SYLVAN LAKE

DRAFT MFLS

PEER REVIEW KICK-OFF MEETING

01/25/2021

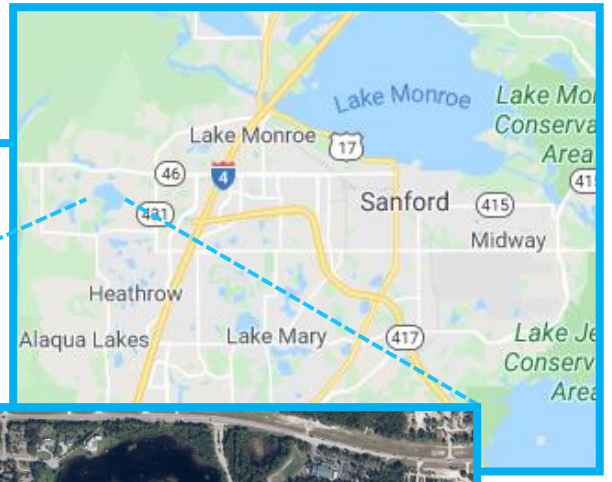
WSPA - BUREAU OF WATER SUPPLY PLANNING

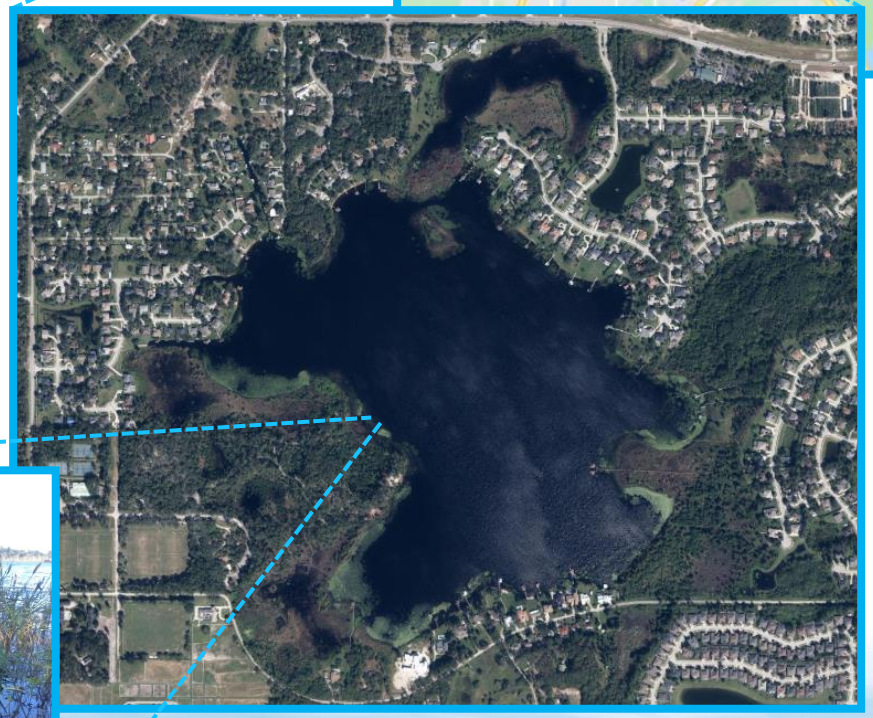
Workshop Agenda

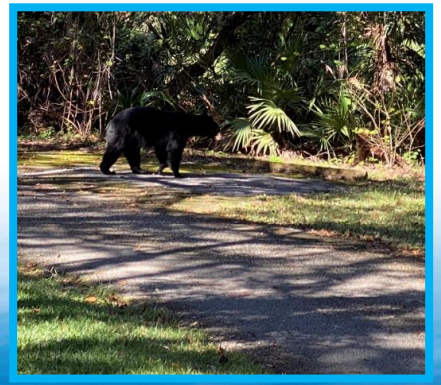
- Sylvan Lake Overview
- Sylvan Lake MFLs Background
- MFLs Process Overview
- MFLs Determination
- MFLs Assessment
- Summary
- Scope of Peer Review
- Schedule
- Questions – Reviewers and Stakeholders

Sylvan Lake - Seminole County

- 180-acre lake, west of Sanford
- Large county park – regionally significant
- Several intact natural areas remain; close to Wekiva corridor
- Emergent marshes, shrub swamp, small pockets of hardwood swamp
- Recreational uses – motorboats, small watercraft, fishing
- Highly connected to the UFA – useful sentinel for determining effects of groundwater withdrawal







Sylvan Lake MFLs - Background

- MFLs adopted in 1998
- Prioritized for re-evaluation after assessment showed MFLs potentially not meeting
- Currently on Priority List for 2021
- Model (HSPF) peer review workshop conducted in Fall 2020
  - Peer review didn't result in any changes to the model

Statutory Directive

Water management districts must establish MFLs that set…

"…the <u>limit</u> at which further withdrawals would be significantly harmful to the water resources or the ecology of the area."

Section 373.042(1), Florida Statutes (F.S.)

MFLs Process Overview

MFLs Determination

- Determine the most critical environmental features to protect and the minimum hydrologic regime required for their protection (**MFLs condition**)

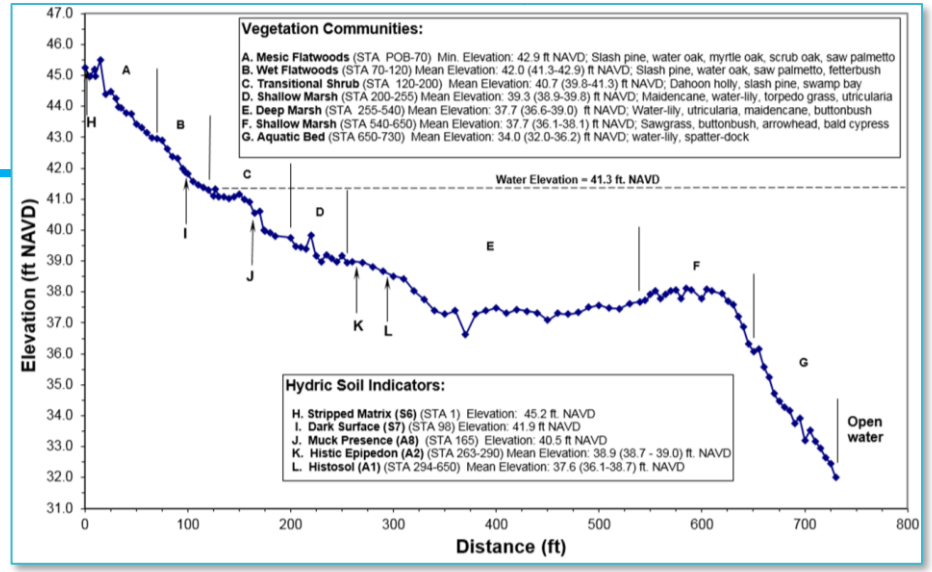
MFLs Assessment

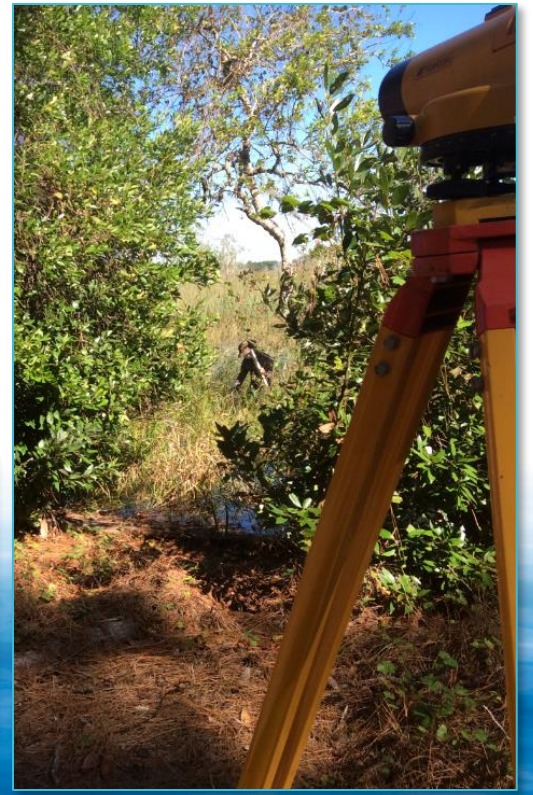
- Determine **no-pumping condition** that represents historical pre-withdrawal condition
- Determine the **current-pumping condition** that represents current impacted conditions
- **MFL and current conditions compared** to determine available water

