

GIS TECHNOLOGY HELPS COASTAL COMMUNITIES PREPARE FOR DISASTER

This project seeks to provide decision-making support to emergency managers in coastal Oregon cities that are vulnerable to tsunami and earthquake hazards in order to enable a speedy recovery after such disasters.

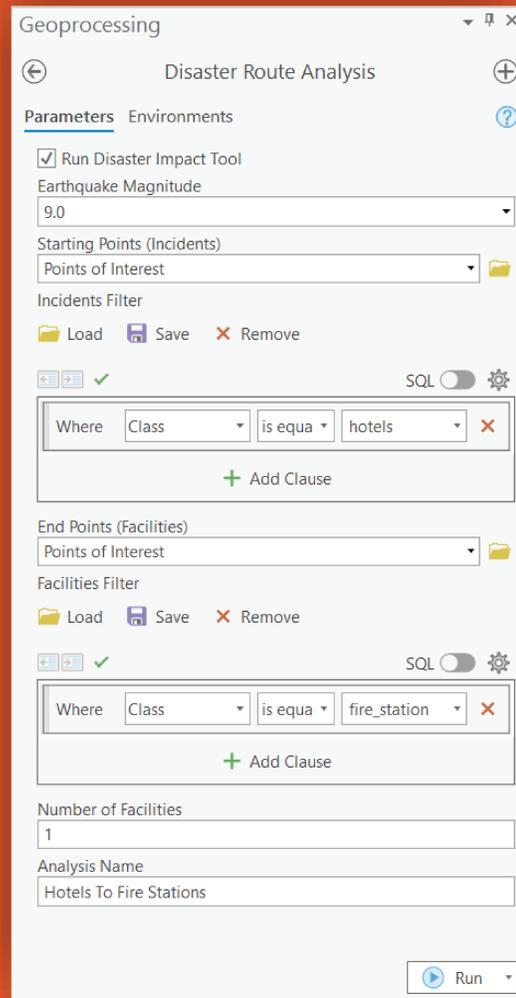


Fig 1. The Disaster Route Analysis tool which finds optimal routes between two different sets of points while avoiding damaged bridges.

GEOSPATIAL ANALYSIS FOR DISASTER EVACUATION PLANNING

Using ArcGIS and Python to Help Save the Coast

COLLECTING ASSET DATA FOR COASTAL REGIONS

Geographic Information Systems (GIS) create, manage, analyze, and map all types of data.

In this project, our data consists of assets like roads, bridges, hospitals, fire stations, and more.

These assets are represented as points and shapes on the map, each with their own unique symbol and attributes as shown in **Fig. 2**.

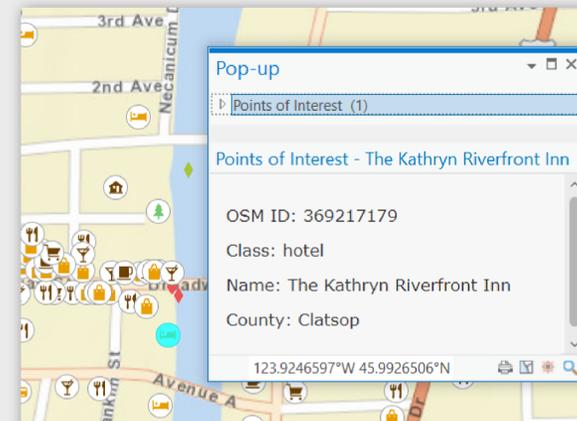


Fig 2. Different assets shown on the map with the Kathryn Riverfront Inn in Seaside, OR selected.

FINDING THE BEST ROUTES THAT AVOID DAMAGE

To aid the effort in disaster planning on the Coast, we can calculate what type of damage certain infrastructures will receive after an earthquake of a specific magnitude.

Then, we can calculate optimal routes from one point to another that either goes to or avoids these damaged infrastructures.

Our Disaster Route Analysis tool (**Fig. 1**) calculates the type of damage bridges on the coast will receive (shown in **Fig. 3**). Next, it calculates optimal routes from one set of points to another while avoiding the most damaged bridges (shown in **Fig. 4**).

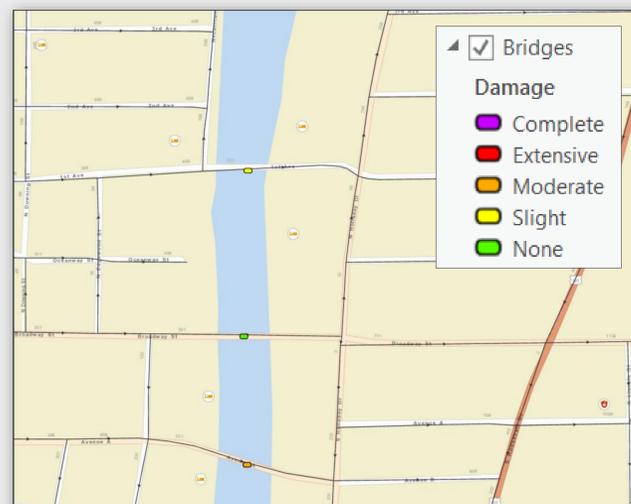


Fig 3. Map showing hotels, bridges, and a fire station in Seaside, OR. The bridges are color coded to show their respective damages state after an earthquake magnitude of 9.0.

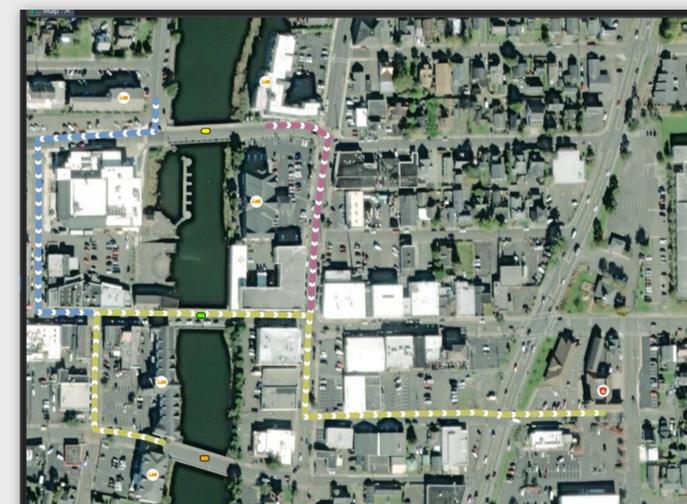


Fig 4. The routes shown after running the Disaster Route Analysis tool. Bridges with a damage state of "Slight" and higher are avoided. The base map is also changed to a satellite view.

ABOUT OUR TEAM

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