



and

Ohio Clean Diesel School Bus Fund

Financial Summary State Fiscal Year 2013



Office of Environmental Education
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049
50 W. Town Street, Suite 700
Columbus, Ohio 43215
Phone (614) 644-2873
Fax (614) 728-1275
www.epa.ohio.gov/oeef/
email oeef@epa.state.oh.us



**Ohio Environmental Education Fund
Ohio Clean Diesel School Bus Fund
Financial Summary
State Fiscal Year 2013**

Contents

Ohio Environmental Education Fund

OEEF Fiscal Activity for SFY 2013.....	1
Program Highlights 2013	4
2013 Grants for the Pre-school through University Audience.....	10
2013 Grants for the General Public Audience.....	20
2013 Grants for the Regulated Community Audience.....	24
Statewide Sponsorships to Promote Environmental Careers in FY 2013	
Environmental Science and Engineering Scholarships.....	27
State Science Day.....	29
Ohio Envirothon.....	34
National Engineers Week Future City Competition.....	35
“Teachers, Industry, & Environment” Conference.....	36
Statewide Partnerships	
Environmental Education Council of Ohio.....	37

Ohio Clean Diesel School Bus Fund

Annual Summary, SFY 2013.....	42
-------------------------------	----

Ohio Environmental Education Fund Fiscal Activity SFY 2006-2013

	SFY 2006	SFY 2007	SFY 2008	SFY 2009	SFY2010	SFY2011	SFY2012	SFY 2013
Revenues (1)	846,644	1,404,063	1,918,867	1,758,819	1,862,072	1,258,402	1,736,975	1,233,578
Expenditures (2)								
Personal Service (3)	365,436	311,724	387,470	371,873	341,774	369,837	322,841	336,383
Supplies & Maintenance (4)	79,554	62,269	56,775	57,730	64,820	73,513	10,118	72,362
Indirect	54,639	55,126	57,332	63,206	64,321	58,744	162,156	67,812
Equipment	1,708	7,516	2,062	0	0	1,795	5,560	697
Total Operating Expenses	501,337	436,635	503,639	492,809	470,915	503,889	500,675	477,254
Grant Payments (5)	901,693	845,090	1,413,044	956,858	751,210	1,197,847	748,873	719,028
Ending Cash Balance (1)	1,790,809	1,913,146	1,915,183	2,224,335	2,864,282	2,420,949	2,908,376	2,918,377
Open encumbrances	559,653	720,995	277,215	286,315	276,790	384,807	466,791	397,288
Grant Awards								
General Grants	754,839	741,803	719,511	704,600	737,294	700,000	670,438	631,948
Mini Grants	93,395	98,111	97,596	89,227	95,000	100,256	92,813	100,288
EE partner- and sponsorships	183,601	163,851	163,550	163,800	147,800	147,800	174,870	155,670
Total Grant Awards	1,031,835	1,003,765	980,657	957,627	980,094	948,056	938,121	887,906
Total Commitments (6)								
Operating + Awards	1,533,172	1,440,400	1,484,296	1,450,436	1,451,009	1,451,945	1,438,796	1,365,160

(1) Includes one-half of civil penalties collected by Ohio EPA air and water programs, plus reimbursements and donations.

(2) Includes a total of \$239,488.29 in funding for Ohio EPA Small Business Assistance Office in SFY01.

(3) Includes staff salaries and benefits, reimbursements to volunteers for travel, and substitute teachers. 2007 includes \$38,280 for GMS.

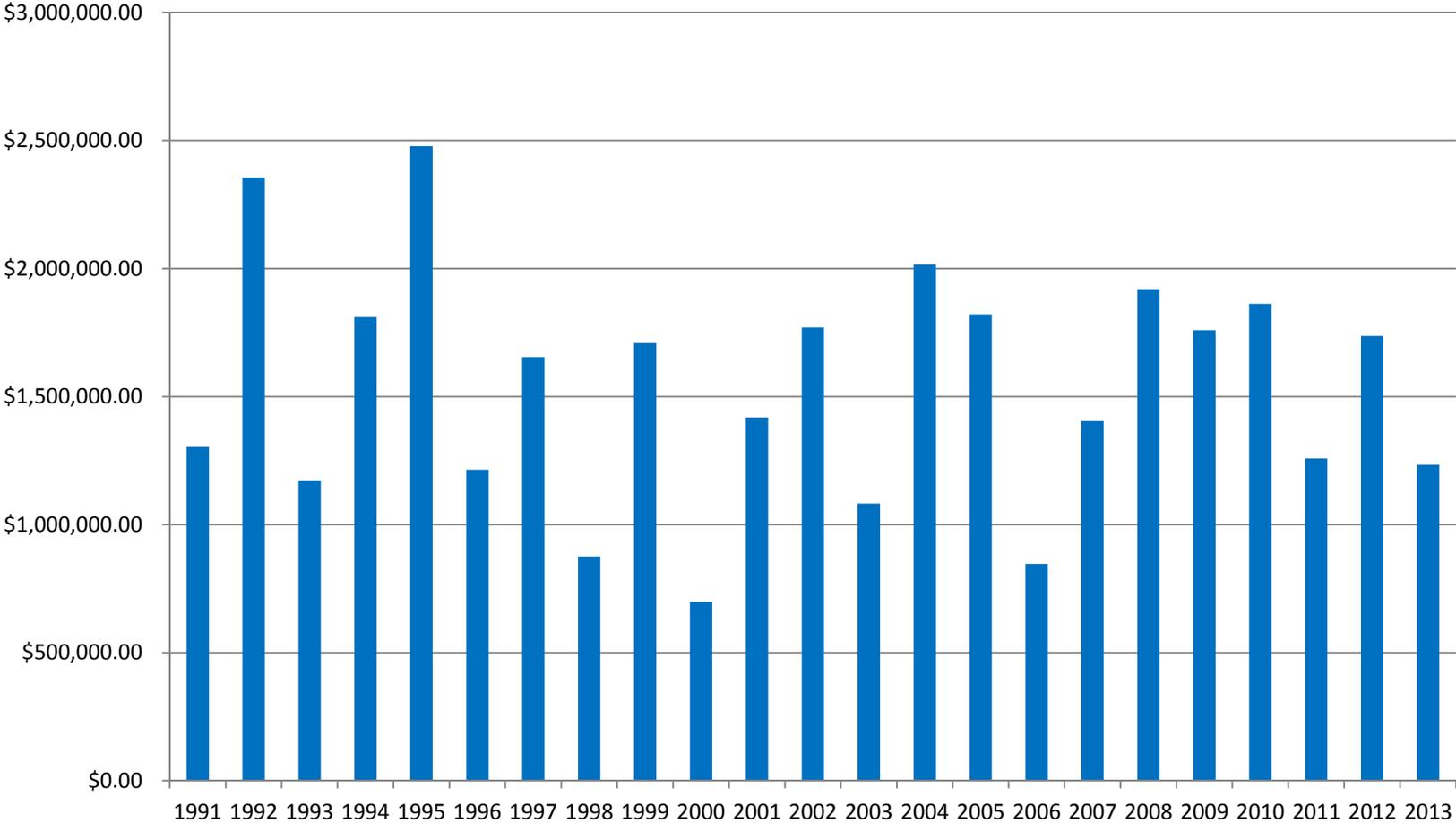
(4) Includes rent, printing, communications, and postage.

(5) Includes final payments to previous fiscal years' grantees.

(6) Comparable to annual budget.

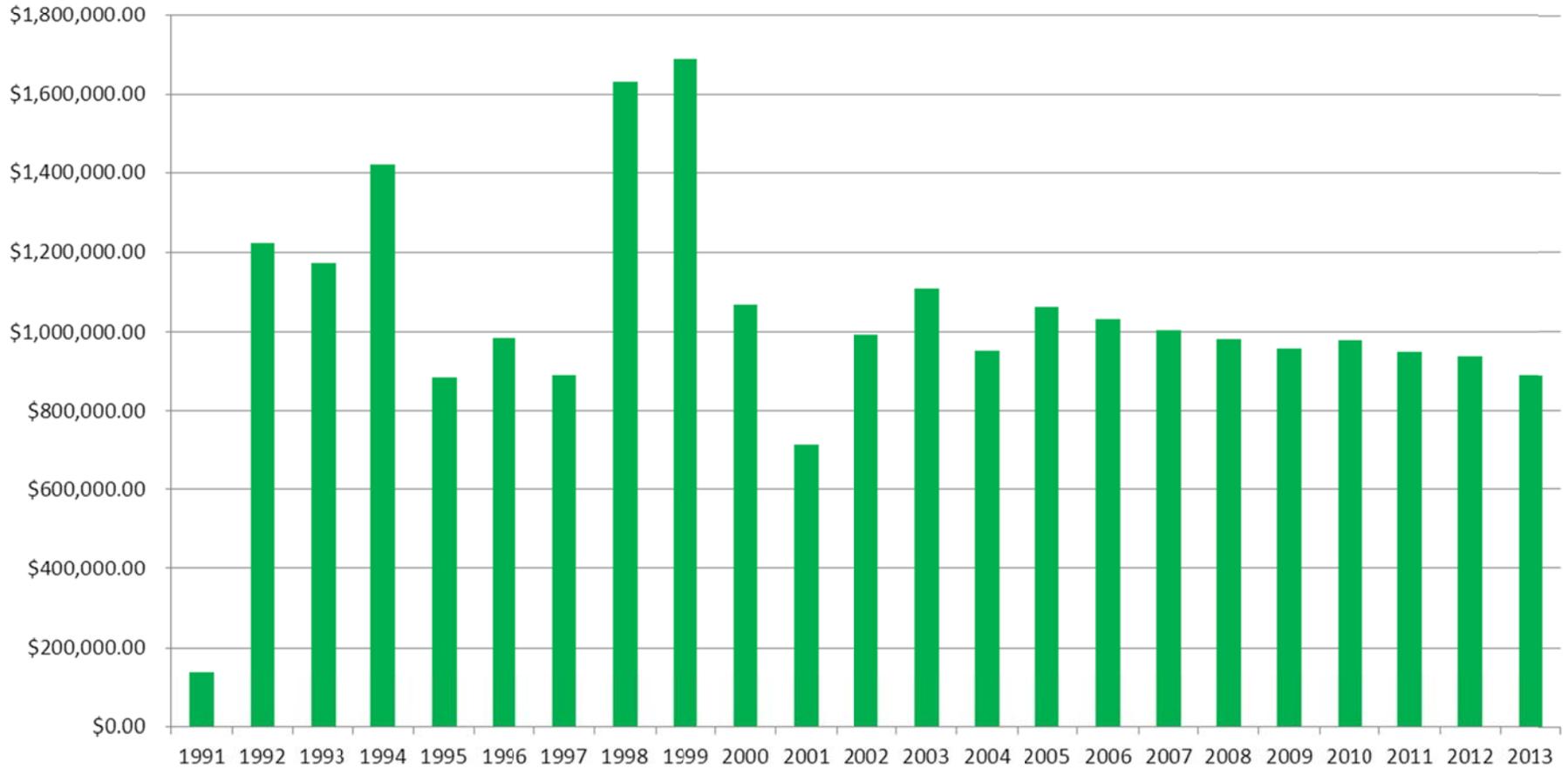
Ohio Environmental Education Fund

Revenues 1991-2013



Ohio Environmental Education Fund

Grant Awards 1991-2013



Ohio Environmental Education Fund Program Highlights 2013

Educational Priorities for SFY 2013

Funding priorities for OEEF grant programs are set by the OEEF Advisory Council in consultation with the Ohio EPA director. Ohio EPA is interested in using OEEF funds to support projects that are closely linked to the Agency's overall priorities and efforts to protect Ohio's environment. This year, funding priority for education projects was related to three of the most pressing current environmental issues confronting the state.

