

Red Brook Hydrologic Assessment Project

#2010PT21

Waterbody Name: Red Brook

Location: Scarborough and South Portland – Cumberland County

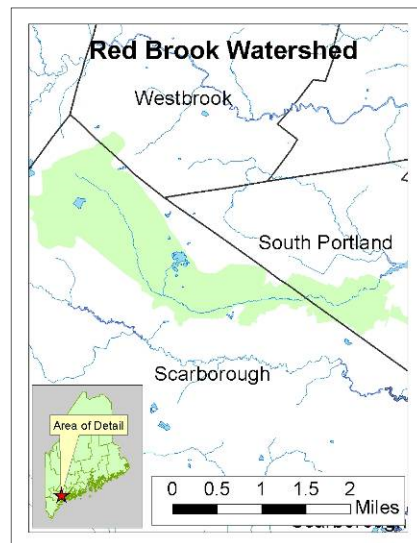
Waterbody Status: Urban Impaired Stream

Project Grantee: Town of Scarborough

Project Duration: July 2012 – December 2012

604b Grant: \$7,800

Local Match: \$17,940



PROBLEM:

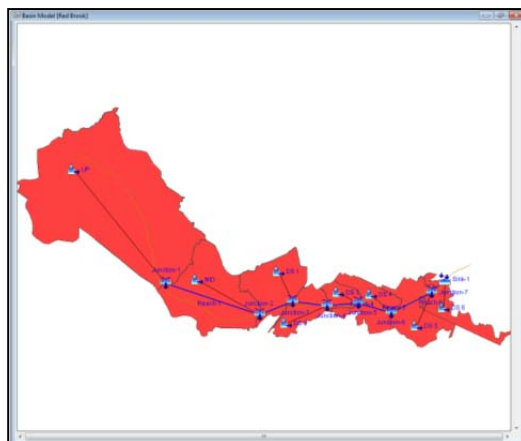
Red Brook is a small, 7.15 mile-long stream that flows into Clark's Pond and the Fore River. The 3.2 square mile watershed includes a relatively undeveloped upper watershed, sections of the Maine Turnpike and I-295, a regional waste incinerator, and a high-density commercial area at the base of the watershed.

Water quality in the upper portions of the stream is considered to be relatively stable, and the stream supports a brook trout population. However, the stream does not meet Class C standards and is impaired due to habitat degradation and PCB contamination. A PCB-contaminated site in the upper watershed was sealed in 2009, and levels in fish tissue are expected to decrease over time. Habitat degradation is found primarily in the lower sections of the stream due to past channel alterations and near-stream development. The *Red Brook Watershed Based Management Plan* was completed in 2011 with funding from a 604b ARRA grant (#2009SP03).

PROJECT DESCRIPTION:

The primary purpose of the project was to develop a hydrologic model called for in the *Red Brook Watershed Based Management Plan*. The model will enable future evaluation of stream hydraulics and projects to improve in-stream habitat, stream crossings and watershed restoration.

The Town paid the project consultant to process raw aerial LiDAR data from 2006 and 2011 into two-foot contours of the watershed. Fieldwork was also conducted to ground-truth watershed boundaries and stream culverts, and to conduct field reconnaissance to evaluate modeling needs. A QAPP was developed and approved with input from Maine DEP and US EPA staff, and a preliminary model as developed using HEC-HMS software.



Screen shot from HEC-HMS model.

PROJECT OUTCOMES:

- A hydrologic model was developed for Red Brook using the HEC-HMS model. The model can now be used to help prioritize and design restoration projects as part of Red Brook Plan implementation efforts.
- A GIS data layer of two-foot contour lines was developed for the Red Brook watershed.
- The *Red Brook Hydrologic Assessment Project Quality Assurance Project Plan (QAPP)* was completed and approved in December 2012. If EPA grant funds are acquired to complete and run the model, the same QAPP can be referenced. Only an appendix will be required.



The HEC-HMS model will be used to evaluate and design future in-stream and culvert rehabilitation projects such as those shown above. The goal is to restore stream habitat and remove fish barriers.

PROJECT PARTNERS:

AMEC Environment & Infrastructure, Inc.

CONTACT INFORMATION:

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Suggested Citation:

Maine Department of Environmental Protection (2013) "Nonpoint Source Management Program 2012 Annual Report," Document # DEPLW-1245. Augusta: MDEP.