UF UNIVERSITY of FLORIDA
IFAS Extension

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2012 Florida School Garden Competition
ENTRY FORM

School West Melbourne School for Science

Teacher(s) & Grade(s) involved in garden program

Michelle Ferro (Science Coordinator), all Teachers and all students in the school grades Kindergarten to Sixth Grade

Contact Person Michelle Ferro, Science Coordinator

Email address ferro.michelle@brevardschools.org

Phone (321) 956-5040 Fax (321) 956-5043

Time contact person can be reached between 8am and 4pm

Street address 2255 Meadowlane Avenue

City West Melbourne State Florida Zip 32904

CATEGORY (Please mark only one)

_____ SINGLE CLASS GARDEN (Garden used by one class only)
Number of students in class and grade _____

_____ MULTIPLE CLASS GARDEN (Garden used by more than one class or grade, but not by the entire school)
Number of students involved in the garden and grades _____

__✓__ ENTIRE SCHOOL GARDEN (Garden that is used by all grade levels at the school)
Number of students involved in the garden and grades 443

Number of classes involved 23

TYPE of school garden that you use with your students. (Please mark only one)

_____ Vegetable

_____ Flower

__✓__ Combination vegetable/flower

__✓__ Other, please specify Butterfly

Please indicate the number of hours a week, on average; your students spend in the garden. 15

1. Please mark all the activities that your students participate in *prior to gardening*.

   _____Planning the garden
   _____Designing the garden
   _____Other: _____
   _____Preparing the garden
   ✓ Choosing plants

2. Please mark all the activities that your students participate in *while in the garden*.

   ✓ Planting
   ✓ Observing
   ✓ Playing
   ✓ Experimenting
   ✓ Other: Composting, Art ; music
   ✓ Watering
   ✓ Recording
   ✓ Sitting
   ✓ Weeding
   ✓ Harvesting
   _____Fertilizing

3. Please indicate the percentage of time, on average, that you used the garden as an instructional tool in your classroom. 4hrs per week

4. Please mark the subject area(s) into which you have incorporated school gardening. Check all that apply.

   ✓ Math
   _____History
   ✓ Music
   ✓ Ethics (responsibility and nurturing)
   _____Other, please specify_____
   ✓ Science
   ✓ Health/Nutrition
   _____Physical Ed.
   _____Social Studies
   ✓ Language Arts
   ✓ Environmental Ed.

5. Please indicate the number of years that a school garden has been part of your curriculum. _____

6. Please indicate the types of volunteers that have helped you and your students with the garden.

   ✓ Master Gardener volunteers
   ✓ University students
   _____High school students
   ✓ Older students at your school
   _____Other, please specify_____
   _____ County Extension Office
   ✓ Garden club members
   ✓ Parents
   _____4-H members
   _____FFA
   _____Senior citizens

7. Please indicate the source(s) of information used to assist in the incorporation of school gardening into your school's curriculum. Check all that apply.

- ✓ County Extension service
- ✓ Teacher in-service training
- ✓ Personal knowledge
- ✓ Educational journals/publications
- ✓ National Gardening Association's Growlab/Growing ideas newsletter
- ____ 4-H education materials
- ____ Lifelab
- ____ Master Gardener training
- ✓ Friends/volunteers
- ____ Other, please specify_____

8. Please indicate the types of educational material(s) used in the classroom to support the use of school gardening in the curriculum.