- 1. Improving air quality and efforts to reduce emissions**, particularly in counties not meeting federal air quality standards. Fundable projects might include efforts to work with local officials or organizations to encourage alternative public transportation initiatives or similar public awareness campaigns. For example, this year OEEF awarded grants to encourage bicycle commuting to work, to class and to large public events in Bowling Green, Cleveland and Columbus. A mini grant is providing Spanish-language information about the health effects of ozone and soot pollution, and ways to reduce exposures, to residents and businesses in Latino-Hispanic communities in Franklin County.
- 2. Using innovative practices to limit the volume and pollution of storm water runoff in order to improve water quality in receiving streams and rivers.** Fundable projects might include efforts to persuade developers, site designers, local officials, businesses and residents to use options such as permeable pavement, vegetated roofs and swales, rain gardens and rain barrels, low-impact development techniques, sediment and erosion controls, and naturally functioning storm water infrastructure. For example, this year OEEF is supporting a rain garden and rain barrel program in the City of Groveport, and training for landscape professionals and employees of regulated municipalities on storm water Best Management Practices (BMPs) and how to use alternative infrastructure for cost-effective storm water management.
- 3. Reducing nutrient loadings to Ohio's streams and lakes, to improve water quality and prevent Harmful Algal Blooms (HABs).** Fundable projects might include efforts to persuade local communities, businesses, agricultural producers, livestock operations, golf courses and other entities to adopt nutrient management projects, sediment control projects (filter areas), controlled drainage water management systems, livestock exclusion and manure management, conservation crop rotation projects with cover crops, riparian re-vegetation/protection projects, and alternative technologies such as anaerobic digesters; efforts to persuade businesses and residents to maintain septic systems and apply lawn and garden fertilizers responsibly; and efforts to educate the public about the causes, dangers and prevention of HABs. This year OEEF

awarded a grant to the Ohio Lake Management Society to train a network of citizen volunteers to collect samples from lakes and package them for shipment to a laboratory for analysis, identify algal blooms and report them to Ohio EPA.



Ohio Lake Management Society expert Dana Oleskiewicz demonstrates sampling techniques to citizen volunteer monitors on Pleasant Hill Lake in April, in preparation for the 2013 sampling season, as part of the "Citizen Training for Harmful Algal Bloom (HAB) Identification, Reporting and Sampling" project.

Additional educational priorities for 2013 include:

Business Innovation: help regulated entities, and particularly small business, understand and comply with Ohio's environmental laws and regulations

Community Outreach: design and implement model projects to educate the public about technical aspects of environmental issues or environmental health issues in their communities. In addition to the three highest-priority issues outlined above, Ohio EPA is interested in supporting education efforts related to source water protection, brownfields cleanup and redevelopment, and endorsed watershed plans. Copies of all state endorsed watershed action plans may be found at the following Ohio DNR ftp site: [ftp://ftp.dnr.state.oh.us/Soil_ & Water Conservation/WatershedActionPlans/EndorsedPlans/](ftp://ftp.dnr.state.oh.us/Soil_&_Water_Conservation/WatershedActionPlans/EndorsedPlans/)

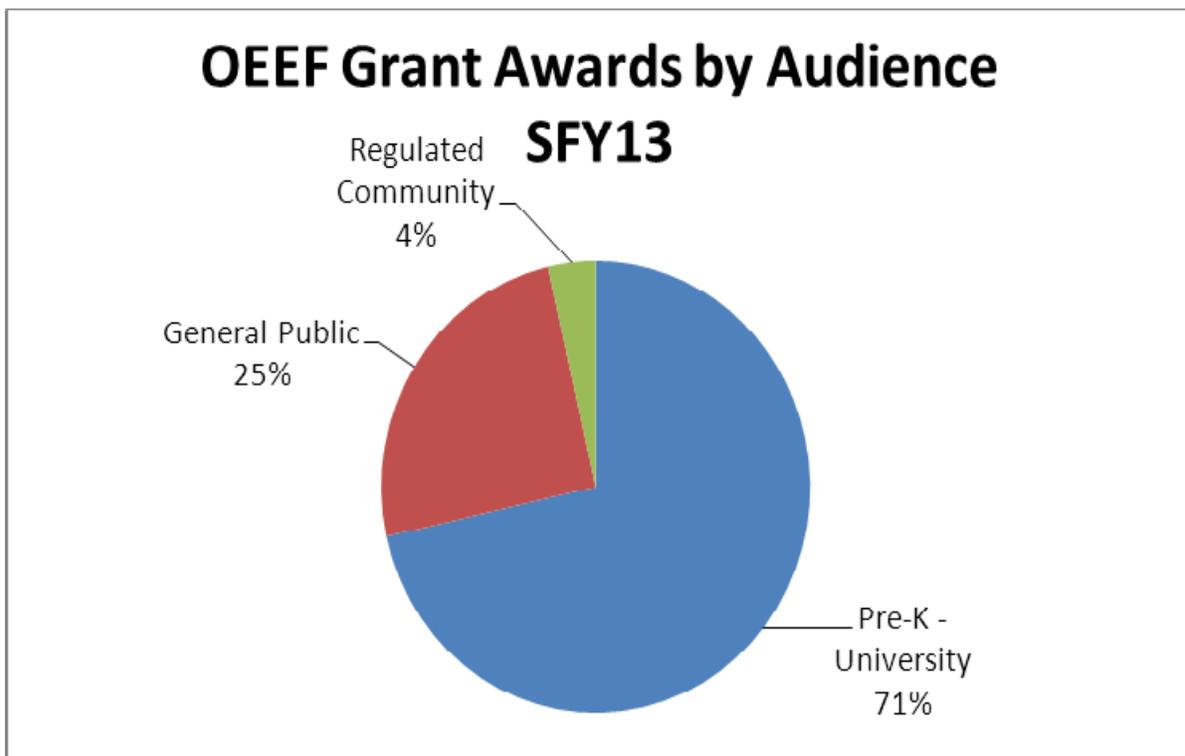
In addition, Ohio EPA will consider educational efforts which highlight human health threats from environmental pollution, and how to minimize human exposure to preserve good health. Issues of current priority to Ohio EPA include reduction of ozone

precursors, airborne particulates, waterborne diseases and toxic chemicals such as mercury in the environment.

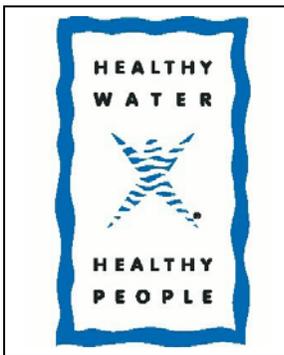
Energy Innovation: educate about energy efficiency and conservation, alternative fuels and energy sources and alternative building principles.

Outreach to Under-served Audiences

The OEEF tries to balance the needs of three different audiences (pre-school to university, general public, and regulated community). Outreach efforts and scoring incentives implemented since 2002 have greatly increased the number of funded general public projects to help Ohio citizens understand technical aspects of environmental issues. OEEF grants are helping local communities and watershed organizations meet federal mandates for education related to storm water management and efforts underway to improve water quality in rivers and streams not meeting federal standards. OEEF is continuing to offer scoring incentives for education projects to help regulated entities, such as the agriculture industry and small businesses, understand the environmental regulations they must comply with. Ohio EPA is marketing the grant programs to organizations who work with these two audiences.



Healthy Water, Healthy People



The Office of Environmental Education provides statewide coordination for this secondary school curriculum from Project Wet, to teach middle and high school students and teachers to monitor local water quality. This year, OEE staff offered 23 water quality monitoring demonstrations and presentations at schools and educator workshops around the state, and the Dayton and Central Ohio Children's Water Festivals, reaching 1,054 students and adults. A statewide train-the-trainer session was offered in June, certifying 18 new facilitators. The Office also assists Ohio EPA's Division of Surface Water in training adult volunteer monitors to collect stream quality data under Level 1 of Ohio's Credible Data program.



Environmental Careers

Ohio EPA would like for more Ohio students to consider careers in environmental science and engineering. The OEEF is supporting six initiatives described more fully in the sponsorship and partnership pages of this report, in keeping with the state's emphasis on **STEM (science, technology, engineering, and mathematics)** education and preparing students to meet the needs of Ohio employers.

- \$50,000 annually in **scholarships** for environmental science and engineering students at Ohio colleges and universities
- Support to the Ohio Academy of Science for **State Science Day**, recognizing grade 7-12 student environmental science research projects
- At the middle school level, the **National Engineers Week Future City Competition®**, <http://futurecity.org/ohio>
- At the high school level, the **Ohio Envirothon®** competition sponsored by Ohio's soil and water conservation districts, <http://www.dnr.state.oh.us/tabid/8652/Default.aspx>
- Sponsorship of the Ohio Chemistry Technology Council's "Teachers, Industry and the Environment" conference, <http://www.ohiochemistry.org/aws/OCTC/pt/sp/tieconference> .
- A new searchable database of volunteer **environmental career ambassadors** willing to make school presentations, through a partnership with the Environmental Education Council of Ohio and The Ohio State University's Environmental Professionals Network, <http://epn.osu.edu/>

Ohio EPA is also partnering with other state and federal agencies to introduce Ohio's young people to STEM careers, and Ohio EPA staff scientists and engineers provide school presentations and participate in school Career Exploration Days.



Ohio EPA's Holly Tucker demonstrates science research methods to students.

**Ohio Environmental Education Fund
Grants for the Pre-Kindergarten to University Audience**



In SFY 2013, the OEEF funded 26 pre-K-university projects for a total of \$447,050.00

Ohio University - Civil Engineering, “Virtual Boat for Environmental Education in Ohio” F13G-002, \$45,253, Athens County, Audience: High School, Undergraduate and Graduate, Contact: Tiao J Chang, chang@ohio.edu, (740) 593-1462.

