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Facility & Property Management: BMPs for Water Management

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Who is Audubon International?



AUDUBON
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Who is Audubon International?



Environmental Stewardship & Management

- Fostering an ethic of environmental stewardship and help people improve the way they manage resources so that they make a positive difference in contributing to a more sustainable world.



Audubon International Programs for Facilities and Organizations

- Audubon Partners for the Environment
- Audubon Cooperative Sanctuary Program
- Audubon GreenLeaf Eco-Rating Program for Hotels
- Audubon Classic Program
- Audubon Signature Programs



Chambers Bay Golf Course, WA
Certified Audubon Signature Sanctuary

Why are these programs so important?

1. Address each facility's specific environmental issues and opportunities.
2. Assist facilities in becoming, and being recognized as, *community environmental assets*.



Uwharrie Vineyards, NC
Certified Audubon Cooperative Sanctuary

How the ACSP works...

PLAN	Complete a Site Assessment and Environmental Plan
DO	Implement your Environmental Plan
CHECK	Gauge your results and apply for certification
ACT	Strive for continuous improvement

Environmental Focus Areas

- Environmental Planning
- Wildlife
- Water
- Resource Management
- Outreach and Education



Uwharrie Vineyards, NC
Certified Audubon Cooperative Sanctuary

Water

- Conservation - efficient technologies, proper equipment maintenance, efficient water use
- Quality Protection - best management practices to protect surface and ground water



Water Conservation

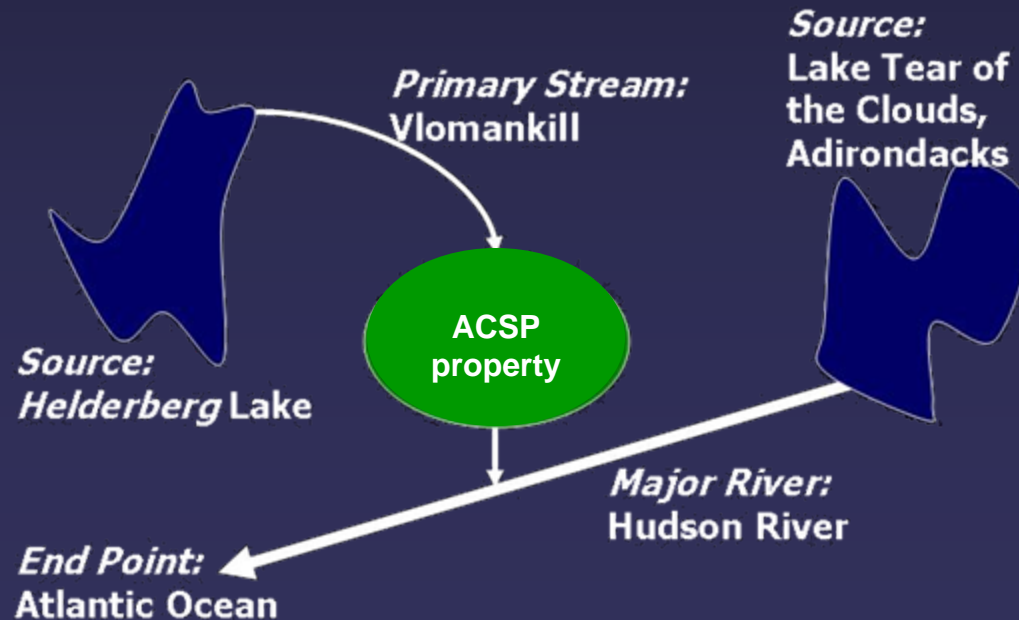
- Identify local watershed and water sources.
- Make a commitment to judicious water use.
- Maintain irrigation equipment for maximum efficiency and minimal water waste.
- Implement water conservation practices.