- ✓ Library books
- ✓ Internet
- ____ Filmstrips
- ✓ Textbooks
- ✓ Trade books
- ____ Newspapers
- ____ Computer software
- ✓ Videos
- ✓ Personal books
- ✓ Experiments
- ✓ Gardening magazines and catalogs
- ____ Other, please specify_____

Please read and sign below

By submitting the same you acknowledge and agree that the University of Florida (and Walt Disney World Co.) may reproduce the same, and all materials may be displayed (in part or in whole) at the Epcot® International Flower & Garden Festival and for other promotional materials. Such presentation materials (and School Garden packets) will NOT be returned to you (they will become the property of the University of Florida and Walt Disney World Co.) **Finally, you acknowledge and agree that should your school be selected as a winner under the competition, then to the extent any of the photographs or materials submitted contain the names of likeness of students, teachers and/or others, you will be required to have adult individuals sign (and the parents/guardians of such students) sign consent/release forms provided by us so that we can display those photographs or materials concerning your winning garden**. ***Such requirement would be a condition of your accepting the award.***

I have read and understand the above.

Michelle Frino
Signature

3/19/12
Date

2012 Florida School Garden Competition

WEST MELBOURNE SCHOOL FOR SCIENCE

2255 Meadowlane Avenue
West Melbourne, FL 32904
Brevard County Public School

Principal: Dr. Neleffra Marshall

Science Coordinator: Michelle Ferro

Garden Coordinator: Jessica Fulford

WEST MELBOURNE SCHOOL FOR SCIENCE

MILLENIUM GARDEN 2012

Background:

West Melbourne School for Science garden is located in the east side of the school property. Over the years our garden has gradually grown and currently occupies approximately 12,000 square feet. This garden started as an effort to provide an outdoor living classroom to students and teachers, and for the enjoyment and education to the school community -- teachers and staff, students and parents, volunteers and visitors.

The main objective of the garden is to integrate sustainable and environmental concepts into the school core curriculum for science, math, literacy, social studies and arts. The students' hand-on experience in the garden's living ecosystem fosters a deeper appreciation for the environment, incentivizes curiosity for science, enriches the social character skills and develops social responsibility.

Mission:

WMSS garden promotes a safe multisensory environment for exploration and discovery of nature by combining academic learning and hands-on experience while developing student's individual character and personality with lesson on leadership, accomplishment, purpose and social responsibility.

Objectives

West Melbourne School for Science has identified the following as the main objectives for the garden:

- Promote environmental awareness and the preservation of natural resources
- Provide a multisensory environment that supports diversity and a wide range of learning styles and abilities
- Expose children to an outdoor physical activity
- Enrich school curriculum activities in several disciplines
- Incentivize curiosity and respect for the environment
- Encourage healthy eating habits
- Provide social skills development and social consciousness
- Develop leadership skills

Benefits

West Melbourne School for Science has identified the following benefits of having a garden on our campus:

- Improve learning skills by exercising observation and experimentation, curiosity and inquiry
- Offer dynamic ways to connect the academics in multiple disciplines like science, mathematics, literacy and arts with hands-on experiences
- Build social skills by succeeding and overcoming mistakes and challenges
- Build social responsibilities by respecting, caring and loving others and the environment
- Develop a sense of pride and accomplishment by taking responsibilities and being accountable
- Develop a sense of purpose by participating in meaningful activities

Garden Sections

WMSS garden features several Florida native plants that have been donated by parents and donors throughout the years, which have been distributed among six identifiable sections.

- Butterfly Dome
- Koi Pond
- Fern Arbor
- Vegetable Area
- Hydroponics
- Composting and worm farm

Educational Relevance:

Teachers from all grade levels and subjects utilize the garden at WMSS. Science teachers use it to teach a variety of life, nature of science, physical science and earth science standards. The garden provides the perfect location for students to practice necessary nature of science skills of observing, inferring, classifying, collecting data and even measuring. Life science students can investigate the life cycles of plants and organisms (including the butterflies that are housed within our dome), learn to classify the organisms present in accordance to the Linnaean system, and learn about the different parts of plants and their needs. Earth science standards include topics like weather, rocks and soil, living and non-living things found on the Earth's surface, as well as weathering and erosion. This year, our fifth graders spent time outside in the garden with a new weather station. Physical science standards that are sometimes addressed in the garden include the flow of energy (food chains and food webs). Standards related to all of these Bodies of Knowledge of Science exist in varying degrees for every grade level.