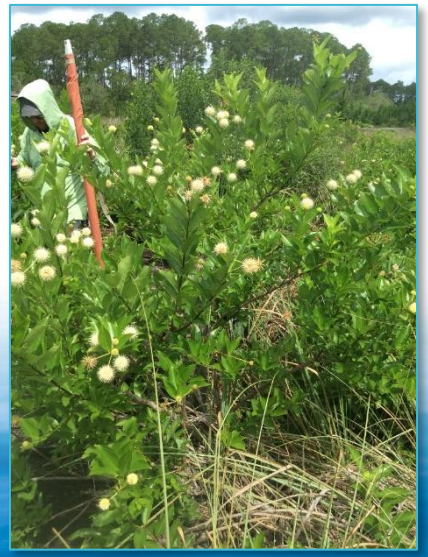
MFLs Determination

Field Work and Environmental Criteria

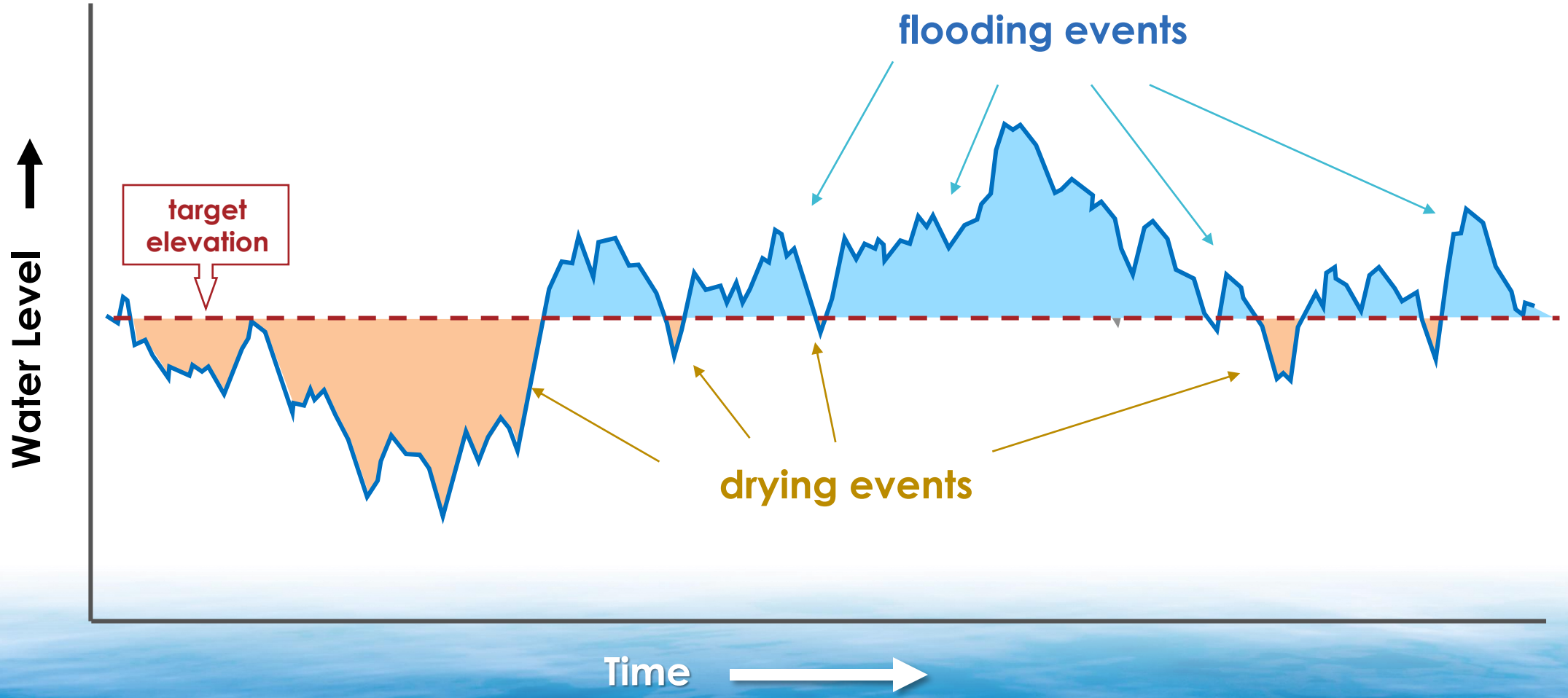
- Re-evaluation fieldwork: 2005
- Vegetation community elevations field verified in 2017 and 2020
- Soils elevations verified in 2020
- Stable wetlands and soils
  - **event-based metrics**