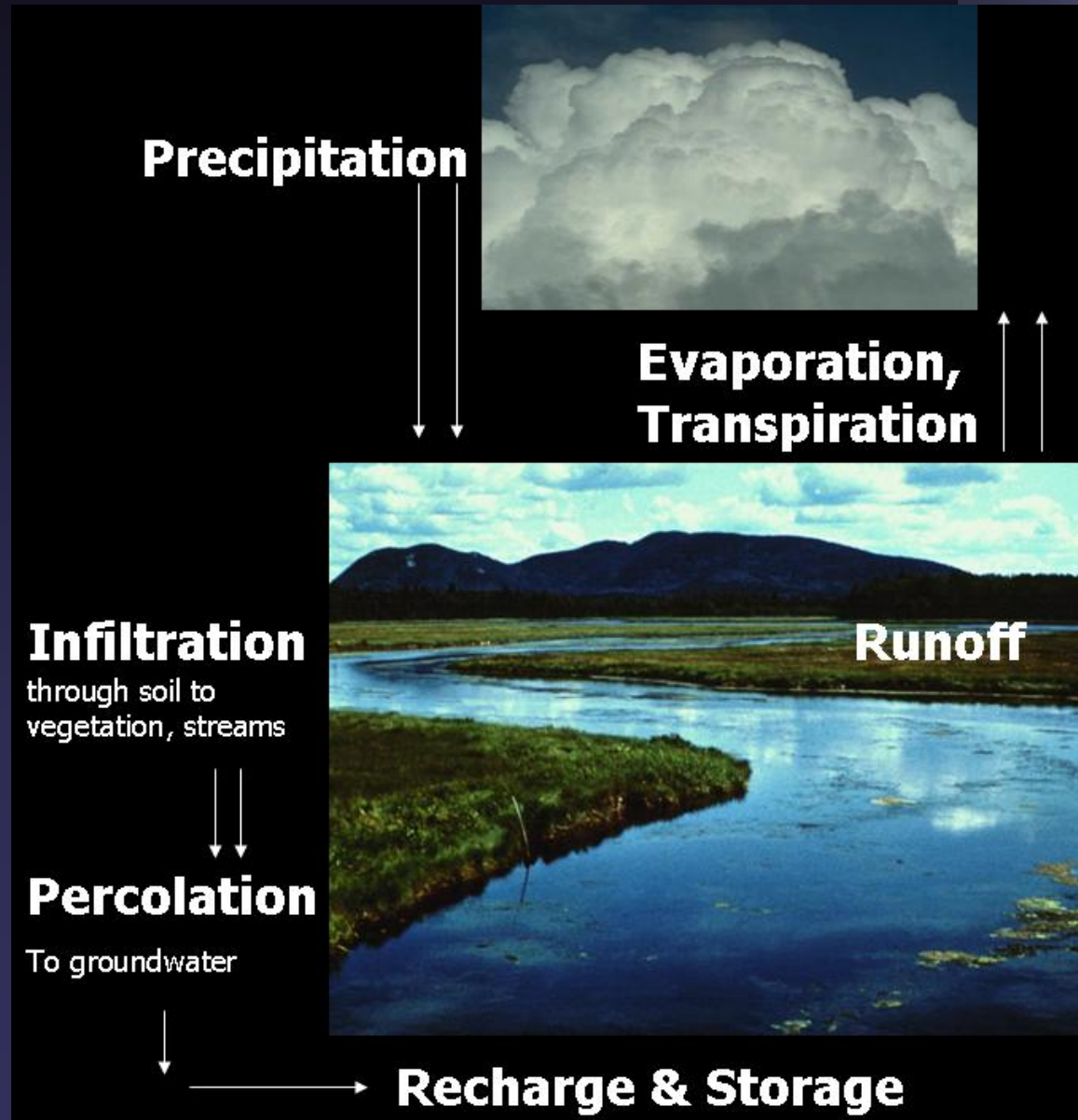
WCI Community, FL
Certified Audubon Cooperative Sanctuary

Watershed Connections

- Where does water enter your property?
- What's the quality of the water as it enters?
- Where does water exit your property?
- Does water quality improve, decline, or stay the same as it moves off the property?



General Knowledge-Water Cycle



Optimizing Equipment Efficiency

- Use modern technology- computers and weather stations
- Relocate heads to improve distribution
- Use half-circle sprinklers
- Keep records



Avondale Country Club, NSW
Certified Audubon Cooperative Sanctuary

Water Conservation Practices

- Eliminate unnecessary water use
- Maximize ground water infiltration
- Minimize water loss through runoff, evaporation, and transpiration



Newport National, RI
Certified Audubon Cooperative Sanctuary

Proper Irrigation Practices

- Reduce irrigated acreage
- Prepare plants for hot, dry summer weather
- Use a soil probe
- Water on a deep, infrequent basis
- Water uniformly, slowly, and at correct time
- Hand water if needed
- Use drip irrigation in landscape beds
- Use weather data

How to improve the water cycle?

