

CEC Flood Costing Project
Case Study: 2016 Fort McMurray Wildfire & Flood

Third Virtual Expert Workshop

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Case Study Description

Wildfire (May 2016)

- 88,000 people evacuated
- Over the course of five weeks, the wildfire burned 590,000 hectares of land and 2,000 structures in the region were either lost or destroyed
- Socio-economic impacts on Indigenous Peoples

Flood (July 2016)

- Only weeks after residents returned to their communities as a result of the devastating wildfire, the city of Fort McMurray was struck by a flash flood
- Occurred at a time when Fort McMurray was undergoing recovery efforts in response to the wildfires
- Damages to 41 homes, road closures, and knocked out power to traffic lights

Data Collection Process and Analysis

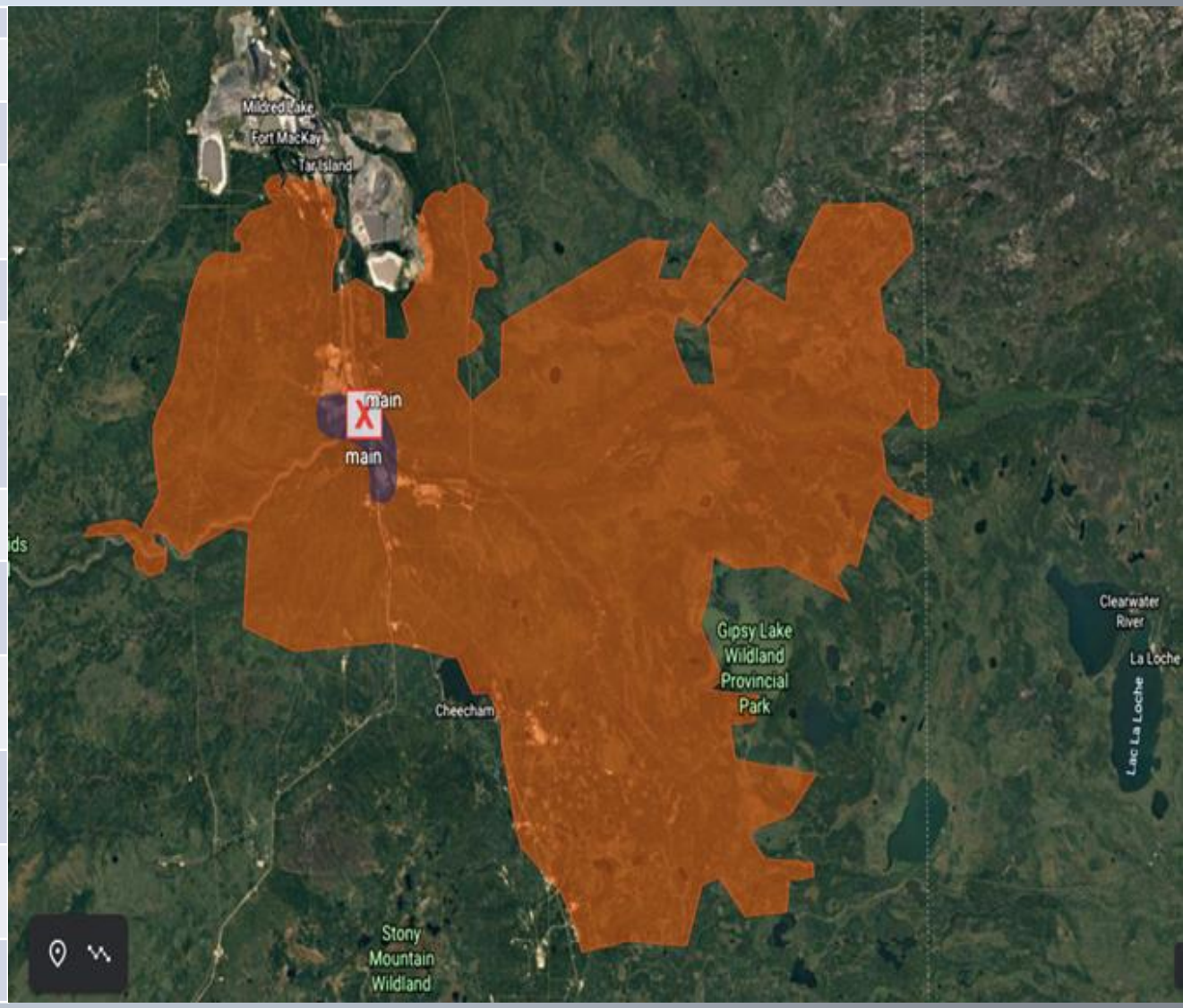
- Insured Costs of Wildfire and Flood: Catastrophe Indices and Quantification Inc. (CatIQ)
  - Estimated catastrophic insured losses by province and line of business (personal, commercial, auto), broken down into physical and non-physical damage.
  - Using 2016 census data, costs of flood were disaggregated/downscaled through a population-weighted assessment of insured damages
- Uninsured Costs of Wildfire: Rapid Impact Assessment (MacEwan University)
  - Estimates are derived from many sources, including published data from Statistics Canada, Government of Alberta, and the Regional Municipality of Wood Buffalo; municipal property data and interviews with municipal and provincial officials; estimates based on existing literature; and statements reported in the media

Summary Findings

Estimated damages and losses caused by the 2016 Fort McMurray Wildfire & Flood Unit: 2020 USD

Indicator	Wildfire	Flooding	Total damage
Household item (direct damage)	87,831,578.63	5,317,391.14	**93,148,969.76**
Dwelling (direct damage)	1,514,258,307.45	6,408,585.18	**1,520,666,892.63**
Commerce building and facility (direct damage)	993,989,340.45	965,193.07	**994,954,533.52**
Commerce credit (indirect effect)	154,030,572.23	10,079.14	**154,040,651.37**
Temporary accommodation (loss and additional cost)	194,246,040.30	6,167.34	**194,252,207.64**
Distribution network treatment plant (direct damage)	51,758,400.00		**51,758,400.00**
Erosion and sedimentation (direct damage)	147,996,675.00		**147,996,675.00**
Psychological impacts, stress, and anxiety (indirect effect)	21,835,575.00		**21,835,575.00**
Loss of tax revenue for local governments (loss and additional cost)	150,422,850.00		**150,422,850.00**
Loss of revenue for energy and utilities (loss and additional cost)	1,374,832,500.00		**1,374,832,500.00**
Market value of public forest product (loss and additional cost)	1,761,403,050.00		**1,761,403,050.00**
Total damage	**6,452,604,889.05**	**12,707,415.86**	**6,465,312,304.91**

Spatial distribution of the 2016 Fort McMurray Wildfire & Flood



The Most Significant Challenges Encountered

- Tackling the systemic disaster cost data vacuum
- Data granularity
  - Much of the existing disaster cost data is aggregated by province and categories are generalized
  - Addressed this challenge through analytic techniques (population weighted adjustment) and the use of software (ArcGIS) to disaggregate/downscale the data
- Quantifying uninsured losses has been difficult due to issues around data accessibility and availability
- Disaster cost data for remote areas and Indigenous communities are scarce