

# Mount Rainier Lahars

## Impact on Pierce County and the Puyallup River Valley



The yellow highlighted region is the Puyallup River Valley which is the area of focus for the analyses. Red represents lahar flows, green denotes Mount Rainier National Park, and urban areas are grey.

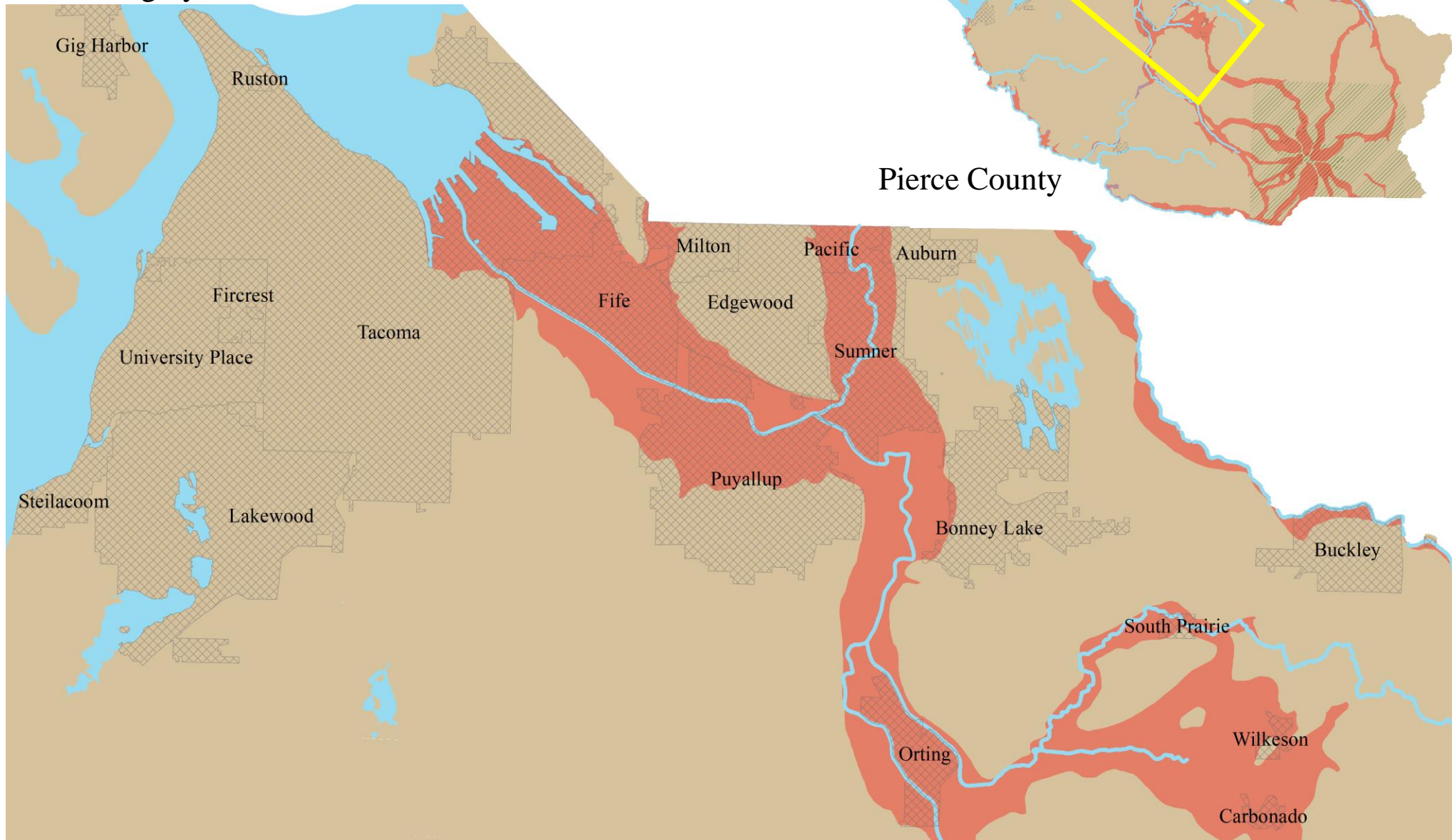


Figure 1: Puyallup River Valley and urban areas of Northwest Pierce County

### Puyallup River Lahar

At 14,410 feet Mount Rainier looms over everyday life in the Seattle-Tacoma region. If Mount Rainier were to erupt, residents would have little to fear from the actual eruption; lahars would be the major threat. Lahars are composed of a slurry of pyroclastic material, rocky debris, and water. Lahars typically flow along a river valley. The largest, predicted, lahar will be the one that flows down the Puyallup River Valley. About 80,000 people are at risk within the Puyallup River Valley along with key infrastructure such as major highways, utilities, economically important businesses, hydroelectric dams, and a major seaport. While an eruption event would affect a vast majority of Pierce County residents, knowing where at-risk communities are can help relief efforts to be targeted to those that may be disproportionately affected. Past natural disasters have shown that certain populations can be affected far worse and longer than others.