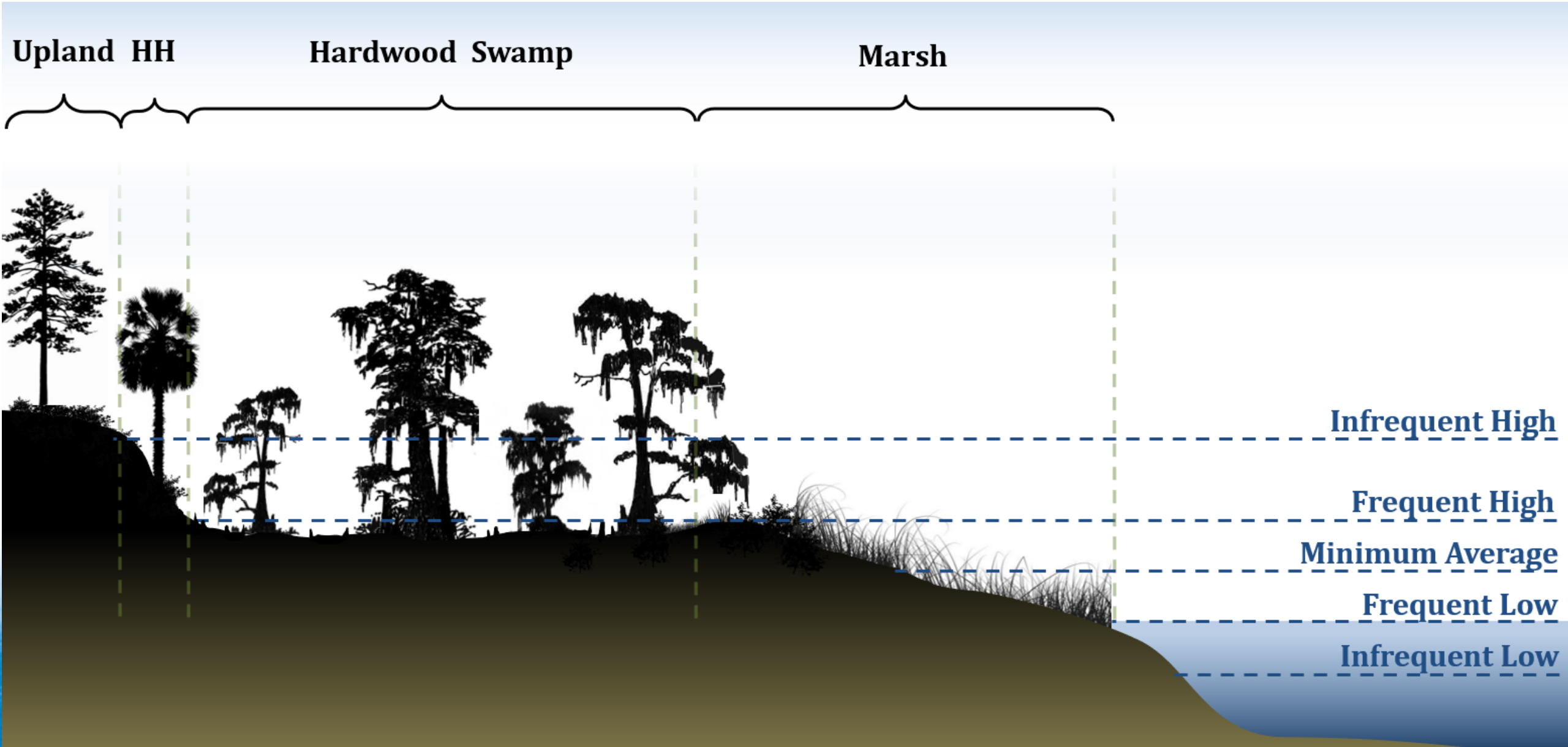




Hydrographs: *series of events of varying duration and frequency*

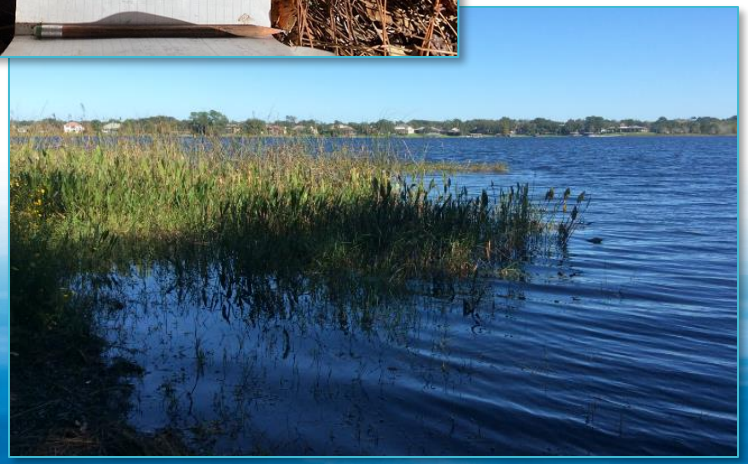


Multiple MFLs Events: Protecting the Natural Hydrologic Regime



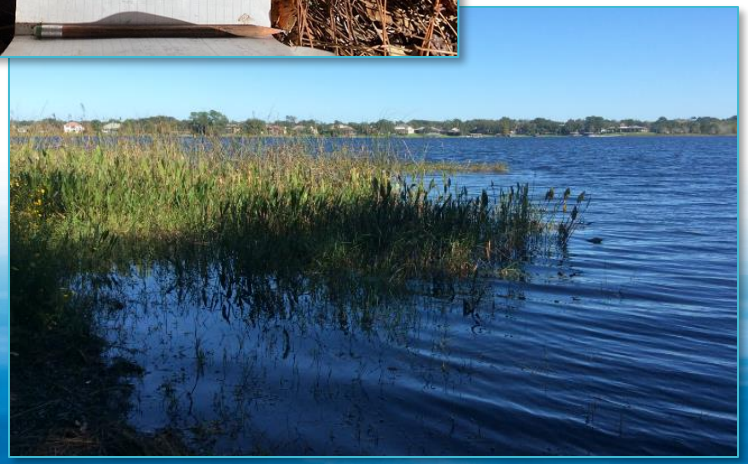
MFLs – Minimum Hydrological Events

- Three minimum events for Sylvan Lake
  - **Frequent High**
    - Protection of shrub swamp communities and associated wetland and wildlife habitat values
  - **Minimum Average**
    - Protection of wetland (organic) soils from oxidation and subsidence
  - **Frequent Low**
    - Protection of shallow and deep marsh habitats and associated fish and wildlife



RECOMMENDED MFLS

Minimum Levels	Environmental criteria	Minimum Level Components		
		Level (ft NAVD88)	Duration (days)	Return Interval (years)
Frequent High	Transitional shrub communities; Fish and wildlife habitat	**40.2**	**30**	**4.3**
Minimum Average	Organic soils; Seasonally flooded wetland habitat	**37.9**	**180**	**1.7**
Frequent Low	Shallow and deep marsh habitat; Organic soils	**35.7**	**120**	**7.5**



MFLs Process Overview

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MFLs Assessment

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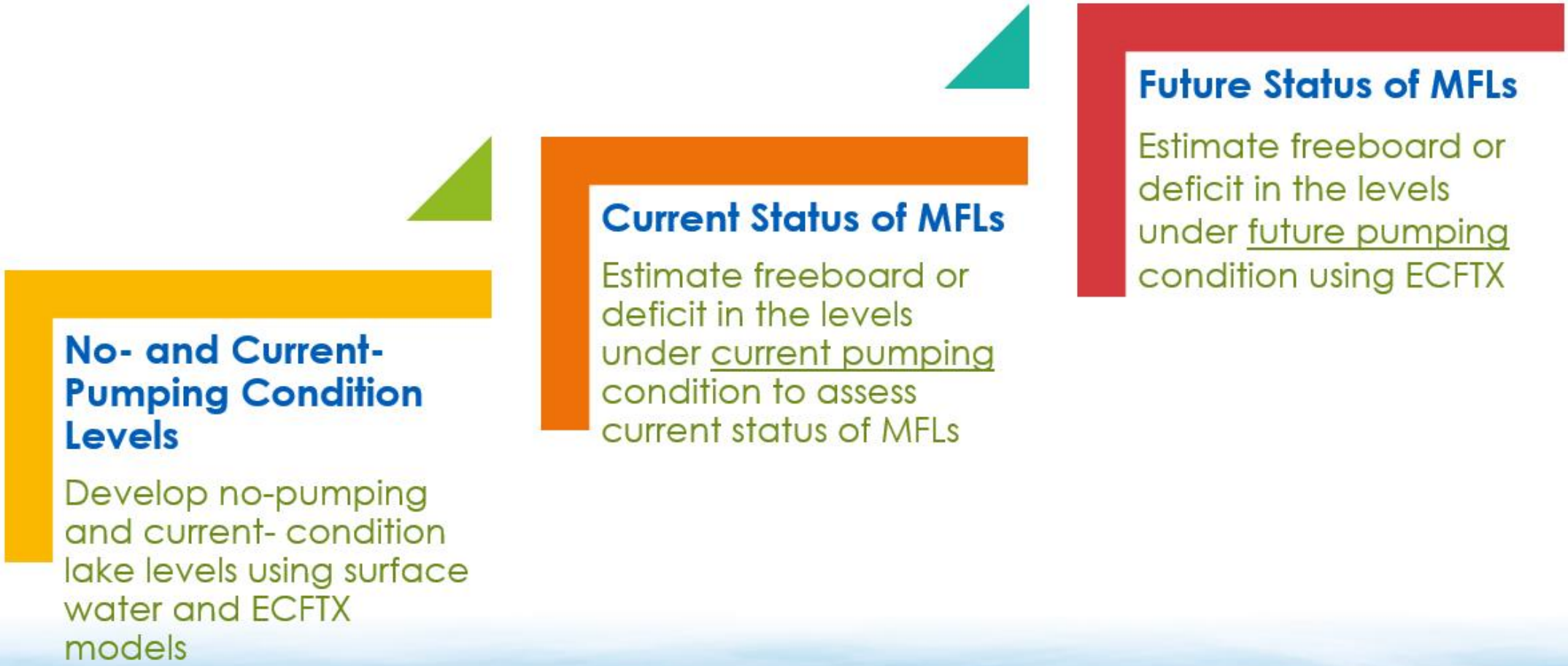
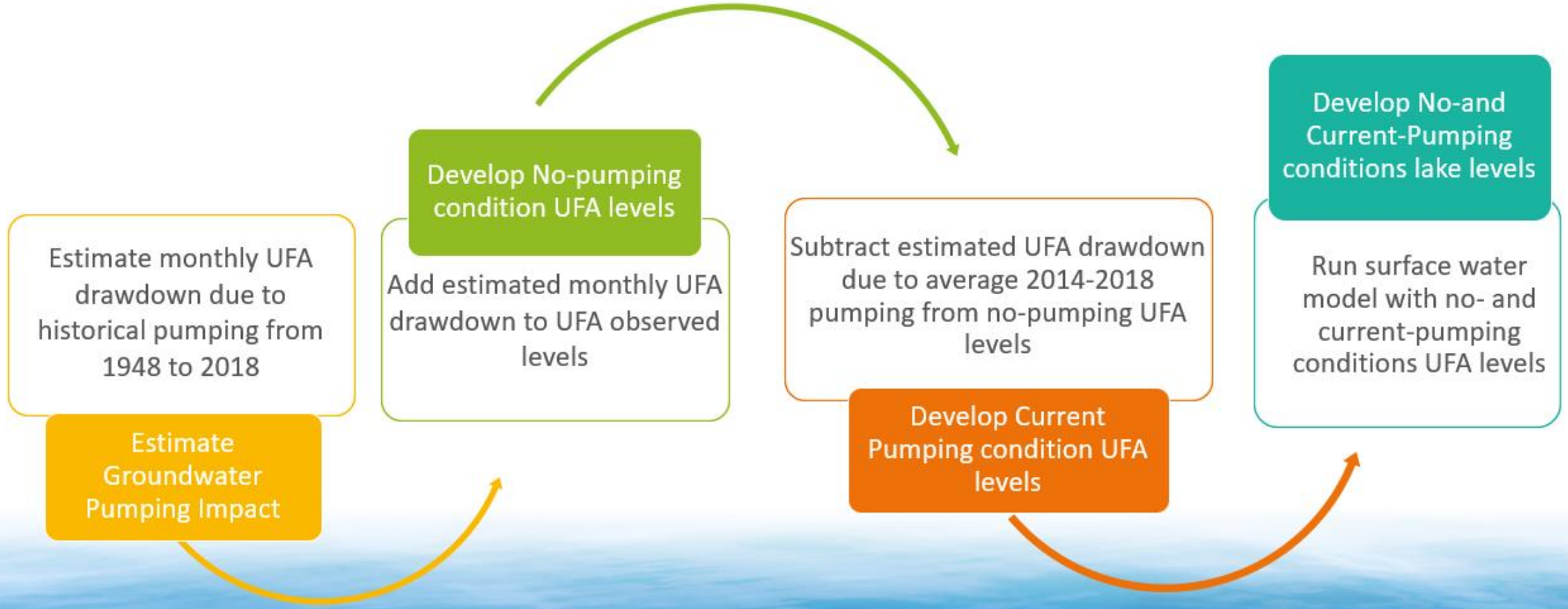
- **MFL and current conditions are compared** to determine water available

