



City of Casselberry & Florida Fish & Wildlife Conservation Commission



**Middle & South Lake Triplet,
Lost Lake, & Queens Mirror Lake Workshop**

Workshop Goals

- Explore physical & biological characteristics of each lake
 - Acreage, depth, floodplains, water levels, watershed connectivity, plant species, water quality
- Learn about permitting requirements for shorelines, docks, seawalls, etc.
- Learn about City activities and projects for the benefit of the lakes
- Learn about “backyard” best management practices to help protect the lakes



Middle Lake Triplet



Lake Triplet

Section - Township - Range
8,9,16 & 17 - 21 - 30

-  Contour Lines
Expressed in
1-Foot Intervals
-  Estimated Lake
Perimeter

EXPLANATION:

Assessment Date: June 6, 2002.

Lake water level was 48.59 ft. above sea level when the lake was assessed. Contours are expressed in absolute depth below this level and may not exclude the presence of submerged aquatic vegetation.

DATA SOURCES:

Seminole County 1999 color aerials provided by Seminole County Public Works. All contours generated by Florida Center for Community Design and Research based on GPS/Sonar data provided by the Seminole County Stormwater Division.





South Lake Triplet



South Lake Triplet

Section - Township - Range
16-21-30

-  Contour Lines
Expressed in
2-Foot Intervals
-  Estimated Lake
Perimeter

EXPLANATION:

Assessment Date: July 3, 2002.
Lake water level was 48.83 ft. above sea level when the lake was assessed. Contours are expressed in absolute depth below this level and may not exclude the presence of submersed aquatic vegetation.

DATA SOURCES:

Seminole County 1999 color aeriels provided by Seminole County Public Works. All contours generated by Florida Center for Community Design and Research based on GPS/Sonar data provided by the Seminole County Stormwater Division.



0 100 200 300 400 500 Feet





Lost Lake

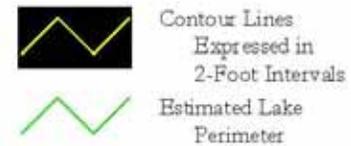


Queen's Mirror Lake



Queens Mirror Lake

Section - Township - Range
16-21-30



EXPLANATION:

Assessment Date: August 6, 2001.

Lake water level was 49.675 ft. above sea level when the lake was assessed. Contours are expressed in absolute depth below this level.

DATA SOURCES:

Seminole County 1999 color aeriels provided by Seminole County Public Works. All contours generated by Florida Center for Community Design and Research based on GPS/Sonar data provided by the Seminole County Stormwater Division.

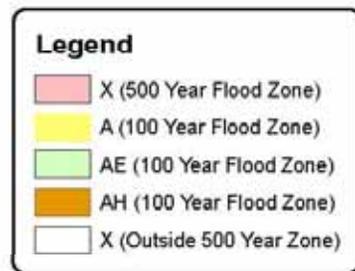
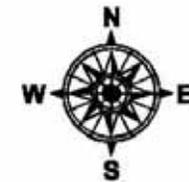


Physical Characteristics

- Middle Lake Triplet
 - Approximately 54 acres
 - Depths up to 11 feet
- South Lake Triplet
 - Approximately 25 acres
 - Depths up to 16 feet
- Lost Lake
 - Approximately 12 acres
 - Depths approx 8-10 ft
- Queen's Mirror Lake
 - Approximately 12 acres
 - Depths up to 12 feet

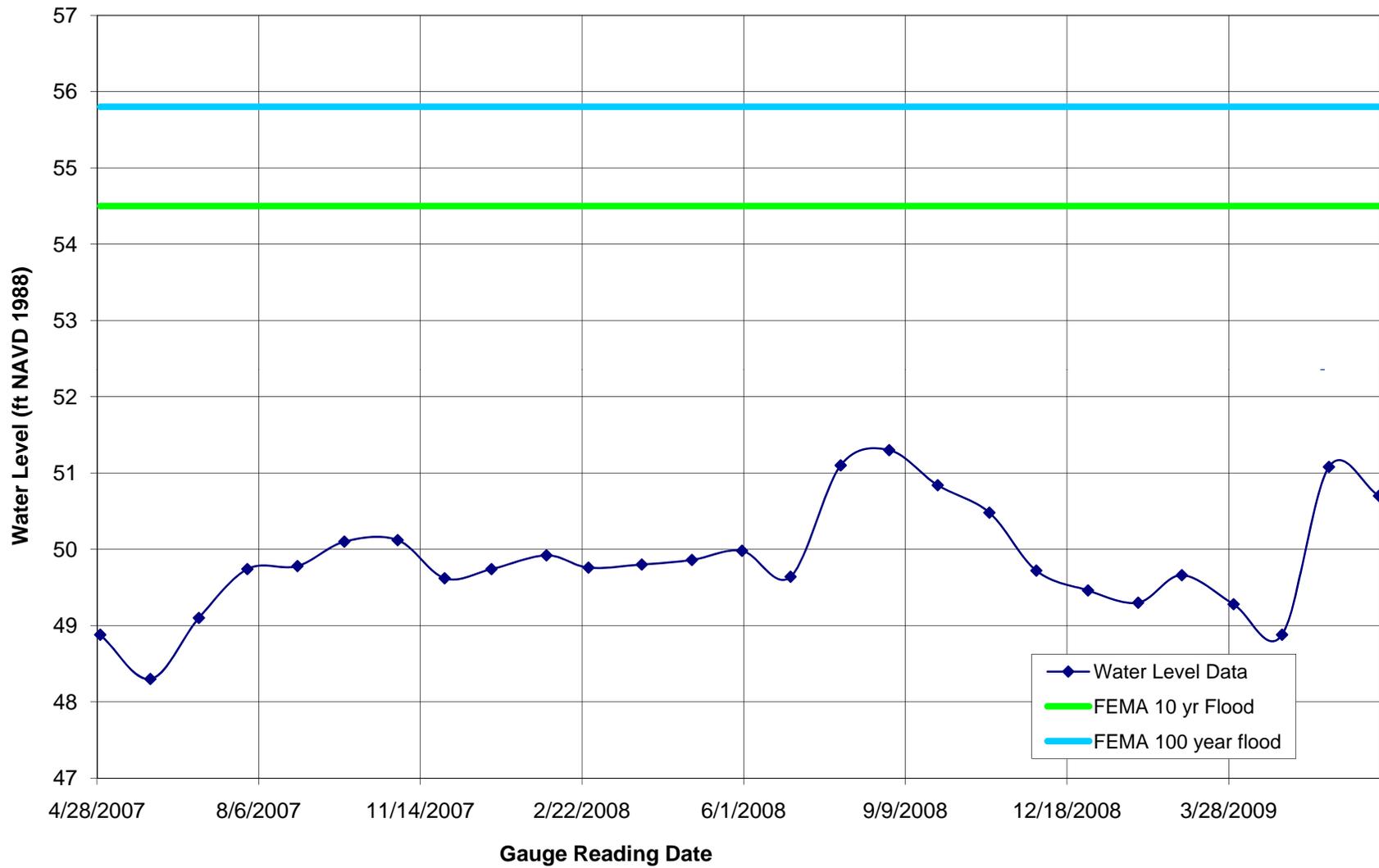
Physical Characteristics

- 100 year flood elevation
 - Middle/South Lake Triplet & Lost Lake: 55.8 ft
 - Queen's Mirror: 56.0 ft



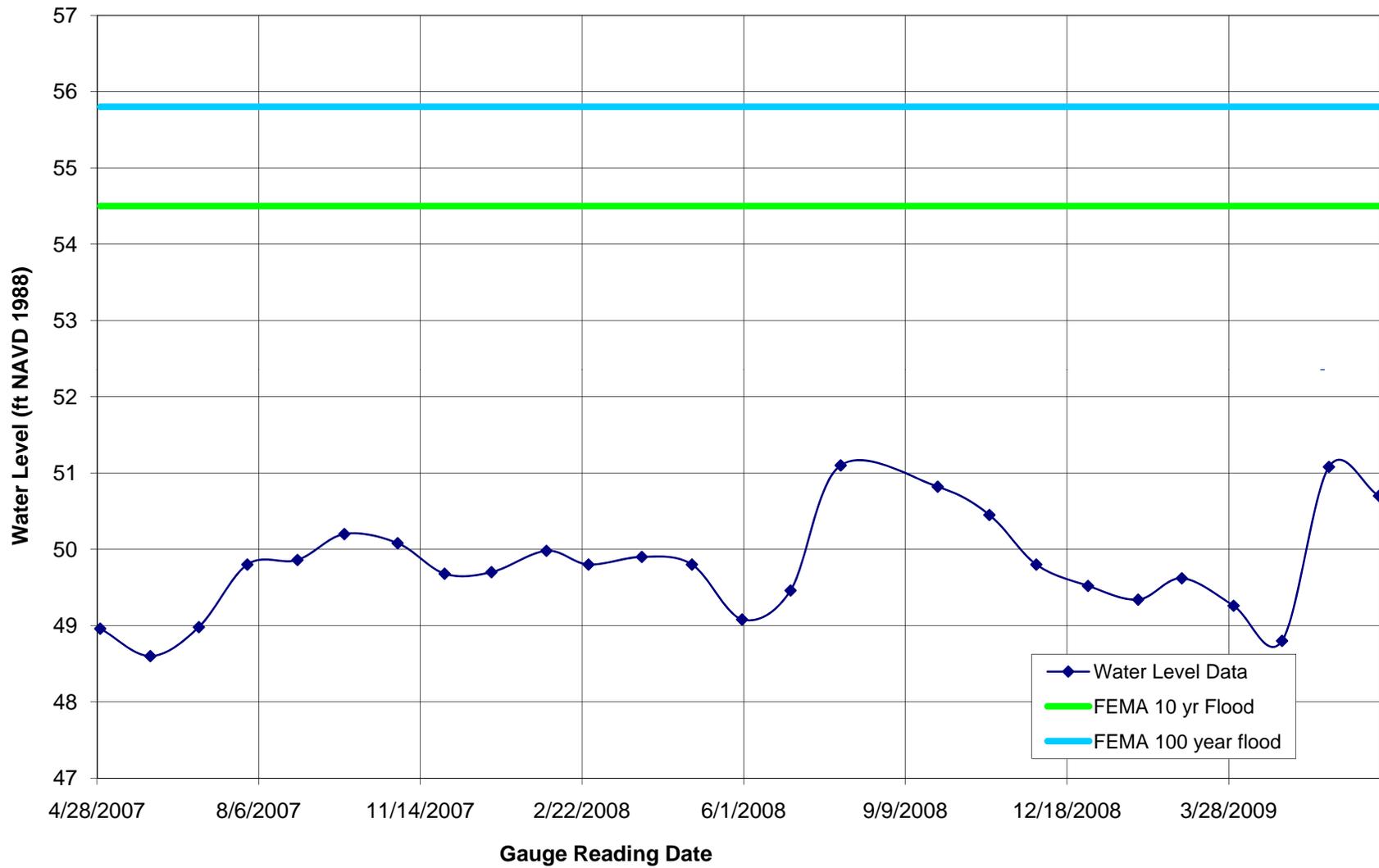
100 year floodplain (light green)

