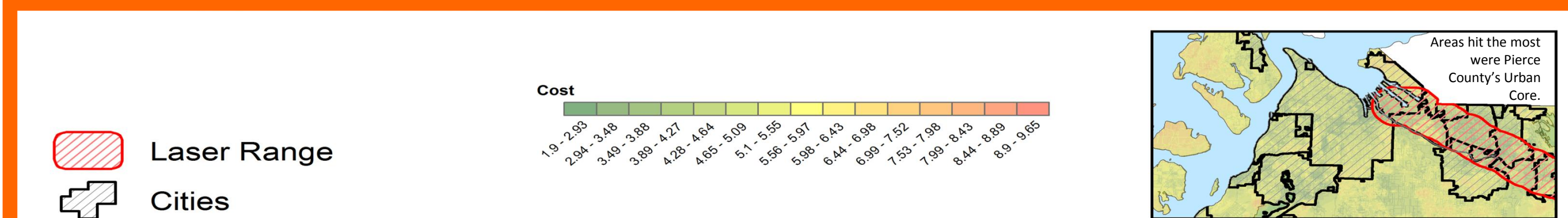
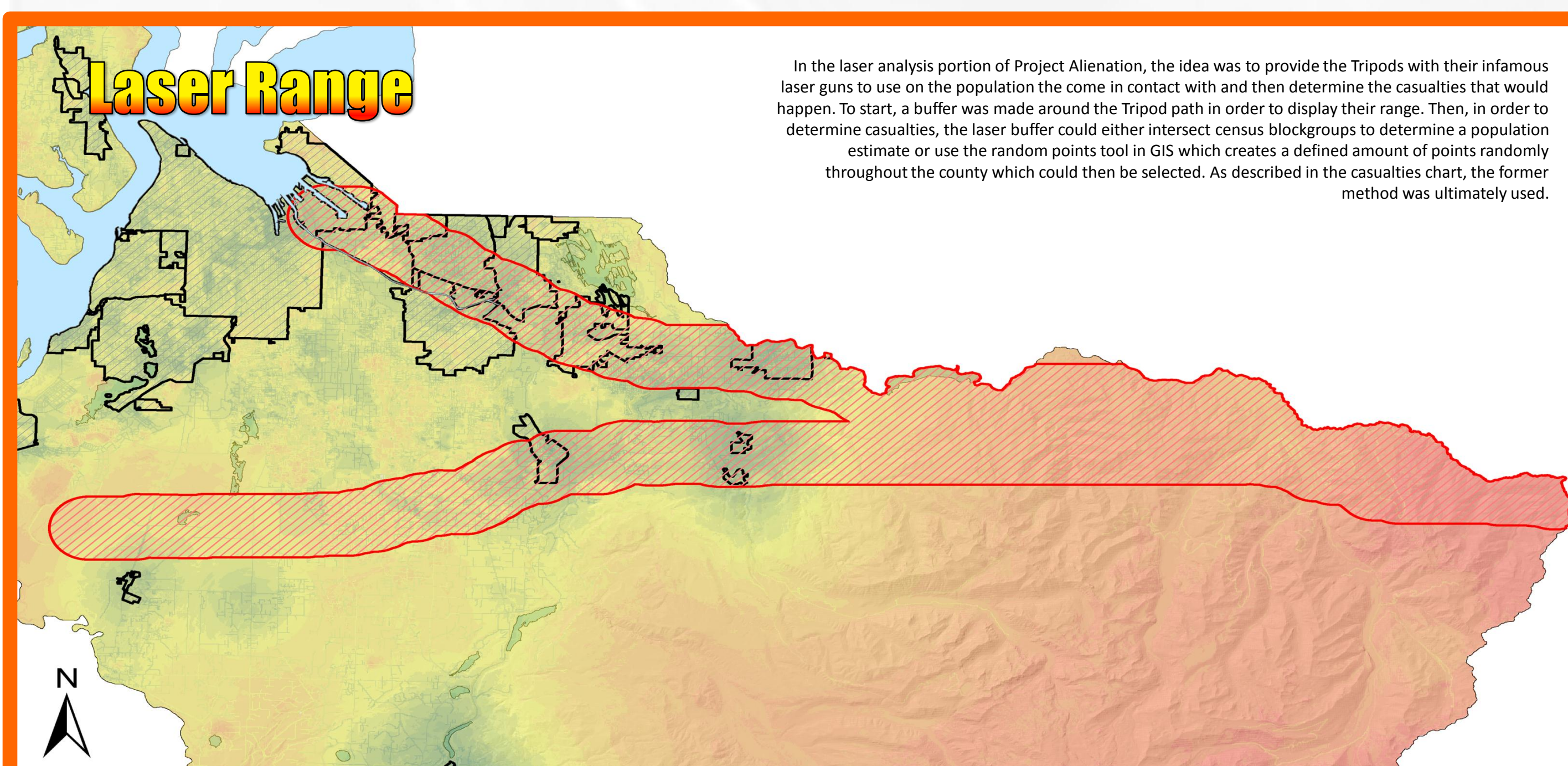