- Improve drainage to minimize runoff and evaporation
- Reduce compaction
- Aerate
- Add organic matter
- Maintain soil cover
- Reduce turf stress
- Reduce thatch
- Overseed with improved varieties



Indoor Water Conservation

- Low-flow water saving devices in the facility
 - low-flush toilets
 - faucet aerators
- Reuse water (e.g., from air-conditioning units)
- Insulate water pipes and tanks



Water Quality Management

- Improve general knowledge
- Eliminate chemical runoff, nutrient loading, and drift
- Monitor water quality



Grande Pines, FL

Certified Audubon Cooperative Sanctuary

Identify Potential/Actual Impacts

- Leaching, drift, or runoff
- Erosion
- Thermal pollution
- Excessive water withdrawals
- Oxygen depletion



Best Management Practices

- Prevention
- Detection
- Control



The more you can prevent problems from occurring, the easier, less costly, and more effective your water quality management program will be.

Eliminate chemical runoff and drift

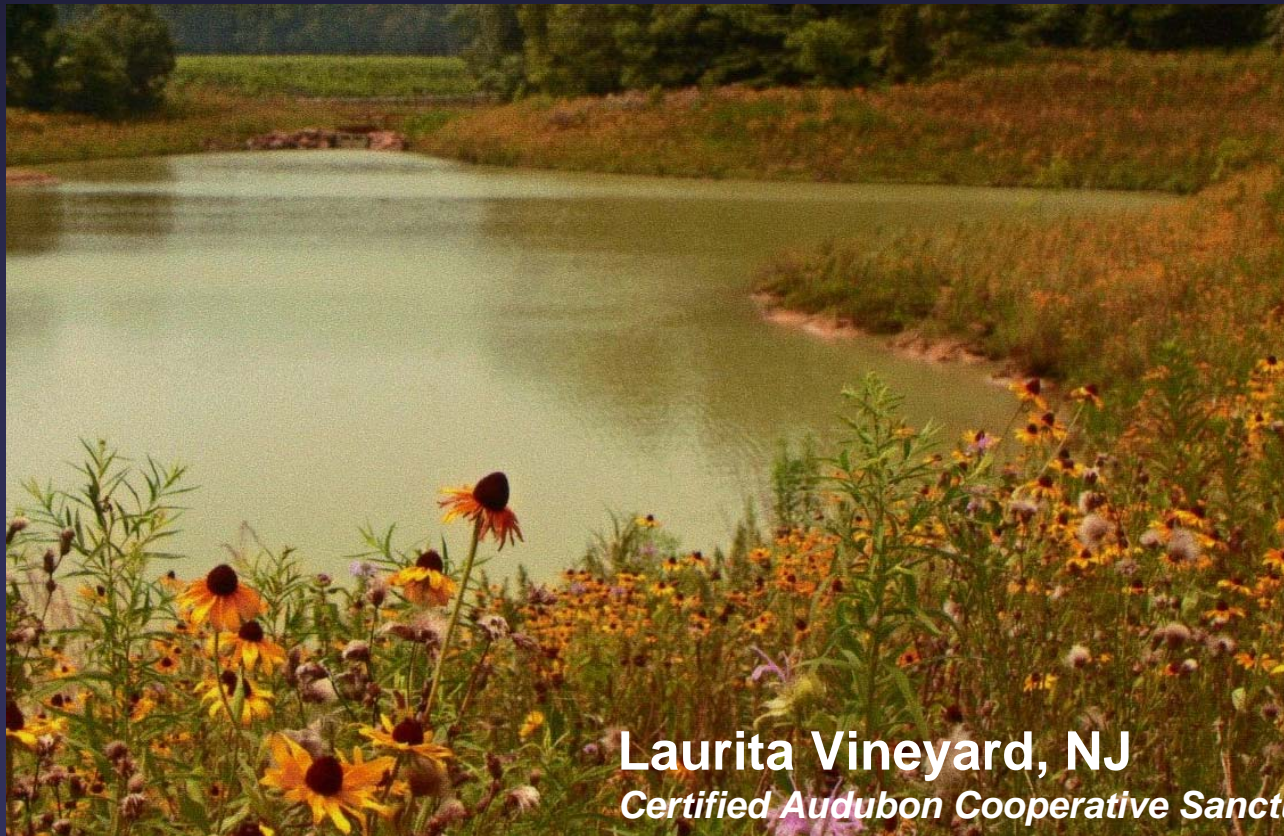
- “No spray” and “limited spray” zones
- Spoon feeding
- Slow-release fertilizers



