



Executive Summary
Ecology Mapping Method to Prioritize Environmental Actions

Innovation

This method depicts the environment around bodies of water such as streams, and based on the conditions along the stream, it can identify which segments of that body of water need to be remediated. The associated ecology diagrams typically reveal the interconnections between biotic and abiotic factors. The innovation modifies the current view to diagramming by conflating the explicit mapping of the “causal factors/issues around each individual anticipated impact.” These diagrams super-imposed with landscape systems map clarify the spatial scale and extant as well as micro- and macro-scale nested hierarchies of the impact on an ecosystem. Superimposing associated ecology diagrams with the landscape system’s transect diagrams reveals the locations and, thus, the geographical extant of the eco-systemic impact of a causal condition.

Market Need

The need for urban stream restoration gained momentum in the Chesapeake Bay watershed since many tributaries were rated as impaired by the Environmental Protection Agency (EPA). The loss of aesthetics and recreation was most affected, followed by aquatic life harvesting and fish/wildlife protection. Top causes of impairment are pathogens, metals, nutrients, turbidity, and sediment, aggravated by urban and agricultural land use. Current decision-making is scoresheet-based and considers a range of restoration goals such as water quality and habitat, underscored by cost effectiveness. The associated ecology mapping is a promising stream restoration prioritization decision-support tool that could be easily integrated as an additional intermediate refinement step in current federal, state and city scoresheet-based prioritization approach to stream restoration. This innovation would be of interest to city, county and federal governments, and international aid organizations. In fact, the Federal Government alone requested a nearly \$1 billion budget for water and water-related reclamation projects.

Intellectual Property

An intellectual property disclosure was filed with Morgan OTT in January 2021.

Stage of Development

A software tool based on this invention will map associated ecology, provide web diagrams of varying fidelities as guided by visual assessment of stream, and superimposed with landscape system transect diagrams. The first site for the associated ecology diagrams will be for Herring Run between East Cold Spring Lane and Echodale Avenue in Baltimore City adjacent to Morgan State. In addition, the technical challenges of data transfer to Geographical Information Systems (GIS) or other map-making software programs will be evaluated.

Technology Transfer Opportunity

A licensee of this technology could market to a wide range of public and private entities including the US Army Corps of Engineers, USGS, and many multinational companies. The innovation depicts pollution loading, stormwater flow, soil erosion, floodplains, excess sedimentation, flood susceptibility of stream banks, sewer outflows/biological contamination, and invasive vines covering existing trees.

Key Investigators:
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Field(s) of Use:
-Ecology
-Public Policy
-Landscape Architecture

Key Words:
-Remediation
-Restoration
-Mapping
-Prioritization

Advantages:
-Additional layer of analysis
-More refined
-More comprehensive decision-making process

Status:
Intellectual Property Disclosure submitted January 2021, and an I-GAP grant awarded in February 2021.

Links:
[Inventor Bio](#)

Reference Number:
127/2021

Tech Transfer Contact:
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