

MAPPING THE 103RD STREET KETTLE

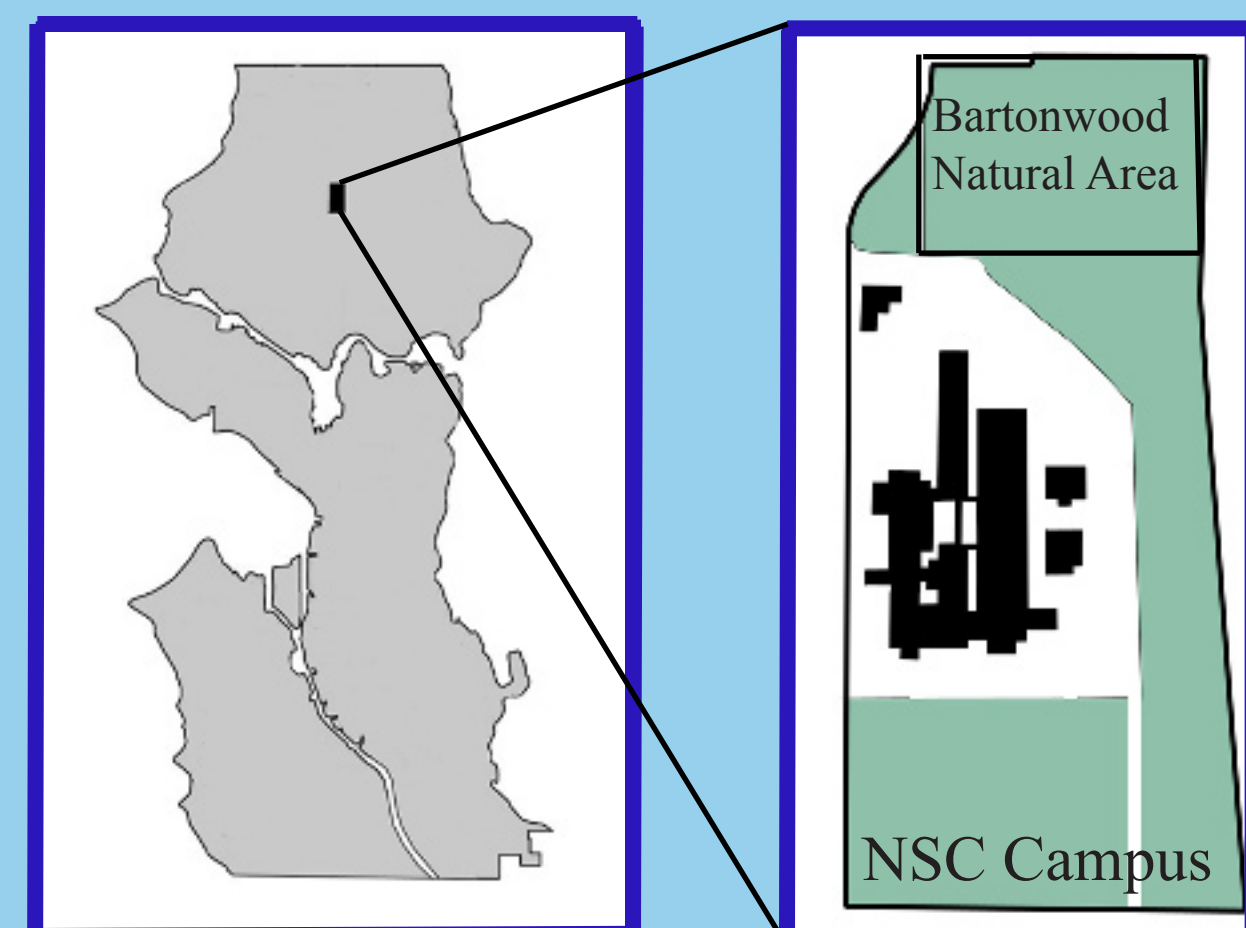
On the North Seattle College Campus

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ABSTRACT

Student research has recently identified three glacial kettles on the campus of North Seattle Community College in North Seattle. These kettles were established as the Puget Lobe retreated from this area some 13,000 years ago. They were subsequently filled with lacustrine deposits, in a post-glacial lake which occupied