



10<sup>th</sup> Annual Progress Report  
NatureScape Broward/Broward Schools Environmental Initiative  
Covering the Period July 1, 2016 – June 30, 2017



## Executive Summary

This is the tenth annual progress report prepared under the Partnership Agreement to implement the terms for support of the NatureScape Broward program within the Broward County School District areas as originally approved by the School Board of Broward County (SBBC) in May 2007 and by the Broward County Board of County Commissioners in June 2007. NatureScape Broward is a program of the Environmental Planning & Community Resilience Division (EPCRD). A second five year agreement, currently in effect, was executed in December 2012.



The scope of work focuses on creating sustainable schools in a holistic approach that brings all of the County's efforts, resources, and programs under an umbrella initiative, thereby maximizing access and the use of various tools. A key component of this Agreement is the P<sub>3</sub> Eco-Challenge, which acknowledges and rewards schools and teachers for participating/implementing environmentally sustainable measures and green initiatives within their schools. Other tasks within the Partnership Agreement as discussed herein include: Development of tools and trainings to enhance curriculum; NatureScape presentations in schools; Trainings for facilities managers; NatureScape learning gardens/certifications; Water Matters Day partnerships; Irrigation system evaluations; Water audits; and Coordination/Administration.

Primary support for implementation of the Partnership Agreement during the reporting period included the following:

- Jennifer Jurado, Ph.D., Division Director, EPCRD
- Carolina Maran, Ph.D., Water Resources Manager, EPCRD
- Robert "Rudy" Rudolph, Water Planning Program Manager, EPCRD
- Victor Suarez, NatureScape Broward Education Specialist
- Maena Angelotti, NatureScape Broward Water Conservation Specialist, EPCRD
- Kimberly Mayo, NatureScape Program Assistant, EPCRD
- Guy Barmoha, Director of Math Science, & Gifted Department, SBBC liaison for the Environmental Partnership, SBBC
- Lisa Milenkovic, PhD, Supervisor, STEM+Computer Science, SBBC
- Marilyn Johnson, PhD, Science Supervisor, SBBC
- Rob Jindracek, Manager, Environmental Conservation/Utility Management, SBBC
- Ed See, Environmental Conservation/Utility Management, SBBC

A review of task progress under the current renewal period follows. This report covers the period July 1, 2016 through June 30, 2017.

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## Task 1 – Green Schools Recognition Program

This task supports SBBC's efforts to educate its community and engage in environmental practices within the schools through a Green Schools Sustainability/Recognition Program that acknowledges and rewards schools, teachers, and students for implementing environmental measures and green initiatives within their schools and communities. The task consists of four subtasks.



### Coordinate Fundraising Efforts

Working with the SBBC's Math, Science & Gifted Department staff, NatureScape Broward staff within the County's Environmental Planning and Community Resilience Division (EPCRD), made approximately 80 solicitations to agencies, public and private companies (local, national and international), financial institutions, and nonprofit groups to seek funds for a Green Schools Recognition Awards program - P<sub>3</sub> (Preserving Our Planet for Posterity) Eco-Challenge. These solicitations were made in person, by phone, by letter, and by email. Sponsors were provided the opportunity to participate at five different levels of sponsorship. Each sponsorship level provided for increasing levels of recognition based on the amount of contribution. These solicitations resulted in approximately \$36,000 in cash, prizes and in-kind items for the Broward P<sub>3</sub> Eco-Challenge Awards Ceremony and have provided a foundation for continued support and future sponsorships.

 <p><b>Platinum Sponsor</b></p> <ul style="list-style-type: none"> <li>• Whole Foods Market</li> </ul>	 <p><b>GOLD SPONSOR</b></p> <p><b>Gold Sponsors</b></p> <ul style="list-style-type: none"> <li>• National Wildlife Federation</li> <li>• JM Family Enterprises</li> <li>• Hazen &amp; Sawyer</li> <li>• Everglades Holiday Park</li> <li>• Wacky Wild Science</li> </ul>	 <p><b>SILVER</b></p> <p><b>Silver Sponsors</b></p> <ul style="list-style-type: none"> <li>• Marine Industries Association of South Florida</li> <li>• FIU SEAS program</li> <li>• South Florida Audubon Society</li> <li>• National Geographic Learning</li> <li>• Diamond Del's Gem Mining Adventure</li> </ul>	 <p><b>BRONZE SPONSOR</b></p> <p><b>Bronze Sponsors</b></p> <ul style="list-style-type: none"> <li>• Calvin Giordano Associates</li> <li>• Citrix</li> <li>• Curriculum Associates</li> <li>• Allstate Resource Management</li> <li>• Alexanders Plant Farm</li> <li>• Educational Resource Solutions</li> <li>• Miller Legg</li> <li>• Explore Learning</li> <li>• Florida Ag in the Classroom</li> <li>• Museum of Discovery &amp; Science</li> <li>• Broward County Parks and Recreation</li> <li>• Broward Sierra Group</li> <li>• National Geographic Learning</li> <li>• Broward County Drone League</li> <li>• Promethean</li> </ul>
 <p>+ 8 Eco Friends</p>			

Once again, Whole Foods Market was the Platinum Sponsor for the awards ceremony. The Gold sponsors remained the same as in previous years as well, although Wacky Wild Science, a former Eco-friend sponsor increased its in-kind sponsorship and this year became a gold level sponsor. Their prize is an in-school field trip bringing a museum experience to the whole school. In addition, a new Silver sponsor, Diamond Del's Gem Mining Program, offered a mobile gem mining adventure for up to 150 students. There were two new bronze sponsors this year – Alexander's Plant Farm donated a garden installation with wildlife gardening lessons and the Drone League donated a drone presentation and training.

