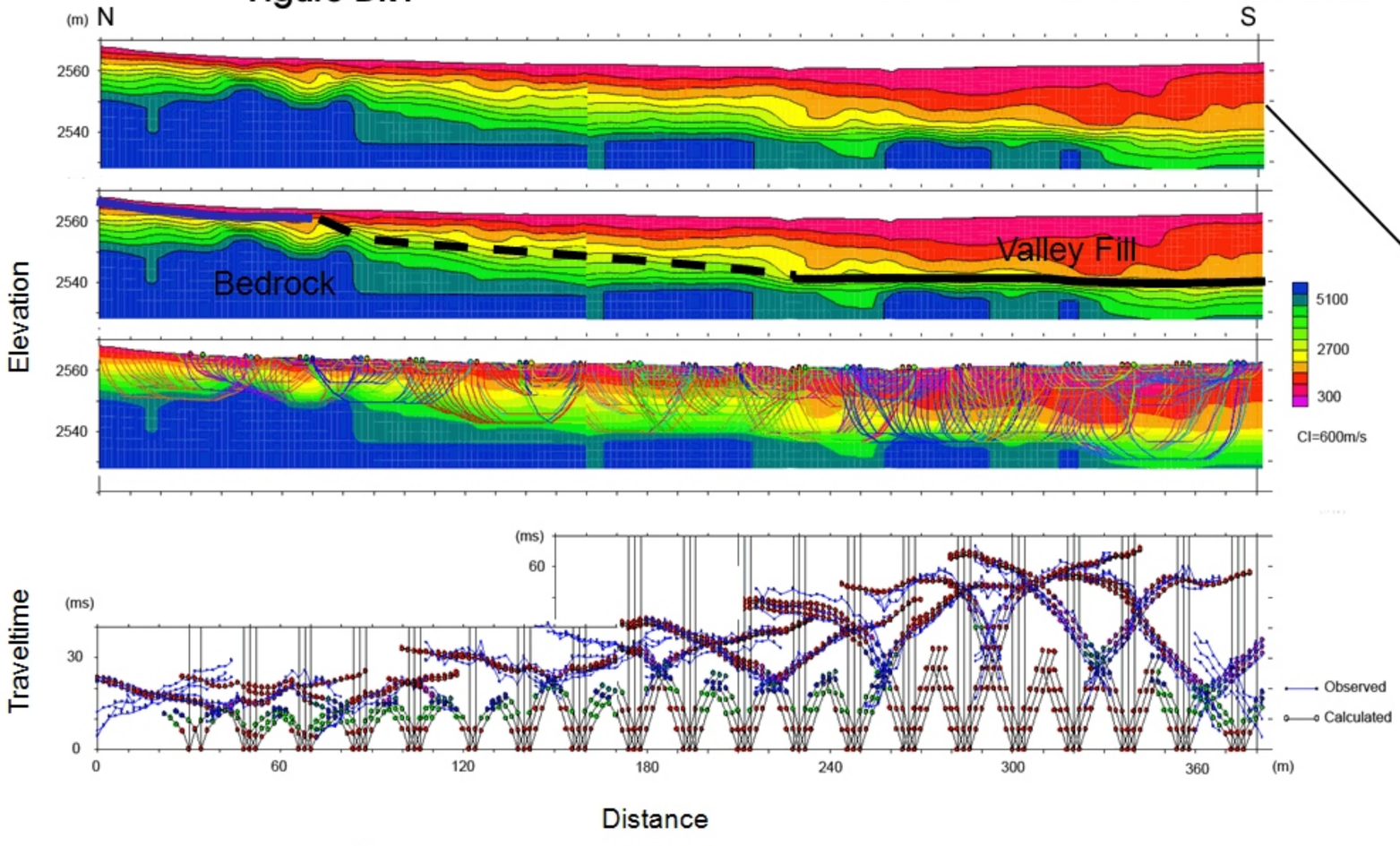
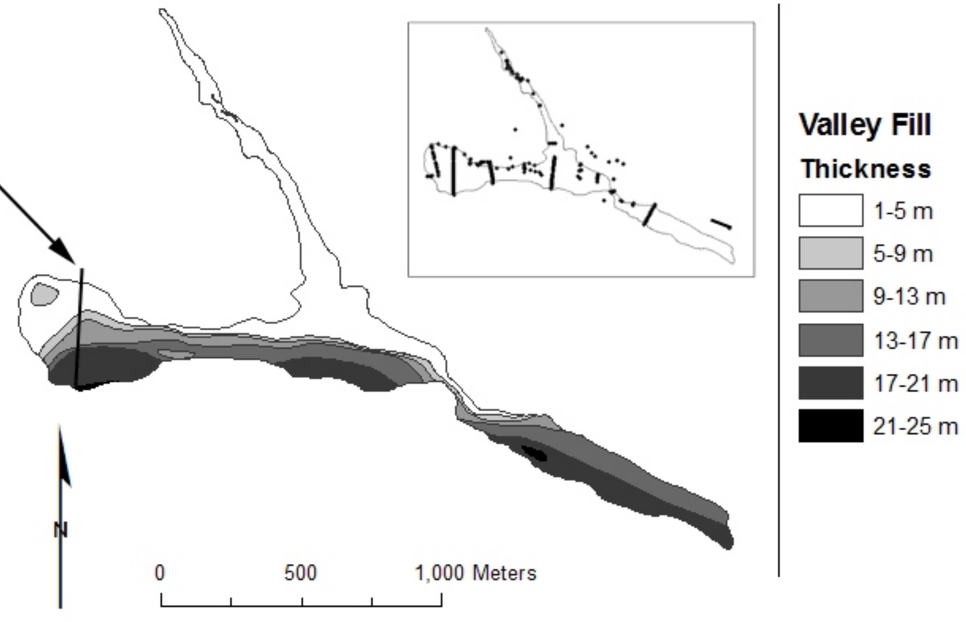
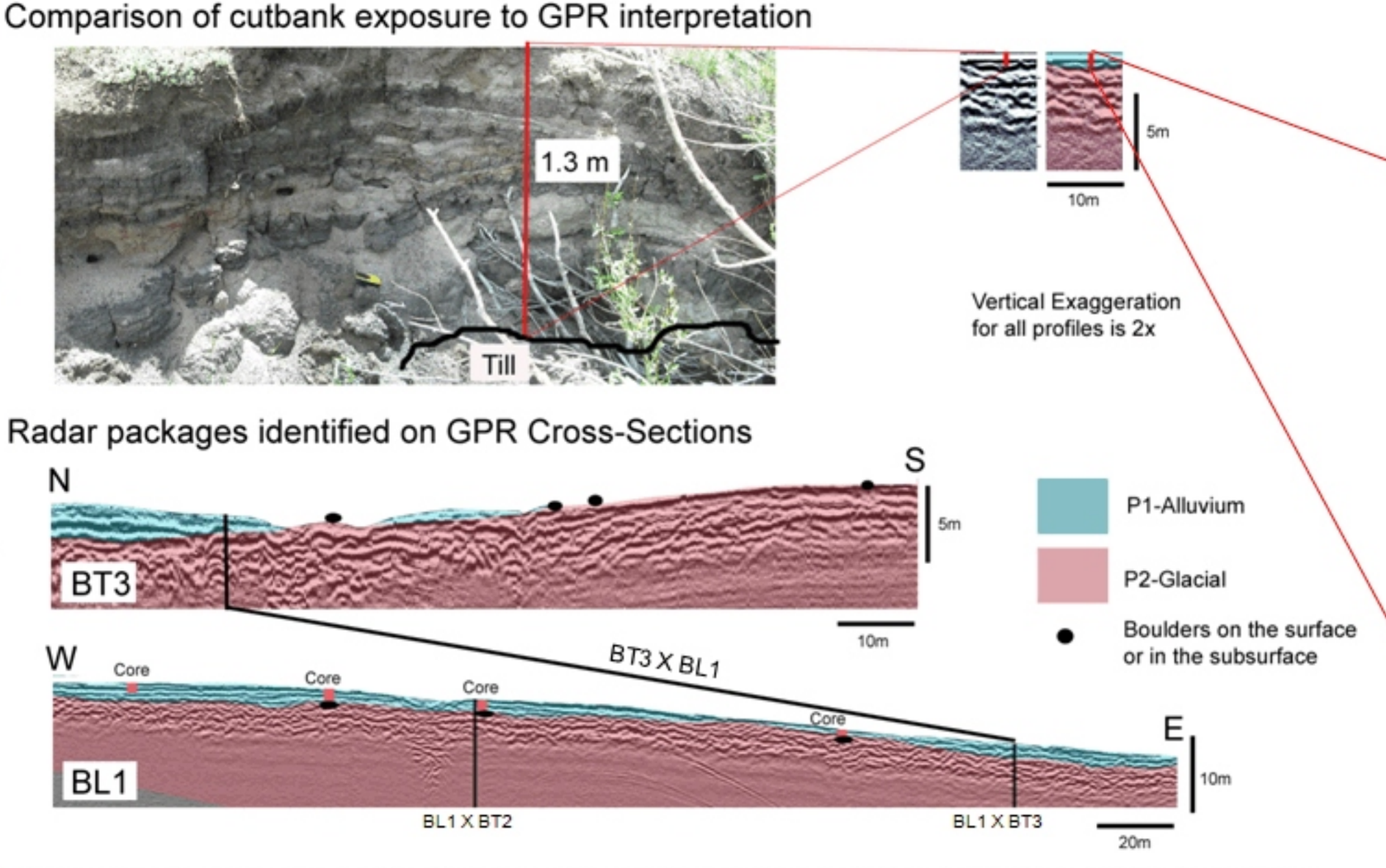




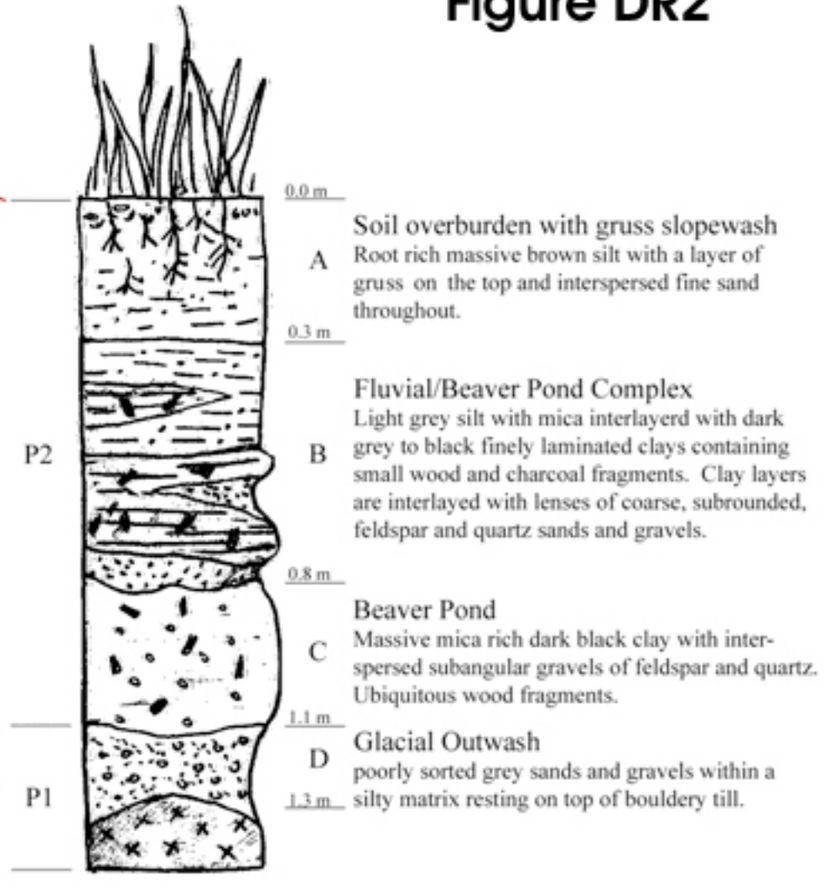
A tomographic profile transverse to the valley axis shows the bedrook contact deepening towards the South. The solid blue line along the bedrock contact is where the contact is shallow enough to be is visible in a GPR profile. The travel time versus distance plot with calculated and observed first break picks shows that the modelled data is a good fit with observed data.

Isopach map of valley fill thickness generated by interpretively contouring data points (shown in inset map) from interpreted tomographic profiles or surface observations. The isopach map shows the thickness of valley sediments from the surface to bedrock and thus is essentially a bedrock contour map of Beaver Meadows.