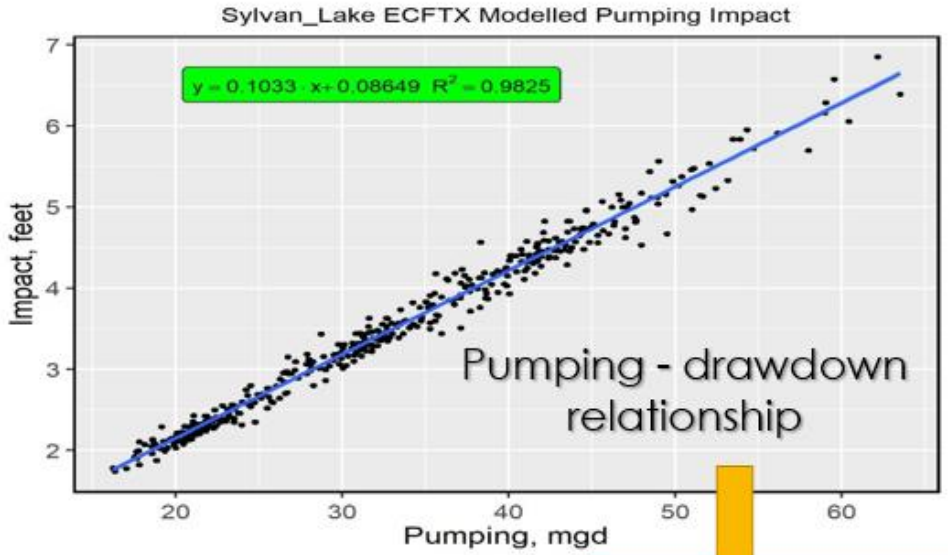
MFLs Assessment

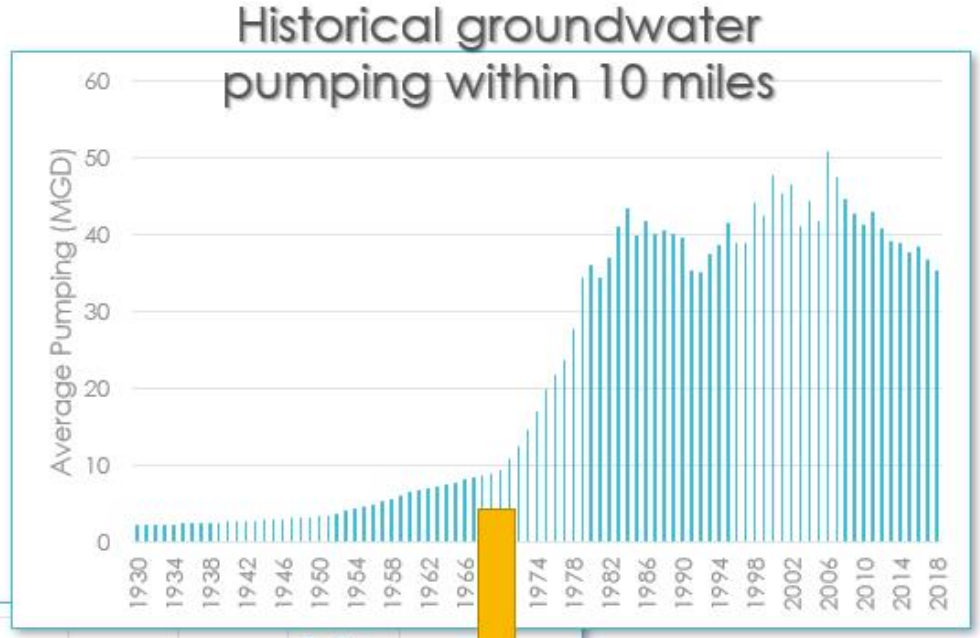


No- and Current-Pumping Condition Lake Level Data Development

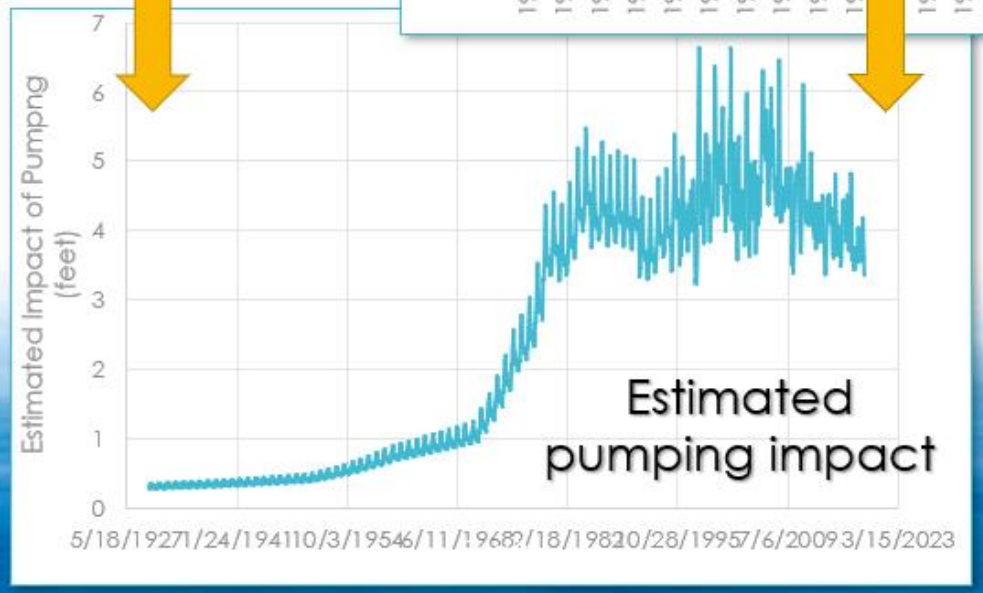