### **Maintain and Enhance the Rubric**

During the first year of the current agreement, a matrix or rubric was developed through extensive coordination with County agencies and SBBC staff in order to recognize schools, teachers, and students that are implementing sustainable environmental practices. Each year, the rubric is reviewed and modified to reflect changes in programs and comments from teachers and administration. The rubric was revised this school year to add a "Custodial" category and is currently being reviewed once again to identify what modifications need to be made to reflect existing opportunities for the school community to showcase environmental stewardship within their schools and communities and how it might be modified to increase its use amongst teachers and schools. Plans are underway to make major changes to the P<sub>3</sub> Eco-Challenge application process and are expected to be implemented in the 2018-2019 school year. The application is not expected to be available online in the 2017-2018 school year due to major modifications being made to the Broward County Public Schools website.

### **Coordinate Solicitation and Review of Submissions**

NatureScape staff actively promoted the P<sub>3</sub> Eco-Challenge throughout the school year and encouraged participation from the teachers and schools. The P<sub>3</sub> Eco-Challenge was featured in the *SchoolScapes* e-newsletter as well as being promoted on the SBBC's environmental and STEM web pages. While School Board staff was directly responsible for collecting submissions, NatureScape and other County staff met regularly with them to help identify and encourage schools and teachers that should apply, as well as discuss other issues. The County staff also identified environmental professionals to serve as judges for the P<sub>3</sub> submissions.

### **Develop Awards Package and Host Ceremony**

The P<sub>3</sub> Eco-Challenge is promoted as a contest offering a prize of \$2,000 to the top school, \$500 to the top teachers, and \$250 for winning students. However, as in past years, NatureScape staff was extremely successful in soliciting significant sponsorship funds, which allowed for additional cash awards and prizes to all the applicants of the P<sub>3</sub> Eco-Challenge. By the time of the Awards Ceremony on May 10, over \$35,000 in cash, materials, and in-kind prizes and services had been secured for the event.

NatureScape staff arranged for the Broward County Park Division's Long Key Nature Center in Davie to serve once again as the venue for the Awards ceremony. Multiple P<sub>3</sub> Eco-Challenge

Committee planning meetings were held with EPCRD, SBBC, and the Environmental Conservation Organization (ECO) staff in order to develop the Awards Ceremony Program. SBBC staff was able to arrange for Charles Webster, Broward County Public Schools (BCPS) Legislative Affairs, to serve as Master of Ceremonies. NatureScape staff arranged for Mr. David Mizejewski to serve as the Keynote Speaker. Mr. Mizejewski is a media personality, author, blogger and a naturalist with the National Wildlife Federation. He is a regular guest on numerous television shows including *Conan*, *Inside Edition*, and *Today* and is a regular speaker at environmental conferences both on the national and local level. Mr. Mizejewski presented information about National Wildlife Federation, Broward County's successful partnership with NWF and shared some information about several wildlife ambassadors that joined him on stage. The local wildlife was provided by the staff at Flamingo Gardens, which serves as a venue for fieldtrips with 28,000 students visiting last year.

On May 10, 2017 over 200 guests, Broward County Commissioner Beam Furr and School Board Member Laurie Rich Levinson congratulated prize winners. Over-all winner Tequesta Trace Middle School won \$2,500 and runner-up Beachside Montessori Village won \$1,500. Forty-Six (46) other cash prizes ranging from \$50 to \$500 were awarded to schools, teachers, custodians and students. In addition, numerous schools and teachers received certificates for in classroom programming by professional environmental educators. Guests took home door prizes, native wildflowers and trees.



Thanks to a generous sponsor, there was a Native Tree Giveaway at P<sub>3</sub> Eco-Challenge Awards Ceremony



Board Member Laurie Rich Levinson presents \$2,500 check to Carolyn Sant Angelo of Tequesta Trace Middle School

## Task 2 - Development of Tools and Trainings to Enhance Curriculum

Under the partnership agreement, EPCRD is continually exploring opportunities for new curriculum, programs, tools, and trainings to offer to students, teachers, and staff to improve programming to the school community.

NatureScape frequently updates its Educator Resource List which is provided to teachers and includes local, state and national environmental educational resources that can assist them in enhancing their curriculum. New resources are added to the list as they are identified. During the reporting period, the Educator Resource List was updated as appropriate and posted on Edmodo for the use of all teachers. Edmodo is a website that helps connect students, educators, and parents with the people and resources needed to reach their full potential.



Per the direction of SBBC staff, NatureScape trainings have continued to include additional resources to help teachers inform their students about Climate Change. This includes references to climate change concepts and lessons that can be shared in the classroom as well as science-based referenced websites.

NWF also has a website where climate smart educational resources and learning opportunities can be found at <http://climateclassroom.org/> and has recently released a second website focused on grades 3-6 which can be found at <http://climateclassroomkids.org> .

In addition, with the inclusion of Citizen Science as the Special Projects/Innovation category in the P<sub>3</sub> Eco-Challenge, EPCRD staff has prepared a list of popular Citizen Science websites, where teachers and students can provide information from their mobile devices or laptops to assist researchers in scientific data gathering. One excellent source to help get teachers started can be found at <https://scistarter.com/> .

Trainings remain an integral part of the Environmental Partnership. Over 50 teachers received some type of NatureScape-based training during the reporting period, including two NatureScape one-day teacher training workshops that were held on August 2, 2016 and June 27, 2017. There were a total of 36 teachers that attended these in-service trainings. Teachers who completed the trainings and their follow-up assignments were eligible for in-service points.



During the 2017 Habitat Stewards class, teachers helped remove invasive plants and assisted in dune planting at Hollywood Beach

During this reporting period, the NatureScape staff also hosted a National Wildlife Federation Habitat Steward 5-day training for 15 teachers (June 2017.) Habitat Steward teachers Jacqueline R. Sanchez from Griffin Elementary School and Linda Gancitano from Driftwood Middle School, former P3 Eco-Challenge winners, shared strategies for accessing environmental opportunities within the school district and how to green their campuses. They also shared ideas about the projects that are happening at their own schools with suggestions on how the soon-to-be stewards can implement these or similar programs on

their campuses. Staff also participated in an invasive plant removal project and dune planting as a new part of the Habitat Steward program this year.