Presidio Golf Course, CA
Certified Audubon Cooperative Sanctuary

Water Quality Management

- Best Management Practices - Prevention
 - Vegetative Buffers
 - No-spray zones



Laurita Vineyard, NJ
Certified Audubon Cooperative Sanctuary

Maintenance Facility

- Properly store, handle, and dispose of chemicals
- Equipment should be cleaned in a manner that does not allow chemicals to move into waterways
- Chemicals should be stored safely
- Spill containment should be guaranteed
- Empty chemical containers should be stored and disposed of properly.

Water Quality Monitoring

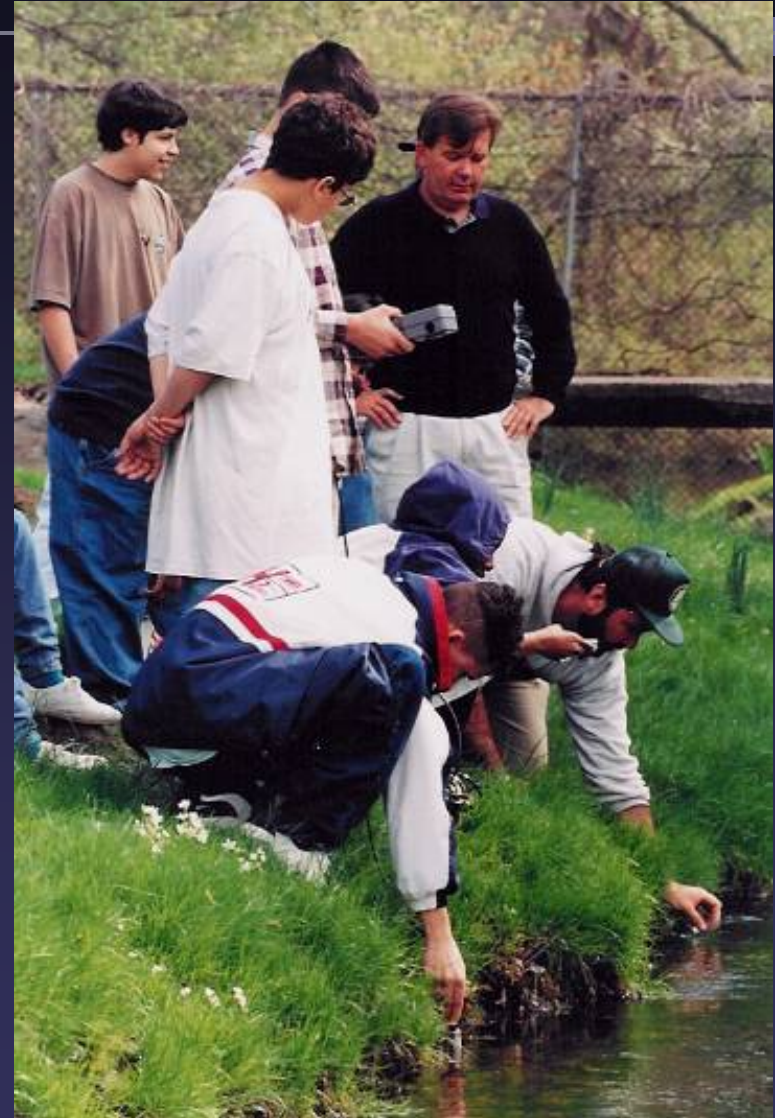
Monitor the health of water features to detect possible movement of nutrient and chemical inputs into water sources and correct problems as needed.



Warren Golf Course at Notre Dame, IN
Certified Audubon Cooperative Sanctuary

Conducting the Tests

- Do-it-yourself
- Contract Laboratory
- Working with a local organization



Woodway Country Club, CT
Certified Audubon Cooperative Sanctuary

Results count!