H.G. WELLS' THE WAR OF THE WORLDS

PROJECT ALIENATION

Project Alienation is a GIS project based on the classic by H.G. Wells, The War of the Worlds. There are two basic purposes of this project, firstly to determine where a theoretical Tripod invasion would take place in Pierce County, and secondly to see if GIS is a realistic tool for military planning in terms of invasion strategy and defense.



Objectives

In theory, if an alien invasion of the caliber read about in *War of the Worlds* were to take place in reality, not only would we likely have no real chance to be saved by some last ditch effort by our Tom Cruise American action hero, there would also honestly be no real need for a geospatial analysis to be done. E.T. shows up with a bad attitude, zaps us, game over. However, while a real alien invasion army may have no legitimate limits, human forces absolutely do have limitations, objectives and desired outcomes that must be planned for accordingly. This project uses H.G. Wells' Tripod limitations with the objective of answering the following questions:

- If Wells' War of the World's were to take place in Pierce County, what would the invasion look like in action?
- Can GIS be used for military planning in invasion strategy, if so, should it be used?

Methodology

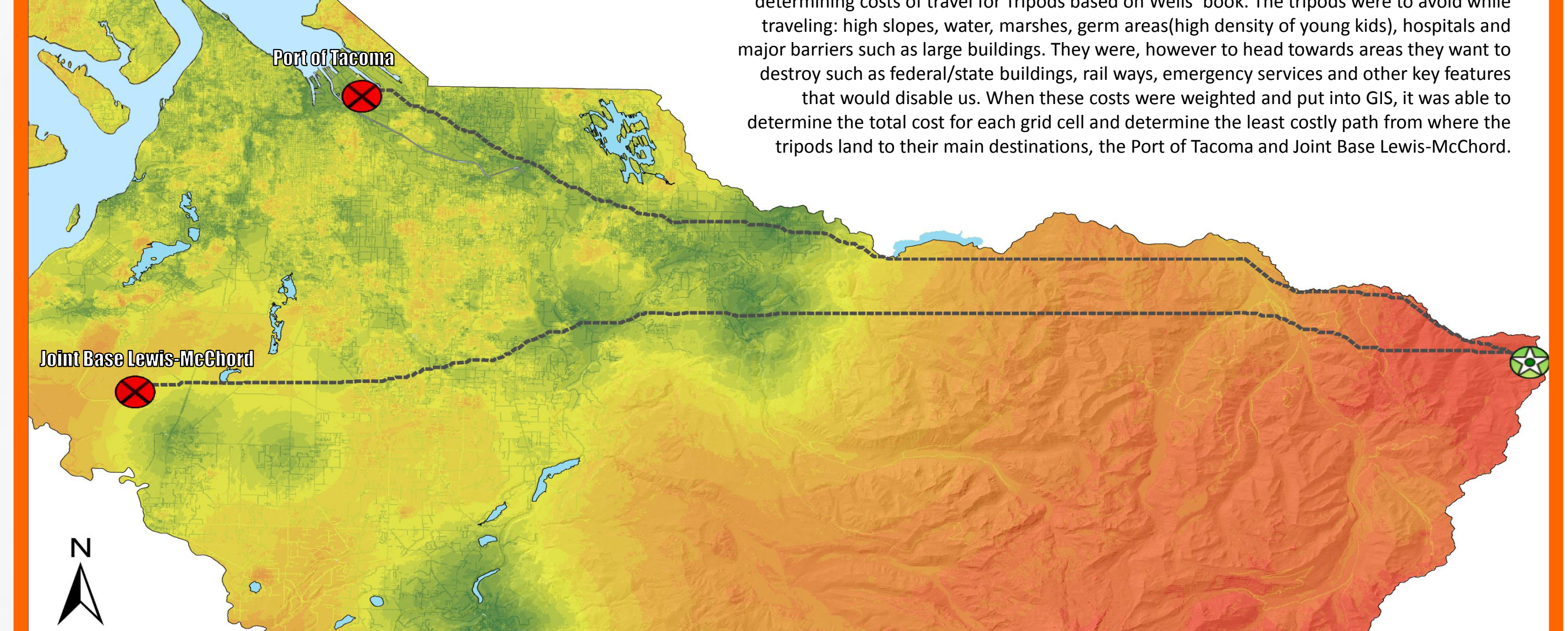
In a GIS, especially ArcGIS, there are always many ways to do the same or similar analysis and the methods heavily depend on the data involved and the outcome desired. For PA, the invasion was to be determined via the cost distance and cost path tools. The cost path tool operates a least cost path analysis which determines a path from the user's start point to the user's destination point(s) in a manner that is the least costly for the object to travel that path, in this case, the alien tripods. The way this process works is the user must establish different costs that are then calculated into a total cost which is converted via cost distance into what is called a cost grid. This cost grid is based on the cost path's starting point and determines for every cell, the cost it would take for that path to cross each cell.