In conjunction with the Broward County Parks & Recreation Division, NatureScape Broward helped host the math and science teacher meetings for the year at Long Key Nature Center and Tree Tops Park. This also provided an opportunity to introduce teachers to the County Parks staff, as well as introducing them to potential new field trip locations and opportunities for volunteer hours for students and others at these locations. NatureScape staff introduced its programs to teachers and also coordinated with SBBC to offer a list of suggested agencies that they might invite to this event so that teachers could meet representatives from local environmental groups and agencies.

Staff shared information with teachers about the free GLOBE Training for Eco-Schools USA offered through NWF. This training provides learning opportunities that are scientifically rigorous while allowing students to address sustainability through service learning.

[http://www.nwf.org/Eco-Schools-USA/GLOBE/On-Line-Course-Information.aspx?s\\_email\\_id=20161012\\_ECO\\_ENG\\_GLOBE\\_ProjectPB|STedu](http://www.nwf.org/Eco-Schools-USA/GLOBE/On-Line-Course-Information.aspx?s_email_id=20161012_ECO_ENG_GLOBE_ProjectPB|STedu).

Staff also shared information with teachers about the U-FUTuRES (UF Unites Teachers to Reform Education in Science) program, a professional learning opportunity for 4<sup>th</sup> – 8<sup>th</sup> grade teachers to transform how science is taught in Florida's middle schools. U-FUTuRES is a certificate program offered by the University of Florida, College of Education, School of Teaching and Learning.

During the school year, NatureScape staff also encouraged high school students, through their science teachers, to participate in the Aquatic Plant Management Society's Scholarship Fund.



Following up on last year's "100 Days to Save" water conservation contest, this year schools were asked to create a 30 second PSA video with the focus *#watermatters – Water Conservation: what students can do?* The contest was designed to inspire and empower students to educate others about the importance of water conservation. The videos had to show water conservation-minded behavior happening at schools and include water conservation facts. The winning school was Orange Brook Elementary School which won a water bottle filler for their entry "Water You Wasting It For?" Other top finishers won educational science kits.



As winner of the "100 Days to Save" water conservation contest, Orange Brook Elementary School won a water bottle filler to help reduce the use of plastic bottles at their school.

Maena Angelotti also coordinated the "How Low Can You Go Contest", assisting schools with monitoring and reducing their water consumption for a new Water Conservation category as part of the contest. How Low Can You Go has a partnership with the Miami Heat Basketball franchise which rewards schools that win, among other things, tickets to a Heat home game. Nine schools entered the water conservation section which challenges schools to reduce water at their schools during an approximately three month period. Lauderdale 6-12 STEM-MED won for reducing the most water and was recognized during a Miami heat game.

In addition, EPCRD staff provided Dr. Marilyn Blair-Johnson, the Science Supervisor for SBBC, with resource materials including lessons and case studies, to assist in creating the new Climate Change and Water Management modules for the Environmental Science Honors program.

EPCRD invited teachers to participate in a Climate Education Teach-In. The Alliance for Climate Education hosted a global climate teach-in on April 24<sup>th</sup>. Teachers were able to stream videos from their interactive climate assembly, Our Climate Our Future and participate in a Q&A session with climate scientist Dr. Scott Denning of Colorado State University. EPCRD, working with SBBC, is also helping to organize student participation at the December, 2017 9<sup>th</sup> Annual Southeast Florida Regional Climate Leadership Summit.

### Task 3 - NatureScape Presentations in the Schools

NatureScape continued to maintain an active presence in the schools, providing presentations and support for projects throughout the year. During the reporting period, 236 programs were delivered to approximately 5,830 students and included the following:



During summer 2016, NatureScape staff was able to engage students by providing presentations at libraries and summer camps on an as requested/as available basis. A new program in summer 2016 was presented at James S. Hunt Elementary School. Called “Summer Break Spot”, it is hosted by the Coral Springs Police Department, and it allowed NatureScape to provide outreach to many Title I students. The program works in conjunction with the Meals on Wheels Program.

NatureScape staff participated in the Science Night at Challenger Elementary School in September which had approximately 500 participants. Our staff provided lots of information to an energetic audience about water and energy conservation, habitat certification and county programs available to the public.

A new program that was presented to students this year by Victor Suarez was held in conjunction with “Working Forests Week” sponsored by the Florida Forestry Association during the third week in October. This program served to introduce and remind students about products that come from our Florida forests and the role they play in our economy and the available careers in the industry. Staff made 17 of these presentations to 355 students at three different schools.

During the reporting period, campus tour programs were also delivered to elementary, middle, and high schools. It has become increasingly evident that exposure of teachers to the NatureScape Teacher In-service and/or the NWF Habitat Steward training opportunities has helped drive requests for these tours as many of these were scheduled as a result of teachers attending these trainings.

Another activity that is popular with teachers is the Everglades Food Web activity, a program that involves students playing the role of flora and fauna in the Everglades. They learn about adaptation, habitat and interdependence, as well as human impacts to that fragile ecosystem.

At their request, Maena also met with SBBC staff to discuss water conservation strategies for the Greening Athletic Events meeting in August 2016. In November, Maena judged the American Water Works Association’s Water Tower Competition which provides students with a fun-filled, science-oriented competition aimed at introducing high school and middle school students to Engineering and professions in the water industry fields.

Career Days are always an opportunity to interact with students and teachers. This year, Maena presented at Royal Palm and Oriole Elementary schools Career Days. Several other schools also requested NatureScape's assistance in finding presenters for their Career Days. Staff helped arrange participation from Agriculture in the Classroom, Broward County Air Quality, local municipalities, Florida Forest Service, the South Florida Water Management District, South Florida Audubon Society, and the South Florida Public Archaeology Network which helped make these events a success.

The container garden program, one of the most popular NatureScape programs, was presented to elementary and middle school students. In this program, school students learn about plant structures and create their own container gardens. This program also incorporates and explains the concepts of reduce, reuse and recycle and presents action steps that students can take to incorporate sustainable behaviors into their daily lives.

The use of the EnviroScape model, another often-requested program, continues to be a popular means of presenting information about nonpoint source pollution and water quality to students. This model is used to help people better understand the sources and prevention of water pollution through visual, hands-on interaction.