The general public, government agencies, and environmental community look at NUMBERS and RESULTS to evaluate how good a company is for the environment.

Bethpage State Park- Black Course, NY
Certified Audubon Cooperative Sanctuary



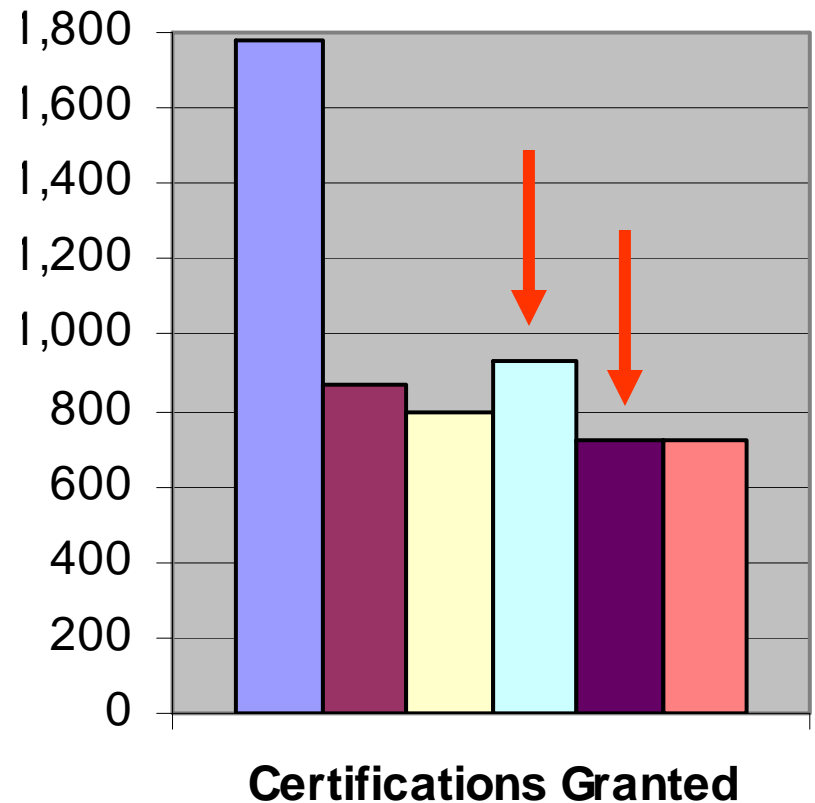
Keeping Track of Results

- Water use (gallons/month, gallons/year)
- Irrigated acreage (square feet, acres)
- % of water saving equipment (e.g., low flow fixtures, improved irrigation system, etc.) vs. conventional equipment
- Water costs (\$ per month/year)
- % of reclaimed water used
- Water monitoring/testing

Results: Membership Activity

- ACSP Members are developing plans and taking action.

- Environmental Planning
- Wildlife & Habitat Management
- Chemical Use Reduction & Safety
- Water Conservation
- Water Quality Management
- Outreach and Education



Results: Proven Environmental Outcomes

- Water Conservation
 - 69% decreased water use
 - average savings: 1.9 million gallons/ year/property
- Water Quality Protection
 - 89% of respondents improved cultural control methods
 - 92% used pesticides with a lower toxicity level
 - 86% increased efforts to monitor water quality



***6,748 new birds fledged
on 112 properties***

2005 Nestbox Survey

Results: Proven Environmental Outcomes

- Habitat Management
 - 55% increased emergent vegetation around ponds
 - 89% emphasize native plants when landscaping
 - 80% decreased turfgrass
 - The average increase in wildlife habitat: 22 acres per golf course



***289 birds identified on 53
golf courses***

***2006 North American
Birdwatching Open***

Telling the Story

I scream, you scream, we all scream for

Clean Water

Ponds, like the one to your right, serve as habitat to a wide variety of wildlife. Turtles, frogs, muskrats, ducks, fish, and insects are just a few examples of the animals that live in Iowa ponds. Keeping the

water clean is essential for the survival of these animals. If you plan to hit your golf ball into the pond, think of the animals, and give it a good washing before hand.



FAIRWAY FACTS

The return of river otters to Iowa's waterways is a good indicator that water quality is improving.



(515) 323-5300

www.conservationboard.org

Jester Park Golf Course, IA
Certified Audubon Cooperative Sanctuary

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