

# IRRIGATION AND FERTILIZER USE: QUANTIFYING AND PROJECTING HOW REDUCING USAGE IN RESIDENTIAL LANDSCAPES CAN BENEFIT WETLANDS



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## Introduction

- As residential development increases, the protection of Florida water resources (quality and quantity) is important.
- Alternate landscaping practices that can reduce irrigation and fertilizer usage may help to protect water resources and aquatic habitats, such as wetlands.
- We will test this hypothesis in the context of a proposed development site, the Gainesville 121 Site, where the developer, Weyerhaeuser, wishes to install residential landscapes that require substantially less irrigation and fertilizer to maintain.

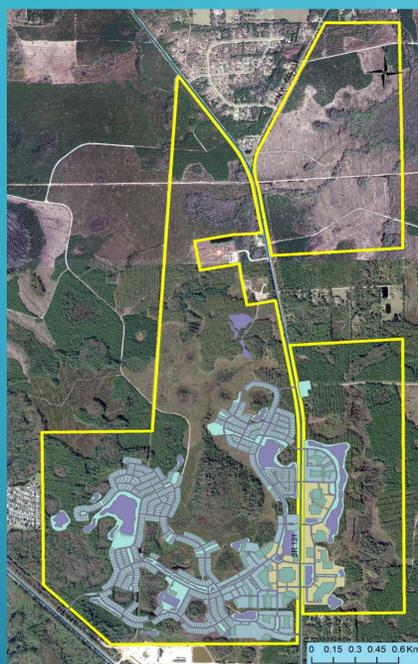


Figure 1. Potential pattern to the development plan

## Objective

We will determine how the construction patterns of residential development and the variation of irrigation and fertilizer usage affects wetland hydrology, water nutrients, and plant communities.

## Methods

- Figure 2. illustrates the Methods for this project.
- We will collect empirical data from wetlands located on the 121 Site and adjacent to already developed areas. Data includes hydrology, water nutrients, and plant community composition.
- Using an already established wetland hydrology model (Figure 3.), data already collected from the Program for Resource Efficient Community on household irrigation usage, and UF/IFAS recommended fertilizer rates, we will model the hydrology and nutrient levels of the developed wetlands.
- We will quantify the agreement between the model and empirical wetland data.
- The degree of agreement will be used to verify the utility of the wetland model and its predictions that it produces for the impacts of variation in irrigation and fertilizer usage at the 121 Site.

## Expected Results

- Model predictions for variation of irrigation and fertilizer usage.
- Empirical data on wetlands will feed into statistical analyses to determine how development affects wetland characteristics.
- Model predictions and statistical analyses will allow us to determine how construction patterns and the variation in irrigation and fertilizer usage affects the wetlands hydrology, water nutrients, and plant communities.



## Research Products

- Recommendations for irrigation and fertilizer use in residential landscapes aimed at protecting water resources.
- These recommendations can guide future landscaping design and management
- Recommendations will contribute to programs such as Florida Friendly Landscaping<sup>TM</sup> and Sustainable Floridian<sup>TM</sup>

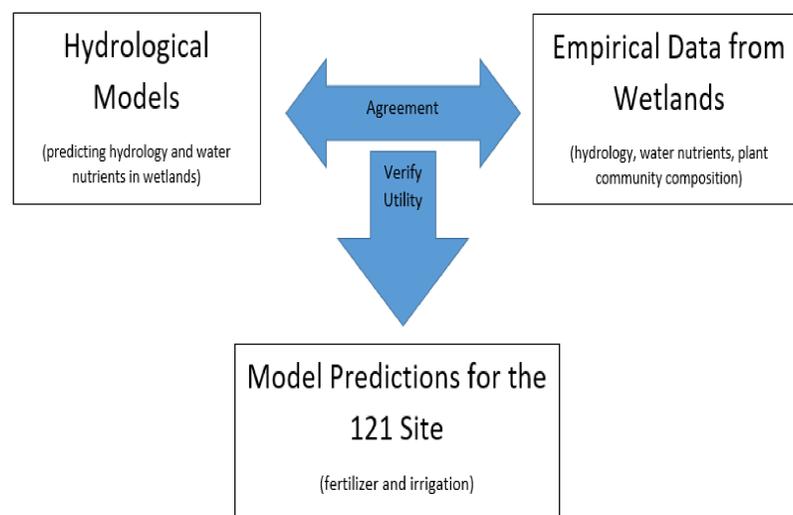


Figure 2. Analytical framework for empirical data collection on wetlands

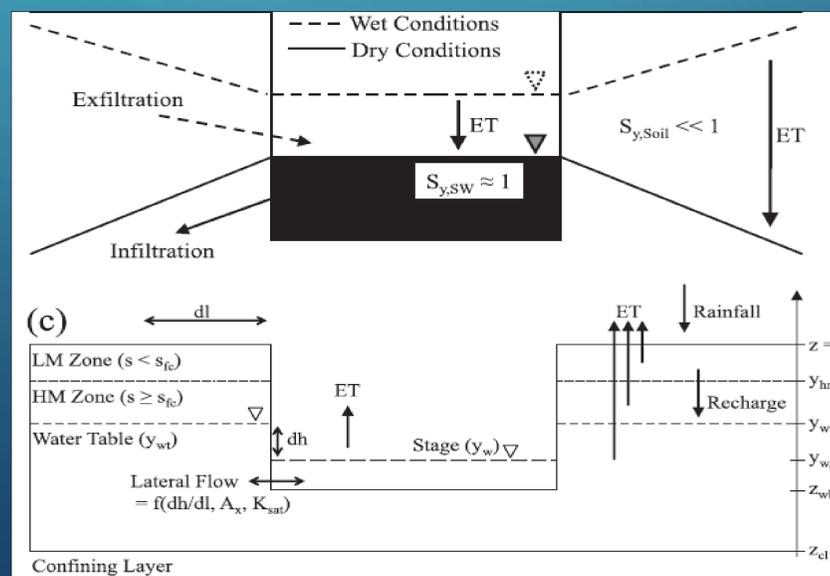


Figure 3. Existing hydrological model from McLaughlin et al. (2014)



## Acknowledgements

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## Literature Cited

McLaughlin, D.L., D.A. Kaplan, M.J. Cohen. (2014). A Significant Nexus: Geographically Isolated Wetlands Influence Landscape Hydrology. *Water Resource Publications*. 50.

**Effects**  
Hydrology, Water  
Nutrients, and Plant  
Community Composition

