Brief project overview/Abstract:
Reduction of bacterial impairments in coastal waters requires a solid understanding of the effect of the type of BMPs on bacterial concentrations in wet weather flows. Preliminary research at the UNHSC demonstrates that filtration systems (Low Impact Development and Manufactured Treatment Devices) can provide significant reduction to bacterial loads whereas stormwater ponds and swales show increases. The results of this project will 1) increase the understanding of BMP treatment performance for microbial pathogens, and 2) increase the state capacity for management of stormwater derived bacterial loads through municipal education on BMP selection for new and redevelopment. This research proposes to leverage the existing infrastructure, research products, and outreach program of the UNHSC and the network and outreach expertise of the Coastal Training Program.

Objectives:
The University of New Hampshire Stormwater Center (UNHSC) will characterize the major classes of stormwater best management practices (BMPs) for bacterial removal performance and in collaboration with the New Hampshire Coastal Training Program (CTP) will develop BMP guidance for resource managers.

Research findings/accomplishments/progress to date:
Monitoring has been completed for the project to date. Monitoring has included sediment and water quality analyses. Eleven systems have been monitored to date. Systems have typically been monitored for 23 storm events. A few systems were monitored for 5 or 6 storms and some for as many 26. Data analyses are underway. Data is being examined as time series data; inter quartile analyses, treatment effects plots, effluent probability, and treatment efficiency. Data analysis is also underway to examine seasonality. Preliminary data is proved below.
Figure 1: Time Series analyses for Conventional, LID, and Manufactured Treatment Devices for E Coli and Enterococci
Figure 2: Removal Efficiency for Dry Pond Bioretention Systems for E Coli and Enterococci
Figure 3: Removal Efficiency for Hydrodynamic Separators and a Gravel Wetland for E Coli and Enterococci
Figure 4: Removal Efficiency for Dry Pond Bioretention Systems for E Coli and Enterococci
Figure 5: Treatment Effects Plots for All systems for E Coli and Enterococci
Figure 6: Treatment Effects Plots for Manufactured Systems and LID Systems for E Coli and Enterococci
Figure 7: Effluent Probability for All Systems and Conventional for Enterococci
Figure 8: Effluent Probability for LID and Manufactured Treatment Devices for E Coli and Enterococci
Figure 9: Inter-quartile Distribution for All Systems for E Coli