

**Soil and Water Sciences Department
Graduate Student Exit Seminar**

Speaker: Stefan Kalev
M.S. Thesis Degree Candidate

Advisor: Dr. Gurpal Toor

Title: Concentrations and Loads of Dissolved and Particulate Organic Carbon in Urban Stormwater Runoff and Pond Outflow Waters

Date: Monday, April 17, 2017

Time: 3:00 pm – 4:00 pm

Location: McCarty Hall A, Room G186

Residential areas in urban watersheds are the major contributors of carbon (C) in receiving water bodies. Our objectives were to investigate the concentrations, forms, and loads of C at two junctions in the urban water infrastructure: (1) urban stormwater runoff from a residential catchment of 13 single family homes (drainage area: 3.88 ha) and (2) retention pond outflow waters from a residential catchment of 8 single family homes (drainage area: 2.02 ha). Both catchments were instrumented with ISCO samplers, flow meters, and rain gauges. Samples were collected over 25 storm events at first junction (urban stormwater runoff) and over 13 storm events at second junction (pond outflow waters) during the 2016 wet season (May–September). All samples were analyzed for dissolved organic C (DOC) and total organic C (TOC), and particulate organic C (POC) was calculated as difference between TOC and DOC. Mean concentrations of DOC and POC were 10.5 and 2.0 mg/L in the urban stormwater runoff and 11.15 and 0.58 mg/L in the pond outflow waters, respectively. In most storm events, DOC concentrations were greatest during the rising limb of the storm hydrograph, followed by reduction throughout the event. At both sites, DOC was the dominant form (>95% of TOC), with DOC:POC ratio of 5:1 in stormwater runoff and 19:1 in pond outflow waters suggesting an increase in the DOC and a decrease in the POC in pond outflow waters. The calculated loading of TOC was 71.4 kg in 25 storm events in urban stormwater runoff and 45.1 kg in 13 storm events in pond outflow waters. The major sources of C in these urban waters likely originated from plant materials such as leaves and grass clippings, followed by atmospheric deposition and leaching from sandy soils. Future research should target identification of DOC sources, transport mechanisms, and transformations along the urban water infrastructure in urban catchments.

For our off-campus students, off-campus faculty, and on-campus students who cannot attend, this seminar can be viewed via live or watched at a later date via this link: [Stefan Kalev](#). In addition, all seminars are archived for viewing on our [SWSD Seminar Page](#).