RAMBOLL

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Title: SCALGO – Efficient Site Assessment Tool
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Key Topic: Innovative Assessment Methods
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Client Name: City of Rye
Project Name: Blind Brook Flood Resiliency Study
Project Location: City of Rye, Town of Harrison, and Village of Rye Brook, New York
Primary Ramboll Project Staff (Office): Syracuse, New York

ABSTRACT

Background/Objectives:

The objective of this presentation is to review capabilities of the SCALGO platform that was successfully implemented during execution of the Blind Brook Resiliency project. The Blind Brook watershed, a tributary to the Long Island Sound, is in southeastern New York. The portion of Blind Brook that flows through the City of Rye, New York, has experienced significant flooding and property damage due to extreme precipitation events such as nor'easters and hurricanes. Ramboll was retained by the City of Rye to evaluate a number of potential flood mitigation measures within Blind Brook watershed. The project included a screening phase where over 20 potential projects were rapidly evaluated using a combination of SCALGO and conventional assessment tools (e.g., H&H models, GIS, CAD).

Approach/Activities:

The Ramboll team utilized the SCALGO platform to efficiently evaluate conceptual site modifications. SCALGO is an on-line (operated from a browser) platform primarily used for climate adaptation, urban planning, emergency management and administration of watercourses. SCALGO uses on-the-fly terrain data-processing technology that allows the user to interact with high resolution 3D surfaces and view the effects of proposed changes (e.g., excavation, grading, berms, ponds). Capabilities include dynamic watershed delineation, identification of flood risk areas, surface profile generation, and terrain modification. For the Blind Brook project application, the SCALGO terrain editor allowed the team to easily identify the storage capacity of the pond and berm alternatives, adjust the dimensions and elevation of the pond or berm, and estimate the cut or fill volume of soil required for construction. These approximate measurements were used in the preliminary cost estimate and prioritization of the analysed alternatives.

Results/Lessons Learned:

SCALGO is an innovative and intuitive tool for understanding the characteristics of an area and evaluating impacts of terrain modification at a conceptual level. The team used the project site elevation model to identify and evaluate locations that could be utilized for a site management feature, and to optimize the size of the feature to match existing topography. The ability to make changes and view the effects in real-time eliminated the need for lengthy processing. The applicability of SCALGO for a project depends on the availability of terrain data. Westchester County has a robust LiDAR database from which the team obtained the necessary terrain data for the project site. Availability of high-quality digital terrain data will affect the accuracy of the tool.

Aspect of Work that Relates to Sustainability:

In the context of Blind Brook, the team used SCALGO to rapidly evaluate a large number of potential site modification alternatives as flood mitigation measures. If constructed, the selected alternatives would result in a more resilient City of Rye community.