WRP Celebrates 15 Years Service with State Partnership

Message from the WRP Director, Terry Albrecht

The idea of engaging the talents of retired engineers and scientists to help businesses and organizations improve their environmental performance is unique. Only a few such “retired engineers” programs exist throughout the country. The 2015-16 fiscal years marks a 15-year partnership between the Land of Sky Regional Council and the state’s Department of Environmental Quality to shepherd an initiative that serves so many organizations across the state.

The Waste Reduction Partners program has assisted 2,480 organizations in North Carolina since the inception of the partnership in 2000. The success and longevity of the program is premised on the theory that organizations have smart operations, operate efficiently and practice pollution prevention will, in fact, improve their environmental performance while reducing costs and increasing economic competitiveness. For many organizations, this environmental protection approach has long since evolved into holistic environmental sustainability efforts that are key in larger corporate responsibility values.

With all this environmental focus, many organizations still need advice on how to put their sustainability goals into practice. Sage business advisors of the WRP program help organizations identify and understand these efficiency and waste reduction strategies. WRP engineers and scientists share their expertise in the pursuit of cost-effective strategies that meet the client’s goals, like cutting utility costs, zero waste to landfill, water conservation, resource efficiency through product design, lean production processes, or cutting carbon emissions.

Through our partnership support of a state pollution prevention mission, WRP staff and retired professionals are pleased to be of service to your organization. A special thanks to this remarkable team that assist manufacturers to farms to institutions – helping to pursue cost-effective environmental sustainability objectives.

On-site consultations identify improvements

WRP engineers review a variety of environmental improvement strategies to help manufacturers achieve sustainability objectives.

WRP Tours McGill Composting

Team members of WRP and staff from NCDEACS visit McGill’s industrial composting facility in New Hill on May 4.
Energy Efficiency Drives Action

A highly active energy assessment team delivered energy efficiency assessments and management guidance to 76 businesses and organizations across the state last year. WRP engineers identified hundreds of energy conservation measures for these clients, documenting each in a detailed report with a cost/benefit analysis. WRP estimates that these clients will implement measures to save $745,000 per year in energy utility costs, reduce energy use by 52,772 million Btu, and cut related carbon emissions by 27,021 metric tons.

Waste Reduction Partners engineer, Adrian Boutwell, provided a comprehensive energy efficiency assessment for the Brevard Music Center this year. The objective of the assessment was to determine a cost/benefit analysis of energy efficiency and renewable opportunities on the center’s large campus to help prioritize facility investments, short term and long term. The report presented strategies to reduce and offset over 40 percent of the center’s energy use.

Engineers advise on continual improvement at Cardinal Container

WRP engineers, Eric Soderberg and Marshall Goers, provided a detailed energy efficiency assessment at Cardinal Container’s multi-building industrial site in Lexington, NC. The assessment addressed efficiency improvements to facility lighting, HVAC, compressed air, chiller and steam systems. Even with Cardinal’s aggressive continual improvement programs with facilities, WRP engineers identified additional energy-saving strategies that could yield over $90,000 in annual operational utility cost savings. The developed energy use benchmarks will be used to gauge energy use performance over time.

Interested in an energy assessment? Contact Russ Jordan, WRP Energy Manager, at rjordan@wrpnc.org.
The Blue Star Hospitality group requested a water and energy assessment of its Clarion Inn in South Asheville. WRP team members, Barry Hanak, Tom Kimmel and Terry Albrecht, helped the Blue Star management team identify utility cost-saving strategies which would reduce energy use, increase recycling, cut water use and explore alternative fuel vehicles. Last year, the Clarion Inn installed a rooftop solar hot water system. The WRP assessment helped define another phase of upgrades and operational practices to advance Blue Star’s vision of being one of the most sustainable hotels in the region.