Figure DR2

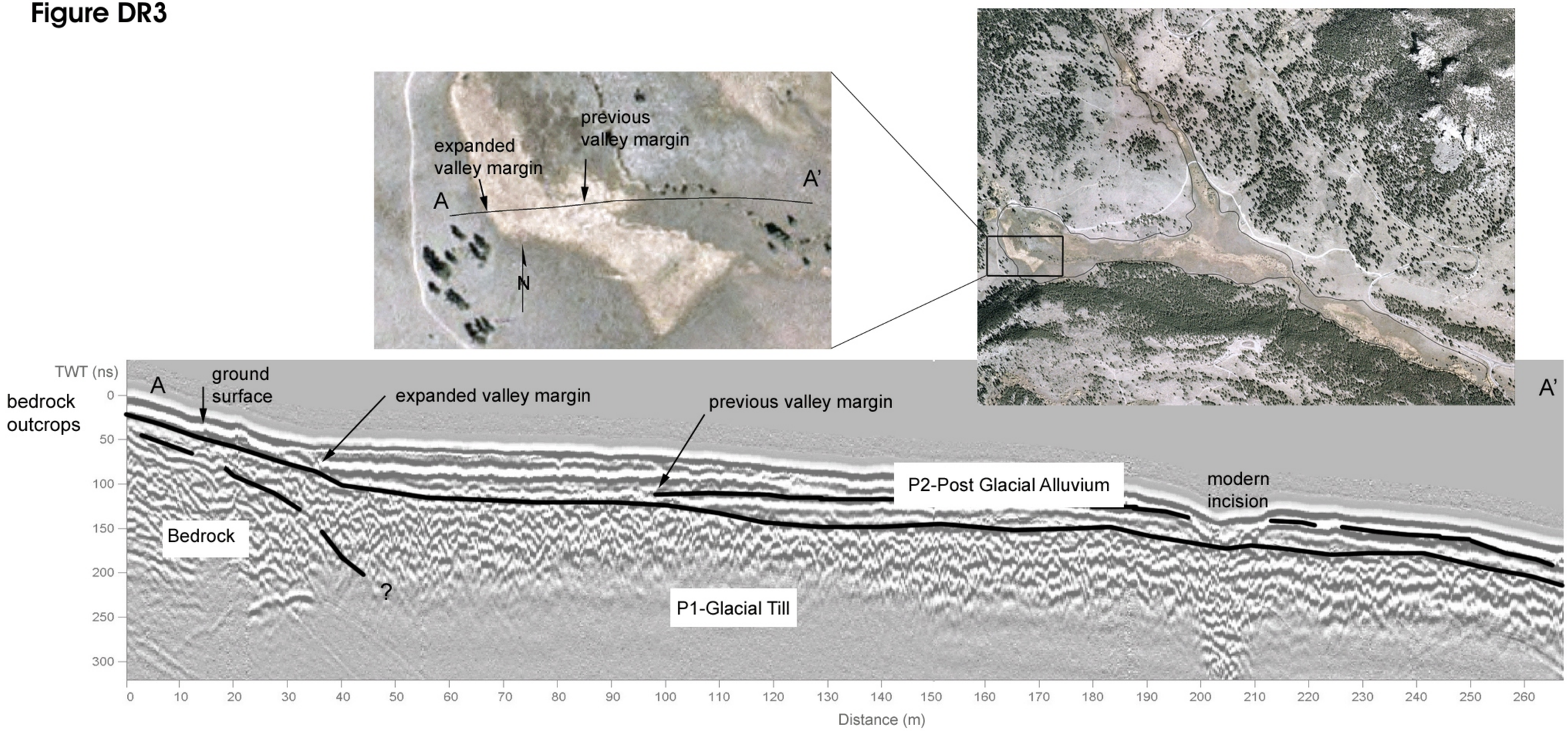


Comparison of the glacial-alluvium contact with cores and a cutbank exposure. The air wave and direct ground wave are not shown. GPR line labelled BL1 crosses transects BT2 (not shown) and BT3 where annotated. Note that BL1 and that BT3 were drawn at different scales due to a large difference in length. The red vertical lines on BL1 represent auger holes. Boulders encountered at the base of an auger hole are marked and correspond to the alluvium-glacial contact identified independently in the GPR.