Middle/South Lake Triplet Water Levels



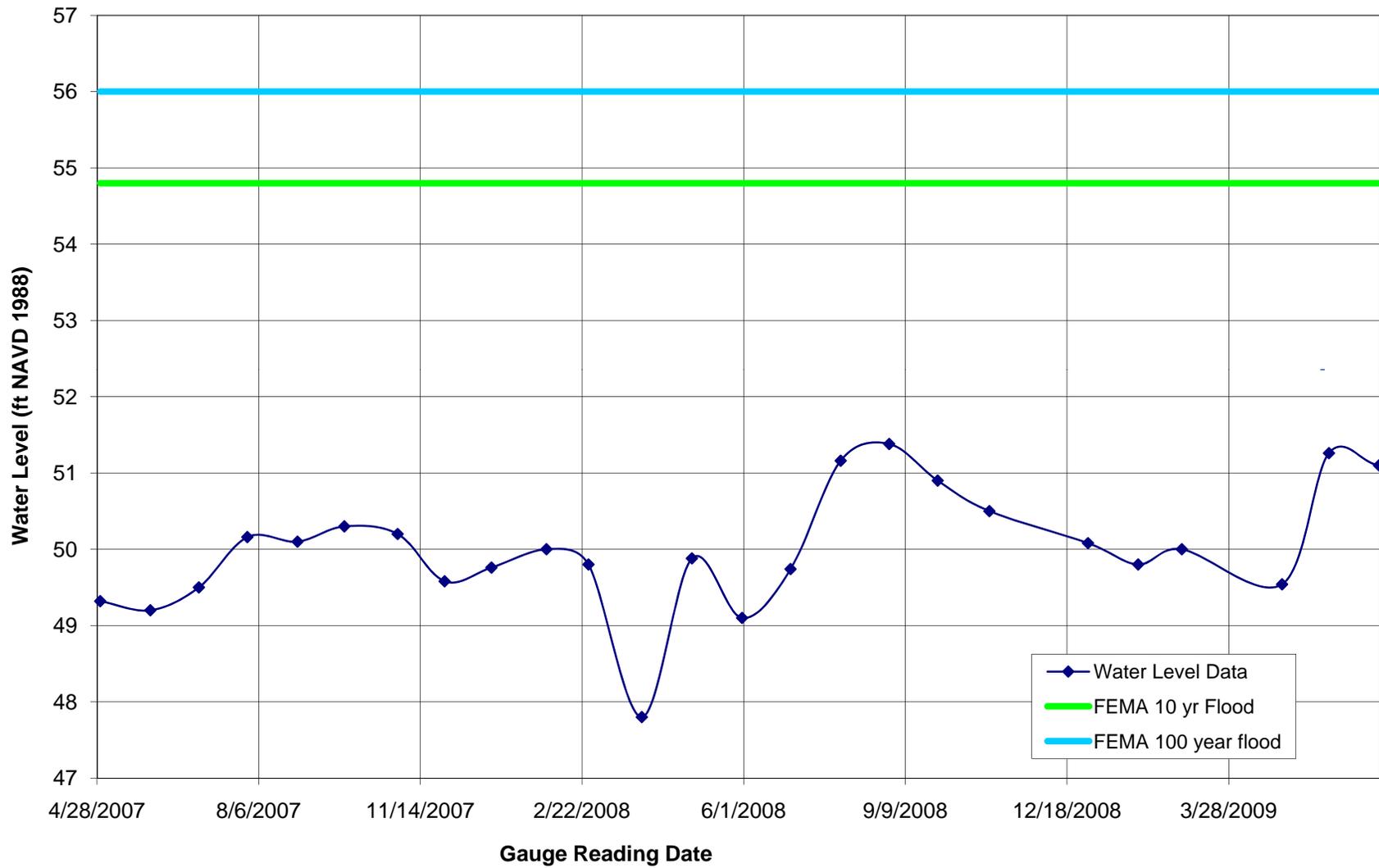
Water surface elevation – Middle/South Lake Triplet

