California, Davis.

He conducted training sessions for participants in California, Colorado, Idaho, Montana, Oregon, Nevada, Utah, and Washington on using NASIS, the Soil Data Viewer ArcMap tool, soil survey Access databases, and Web Soil Survey to obtain and use soil survey information.

Campbell conducted a 3-day training session in California on using soil survey tabular and spatial data in combination with other spatial data to help develop and correlate ecological sites. Participants included rangeland management specialists, ecologists, and soil scientists involved with ecological site development in California.

He made presentations on using Web Soil Survey to provide information for restoration projects at a “Restoration of Sagebrush Ecosystems” course in

Arizona, and on a webinar for members of the Sage Grouse Initiative team.

Campbell assisted the Alaska NRCS soils staff in the modification of a number of national soil interpretations related to urban development, to account for some of the unique properties of Alaska soils. He has begun assisting Alaska in the development of a permafrost sensitivity soil interpretation designed to rate soils on the risk of permafrost thawing as a result of climate change.

## Pollinators

*Mace Vaughan, Entomologist*, Xerces Society Pollinator Conservation Program continues to provide leadership for advancing the pollinator and beneficial insect conservation goals of NRCS. Over the 2012 fiscal year, with support from the WNTSC and funds leveraged from non-NRCS sources, Vaughan and his colleagues at Xerces provided NRCS and partner agencies with dozens of presentations and pollinator conservation planning short courses across the country. The team of specialists Mace manages addresses technical questions from the field and states, works on pollinator habitat demonstration projects and field trials with Plant Materials Centers and farmers, and continues to help raise awareness among farmers about how NRCS can support pollinator conservation efforts.

Over the past year, training initiatives have shifted their focus. Previously, the cooperative partnership between Xerces and NRCS focused on raising awareness of pollinator conservation issues, now the focus is on implementation. One highlight from the past year was an August webinar with over 300 participants who were taught detailed information on establishing diverse wildflower meadows and hedgerows for pollinators. With increasing grower interest in pollinator habitat creation, these trainings are more important than ever.

*Mace Vaughan teaching cranberry growers how to establish wildflower meadows for pollinators. August 2012. Photo by Anne Averille, University of Massachusetts.*

To further support implementation of pollinator habitat projects, Xerces has been working hard to finalize Conservation Cover and Hedgerow Installation Guides for multiple regions of the country. The guides are based upon 3-year Conservation Innovation Grant (CIG) testing pollinator habitat installation strategies, and represent the latest findings on how to successfully establish wildflower-rich habitat using NRCS practices.

Forthcoming efforts to the USDA National Organic Program will better enforce the natural resources requirements of the Organic Rule. One major component of this renewed attention on natural resources is a focus on biodiversity and wildlife. Organic growers view the installation and protection of pollinator and beneficial insect habitat as a way to meet this requirement of certification. Organic farms are taking a leading role in asking for tools and technical support for creating pollinator habitat.

*Field training at demonstration pollinator habitat planting at the Lockeford NRCS Plant Materials Center. This habitat project is a collaboration of the Lockeford NRCS PMC, the Xerces Society, and the University of California, Davis. Photo by Jim Cairns, California NRCS.*

*Former California NRCS State Conservationist Ed Burton looking very pleased about the pollinator habitat meadow at the Lockeford PMC. Photo by Jessa Guisse, Xerces Society.*

*Core Team continued*

While pollinator habitat creation is on the rise, so are concerns about risks posed to pollinators and other beneficial insects from pesticide use. Over the past fiscal year, Mace continued to work with Giulio Ferruzzi, Conservation Agronomist at the WNTSC, and the WIN-PST team on a pollinator pesticide risk mitigation technical note. This tool will help conservation planners, landowners, and IPM professionals to work together to develop integrated pest management plans that effectively maximize crop protection while also reducing pesticide harm to pollinators. A technical note on this subject is in final stages of production.

