

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



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Water
Designing with ~~Nature~~ in Mind
An Audubon Signature Approach

AUDUBON
INTERNATIONAL



Just the facts...

- Reduced availability of water resources.
- Public awareness of the need to better manage and protect water has grown over the last decade.
 - Economic criteria and political considerations still tend to drive water policy at all levels.
- Further pressures on water resources are increasing as a result of human activity
 - urbanization
 - population growth
 - increased living standards
 - pollution.



A Multi-Faceted Approach...

1. “Big Picture Problem” approach
(e.g. climate change, loss of biodiversity)
2. “Charismatic Mega-Fauna” approach
(a.k.a. the “save the whales”)
3. “Wilderness Preservation” approach
(e.g., buy up and protect wild areas)
4. “All or Nothing” approach
(i.e., clean cars or clean power)
5. “Anti-something/Us vs. Them” approach
(i.e., the history of antagonism)

The Audubon International Approach

The environment and the economy are interconnected, as such good business decisions and good environmental decisions are inherently connected.

About Audubon International...

- Audubon International is a not-for-profit, 501(c)(3), environmental education organization that provides people with the education and assistance they need to practice responsible management of land, water, and natural resources.
- For over 20 years Audubon International has been working with individuals who can have an immediate impact while growing support to drive community-wide change.



Who We Work With...

Initiative	Target Group
Community Engagement, Planning, & Action	Towns, Cities, Counties, Mixed-Use Private Communities, Neighborhoods, Destination Resorts, Community Organizations, Planning Bodies
Eco-Design & Development	Land Owners, Developers & Architects, Town Permitting Boards, Community Planners, Construction Crews & Builders, End-users
Environmental Stewardship & Management	Facility Managers, Cemeteries, City & Town Park Managers, Schools & Youth Groups, Homeowners, Community Service Groups
Golf and the Environment	Golf Course Superintendents, Owners & Managers, PGA Professionals, Golf Architects & Builders, Golfers & Golf Associations, Management Companies

Developing *with* the Environment...

- An Audubon *Signature* Approach



- Serving to leverage innovation and best management practices to create models for the proper placement, design, construction, and management of new developments.

Audubon Signature Program

- Created to assist landowners & developers.
- Flexible and adaptable to any type of new development, renovation or restoration
- Works directly with landowners
- Balances needs of people with protection of the environment.



“Audubon International and Crescent Resources are working hand-in-hand to protect and sustain the land, water, wildlife, and natural resources, while creating a quality living experience for residents.”

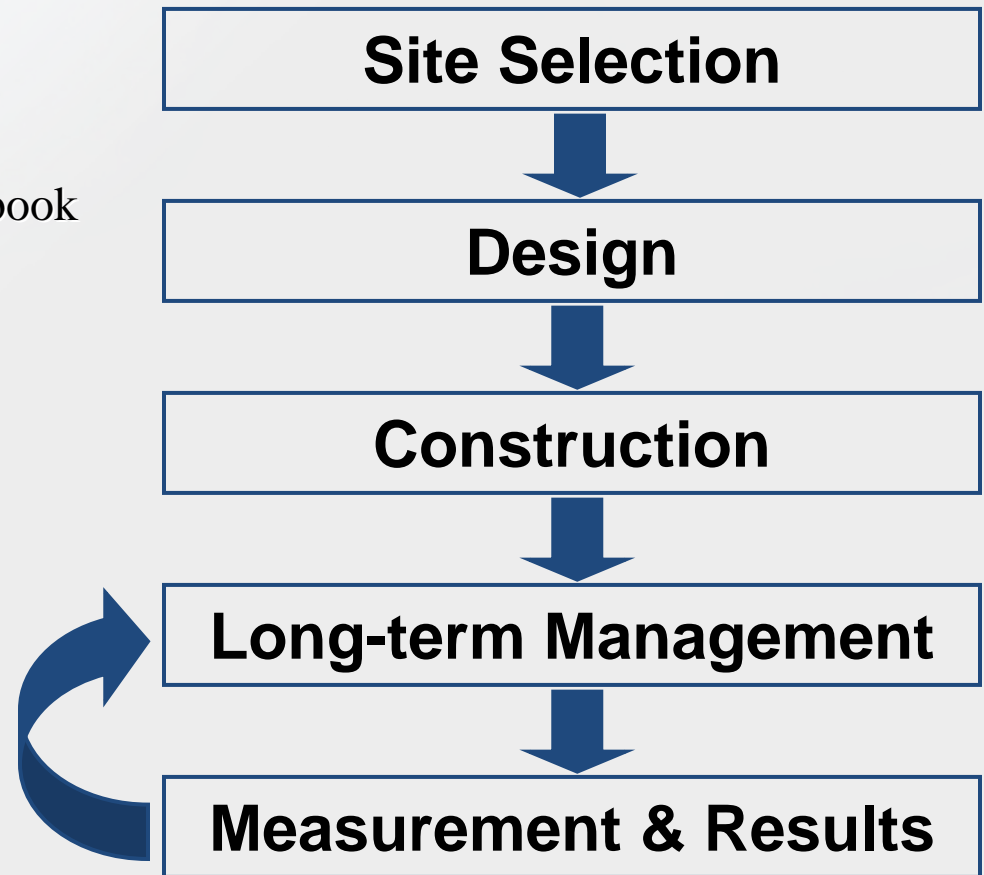
**Allen Harrington
Vice President
Crescent Resources, LLC.**