Victor, along with other County staff, assisted School Board staff and members of the Environmental Conservation Organization in hosting the 2017 Regional Envirothon, a problem-solving, natural resource education program for high school students in February. The Envirothon is a field-oriented program in which students, working in teams of five, learn to use critical thinking skills, work as a team, and develop problem-solving and communications skills to answer written questions or conduct hands-on investigations about environmental issues, the focus of which shifts each year. These interrelated and broad study areas teach a holistic approach to natural resource conservation and can easily be incorporated into a teaching curriculum.

NatureScape staff served as mentors for high school seniors in the Everglades Restoration Magnet program at South Plantation High School. Staff helped to guide students along with their projects and oversaw their work throughout the year. One senior student installed a garden to benefit pollinators after she read an article about how they are declining around the world. Another student wanted to increase shade in the student parking and researched which trees, plants and palms would work best. Staff reviewed their research with the students to help ensure success. Staff were then invited back to the judging of the senior class projects later in the year.

NatureScape staff and volunteers provided seven programs in the Broward Municipal Services District beginning at the end of June 2017. This 8-week summer program for children ages 6-10 at the Boulevard Gardens Community Center engaged approximately 50 children in connecting with nature, starting in their own backyards and community. The members of Boulevard Gardens Homeowner's Association attended a NatureScape presentation to learn about the summer Butterfly Garden program and take home native plants to start their own backyard wildlife habitat. Maena also participated in summer camp for students at Lauderdale Lakes Library twice during this period, presenting a water conservation program at this location.



## Task 4 - Trainings for Facilities Managers

During the reporting period, NatureScape Water Conservation Specialist Maena Angelotti organized two custodial irrigation training sessions that were held in October 2016 and March 2017 at McArthur High School which allowed for actual field repair lessons. A total of 40 facilities staff attended these trainings. During the six-hour trainings, NatureScape and SBBC staff provided information on improving the efficiency of school

irrigation systems to save water and money, along with maintenance fundamentals. Additionally, training on indoor water conservation best management practices was provided this year to BCPS staff which were also taught about high rates of water consumption in the schools, retrofits available for faucets, toilets, and kitchen use including Somat machines and pre-rinse spray valves.

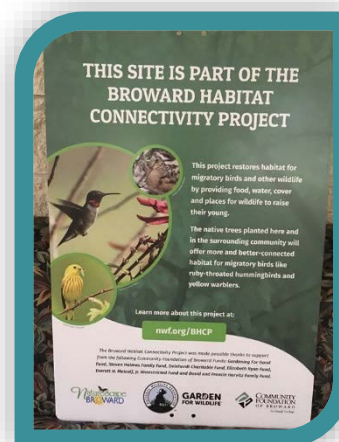
The trainings also provide an introduction to NatureScape Broward, an overview of the County's "Know the Flow" outreach program, and information on landscaping best management practices. Custodial staff are able to identify and fix minor repairs on the hosting school's campus, as well as providing an opportunity to do some planting, mulching, and pruning at the host school. NatureScape plans on continuing to host these trainings at schools to enable the hands-on experience for the staff as well as providing landscape improvements at the same time.

At the request of SBBC staff, Maena served as a presenter at the 2017 Facilities Servicepersons' Conference held on June 21 and 22 at South Plantation High School. Approximately 480 head and assistant head custodians attended the event. Maena stressed the importance of reporting water leaks and items that need repair to appropriate SBBC personnel, as well as ways to combat high water use at the schools.

## Task 5 – NatureScape Learning Gardens/Certifications

During the reporting period, NatureScape staff continued to provide assistance in the form of training, labor, landscaping projects and identifying potential sources for plants and trees. Much of this year’s efforts were centered on lower income communities which lack wildlife habitat. NatureScape Broward, in conjunction with the National Wildlife Federation and a grant from the Community Foundation of Broward, launched the Broward Habitat Connectivity Project, with the following goals:

- Create new islands of habitat for migratory birds travelling through urban Broward County by planting trees that will provide food and cover;
- Provide interested residents in the neighborhoods surrounding the new “islands of habitat” free trees to plant in their own garden and strengthen the network of habitat in the area;
- Plant native trees to increase tree canopy in the areas of Broward County that have the lowest percentages of tree canopy in the County;
- Create outdoor learning laboratories for students to learn STEM (science, technology, engineering and math) subjects through hands-on environmental education in the newly planted areas;
- Help meet specific County goals for increasing tree canopy and community resilience.



In April, more than 150 students and volunteers removed weeds, spread mulch and top soil, and planted 40 native Jamaican Caper and Simpson Stopper trees at Lauderdale Lakes Middle School.

Utilizing GIS data compiled by the County’s Environmental Planning & Community Resilience Division, NatureScape staff identified areas in the County that lacked tree canopy, native habitat and participation in NWF’s Garden for Wildlife program. Target areas included North Lauderdale, Lauderhill, and Lauderdale Lakes where existing tree canopy is in the 0-19 percent category (the County has a goal of achieving 40 percent tree canopy throughout the County). NatureScape Broward was able to successfully secure match funding for the project from the Broward County Tree Trust and the schools selected for landscape improvements included Lauderdale Lakes Middle School, Oriole Elementary School, Silver Lakes Middle School, North Lauderdale PK – 8, Wingate Oaks Center, and Larkdale Elementary School.

Plants attractive to hummingbirds were also planted at these six schools to supplement the tree plantings. Several tree giveaways were also held in the communities where these schools are located to encourage greater participation in the Habitat Connectivity project.

Additionally, while not within the target areas for the Habitat Connectivity grant, Tequesta Trace Middle School, received canopy trees this year as a result of a previously approved grant that NatureScape had secured through the Broward County Tree Trust. More than 50 students, teachers and NatureScape Broward staff helped plant trees and hummingbird plants.