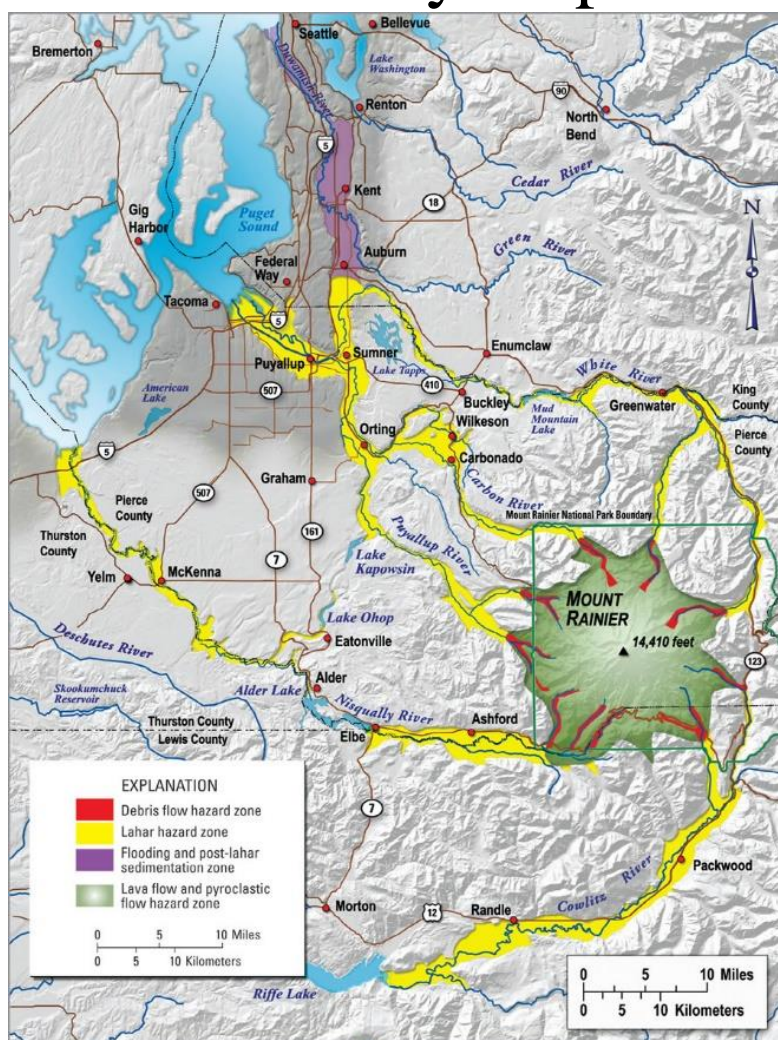


Figure 2: Eruption events (USGS)

