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Landslide study will guide future development

By Kristjanna Grimmelt
R-G Staff
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Landslide hazards in the Peace River Valley are being examined as part of a breakthrough geological study. Results could act as a model for urban planning here and across Western Canada.

"The data will help us determine what the types of landslides are, the extent of the landslides and what they're doing," says Corey Froese, geotechnical engineer with the Alberta Geological Survey.

Tests will examine about 1,000 test holes and use cutting-edge technology including a three-dimension geotechnical model and airborne data to achieve high resolution images of the Town and surrounding areas.

The multi-year landslide hazard study partners the Alberta Geological Survey, the University of Alberta and stakeholders including the Town, CN Railroad, Atco Electric and Pipelines and Alberta Infrastructure and Transportation.

Peace River was an ideal location because of the age and complexity of the river valley, says Froese. Being a small urban centre, data was also more manageable.

"Geologically, Peace River is a very complex setting with a history of landslide hazards."

Landslides - on Froese's example of Judah Hill and in other areas - and their impact on infrastructure are well-documented over the past 50 years and provide ample information for geologists.

The Peace River Valley is 8,000 -12,000 years old, says Froese, and surrounding areas actually lie on old, buried valley systems. Previous prehistorical river valleys cut into the bedrock in different locations than today's, but when glaciers moved in, they filled these valleys with soil. When glaciers melted, they formed new river valleys and covered some of the existing ones.

"The valley is relatively young. Everything is kind of finding its equilibrium," Froese explained.

The West side of the valley is underlaid by an ancient river valley, while the East side is composed of more recent glacial sediments on top of bedrock.

He stressed that understanding the valley's history leads to informed planning.

"If we looked at the valley's entire history in 24 hours, our occupation of Peace River would be a fraction of a second."

Much of Western Canada is built on moving slopes that will continue to shift over thousands of years. But Froese says that's not necessarily a hazard. Landslides can be caused by a variety of things including altering groundwater flow. He affirmed that a geotechnical study on land is "absolutely" necessary.

"The features of an area are often very sensitive. If you don't understand this and you're doing work and changing things, that can cause a landslide."

While the landslide study will examine municipal zoning and landslide risk for specific sites, they will leave it to private geotechnical firms to provide recommendations on where people build.

This fall, geologists will begin mapping the area and other fieldwork. In 2008, organizers aim to document and publish their findings.

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