An Analysis of Transport Routes from the Portland Harbor Superfund Site: Getting the Muck out of Portland!

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Methodology

Data was acquired through Portland State's research shared GIS-data:

- PortlandRLIS archives for 2010 census data and Tax-lots
- PortlandRLIS for current Boundary, and Water data
- City Portland Freight Districts TSP Classifications.

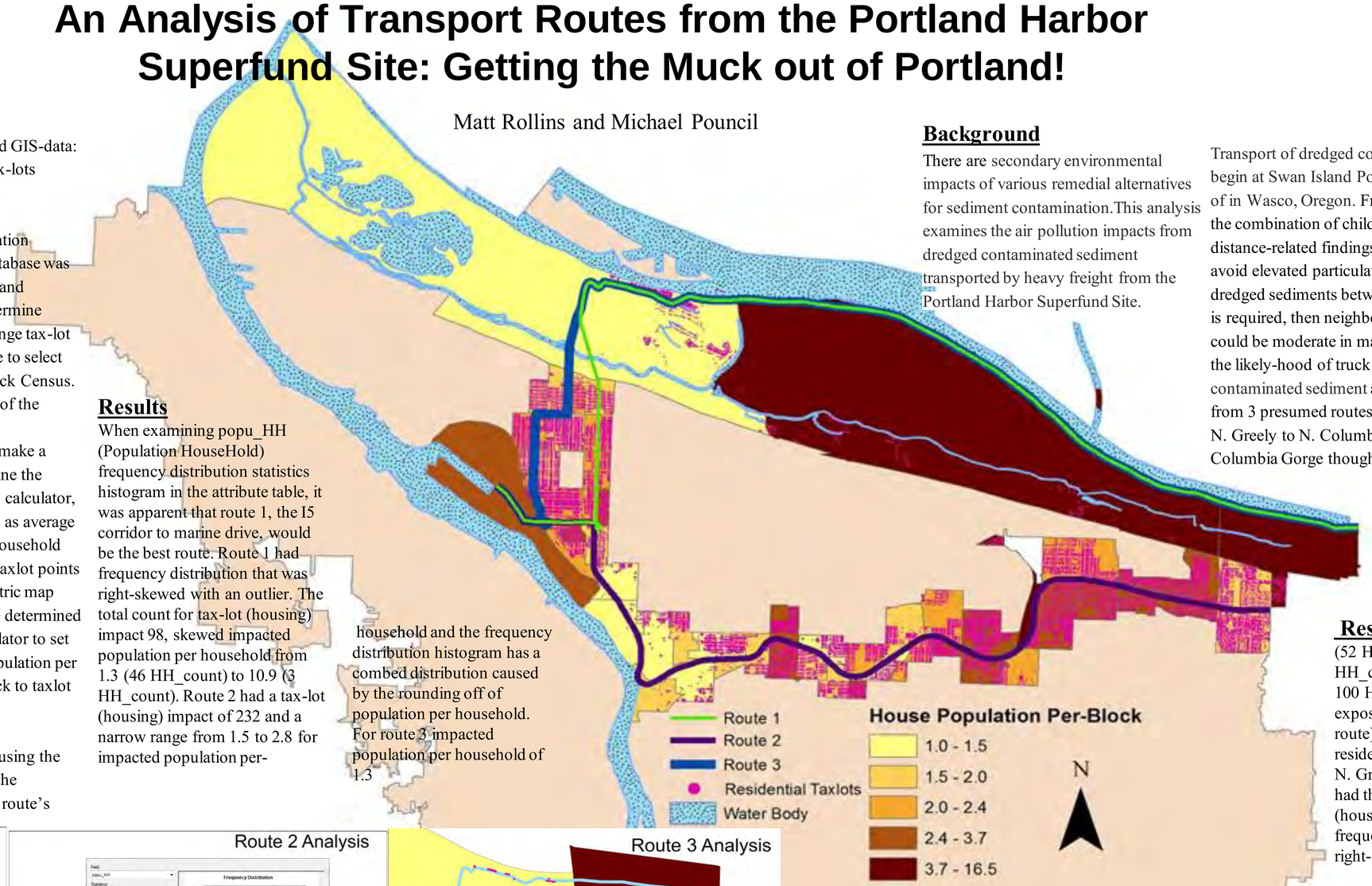
Routes were determined by TSP Classification (Transportation Service Provider). Clipping tool from ArcMap 10.3 geodatabase was used for isolate data from Blocks Census data for the Portland boundary. Clipping tool was used again for tax-lots to determine boundary and the toolbox conversion tool was used to change tax-lot polygons to centroid points. The select by location was use to select features from target layers of tax-lot from source layer Block Census. The clipping tool and select by location was used for each of the routes.