Lost Lake Water Levels



Water surface elevation – Lost Lake

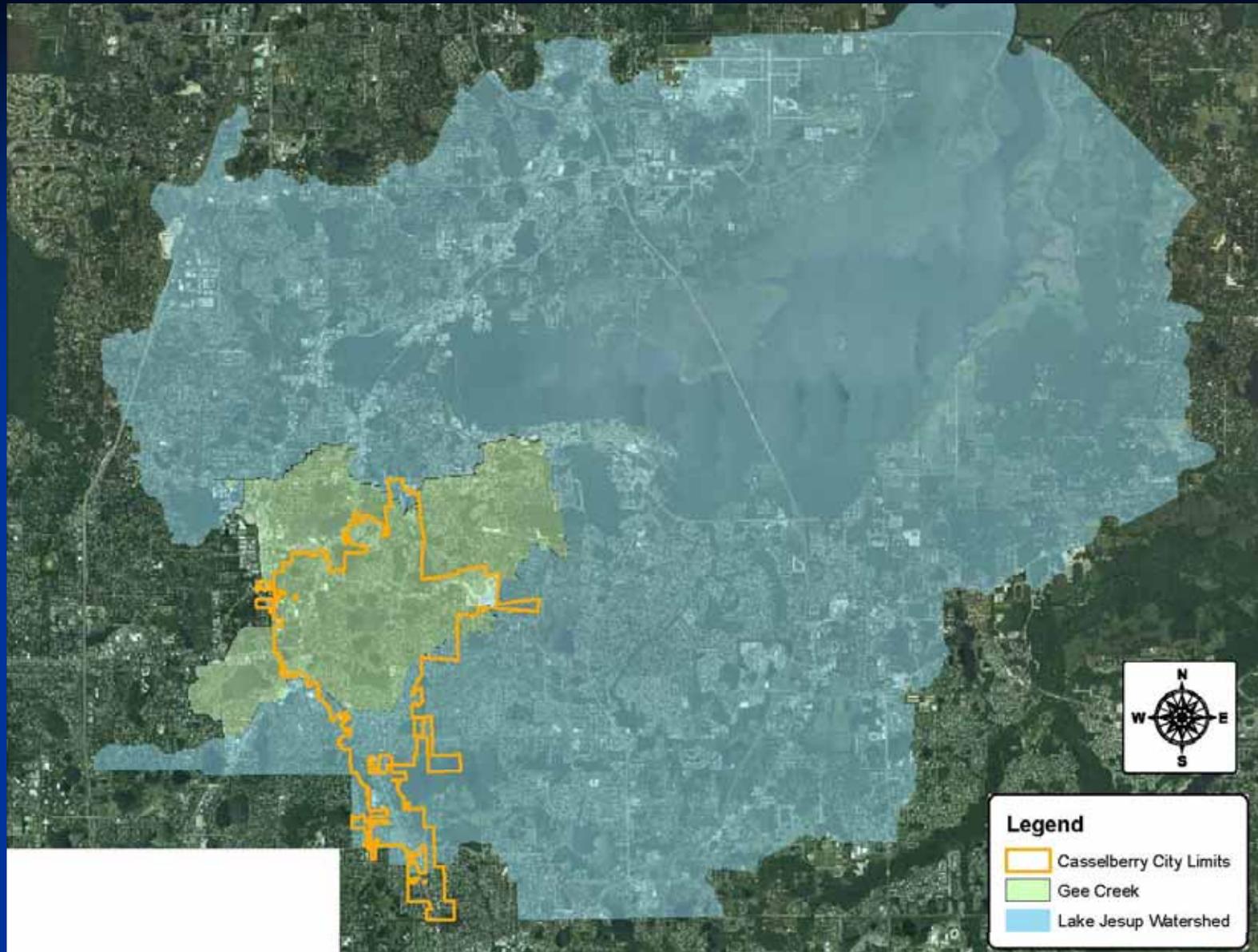
Queen's Mirror Water Levels



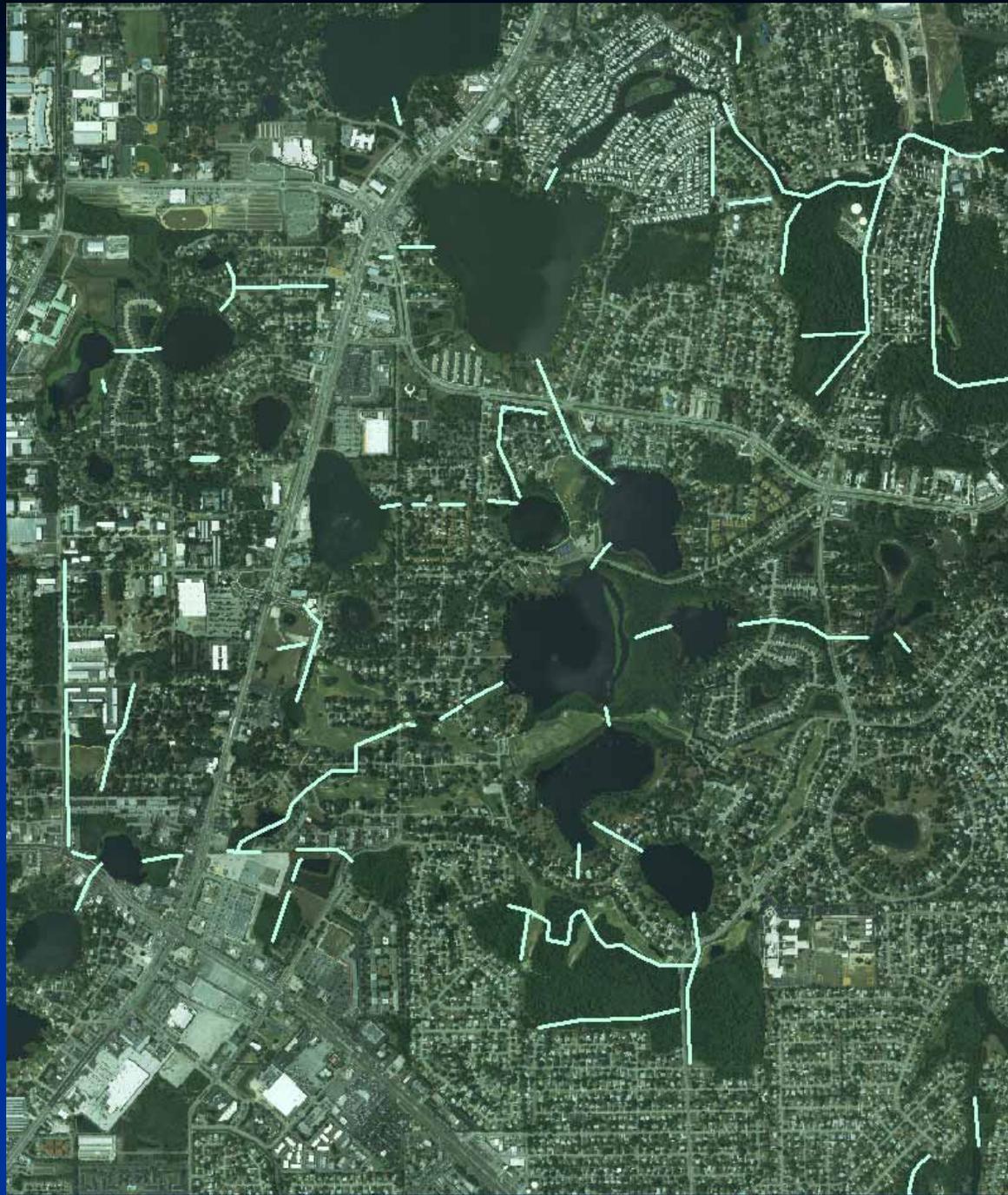
Water surface elevation – Queen's Mirror

Physical Characteristics

- 100 year flood elevation: 55.8 – 56.0 ft
- Water elevation typically 49-51 ft
- Part of the Gee Creek Basin (Lake Jesup Watershed)



The Big Picture



*How It's
All Connected*

Biological Characteristics

- Vegetation: Native species vs. Non-native, invasive species
 - Biodiversity and native habitat vs. “monoculture”
 - Impacts on water quality, fish habitat, and recreation

Biological Characteristics

■ Sample Native species present

- Carolina Willow
- Bald Cypress
- Red Maple
- Spatterdock
- Fragrant water lily
- Cattails*
- Coontail
- Giant bulrush
- Tape grass
- Pickerelweed
- Chara (muskgrass)
- Bladderwort

■ Sample Non-native Invasives present

- Chinese tallow
- Brazilian pepper
- Alligator weed
- Torpedograss
- Wild taro
- Water lettuce
- Cuban bulrush
- Duckweed**
- Common salvinia
- Hydrilla
- Parrotfeather

*native with invasive potential; often requires control

**similar native and non-native species; often requires control

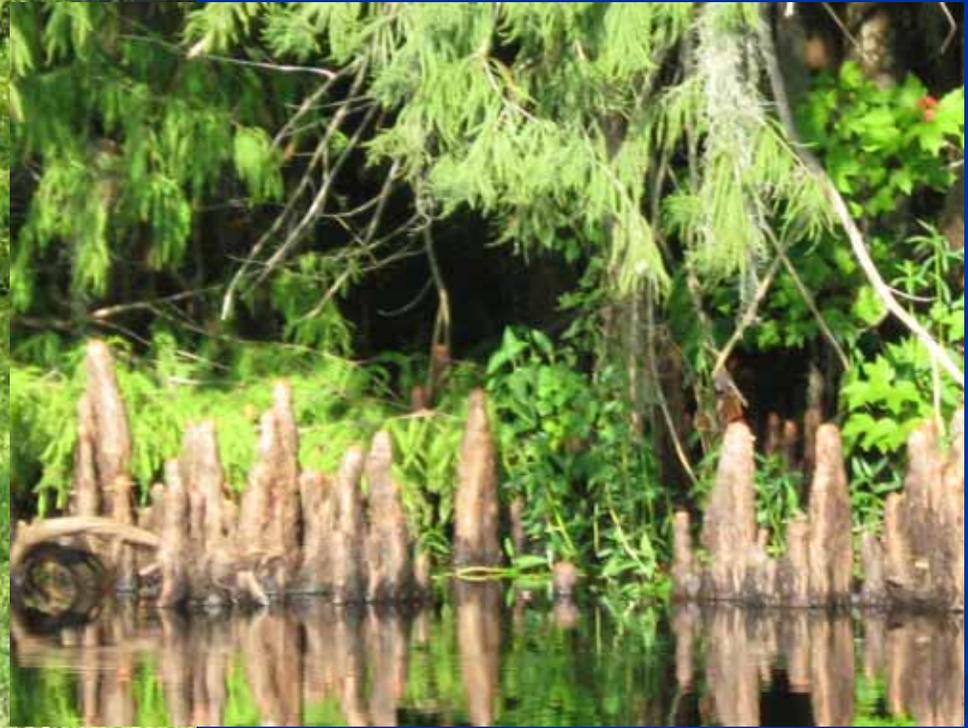
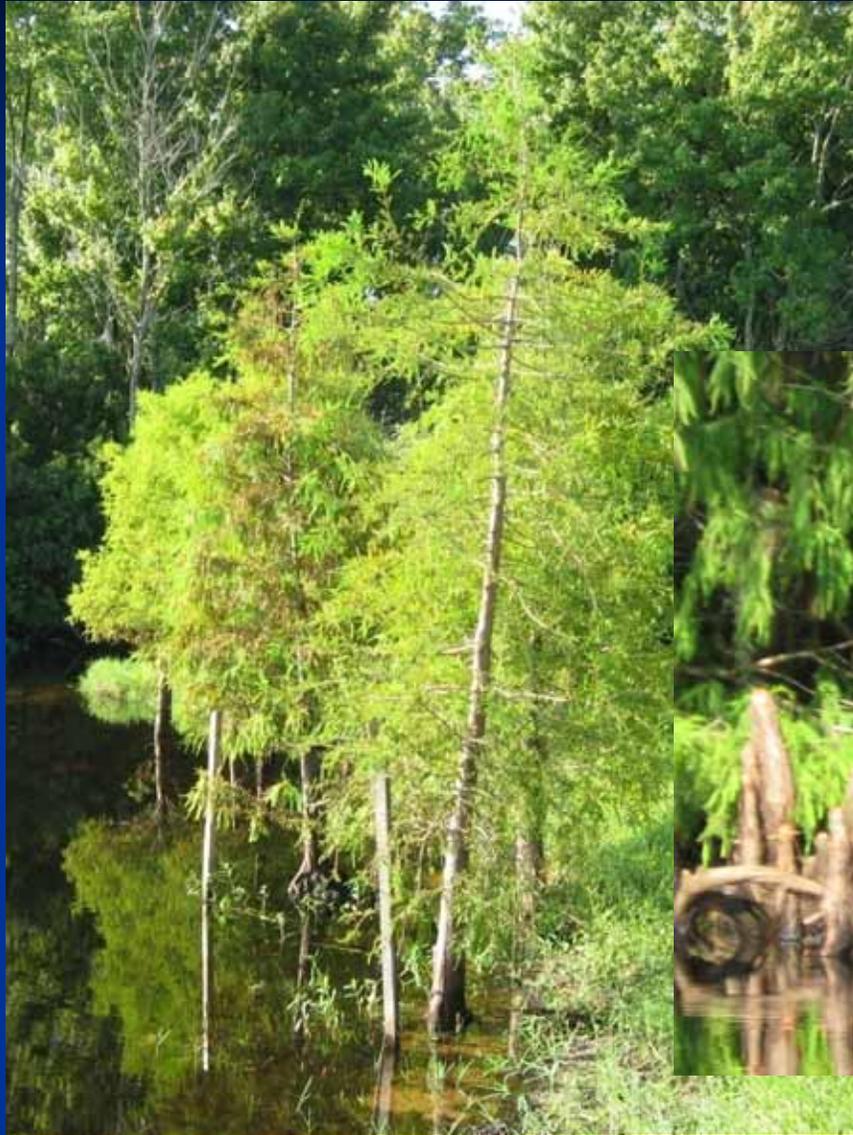
Salix caroliniana
coastal plain willow
Photo by Amy Richard
Copyright 2005, Univ. of Florida