Results

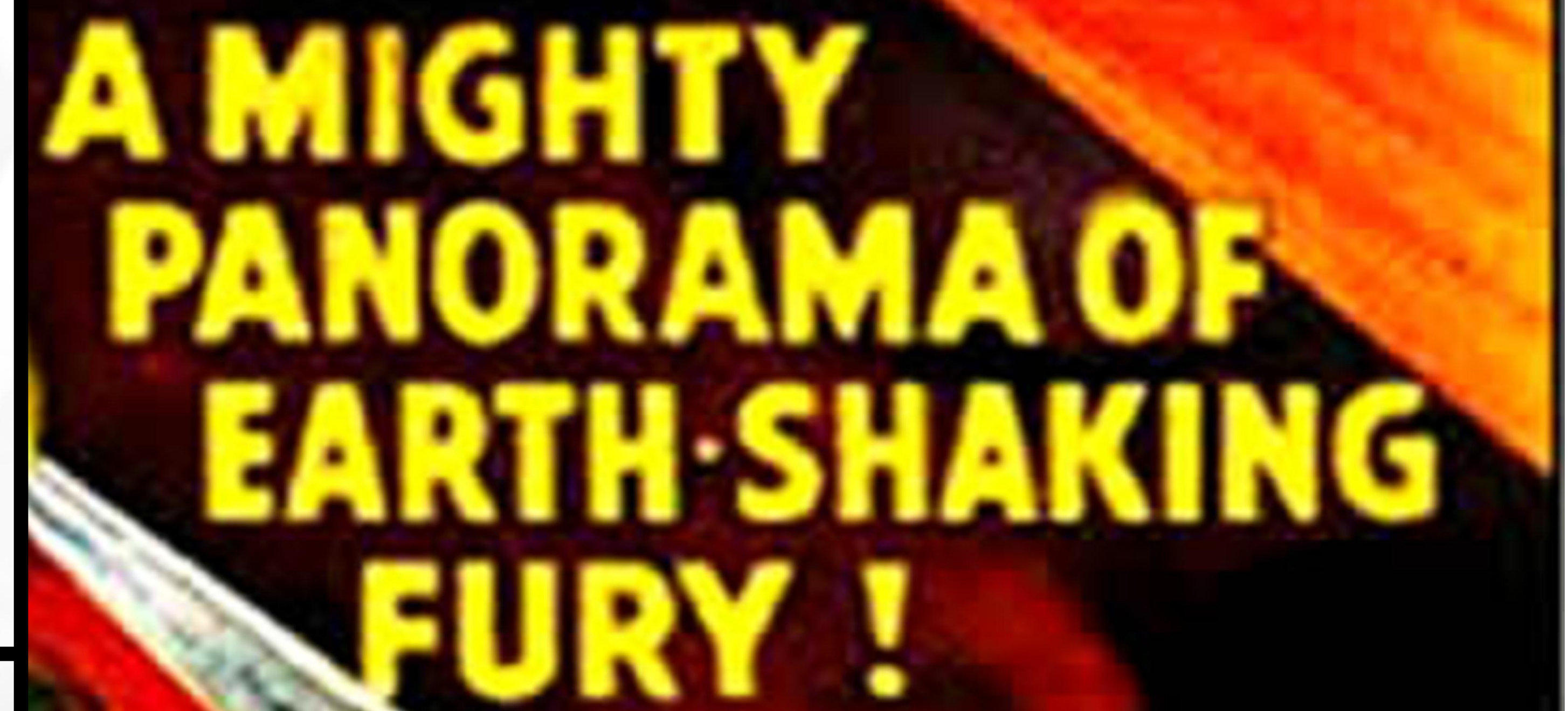
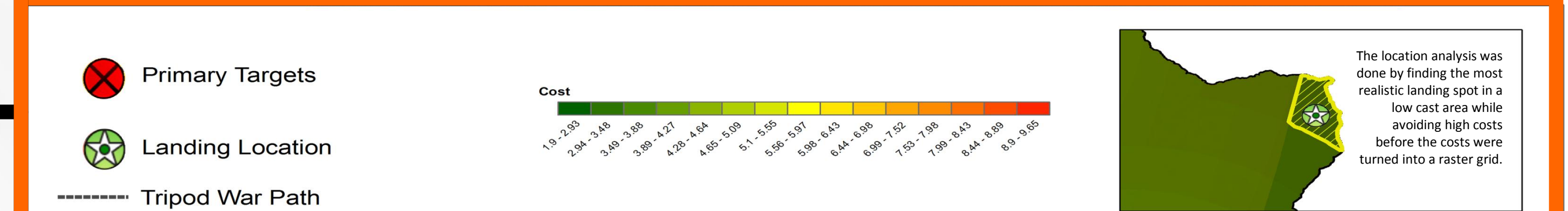
As far as results go, Project Alienation has ended with two major answers to the questions it sought out to answer from the beginning. Firstly, as far as replicating Wells' Tripod invasion in Pierce County, the results are fairly straight forward as shown in the Total Cost, Laser and Casualty maps and are explained there.

In terms of the second research question relating to military planning for invasion strategy, the results are not as straight forward. Pertaining to the question of can the military use GIS for invasion planning via cost distance and the other analyses done, the answer is most definitely yes. There are many aspects that would work well for the military, especially in location analyses and finding efficient routes. However, should they use GIS, as a primary method but as a supplement to their planning. While cost distance analysis works for straight forward research such as bike routes or Tripods, a military operation has too many alternating costs and is not a formulaic procedure. The costs a military operation would come up with would alternate too much for GIS to understand. Example being a slope cost. At some points troops would want to avoid slope for travel, whereas later on they may need slope for either high ground or to stay hidden. GIS does not handle these kind of changes well and requires a person to really determine these outcomes.