We wanted to ascertain how population was impacted, by make a dasymetric map using census block layer. First we determine the number of household units per taxlot point. Using the field calculator, we set SFR=1 and MFR=BLDGSQFT/600. We chose 600 as average square footage per SFR. Next we counted the number of household units per block. We used Join by Special Location to join taxlot points to census block (sum). The output shapefile was a dasymetric map which shows the household population per block. Next we determined the population per household unit. We used the field calculator to set popu_HH=popu10/sum_HH_unit. Lastly, we assigned population per household unit to taxlot points. We did this by joining block to taxlot point. We used the field calculator using taxlot_pop10=pop_HH*HH_unit.

We created a 150 ft. buffer around each route for analysis using the Buffer tool. Once we had created our buffers we the used the Statistics function to determine the population within each route's

Results

When examining popu_HH (Population HouseHold) frequency distribution statistics histogram in the attribute table, it was apparent that route 1, the I5 corridor to marine drive, would be the best route. Route 1 had frequency distribution that was right-skewed with an outlier. The total count for tax-lot (housing) impact 98, skewed impacted population per household from 1.3 (46 HH_count) to 10.9 (3 HH_count). Route 2 had a tax-lot (housing) impact of 232 and a narrow range from 1.5 to 2.8 for impacted population per-household and the frequency distribution histogram has a combed distribution caused by the rounding off of population per household. For route 3 impacted population per household of 1.3



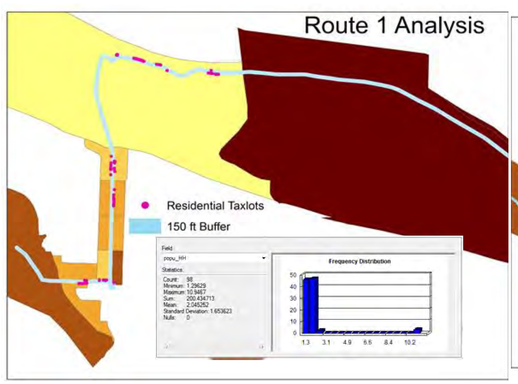
Background

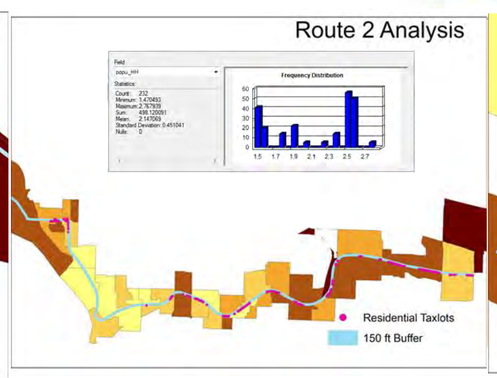
There are secondary environmental impacts of various remedial alternatives for sediment contamination.This analysis examines the air pollution impacts from dredged contaminated sediment transported by heavy freight from the Portland Harbor Superfund Site.

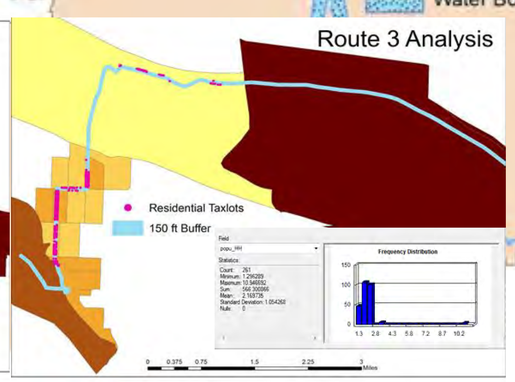
Transport of dredged contaminated sediment routes begin at Swan Island Portland, Oregon and is disposed of in Wasco, Oregon. Freeways and high-traffic roads, the combination of children's health studies and distance-related findings suggest that it is important to avoid elevated particulate pollution. Truck transport of dredged sediments between the river and rail facilities is required, then neighborhood impacts are likely, and could be moderate in magnitude. We are investigating the likely-hood of truck transport of dredged contaminated sediment and dispersion of 150 feet from 3 presumed routes (Interstate 5, Highway 84 and N. Greely to N. Columbia Blvd) that converge to the Columbia Gorge though Portland, Oregon.

Results Cont'd

(52 HH_count) to 10.9 (3 HH_count), and 2.3 to 2.6 had over 100 HH_count for households expos e Route 3 (our termination route), which travels through residential non-freight zoned area, N. Greely to N. Columbia Blvd, had the highest count of tax-lot (housing) impact of 261 and had a frequency distribution that was right-skewed with an outlier.







Acknowledgements

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http://onlinepubs.trb.org/onlinepubs/ncfrp/ncfrp_rpt_016.pdf
Health Impacts Assessment http://deohs.washington.edu/sites/default/files/research/HIA_final_report_10-15-13_low_res.pdf
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