



Canadian Archaeological Association  
Association canadienne d'archéologie



INSTITUTE OF PRAIRIE AND  
INDIGENOUS ARCHAEOLOGY

## **Archaeological Remote Sensing: Unmarked graves**

Hello, I'm Dr. Kisha Supernant. I'm Metis and I'm director of the Institute of Prairie and Indigenous Archaeology at the University of Alberta, and the chair of the Indigenous Issues committee for the Canadian Archaeological Association. Today, I'm here to talk about how we use remote sensing technologies to help locate unmarked graves. This video is a collaboration between the Canadian Archaeological Association, the Institute of Prairie and Indigenous Archaeology, with generous support from the Kule Institute for Advanced Study (KIAS) at the University of Alberta.

I want to begin by acknowledging that this video is currently being filmed on Treaty 6 territory and the Metis homeland in Amiskwaciwâskahikan (Edmonton, Alberta). Some of the content of this video, viewers might find disturbing as we will be talking about unmarked graves associated with Indian Residential School sites in the lands we call Canada. There are supports available for anyone feeling triggered by this traumatic information.

In response to the recent news from Tk'emlúps te Secwépemc about a potential 215 burial locations found of children who went missing from the Kamloops Indian Residential School, myself and a group of archaeologists from across Canada (including folks associated with the Canadian Archaeological Association) wanted to provide some information about how these technologies are used in locating unmarked graves. We want to say at the outset that none of us were involved in the work at the Kamloops Indian Residential School and this is information provided for communities and the general public to understand better how these technologies can be used. Any work that happens around residential school sites to locate the missing children should be led by the communities whose relatives went to those schools and we are only here to provide information to the best of our ability.

There's been a lot of conversation about different types of remote sensing technology that has been used to locate unmarked graves. The most common is ground-penetrating radar and this video will focus on the application of that technology.

Ground-penetrating radar is a type of remote sensing technology where a small antenna is pulled across the surface of the ground and sends a radar signal down into the earth. That radar signal can be set at multiple frequencies and those different frequencies will send different waves down into the ground.

That signal bounces back differently depending on what's underneath the surface. So different soil composition will send back different signals. When the soil is disturbed, say through the digging of a grave, then you can sometimes detect that change using ground penetrating radar. You can also pick up other types of buried features, such as rocks, tree stumps, gopher holes, et cetera.

One of the questions that has been asked is: how do we know that what we're seeing is a grave and not something else? The truth is with ground-penetrating radar, we can never be 100% certain that what we're seeing is in fact a grave, but there are well-established methods that have been used by archaeologists for many, many years that can help us build our confidence that what we're actually seeing is a grave. This technology has been used in historic cemetery contexts and in partnership with Indigenous communities to locate unmarked graves for at least 15 years in Canada. Through all of these previous projects, we've been able to refine our methods and build our confidence that what we're seeing is in fact a grave shaft.

We can be most confident that what we're seeing are graves when we work in historic cemetery contexts, because in many historic cemeteries there are graves that have markers, and then there are areas of the cemetery that do not have markers. What we are able to do is use the ground-penetrating radar over top of the graves that have markers, see what that signal looks like, and then use that to measure the areas that don't have markers. So when we see a very similar signal in that area, we can say "This is most likely a grave." This gets a lot more complicated when it's not a formal cemetery context, and when the graves themselves may look different. So, for example, if they're shallower, or clandestine, they're more difficult to detect.

Ground-penetrating radar also works better in certain conditions than others. For example, ground-penetrating radar works very well when it's used in sandy soils, and does not work well when there's a lot of clay in the soil, or there're a lot of other materials, such as shell, in the ground.

There are other factors at play that indicate whether or not ground-penetrating radar is likely to be successful. Some considerations include historic land use and ground cover. For example, when you have a wooded area, ground-penetrating radar cannot get to the surface of the ground and it requires what we call ground-coupling, which means the antenna needs to sit against the surface of the ground to be successful. Therefore, an area that is wooded would require the clearing of brush for ground-penetrating radar to be effective. When historic land-use has impacted the site, say through cultivation or building on top of different sites, there may be different considerations as well.

Ground-penetrating radar primarily detects changes in the soil and we want to emphasize that we do not see any bodies or bones using this particular technique. This does not work like an X-ray. Really, what it is showing is the disturbance of the ground when a grave is dug and we can be more or less confident that what we're seeing is a

grave based on our established methods. We never actually see any remains under the surface.

Multiple techniques build our confidence that what we're actually seeing using these technologies is in fact a grave, but we can never say we have for sure found a grave, and we can never say when we have negative results that no graves are present.

So we have been hearing stories of Indigenous communities being approached by companies, organizations, or individuals who are offering to do this type of remote-sensing work, and we encourage any Indigenous community with questions about what they should be expecting from this work to reach out to us, because it is essential that we do this following established best practices and providing the most accurate information we can to Indigenous communities who are searching for their lost children.

We are currently in the process of developing a set of guidelines and resources that will be publicly available, so please check our website, the Canadian Archaeological Association, and the information you see below for guidelines and information that is provided around the specifics of these types of remote sensing surveys.

We recognize that this work should not be considered archaeological research, and we are here to provide expert advice based on our experiences using these techniques. We acknowledge that the data generated in these projects is highly sensitive, and encourage Indigenous communities to ensure that there are strong data agreements in place before any work is undertaken. These data agreements should uphold OCAP, which is Ownership, Control, Access, and Possession of data by Indigenous communities and you should have full control over how, with whom, and in what formats this data may be shared.

We call upon the government of Canada to implement all 94 of the calls to action from the Truth and Reconciliation Commission, of which this work is of course an important part. It is essential that Indigenous communities are provided with the resources and the expertise to do this work in the way that they determine they wish to proceed. It is also the goal of the Canadian Archaeological Association to be able to provide training for Indigenous communities to do this work themselves so they do not have to rely on outside experts to help find these missing children.

We want to emphasize that any work done around Indian Residential School sites to find unmarked children should be community-led, and it is up to communities to determine when, how, and under what conditions this work should take place. We recognize the important role of ceremony and other cultural protocols around doing this highly sensitive work, but when communities are ready, the Canadian Archaeological Association and the Institute of Prairie and Indigenous Archaeology at the University of Alberta stand ready to support communities in any way that we can. If you're experiencing trauma or are feeling triggered by this, there are resources available including the 24-hour Indian Residential School Survivor crisis line and other information that you see below.

I want to take this moment to thank the Canadian Archaeological Association, the Institute of Prairie and Indigenous Archaeology at the University of Alberta, all members of the working group, and the Kule Institute for Advanced Study at the University of Alberta for supporting this work and providing this guidance. We can be reached at the information on your screen and we stand ready.

Kinanaskomitin, hiy hiy, thank you.