Carolina willow (good)



Chinese Tallow (bad)



Bald cypress (good)



Brazilian pepper (bad)



Red Maple (good)



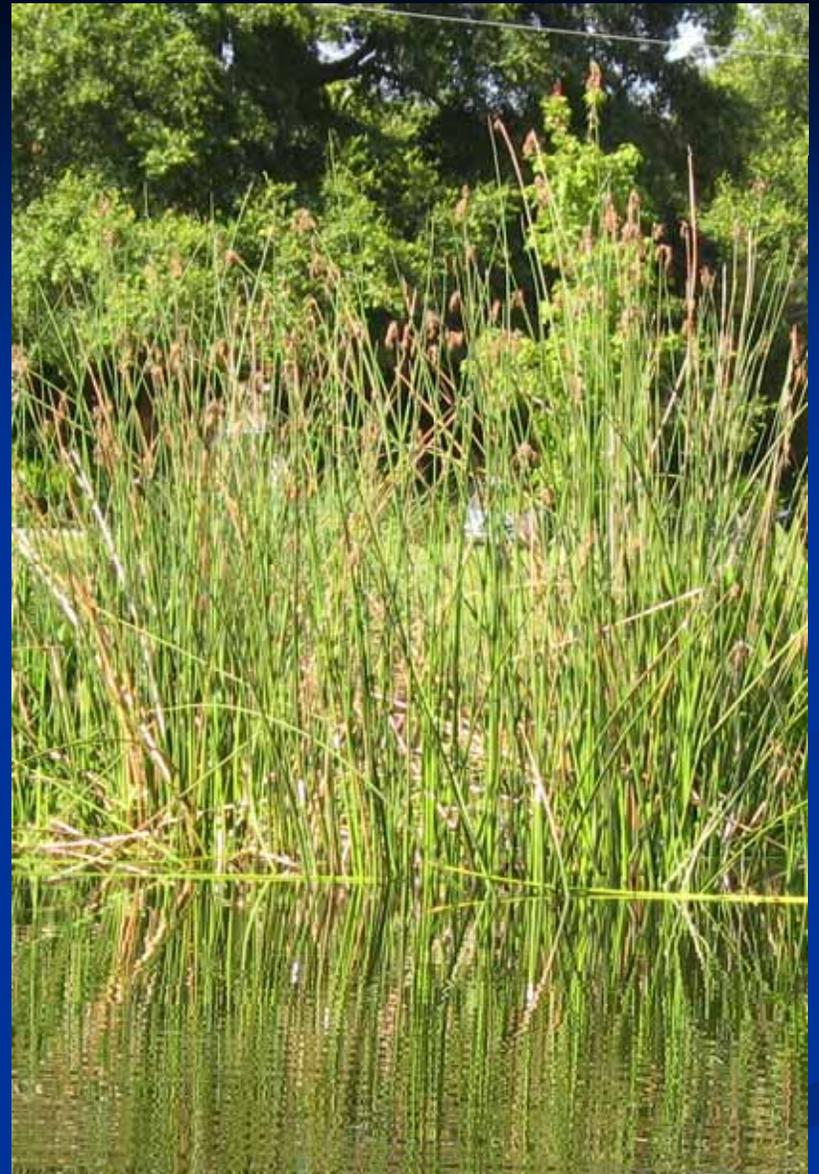
Alligator weed (bad)



Torpedograss (bad)



Cattails (not so good)



Giant bulrush (good)



Cuban bulrush (bad)



Pickerelweed (good)



Arrowhead (good)



Wild taro (bad)



Spatterdock (good)



Fragrant water lily (good)



Water lettuce (bad)



Mosquito fern (good)



Common salvinia & Duckweed (bad)



Coontail (good)



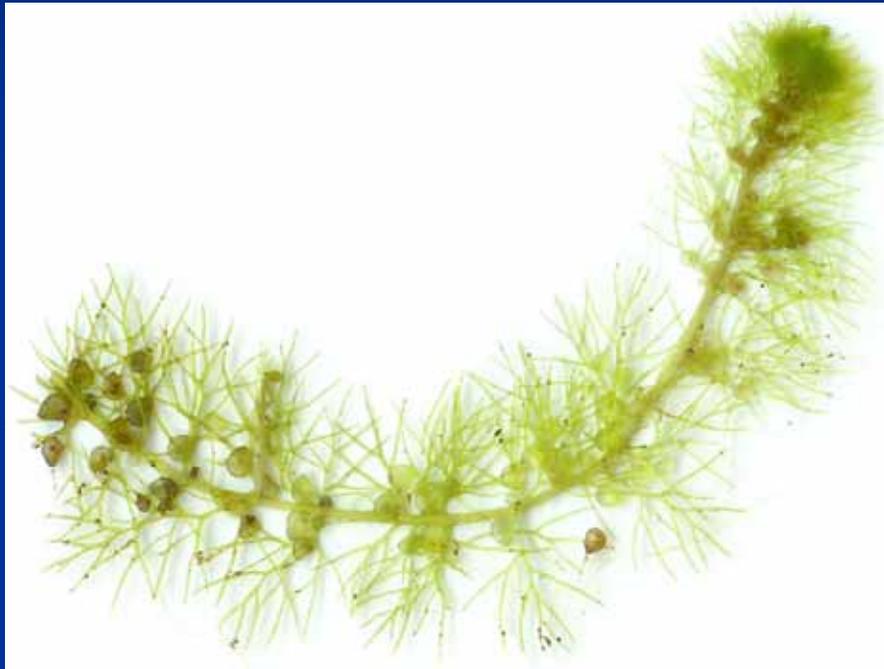
Hydrilla (bad)



Chara (good)



Hydrilla (bad)



Bladderwort (good)



Hydrilla (bad)

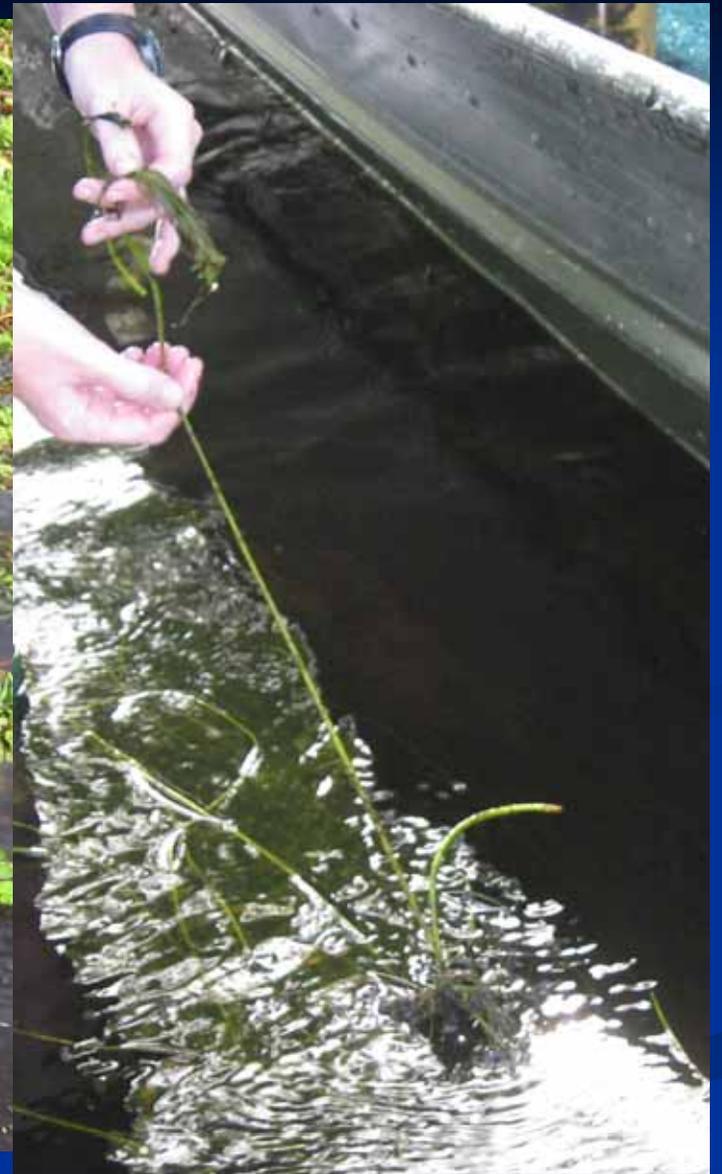


Photo by Jesse Van Dyke
Copyright 1998 Florida Department of Environmental Protection

Sago pondweed (good)



Hydrilla (bad)



Parrotfeather (bad)



Tape grass/eel grass (good)

Trophic States: Example Healthy Lakes



diverse assemblage of
native plants

shoreline stabilized
with vegetation

abundant species of
fish and wildlife



Eutrophic/Hypereutrophic Examples

Absence of plants causes nutrients to accumulate in water...leads to algal bloom...