Complementing this effort, Xerces is also finalizing a new technical note on Conservation Biological Control, which is an approach to pest management that focuses on conserving habitat for native insects that prey upon crop pests. The technical note will provide a comprehensive overview of the common beneficial insects found on farms, information on the pests they control, and strategies for increasing their populations using NRCS practices such as cover cropping, herbaceous wind barriers, contour stripcropping, and more. The information presented in the technical note is, in part, the result of a CIG project Xerces conducted with scientists at the University of California, Berkeley to evaluate the pest control value of native plant habitat on farms. Specific findings from that project will be included in the document, and it is hoped that this addition to the conservation planning toolbox will provide producers with an additional way to reduce pesticide use.

# NATIONAL TECHNOLOGY DEVELOPMENT TEAM ACTIVITIES

## Air Quality and Atmospheric Change

*Agricultural Air Quality Conservation: Work with EPA*

The NRCS Air Quality and Atmospheric Change Team and the EPA Office of Air Quality Planning and Standards completed the "Agricultural Air Quality Conservation Measures: Reference Guide for Cropping Systems and General Land Management". The authors designed the Guide to aid NRCS planners, and others, identify and recommend actions to farmers to help them manage air emissions. The authors caution against using the Guide to identify agricultural sources of harmful emissions, and state that the document is not a comprehensive assessment of agricultural air quality technologies and methodologies.

NRCS Chief Dave White and EPA Assistant Deputy Administrator Janet McCabe plan to release the Guide at the November meeting of the Agricultural Air Quality Task Force in College Station, Texas. Once released, NRCS will make the Guide available at the NRCS Air Quality website. Development of a similar document for livestock operations is planned.

*New Particulate Matter Emissions Management Practice Released*

The AQAC team worked with Norm Widman, National Agronomist, to develop a new, interim conservation practice standard "Field Operations Emissions Reduction" (Code 756), to be used when planners identify PM emissions as a resource concern on cropland. To implement the practice, landowners will modify field operations and adopt technologies that reduce PM emissions associated with crop production. The authors expect the practice to be particularly useful in situations where residue requirements for practices 329 (no-till) and 345 (mulch till) cannot be met.

The Field Operations Emissions Reduction Practice will assist landowners modify the timing and/or the method of field operations, and adopt technology such as combined tillage operations, and precision guidance systems. The practice is supported by recently completed research that identified and quantified PM emissions associated with crop production field operations and the expected emission reductions associated with the adoption of certain technologies.

This new practice has been approved for use in California in FY13. Other states can ask for approval to utilize it following procedures in GM 450-401.17. Payment schedules, including appropriate cost components, as well as technical specifications for specific technologies are being developed by the AQAC team and specialists in California.

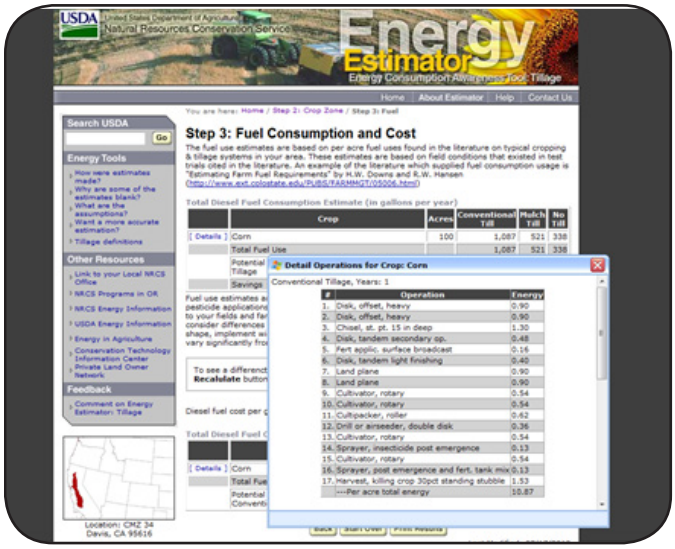
## Energy

Energy conservation is gradually "coming of age" in NRCS. The demand for financial assistance under the FY12 On-Farm Energy Initiative was far greater than the funds available. In the West, more than 1,460 energy-related practices were completed or planned. The West Region states established an Energy Consortium to share information and coordinate activities. Two new national energy conservation practice standards were issued. The web-based "3-click" energy estimator tools were updated and moved from a server in Fort Collins to one in St. Louis. Six training webinars on practice standards used in the On-Farm Energy Initiative were held and their recordings placed in the Science and Technology Training Library. The team drafted a technical note on Energy Use Indices (EUI) and the Energy Consortium provided a preliminary review. A second draft will be issued to a wider audience for review and the final technical note should be issued in early CY 2013.

