University of Florida Natural Area Teaching Laboratory
2013 NATL Minigrant Program

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Experience:

Graduate Research Assistant 2012 - Present
Soil & Water Science Department, University of Florida
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SWS 3022L Soils in the Environment Laboratory

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Signatures

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Title of project
Spatial Assessment of Nitrate in UF's Stormwater Ecological Enhancement Project

Project summary
The Stormwater Ecological Enhancement Project (SEEP) is an ecologically enhanced 3-acre retention pond in UF's Natural Area Teaching Laboratory that treats stormwater from a 39.75-acre watershed[1]. The basin directly drains cultural and academic buildings, parking lots, and athletic fields through a system of campus wide storm drains (Figure 1). These diverse inputs require the SEEP to treat pollution in the form of nutrients, metals, and sediment to improve water quality before recharging the Floridian Aquifer. The proposed project would assess the spatial variability of nitrate in the SEEP basin: inputs from stormwater drains and treatment within the wetland.

Starting date
April 15, 2013

Completion date
August 15, 2013

Description of project
Nitrate levels will be assessed at the discharge points of four stormwater drains in the northern half and the discharge point of one stormwater drain in the southern half to evaluate incoming concentrations into the wetland. To assess water quality treatment within the basin, nitrate will be measured at the weir where water passes from the northern treatment basin to the southern half and in the southern deep-water pond where aquifer recharge takes place.

To obtain real time in-situ nitrate measurements on a small spatial scale, a Submersible Ultraviolet Nitrate Analyzer (SUNA) made by Satlantic will be deployed in the basin. Measurement sites will include the five input drains to assess inputs, in addition to the weir stilling pond and the deep-water pond to assess treatment of the subdivided basin. Samples will be taken and analyzed with analytical methods for comparison with real time in-situ measurements.

ArcGIS maps will be produced to demonstrate hotspots of nitrate and treatment zones within the basin. This project will help understand the spatial variability of water quality within the SEEP – a dominant driver of species richness and diversity. By identifying zones with high nitrate concentrations, recommendations can be made to minimize inputs and improve water quality.

Provision for periodic communication with NAAC administration
Progress updates will be presented to the committee at NAAC meetings. The committee will be notified when in-situ instrumentation is deployed and removed from the NATL. A final presentation will be presented to the committee after completion of the project and dissemination of the deliverables.

[1] Stormwater Ecological Enhancement Project: A project of the Wetlands Club. University of Florida Natural Area Teaching Laboratory. http://natl.ifas.ufl.edu/seep.php.

Budget	**Price (USD)**
Field Supplies	
12 Volt gel cell rechargeable battery *for field deployment*	30
12 Volt power supply *for laboratory analysis and setup*	40
Rubbermaid Roughneck storage tote *for field deployment (x2)*	46
PVC *to enclose sensor*	28
Nitex Screen *to customize SUNA for on-site conditions*	25
Scintillation vials *for collection of nitrate samples*	30
Laboratory Analysis	
Nitrate *(150 samples @ $2.00 per sample)*	300

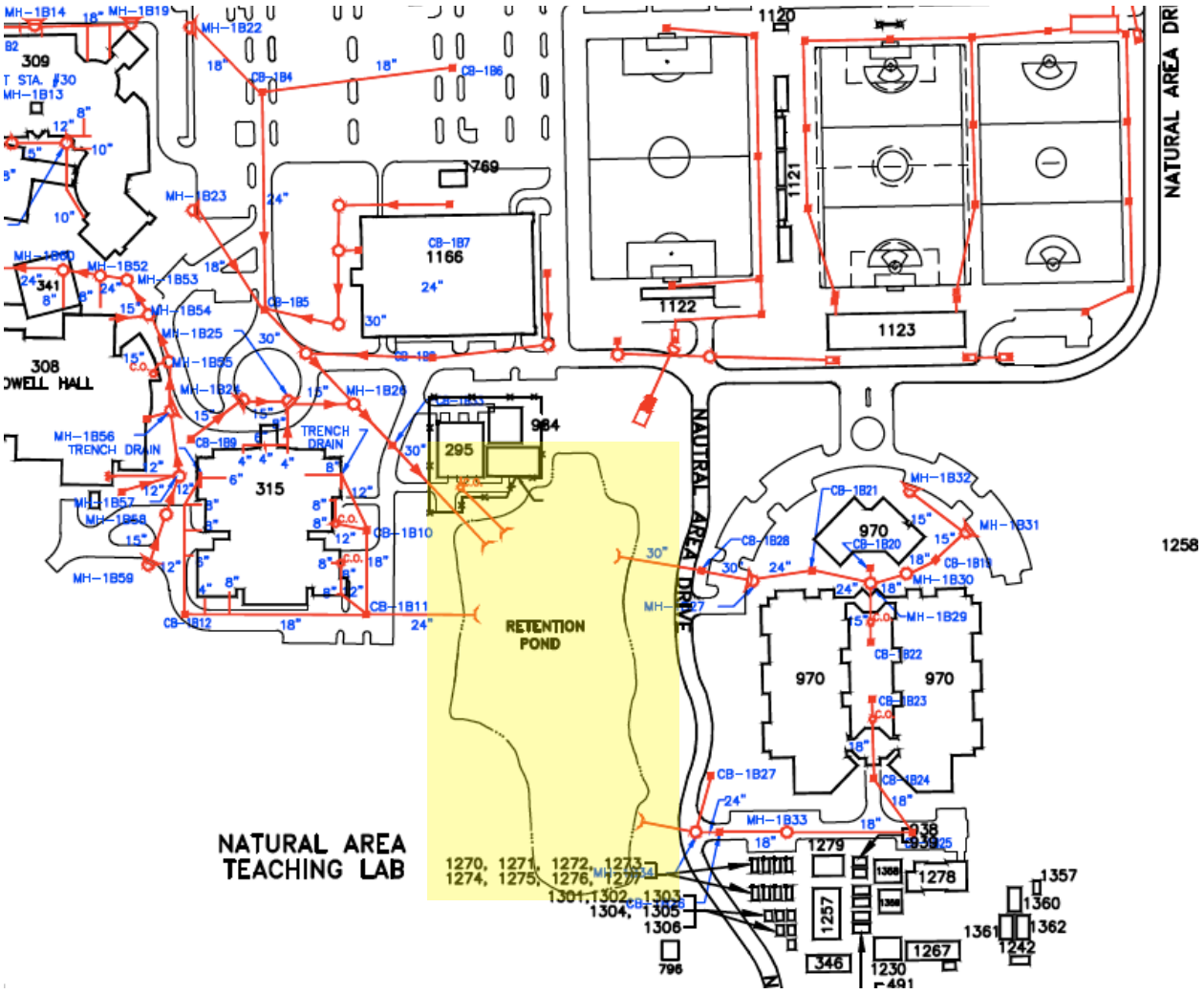

Figure 1: Storm drainage inputs for the Stormwater Ecological Enhancement Project