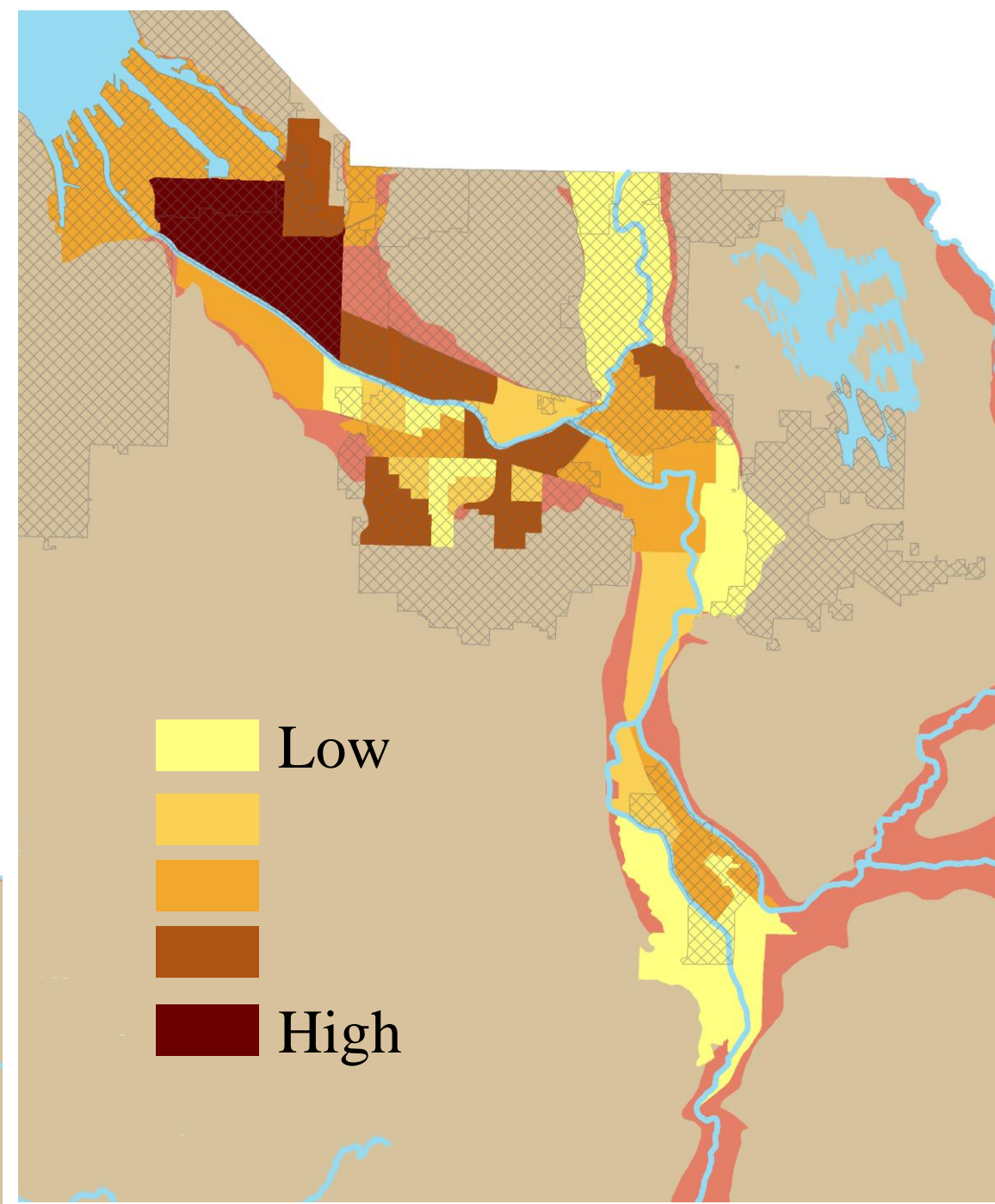


Figure 3: Non-white population

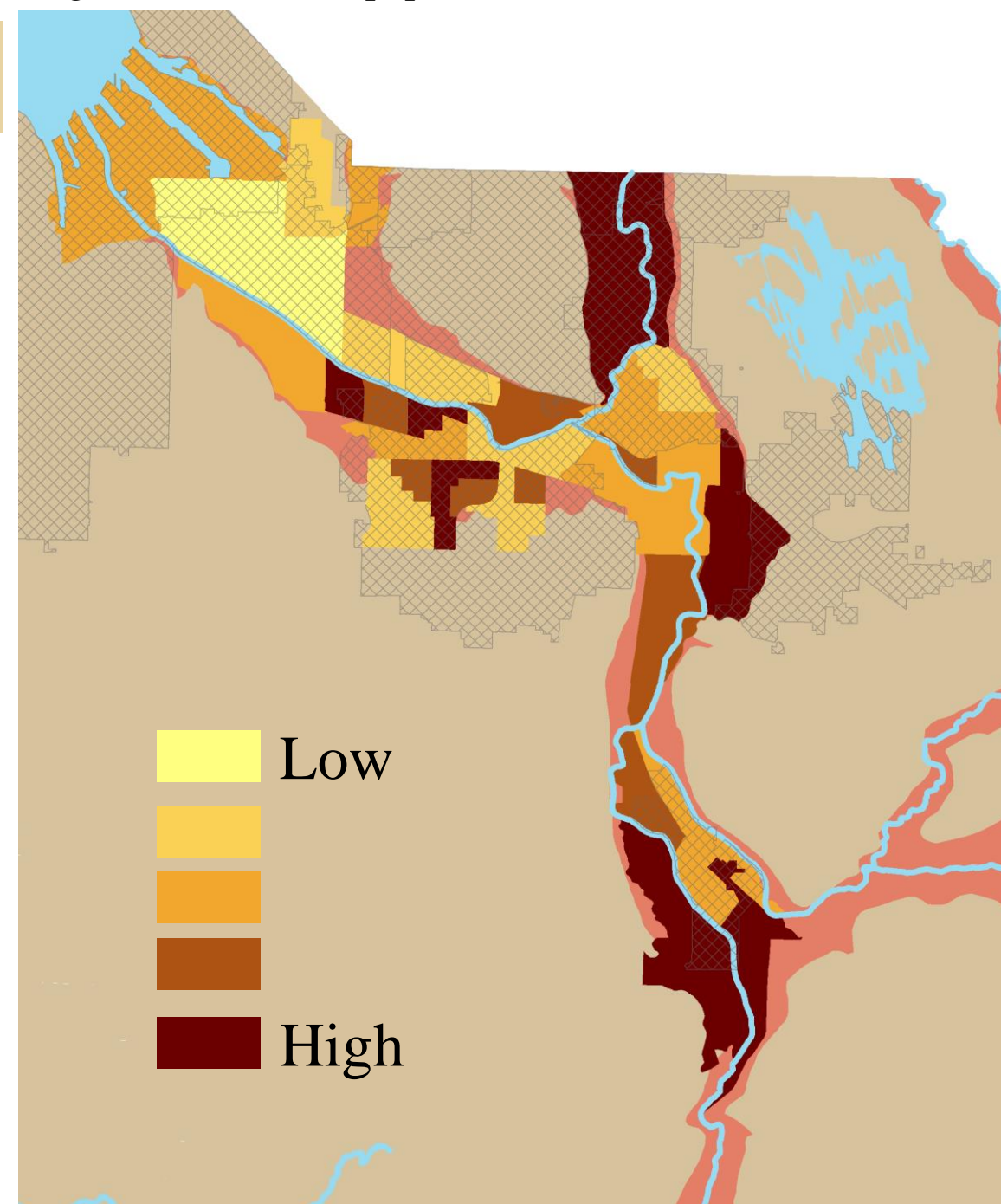


Figure 4: White Population

### Puyallup Valley Demographics

Natural disasters in the US have disproportionately affected citizens of certain demographics, those of certain races and income level. Individuals most at-risk during an eruption event would be minority, low-income renters. US Census data and block groups were used to identify areas within the Puyallup River lahar zone that were high-minority and low-income. Pierce County tax parcel data identified multi-family units. Pierce County has a median income of \$72,000 for a family of four. The low-income levels for a 4-person family are \$24,250 (extremely low), \$35,450 (very low), and \$56,700 (low) which is 30% below \$72,000. Looking at the data, income levels (Figure 5), as a whole, decline as the Puyallup River heads towards Tacoma. The population shifts from heavily white (Figure 4) to higher percentages of non-white (Figures 3) as the river flows towards the urban area around Tacoma.

While minorities, especially those with low incomes, are known to be at a disproportionately higher risk when it comes to the affects and aftermath of natural disasters, renters are often overlooked. Renters are also extremely affected, especially when it comes to the aftermath of an eruption event. Those that rent find it hard during recovery due to a number of factors, such as: lack of insurance, building being destroyed, owner not wanting to rebuild.

### Results

A region within the city of Fife, located between Puyallup and the Port of Tacoma was found to have high concentrations of the three key demographic factors: high-minority, low-income, and clusters of rentals. The region has a non-white population of around 42% and a median income of \$45,676, well below the county's median of \$72,000. The region also exhibits significant clusters of multi-family housing.