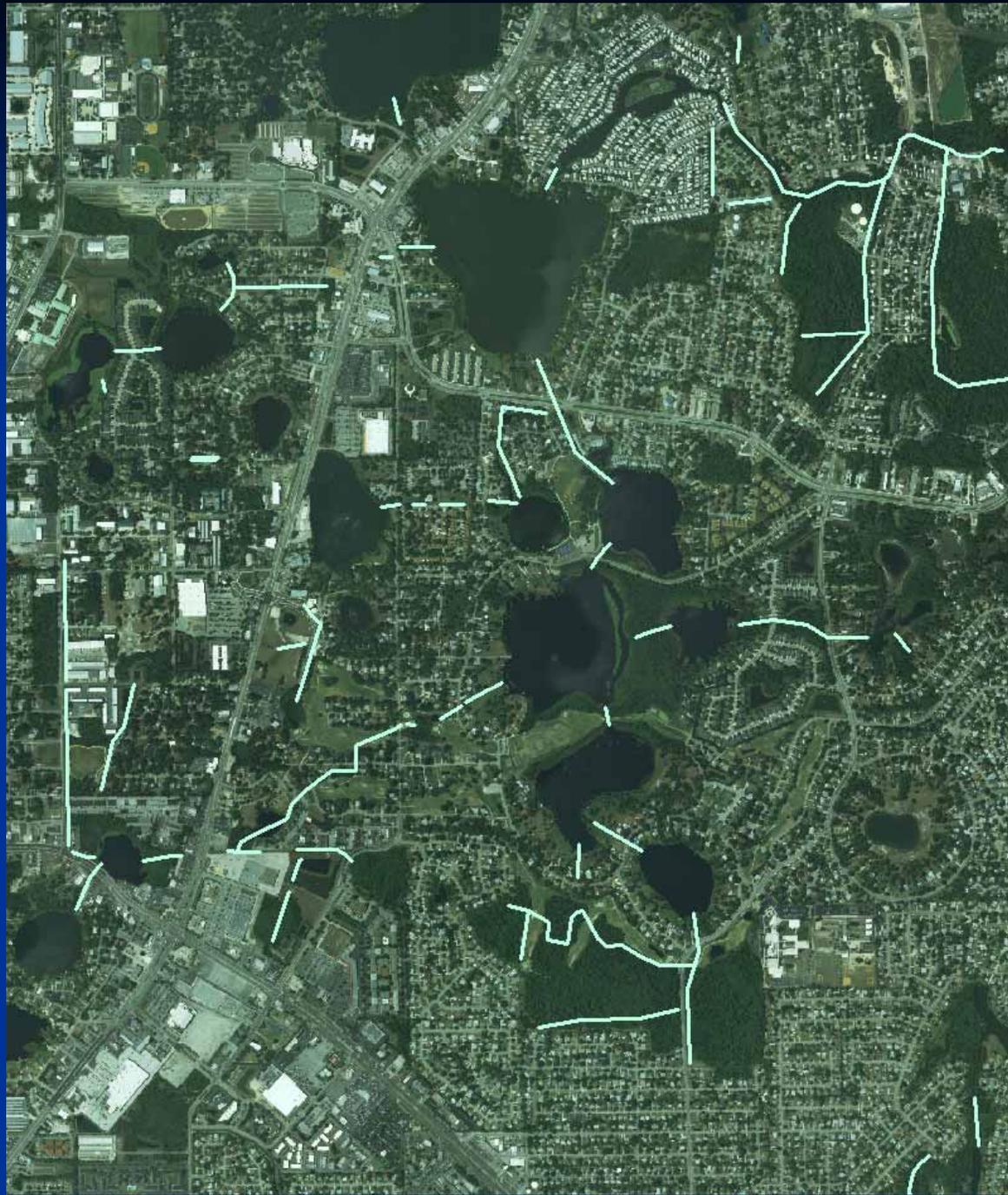


...algal bloom prevents light from reaching bottom

...Fish kill due to lack of oxygen



Excess Algae (March 2009)

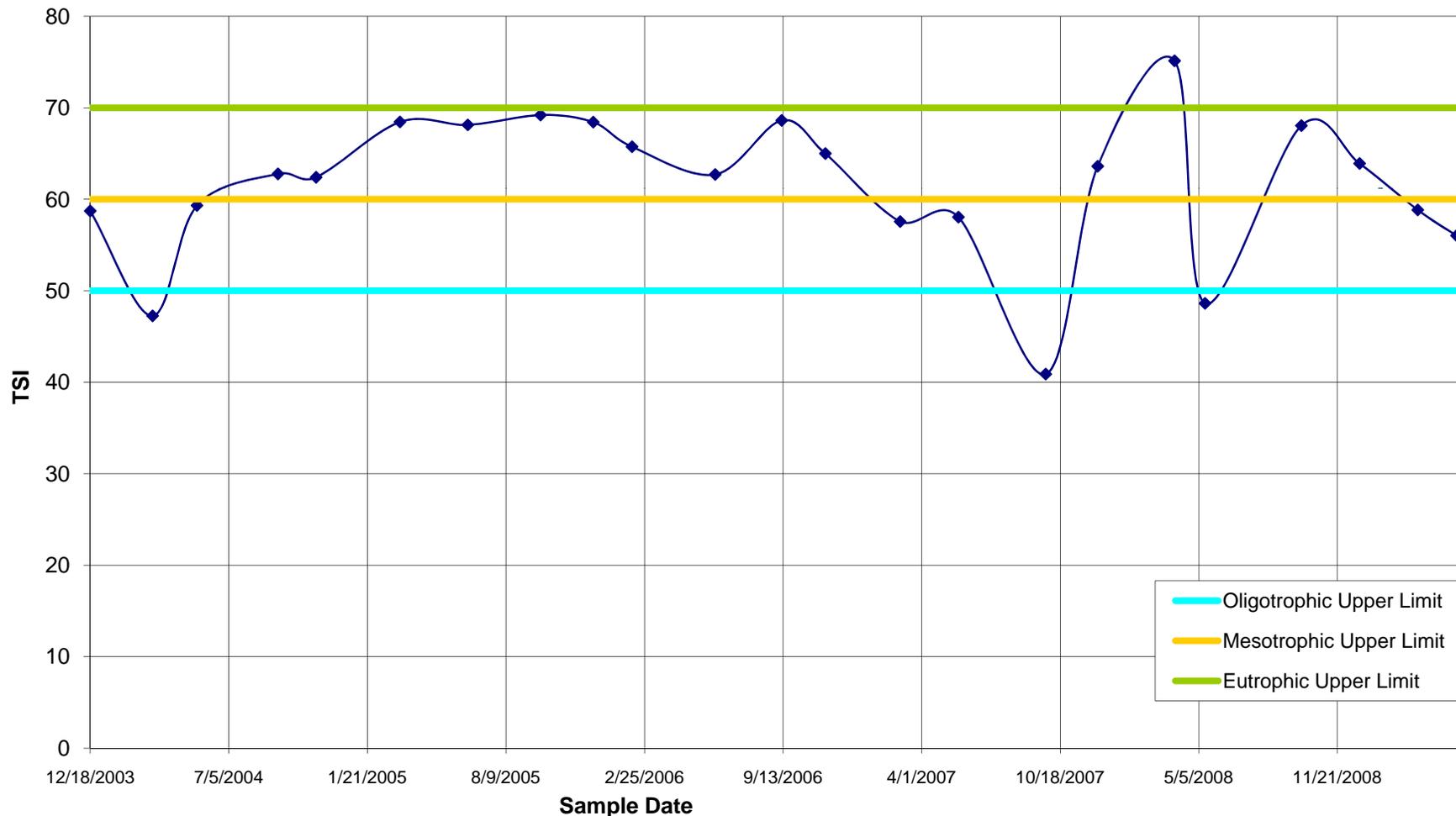


*How It's
All Connected*

Water Quality Characteristics

- Queen's Mirror TSI typically Eutrophic (poor)