#### Landscaping installed this SY through NatureScape-secured grants and expenditures

School	No. large (8'-12') trees installed	3 Gallon Trees	Butterfly Plants	Tree Trust/CFB/Other Grant Funds
Silver Lakes Middle School	38	10	-	\$8,056
North Lauderdale PK-8	7	3	-	\$894
Larkdale Elementary School	14	3	23	\$3,884
Wingate Oaks Center	10	-	23	\$2,130
Oriole Elementary School	18	N/A	20	\$4,000
Lauderdale Lakes Middle School	22	40	26	\$6,329
Tequesta Trace Middle School	18	30	25	\$4,132
Other Schools (5)	7	1	25	\$1,300
Miscellaneous*			145	\$1,730*
<b>TOTALS</b>	<b>127</b>	<b>87</b>	<b>287</b>	<b>\$36,955</b>

\* Additional landscaping materials were also provided to schools, teachers, and students including tools, hoses, and mulch.

Other landscape installations and wildlife advice provided by NatureScape staff during the reporting period include:

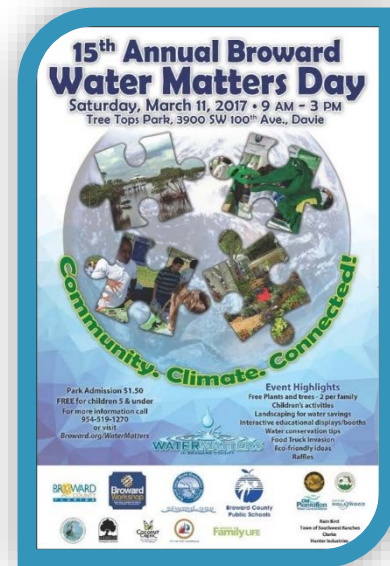
- NatureScape was able to again successfully secure \$1,000 in funding from the South Florida Water Management District for trees for Arbor and Earth Day celebrations at schools including Pine Ridge Center, Beachside Montessori Center, and Driftwood Middle School. Trees were also provided to Hollywood High School and New River Middle School.
- Staff organized a committee of Community Wildlife Habitat Team Leaders, City Staff, Master Gardeners, and Habitat Stewards to meet with school staff at Wilton Manors Elementary School to enhance and redo parts of their interior gardens using a portion of the prize money that they won from the 2016 P<sub>3</sub> Eco-Challenge.
- Staff introduced the Project Perch Team to the staff at Orange Brook Elementary School for the installation of an artificial owl burrow on their campus to provide new homes for the soon-to-be displaced owls as a result of a new development nearby.

A map showing certified school landscapes can be found in *Appendix A*.

## Task 6 – Water Matters Day Partnerships

The Fifteenth Annual Broward Water Matters Day was held on March 11, 2017, with the theme of “*Water Matters Day – Community. Climate. Connected.*” A record 4,320 Broward County residents joined this celebration. In addition to the large number of students and their parents that attended, numerous water conservation and environmental stewardship activities were directly supported by students. Approximately 80 students from McNicol and Tequesta Trace Middle Schools, as well as Cypress Bay, Plantation and Monarch High Schools assisted with the distribution of 2,300 trees, shrubs, groundcovers and wildflowers in the plant giveaway area.

Many schools hosted and/or assisted in booths providing educational activities, displays, games and fundraising.



School	Activity
Monarch High School Environmental Club	Relay for Life Booth, Tree Giveaway, Event Surveys
Tequesta Trace Middle School	(1) National Wildlife Federation Taiwan Project (2) Eco-Partners' School Environmental Activities
McNicol Middle School	Growing Awareness in All (conservation and upcycling)
McArthur High School	Agriculture in the Classroom – Tree Giveaway
Griffin Elementary ECO Patrol	Micro Plastics in Our Environment
South Broward High School	Plastic Free Mermaids
South Plantation High School	Water conservation and Everglades restoration
Everglades Magnet Program	
Coral Springs High School	National Wildlife Federation – Ranger Rick

An estimated 800 students attended the event as well for extra credit. As always, a literary contest for students is part of the event. For the invited middle schools, the topic for this year's school literary contest was “*How is our school community and our climate connected? What kind of things can we do at our schools and at home to protect and conserve water?*” High school students were asked the following: “*Recognizing that each member of our community, whether at school, at work, or at home, has an impact on our climate and the future of our planet, we as individuals must do our part to conserve water and other resources. Calculate your family's “water footprint” at <http://environment.nationalgeographic.com/environment/freshwater/change-the-course/water-footprint-calculator/>. How does your family's water usage compare to the average family? What kinds of things can you do to conserve and protect our water resources and how will this help our climate?*”



School Board Member Nora Rupert (L) poses with Jude Crosby-Darling, winner of the Literary Contest from Nova Middle School along with her teacher, Susan McKinney and principal, Rayner Garranchan.

School Board Member Nora Rupert presented the prizes during the opening ceremonies at the event. Winning students and their teachers from Pines Middle, William Dandy Middle, Nova Middle, McArthur High, Western High, and South Plantation High Schools were awarded tickets to educational venues, natural area attractions and airboat tours. The prizes were solicited by NatureScape staff with assistance from the outreach coordinator for the Central Broward Water Control District. The top middle school winner won a week of “Teen Eco Experience”

day camp from Camp Live Oak which includes hands-on leadership experience, field trips, environmental projects, and team building opportunities. The top high school winner won four passes for a snorkeling trip from Dixie Divers.

Promotions for Water Matters Day were extensive and included a press release distributed to local media and Broward’s public information office, radio and newspaper advertisements, and posters in English and Spanish that were distributed to public libraries, parks, and all of the Broward County Public Schools. Additional promotions for the event included a feature on the Broward County website and mention at numerous events hosted by the EPCRD that led up to Water Matters Day. An article promoting the event also appeared in the *SchoolScapes* newsletter prior to the event.

Partners and sponsors of the 2017 Water Matters Day event, including the School Board, were recognized by the Broward County Board of County Commissioners in a proclamation ceremony on February 14, 2017.



