HAZUS Results for the Skagit Valley

Combination of All Levee Removals

50 Year Analysis

HAZUS Disclaimer

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood. These results can be improved by using enhanced inventory data and flood hazard information.

Figure 1. Depth grid generated from the combination of all levee failure scenarios for a 50 year flood event. This scenario encompasses all possible levee scenarios and although unlikely characterizes all possible levee failures.

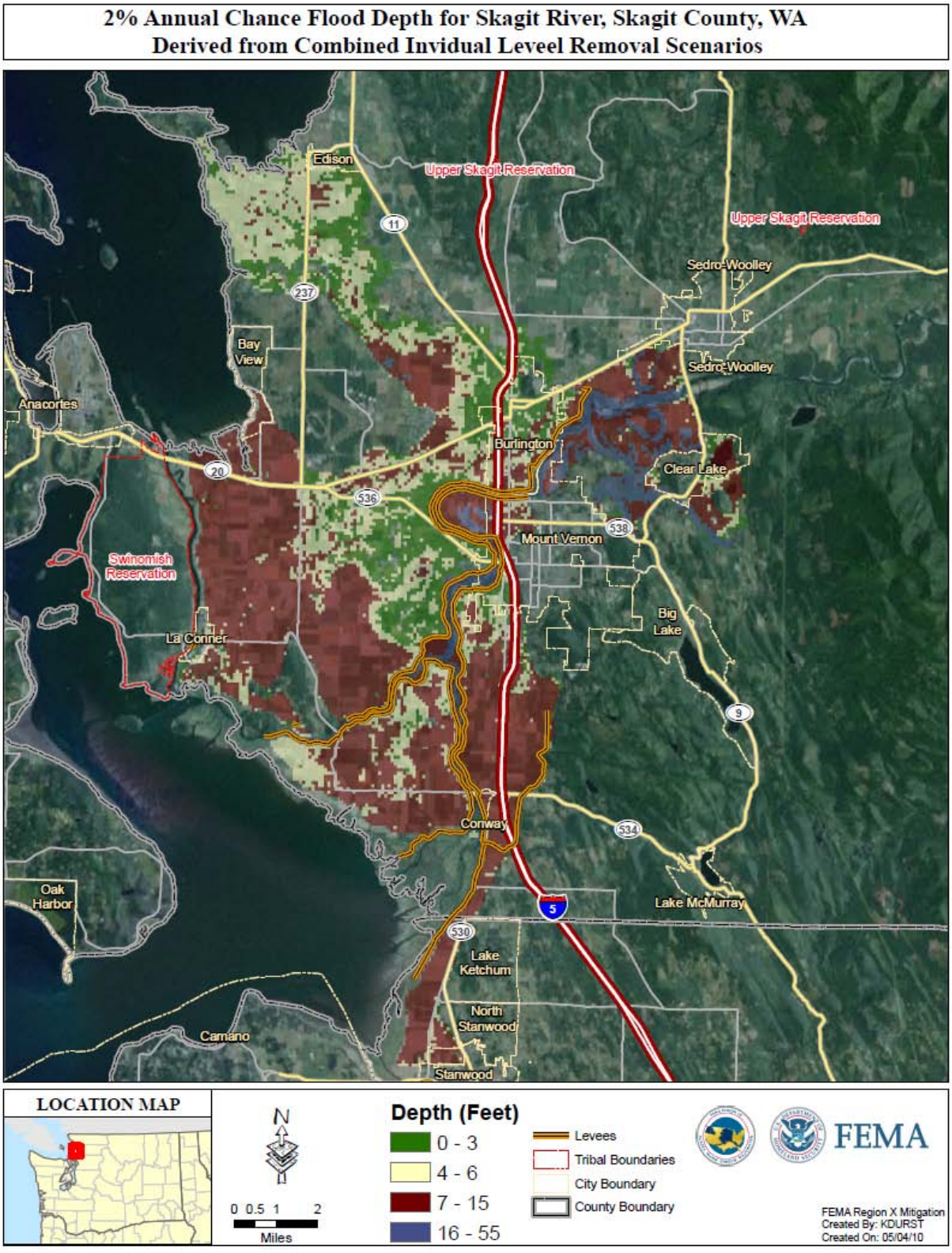

Figure 2. Total Economic Loss for the Skagit Valley. Structural Damage includes building cost, content cost, and inventory cost. Remaining non-structural cost includes business interruption costs, relocation costs etc. Total economic loss is $720 million. Red areas indicate $10-28 million of economic loss for each census block. Census blocks with losses below $100,000 were not shown.