What Types of Projects Can Develop Green?



Basis For Signature Program...

- AI's Principles For Sustainable Resource Management
- Sound Science
 - Landscape Restoration Handbook 2nd Edition Pages 1-100
 - Principles and Practices of Natural Landscaping
 - Principles and Practices of Ecological Restoration
- Over 20 years working with land developers
- Site Classification Tool

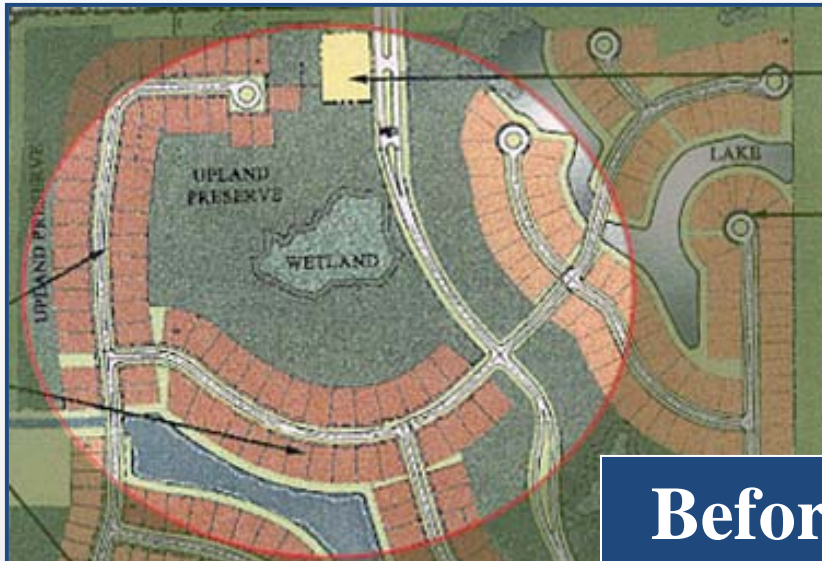


Site Selection: Knysna River



- Located on the Knysna River, just upstream of the City of Knysna, South Africa.
- Proposed site for the South African Sports Hall of Fame and a destination resort.
- *Cape Floristic Region*—a world heritage site by IUCN-The World Conservation Union.
- 500-acre site, historically used for agriculture.
- Several communities of interest, including the *fynbos*, salt marsh, and indigenous forest.
- Designated as 1-A

Design: Evergreene



Before



After

- 364-acre residential development in Palm Beach Gardens, FL— four miles inland from the Atlantic Ocean.
- Straight-line canal channeled water across northern section of property.
 - Meandering layout improved local water quality by removing suspended solids
- Retention and creation of water connections and habitat corridors.
- 81 acres of green space, 58 acres of lakes, removal of invasives covering 2/3 of property.
- Inclusion of littoral shelves planted with emergent aquatic vegetation would filter dissolved nutrients.