Writing teachers often use the garden as a source of inspiration for their students. Many teachers bring them outside to teach them about poetry and literary elements such as onomatopoeia, alliteration, simile, and metaphor. It has also been used to address descriptive and expository writing, to teach adjectives and the use of vivid imagery. Last year, a teacher used the garden with her students to identify "dead" or overused words that students use as descriptors and students then held a funeral/burial for these words before coming up with new vivid adjectives to describe the garden.

Reading teachers use the garden in conjunction with the pieces that they read. The garden also provides an excellent story time setting. The garden provides a unique natural setting to look at the real world application of math skill. Students can practice measuring skills by working with the different plants and plots that we have available in the garden area. In the advanced grades students can calculate the area available in the plots, and the volume of water held by our pond. Graphing is a skill utilized in both math and science and students can chart the growth of plants.

Art students spend a great deal of time visiting the garden. Not only is it a wonderful source of inspiration for the students, but its varied and seasonally changing settings provide a wealth of subject matter for students when it comes to sketching and preparing pieces.

Standards addressed:

Science
SC.K.L.14.2: Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life.
SC.K.L.14.3: Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.
SC.K.N.1.1: Collaborate with a partner to collect information.
SC.K.N.1.2: Make observations of the natural world and know that they are descriptors collected using the five senses.
SC.1.E.6.1: Recognize that water, rocks, soil, and living organisms are found on Earth's surface.
SC.1.L.14.1: Make observations of living things and their environment using the five senses.
SC.1.L.14.2: Identify the major parts of plants, including stem, roots, leaves, and flowers
SC.1.L.14.3: Differentiate between living and nonliving things.
SC.2.E.6.2: Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.
SC.2.E.6.3: Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.

SC.2.E.7.1: Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
SC.2.L.16.1: Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.
SC.3.L.14.1: Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.
SC.3.L.14.2: Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.
SC.3.L.15.2: Classify flowering and nonflowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics.
SC.3.L.17.1: Describe how animals and plants respond to changing seasons.
SC.3.L.17.2: Recognize that plants use energy from the Sun, air, and water to make their own food.
SC.4.E.6.3: Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.
SC.4.E.6.4: Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).
SC.4.L.16.1: Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.
SC.4.L.16.2: Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.
SC.4.L.16.4: Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.
SC.4.L.17.1: Compare the seasonal changes in Florida plants and animals to those in other regions of the country.
SC.4.L.17.3: Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.
SC.4.L.17.4: Recognize ways plants and animals, including humans, can impact the environment.
SC.5.E.7.1: Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.
SC.5.E.7.3: Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.

SC.5.L.14.2: Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.
SC.5.L.15.1: Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.
SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.
SC.6.L.14.2: Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.
SC.6.L.14.4: Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.
SC.6.L.15.1: Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.

The standards utilized in the other subjects vary widely based upon the assignment given by the teacher and vary widely from teacher to teacher. A writing teacher may very well address nearly every standard in their curriculum dependent on the assignment their students are given.

The same goes for reading. The piece a teacher is evaluating with a student may have a garden theme and address any wide range of reading skills. These skills are going to vary piece by piece.

For math, a large number of standards can be addressed using garden materials as manipulative for the students.

The standards that can be addressed using the garden for subjects other than science are vast and difficult to list specifically. There are 3 teachers at each grade level 3-6 and 4 for K-2. Each of these teachers utilizes the garden to meet the unique needs of each of their classes.

Involvement

Student leadership

Throughout the year, the WMSS garden has been open to a wide variety of activities for all students and teachers to connect academic learning and hands-on experiences. The uses are diverse, and the integration in the teaching curriculum varies accordingly. The recently created garden club for example allows students a more active participation in composting, mulching, weeding, planting, seeding, watering and cultivating our garden, as well as learning about the importance of the plants in site and some of its uses. Members of the club under the direction of the volunteer garden coordinator plan and develop activities that address the objectives of the garden and encourage multiple levels of participation; as an example, the garden club promoted a newspaper recycling drive to be use in the mulching and also in the composting areas. As months pass members of the club are becoming more conscious of recycling and aware of the multiple benefits of plants in real life applications.

