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Improve Agricultural Practices through Waterflow Modeling & Visualization

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Improve Agricultural Practices through Waterflow Modeling & Visualization

Client: Cedar Valley Innovations (CVI), Waterloo, IA

Problem Statement

- Current farming tools do not provide an easy solution for waterflow modeling; therefore, farmers are not aware of what happens in their fields after rainfall events.

Benefit to Client

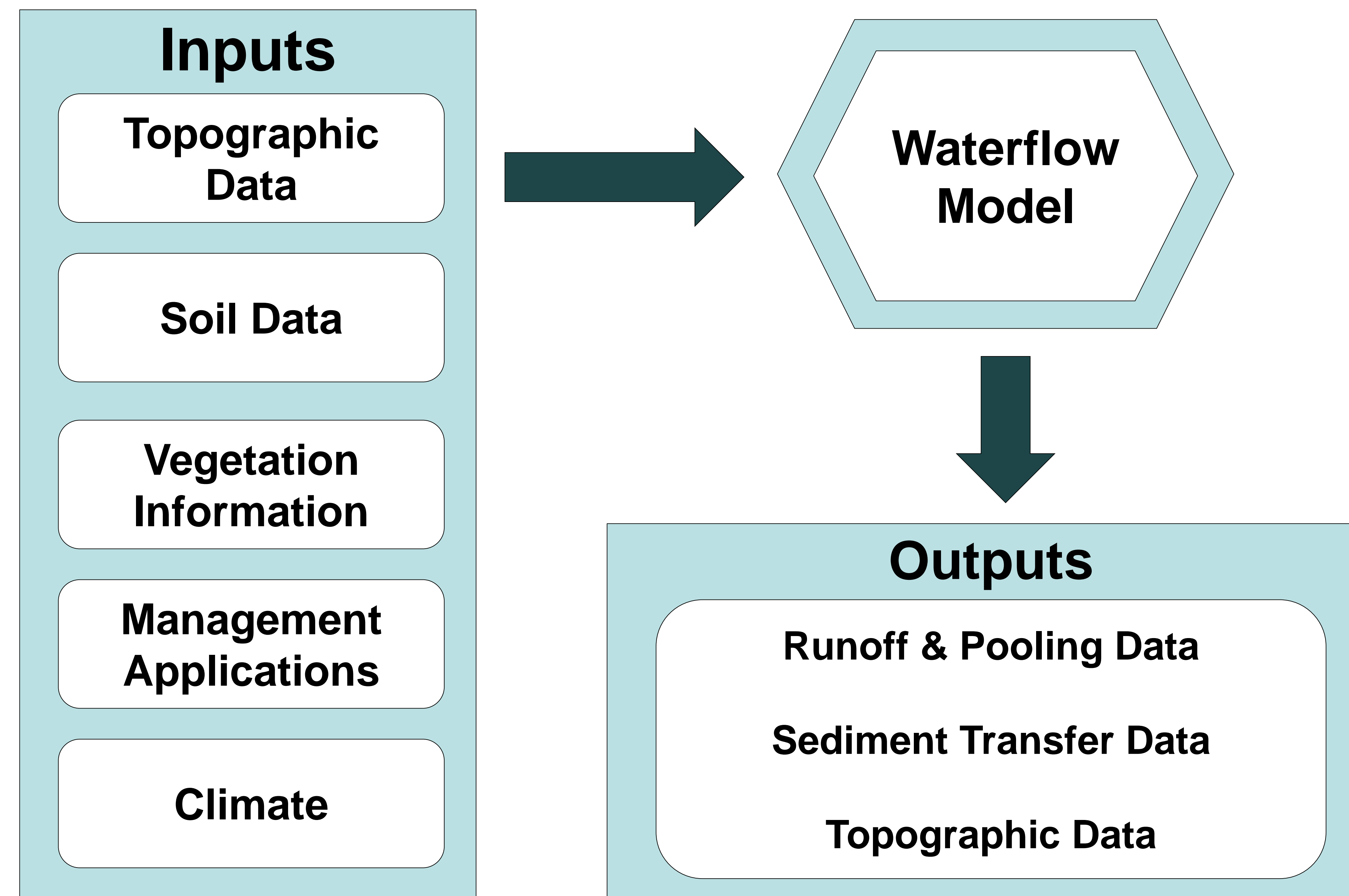
- Used to improve the effectiveness of water management practices and decrease soil erosion through an accurate waterflow modeling software.

Criteria

- Support Farmer's Triple Bottom Line:
 - Sustainable Income
 - Leave the soil in better condition for the future
 - Feed the World
- Visually demonstrate the impact of agronomic practices
- Personalize to a Grower's Field

Constraints

- Google Earth as well as other publicly available information must be used to build the models so that no private data is needed to run the program.



