

The Impact of Natural Disasters on Property Boundaries

October 10, 2025

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Presentation Outline

- General boundary principles in British Columbia
- Unique considerations for specific natural disasters
 - Wildfires, Flooding, Earthquakes, Landslides
- General Considerations after a natural disaster
- Options for survey
- Supporting Recovery

BC Land Title and Survey System



Unique considerations for natural disasters

Fire

Flood

Earthquake

Landslide

Lytton Wildfire, 2021

- Highest temperature ever recorded in Canada was in Lytton on June 29, 2021
- On June 30, 2021 a wildfire began just south of the village
- 90% of the village structures were destroyed
- After many delays in recovery efforts, the first building permit was issued in fall 2023



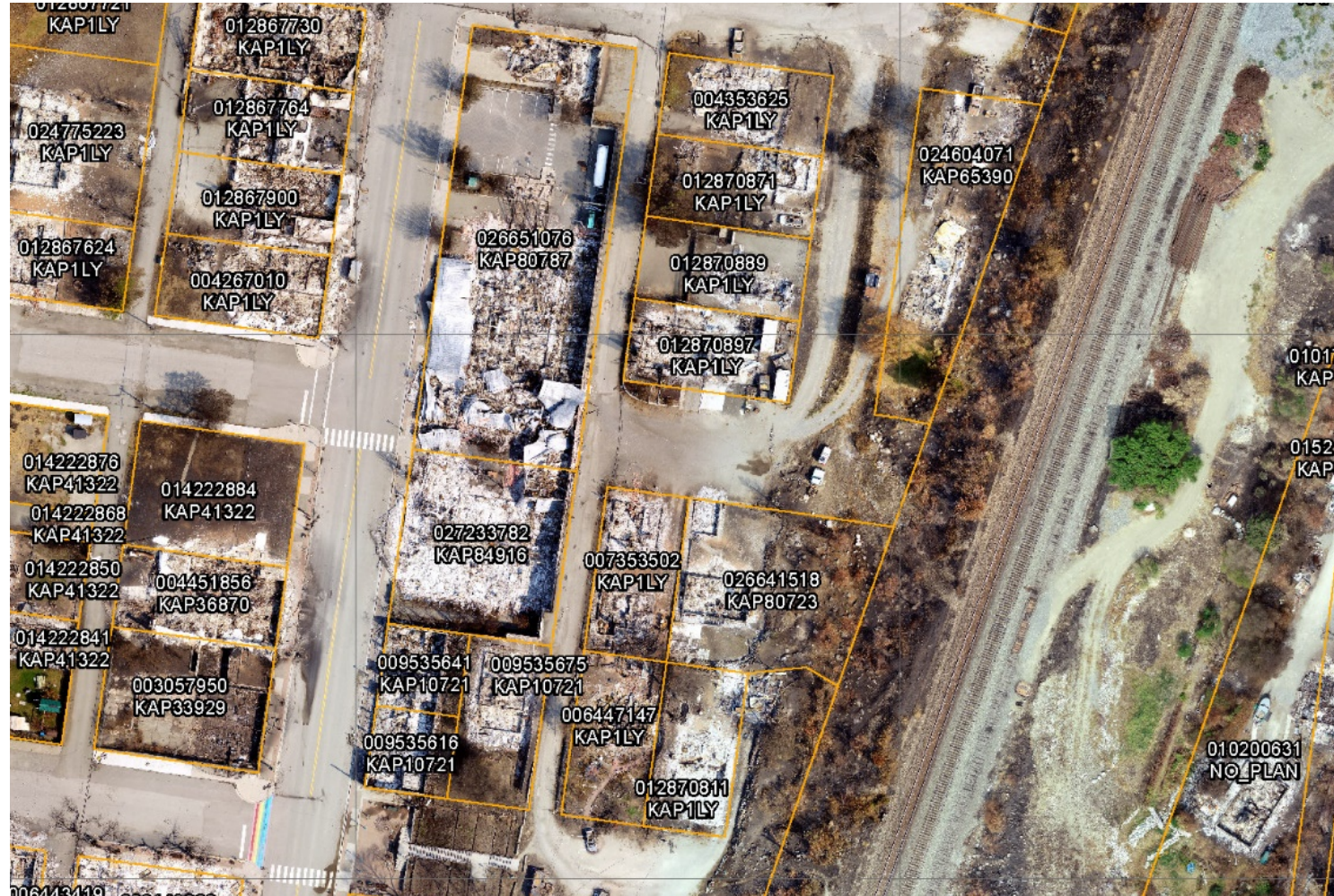
Post-Fire Recovery Process



PHOTO CREDIT: CANADIAN PRESS/DARRYL DYCK

- Identified risk of boundary evidence being destroyed by clean-up efforts.
- Engagement with Provincial government and municipality
- 1st phase of survey to tie in existing evidence before clean-up and set control monuments
- 2nd phase of survey to replace key monuments
- All survey information recorded in the land title register on posting plans.