Annual planting days are also scheduled and coordinated to promote the participation of all students in the planning of the garden. Students are encouraged to select from a list of desired plants and later bring the plant into the school for them to plant it around the garden. Equally important are the garden tours conducted during those days for all grade levels to get acquainted with Florida native plants and the importance on a sustainable living. We also promote the competition of finding the longest weed, finding the most insects in the garden as a fun activity.

Equally, the garden allows parents to volunteer and participate once a month in the maintenance of the garden while practicing camaraderie and team work. Because students are always encouraged to join their parents during this event, specific grade levels function as sponsors of the Saturday work day.

Partnerships

West Melbourne School for Science is privileged of counting with two cornerstones volunteer Master Gardeners since 2009, Mrs. Joan Gulliver and Mrs. Candy Morrison, who volunteer their time every week to take care of the Butterfly dome, including during the summer. Also, they function as consultants for new projects in the garden and as an information resource for the Garden Coordinator, who is also a volunteer and a school parent.

Our links to the community include Brevard Community College (BCC) Biology instructor and faculty advisor for the BCC Environmental Club, Mr. Scott Herber. He and a team of college students helped the garden coordinator to conduct a plant inventory in

our garden. Besides, Mr. Herber collaborates with advice and information for special garden projects.

Our network of community partners is extending this year to include Florida Institute of Technology Student Organization for Sustainability Action (SOSA) and students from the sustainability class and minor.

Over the years, West Melbourne School for Science has received advice about native plants from several local native plant nurseries in the area, especially Maple Street Native Plants and South Brevard Nursery; both businesses are located in the vicinity of our school and have given discounts to our parents during the planting days. The consulting of High Tech Garden, a local business specialized in hydroponic cultivation, was important when we installed the donated hydroponic system equipment.

Local Boy Scout troops have been vital in several projects throughout the years; projects like the koi pond, display sign, pergola, and irrigation system has been designed and executed by local Boy Scouts some of whom have been alumni of WMSS in conjunction with other volunteers. Mainly the garden has been developed with the help of grants from Keep Brevard Beautiful, Florida Wildflower Association, and general donations of volunteers and donors.

School Support

West Melbourne School for Science administration and staff are always receptive of the garden ideas, and they have been a pivotal support for new projects. Their input, comments and cooperation about the garden activities have been always welcomes and encouraged, enhancing the teaching and learning experience.

Quality of the Garden

Garden design, considerations and process

West Melbourne School for Science Garden was originally designed, planned and coordinated in 2001 by Maria Dechristofano, Science Specialist, with the help of a group of volunteers. Years later, WMSS administration, Science Coordinator, Michelle Ferro and Cathy Schirmer, Garden Coordinator and volunteer parent redefined the design of the garden to what is today.

The original idea of starting a garden was conceived to use an unutilized area of the school to provide students a living laboratory and outdoor classroom. The original design divided the lot into 4 sections: Fossil era, Gymnosperm, Angiosperm, and Commercial Production, which created very geometrical area divisions. However, within

the last ten years, WMSS garden has evolved into a more organic and integrated landscape with areas for sitting and working, along with storage.

Unique qualities

West Melbourne School for Science garden is unique in the passion for Florida plants and gardening, but overall it reflects the passion for a sustainable and balanced living environment that grows and transforms constantly while maintaining wildlife value.

Our garden teaches students all stages of life cycles from growing seeds to well mature plants; they reflect the seasons and also teach the importance of a natural ecosystem.

Care and maintenance

Our garden requires a medium level of maintenance due to the size, which is approximately 12,000 square feet. The duty is mainly done by volunteer parents and families of the students in a monthly Saturday work day, students during specific activities throughout the year, garden club members every Friday after school, master gardeners every Tuesday, and school custodians as requested. In addition, for the last few years, the garden coordination has actively encouraged volunteer participation of parents during the week.