Clarion Inn, Sustainability Flagship

The Blue Star Hospitality group requested a water and energy assessment of its Clarion Inn in South Asheville. WRP team members, Barry Hanak, Tom Kimmel and Terry Albrecht, helped the Blue Star management team identify utility cost-saving strategies which would reduce energy use, increase recycling, cut water use and explore alternative fuel vehicles. Last year, the Clarion Inn installed a rooftop solar hot water system. The WRP assessment helped define another phase of upgrades and operational practices to advance Blue Star’s vision of being one of the most sustainable hotels in the region.

Water Efficiency Promotes Resource Stewardship

City of Asheville and WRP celebrate ten years of making customers more water efficient

In 2006, the City of Asheville Water Resources Department implemented a program of water assessments for their high-use, non-residential customers with the goal of reducing the amount of water used. Waste Reduction Partners was selected to handle these audits and ten years later is still making recommendations that reduce customer water bills. In the past year alone, these audits saved customers 15,339,492 gallons of water eliminating $72,235 in costs. One of the bonus areas for taxpayers are the benefits derived from the work done annually with the Buncombe County School System. Several schools are reviewed each year and the recommendations save thousands of dollars in avoided water and sewer costs. Elaine Marten is the WRP team leader for the county school system, assessments were done for industrial plants, retirement facilities, a mobile home park, and a hotel.

Town of Cary initiates a pilot program of the EPA’s H2O Hotel Challenge Program

The Town of Cary, which has a national reputation of being on the cutting edge of water conservation efforts, used an EPA self-assessment water-use program for hotels and took it a step further by having Waste Reduction Partners do the assessment work. Three Cary hotels were in the pilot program that assessors Dale Denny and Paul T. Bartlett tackled. The reason the EPA created a self-assessment program is because hotels are heavy water users, having so many plumbing fixtures and laundry demands. The three pilot program hotels together will save 3,466,245 gallons of water a year. In addition, the hotels will avoid $80,936 in water and sewer costs a year. The money spent on upgrade costs will be recovered in three years and four months.

WRP gears up for Triangle business assessments

This fall, the WRP Piedmont team will be preparing to conduct water efficiency assessments with the City of Durham’s large water users. Demand-side management programs with businesses and institutions yield valuable water conservation results for water suppliers, but few water departments have the expertise to advise these complex commercial and industrial customers about how to enhance their efforts. Building on lessons learned in Asheville and Cary, WRP engineers hope to help by not only conducting on-site water efficiency assessments but also help build water supplier staff capacity across the region working with these non-residential customers on efficiency strategies.

Interested in a water assessment? Contact Tom Kimmel, WRP Water Manager, at tkimmell@wrpnc.org.
Solid Waste Efforts Boost Recycling

The WRP solid waste team worked with 75 clients during the year which included a wide range of NC manufacturers, retail, food services, local governments, schools, farms and nurseries. The on-site assistance resulted in the diversion of more than 9,421 tons from landfills. The value to these customers, including disposal management savings and material revenues, is estimated at $556,000 for the year. With funding support by the USDA, NC Division of Environmental Assistance and Customer Service and the Tobacco Trust Fund Commission, these waste reduction consultation services are provided at no cost to these NC customers. A few highlighted projects follow.

Atlantic Orchid and Garden Center, Raleigh

WRP assessor team, Dick Sloane and Bev Fermor, visited Atlantic Orchid and Garden Center in August to advise them on solid waste reduction. WRP volunteers made the Garden Center aware of the opportunity to return their old pots and flats to Plantworks Nursery in Rougemont for recycling, when they buy their next plants from Plantworks. During the visit, they also expressed a concern about an erosion problem from site runoff. Dick Sloane provided a report of options for solid waste reduction, referred them to WRP Assessor, Bob Brown, for a report of potential solutions for their storm-water runoff, and also presented a backyard composting class for the Garden Center’s customers that was very well received.

