**Lake Champlain Basin Program**

**Quarterly Report**

**January 10, 2018**

**Organization Name:** Stone Environmental, Inc.

**Project Name:** Assessment of Tile Drainage System Impacts to Lake Champlain and Phosphorus Loads in Tile Drainage in the Jewett Brook Watershed of St. Albans Bay

**NEI Job Code:** 0100-310-002

**Project Code:** L-2016-060

**Final Report Due Date:** September 2018

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**Summary of Activities:**

***Task 1: Literature Review Examining Tile Drainage Systems***

Completed

***Task 2: Assessment of Tile Drainage Systems in the Jewett Brook Watershed***

Flow monitoring and sample collection continues at all 12 tile drain stations. Flow-paced, composite samples are collected approximately weekly. To date, 25 rounds of sampling have been performed at the monitoring sites. Flow-pacing settings are adjusted at the start of each sampling round, based on recently measured flow rates and the weather forecast. The goal is to produce composite samples of appropriate volume that are representative of flow conditions at each site.



Completing monitoring station construction at JBT01.

Stone’s subcontractor, the Friends of Northern Lake Champlain, is performing the majority of sample processing. Various maintenance activities are performed on every sample collection date, including checking/changing instrument desiccant and removing vegetation shading solar panels.

A tremendous effort was devoted in the last quarter to manipulating flow data and identifying and making estimates for any gaps in the continuous flow and concentration time series data. This laborious effort is a necesary precursor to calculating seasonal and annual flow totals and mean TP and TDP concentrations and loads.

Each month, a brief monitoring report is prepared summarizing monitoring data collected to date. Thus far only nutrient concentration data have been included.

***Task 3: Phosphorus Load Estimation of Tile Drainage Systems in the Jewett Brook Watershed***

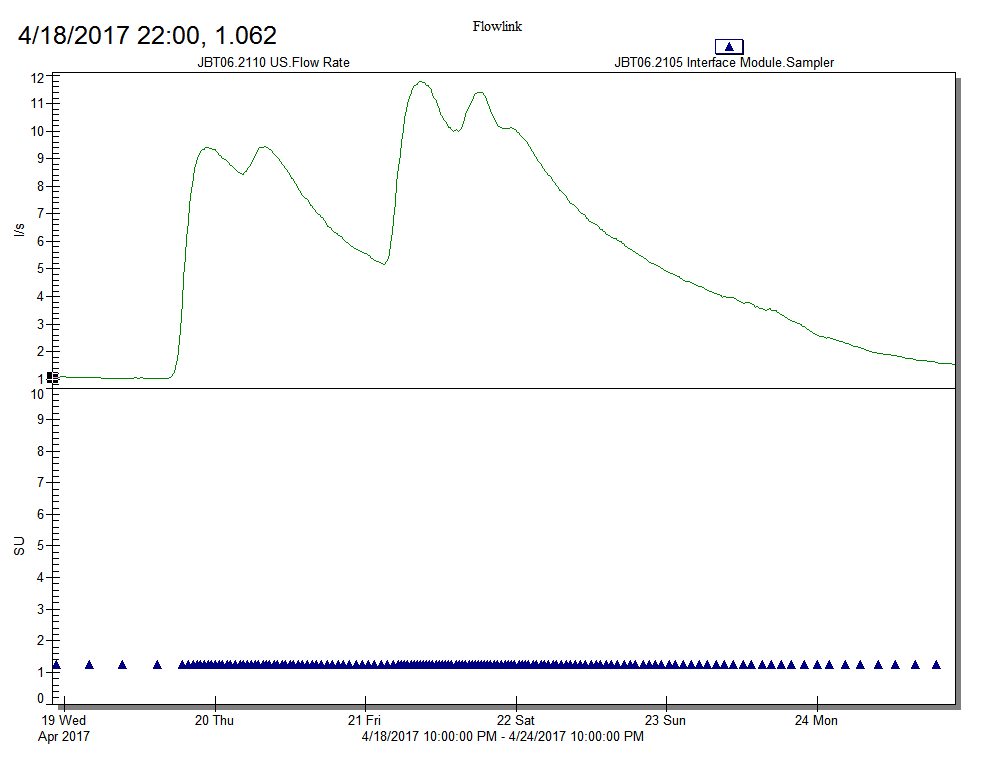
No activity.

**Project Status:**

Every 30 minutes, flow and sampling data are transmitted to Stone’s server. These data are checked periodically to assess whether the sampling program is working as intended. Figure 1 displays an example of flow data (top panel) at station JBT06, along with the time each sample aliquot was dispensed to the sample carboys (bottom panel).

Composite samples collected at the tile drain monitoring stations are analyzed by the Vermont Agriculture and Environmental Laboratory for concentrations of total phosphorus (TP), total dissolved phosphorus (TDP), and total nitrogen (TN). Beginning in August, VTDEC (which supports the TN analysis) has requested TN be collected on alternate weeks (a cost saving measure) until field conditions change due to manure application or other agricultural activities.

Figure 1. Example flow rate and sampling marks from Station JBT06



**Challenges Encountered:**

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**Work Anticipated Next Quarter:**

In the next quarter, sampling and data management activities will continue. all the flow and concentration data collected to date will be reviewed and manipulated to produce continuous times series from which nutrient load estimates can be calculated (supports analyses for Task 3).