Design: Other Examples



Old Collier Golf Club, Naples, FL—Seashore Paspalum turf grass was selected because of its deep-rooted character and tolerance to salinity. Irrigation of the golf course is from two sources of little use to the general population: the tidal Cocohatchee River and the high sulfur and bicarbonate aquifer.

Construction: The Sanctuary



Many green-home features:

- **pervious concrete pavement driveways to minimize storm-water runoff**
- **a rain garden in the center of each cul-de-sac to filter runoff**

- Located outside Charlotte, NC the 1,348- acre property boasts only 189 homesites, with 80% of the property left undisturbed and 215 acres in common open space.
- Crescent Communities mandated 200-foot-wide conservation corridors (four times the County requirement).
- Total denuded area of each preserve is no more than 15%, with the total maximum impervious cover on each “private preserve” lot as 12%.

Construction: Other Examples



Sanctuary Golf Course, Scottsdale, AZ— on-site recharge wells purify runoff water from the golf course and return it to the ground to replenish the area’s natural water supply.



Raptor Bay Golf Club, Bonita Springs, FL— uses of “phytozones,” 22 acres of small wetland pockets constructed to treat runoff from the golf course.

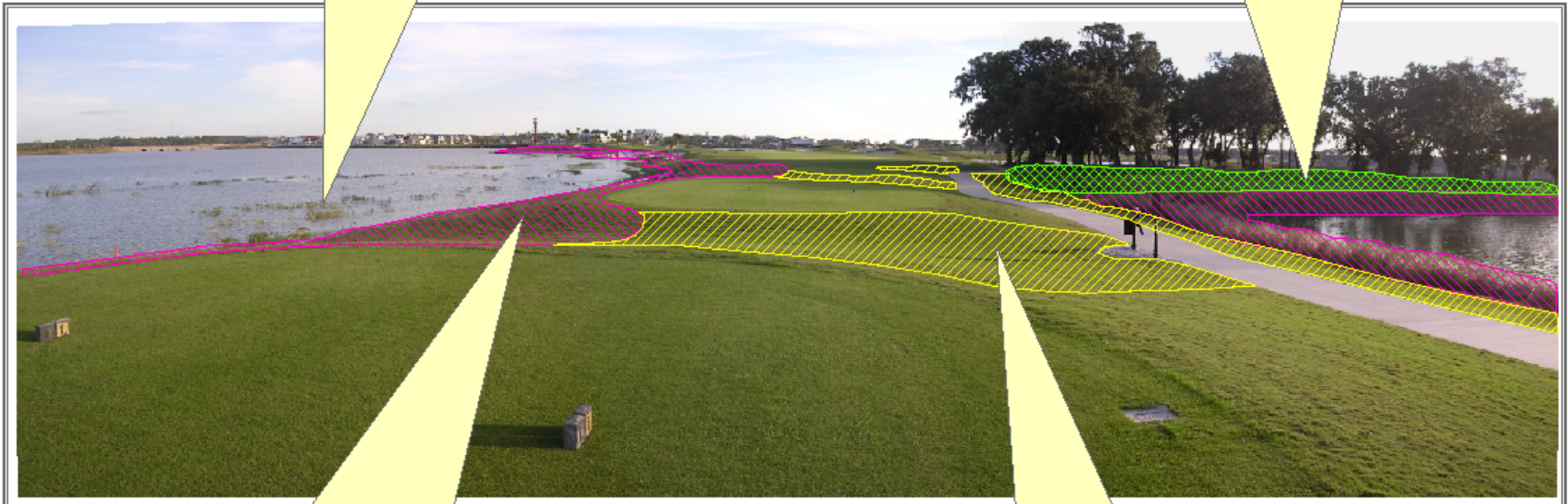
Long-term Management: Specific Management Areas



Recommended Management Zones & Practices for Audubon International Signature Courses

LAKE PROTECTION: Monitor, identify and manage potential nuisance aquatics

NATIVE FOREST UNDERSTORY: Transplant or plant native shrub and groundcover species in forest patch