Delhaize (Food Lion), Dunn

WRP Solid Waste Manager, Jan Foster, was invited by the Delhaize Sustainability Manager to tour their one million square foot distribution center in Dunn in March and provide recommendations. This facility is already diverting close to 80% of their waste stream, but WRP provided a written report with a strategy for diverting an additional 10%, which would save approximately $7,200 per year in disposal costs.

Champion Home Builders, Lillington

WRP Assessor, Dick Sloane, provided technical assistance to Champion Home Builders to compost 17 tons per year of scrap sheetrock.

Highland Brewing Company, Asheville

Highland Brewery is a founding brewery in the Asheville region with high growth and high commitment to sustainability. In 2016, Highland staff asked WRP for assistance with a “dumpster dive” analysis in order to evaluate their current waste reduction program and look for enhancements. WRP assessor team, Marshall Goers and Jan Foster, organized the dumpster dive which was held in May, sorted through the dumpster components with two brewery employees and analyzed options for enhancing their program.

Walker Woodworking, Shelby

WRP Assessor, Jack Noor, visited Walker Woodworking in November 2015 to evaluate options for recycling their wood waste instead of sending it to the landfill. Jack researched options, evaluated the costs of those options and provided an assessment report which identified a local wood waste recycler that could divert 79 tons per year and save at least $1,000 annually.

Interested in a solid waste assessment? Contact Jan Foster, WRP Solid Waste Manager, atjfoster@wrpnc.org.
Lean and Green Prompts Results

This year, WRP concluded an innovative project funded by the USEPA titled, “Lean & Green: Pass it On” which delivered nearly $1 million in value for the participating clients. The work is premised on overlaying pollution prevention analyses on top of production leaning methods, such as value stream mapping. Under the leadership of WRP Technical Manager, Conrad Meyer, WRP teams worked with clients to provide custom one- and two-day workshops to address a diversity of production efficiency and waste reduction goals at manufacturers.

When environmental impacts are incorporated in leaning continual improvement exercises, new opportunities readily flow from the participating staff. WRP worked with seven manufacturers during this initiative and utilized a variety of process analysis techniques including current and future state value stream mapping, spaghetti line diagraming, and material balance analysis. The WRP facilitators documented and prioritized the cost benefits of the opportunities. Clients were provided all training materials to carry on these lean and green events on other production processes at their plants. The effort resulted in a 1,200 ton reduction in carbon emissions and more than 540 tons in solid waste reduction. Participating WRP Team members included Conrad Meyer, Marshall Goers, Terry Albrecht, Dale Denny, Jan Foster, Ernie Swanson, and Eric Soderberg.

Fiscals and Client Profile

2016 WRP Budget:

$219,094

Waste Reduction Partners provided 8,832 hours of technical assistance across North Carolina communities in fiscal year 2015-2016.
Agricultural Plastics Recycling

In an April 2016 GreenBiz article, staff writer Elizabeth Grossman posed the question, “How can agriculture solve its $5.87 billion plastic problem?” With farmers increasing reliance on plastic materials and plasticulture farming techniques, a team of NC recycling stakeholders is expanding recycling options for growers across the state. With support of the NC Tobacco Trust Fund Commission, Waste Reduction Partners launched a comprehensive recycling outreach effort to make growers aware of cost-effective recycling options. Much progress is being made, but challenges still remain such as reducing contaminants, establishing collection sites, sorting of plastic types, and market conditions.

**What’s next? Addressing the challenges of recycling dirty mulch films**

A key objective of next year’s activities will focus on identifying solutions to recycle more difficult plastics such as mulch “ground” films. In partnership with Cooperative Extension Agents and growers, WRP hopes to develop and pilot better processes for retrieving the films from the ground with less vegetation and dirt. Recycling enterprises also are striving to install systems that can better clean these agriculture plastics for reprocessing. Outreach to promote recycling options, collection sites, best handling methods and awareness will continue as the cornerstones of the NC Agriculture Plastics Recycling Project.