Washington State developed a Cropland Energy Estimation Tool (CEET) to support conducting energy audits (Landscape AgEMP's). The team worked with several States to evaluate this tool for nationwide use. With a few minor modifications and additional training this tool has the potential to assist both TSP's and NRCS address energy in conservation plans. Plans are also underway to develop an energy planning tool for the CDSI Conservation Desktop and we think the CEET could provide the foundation for this tool.

A primary concern with energy conservation has been training for field office and technical personnel. The team created a training matrix to identify and allow easy access to previous webinars and other tools currently available to support individual energy conservation practices. This matrix is housed on the

Energy SharePoint site, https://nrcs.sc.egov.usda.gov/st/wntsc/energy/default.aspx. The next step is to focus on a course that would give conservation engineers and energy specialists the knowledge and skills to review and critique Agricultural Energy Management Plans (AgEMP's), administer job approval authority for projects implemented under Farmstead Energy Improvement (374), and train other NRCS employees in their respective States. A detailed proposal for this training has been developed and approved pending funding availability.




*Energy Consumption Awareness Tool*

Clearly there is still much work to accomplish before energy conservation is fully integrated into NRCS planning and programs but progress is being made.

## Water Quality And Quantity

Water quality and quantity continue to be primary resource concerns that land owners across the country address on a daily basis. In order to support these producers and the working lands they steward, the Water Quality and Quantity Team (WQQT) focus on four major areas:

- Water Quality and Quantity Technology Development
- Water Quality and Quantity Training
- Assisting State NRCS Offices in direct project accomplishments
- Water Quality and Quantity Leadership

The major Technology Development challenges and opportunities we faced in FY12 consisted of ensuring current Water Quality and Quantity software transitioned successfully into the new Conservation Desktop Streamlining Initiative (CDSI) framework. Three WQQT staff members detailed for significant portions of the year to the CDSI Staff to ensure that the Pest Management and Nutrient Management software and planning processes would transition to CDSI seamlessly. Concurrently, WQQT staff prepared the remainder of the Water Quality and Quantity applications for the transition while maintaining and keeping them bug free. The WQQT team manages over 50 national software programs. One of the new technology tools developed this year was the Water Quality Index for Agricultural Runoff. It is a qualitative tool that may be used in conjunction or independently with more rigorous tools to characterize water quality effects from a multivariate standpoint.

*Water Quality and Quantity Staff help deliver the National Water Quality Assessment Course*

The WQQT team led and assisted with over 45 national and regional training sessions this year with the irrigation and water management staff hosting 15 of them. WQQT team members were active on National Employee Development Center, professional society and state office requested training cadres. In light of diminishing training budgets, the Video Teleconference or VTC medium was used as a way to deliver more technical training.

Water Quality and Quantity Team members participated in a substantial number of direct assistance projects across the country in FY12. Stream restoration and natural channel design continue to be in high demand as states tackle complex riparian and aquatic system conservation. The WQQT team also engaged in dam inspection and design analysis for agricultural impoundments.

The WQQT engaged in many of the National Initiatives including the National Water Quality, Mississippi River Basin, as well as the Chesapeake

Bay, Great Lakes, and Gulf Coast Initiatives. Water quality and quantity plays a pivotal role in almost every conservation plan or system NRCS delivers. The WQQT is often involved in many stages of the initiative process. Additionally, external conservation organizations look to NRCS and the WQQT as a source of expertise and technology as these partners independently work for conservation. In fiscal year 2012, the Field To Market group adopted the Water Quality Index for Agricultural Runoff as the water quality component to their Fieldprint Calculator.