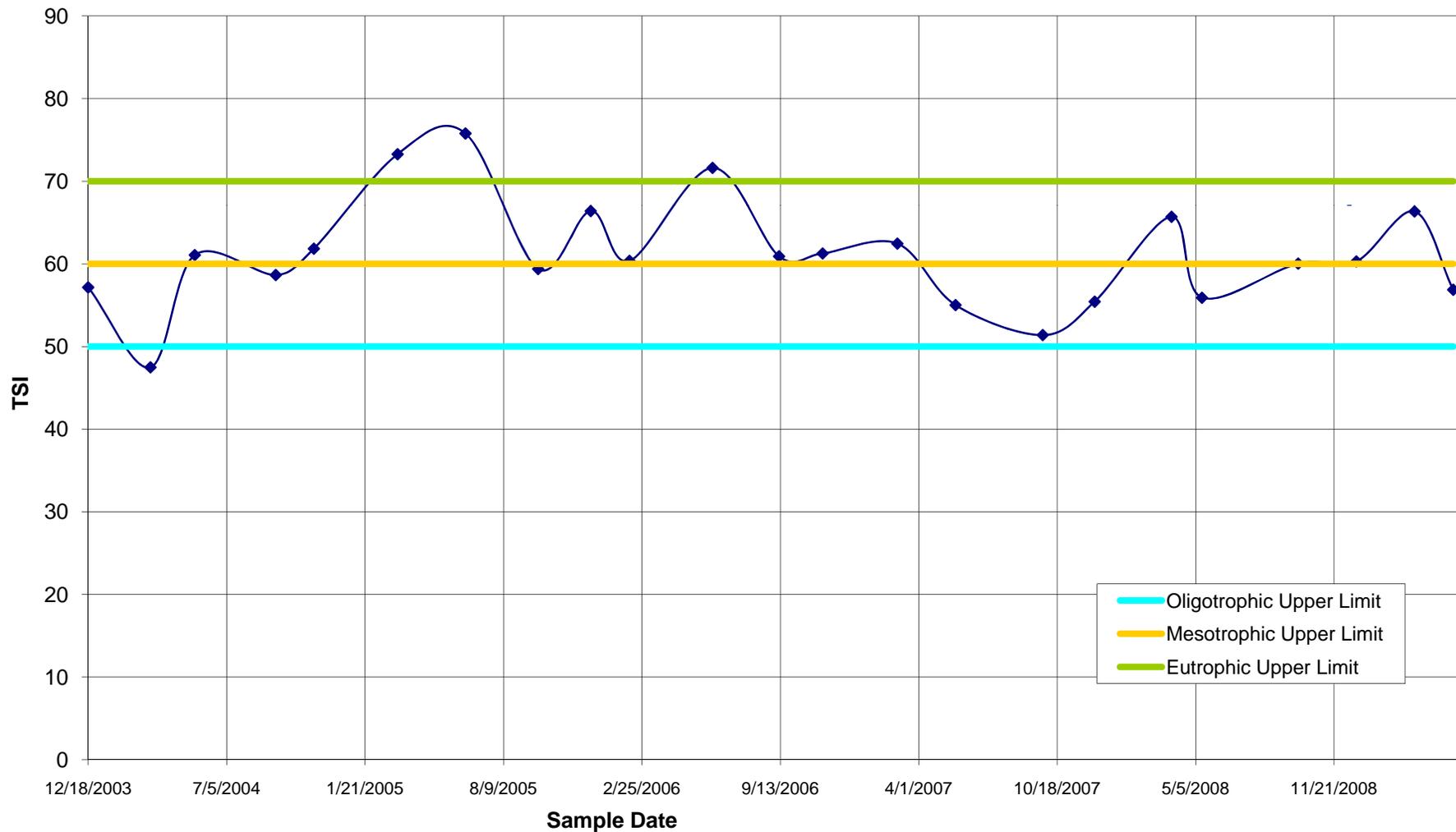
Queen's Mirror- Trophic State Index

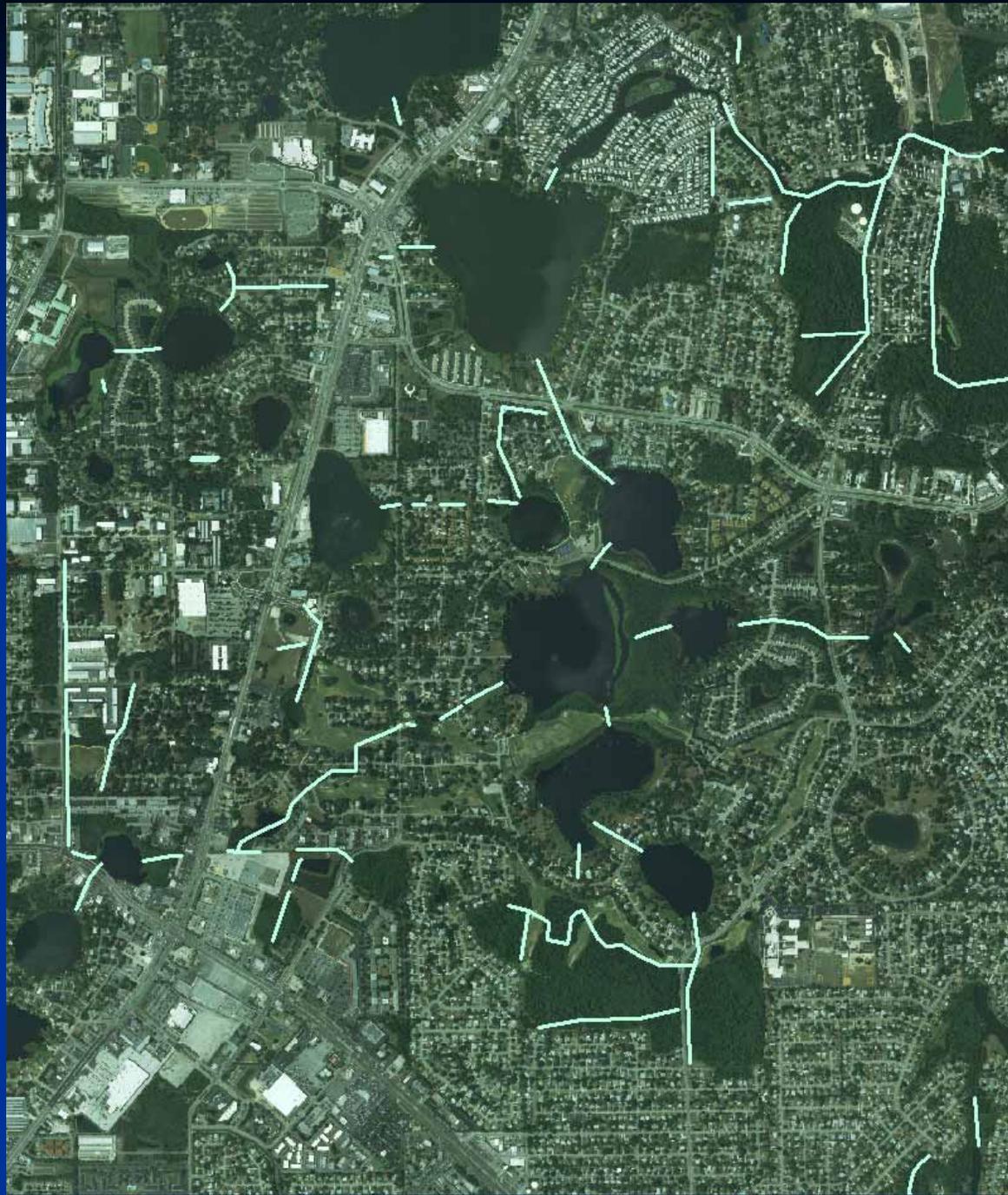


Water Quality Characteristics

- South Lake Triplet TSI typically Eutrophic (poor)

South Lake Triplet - Trophic State Index



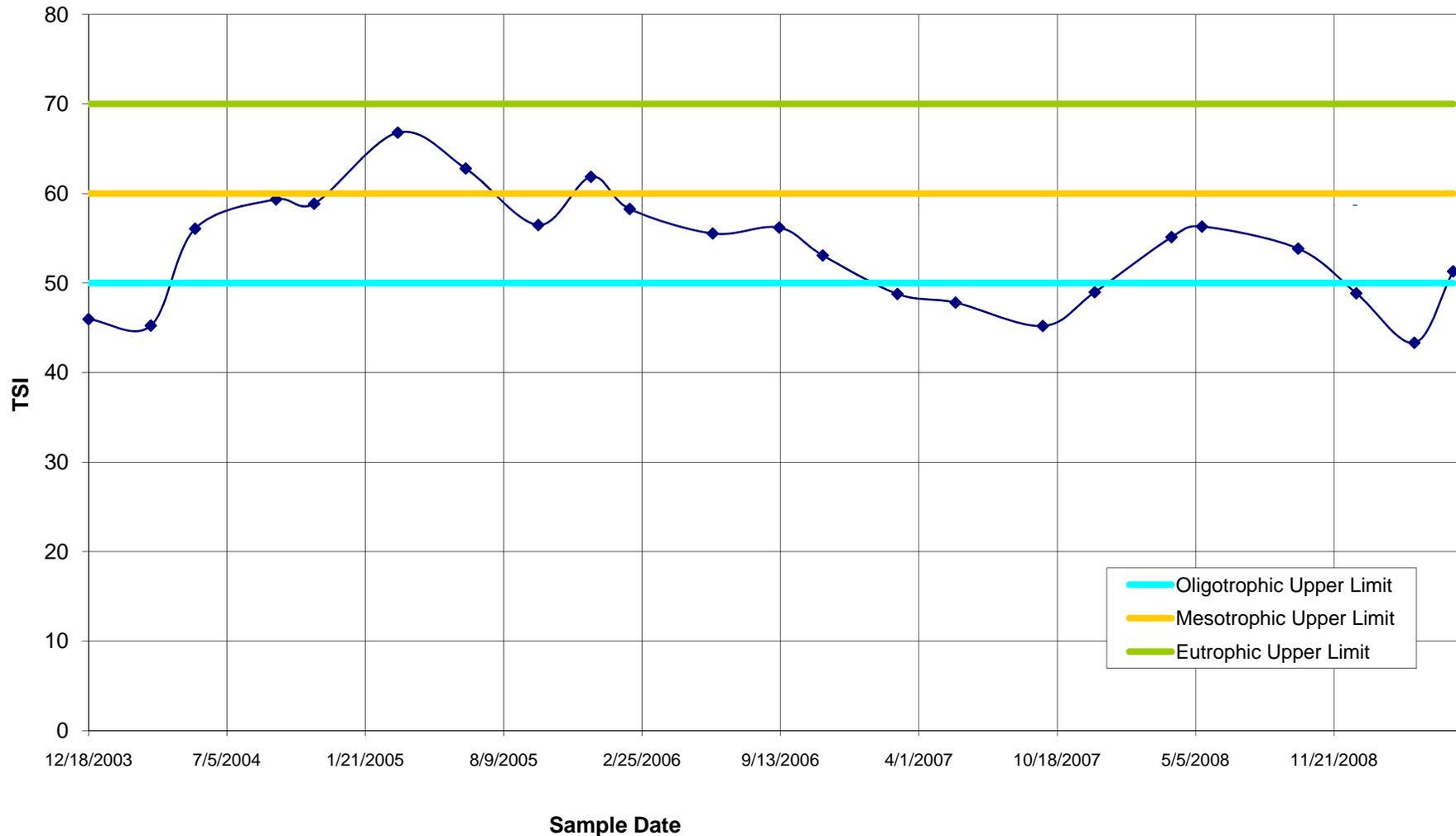


*How It's
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Water Quality Characteristics

