

University Environment Committee Draft Proposal

Evaluate Seasonal and Storm-driven Fluctuations in Water Level at East Recharge Basin / DEC Freshwater Wetland PJ-10

May 3, 2019

1. Introduction

The Stony Brook University (SBU) precipitation runoff East Recharge Basin, located between Nicholls Rd and O'Neill College, informally known as Lake Briana, is designated by the New York State Department of Environmental Conservation (DEC) as Freshwater Wetland PJ-10 (Figs. 1 and 2).

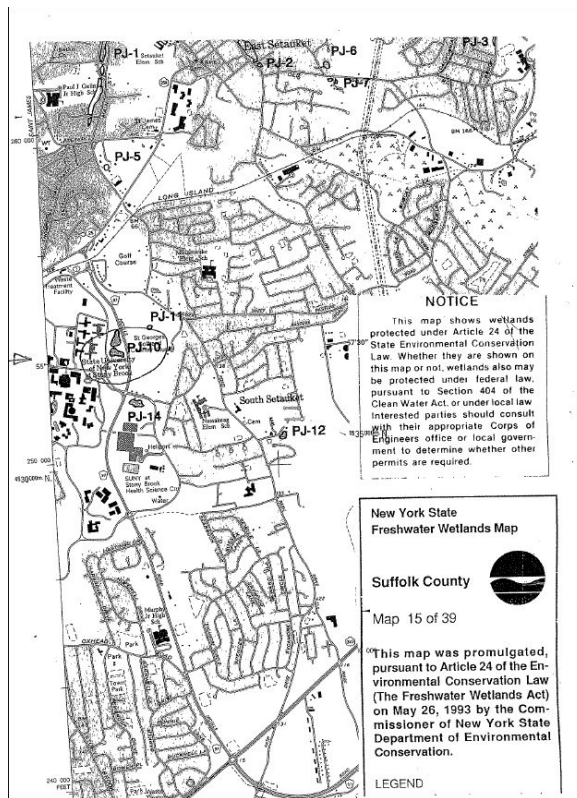


Fig. 1. Excerpt from New York State Freshwater Wetlands Map 15, dated May 26, 1993, identifying Freshwater Wetland PJ-10. Promulgated pursuant to Article 24 of the Environmental Conservation Law (The Freshwater Wetlands Act) on May 26, 1993 by the Commissioner of New York State Department of Environmental Conservation,



Fig 2. Excerpt from Stony Brook University campus map, with Freshwater Wetland PJ-10 highlighted in green.

Over the years the basin has stabilized with standing water, presumably the expression of the local water table. It has become populated with a variety of migratory birds, waterfowl, fish and flora. The basin is surrounded by dense undisturbed deciduous forest. The basin is secured by a high chain link fence with one overgrown access path located on the western side (Fig. 3).



Fig. 3: Aerial photograph of NYS DEC Freshwater Wetland PJ-10 on west campus.

2. History.

The SBU Senate Environment Committee (UEC) has long been interested in working with SBU and DEC to develop the basin as a student ecological research site, by making modest additions to the existing access in the way of unpaved trails on the western perimeter, leading to a bird viewing blind. The intention would be to allow access only during daylight hours and not allow access at all on the eastern side adjacent to Nicholls Rd.

Preliminary discussions were held in the fall of 2008 with DEC officials and Vice President for Facilities and Services Barbara Chernow. Present were Professors Robert Aller (SoMAS), Gilbert Hanson (Geosciences), Malcolm Bowman (SoMAS), John Robinson (Psychology), and university counsel. Oral agreement was reached to proceed with opening up the preserve (as is)

for one year as a trial and to establish its value as a biological field site and to create an ecological inventory (bioblitz).

In the past 18 months, renewed and productive discussions have been held with Vice President for Finance and Administration Robert Megna, Director of Environmental Health and Safety Gary Kazmarczyk, Vice President for Strategic Initiatives Matthew Whelan, Malcolm Bowman, past UEC Chair John Robinson (Psychology), and current UEC Chair Thomas Wilson (SoMAS) to reinvigorate the 2008 proposal.

One key issue critical to any long term management plan is the ability of the current basin to absorb discharge from precipitation and runoff events. That is, if maintained in its natural state can the basin effectively handle both routine and extreme stormwater discharge from its catchment area? This document proposes a scientific and engineering study that will provide objective data to definitively answer that question.

3. Proposal

The UEC proposes a study of water level fluctuations in the basin due to natural causes and discharge during precipitation events over the basin's catchment area. The initial study duration will be one year with time extension possible depending on interest and findings.