Lisa Milenkovic, Supervisor STEM and Computer Science (bottom, third from right) received the Water Matters Day partner proclamation on behalf of SBBC





## Task 7 – Irrigation System Evaluations

During the reporting period, (92) irrigation evaluations were conducted at (38) school facilities. Maena Angelotti, Water Conservation Specialist, encourages the schools' custodial staff to be present during the evaluation and when feasible, to make repairs as the evaluation takes place. This provides an opportunity to provide information regarding best management practices for the irrigation system as well as reminders regarding efficient irrigation. In addition to

assessing the irrigation system, landscaping advice is often requested. Resource materials to enhance the school's landscaping are also provided as available.

Actual annual water savings realized through irrigation system evaluations conducted at those schools exceeded 68,000,000 gallons providing an annual estimated cost savings of over \$250,000. A large number of this year's evaluations were on systems utilizing municipal water supplies as the irrigation source and which produced considerable cost savings for the District, especially when settings were modified to comply with the Mandatory Year-Round Landscape Irrigation Rule. To date, irrigation evaluations have been conducted at 268 schools on 588 irrigation systems. Annual water savings realized through irrigation system evaluations conducted at all schools since June 2009 is providing an annual estimated cost savings of over \$770,000 and over 380 million gallons of water saved. (See *Appendices B and C*).

Through coordination of joint training workshops and sharing of information included in the irrigation evaluation reports, NatureScape and site-based custodial staff, along with SBBC staff have developed an excellent working relationship. Information developed during evaluations has been made available to staff at each facility and to School Board management.



**Broken sprinkler heads are a common problem encountered during irrigation evaluations at schools.**

## Task 8 – Water Audits



During the reporting period, NatureScape staff conducted indoor water use audits at two schools-Indian Ridge Middle School and Thurgood Marshall Elementary School. Where available, students are asked each year to participate in the water audits. This year, students participating in a CareerSource internship were trained in doing the audits in the school bathrooms.

The indoor water audit program follows procedures outlined in SFWMD's *Water*

*Efficiency and Self-Conducted Water Audits at Commercial and Institutional Facilities: A Guide for Facility Managers*. This guidebook was prepared by the South Florida Water Management District (SFWMD) based on its own experience assessing water use efficiency at its own facilities.

The water audit is a systematic survey of all water-using fixtures, appliances, equipment, and practices at a campus. The audit can identify leaks, areas of excessive consumption, and other opportunities for efficiency improvements; it can also identify the degradation of previously efficient devices. Audits can form the basis of efficiency improvement and investment planning, and provide a benchmark for measuring water efficiency program successes.

Specific recommendations on efficiency improvement measures for most points of water use have been prepared and are provided to these schools as well as SBBC administration. Estimates of their costs, savings, and investment recovery periods have been included whenever possible. Data collected during the assessment were entered into the SFWMD's water use and savings calculators associated with its water use self-conducted water audit guide to generate these savings estimates.

This year, SBBC provided a plumber to accompany NatureScape staff as Maena conducted the water audits. SBBC staff was able to work with Maena to ensure that recommendations were within the framework of what can be accomplished at the School District. Additionally, retrofitting of school restrooms that have been previously audited were completed at Northside, Sunland Park, Meadowbrook, Maplewood, and Bayview Elementary schools.

The findings of this year's audits are as follows:

The total cost estimate to follow the recommended water-use efficiency improvement measures at Indian Ridge Middle School is \$3,057. The total annual potential savings is \$30,022 and the potential annual water savings is estimated at 2,761,922 gallons.

The total cost estimate to follow the recommended water-use efficiency improvement measures at Thurgood Marshall Elementary School is \$2,135. The total annual potential savings is \$15,480 and the potential annual water savings is estimated at 1,420,574 gallons.

Additional indoor audits are pending approval by Energy Conservation/Utility Management staff.

At the request of Ed See of the Energy Conservation/Utility Management Division, EPCRD staff assisted in the development of Standard Operating Procedures for Irrigation and Water Audits along with a *BCPS Alert* focusing on water conservation in the schools.

### **Task 9 – Coordination/Administration**

Several formal coordination meetings and conference calls between SBBC and County staff were held to discuss the implementation of the various tasks associated with the Partnership Agreement, as well as to address issues of shared interest.

These meetings included one or more of the following representatives from EPCRD:

- Jennifer Jurado, Ph.D., Division Director
- Carolina Maran, Ph.D., Water Resources Manager
- Robert “Rudy” Rudolph, Water Planning Program Manager
- Victor Suarez, NatureScape Broward Education Specialist
- Maena Angelotti, NatureScape Broward Water Conservation Specialist
- Kimberly Mayo, NatureScape Program Assistant
- Rose Bechard-Butman, NatureScape Broward Outreach Coordinator
- Robert Wanvestraut, NatureScape Irrigation Service Coordinator

Key members of SBBC that attended coordination meetings included:

- Guy Barmoha, Director of Math Science, & Gifted Department, SBBC liaison for the Environmental Partnership Agreement
- Susan Cantrick, Director Applied Learning
- Lisa Milenkovic, PhD, Supervisor, STEM+Computer Science
- Marilyn Johnson, PhD, Science Supervisor
- Rebecca Malones, Instructional Facilitator Math, Science, & Gifted Department
- Rob Jindracek, Manager, Environmental Conservation/Utility Management
- Ed See, Environmental Conservation/Utility Management

Partnership and P<sub>3</sub> Eco-Challenge planning meetings were held as needed during the reporting period. Early in the school year, Victor met with Guy Barmoha and other Math, Science and Gifted staff to review the list of potential P<sub>3</sub> Eco-Challenge sponsors and to determine if additional groups that routinely interact with the School Board might be potential sponsors.

Rudy and Maena met with Rob Jindracek and Ed See to talk about installing irrigation controllers and general program coordination, and Maena and Rudy coordinate closely with Ed See regarding programmatic plans and opportunities. NatureScape staff has worked diligently to address issues with particular facilities as they have arisen.

Dr. Jurado, Dr. Maran, and Rudy met with Guy Barmoha and Lisa Milenkovic to discuss the upcoming (December 2017) 9<sup>th</sup> Annual Southeast Florida Regional Climate Leadership Summit and possible participation from students.

Dr. Jurado, Dr. Maran, and Rudy met with Susan Cantrick and Lisa Milenkovic to introduce Susan to the Environmental Partnership Agreement.