Project partners include: NC Division of Environmental Assistance and Customer Service, NC Department of Agriculture, NC Nursery and Landscape Association, NC Tobacco Trust Fund Commission and Waste Reduction Partners.

**Plastic Pot Collection Sites**

WRP led the effort to open two agricultural plastics collection sites at the Piedmont Triad and State Farmers Markets in Raleigh.

**Mulch Ground Films – The Next Challenge**

Bev Fermor, Ag Plastics Program Manager, hopes to focus on recycling strategies for recycling mulch ground films (shown above) in 2017 and beyond.

**TTFC Supports Recycling**

Much of the work of the NC Agriculture Recycling Project would not have been possible without the support of the NC Tobacco Trust Fund Commission.

**Summary of the recent accomplishments by the NC Agricultural Plastics Recycling Project**

**Outreach**

- Developed recycling website [www.ncagplastics.org](http://www.ncagplastics.org) with 5,400 users.
- Created resources on recycling markets, material handling, and case studies.
- Assisted over 100 farms and nurseries.
- Impacted over 4,000 acres of farmland.
- Worked with over 40 recyclers.
- Attended trade shows to meet with growers and farmers.
- Produced flyers, rack cards, written articles.
- Presented at conferences.

**Instructional Videos Produced**

- Hoop House Film Recycling Hefner’s Nursery, Conover, NC.
- Pots and Flats Recycling, Pender Nursery, Gardner, NC.

**Value to Grower and Recycling Impacts**

- Tracked >2,900 tons of agricultural plastics recycled in NC.
- Saved growers > $125,000 in landfill tipping fees.
- Growers received > $345,000 payment from recyclers for their plastics.
WRP Launches New Website

Under the leadership of Dee Hanak, WRP Office Manager, WRP launched a brand new and improved website on a Joomla platform. The new, more user-friendly site includes dropdown menus, modular construction and is completely compatible on any mobile device. Users can find a detailed explanation of WRP on-site services, downloadable guidance documents, team member bios and all the latest news about the program, making donations or volunteering. Requesting assistance is easier than ever using the “Initiate a Project” link.

USI Teams with WRP: It’s All About Public Service

By the end of the 2015 fiscal year, the state’s Utility Savings Initiative (USI) had helped state facilities attain a monumental milestone of achieving a 32 percent reduction in energy use intensity from a 2003 baseline year. This 13-year effort has documented over $1 billion in avoided utility costs at state buildings due to the initiative! The work to maintain and expand these achievements is ever challenging. Waste Reduction Partners is proud to have played a technical support role for the USI program over these years.

In FY 2013, the USI team was merged under the same division and section at the Department of Environmental Quality that oversees Waste Reduction Partners, providing the opportunity for even more synergy in serving the public sector. USI-WRP collaboration in FY2015-16 yielded some excellent results. With a small contract to the Land of Sky Regional Council, the WRP engineers addressed referrals of organizations that needed detailed energy assessments, assisted in pilot projects, and performance contracting project reviews referred by the USI team. Under this cooperative agreement, WRP provided on-site energy efficiency assistance for nine organizations. WRP engineers identified energy efficiency and renewable opportunities at nine organizations which could save more than $242,000 in annual operation expenses for these organizations. The synergy of engaging the WRP team for more in-depth assistance when needed has been extremely valuable to the DEQ outreach mission. Highlights of USI/WRP specialty projects follow.

UNC-Wilmington seeks to optimize building controls

Steve Sharpe, Energy Manager for UNC-W, requested the assistance of Phil Korest, WRP Engineer, to review building controls for improving efficiency on a pilot set of buildings on the UNC-W campus. Many large campuses have a central Building Automation System (BAS) that allows facilities to control and monitor performance of all the campus facilities from one location. BAS are large and complex software and hardware systems with capabilities to support a huge array of equipment and equipment configurations. In conjunction with the UNC-W Energy Manager, four buildings were selected for a controls review. BAS scheduling, control and trend data was collected and analyzed to identify potential new energy conservation measures. Twelve ECM’s in controls improvement were identified for UNC-W. Six of these were quantified showing the potential of cutting energy use by 1,010 MMBtu and saving $4,400 per year for the pilot facilities.