Objectives

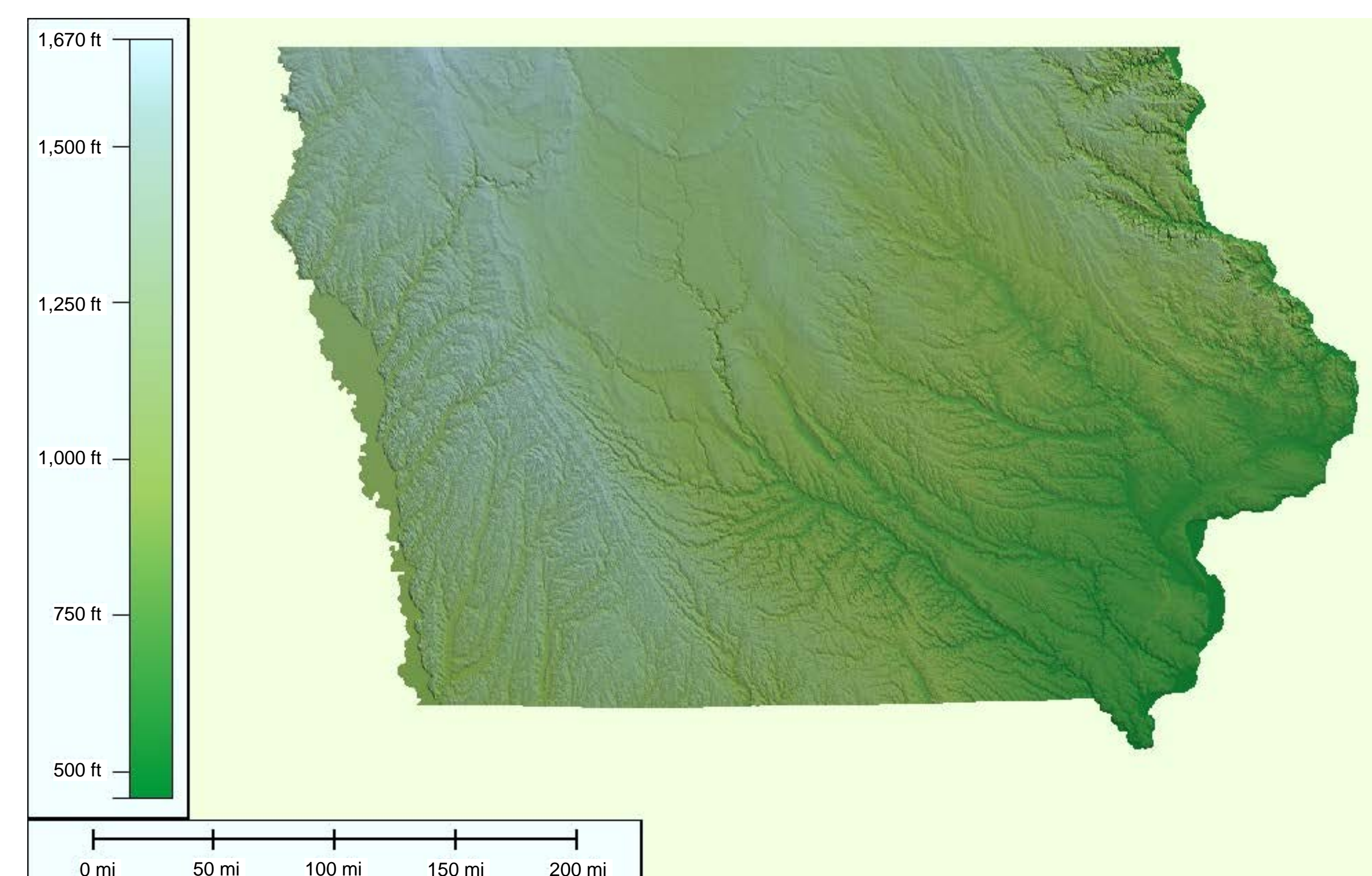
- Create a list of parameters used in landscape waterflow modeling
- Find source of site-specific data for each modeling parameter
- Recommend a software for model visualization
- Demonstrate model function on specific real world landscapes

Scope

- The main area of our scope is to find public domains that provide us with the information necessary to the equations used for waterflow modeling.
- We do not need a fully functioning software by the end of the project. This task can be handed off to a following capstone project to finish.

Proposed Solutions

- Gather and utilize data from public domains to create a software on SimTable that models waterflow (and the erosion created by the waterflow) through a farmer's fields.



Iowa Topographic Map