Groundwater Pumping Impact

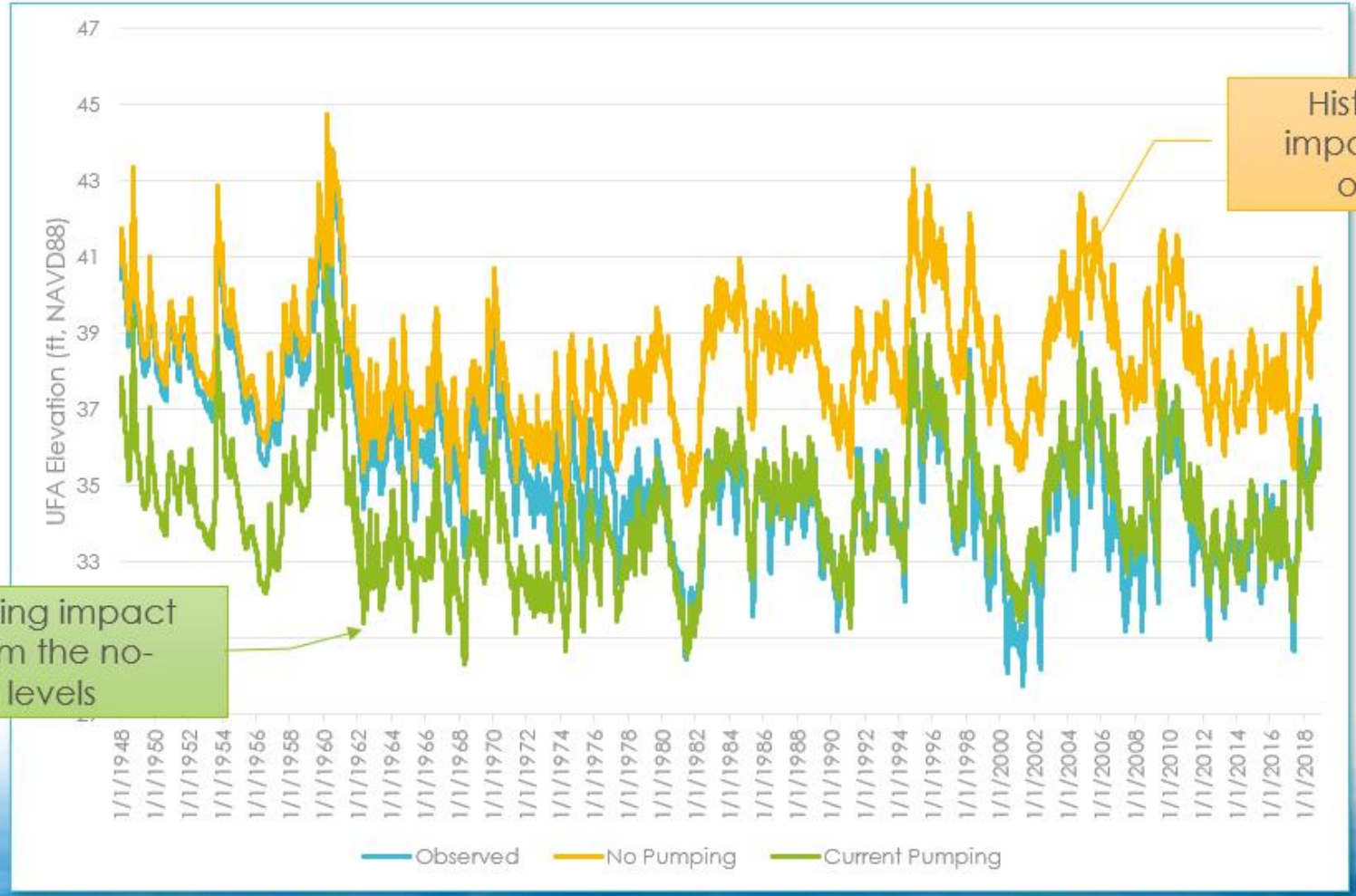




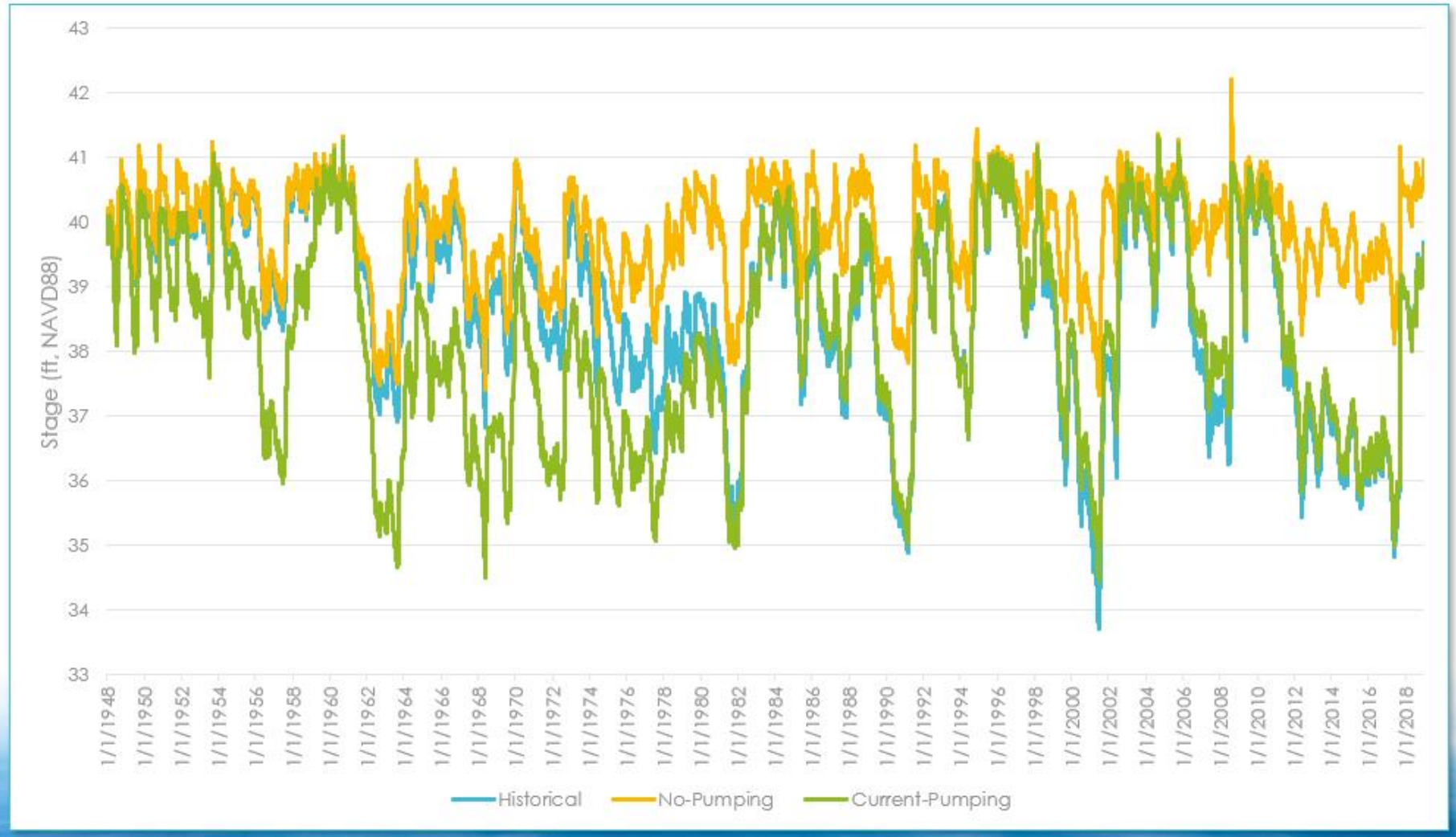
- ECFTX Scenarios
  - Calibration
  - 50% Pumping
  - 75% Pumping
  - Pumps off