Personnel: Distinguished Service Professor Malcolm Bowman of SoMAS will supervise the study. The SoMAS Instrument Laboratory already maintains the weather stations and will install and maintain the water level recorder. Stony Brook University students will collect and analyze the data as part of related courses. All field work will be appropriately supervised and take place during daylight hours.

Site visits will occur every 1-2 weeks and will involve visual inspection of the instrument, noting the water level reading on the tide staff for ground truth verification of the instrument reading, and retrieval of recorded data using a laptop computer. Total time on site will typically be 30 minutes or less. Routine maintenance will involve changing batteries every few months as needed.

Water level: A donated Ott Ecolog 500 water level gauge will be installed on the basin shoreline using a small locked diagonal pipe mount with minimal visual and environmental footprint. Time stamped water level data for the basin will be recorded every 15 minutes. A Swift Navigation PIKSI Multi GNSS system will be used to establish appropriate absolute vertical level references.

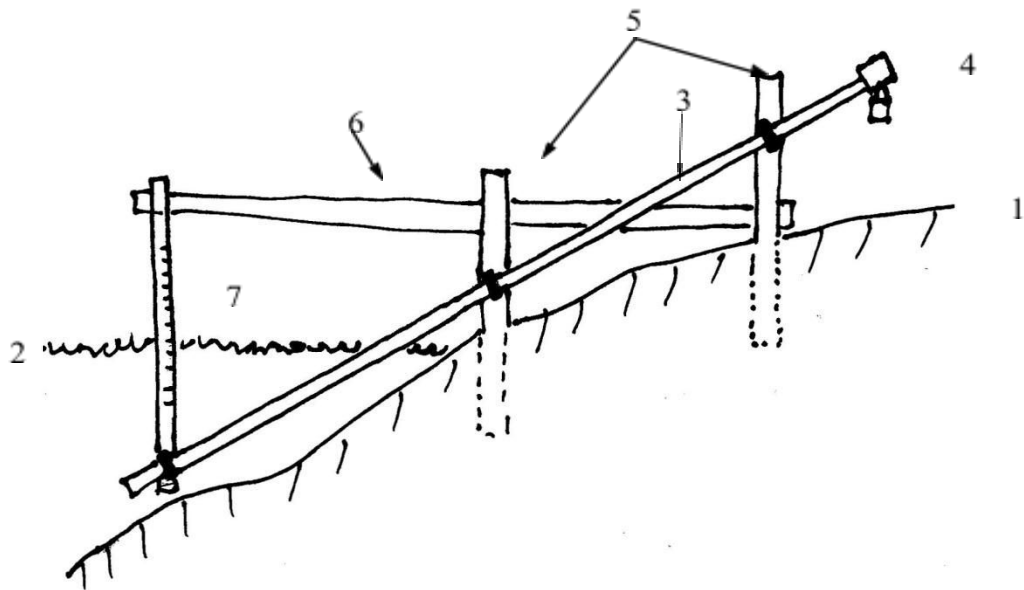


Fig 4. Sketch of proposed water level recorder installation. 1: Ground surface, 2: water surface, 3: 14 foot long 2 inch PVC plastic pipe containing EcoLog water level recorder, 4: padlocked endcap, 5: 4x4 wood mounting posts, 6: horizontal staff support rod, 7: tide staff with ruler for ground truth readings during site visits.

The mounting will be prefabricated, with minimal assembly and cutting on site. The wooden mounting posts will be set in the ground approximately 3 feet by hand excavation with a post hole digger.

Site selection: In a site visit with Clifford Knee of Environmental Health and Safety, a suitable location was identified for the water level recorder. It is easily accessible from the perimeter gate, has a flat grade, and sufficient water depth for the sensor.



Fig 5a and 5b. Water level recorder location. Map and panoramic site photograph. Access gate on right.

Rainfall: SoMAS already operates two Davis Instruments Vantage Vue weather stations: one at South P lot and the other on top of the Health Sciences Center Tower. These stations record precipitation every 5 minutes.

Basin response: Rain and water level data will be analyzed to show the relationship between precipitation events, the immediate rise in water level, recovery time of the basin after an event, and seasonal variation. Correlation of precipitation event size and basin response can be used to predict the ability of the current system to handle extreme events (20, 50, or 100 year rainstorms)

Budget: Operation of the weather stations is covered in the SoMAS base budget. The water level instrument mounting will be constructed from scrap and surplus materials. Cost of batteries and other expendables will be less than \$200. UEC will seek funding from a variety of sources after the study is authorized.

Permitting: On May 9, 2018, Robert F. Marsh, Regional Supervisor of Natural Resources for NYS DEC Region 1 informed SoMAS Associate Dean Larry Swanson that no DEC permits are required for the installation and operation of the water level recorder (email appended as Appendix 4.3).