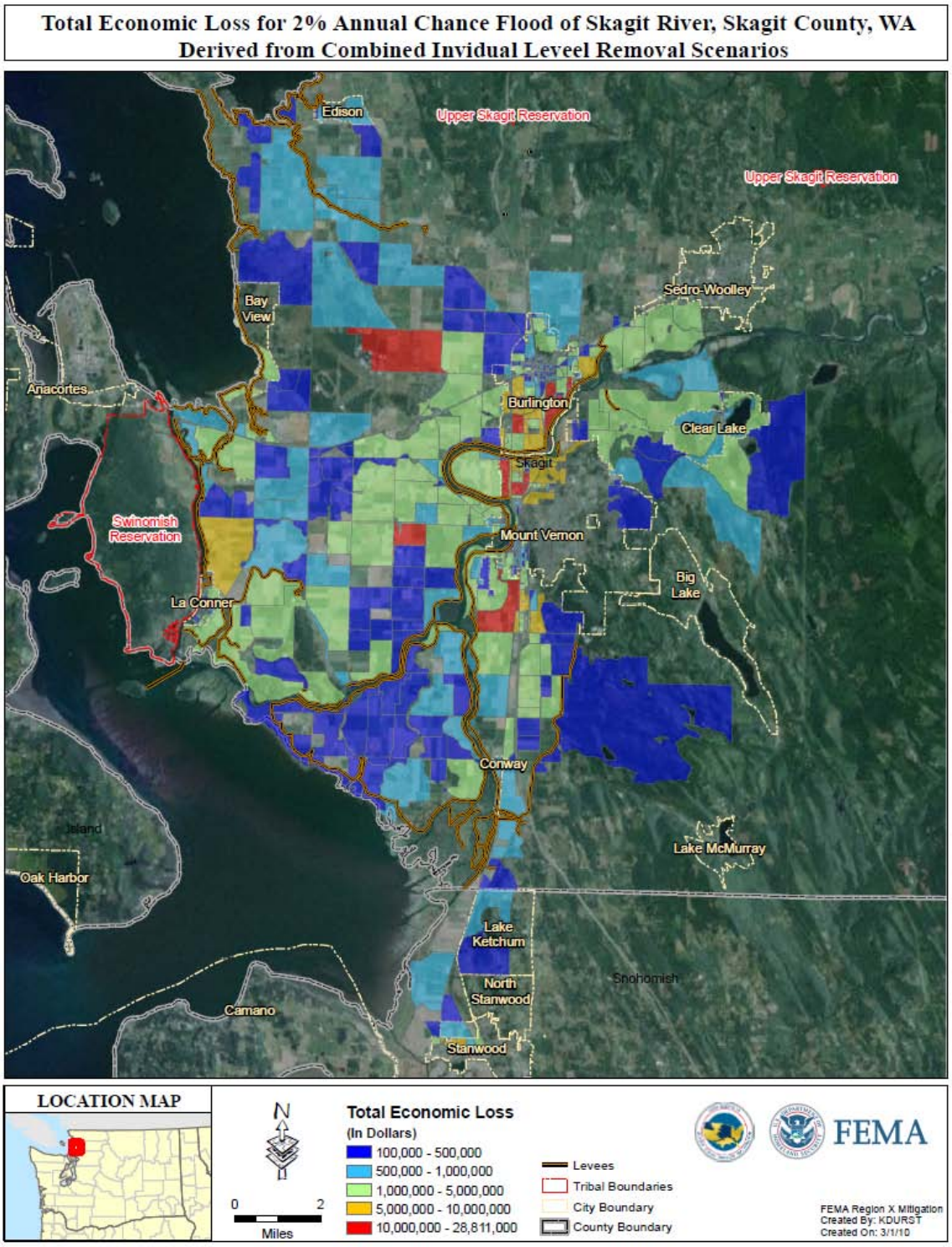

Table 1. Total Economic Loss for Each Building Category, for a 50 Year Flood for the Skagit Valley as shown in Fig. 2.

Loss Category	Residential	Commercial	Industrial	Others	TOTAL
Building Loss					
Building	$158.0M	$78.5M	$20.7M	$17.7M	$275.0M
Content	$104.5M	$206.6M	$45.1M	$58.5M	$414.6M
Inventory	$0	$7.7M	$8.24M	$5.6M	$21.5M
Subtotal	**$262.5M**	**$292.9M**	**$74.0M**	**$81.8M**	**$711.1M**
Business Interruption					
Income	$8K	$1.3M	$10K	$48K	$1.9M
Relocation	$49K	$48K	$10K	$10	$98K
Rental Income	$27K	$33K	$0	$0	$60K
Wage	$20K	$1.5M	$10K	$4.2M	$5.9M
Subtotal	**$1.0K**	**$3.6M**	**$30K**	**$4.7M**	**$9.4M**
TOTAL	**$263.6M**	**$296.4M**	**$74.0M**	**$86.4M**	**$720.5M**

*The above totals are estimates generated from HAZUS. A real event may produce different results than presented here.