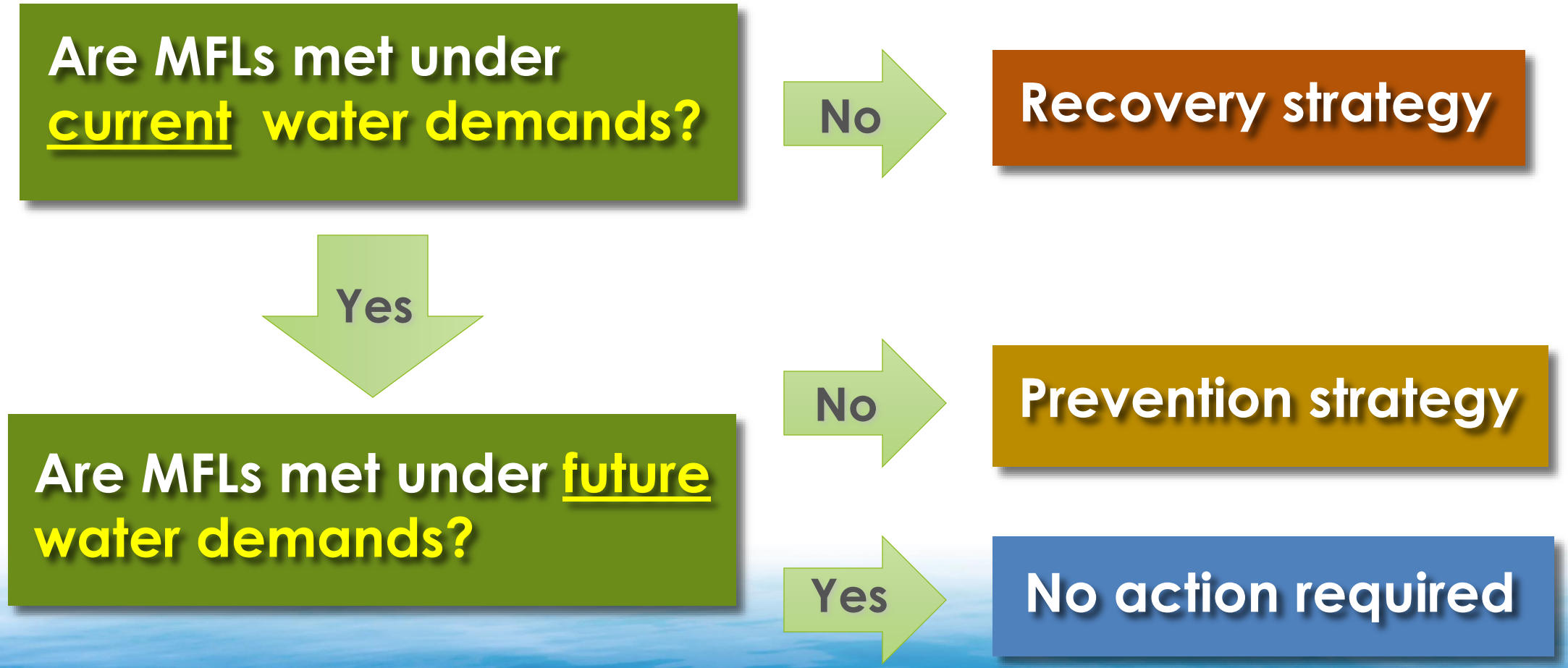
No-pumping and Current-pumping UFA levels



No-pumping and Current-pumping Lake levels



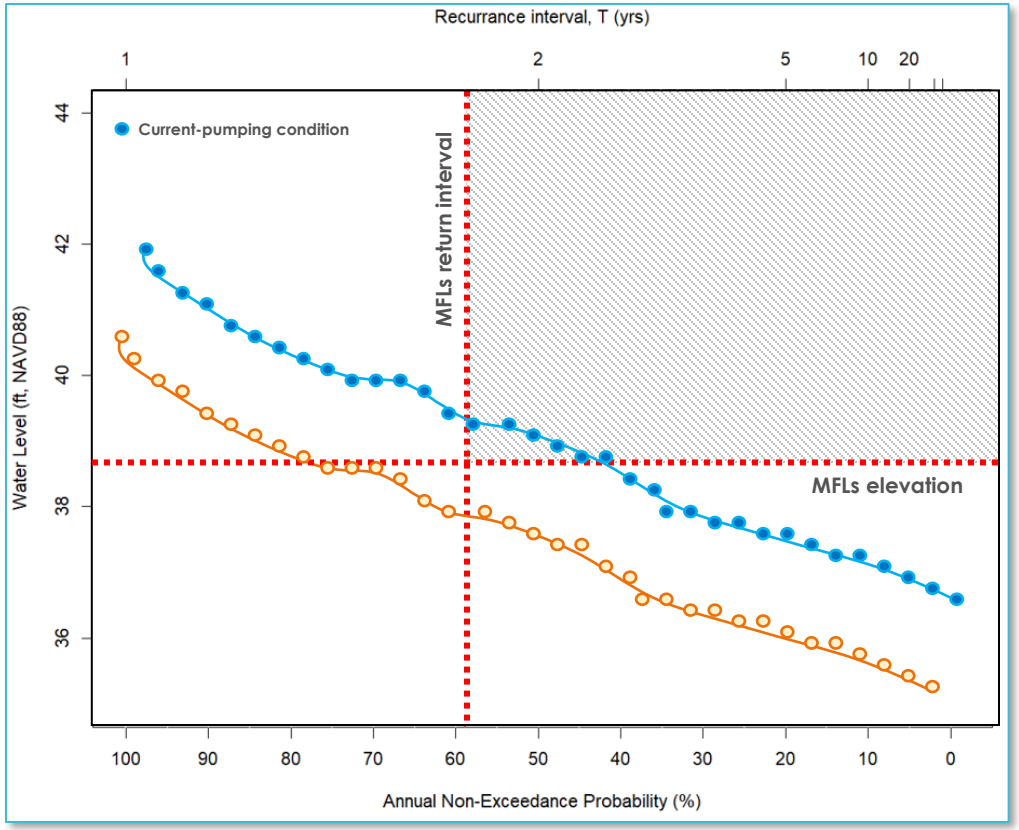
Current and Future MFLs Status



UFA Freeboard / Deficit

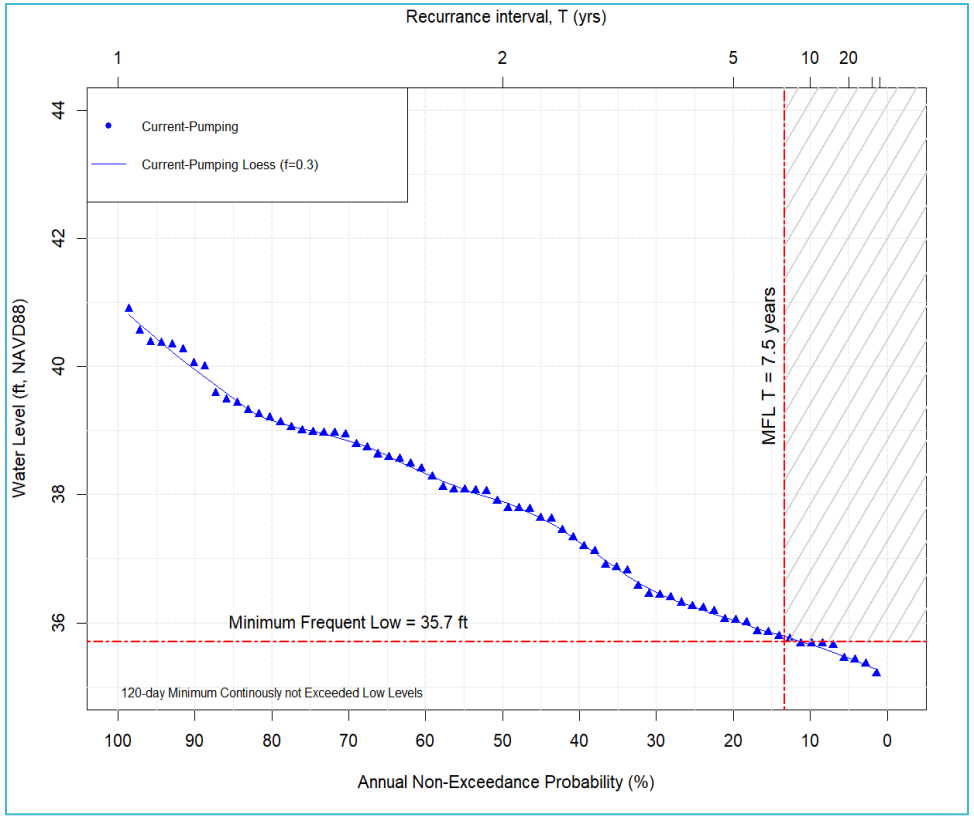
Frequency Analysis – Available water calculation