Access: A second padlock will be placed on the access gate by the research team so that either padlock provides access to the study area.

Project leader will notify University Police (Eric Olsen, UPD Assistant Chief of Patrol, Eric.Olsen@stonybrook.edu) of the schedule for working at the project site, with approximate time, duration, and personnel involved. Access will only be requested during daylight hours.

Site visits will occur every 1-2 weeks and will involve visual inspection of the instrument, noting the water level reading on the tide staff for ground truth verification of the instrument reading, and retrieval of recorded data using a laptop computer. Total time on site will typically be 30 minutes or less. Routine maintenance will involve changing batteries every few months as needed.

Project team will notify project leader each time they are entering the site. Project team will carry a charged cell phone, programmed with University Police number (631-632-3333). Project team will notify the project leader each time they exit the site.

Safety: All personnel will be trained in appropriate operational and safety procedures for this fieldwork as detailed in the most recent revision of the Water Level Monitoring Safety Plan.

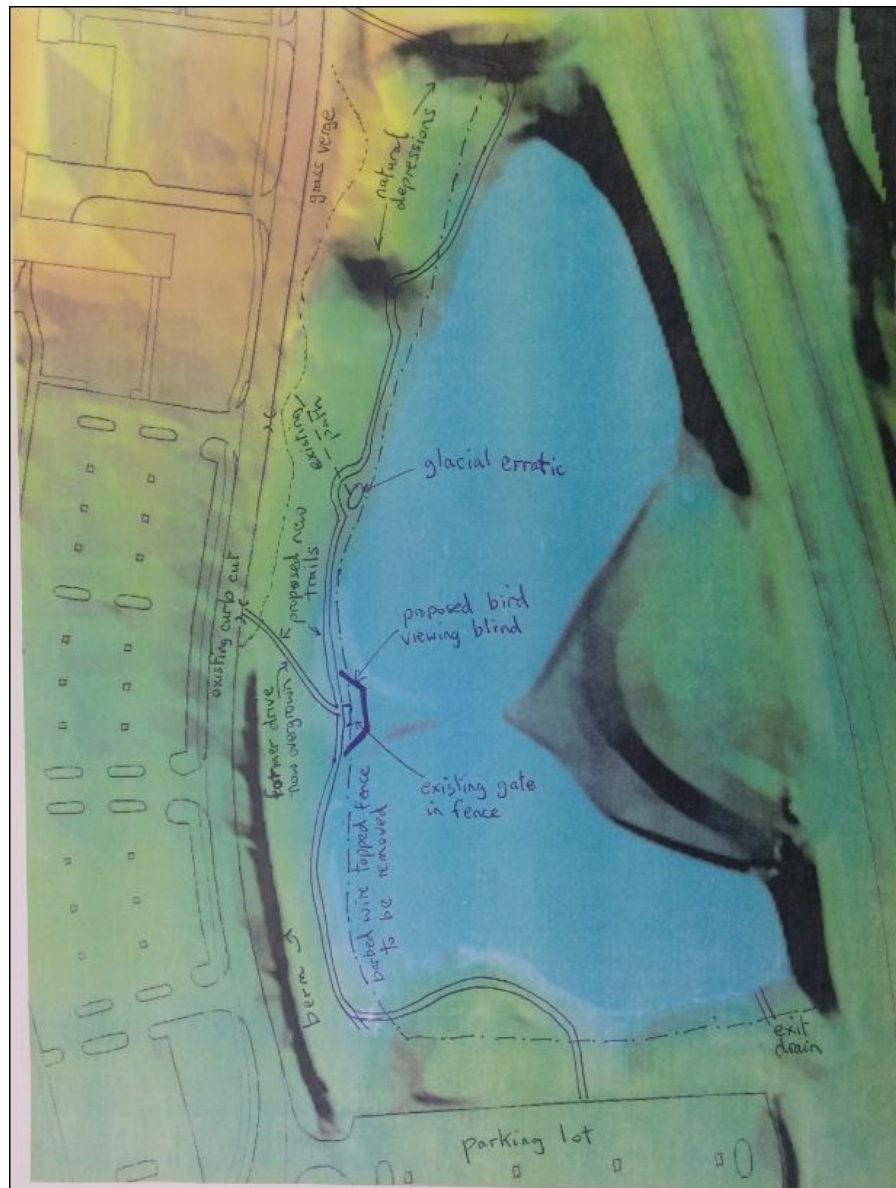
Removal: SoMAS commits to remove the water level instrument and mounting at no cost to the University Administration at the conclusion of operations.