Mapping Overlays



Lessons Learned - Wildfire

- Provide information about the risk to the survey fabric proactively. Reduce reliance on advocates for the cadastre to personally contact ‘just the right person’ after a natural disaster.
- Local knowledge is preferable.
- Communicate with the recovery team throughout, so surveys can occur at the right time. Coordination of various recovery activities can be challenging.
- Importance of understanding the specific situation
- The message about risk to boundary certainty from wildfires is important and needs to be shared.

Lahaina, Hawaii – 2023 Wildfire



PHOTO CREDIT: PATRICK T. FALLON/AFP VIA GETTY IMAGES

KULEANA: | Connect & Learn

ISLAND LIFE LIVE | Birthdays

https://www.kitv.com/news/lahaina-homeowner-recovery-program-offers-free-lot-surveys-to-homeowners-affected-by-the-fires/article_14aded74-90d2-11ef-9594-03bc03f43af.html

Lahaina Homeowner Recovery Program offers free lot surveys to homeowners affected by the fires

By Jeremiah Estrada
Oct 22, 2024



Courtesy of Hawaii Community Foundation

Jasper, Alberta – 2024 Wildfire



PHOTO CREDIT: PARKS CANADA

Atmospheric River, 2021

- In November 2021, a series of rainstorms hit the South Coast and southern Interior of BC
- Resulted in severe flooding, landslides and damage to infrastructure
- Dykes failed, bridges and sections of highway were washed away
- Displacement of people and loss of livestock
- Costliest natural disaster in BC history



Impact on Natural Boundaries

- Natural boundary locations don't change from storm events.
- Challenging to determine the extent of ownership when avulsion occurs.
 - Depiction on registered plans may not be the best evidence; it's only a snapshot of where the natural boundary was located on the date of survey.
 - Research is always required to find the best evidence of the boundary location at the time of the avulsion.
 - Although the upland property may still have title to submerged lands, they need to seek approval for any reclamation.



PHOTO CREDIT: NICOMEN INDIAN BAND

Earthquakes

- In BC we have many small earthquakes, and we know that a significant earthquake is inevitable
- The Surveyor General has drafted a post-quake boundary restoration plan and resource materials, to support recovery after a significant earthquake



What problem are we addressing?

- Property boundaries are fixed in location, generally defined by original survey evidence, except for natural boundaries which can shift slowly over time.
- A significant earthquake may cause survey evidence and occupation to shift in both an absolute and relative position and the movements may be irregular.
- There are no provisions in current legislation or common law to address survey evidence that has shifted due to deformation events.





Pumphouse

(Previously straight)