The University currently has a five-year National Science Foundation grant to study the impacts of human activity on water quality in the Ohio River basin, and integrate research results into high school curriculum. Local students and teachers are sampling water quality from a real boat on the River. However, the number of high school students from the basin who can participate is limited by distance, boat capacity, and the short seasonal window when the boat can dock and navigate along the River. This project will create a Virtual Boat iPad and desktop computer game whereby students conduct two- and three-dimensional water sampling along a virtual river using an existing Geographic Information System (GIS) database to simulate the current conditions along the Ohio River from Marietta to Gallipolis. Structured lesson plans include a Water Quality Index and Fish Kill and Pollutant Locator using global positioning systems (GPS). Students will “test” for dissolved oxygen, fecal coliform, biochemical oxygen demand, temperature change, total phosphate, nitrate, turbidity and total solids, with results based on real data collected by the University and the Ohio River Sanitation Commission (ORSANCO). The game will be field-tested with students and teachers at two high schools in Athens and Meigs Counties, and demonstrated to the public through one-week exhibits at public libraries in the two counties, and a Research and Create Activity Expo at the University.

The Dawes Arboretum, “The Dawes Arboretum Wetland Education Program” F13G-008, \$39,732, Licking County, Audience: Middle School, Contact: Jenny Pope, japope@dawesarb.org, (740) 323-2355.

Dawes Arboretum staff and project partners will build an outdoor education program emphasizing water quality, ecosystems and environmental impact. Students will engage in an inquiry-based science education program in which classroom concepts are brought outdoors to achieve better comprehension. National curricula from the Wonders of Wetlands (WOW), Project WILD, Project WET (Water Education for Teachers), Project Learning Tree (PLT) and Healthy Water, Healthy People will be used to engage approximately 700 Heritage Middle School students in data collection and citizen science activities and to increase student appreciation of science as a career path by providing them with opportunities to interact with environmental professionals. Field trip activities will include seining for macro-invertebrates, using nets to sample for phytoplankton and zooplankton, and exploring animal habitat, comparing water quality

indicators and species sitings with results collected by other organizations such as The Ohio State University Extension's Certified Volunteer Naturalist program and the Licking County Soil and Water Conservation District. Families will be invited to participate in a weekend litter cleanup along the Licking River.

ThinkTV, "Nature as the Outdoor Classroom," F13G-014, \$49,853, Montgomery County, Audience: Pre-school, Contact: Tina Spaulding, tspaulding@thinktv.org, (937) 220-1670.

Because Head Start teachers are often untrained in science, they need practical examples of how very young children can develop literacy, math and science skills while having fun exploring nature in their local neighborhoods. Three PBS stations in Cincinnati, Columbus and Dayton will provide training to 840 Head Start teachers through 42 workshops in 28 counties in their viewing area, using the national Growing Up Wild early childhood curriculum from Project WILD. A follow-up monthly e-newsletter will provide new ideas and activities.

University of Dayton - Rivers Institute/Fitz Center for Leadership in Community, "Rivermobile," F13G-027, \$10,845, Montgomery County, Audience: Middle and High School and General Public, Contact: Don Pair, dpair1@udayton.edu, (937) 229-2602.

The grant will provide a portion of the seed money to develop an interactive Rivermobile to "bring the river" to schools and community events, to help correct public misperceptions about local water quality while building overall community appreciation for the region's rivers and aquifer. A 53-foot semi-trailer will be transformed into an engaging educational experience that will call youth and the community to action to protect, enjoy and understand the region's natural water resources.

North Central Ohio Educational Service Center, "Watershed Dynamics for 21st Century Learners," F13G-029, \$48,667, Seneca County, Audience: High School, Contact: Rhonda Feasel, rfeasel@ncoesc.org, (419) 447-2927.

The project will allow 210 high school students to investigate and explore solutions to complex, real-world problems associated with the Sandusky River watershed. Students will engage with the problems using scientific instrumentation, technology, hands-on field work and computer modeling. Methods are aligned with the Common Core Science Standards and the State of Ohio Model Curriculum. This project will provide extensive professional development for science teachers in participating Seneca County school districts. The National Center for Water Quality Research at Heidelberg University scientists, researchers and environmental science students will contribute their expertise in the field of water quality. The Ohio State University Stone Laboratory will conduct professional development and a culminating student learning experience.

Ottawa National Wildlife Refuge Association, “Wetland Learning Center: Connecting Ottawa NWR and its Partners to the Community,” F13G-035, \$48,460, Erie, Lucas, Ottawa and Sandusky Counties, Audience: Pre-school to University, Contact: Jennifer Brown, jennifer_brown@fws.gov, (419) 898-0014.

Equips a new environmental education shelter and provides staffing to update existing curriculum on wetlands, coastal ecosystems, native species and migratory birds to align with the Ohio Department of Education's revised academic content standards for science, to support K-12 classroom visits and field trips for 2,400 students from school districts in four counties. The project will expand the existing Wetland Investigation Network partnership with the Black Swamp Bird Observatory and the Ohio Division of Wildlife Magee Marsh Wildlife Management Area. New internship programs being developed with the University of Toledo and Bowling Green State University will provide student teaching opportunities to continue the school programs once the grant-funded staffing ends. The Friends of Magee Marsh and Ottawa Soil and Water Conservation District are also collaborating.

Camp Oty'Okwa, Big Brothers Big Sisters of Central Ohio, Inc., “Discovery Center,” #S13G-047, \$35,029, Hocking County, Audience: Preschool-University. Contact: David Schirner, dschirner@bbbscentralohio.org, 614-839-2447.

Provides exhibits and supplies for a regional science education center that annually serves more than 10,000 youth, 850 adults and 500 community members in school programs, summer camp, and adult education classes offered in conjunction with local partner organizations such as the Appalachia Ohio Alliance, Crane Hollow State Nature Preserve, Hocking Hills State Park, Rural Action and Wahkeena Nature Preserve. Exhibits about the seven ecosystems on the site will illustrate how the geology, climate, plant and animal communities in a protected watershed contribute to healthy streams. Water cycle panels will show how rain gardens and rain barrels at homes and schools can slow storm water runoff to protect water quality in urban watersheds. A Waste to Food exhibit will feature decomposition, photosynthesis and energy transfer in the nutrient cycle, “botany on a plate” lessons about food served at the facility, and composting and recycling in natural and human systems. A bird observation area will feature species characteristics and adaptations, as well as scientific study and data collection methods being used in citizen science and school programs such as the Cornell Ornithology Lab’s Classroom Feeder Watch. Test kits and equipment will enable participants to monitor weather conditions; soil, water and air quality; pollen levels and the predominant plants releasing pollen in the area. They will record observations and upload data collected to the Camp’s website.

Cincinnati Nature Center, “Nature in the Classroom - Teacher Training Program,” #S13G-052, \$5,690, Clermont County, Audience: Elementary and Middle School. Contact: Connie O’Connor, coconnor@cincynature.org, 513-965-4891.

This project provides 24 teachers in grades 1-8 with basic knowledge of local natural history as well as methods for integrating science-based nature interpretation into state teaching standards. A three-day summer session will show teachers how their students can investigate nature in the schoolyard. Two hours of hands-on nature training will prepare 12 classroom parents to volunteer for at least five hours each during the school year. The grant will also provide the teachers with field guides, bird feeders and other supplies.

Bowling Green State University- Campus Sustainability, “Green Roof Bike Racks,” #S13G-057, \$50,000, Wood County, Audience: University, Contact: Nicholas Hennessy, nickjh@bgsu.edu, 419-372-9949.

Project will install two bicycle shelters with roofs composed of live vegetative plant panels, to raise the visibility on campus of this method of storm water retention. Interpretive signage will explain the design and function, and encourage bicycle ridership to reduce air emissions. The racks will also be featured in actual and virtual campus tours, and included in course curriculum for environmental studies and sustainable architecture classes.

The Ohio State University- Facilities, Operations & Development, “OEEF Bike Shelter Grant,” #S13G-063, \$50,000, Franklin County, Audience: University. Contact: Robert Osterfeld, Osterfeld.5@busfin.osu.edu, 614-688-8482.

Project will install two bicycle shelters with roofs composed of live vegetative plant panels in the northern and southern districts of campus, to raise the visibility of this method of diverting storm water runoff. Interpretive signage will explain the design and function, and encourage bicycle ridership to reduce air emissions. Information about storm water runoff and vehicle emissions will be added to the University’s Sustainability websites, and bike shelter locations will be added as stops on the University’s Sustainability Tours.

Hubbard Exempted Village Schools, “Land Lab Initiatives,” F13M-003, \$5,000, Trumbull County, Audience: Pre-School – High School, Contact: Lucille Esposito, espositol@hubbard.k12.oh.us, 330-534-1921.

The school district is building a new K-12 campus that includes five acres of an adjacent 25-acre wetland as an outdoor learning area to be used by 2,100 students and available to the local community of 10,000 residents. The district plans a three-week series of evening environmental science programs for families beginning in April 2014 to introduce the land lab. The grant will provide monitoring equipment for high school chemistry students to measure soil moisture and turbidity, and supplies for daytime and nighttime nature observation by students in all grades, as well as the families and residents attending the evening programs.

Georgetown Exempted Village Schools – Georgetown Jr/Sr High School, “Water Sampling and Test of White Oak Creek by High School Students,” F13M-006, \$3,396, Brown County, Audience: High School, Contact: David Earl Whittington, whit2753@fuse.net, 937-378-6730.

Provides water quality monitoring equipment and supplies to support a new environmental science course at Georgetown High School. Students will learn scientific protocols to conduct biological and chemical sampling of White Oak Creek to observe seasonal changes in water flow and water quality, and identify possible sources of pollution, hypoxia and eutrophication. Brown Soil and Water Conservation District is collaborating.

Mahoning Soil and Water Conservation District, “Mahoning County Junior Envirothon,” F13M-009, \$1,168, Mahoning County, Audience: Middle School, Contact: Kathleen Vrable-Bryan, kvrable-bryan@mahoningcountyoh.gov, 330-740-7995.

Provides supplies and transportation for a middle school conservation education program modeled on a successful statewide high school competition. Teams of 6th-8th grade students will visit learning stations on aquatic ecology, forestry, wildlife, soils, and a current environmental issue, each presented by a specialist who will also describe his or her career. Students must use teamwork and critical thinking skills to connect evidence and interpret data from the stations to answer the competition questions. Collaborators include the Mahoning County Career and Technical Center, ODNR Divisions of Wildlife and Soil and Water Resources, Mahoning County Solid Waste and Recycling, Mahoning County Engineer, LZ Forestree Consulting and Youngstown State University.

