

# GIS Analysis: Hill Top Tree Removal Analysis

John Laughery - University of Washington Tacoma - GIS Certificate Program 2010

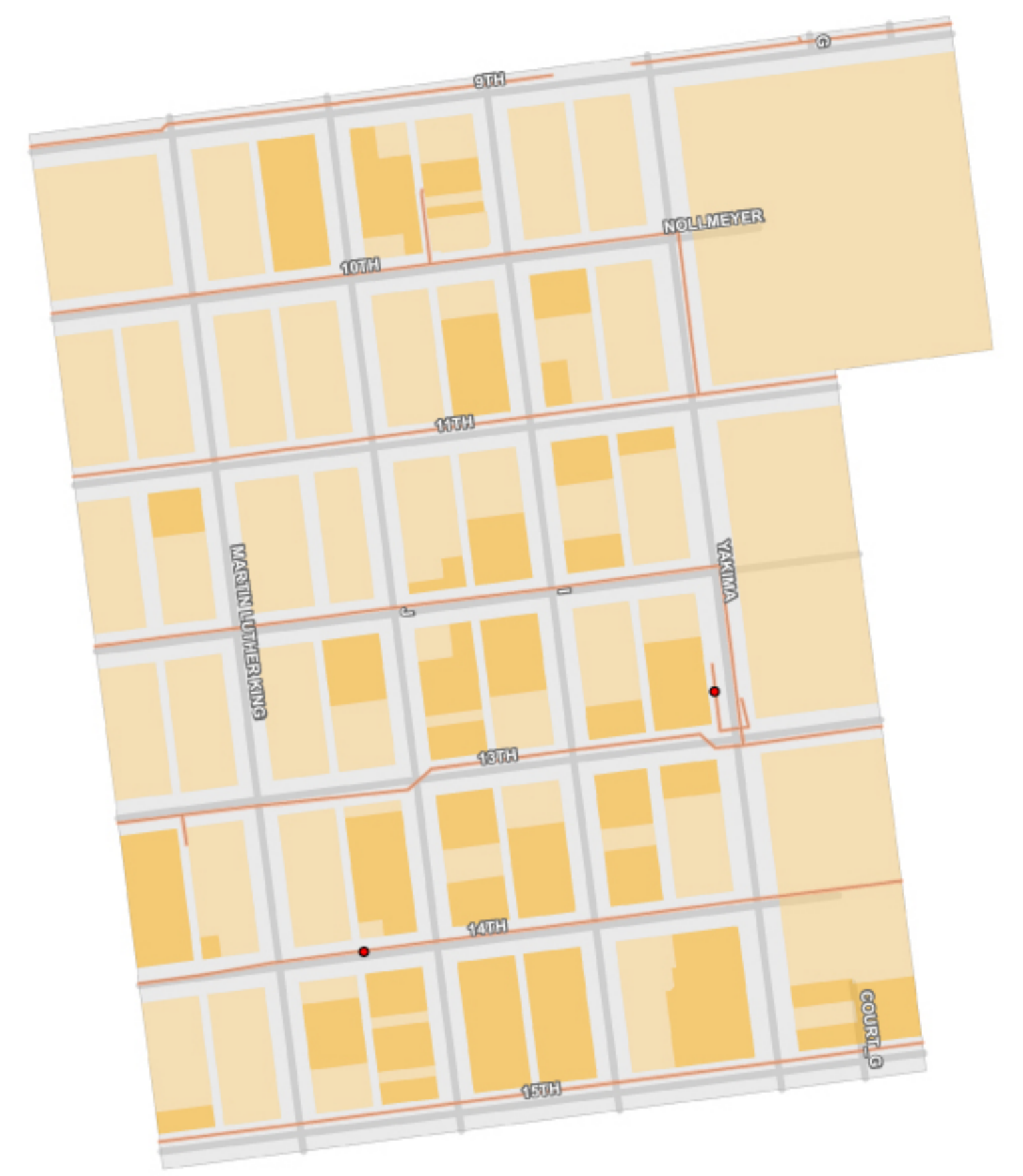
## Trees Conflicting with Electrical Lines