Watering is done by irrigation system during specific times of the year controlled by the custodians of the school under direct guidelines of the Brevard School Board. Additionally, we harvest rain water in rain barrels for kids to use during watering assignments.

Plant selection and uses

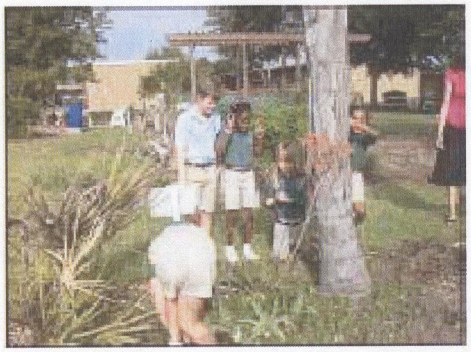
Our plants were selected initially following the original division; later as the concept design changed, the plants were considered from the Florida University list of Florida native plants. In addition, several recommendations were made from Keep Brevard Beautiful throughout our participation in several grants. Master gardeners, science specialist and gardening businesses in the vicinity also had participation on the type of plants we planted over the years.

The plants have been distributed throughout the garden creating different spaces and integrating the original design and its plants into a more organic and natural landscape that contains different sitting areas and work tables, a butterfly garden inside of a screened dome, a pond, an arbor, and composting area. Our garden has in its majority low maintenance, full sun and drought tolerant Florida friendly and Florida native plants. The selection also contemplates plants that were able to attract beneficial insects and wild life to the garden.

Discovery Garden

WMSS Discovery Garden gets a Spring Time helping hand.

The week of April 4—April 8 our students, parents and volunteer Master Gardeners gave our outdoor science lab a Spring make-over. Every student participated in planting something in the garden. The garden looks beautiful! Thanks to everyone that helped and especially to Ms. Ferro and Mrs. Schirmer for coordinating this event.



THIS PROJECT DONE AT WMSS

South Beaches Breeze

FLORIDA TODAY

SERVING SATELLITE BEACH, INDIAN HARBOUR BEACH, INDIALANTIC AND MELBOURNE BEACH

FEBRUARY 10, 2010 Vol. 5, No. 25

For FLORIDA TODAY

John Roth of Indian Harbour Beach, right, gets some help with his Eagle Scout project from fellow Eagle Scouts Brian Levy, left, Kyle Gear, Jay Amin and Ryan O'Kelly.

Scouts pitch in for Eagle project

Beachside teen installs school's garden pond, *Page 27*

FLORIDATODAY.com

Eagle project beautifies school

Scout creates garden pond with waterfall

FLORIDATODAY STAFF

High school senior John Roth of Indian Harbour Beach has organized other Boy Scouts to go back to his former elementary school and construct a garden pond.

Roth

Roth, a student at Cocoa Beach Jr./Sr. High, is a member of Boy Scout Troop 314 in West Melbourne.

As his project to reach Eagle Scout, Roth is organizing the construction of a pond, about 10-feet by 12-feet, in the West Melbourne School for Science garden.

The goal is to provide the school the opportunity for its garden to be a Nature's Conservancy Designated Schoolyard Habitat. To qualify as a schooyard habitat, it must have a water feature that sustains life. The pond will include a waterfall and filtration system.