Census Demographics of the affected area of Fife		
Block Group	Non-White Population	Median Income
Block Group 3, Census Tract 9400.03	34%	\$37,196
Block Group 2, Census Tract 9400.03	40%	\$54,833
Block Group 2, Census Tract 9400.02	51%	\$45,000

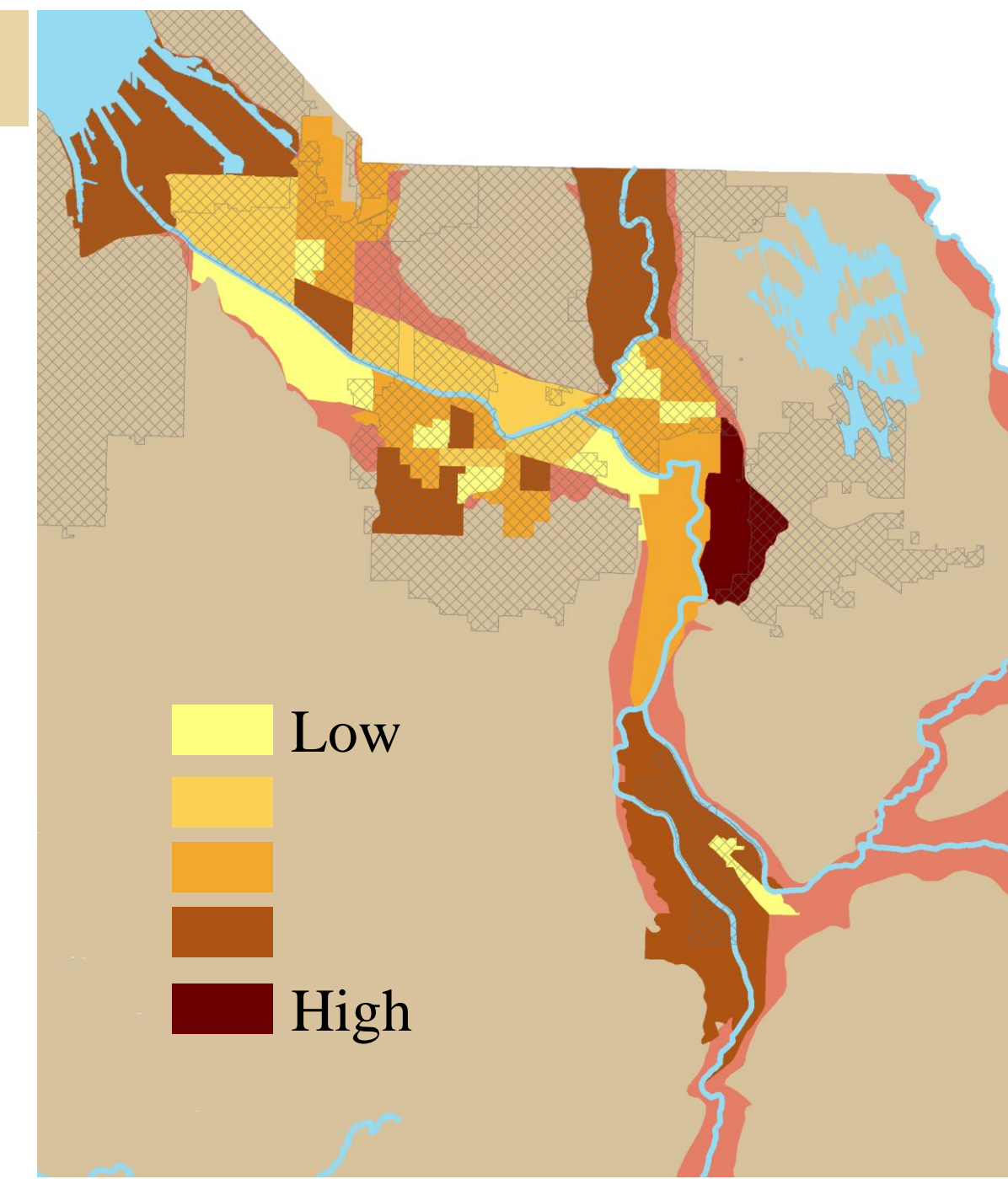


Figure 5: Median Income