- Comparison of current-pumping condition (CP) vs MFLs frequency for each event
- Weibull plotting position formula; annual maxima or minima
- Iterative decrease or increase from CP of UFA using surface water model
- Stop at point where further withdrawal would violate MFLs
- Increase from CP = Recovery
- Decrease from CP = Freeboard



UFA FREEBOARD

Minimum Levels	Environmental criteria	Minimum Level Components			UFA Freeboard (ft)
		Level (ft NAVD88)	Duration (days)	Return Interval (years)	
Frequent High	Transitional shrub communities; Fish and wildlife habitat	**40.2**	**30**	**4.3**	**0.0**
Minimum Average	Organic soils; Seasonally flooded wetland habitat	**37.9**	**180**	**1.7**	**0.1**
Frequent Low	Shallow and deep marsh habitat; Organic soils	**35.7**	**120**	**7.5**	**0.0**



Sylvan Lake is in Prevention

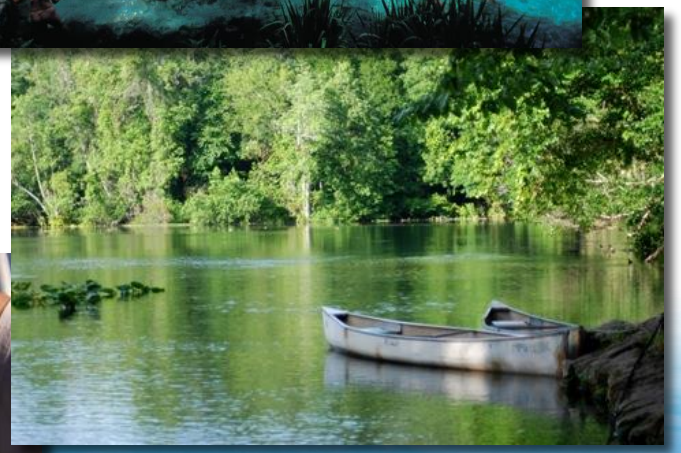
Recommended Minimum Level (P50) = 38.0 ft NAVD88

Water Resource values (WRVs) Assessment

"…consideration shall be given to… non-consumptive uses, and environmental values…"

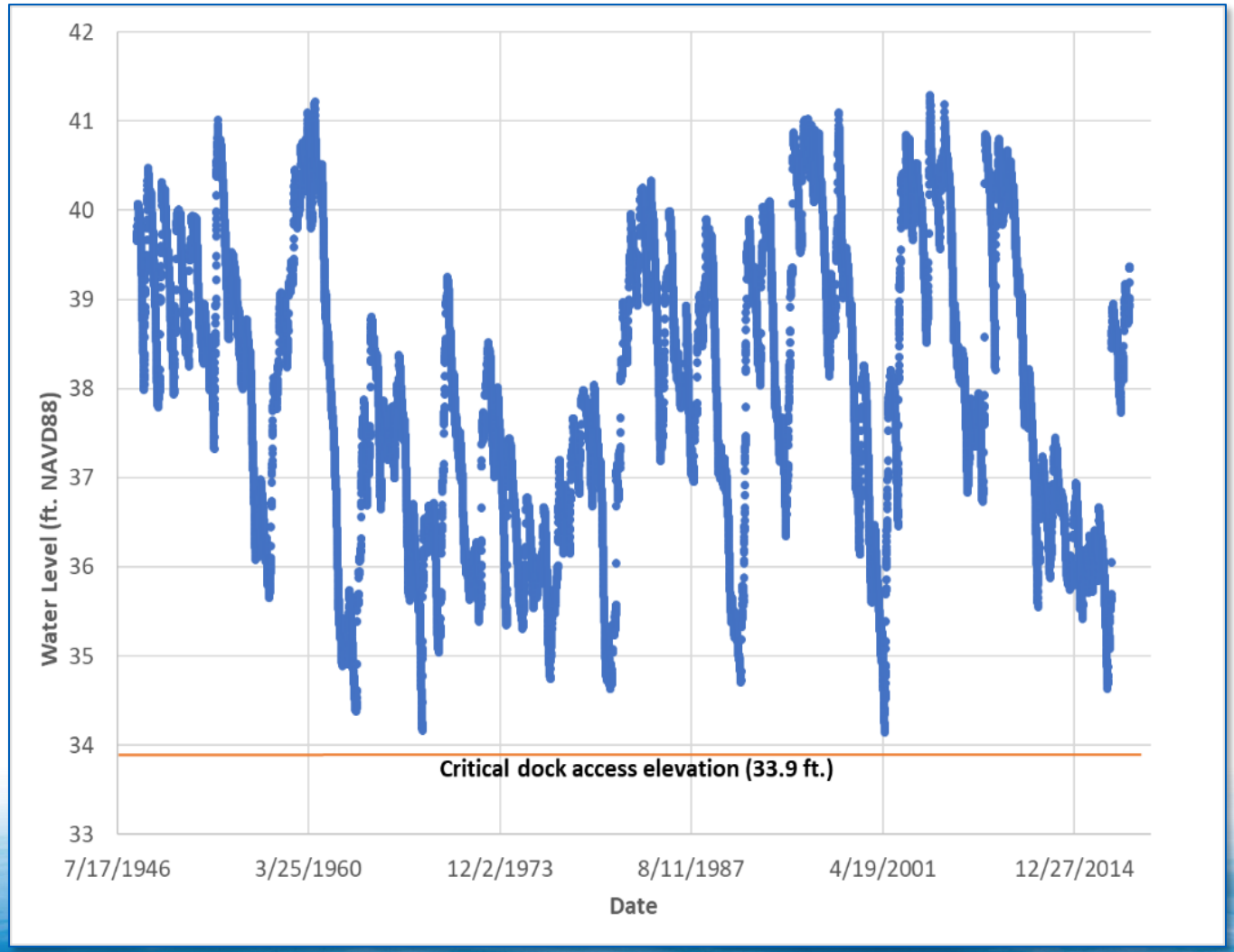
62-40.473, F.A.C.

- Recreation in and on the water
- Fish & wildlife habitats and the passage of fish
- Estuarine resources
- Transfer of detrital material
- Maintenance of freshwater storage & supply
- Aesthetic and scenic attributes
- Filtration / absorption of nutrients & pollutants
- Sediment loads
- Water quality
- Navigation