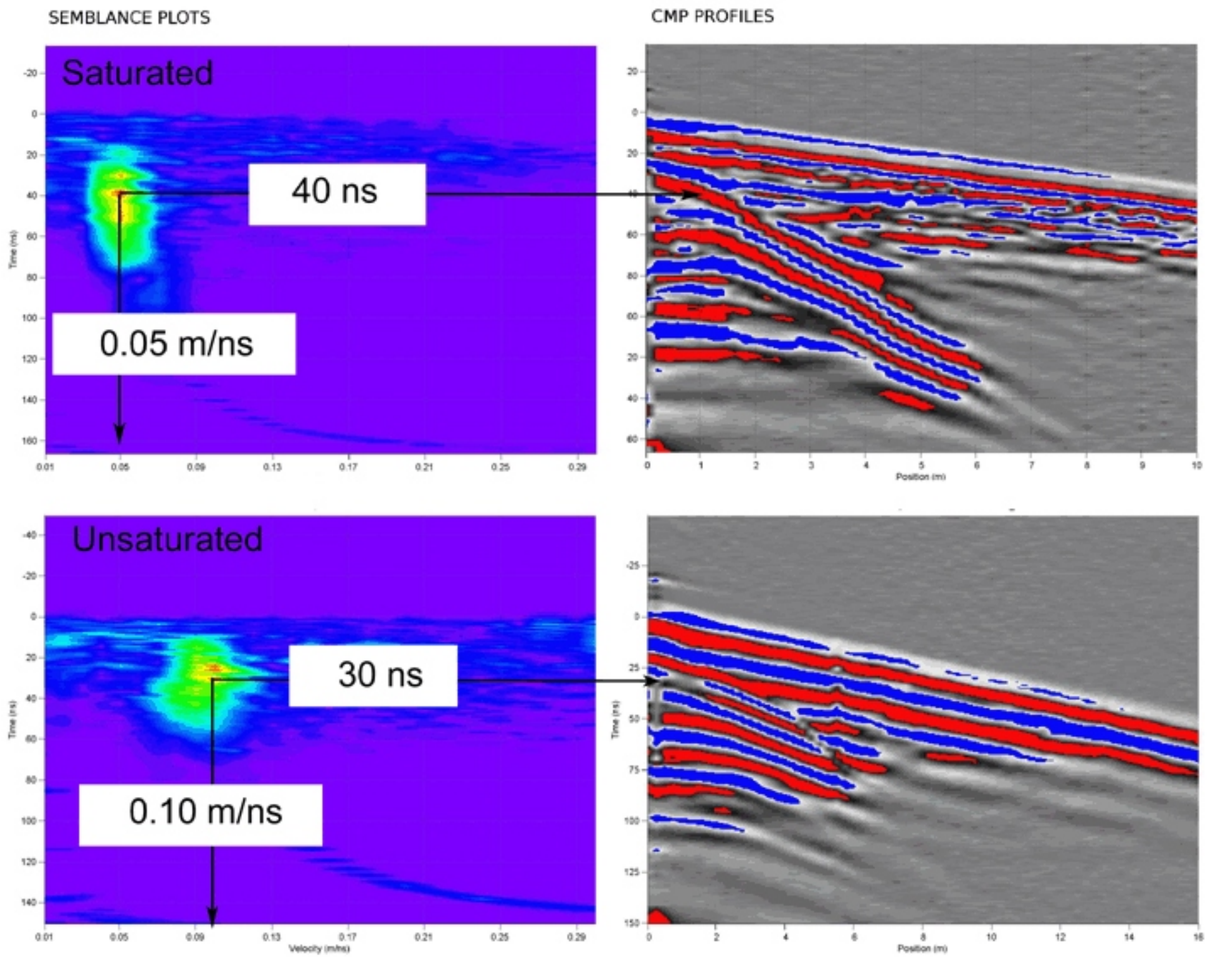
Generalized alluvial stratigraphy from a cutbank exposure in Beaver Meadows. The stratigraphic units shown are representative of stratigraphic units in many auger holes throughout the meadow. P1 and P2 denote radar packages associated with glacial and alluvium deposits, respectively.