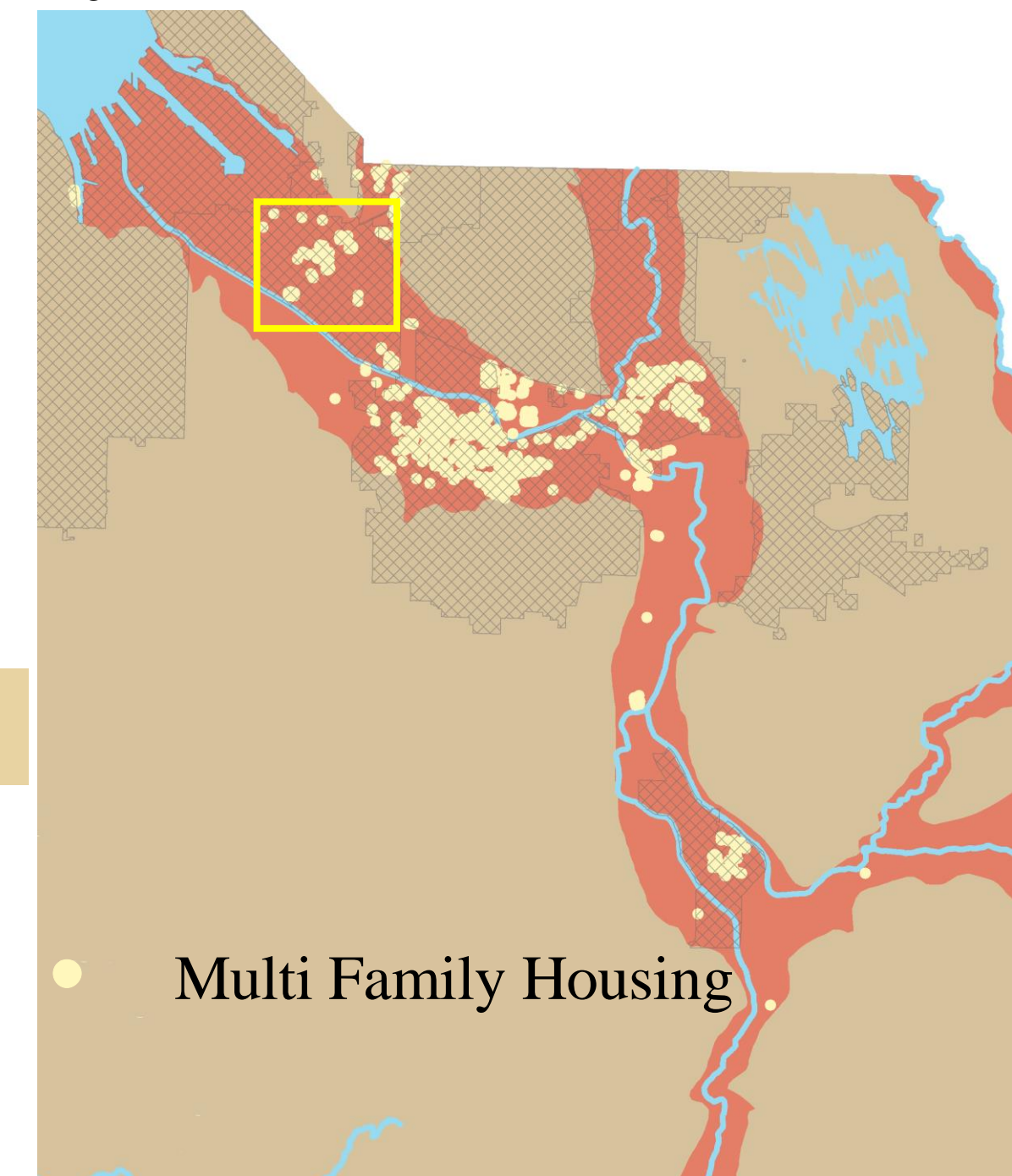


Figure 6: Multi-Family Housing (Yellow box: see Figure 7)

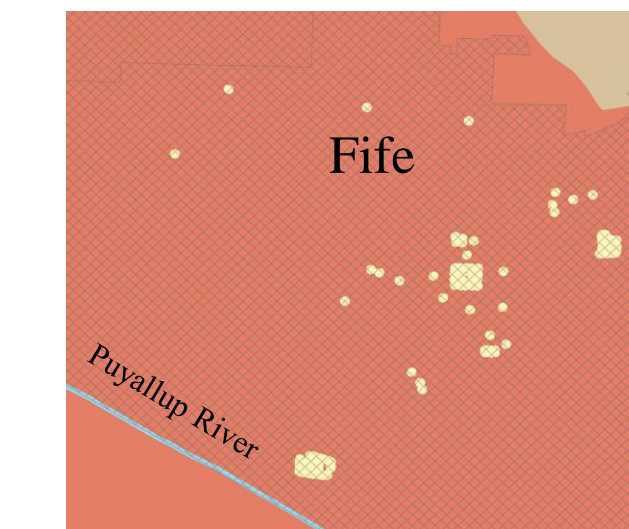


Figure 7: Potential area within Fife at a disproportionate risk from a lahar

#### Credits

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