- Middle Lake Triplet TSI typically Mesotrophic (fair, average)

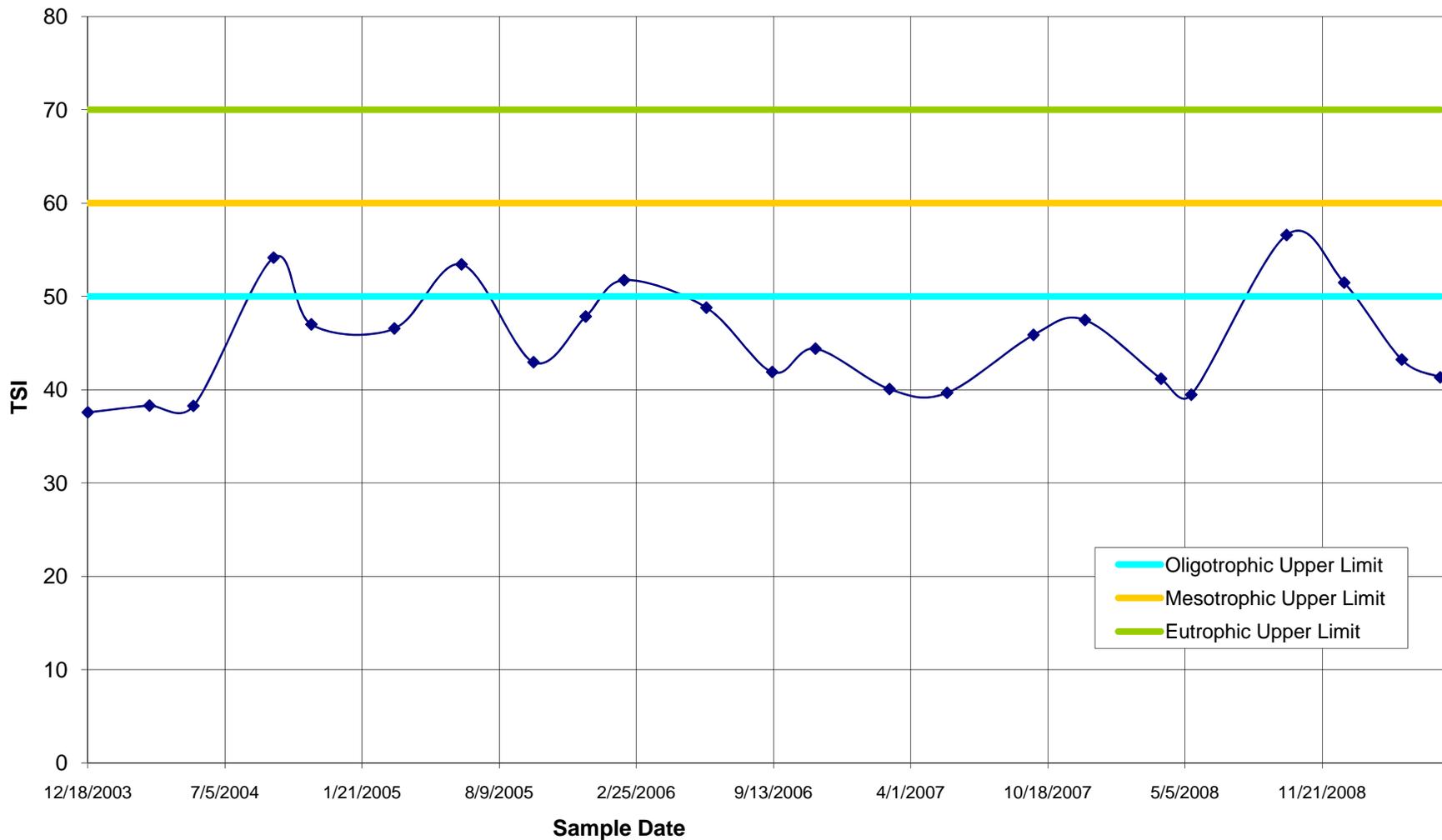
Middle Lake Triplet - Trophic State Index



Water Quality Characteristics

- Lost Lake TSI typically Oligotrophic (good to excellent)

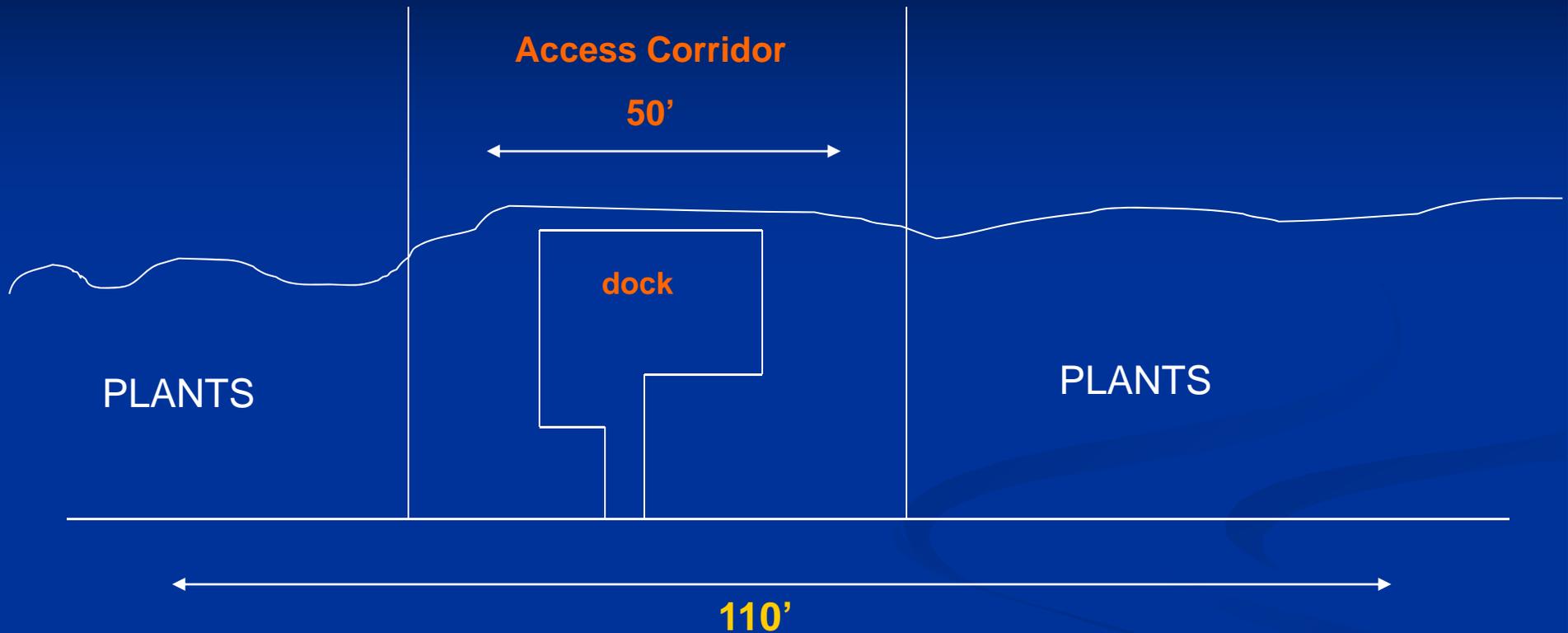
Lost Lake- Trophic State Index



FWC Aquatic Plant Management Permit

- No fee
- Lakes larger than 10 acres in size, multiple owners
- Required for:
 - use of **ANY** herbicide
 - removal of exotic plants outside access corridor
- Provides:
 - navigational/recreational access to open water
 - shoreline vegetation
 - appropriate removal methods
- Valid for 3 years

FWC Aquatic Plant Management Permit



- Can clear 50', or 50%, whichever is less
- Rest of lakefront **MUST** be vegetated with submersed and emergent plants
- Either plant native aquatic plants, or let what was there regrow ("something is better than nothing")

Sample Good Revegetation Species
(among many, many others!)



Cordgrass



Golden Canna

Other Permits

- Consult the City before:
 - Clearing
 - Filling (including sand)
 - Dock or seawall construction (also FDEP)
- Public Works
 - (407) 262-7725 x 1235
 - www.casselberry.org/lakes

What does the City do for these lakes?

