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Stream Behavior Videos

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Abstract

Based on outreach needs and targeted audiences identified by Cornell Cooperative Extension educators in NYS, the project developed three videos on stream behavior using footage from the Cornell Environmental Hydraulics Laboratory, landscape shots, and stock footage. The narrated videos illustrate concepts of stream energy and upstream and downstream effects of stream modifications, including dredging, in a physically intuitive manner for a lay and public official audience as well as for classroom use.

Major Accomplishments

- [Stream Behavior: Stream Energy](#)
- [Stream Behavior: Upstream/downstream Effects](#)
- [Stream Behavior: Dredging](#)

Stream Behavior Videos

Introduction

Resiliency in the face of changing climate, including increasing storm frequency and intensity leading to flooding and stream channel and bank changes, is a major issue in the Hudson Valley. Cornell Cooperative Extension educators and Cornell faculty working with local government officials and communities as part of the Hudson River Estuary Program Watershed Resiliency program conducted a needs assessment with respect to education. A survey of available materials and programs was done, and the educators began developing approaches, materials, and presentations to deliver in the Hudson Valley communities. The educators identified the need for additional, visual educational and outreach materials on stream behavior. Highway and public works superintendents and their staff were identified as a particular audience, but landowners were a secondary audience often driving highway and public works actions. The request was for physically intuitive presentations of the concepts underlying stream behavior.

Program Description

Grantham and Galford surveyed existing visual materials on stream behavior, including productions by the US Geological Survey and Little River Research and Design (EmRiver). Visual quality was often lacking, and generally either landscape footage or model/laboratory footage was used, but not both in one production. Another limitation was the length of productions, often too long to use in workshops.

The Cornell DeFrees Hydraulics Laboratory has hydraulic flumes that can be set up to observe idealized stream behavior. Professor Edwin A. Cowen, Director, approved use of the facility and assistance from graduate student Diego Fernando Muriel Delgada, Civil and Environmental Engineering, Cornell University.

After testing in the hydraulic flume, narratives for three short videos were written. Footage was shot in the DeFrees Hydraulics Laboratory to illustrate as much of the narratives as possible. Landscape shots were acquired to supplement the laboratory footage. In

addition, stock footage of skiing and horseback maneuvers was purchased to provide visual analogies for stream energy concepts.

Three videos resulted: Stream Energy; Upstream/Downstream Effects; and Dredging.

Insights International, Inc., shot and produced the videos and subcontracted the narrator.

Project Methods

Educational needs assessment was performed as part of the HREP Watershed Resiliency project, through surveys and interviews. Target audiences were identified based on the educational needs assessment. Available visual materials and methods were searched by Grantham and Galford.

Impacts and Results

Three videos are posted on the NYS Water Resources Institute youtube site (<https://www.youtube.com/watch?v=jlYQDV4OJZ4> ; <https://www.youtube.com/watch?v=oXt2Od7yr9Q> ; <https://www.youtube.com/watch?v=IB0pTSz87DE>). They will be used in classroom settings beginning in Spring, 2015 and in nonformal outreach settings in the Hudson Valley beginning in 2015. To date, educators have said that “They are very well done, and are the perfect length to embed in our Streams 101 presentation.” And “...it is great to have the modeling, real stream images and narrative in one video.”

Policy Implications

Public works and highway departments have a certain degree of jurisdiction and responsibility for streams, as they impact roads and bridges in particular. These videos are geared to reach that audience with basic physical concepts about stream behavior and the results of stream modification.

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