Harrison Hills City Schools – Harrison North Elementary School, “Harrison North Environmental Center,” F13M-010, \$4,900, Columbiana and Harrison Counties, Audience: Pre-School – Elementary, Contact: Shawnee Dee Arbaugh, sarbaugh@hhcsd.org, 740-946-1055.

Provides supplies to equip an outdoor environmental research learning lab with stations on composting and vermi-composting, butterfly gardening, weather, water quality and pond management, organic gardening and geological formations. Budget includes funding to train and certify additional teachers at the school in the national curricula Project WET and Project WILD, and the Ohio curriculum Windows on Waste, to present learning activities to 325 students in 14 classes grades K-6. Collaborators include the Carroll-Columbiana-Harrison Solid Waste District, Harrison County Farm Bureau and New Rumley 4-H Club.

Brookville Local Schools – Brookville High School, “Food on Our Table,” F13M-018, \$2,200, Montgomery County, Audience: Elementary, Middle and High School, Contact: Cynthia Tucci, bvhsctucci@mdeca.org, 937-833-6761.

Provides supplies to add a vegetable garden to the school’s existing outdoor classroom and greenhouse. Approximately 1,465 students in grades 4-12 will participate in grade-band aligned lessons from Project WET, Project WILD and Miami University’s “Fighting Foods” curriculum on plant growth, nutrition, and the flow of energy, nutrients and toxins through food webs and food chains. An engineering component will have high school students dividing the garden into sections and calculating the area and productivity of each plot, using vertical gardening techniques to maximize productivity. The garden will be used year-round, with indoor germination of seeds and winter hydroponic gardening in the school’s greenhouse, local student families maintaining the garden during the summer and produce used in the school cafeteria.

Lisbon Exempted Village Schools – David Anderson Jr-Sr High, “Using Technology to Teach Environmental Sustainability,” F13M-020, \$4,681, Columbiana County, Audience: Middle School, Contact: Beth Hiscox, beth.hiscox@omeresanet.net, 330-853-3182.

Equips the school’s outdoor environmental research learning lab for three new programs: (1) NASA/NOAA’s GLOBE program where students collect weather and soil moisture data according to scientific protocols for posting to an online database where they compare their results to data from schools around the world to research questions about climate; (2) Environmental geocaching, with students acquiring information about global satellite positioning and the use of GPS/GIS to participate in the National Geocache Monarch Tracking and Release Program; and (3) water conservation, erosion and pollution, with students measuring the effectiveness of rain barrels and rain gardens. Once proficient in the use of GPS/GIS, students will use state and local databases to identify and map various environmental problems including radon hot spots and

contaminated wells. Two hundred students in grades 6-8 will present their findings to the local community. Carroll-Columbiana-Harrison Solid Waste District and Columbiana Soil and Water Conservation District are collaborating.

Phoenix Academy Community School – Phoenix Academy, “Water Quality Investigation,” F13M-024, \$863, Lucas County, Audience: High School, Contact: Kimberly Bigioni, kim.bigioni@phoenixtoledo.org, 419-720-4505.

Provides supplies to add a two-part water quality investigation to the high school’s environmental science course. In a Mystery Case Study, 40 students will investigate a fictitious water pollution case. In the Field Study, students will extend skills learned by testing their predictions about the health of the Ottawa River near a student-selected site of interest (e.g., industrial area). Students will test for parameters including temperature, pH, phosphorus, nitrate/nitrite, dissolved oxygen and turbidity.

Cleveland Heights University Heights – Ruffing Montessori School, “Land Restoration with Ruffing Montessori School and the Nature Center at Shaker Lakes,” F13M-027, \$5,000, Cuyahoga County, Audience: Elementary, Contact: Mary Elizabeth McCormack, marybethm@ruffingmontessori.net, 216-321-7571.

Ruffing Montessori School will work with the Nature Center at Shaker Lakes (NCSL) to restore a mini-marsh in the Doan Brook Watershed. Seventy-two students will participate in the decision making process including evaluation of habitat, identification of native and exotic species, removal of exotic plant species, cultivation and preparing seeds of native marsh plants for cold stratification and planting. They will also conduct a photo survey and use GIS software to create digital maps of the marsh habitat. The Doan Brook Watershed Partnership is collaborating.

East Cleveland City School District – Shaw High School, “East Cleveland Watershed Education Project,” F13M-028, \$5,000, Cuyahoga County, Audience: High School, Contact: James Tolmie Watson, jwatson@east-cleveland.k12.oh.us, 216-268-6500.

The East Cleveland Watershed Education Project (ECWEP) is a school-based initiative to provide opportunities for students at Shaw High School (SHS) to take part in authentic scientific research on Northeast Ohio water resources. The ECWEP will sponsor field trips for 300-350 high school students per year to monitor the health of the Doan Brook and Nine Mile Creek watersheds and compare these urban watersheds to rural watersheds outside of Cleveland. Each field trip will include a visit to a site that highlights human impacts on water quality and the effects of water quality on human welfare. Tenth grade students will collect and analyze physical, chemical, and biological samples from the streams. Cleveland Metroparks, Cuyahoga County Board of Health and Northeast Ohio Regional Sewer District are collaborating.

West Liberty-Salem Schools, “Trout in the Classroom Mad River,” #S13M-031, \$2,834, Champaign and Logan Counties, Audience: Elementary, Middle and High School, Contact: Carrie Smith, csmith@wlstigers.org, 937-465-1060.

Provides two 55-gallon brown trout tanks and supplies to maintain them according to the guidelines of the national Trout in the Classroom (TIC) program. High school environmental science and Future Farmers of America classes and Boy Scout Troop 11 (Urbana) will maintain the tanks and monitor water quality in the Mad River and its tributary Mac-A-Cheek Creek, which flows through the school’s land lab. Elementary students will study the trout life cycle, Mad River ecology and agricultural and human impacts on stream habitat. Students will compare the simulated Mad River cold water ecosystem in these tanks with already established tropical and marine ecosystem tanks. After a year of study, the students will release the trout to the River in a community event. Roughly 1,200 students will participate.

Scioto Soil & Water Conservation District, “CSI: Shawnee,” #S13M-032, \$4,749, Adams, Brown, Highland, Pike, and Scioto Counties, Audience: Middle School, Contact: Kate Sowards, katesowards@sciotoswcd.org, 740-259-9231.

CSI: Shawnee is an inquiry and standards based science camp that will take place over two days and two nights at Camp Oyo and Shawnee State Park and will continue yearly beginning in July 2013. The camp will accommodate 48 students in grades 5-7 each year, offering at minimal cost to students the opportunity to experience the science, technology, and skills used in field research and to explore natural resources careers. The grant will provide water quality test kits, nets, handheld GPS units and microscopes. The equipment will also be available for use by the collaborating agencies throughout the year for various school and public programs. Collaborators include The Ohio State University Extension, Shawnee State University, Bloom-Vernon Local School District, Simon Kenton Council of the Boy Scouts of America and the Adams and Brown County Soil and Water Conservation Districts.

Carroll-Columbiana-Harrison Solid Waste District, “Environmental Education Academy,” S-13M-035, \$4,500.00, Carroll, Columbiana, and Harrison Counties, Audience: Elementary, Middle and High School, Contact: Eric Matthews, mathesonman@gmail.com, 330-627-7311.

Provides workshops on water quality, nutrient runoff and wetlands for teachers from a three-county area. National curricula such as Project WET, Healthy Water, Healthy People, the Wonders of Wetlands and NASA/NOAA/s GLOBE (Global Learning and Observations to Benefit the Environment) program will be

featured, along with rain gardens and rain barrels as best management practices for reducing storm water runoff. The budget includes: substitute teachers, rain barrels, grow boxes, rain barrel diverters and potting soil. Brown Local Schools, Columbiana County Educational Service Center, Conotton Valley Union Local School District, Lisbon Exempted Village School District and Harrison Hills North Elementary School are all collaborating.

Graham Local Schools – Graham Elementary School, “Graham Local Schools Trout in the Classroom (TIC),” #S13M-041, \$5,000, Champaign and Logan Counties, Audience: Elementary, Middle and High School, Contact: Emily Kay Shreve, shreeve@grahamlocalschools.org, 937-663-4449.

Provides national Trout in the Classroom program supplies, water quality monitoring equipment and two 55-gallon tanks to enable 150 students in grades 1-12 to study the trout life cycle and raise brown trout from eggs to fingerlings for eventual release to the Mad River. Students will be learning about trout habitat requirements and local water quality issues, and be responsible for raising the trout and testing water conditions in the aquarium daily. The project will include two field trips to the River for local sampling. Students will present their findings through a district-wide community night and at other events. The Madmen Chapter of Trout Unlimited is collaborating.

Ohio Corn Marketing Program, “Feeding the World: Sustainable Practices in Agriculture and Water Quality,” #S13M-042, \$4,230, Statewide, Audience: Middle and High School, Contact: Jeanne Gogolski, Jeanne@educationprojects.org, 614-436-4171.

Provides water quality monitoring equipment for 30 western Ohio teachers and their students to conduct kick-seining and bioassessment investigations of local water quality. At a two-day summer workshop, the teachers will learn about sustainable agriculture practices and issues related to crop production, including research and seed development, soil science, sediment control, water quality and drainage water management systems. They will learn to use biocriteria to identify impaired waters and causes of impairments such as Harmful Algal Blooms (HABs). Students will collect data in local streams and share their results using an app such as “River on the Web” developed by Northern Kentucky University. Parameters to be tested include biochemical oxygen demand, coliform bacteria, dissolved oxygen, nitrate, pH and phosphate. A sample kit was tested by science teachers at the Science Education Council of Ohio (SECO) Conference in February 2013. EP&P, Upper Arlington High School, Findlay High School and Green County Career Center are collaborating.

Ohio River Basin Consortium for Research and Education, “Environmental Education Demonstration Rain Garden in Marietta,” #S13M-043, \$5,000, Athens and Washington Counties, Audience: High School and University, Contact: Wilson Tabor, chang@ohio.edu, 740-593-1462.

The Friends of the Lower Muskingum River (FLMR) watershed group and Ohio University’s Russ College of Engineering and Technology are collaborating to design and construct a rain garden in Marietta, and measure the quantity and quality of the water retained. The data collection methods and effectiveness of the rain garden as a storm water management tool will be demonstrated to the local community and to 2,000 high school students participating in the Boat of Knowledge water quality project funded by the National Science Foundation at Ohio University.

Project Learning Tree (PLT) – Ohio, “Forest Community Issues & Project Learning Tree,” S-13M-044, \$5,000.00, Statewide, Audience: Elementary, Middle and High School, Contact: Sue Wintering, sue.wintering@dnr.state.oh.us, 614-265-6657.