Figure 3. Number of residential buildings damaged in the Skagit Valley for a 50 year flood. The results estimate approximately 143 substantially damaged residential buildings and approximately 2,000 residential buildings with at least minor damage.

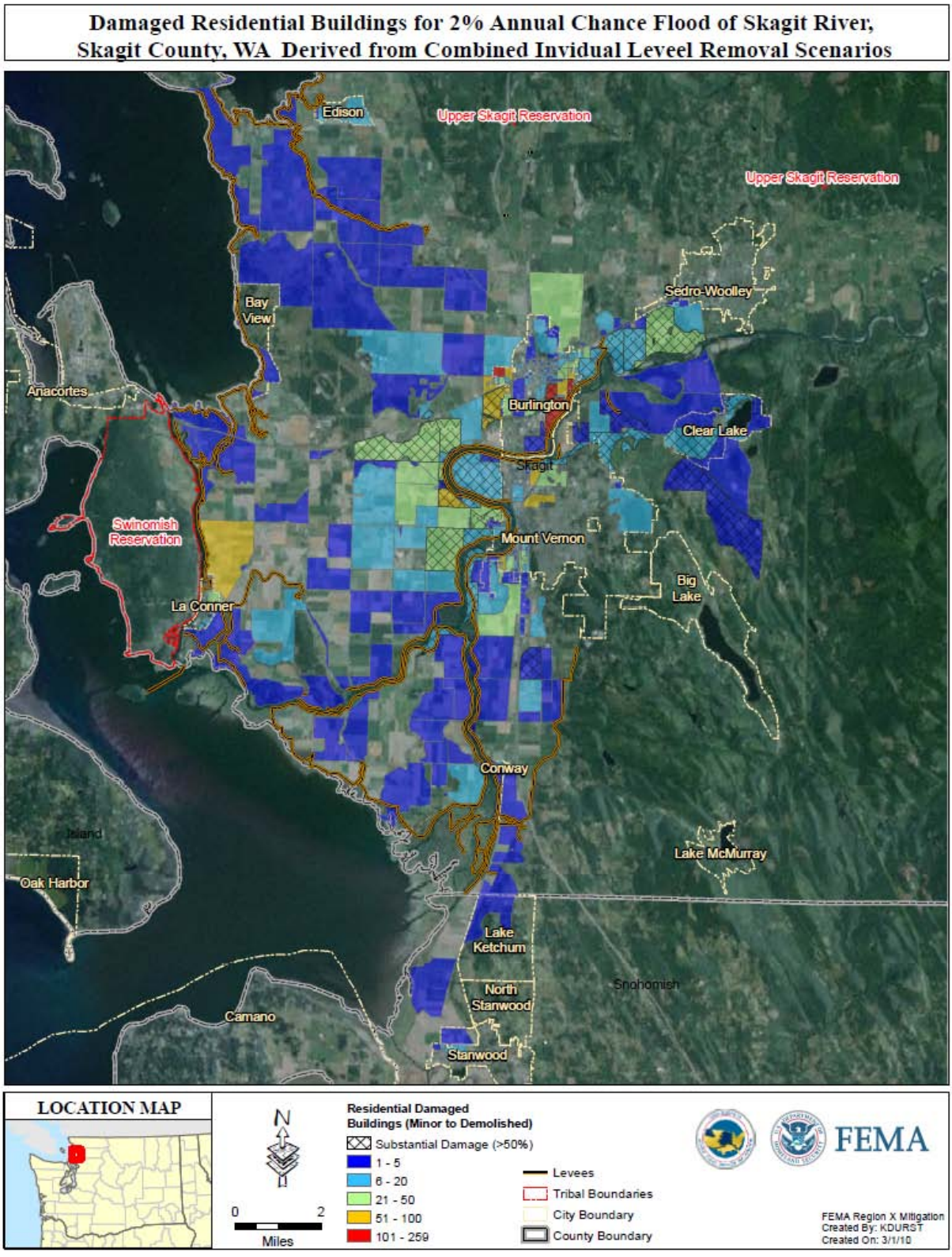

Table 2. Number of Buildings Damaged by Percent of Damage to that Building. Results are for the entire area shown in Figure 3.