MANAGEMENT ZONE A - NO SPRAY ZONE: 25 feet from lake, plant native grasses and eliminate irrigation or increase turf mowing height and decrease mowing frequency

MANAGEMENT ZONE B - LIMITED SPRAY ZONE: 25-50 feet from lake, increase turf mowing height and decrease mowing frequency

Long-term Management: The Villages of Sumter



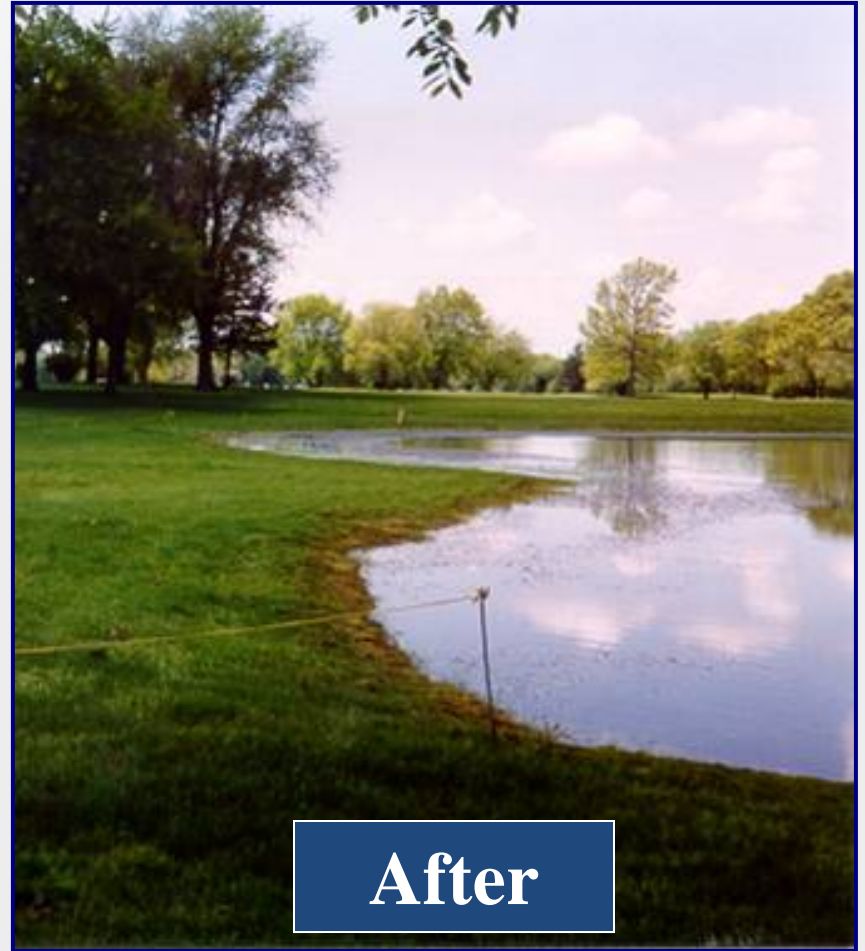
8 Lakes at Sumter have mats, totaling 1/2 acres, providing water filtration, oxygen production, and habitat.

- 13,000 acres located in Sumter County FL, just south of Ocala
- Fluctuating water levels made aquatic plant selection difficult for littoral shelves.
 - Rainy Season-Flooding
 - Dry Season-Irrigation Needed
- 4,200 acres of open space, 1,995 acre golf course, 840 acres of wetland, and 300 acres of lakes.
- Solution: fix the plants to fluctuate with water levels.
 - Interlocking floating mats held plants while adjusting to water levels.

Long-term Management: Other Examples



Before



After

Why education is so important...

Survey Says...

- Members save 20% in electric costs and 30% in overall operating costs—compared to a traditionally built and managed project of an equal type.
- Several members now use effluent water for irrigation. In one case the use of effluent water on a member golf course allowed the city to abandon its practice of discharging effluent water into a local stream.

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How To Get Involved?

AudubonInternational.org

or

Call: 518-767-9051