Deliverables: Final reports will be prepared and provided to the University Senate and the University Administration including methods, data, and results of the study.

The study should accurately establish how much the water level in the basin fluctuates, how quickly it recovers after a precipitation event, how well the system would handle extreme events, and whether additional discharge could safely be accommodated from, for example, additional construction of buildings, parking lots and other hard surfaces.

4. Appendices

Appendix 4.1: Sketch map from 2008 of proposed improvements for biological field site.



Appendix 4.2. Letter of support from Robert F. Marsh, Regional Manager, Bureau of Habitat to VP Barbara Chernow, dated November 26, 2008.

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources, Region One
Bureau of Habitat
Stony Brook University
50 Circle Road, Stony Brook, New York 11790 - 3409
Phone: (631) 444-0275 • FAX: (631) 444-0297
Website: www.dec.state.ny.us



November 26, 2008

Ms. Barbara Chernow
Vice President for Facilities and Services
221 Administration Building
Stony Brook University
Stony Brook NY 11794-1002

RE: Wetland improvement project - SUNY Stony Brook campus

Dear Ms. Chernow:

On October 20th staff from our office met with members of the Stony Brook University Senate Environment Committee to discuss potential improvements to a New York State regulated freshwater wetland on campus. This wetland is located on the eastern edge of West Campus between G and H Quads and Nicolls Road.

The proposed project includes the creation of a walking path, educational kiosks and an observational platform. In addition, the existing fence is proposed to be replaced and relocated.

The Department in general feels that projects of this nature are a good use of natural resources and an education benefit to the community. It is my understanding that the wetland is already a valuable resource on campus for educating students in aquatic ecology as it supports a representative variety of species of fish, terrapins, birds and both aquatic and terrestrial plants. Therefore, the Department approves in concept, and is likely to approve a permit to do the work. Department staff would work with members of the Environment Committee to place the location of the fence, trail and observation platform so that the impact on existing vegetation is minimized. Small amounts of vegetative damage is unavoidable during projects such as this and to that end, the Department would require a number of activities to mitigate for this damage.

These activities may include annual work days to clean up the floatable waste that accumulates in and around the pond, relocation and modification of the fence to make it more friendly to wildlife migration, the creation of a small area of emergent marsh to increase bio-diversity and improve nutrient uptake, and access to the pond to allow for increased fishing activities.

If you have any questions, please feel free to call me at the above number.

Sincerely,

Robert F. Marsh
Regional Manager
Bureau of Habitat

RFM:del

Appendix 4.3. Email from Robert F. Marsh, Regional Supervisor of Natural Resources for NYS DEC Region 1, to SoMAS Associate Dean Larry Swanson, stating that no DEC permits are required for the installation and operation of the water level recorder.

8/2/2018

Stony Brook University Mail - Fwd: Lake Briana



Thomas Wilson <thomas.wilson@stonybrook.edu>

Fwd: Lake Briana

Larry Swanson <larry.swanson@stonybrook.edu>

Wed, May 9, 2018 at 8:40 AM

To: Malcolm Bowman <malcolm.bowman@stonybrook.edu>, Thomas Wilson <thomas.wilson@stonybrook.edu>

Malcolm, Tom:

You have permission from DEC to move forward with the tide gage in Lake Briana. No removal of brush however. The poison ivy must stay. You will still need SBU's permission.

Larry

.....
R. Lawrence Swanson
Interim Dean and Associate Dean
School of Marine and Atmospheric Sciences
Director, Waste Reduction and Management Institute
Stony Brook University
Stony Brook, NY 11794-5000
larry.swanson@stonybrook.edu
phone: 631-632-8704
fax: 631-632-8064

----- Forwarded message -----

From: Marsh, Rob (DEC) <rob.marsh@dec.ny.gov>

Date: Wed, May 9, 2018 at 8:30 AM

Subject: RE: Lake Briana

To: Larry Swanson <Larry.Swanson@stonybrook.edu>

Cc: "Gallagher, Carrie M (DEC)" <Carrie.Gallagher@dec.ny.gov>, "malcolm.bowman@stonybrook.edu" <malcolm.bowman@stonybrook.edu>

Hi Larry,

There is an exemption in the Article 24 regulations for education and scientific research. As long as you don't need to remove vegetation or excavate a large area you would not need any permits.

Rob

Robert F. Marsh

Regional Supervisor

Natural Resources

Region 1

631-444-0270

Rob.marsh@dec.ny.gov

Appendix 4.4. [NYS DEC Freshwater Wetlands Program](#).

Appendix 4.5. [Freshwater Wetland Act](#) (Article 24).

Appendix 4.6. Water Level Monitoring Safety Plan - 5/3/2019.