Supports six regional workshops for 90 teachers on current issues affecting public and private forests in Ohio. The six themes selected by the ODNR Division of Forestry include Fragmentation and Urbanization; Soil and Water Conservation; Forest Health; Forest Public Benefits; Biological Diversity; and Sustainable Forest Management. Workshop participants will help PLT design a poster to be distributed statewide for classroom use on environmental issues impacting forests. Berkshire Local School District, ODNR Division of Forestry, USDA Wayne National Forest, Muskingum Valley Park District, and Geauga Soil and Water Conservation District are all collaborating.

**Ohio Environmental Education Fund
Grants for the General Public Audience**



In SFY 2013, the OEEF funded 10 adult education projects for a total of \$210,220.00

Ohio Lake Management Society, “Citizen Training for Harmful Algal Blooms (HABs) Identification, Reporting and Sampling,” F13G-020, \$48,440, Portage County, Contact: Dana Oleskiewicz, oleskiewicz@windstream.net, (330) 466-5631

Provides ten local presentations to educate citizens about HABs, how to sample for them in lakes and how to properly report blooms to Ohio EPA. In addition, ten local volunteers will receive specific training on how to collect samples in lakes they live on, and package them for shipping to a laboratory for algal identification and analysis of cell counts and microcystin. The volunteer sampling effort at additional sites on public and private lakes with a history of algal blooms will augment ongoing sampling efforts by state agencies. Results will be shared with local watershed organizations, published in newsletters, presented at conferences and posted on the OLMS website.

Western Reserve Resource Conservation and Development Council, “Raising the Environmental IQ of Northeast Ohio,” F13G-022, \$50,000, Lake County, Contact: Dorothy Farris, dorothy.farris@dnr.state.oh.us, (614) 581-5953

The project is a continuation and expansion of the Raising the Environmental IQ of Northeast Ohio initiative. It will help continue the six-month Conservation Crusader campaign that airs on WKYC in Cleveland, which includes monthly videos hosted on the WKYC weather web page using TV weather personalities; two monthly four-minute segments on environmental topics on the Good Company TV show; one click through rotating banner ad on the Cleveland Yahoo weather page linking to the monthly videos and four monthly social media posts. The project further develops the social media component of the initiative and develops a geo/earthcaching component to encourage the public to get outdoors and learn about places of environmental or natural significance in the region. SWCDs will also use this information as part of the education and information they provide to and for NPDES/MS4 regulated communities.

Lake County Soil and Water Conservation District, “Arcola Creek Watershed Landowner Outreach”, F13M-005, \$4,735, Ashtabula and Lake Counties, Contact: Maurine Orndorff, morndorff@lakecountyohio.gov, 440-350-5863.

A multi-faceted public education effort is planned to support the Arcola Creek Watershed Action Plan, required under federal law because the Creek does not meet state and federal water quality standards. The Creek drains directly into Lake Erie through the Arcola Estuary, one of only two remaining estuaries on the Ohio coastline. The campaign will include two workshops for residents, one on reducing erosion and nutrient runoff from lawns, and one on using rain barrels

and rain gardens to reduce storm water volume. A creek clean-up event and geocaching program are planned to bring residents out into the watershed to learn about watershed processes and history. Wall maps of the watershed will be hung in public places and permanent outdoor signs installed in parks to describe the services a healthy watershed provides. A portable, weatherproof display will be created for community events. Collaborators include the Lake County Farm Bureau, Stormwater Management Department, Lake Metroparks and the Village of Madison.

Barnesville Hospital Association, Inc., “Community Mercury Thermometer Exchange,” F13M-030, \$5,000, Belmont and Monroe Counties, Contact: Michael Carpenter, mgcarpenter@barnesvillehospital.com, 740-425-3941.

Project is intended to educate the community regarding human health and environmental threats from mercury and to provide a mercury thermometer exchange program for communities in Belmont and Monroe Counties. The exchange will be promoted at community events with high rates of participation (Barnesville Business Showcase, Pumpkin Festival, Belmont County Fair and Monroe County Fair) and coincide with Barnesville Hospital's successful semi-annual Pharmaceutical Take Back Days. Ohio Hospital Association and Belmont-Jefferson Solid Waste District are collaborating.

Urbana University – College of Arts and Sciences, “Collaborative Outreach to Increase Public Awareness of Environmental Issues in Champaign County,” #S13G-045, \$45,378, Champaign County, Contact: Tingting Cai, tcai@urbana.edu, (937) 484-1379.

Provides a variety of programs on local water quality issues and sustainable resource use for the residents of Champaign County. Interpretive signs will guide visitors through six demonstration ecosystems, a rain garden for storm water retention and energy efficiency features of buildings on the campus. Hands-on family activities from Project WET, Project Learning Tree and the *Healthy Water, Healthy People* program will introduce at least 485 families (1,500 people) the first year to the linkages between local ecosystems, water quality, and human health. A mobile lab will bring these activities to events sponsored by collaborating partners including the Champaign County Library, Champaign Family YMCA, Girl Scouts, Johnny Appleseed Museum and Urbana University Library.

City of Groveport, “City of Groveport Rain Garden and Rain Barrel Program,” #S13G-050, \$43,800, Franklin County, Contact: Jennifer Ponchak, followtheriver@ymail.com, 614-325-9954.

Supports a city-wide program encouraging at least 5,300 residents to install rain gardens and rain barrels to prevent stormwater pollution in the Walnut, Blacklick

and Big Walnut Creeks and tributaries. Three demonstration rain gardens with interpretive signage will be installed at highly-visible municipal facilities. The Central Ohio Rain Garden Initiative model program previously funded by the OEEF will be adapted to help residents understand how to design their rain gardens and select plants for water retention. Residential rain garden locations will be added to the City's GIS maps for an online rain garden "tour of homes" to show a visual connection between these best management practices and receiving streams in the City. Three rain barrel installation workshops, incentives and an online course will be offered, adapting the Franklin Soil and Water Conservation District's successful residential rain barrel program.

Fernald Community Alliance (FCA), "Roadmap to Resolution: Communities, Government and Corporations Solving Complex Challenges," #S13M-039, \$4,150, Butler and Hamilton Counties, Contact: Joyce Colleen Bentle, joycebentle@fuse.net, 513-348-0213.

Supports a series of in-depth video interviews documenting how productive, collaborative relationships evolved between government, regulators and community members during the 20-year cleanup of the heavily contaminated Fernald uranium processing facility in southwest Ohio. Ultimately, this project will incorporate a website including videos, training sessions, written materials and focused team-building exercises to help stakeholders forge trusting, productive relationships that are integral in successfully solving complex environmental, public health, community planning and resource development challenges. Collaborators include the U.S. Department of Energy, Miami University, F-CHEC, and F.R.E.S.H., Inc.

Akron Water Supply, "Upper Cuyahoga River Watershed Sign Project," #S13M-051, \$3,368, Portage County, Contact: Jessica Glowczewski, jglowczewski@akronohio.gov, 330-678-0077.

Promotes awareness of the Upper Cuyahoga River Watershed by strategically placing signage where tributaries of the Cuyahoga River intersect with high traffic roadways. This project is coordinated with a similar effort in the adjacent Tinker's Creek watershed. Signs will be accompanied by targeted educational mailings to local residents as an ongoing effort by Akron Water Supply to educate the public about environmental protection and encourage a greater sense of community and connection with the environment. The project includes 40 signs at 20 locations along the Cuyahoga River, Harper Ditch, Eckert Ditch, Yoder Ditch, Shalersville Ditch, Elliman Run, and one unnamed tributary, which is being petitioned at the USGS for naming.

Ohio City Bicycle Co-Op, “Bike Corral Service at Underserved Public Events,” #S13M-054, \$800, Cuyahoga, Geauga, Lake, Lorain, and Medina Counties, Contact: Jim Sheehan, jim@ohiocitycycles.org, 216-830-2667.

Supports a successful program encouraging bike transportation to replace car trips in congested situations by providing a free, secure, guarded bike corral at large public events. This project will make "valet bike parking" available at events that have not been able to contract for this service in the past and at targeted events that have not previously considered it. Grant will provide pre-event outreach and educational materials about the air quality benefits of bicycle use for distribution to the general public at these events, with the potential to reach an estimated 103,000 people. Youth Outdoors, Bike Cleveland and Slavic Village Development Corporation are all collaborating.

Ohio Hispanic Coalition, “Air Quality Outreach to Hispanic Communities,” #S13M-060, \$4,549, Franklin County, Contact: Virginia Nunes, virgina@ohiohispaniccoalition.org, 614-840-9934.

In 2012 there were 21 air quality alert days in Franklin County. The OHC will translate information about the health effects of ozone and soot pollution, and ways to reduce exposures and emissions, for targeted outreach to the 57,761 residents of Latino-Hispanic communities in Franklin County. At least 2,000 air quality brochures and fact sheets will be distributed at events and public service announcements will be broadcast on Spanish-language radio. A special initiative will target at least ten Latino-owned/operated small businesses to discuss the impact of poor air quality on the community, economic impact and ways to reduce exposure. Ohio Environmental Concern and the Mid-Ohio Regional Planning Commission are collaborating.

**Ohio Environmental Education Fund
Grants for the Regulated Community Audience**



In SFY2013, the OEEF funded five regulated community projects for a total of \$30,109.00

Northeast Ohio Regional Sewer District, “Applied Stormwater Management for the Regulated Community,” F13G-021, \$8,750, Cuyahoga County, Contact: Linda Mayer, mackl@neorsd.org (440) 975-3870

Provides training on the use of alternative infrastructure for cost-effective stormwater management to two different audiences. Seventy-five landscape professionals will receive two full days of training on storm water regulations, site selection, soil infiltration and volume requirements for storm water control measures such as pervious pavers, porous concrete, bio-retention cells, rain gardens and tree filter boxes. Training will include operation, maintenance, and installation pitfalls, with site visits to see best management practices (BMPs). Fact sheets, operational guidance documents and maintenance checklists from the training will also be posted online and distributed through a number of professional organizations and presented at the Central Environmental Nursery Tradeshow. The second audience of 100 storm water professionals and employees of regulated NPDES MS4 municipalities will be trained on how these and other control measures can be successfully retrofitted into urban neighborhoods and tour 37 BMPs installed in the West Creek neighborhood. Collaborators include the Chagrin River Watershed Partners, Cleveland Metroparks, Holden Arboretum, Ohio Department of Natural Resources Divisions of Forestry and Soil and Water Resources, Ohio EPA Northeast District Office and West Creek Preservation Committee.