In addition to this high-level coordination, throughout the reporting period, NatureScape staff coordinated extensively with numerous teachers and other SBBC staff to ensure continued advancement of the partnership goals. During the many visits made by NatureScape staff to the schools, staff took the time to discuss the value of the P<sub>3</sub> Eco-Challenge and encouraged them to participate. Additionally, Victor promoted the P<sub>3</sub> Eco-Challenge at the Broward County Science Fair where he addressed teachers, judges, and fair sponsors about the Challenge and how they can participate and serve as potential event sponsors. These efforts resulted in securing additional P<sub>3</sub> Eco-Challenge funds this year, as well as providing an opportunity to promote Water Matters Day.

NatureScape staff were also able to identify numerous grant opportunities for teachers interested in receiving awards and improving their campus landscapes, as well as assisting on applications for various competitions and prizes.

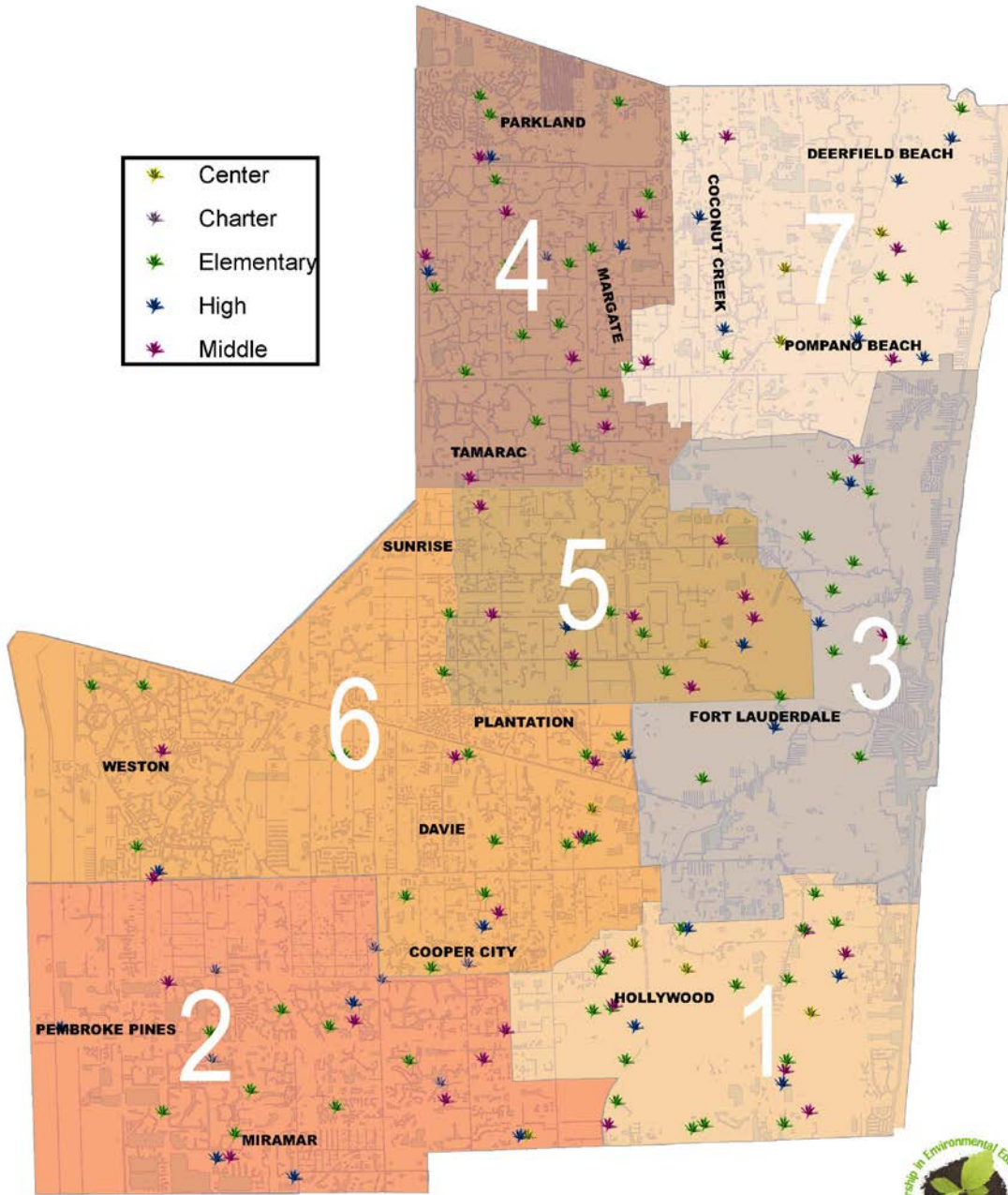
Two editions of the *SchoolScapes* e-newsletter were distributed throughout the school system in January and June. This e-newsletter shares updates on the activities of the Environmental Partnership and is distributed to hundreds of teachers and administrators, as well as school district personnel such as curriculum staff and custodians. It is also sent to school staff after initial meetings have taken place to educate them about the Partnership and activities associated with it and other teachers and staff, upon request. The January 2017 edition of *SchoolScapes* announced the upcoming Water Matters Day and 2017 P<sub>3</sub> Eco-Challenge events, shared professional development training opportunities, programs being done in the schools, and introduced the upcoming Habitat Connectivity Project. The June 2017 edition of *SchoolScapes* highlighted the 2017 P<sub>3</sub> Eco-Challenge Awards Ceremony and achievements, Water Matters Day, and the Habitat Connectivity Project.

In accordance with the terms of the agreement, the annual report for the 2015-2016 School Year was provided to SBBC administration in September 2016 along with additional information to support the annual renewal of the current Partnership agreement.

Finally, there have been several coordination meetings between EPCRD staff and SBBC staff in advance of preparing a new 5-year agreement to go into effect in December 2017.