Least Cost Path

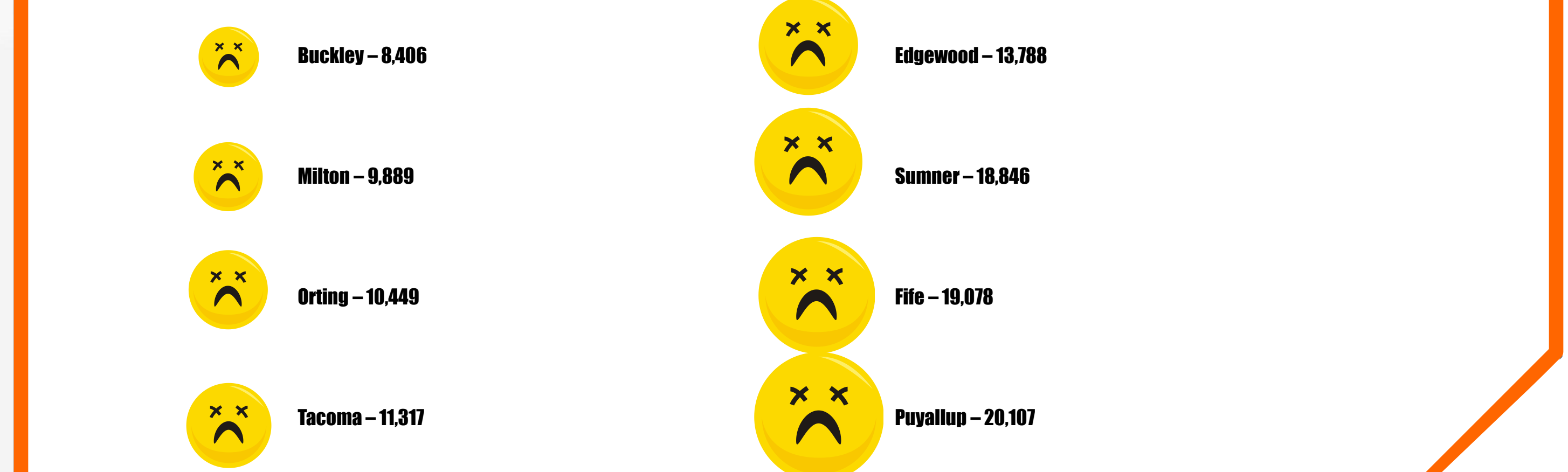


As described in the methodology, this is a least cost path analysis. This map shows the 'total cost raster' before it became a cost grid. The way the least cost was determined was by determining costs of travel for Tripods based on Wells' book. The tripods were to avoid while traveling: high slopes, water, marshes, germ areas (high density of young kids), hospitals and major barriers such as large buildings. They were, however to head towards areas they want to destroy such as federal/state buildings, rail ways, emergency services and other key features that would disable us. When these costs were weighted and put into GIS, it was able to determine the total cost for each grid cell and determine the least costly path from where the tripods land to their main destinations, the Port of Tacoma and Joint Base Lewis-McChord.



Casualties

These are the estimated casualties of the most notable cities hit. The larger the symbol the higher the casualties in that area. While Puyallup had the highest casualty count, small towns like Buckley and Carbonado were completely wiped out, whereas other cities like Tacoma only took minor hits. The way these can be calculated is by intersecting the laser buffer with county blockgroups and then doing simple math to determine the percentage of that blockgroup that was killed. The other method of doing this, random point generation, was in some ways an easier method, but demanded more from the map. It was essentially taking a map already loaded with a lot of data, and then adding one million points, which really slowed and crowded things up. The end total of casualties, just in the most notable cities was about 200,000 which is a big piece of Pierce County's 795,000 people (so about 1 in 4 persons in Pierce County will lose their lives in the tripod invasion). The points that the tripods are interested in taking may avoid some densely populated areas to avoid sick children, but they still hit major urban areas that take out a lot of people. It should be noted that these are not just blockgroups within each city, but also blockgroups near and associated with each city so the casualties will seem greater than population counts.



Citations and Acknowledgements

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