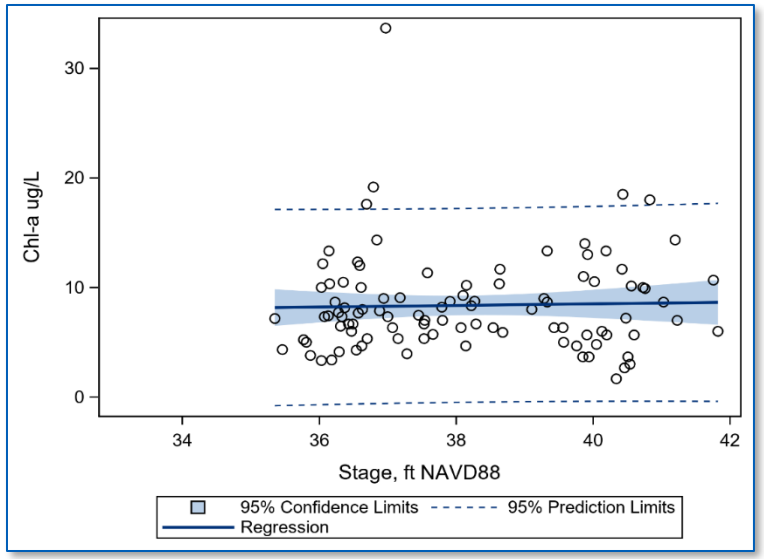
WRVs Assessment

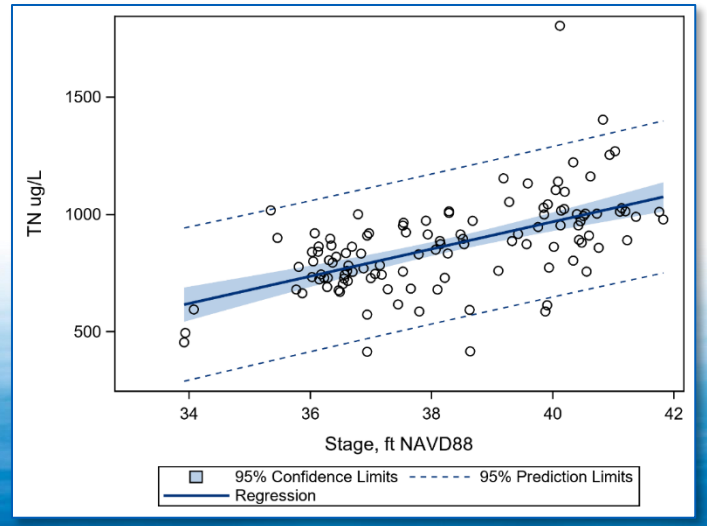
- **WRV 1: Recreation**
  - Dock access elevation
  - Threshold: 15% reduction in exceedance relative to no-pumping

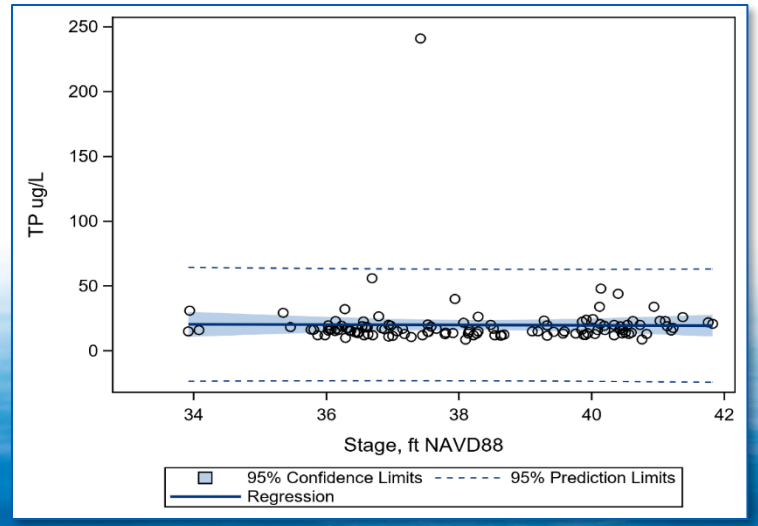


WRVs Assessment

- **WRV9: Water quality**
  - TP and Chl-*a* not correlated with water level
  - TN positively correlated with water level
  - MFLs will not negatively affect water quality



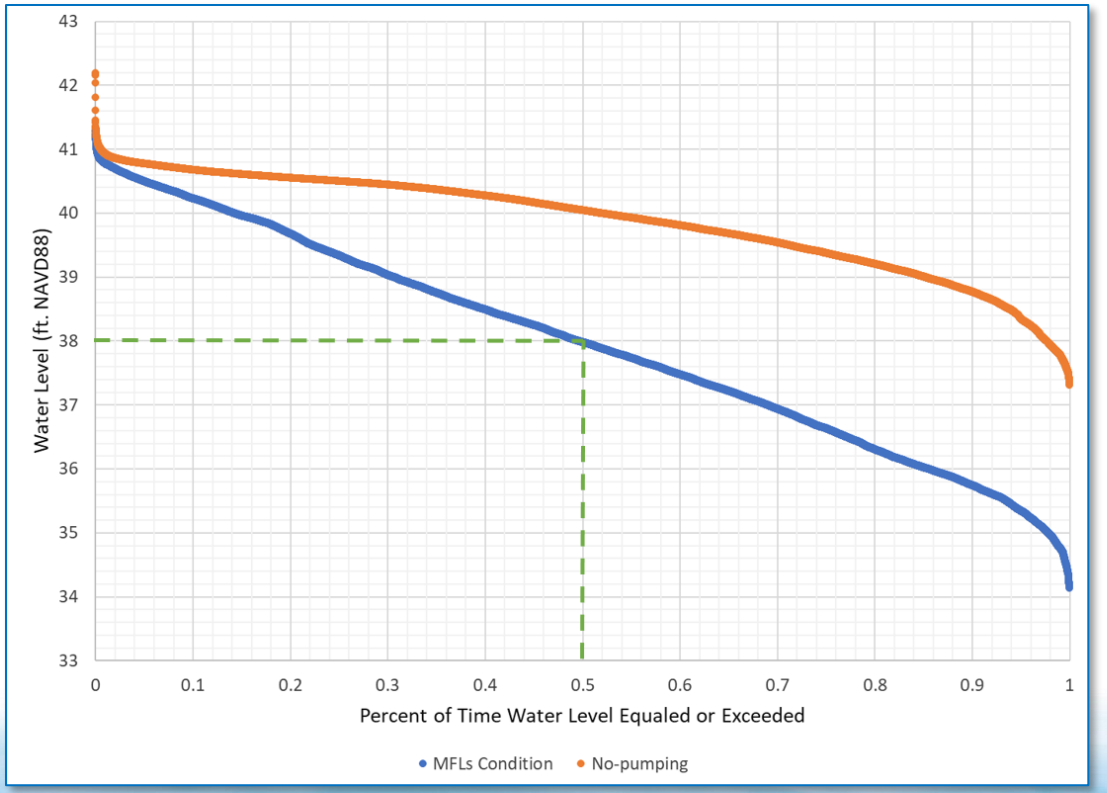




WRVs Assessment: WRVs 2, 4 and 7

Recommended FH, MA and FL

- Wetland habitat protection
- MFLs protect:
  - **WRV 2: fish and wildlife habitat**
  - **WRV 4: detrital matter transport**
  - **WRV 7: nutrient filtration**
- Organic soils protection
  - MFLs supported by recent UF study



Summary

- Standard event-based method
- 2020 fieldwork verified earlier work
- FH, MA and FL resulted in very similar available water
- MFLs condition equals current-pumping condition
  - i.e., UFA freeboard equals 0.0 ft; system is in Prevention
- MFLs condition is protective of relevant WRVs

Sylvan Lake MFLs – Peer Review Scope

- **Scope:**
  - Draft MFLs Report
  - Appendix B: Hydrological analyses (not including attachment: CDM 2017 model report);
  - Appendix C: Environmental data and analyses;
  - Appendix D: Status assessment; and
  - Appendix E: WRVs assessment.
- **Primary focus:**
  - Environmental criteria, analyses and assumptions
- **Secondary focus:**
  - *Application* of models, data and methodologies used to support recommended MFLs

Sylvan Lake MFLs – Peer Review Schedule

Task	Deliverable	Due Date
Project Kick-off Meeting (teleconference)		January 25, 2021
Optional Site Visit		TBD by HSW
Review draft MFLs Report and Appendices		March 15, 2021
MFLs Report Review – Public Teleconference	*Results Presentation and Meeting Summary*	March 15, 2021
Draft Technical Memorandum	*Draft TM*	March 29, 2021
Public Teleconference		April 5, 2021
Final Technical Memorandum	*Final TM*	April 15, 2021

Questions?

Draft Report and Appendices:

https://www.sjrwmd.com/minimumflowsandlevels/sylvan-lake/#mfls-report

Questions or Comments:

Send to: **Andrew Sutherland**
asutherl@sjrwmd.com