Building Type	None	1-10%	11-20%	21-30%	31-40%	41-50%	Substantial	Total
Education	0	0	1	0	0	0	0	1
Government	1	0	1	0	0	0	0	2
Religion	0	0	1	0	0	0	0	1
Agriculture	14	1	5	3	0	0	0	23
Industrial	1	0	0	0	0	0	1	2
Commercial	6	2	16	5	4	3	2	38
Residential	1869	0	137	793	379	515	143	3836
Total	**1891**	**3**	**161**	**801**	**383**	**518**	**146**	**3903**

*The above totals are estimates generated from HAZUS. A real event may produce different results than presented here.

Figure 4. Displaced individuals and short term shelter needs for the Skagit Valley. Census blocks are mapped based on the number of displaced individuals. HAZUS estimated 19,000 individuals would be displaced and of those, 16,000 would need short term shelter.

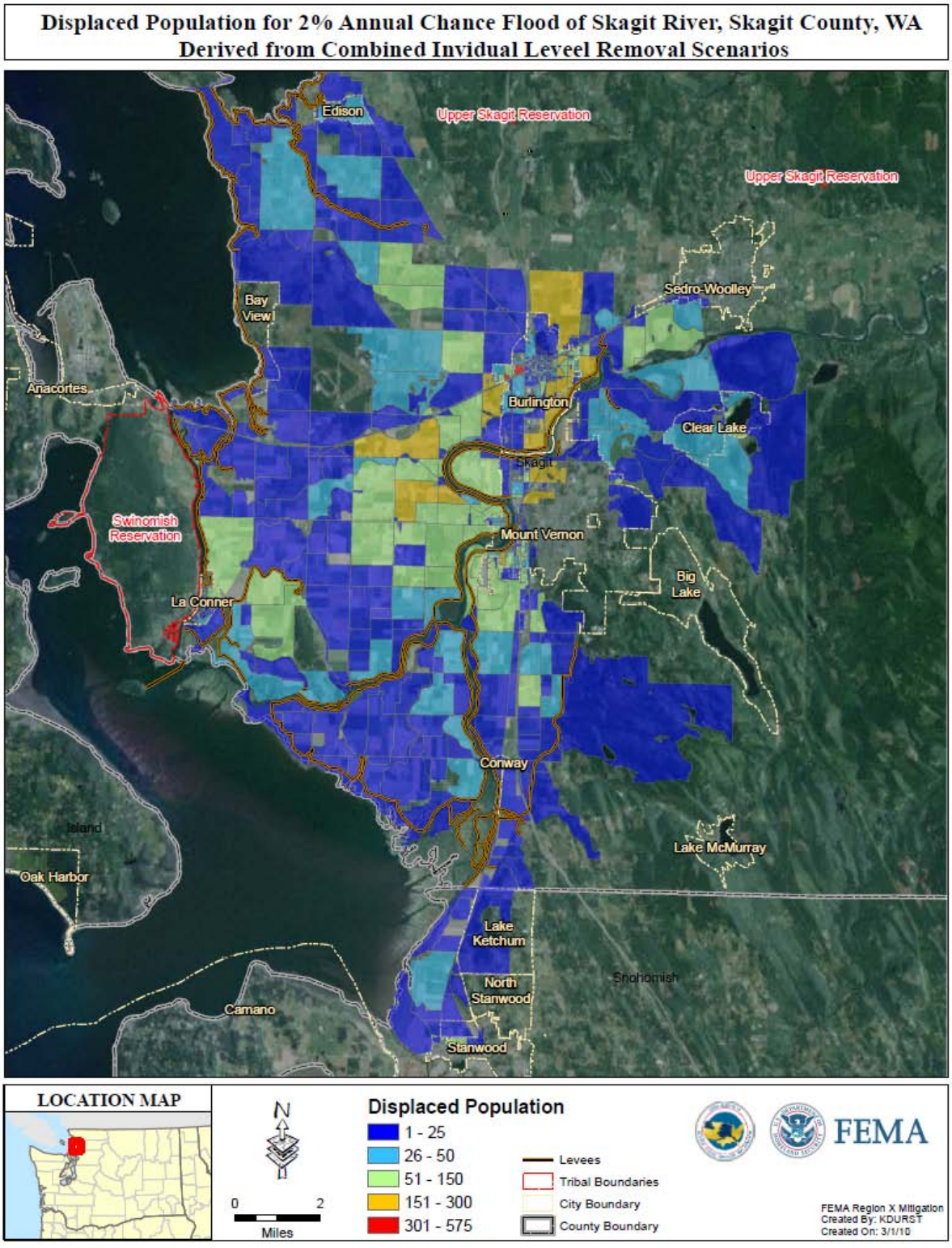

Figure 5. Debris Estimation for the Skagit Valley. Debris in tons is shown per census block. HAZUS calculates the estimated total debris generated to be 117,000 tons. Debris is generated from building and content debris, not from damage due to roads or utilities.