- Trees for removal
- Electrical Lines
- 15ft Buffer

*Purpose: Tacoma is a highly urbanized environment, with a long history entrenched with development and industry. Though the latter has played as a major contributor to Tacoma's success and attraction as a major hub city the natural environment such as local tree coverage has been destroyed and covered with impervious surface. It is in this fact that I aimed to develop a strategy for tree removal and replacement that would decrease financial and public liability, while identifying pockets for potential future tree planting. By eliminating space considered bad planting areas for trees with in the urban environment using current policy, regulation and geographic constraints I will, with hopeful endeavor, be able to display those under utilized pockets where new tree planting might occur. Furthermore, by creating new space as well as identifying usable space for future tree planting it will give new hope for a demographically under served geographic location.*

## Trees Conflicting with Storm Drains



- Trees for removal
- Storm Drains
- 5ft Buffer

## Aggregate Tree Removal Ranking

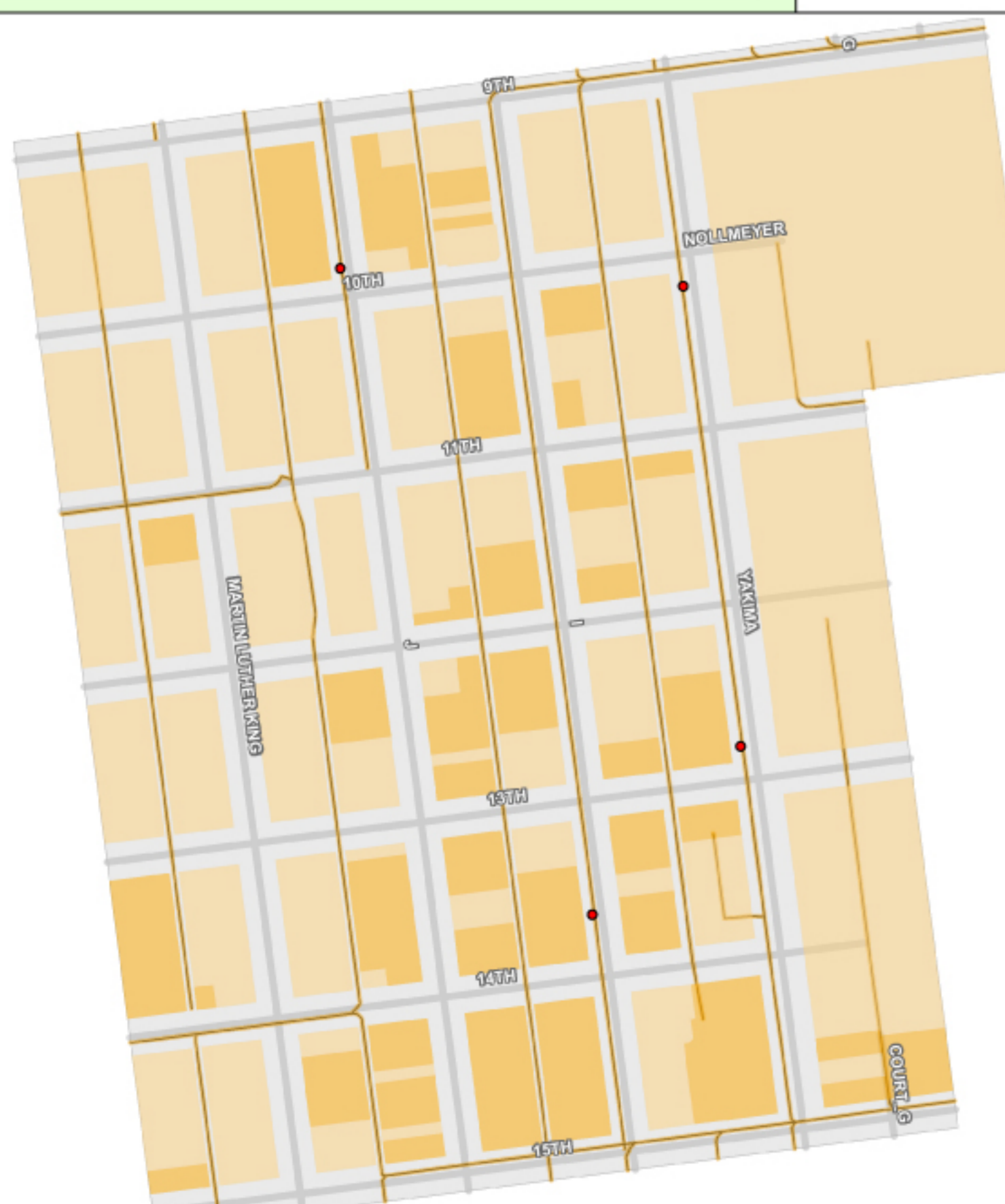


- Aggregate Tree Removal**
- 1 - Least Critical
  - 2
  - 3 - Moderately Critical
  - 4
  - 5 - Most Critical
  - Water Lines
  - Storm Drains
  - Sewer Lines
  - Electrical Lines

*Results: Through my analysis of the Hill Top neighborhood I was able to collect 176 trees that otherwise did not exist. Secondly, I created a landscape of trees that could be deemed for removal because of their inconsistency with City Policy, Regulation and Liability factors. The total of trees considered for removal is 94 of the 176 that were collected. Of those 94 trees deemed for removal (based off of the Aggregate removal total) I found that 2 are of the highest critical removal priority, 5 were of moderately to high critical removal priority, 23 were of moderate removal priority, 27 were of moderate to low removal priority and 37 were of low critical removal priority. Furthermore, I was able to display pockets where future tree planting could occur based partly on the elimination of space as well as visual interpretation.*