Verification of controls tune-up project with NCCU

The state’s Utility Saving Initiative team has been supporting tune-up programs for building controls systems to save energy and cut cost. WRP engineer, Bob Gilbreath, helped validate the performance of one pilot controls tune-up project with North Carolina Central University in Durham. Mr. Gilbreath performed a Measurement and Verification review to estimate energy and cost savings for the pilot completed in 2015. The achieved annual cost saving estimated was $14,452 per year and HVAC tune-up cost was $25,000 for the two buildings in the project. The simple payback for the project cost was verified at 21 months. The WRP report adds to the body of evidence that control tune-up programs are one of the most cost-effective investments in supporting energy efficiency.
On the Horizon, 2017 Services

The Waste Reduction Partners team of engineers and scientists will continue offering no-cost assessments in energy efficiency, waste reduction and water conservation into 2017. The on-site technical assistance will be available for any NC business or institution pursuing sustainability goals.

There is a great opportunity for rural small businesses and farms to take advantage of energy projects and granting fund through the U.S. Department of Agriculture’s energy programs. Through the USDA Rural Energy for America program, grants are available for up to 25 percent of the project cost for eligible rural businesses. WRP provides the energy assessment component of the application.

The WRP team can help any organization with waste reduction programs and zero waste to landfill goals. Staff will review current waste reduction and recycling programs and offer strategies for continual improvement, recycling options and/or full-service companies. Assistance with agricultural plastics recycling will continue as a major focus in 2017.

In the water efficiency arena, WRP will be launching a new technical outreach effort with City of Durham’s large water customers and hopefully other municipalities. In 2017, WRP will be begin a new project with Cherokee businesses to promote green practices, greenhouse gas reduction and utility cost-saving opportunities. Several pending projects remain on the horizon for approval to offer even more one-on-one assistance by the Waste Reduction Partners team, so stay tuned.

For information regarding WRP services, contact Terry Albrecht at 828-251-7475.

WRP Volunteers and Staff

Soud Al-Mishwit, Ph.D.  
Paul Bartlett, PE  
Bill Birdsong  
Tom Black  
Adrian Boutwell  
Barry Bowden  
Bob Brown  
Andrew Courts  
Kent Davis  
Dale Denny, Ph.D.  
Chris Dobbins  
Bill Farrell, PE  
Beverley Fermor, Ph.D.+  
Martin Ferris, PE  
Mary Fling, Ph.D.  
Jan Foster*+  
Bob Gilbreath, PE  
Al Glatz, Ph.D.  
Betsy Godsey, Ph.D.  
Marshall Goers, PE +  
Jose Gonzalez, III  
Barry Hanak  
Russ Jordan*+  
Tom Kimmel  
Dan Kincaid  
Phil Korest, PE  
Richard Krulikas  

Don Levitt  
Dave Lowles  
John Manuel  
Elaine Marten, Ph.D.  
Paul McConocha  
Niall McCormack  
George McRae  
Conrad Meyer+  
Arami Moore  
Jack Noor  
John Rees  
Joe Riddle  
Richard Sloane+  
Eric Soderberg  
Ernie Swanson  
George Tregay, Ph.D.  
Robert VanDewoestine, Ph.D.  
Bob Webster, Ph.D.  
Kent Wiggins  

WRP Program Director  
Terry Albrecht, PE**+  
WRP Office Manager  
Dee Hanak*+  
Justin Hembree*  
Executive Director, LOSRC  
Erica Anderson*  
Economic and Community Development, Director, LOSRC  
Theodore L. Bush, Jr.*+  
Director, NCDPPEA

Mission

The WRP mission is to work for a sustainable economy, healthy environment, and better quality of life throughout North Carolina.