- Quarterly water quality sampling
- Monthly chemical (herbicide) aquatic treatment
 - Targeted species, “as needed” only
- Maintain canals for conveyance
- Harvesting and Revegetation projects



Harvesting Operations – Aquatic Weed Harvester



What Revegetation Can Look Like

What does the City do for these lakes?

- Quarterly water quality sampling
- Monthly chemical (herbicide) aquatic treatment
 - Targeted species, “as needed” only
- Maintain canals for conveyance
- Revegetation projects
- Erosion protection improvements



Erosion Control Project – Queen's Mirror Canal

What does the City do for these lakes?

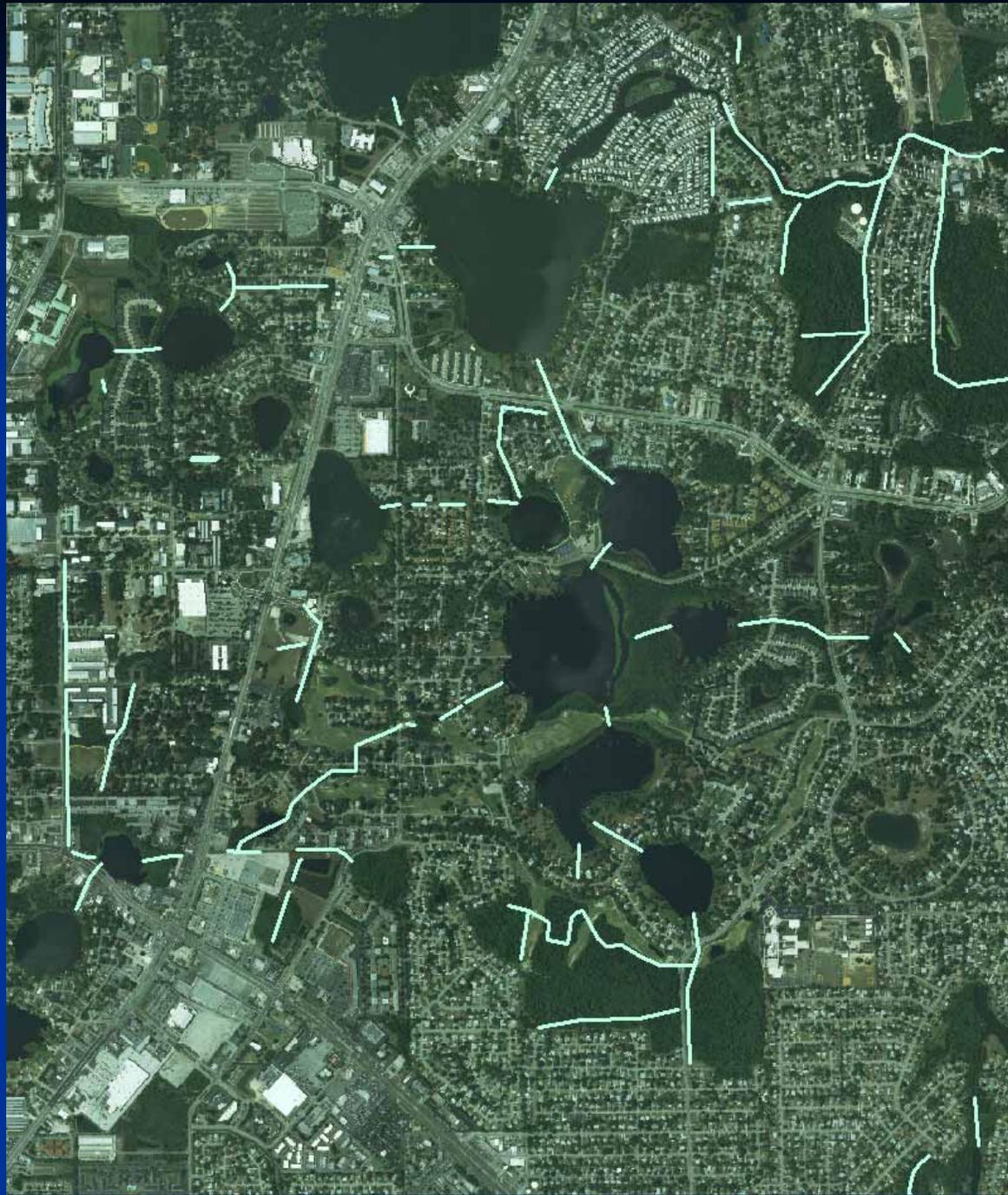
- Quarterly water quality sampling
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- Revegetation projects
- Erosion protection improvements
- Blueway Trail



Blueway Trail System

What does the City do for these lakes?

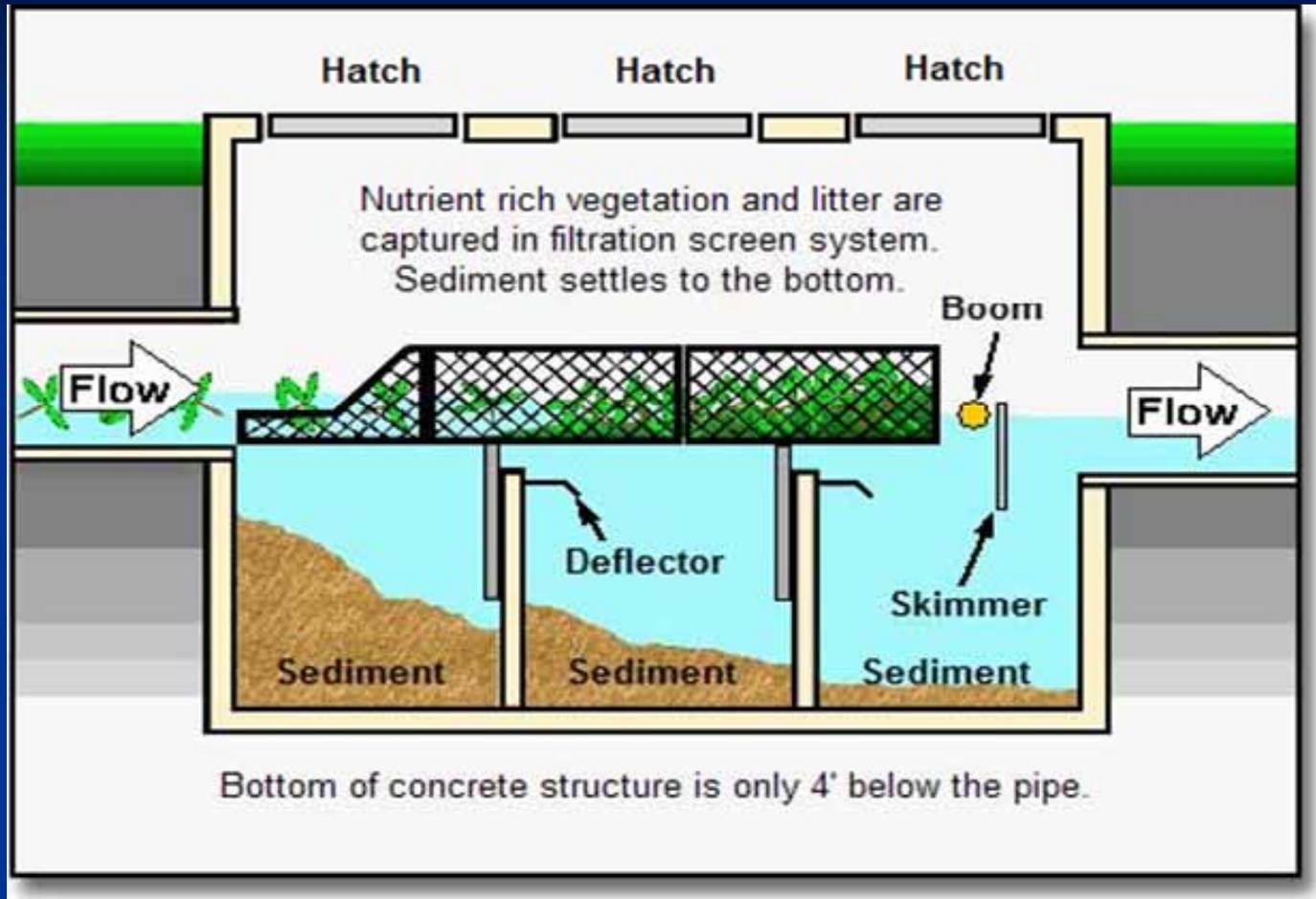
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- Maintain canals for conveyance
- Revegetation projects
- Erosion protection improvements
- Blueway Trail (for Triplet Chain)
- Aeration systems
- Flocculant/alum addition system



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- Baffle boxes



Baffle box

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- Revegetation projects
- Erosion protection improvements
- Blueway Trail (for Triplet Chain)
- Aeration systems
- Flocculant/alum addition system
- Baffle boxes
- Public Education and Involvement

How can residents help protect these lakes?

- Re-vegetate shorelines with natives when needed
- Reduce fertilizer use; provide a fertilizer free buffer near lake edge
 - Nutrients already in reclaim and lake water
- Inspect boat equipment for invasives
- Report suspected illicit discharge to Seminole Watershed Atlas (via www.casselberry.org/lakes)
- Participate in Florida Yards & Neighborhoods workshops for “greener” landscaping
- Install rain gardens, rain barrels, and/or swales and reverse berms

Questions / Comments / Issues

Thank you!

**To find out more, visit us online at
www.casselberry.org/lakes**