Cuyahoga County Board of Health, “Pollution Prevention/Good Housekeeping Informational Poster for Phase II Storm Water Municipalities,” F13M-007, \$5,000, Cuyahoga, Lorain, and Summit Counties, Contact: Laura Travers, ltravers@ccbh.net, 216-201-2020.

Provides training sessions on storm water minimum control measures and best management practices (BMPs) for municipalities, targeting employees of municipal service, building and engineering departments in 59 cities, villages and townships in Cuyahoga County regulated under NPDES Phase II requirements. The project will also include development and distribution of a Pollution Prevention and Good Housekeeping informational poster.

Kleski Environmental Services, “QDC Level 2 Chemical Water Quality Assessment Training,” #S13M-048, \$4,165, Athens, Belmont, Guernsey, Lucas, Meigs, Noble, and Washington Counties, Contact: Jennifer Caroline Chapman-Kleski, Jennifer@kleskienvironmentalservices.com, 740-949-2240.

Seven Kleski Environmental Services (KES) employees will successfully complete a 2 1/2 day Chemical Water Quality Assessment Training conducted by Ohio University to become certified by the Ohio EPA as Level 2 Qualified Data Collectors; two employees will then apply to become Level 2 Qualified Data Collector Trainers. This training will provide comprehensive instruction on the use of protocols for water quality sampling field collection procedures, methods of quality assurance and control, instructions for measuring stream discharge/flow and instruction for creating a sampling plan and Level 2 project study plan. The training will benefit the KES field staff, enabling the company to help regulated small business and other clients understand and comply with governmental protocols, regulations and laws. B&N Coal, Inc. will be collaborating.

The Ohio State University – College of Food, Agricultural & Biological Engineering, “Low-cost, Low-energy Wastewater Treatment for Food Processors,” #S13M-055, \$5,000, Hamilton County, Audience: Regulated Community, Contact: Karen Mancl, mancl.1@osu.edu, 614-292-4505.

A hands-on learning center will be constructed in an existing building next to the newly constructed sand bioreactor treatment system at Whitewater Processing, Inc. The new plant is 1/5 of the cost of a more traditional pretreatment works that discharges to a Publicly Owned Treatment Works (POTW). The learning center will feature framed posters of the treatment process, models of treatment system components and a video of system construction. The educational program will include hands-on activities including sand analysis, liner installation and sealing, and wastewater dosing. Budget includes: signs/banners, demonstration supplies, printing, video editing, artwork and framing signs. Whitewater Processing Company is collaborating.

Grow Youngstown, “Compost Creation Campaign,” #S13G-065, \$7,194, Mahoning and Columbiana Counties, Audience: Regulated Community. Contact: Elsa Higby, elsa@growyoungstown.org, 330-286-0688.

Provides a year-long Compost Campaign to engage more farmers, businesses and community gardens in recycling organic matter, utilizing organic waste streams, and maintaining aerobic conditions in windrows and backyard composting. Project includes a two-day “Life in the Soil” class, a five-day advanced compost course using non-animal-based feedstocks, two on-farm

compost workshops for produce farmers and urban market gardeners and an event bringing together stakeholders that would benefit from a composting system in the Mahoning Valley. Collaborators include Goodness Grows, the Mahoning Soil and Water Conservation District, Mill Creek MetroParks and Trumbull Neighborhood Partnership.

Ohio Environmental Education Fund Statewide Sponsorships in SFY 2013



Ohio Academy of Science, *Environmental Science and Engineering Scholarship Program*, \$50,000, www.ohiosci.org

OEEF provided environmental science and engineering scholarships to 14 university students to encourage them to complete their degrees and enter professional practice in Ohio. According to Ohio EPA Director Scott Nally, "These awards encourage students to consider careers in environmental science and engineering. These fields not only offer many job opportunities, but are critical for training in advanced environmental technologies, advancing Ohio's technical expertise and building Ohio's future economy."

Students in four-year programs who received a \$2,500 scholarship for 2013 include:

- Christin Anderson, Oberlin College (Biology and Environmental Studies), Anchorage, AK
- Rachel Bellis, Baldwin-Wallace University (Biology), Brecksville, OH
- Jacob Cochran, Heidelberg University (Environmental Science), West Jefferson, OH
- Douglas Fox, Cedarville University (Environmental Science), Tiffin, OH
- Michelle Hummel, Case Western Reserve University (Civil Engineering), Canton, OH
- Amanda Kriner, Ashland University (Environmental Science and Biology), Medina, OH
- Cassandra Nix, Ashland University (Environmental Science/Biology/Toxicology) Elyria, OH
- Mitchell Ramsey, Ashland University (Environmental Science/Geology, Bucyrus, OH
- Lauren Shewhart, University of Dayton (Biology), Spring Valley, OH
- Kelly Sullivan, Ashland University (Environmental Science and Biology), Ashland, OH
- Aimee Weidner, Bowling Green State University (Environmental Science), Graytown, OH
- Zack Weilnau, Ashland University (Biology/Environmental Science), Willard, OH

Also receiving a \$1,000 scholarship for 2013 was:

- Erika Brandt, Oberlin College (Biology and Environmental Studies), Knoxville, TN

A student in a two-year program who received a \$1,250 scholarship for 2013 was:

- Michael Metheney, Stark State College (Environmental Health and Safety Technology), North Canton, OH

This year's student recipients have research and work experience in areas such as:

- mercury binding in forest soils;
- flood control infrastructure;
- bio-assessment of Ohio streams;
- global climatology for dry thunderstorms as a warning for wildfires;
- impact of invasive honeysuckle on mosquito populations;
- emergency preparedness for airborne releases of hazardous chemicals at critical infrastructure;
- release of estrogen compounds from waste water treatment plants;
- toxicology of saline deicing agents on aquatic organisms;
- performance of an experimental restored wetland;
- avian populations on the Lake Erie islands;
- amphibian populations in the Ottawa National Wildlife Refuge;
- diet and hibernation sites of Ohio bats;
- effect of amphibian chytrid fungus on salamanders in Ohio;
- invasive species in national parks;
- environmental toxicology and food consumption of snails and grasses in marshes; and
- reducing water use and increasing the use of native plants in landscape design.

Students are selected to receive scholarships based on an academic record with at least an overall GPA of 3.0; original research, scholarship, employment, volunteering, or other unique contributions to environmental science or environmental engineering; activity in non-athletic extra-curricular activities and organizations; ability to communicate; recommendations from education and environmental professionals; and a major in environmental science or environmental engineering.

Since the program began in 2000, \$627,450 in scholarships have been awarded statewide to 255 students at 47 Ohio colleges and universities.

Ohio Environmental Education Fund Statewide Sponsorships in SFY 2013 (Continued)

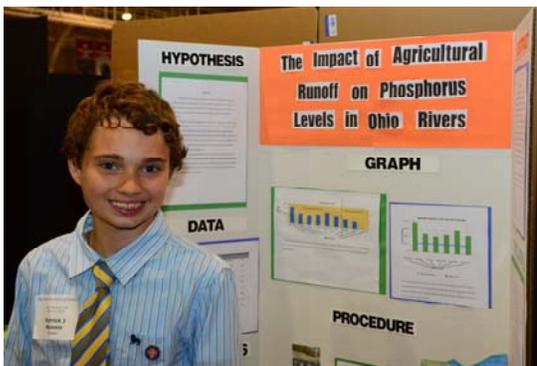


Ohio Academy of Science, *State Science Day 2013*,
\$12,700.00, www.ohiosci.org

OEEF presented \$100 prizes to the 27 winners of the Governor's Awards for Excellence in Environmental Protection Research at this year's State Science Day at The Ohio State University on May 5. In addition, OEEF provided \$10,000 as a title sponsor of the event, the equivalent of a state championship for student science research. The primary objective of State Science Day is to provide an opportunity for young students to demonstrate their abilities and interest in science through individual experimentation and research.

2013 Governor's Award Winners for Excellence in Environmental Protection Research

7th Grade



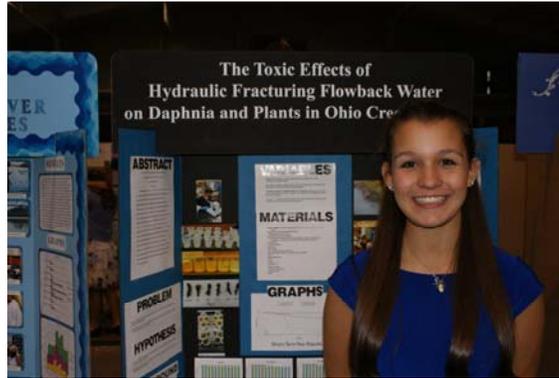
First Place: Mr. Kyle J. Taylor, Nightingale Montessori, Inc., Springfield
Capture ammonia in swine manure and use and preserve it for the nitrogen cycle

Second Place: Mr. Patrick J. Monnin, St. Andrew, Columbus
The impact of agricultural runoff on phosphorus levels in Ohio rivers

Third Place: Mr. Michael Chmura, St. Hilary, Fairlawn
The effect of pH on biodigester efficiency

Honorable Mention: Mr. Kavin S. Vedamoorthy, New Albany MS, New Albany
A simple biotest to determine the land oil spill toxicity

8th Grade



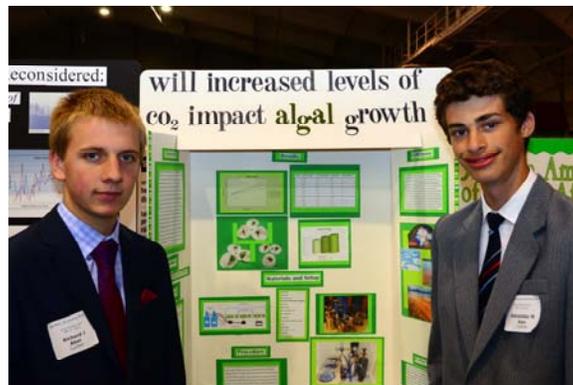
First Place: Ms. Jasmine N. Fujimura, Weisenborn MS, Huber Heights
Soy based ink, a more green solution?