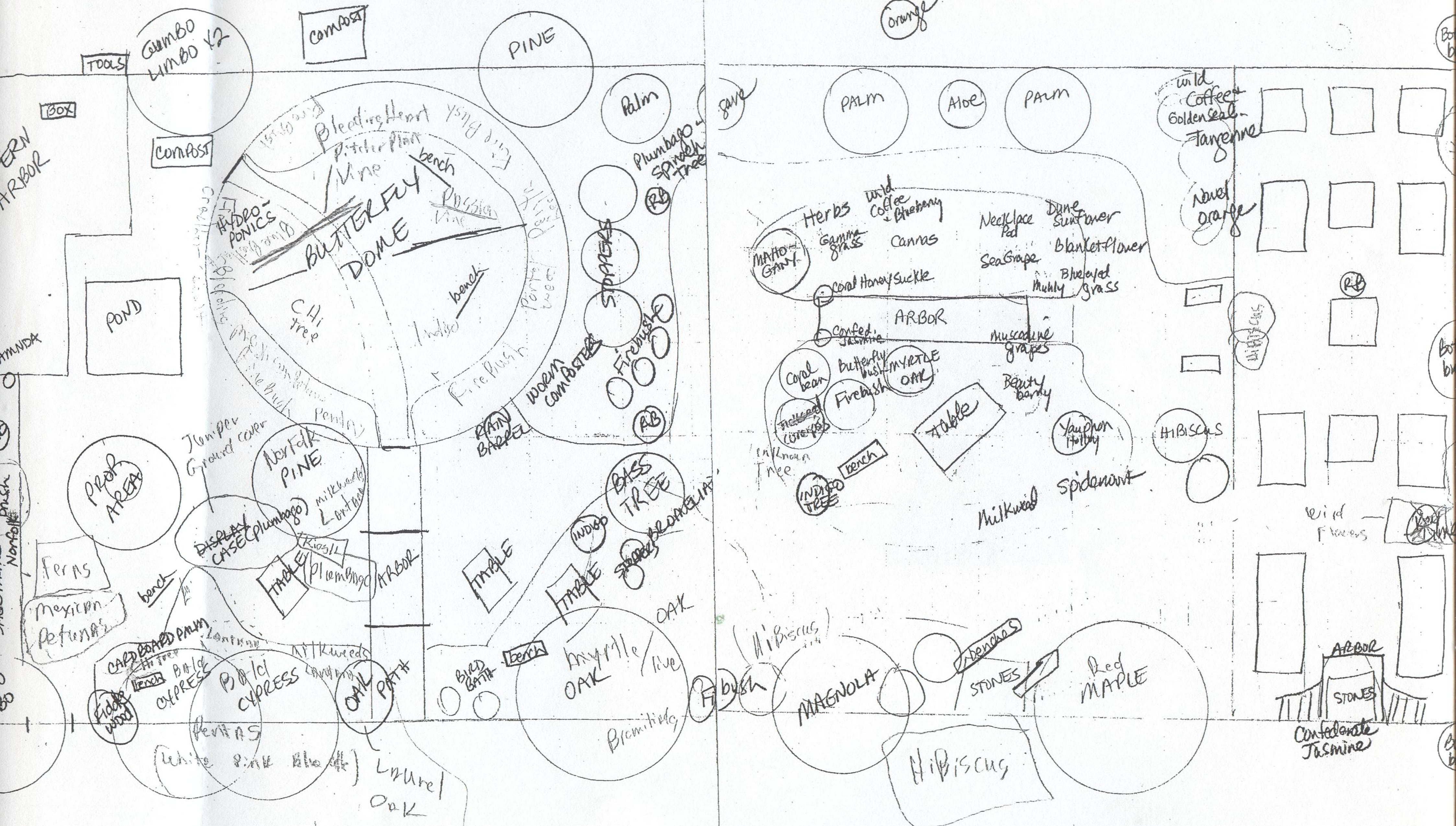
Rick Musser, owner of West Melbourne Aquatics, donated a pump and some expertise to the project.

Roth is in the International Baccalaureate Program at Cocoa Beach Jr./Sr. High, has been in the marching band for five years and the wind ensemble band for six years, and has participated in the Florida Tech Ethics Competition for two years. ■

February 10, 2010


O'NEILL

updated 10/28/11



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WEST MELBOURNE SCHOOL FOR SCIENCE GARDEN


PROPAGATION
AREA
POND