*Objective: To develop a risk and removal strategy for trees in the Hill Top Neighborhood in order to identify open pockets for potential future tree planting. Additionally, develop a geospatially accurate and visually engaging map to inform policy and decision making. My goals are to identify city owned trees through the interpretation of current institutional knowledge, collect those tree points and update those associated attributes in order to create a map of risk, removal and replacement strategy. Mapping this information will allow me to propose new planting strategies, which will have the ability to "reduce urban traffic speeds, create safer walking environments, increase security, improve businesses and cut down on environmental degradation" (Urban Designer, 2008).*

## Trees Conflicting with Sewer Lines



- Trees for removal
- Sewer Lines
- 5ft Buffer

*Methods: Collect tree data in Hill Top Neighborhood with Trimble GPS unit \* Export data through Pathfinder Office and convert to Shp. files for ArcGIS use \* Acquire Public Utilities data, identify relevant attributes, and convert CAD files to Shp. files \* Create buffer around each utility dependant upon its given setback regulation \* intersect any trees within buffer to identify "good" and "bad" trees \* Calculate aggregate total of bad trees (1's) based on a ranking system \* Symbolize attributes and maps accordingly.*

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*Sources: Burden, Dan, and Urban Designer. "Benefits of Urban Street Trees." Walkable Communities (Nov. 2008): 6. PDF File. (Urban Designer-, 2008). \* City of Tacoma. "Right Tree, Right Place." City of Tacoma.org. Urban Forestry Program - Public Works, 2010. Web. 1 June 2010 <http://www.cityoftacoma.org/page.aspx?hid=12329>. (City- of Tacoma, 2010). \* The Urban Forest Project. "Planting a Forest of Creativity." City of San Francisco - 2010 web. 31 May. <http://www.ufp-sf.com/index.php/about-2>. (UPF, 2010). \* Henrik, Vefre (2009) Demonstrating the importance of intangible ecosystem services from peri-urban landscape (Vejre, 2009)*

## Trees Conflicting with Water Lines



- Trees for removal
- Water Lines
- 5ft Buffer