Second Place: Ms. Anastasia S. Johnson, Willow Creek Learning Center, Youngstown
The toxic effects of hydraulic fracturing flowback water on daphnia and plants in Ohio creek water

Third Place: Ms. Sahaja Pandey, Walnut Hills HS, Cincinnati
Removing CO₂ from the atmosphere and transforming it

Honorable Mention: Mr. Charles A. Giganti, St. Raphael, Bay Village
The solution to air pollution

9th Grade



First Place: Mr. Alexander M. Kan, Canfield HS, Canfield with Mr. Richard Abel, 11th grade
The effects of CO₂ on algal growth

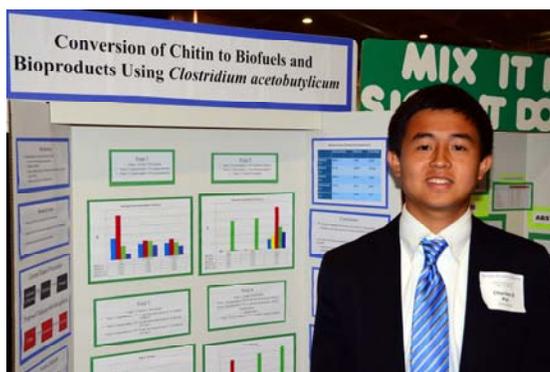
Second Place: Mr. Alec M. Gill, Brookside HS, Sheffield Village

Nanocrystalline solar cells: How anthocyanine dyes compare to Ruthenizer 535 dye

Third Place: Ms. Alyssa D. McQuate, Mapleton HS, Ashland
Fuel spills

Honorable Mention: Mr. Bryan J. Borodkin, St. Vincent St. Mary, Akron
The effect of fertilizer production on Daphnia

10th Grade



First Place: Mr. Bluye' B. DeMessie, William Mason HS, Mason
Sustainable and low cost approach for cleaning metal contaminated water using pyrolyzed banana peels

Second Place: Ms. Bethany G. Cox, Alliance HS, Alliance
Can no-till farming with biochar continue to increase the growth of soybean plants?

Third Place: Ms. Erin E. Sanderson, Bloom Carroll HS, Carroll
The environmental effects of the modern hydraulic fracturing process in a synthetic environment

Honorable Mention: Mr. Charles D. Pei, Upper Arlington HS, Upper Arlington
Conversion of chitin to biofuels and bioproducts using clostridium acetobutylicum

11th Grade



First Place: Mr. Richard J. Abel, Canfield HS, Canfield with Mr. Alexander Kan, 9th grade

The impact of CO₂ on algal growth

Second Place: Mr. Jacob L. Ollier, Carroll HS, Dayton

The effect of a green roof on the rate of change of a building's interior ambient temperature

Third Place: Mr. Mitchell T. Dunlap, Springfield HS, Springfield

Bioremediation of organophosphates

Honorable Mention: Ms. Sarah A. Barbaro, Carroll HS, Dayton

RainCheck

12th Grade



First Place: Ms. Ashley N. Scruse, Springfield HS, Springfield

Which catalyst will yield the most efficient biofuel from soybean oil?

Second Place: Mr. John M. Holcomb and Ms. Kelsey A. MacGregor, Blanchester HS,
Blanchester

Building an anaerobic digester for home use

Third Place: Mr. Michael J. Jacob, Lehman Catholic HS, Sidney

Recycled Insulation

Honorable Mention: Ms. Anna E. Grushetsky, Beaumont School, Cleveland Heights

Is our forest a fractal? Mathematizing the distribution of deciduous trees

Ohio Environmental Education Fund Statewide Sponsorships in SFY 2013 (Continued)

Ohio Federation of Soil and Water Conservation Districts,
Ohio Envirothon 2013, \$1,000

<http://www.dnr.state.oh.us/tabid/8652/Default.aspx>



OEEF sponsored the Oral Presentation Medallion at this year's Ohio Envirothon state championship for high school teams, June 11-12 at Deer Creek State Park. The team from Granville High School won this award and placed first in the overall state competition. The Envirothon is the nation's largest high school environmental competition, testing student knowledge of soils and land use, forestry, wildlife, aquatic ecology and current environmental issues. Each year the Envirothon focuses on a specific environmental theme. This year's theme was "Nonpoint Source Pollution and Low Impact Development."

OEEF support also helped the Granville team travel to Montana State University in Bozeman, Montana in July to compete as Ohio's representative in the Canon North American Envirothon.

<http://www.dnr.state.oh.us/default/education/envirothon/default/tabid/8652/Default.aspx>



Granville High School Team members Julie Archer, McGlynn Cauchon, Amanda Bressond, Amelia Anderson, and Daulton Boucher being presented with the Award for Best Oral Presentation by Dennis Clement, Ohio EPA.

Ohio Environmental Education Fund Statewide Sponsorships in SFY 2013 (Continued)

National Engineers Week Future City Competition,
Ohio Region, \$1,000, www.futurecity.org and
www.futurecity.org/ohio



Teams from 18 Ohio middle schools built cities of the future for the 2013 state finals competition, January 19 at Columbus State Community College. This national competition for middle school teams introduces students to careers in engineering, architecture and city planning. Teams work with a teacher and engineer-mentor to design a city of the future, using an award-winning computer game, SimCity 4 Deluxe™. Teams must also build a scale model of their city, write an essay and prepare an oral presentation. Scoring for the competition incorporates realistic engineering factors, social factors such as population density and transportation needs, and environmental factors such as energy efficiency and recycling infrastructure. This year's competition essay topic asked students to choose an energy source for their city that does not deplete natural resources and has limited impact on the environment. Essays must address how engineering can improve the health and welfare of the team's Future City citizens.

Students from Heritage Middle School in Westerville, Ohio took top honors at Ohio's Future City Competition this year, with their city Aspira.

The 2013 Ohio Special Award for Best Use of Water Resources Engineering (Sam Chebaro Memorial Award), sponsored by the Ohio EPA Office of Environmental Education, was also won by the team from Heritage Middle School, with Honorable Mention to the team from Batavia Middle School in Batavia. OEEF support also helped the Heritage team travel to Washington, DC in March to compete in the national Future City Competition.



National Engineers Week Future City Competition – Ohio Region Winning team from Heritage Middle School, Westerville, Ohio with model of their city “Aspira”. Students Cece Hollins, Jenna Johnston, Sam Johnston, Teacher Lee Smith and Engineer Mentor Ben Miller from CESO.

Ohio Environmental Education Fund Statewide Sponsorships in SFY 2013 (Continued)

Ohio Chemistry Technology Foundation, \$1,000, “Teachers, Industry and the Environment” (TIE) Conference,

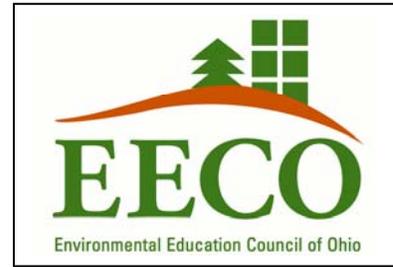
<http://www.ohiochemistry.org/aws/OCTC/pt/sp/tieconference>

TIE is a 2½-day professional development conference giving teachers the opportunity to experience first-hand real world environmental challenges, and to learn how they are being addressed by scientists and engineers in industry and government. Established in 1993, the conference is presented each October to a select group of 60 elementary and middle school teachers from across Ohio, each sponsored by a member company of the Ohio Chemistry Technology Council. Engineers, educators and scientists from the chemical industry and Ohio EPA present environmental issues in understandable, entertaining and action-packed experiments.



Ohio Environmental Education Fund Statewide Partnerships in SFY 2013

Environmental Education Council of Ohio, \$89,970



In 1995, Ohio EPA's Office of Environmental Education initiated a long-term partnership with EECO to build statewide capacity for environmental education in ways that could not be accomplished within the confines of a short-term general grant. Through this eighteen-year partnership, OEEF and EECO are able to provide professional development opportunities for teachers and non-formal environmental educators, as well as quality curriculum resources aligned with the Ohio Department of Education's Academic Content Standards and Model Curriculum.

Environmental Career Ambassadors

For K-12 education, the partnership continues to focus on the STEM disciplines (science, technology, engineering and mathematics). This year the partners joined forces with The Ohio State University School of Environment and Natural Resources to launch a new statewide network of volunteer **career ambassadors in environmental science and engineering**.

More than 100 professionals have already signed on, indicating their willingness to:

- Make classroom presentations
- Participate in school Career Days
- Host field trips
- Offer internships
- Offer job shadowing opportunities
- Mentor young professionals, and
- Recruit additional career ambassadors

EECO, Ohio EPA and OSU are recruiting more professionals to the online database, at <http://epn.osu.edu>. Once it is fully populated, educators will have a cost-free tool to search by county to identify local environmental scientists and engineers interested in working with their local schools.

Partnership Structure

A six-member **partnership steering committee** sets partnership goals in consultation with the EECO Board of Directors and the OEEF Advisory Council. The committee includes the EECO Executive Director and the Chief of Ohio EPA's Office of Environmental Education, and the chairmanship alternates between OEE and EECO representatives. The partnership supports part-time **regional directors** in each of the state's 12 education regions, who work closely with teachers and environmental educators at the local level to offer workshops and share teaching resources. A network of **contacts in more than 2,000 school buildings** helps to publicize and distribute the partnership's materials statewide. A **partnership insert** in the EECO newsletter goes out three times each academic year to educators statewide, promoting cross-pollination between the OEEF grant programs, the products resulting from outstanding environmental education grant projects and EECO conference and workshop opportunities.

Ohio EPA—Environmental Education Council of Ohio
Partnership Regions



Environmental Career Ambassadors Initiative
<http://epn.osu.edu/>

Workshops and Programs

Partnership funds made it possible to offer **104 regional professional development workshops and school presentations in SFY 2013 to 5,575 participants**, offering teachers certification in nationally recognized curricula such as *Healthy Water, Healthy People*, www.healthywater.org; The Leopold Education Project, www.lep.org; Project Learning Tree, www.plt.org; Project WET (Water Education for Teachers), www.projectwet.org; Project WILD, Project WILD Aquatic, Flying WILD, WILD School Sites, and *Science and Civics: Sustaining Wildlife*, all at www.projectwild.org; and Wow! The Wonders of Wetlands, http://www.wetland.org/education_wow.htm. This year the partners continued to promote new early childhood modules from Project WILD and Project Learning Tree to Head Start educators and pre-school programs. Other teacher workshops offered training in programs developed specifically for Ohio, such as Master Composting, Vermi-composting, Dig in Soils, Insects, Science Through Stories, Geology Rocks, Taking Care of Nature's Resources and Animal Adaptations. School presentations included demonstrations of water quality monitoring techniques, the EnviroScape® drinking and wastewater treatment model and Ohio Wildlife History model. EECO and OEE presenters also frequently demonstrate other hands-on models such as the EnviroScape® watershed model, storm drain models, soil tunnels and the EnVision 3100® ground water flow model at schools and teacher conferences.