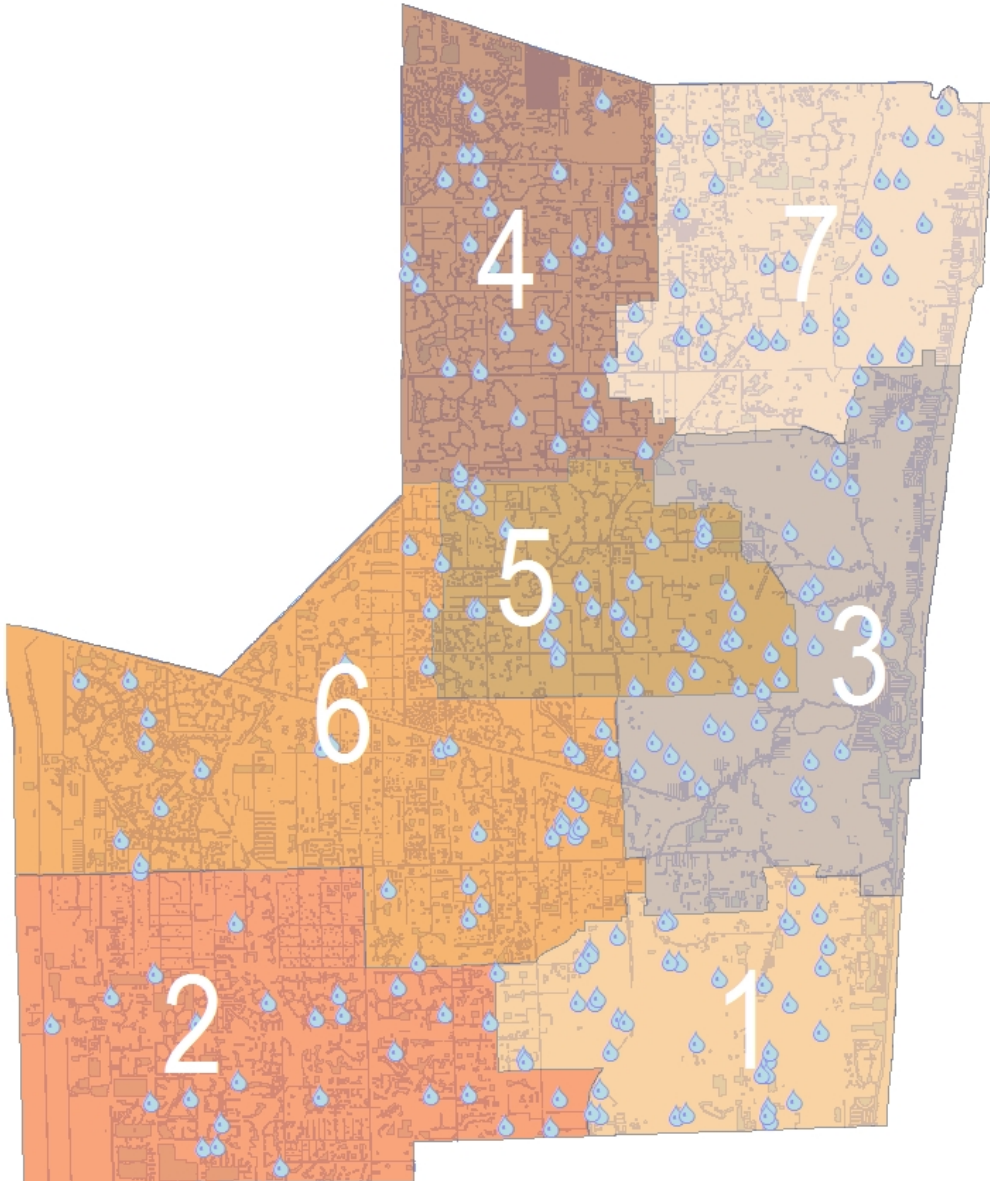
## Appendix A – Landscape Installations

### Environmental Partnership School Certified Gardens



## Appendix B – Irrigation Evaluations

### Environmental Partnership School Irrigation Evaluations Completed By School District



## Appendix C – Summary of Activities

### School Programs Summary

Reporting Period Totals	Number of Programs	Number of Students Reached
SY 16-17 School Programs (District wide)	236	5,830
<b>Cumulative Totals</b>		
School Programs (District wide)	1853	56,033
Community Outreach, NatureScape Education Days, and Special Events	44	14,379

### Teacher Training Summary

Reporting Period Totals	Number of Programs	Teachers Trained
Teacher In-service Training	2	36
<b>Cumulative Totals</b>		
Teacher In-service Training	22	446
Reporting Period Totals	Number of Programs	Teachers Trained
NWF Habitat Steward Training	1	15
<b>Cumulative Totals</b>		
NWF Habitat Steward Training	11	189

### Custodial/Facilities Training Summary

Reporting Period Totals	Number of Programs	Custodial/Facilities Staff Trained
Custodial/Facilities Training	4	520
<b>Cumulative Totals</b>		
Custodial/Facilities Training	28	938

### NatureScape Certifications Summary

Reporting Period Totals	Number of Programs
NWF Habitat Certification	1
<b>Cumulative Totals</b>	
Schoolyard Habitat Certifications	164

## Irrigation Evaluations Summary

Reporting Period Totals		
Irrigation System Evaluations	68,149,425	GPY saved through irrigation evaluations
	38	Schools receiving irrigation evaluations
	92	Irrigation systems evaluated
	\$254,619	Annual Savings
Cumulative Totals		
Irrigation System Evaluations	382,025,819	GPY saved through irrigation evaluations
	268	Schools receiving irrigation evaluation visit
	588	Irrigation systems evaluated
	\$773,501	Annual Savings

## Water Audits Summary

Reporting Period Totals		
Water Audits	4,182,496	Potential annual water savings (GPY)
	2	Schools receiving water audits
	\$5,192	Cost of Retrofits/One time investment
	\$45,502	Identified Potential Annual Savings
Cumulative Totals		
Water Audits	20,425,212	Potential annual water savings (GPY)
	17	Schools receiving water audits
	\$184,567	Cost of Retrofits/One time investment
	\$487,243	Identified Potential Annual Savings

For more information, please contact:  
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