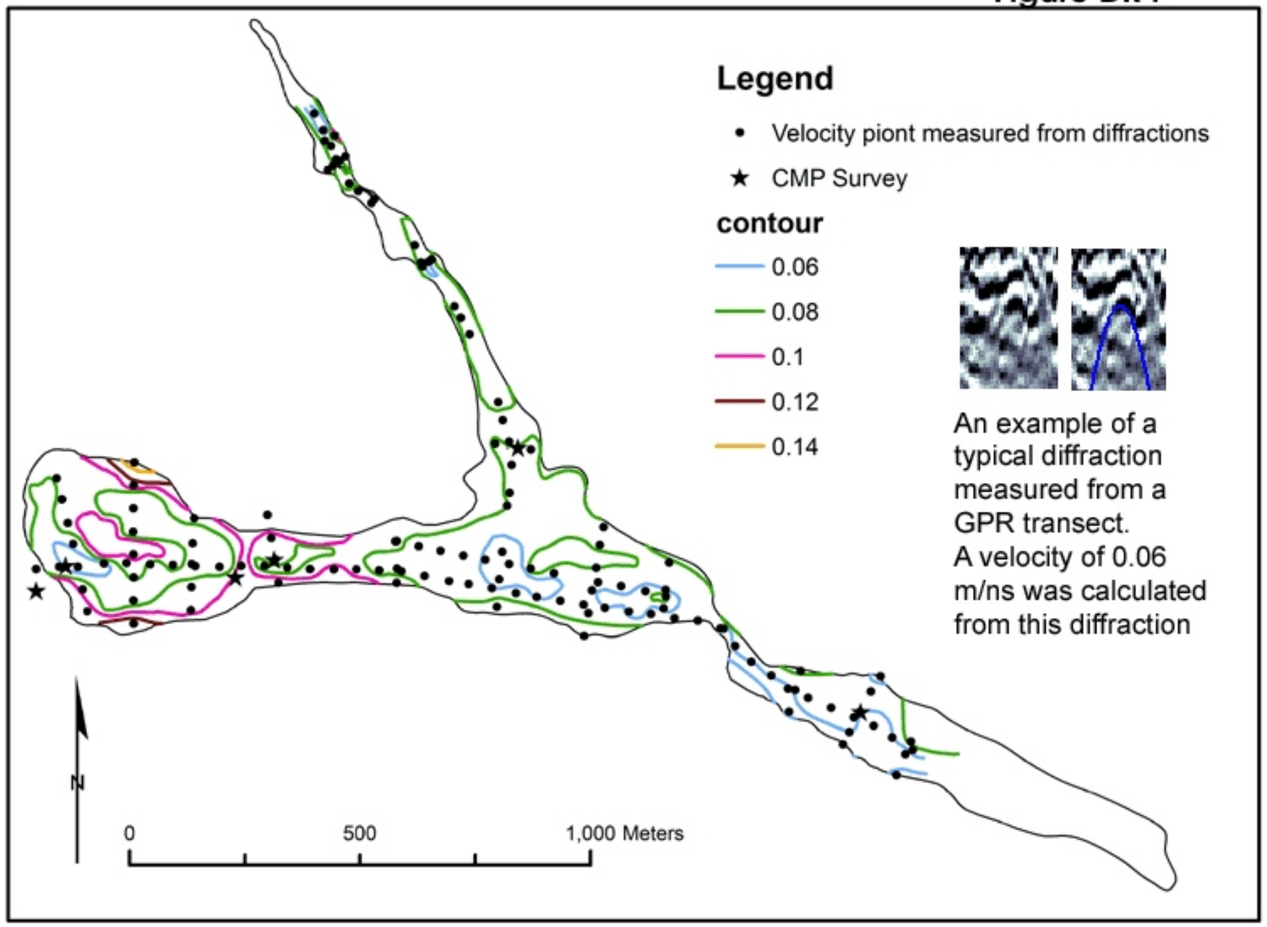
Figure DR3



The GPR profile shows packages P1 (glacial till) and P2 (post glacial alluvium) as well as valley floor expansion by ponded sediments. Note how the stacked sequences of flat lying reflectors expanding the valley floor relate to the vegetation patterns from old beaver dam complexes in the aerial photograph. Field support for interpretation of old beaver complexes in aerial photographs includes observation of contemporary beaver dams and the similarity in surface shape, including the abrupt linear change in vegetation at the downstream end of the beaver pond. Interpretation is further supported by the presence of fine-grained, organic-rich sediment and differences in soil moisture upstream and downstream of the old dam.

Figure DR4





In Beaver Meadows semblance plots and cmp profiles (left) show a clear difference in subsurface radar velocities between saturated areas with mesic vegetation (top left) and unsaturated areas with xeric vegetation (bottom left). The velocity discrepancy shown in the two examples above are consistent for the six cmp surveys deployed in saturated and unsaturated areas throughout the valley. Semblance plots in saturated areas generally have velocities ranging from 0.05-0.06 m/ns. In contrast, semblance plots from unsaturated areas typically show velocities ranging from 0.10-0.12 m/ns. The velocity contour map to the right was generated using the cmp data, velocities measured from diffractions along GPR transects, and vegetation patterns which reflect saturation levels. Due to the heterogeneous velocity across most GPR profiles. We retained the TWT axis and used the velocity contour map to estimate depth of alluvium at specific locations which were later contoured into an isopach map for alluvium.