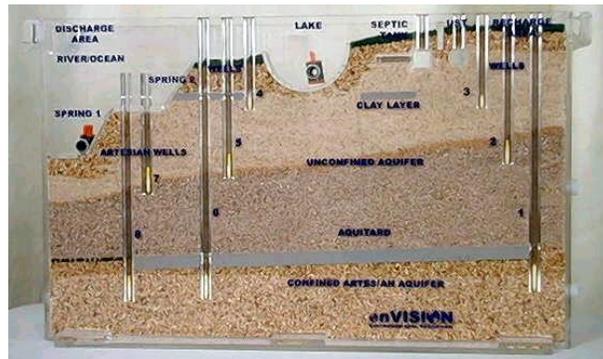
Trashology



EnviroScape® watershed model



Ohio Wildlife History Model



Ground water flow simulator

Conferences



EECO's April, 2013 **annual conference** at Mohican State Park also featured a day of interactive workshops at Mansfield City Schools' Springmill Learning Center, and a pre-conference forum at Ashland University focused on the Economy of Local Foods. Keynote speakers, workshops, field trips and concurrent sessions helped participants learn to tailor education programs to most effectively engage audiences of different ages, backgrounds and interests. Four recent OEEF grant projects were presented: Five Rivers Metro Parks' "The Power of Outdoor, Nature-Based Inquiry"; The Ohio State University Extension's "Youth Scientist: Creating Environmental Stewards" curriculum on how scientists research invasive species like the emerald ash borer; New Philadelphia City Schools' salamander monitoring project; and the Ohio Lake Management Society's Citizen Lake Awareness and Monitoring (CLAM) network.



The annual conference also highlighted the national **No Child Left Inside** movement, promoting outdoor learning and increased environmental education content and funding in teacher preparation. EECO is working with local Leave No Child Inside collaboratives in many Ohio cities and drafting a **state environmental literacy plan** with their assistance. Ohio EPA and the Ohio Departments of Education, Health, Natural Resources and Transportation are supporting this effort as a way getting students outdoors, inspiring them to

explore STEM (science, technology, engineering and mathematics) careers, building their interest in environmental concerns and exposing them to field investigation techniques.



Regional Conferences

The partnership also provides financial support for three regional conferences for teachers and non-formal educators: the “**Winter Snow, Out We Go**” conference in northeast Ohio in February; the “**Black Swamp Educators’ Extravaganza**” in northwest Ohio in June, sponsored by a number of soil and water conservation districts; and the “**101 Alternatives to the Chalkboard**” conference in southwest Ohio in October.

Local Programs

To most effectively reach a wider audience and avoid duplication of effort, the partners work closely with local environmental educator collaboratives such as the Earth Day Coalition in Cleveland, the Delaware Environmental Education Partnership (DEEP), Greater Cincinnati Environmental Educators (GCEE), Terrific Resources for Environmental Education (TREE) in central Ohio and the Tri-County Environmental Educators in the Youngstown area. These collaboratives offered **regional resource fairs** for teachers, afterschool care providers and home schoolers. The partners also exhibited or presented at **seven special events and conferences with 7,725 participants**, including the Cincinnati Paddlefest, Children’s Water Festivals in Dayton and Columbus, Ohio Wildlife Diversity Conference and local Earth Day events. Local collaborators include soil and water conservation districts, solid waste management districts, county extension offices, health departments, zoos, nature centers, botanical gardens, and recycling and litter prevention offices.

Adult education opportunities also included **nine OEEF grant writing workshops** offered around the state last year, reaching a total of 457 participants. EECO’s assistance in hosting and publicizing these workshops has been instrumental in helping the OEEF increase the number of grants awarded in under-served counties.

Ohio's Clean Diesel School Bus Fund Annual Summary, SFY 2013



This year Ohio EPA was able to use state civil penalty dollars to install pollution controls onto 107 school buses, idle reduction equipment onto 113 school buses and remove more than four tons of pollutants from Ohio skies.

During the fall, 2012, and spring, 2013, grant cycles, Ohio EPA awarded \$429,117.53 to 12 school districts for their school buses. These funds provided pollution control equipment to reduce student and driver exposure to diesel exhaust. Ohio EPA estimates that these grants will remove more than 400 pounds of fine particulates (soot particles), and more than 8,000 pounds of hydrocarbons, nitrogen oxides and carbon monoxide from the air annually for each year that these buses continue to operate.

Recipients this year include:

Anna Local Schools, Shelby County, \$42,539 to install diesel oxidation catalysts and anti-idling equipment onto seven buses and anti-idling equipment onto an additional seven buses, #B2013F-003, Contact: Dave Baumer, dbaumer@anna.k12.oh.us 937-394-2011, ext 124.

Benton Carroll Salem School District, Ottawa County, \$9,396 to install diesel oxidation catalysts onto six buses, #B2013F-001. Contact: Paul Greener, pgreener@bcssd.com 419-898-6214.

Buckeye Central Local School District, Crawford County, \$17,558 to install diesel oxidation catalysts onto four buses and anti-idling equipment onto five buses. #B2013S-017. Contact: Scott McCarthy, 419-492-2593, smccarthy@buckeye-central.org

East Holmes Local Schools, Holmes County, \$55,668.53 to install diesel oxidation catalysts and anti-idling equipment onto 11 buses and anti-idling equipment on an additional six buses, #B2013F-006. Contact: Marsha Clark, ehlm_clark@tccsa.net 330-893-2610.

Greenville City Schools, Darke County, \$63,653 to install diesel oxidation catalysts and anti-idling equipment onto seven buses, diesel oxidation catalysts onto six buses and anti-idling equipment onto an additional 12 buses #B2013F-011. Contact: Beth Cain, bcain@greenville.k12.oh.us 937-548-4464.

Huber Heights City Schools, Montgomery County, \$98,152 to install diesel oxidation catalysts onto six buses and anti-idling equipment onto 40 buses.

#B2013S-019. Contact: William Peck, 937-237-6385,
William.peck@hubergheightscityschools.org

Marion City School District, Marion County, \$31,305 to install diesel oxidation catalysts onto 17 buses and idle reduction equipment onto two buses, #B2013F-012. Contact: Fred Buckner, fred_buckner@marioncity.k12.oh.us 740-223-4398.

Oregon City Schools, Lucas County, \$22,358 to install diesel oxidation catalysts onto 14 buses. #B2013S-022 Contact: Terry Huss, 419-693-7727, thuss@oregoncs.org

Rossford Exempted Village Schools, Wood County, \$10,962 to install diesel oxidation catalysts onto seven buses, #B2013F-007. Contact: Jeff Culler, jculler@rossfordschools.org 419-666-2010.

Sylvania City Schools, Lucas County, \$54,648 to install diesel oxidation catalysts and anti-idling equipment onto eight buses and anti-idling equipment onto an additional eight buses, B2013F-015. Contact: Joe Kahl, jkahl@sylvaniaschools.org 419-824-8686.

Tiffin City Schools, Seneca County, \$13,164 to install diesel oxidation catalysts onto eight buses. #B2013 S-023. Contact: Randy Conger, 419-447-8729, randy_conger@tiffincityschools.org

Waverly City Schools, Pike County, \$9,714 to install diesel oxidation catalysts onto six buses, #B2012F-009, Contact: Roger Ramsey, rramsey@waverly.k12.oh.us 740-947-4770.

Why Retrofit School Buses?

Research by the U.S. Environmental Protection Agency (US EPA) suggests that school bus commutes potentially expose children to significantly higher concentrations of pollutants than what is measured in the community's outdoor air. Children are especially sensitive to air pollution because their respiratory systems are still developing and they have a faster breathing rate than adults. The Ohio Department of Education estimates that 1.3 million Ohio children ride school buses to and from school every day. While statistics show that school buses are the safest way to transport children, Ohio EPA wants to ensure that they are also the cleanest way to transport children.

Federal mandates on manufacturers of new school buses beginning with the 2007 model year made these buses up to 95% cleaner than those manufactured before 2004. However, diesel engines are durable and long lasting. It will take a long time for new vehicles to replace the heavy-duty buses currently on the road. These

existing school buses can be made much cleaner by retrofitting them with pollution control devices and by switching to cleaner fuels. Ohio's Clean Diesel School Bus Fund was created for this purpose by the Ohio General Assembly in 2006. The state portion of the funding comes from civil penalties that Ohio EPA collects for violations of Ohio's environmental protection laws. In SFY 2013, the Fund received \$175,481.10 in penalties, all of which was awarded in grants. Administrative costs of the grant program are borne by the Ohio EPA Division of Air Pollution Control, Office of Environmental Education and Office of Fiscal Administration.

This program has three primary goals: (1) retrofit existing school buses with devices and/or cleaner fuels that reduce pollution; (2) reduce school bus idling; and (3) improve air quality in Ohio, particularly in counties that are not currently meeting Clean Air Act standards for fine particulates (PM 2.5). Since this grant program began in 2006, Ohio EPA has awarded more than \$7.7 million dollars to install pollution control equipment on 2,511 school buses statewide, install idle reduction equipment on 845 school buses and remove more than 100 tons of pollutants from the air each year that these buses continue to operate.

Ohio Clean Diesel School Bus Fund Fiscal Activity SFY 2006-2013

Revenues Received:				Grants Awarded:
SFY	Ohio civil penalties	Federal DERA grant	ARRA stimulus grant	
2006	\$434,015.00			\$434,257.78
2007	\$726,217.00			\$681,465.68
2008	\$824,238.39			\$599,869.37
2009	\$778,386.11	\$295,230.00	\$1,730,000.00	\$1,647,674.52
2010	\$994,541.00	\$352,941.00		\$2,392,100.45
2011	\$996,542.00	\$352,941.00		\$1,355,427.79
2012	\$477,168.00	\$293,201.00		\$1,068,495.39
2013	\$175,481.10			\$429,117.53
TOTAL	\$5,406,588.60	\$1,551,779.00	\$1,730,000.00	

Note: Grant Awards appear to exceed revenues in FY06 because grantees received 90% payments. Final 10% payments were made as projects were completed into the following FY. Ohio EPA reports totals the FY they are announced and contracts signed.

Ohio EPA used these state civil penalty dollars and school bus retrofit projects as the required state match to leverage new federal DERA grant of \$257,466.00 during SFY 13. A recent change in state law redirected those funds to Ohio EPA's Diesel Emission Reduction Grant program, where they were awarded for early retirement of 15 old diesel school buses, and their replacement with model year 2013 school buses running routes in the Cincinnati area.

Grant application deadlines for Ohio's Clean Diesel School Bus Fund are March 1 and September 1 each year, with applications posted at www.epa.ohio.gov/oe .



For additional information about diesel emissions from school buses and other clean diesel opportunities, consult US EPA's Clean School Bus USA Web site, at www.epa.gov/cleanschoolbus/.

For additional information about recent research into health effects, consult the University of Cincinnati's Childhood Allergy and Air Pollution Study Web site, at <http://eh.uc.edu/ccaaps/>.

Ohio Clean Diesel School Bus Fund Estimated Annual Emission Reductions in Pounds Grants Awarded May 2006 — May 2013

