Floodplain Planning and Tracking Tool for Phase 2 of the Vermont Functioning Floodplains Initiative

STONE ENVIRONMENTAL
100% EMPLOYEE-OWNED

Services / Expertise
Web-Based Application and Tool Development
User Interface / User Experience Design

Technology
ArcGIS Online
Postgresql 12.x
React
Agile development

Markets
State Government
Conservation Planners
Flood Resiliency and Sustainability Planners

Project Location
Montpelier, Vermont

Date Completed
2019–Present

Project Owner
Vermont Department of Environmental Conservation

SLR Consulting

Project Manager
Roy Schiff, SLR Consulting

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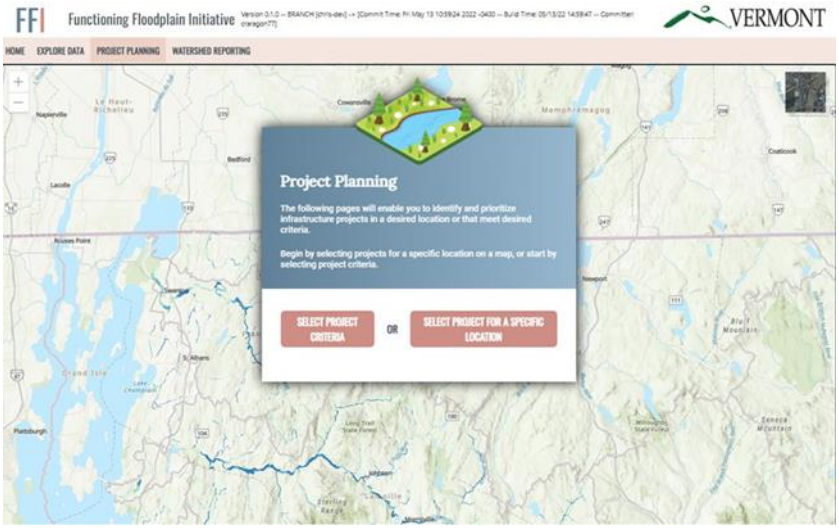

Screenshot of the Functioning Floodplain interface.

STONE is part of a collaborative effort to assist the Vermont Department of Environmental Conservation (VT DEC) in establishing planning tools that promote stream and floodplain connectivity for water quality, flood resiliency, and habitat benefits. Services include:

- Data collection,
- Development of river-floodplain connectivity departure scoring,
- Creation of project opportunity screening approaches,
- Development of a web-based application to house and provide user access to datasets and methodologies, and
- Development of training and outreach materials.

The project incorporates cutting-edge research into method development to inform project planning and track progress toward reconnecting Vermont's rivers and floodplains. This project has advanced our understanding of functioning floodplains in the following areas:

- The level of phosphorus deposition on connected floodplains and the cost-effectiveness of floodplain restoration to improve water quality,
- The potential resiliency benefits include cost and savings associated with reconnected floodplains, and
- Improvements to instream and riparian habitat associated with reconnected floodplains.

The Functioning Floodplain Initiative (FFI) tool enables users to identify potential reconnection projects and explore data describing the state and potential condition of rivers and floodplains in Vermont, as well as calculate site and project-specific benefits of river reach and floodplain project implementation. The application is publicly

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State and Local Government Specialty

accessible and utilizes features such as an open-access platform that enables users to view maps and data, download the results of project identification workflows, estimate the impacts of potential projects on connectivity and phosphorus crediting, and export customized watershed scale summary data.

Stone developed the FFI tool using Esri's ArcGIS Platform for map visualization and a fully custom backend database system to support calculations and tracking of reconnection progress. As a part of the application development process, Stone gathered and refined user requirements, developed a set of prototypes, and completed full-scale custom web-based application development. The application will serve as the interface for state and watershed management stakeholders to support flood and erosion control strategies, water quality objectives, sediment storage and nutrient attenuation, and habitat enhancement.

The FFI web application also tracks progress on basin-level total maximum daily load goals and advancements in reconnecting rivers and floodplains, thereby improving resiliency to climate change and changing weather patterns.

The application, still under development, is available here: https://ffi.stone-env.net/home.