Fault rupture:
Road no longer straight

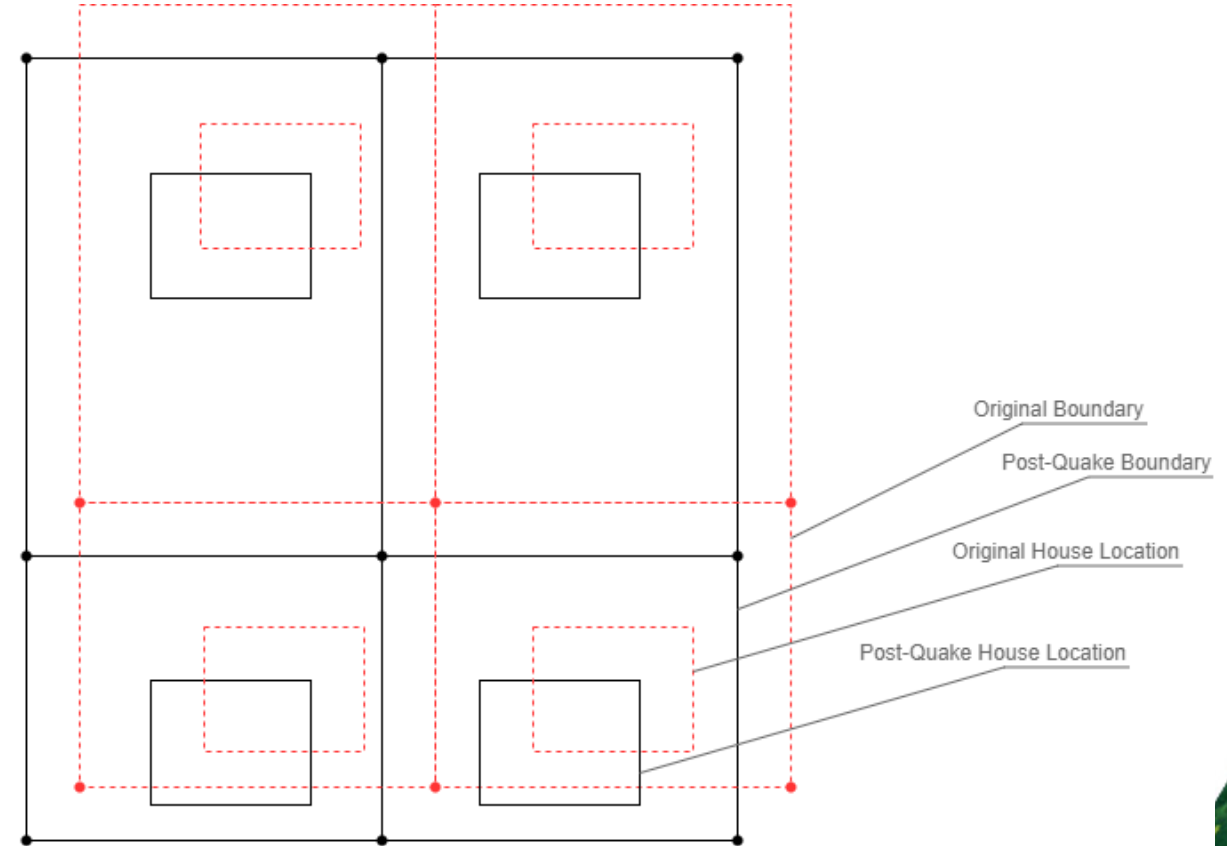


Boundary monument shifted
2.8m to the right (gravel
strip is new)



Jurisdictional Scan

- We've learned from other jurisdictions, notably New Zealand, that trying to adhere to existing boundary principles following an earthquake can create situations where occupation no longer aligns with boundaries.



Boundaries-Moved Principle

- The boundaries-moved principle accepts that boundaries can move following a deformation event and the existing survey principles of best available evidence would still apply.
 - Post-quake location of survey evidence is used to define the property boundary
- We are proposing that the boundaries-moved principle be available to the Surveyor General as an option following an earthquake.
- Legislation is required to enable the use of the boundaries-moved principle.

Earthquake Response

Initial Communication to BC Land Surveyors and Stakeholders

Consultation

Analysis of extent of impact

Implementation of special survey standards, survey rules and legislation

Landslides

- Landslides don't alter boundaries, and the boundaries-moved principle would not be used following a landslide.
- Expert consultation will be required to understand if land remains safe and habitable before survey work begins.
- If remediation of the land is possible, the boundaries remain in their original location.



Considerations after a natural disaster

Communication

Capacity

Safety

Assessment

- Prior to clean-up activities.
 - Assess risk of survey evidence being lost from response and clean-up activities.
Consider:
 - Setting a control network and obtain measurements to survey evidence at risk
 - Marking the evidence so that crews can try to protect it where possible
 - Recording measurements to the evidence on a registered plan
- Assessment considerations:
 - Mapping resources, such as ortho-photography before and after disaster, and change detection mapping.
 - Discussions with local land surveyors
 - State of the cadastre before the disaster. Has there been recent survey activity? Is there pre-existing boundary uncertainty ?

Options for surveys

Individual posting or reference plans

Large-scale posting plan

Special Survey

Replotting Scheme

Pre-planning



Enabling
legislation



Policy



Education



Resource
Materials

Restoring Legal Boundaries After an Earthquake



SPRING 2025

INTENTIONS PAPER



Ministry of
Water, Land and
Resource Stewardship



Surveyor General Report: 2021 Lytton Wildfire Cadastral Preservation

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Version 1.0 Ext

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Disaster Recovery Information

Contents

- LTSA's and Land Surveyors Roles in Disaster Response
- Disaster Recovery and the Cadastral Survey System
- After a Disaster
- Earthquake Response

Supporting Recovery



Questions?