this area up until the late 1800's. The kettles are unusual in that they are not formed by burial in recession-al outwash. Instead, they appear to be "ice pressed" depressions in the landscape. This study has mapped the lateral and vertical extent of the northernmost of these kettles, informally identified as the 103rd Street Kettle. This mapping was done by borehole analysis, revealing a kettle up to 50 m wide, 4 m deep and over 80 m in length.



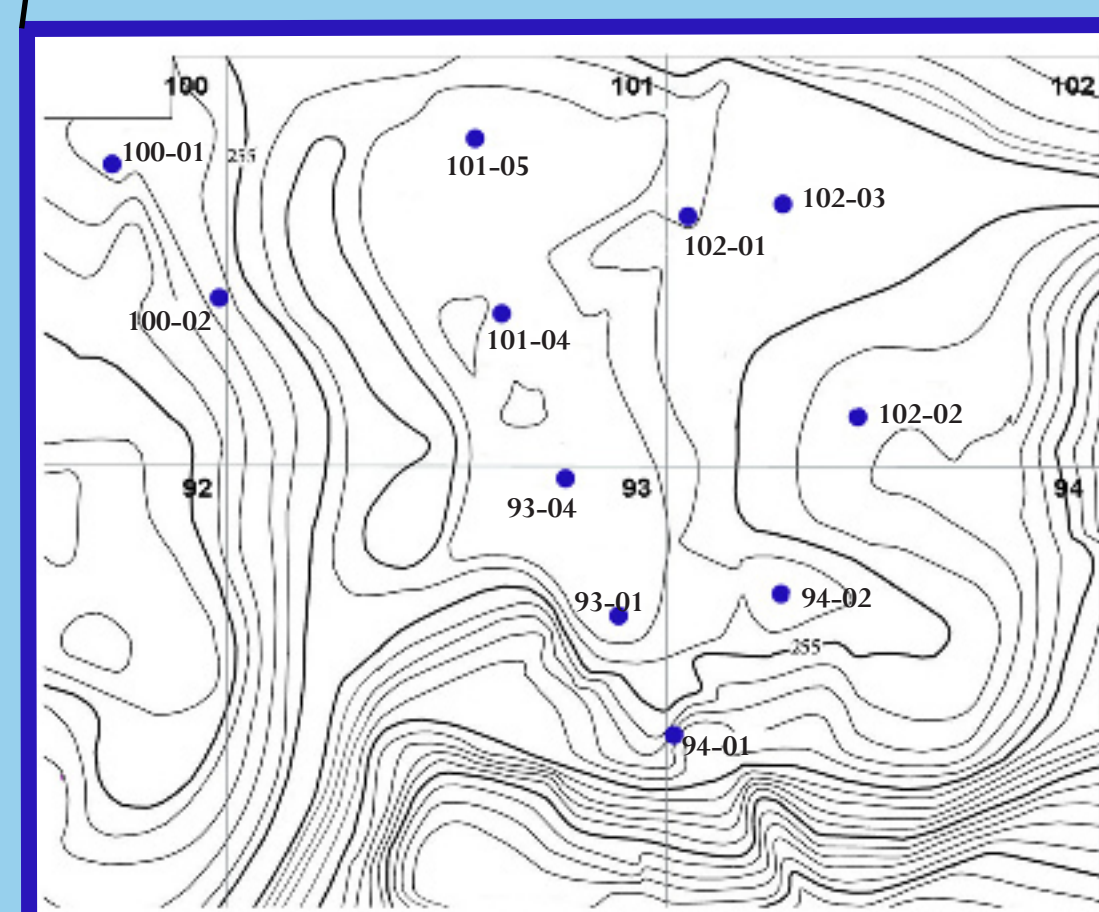
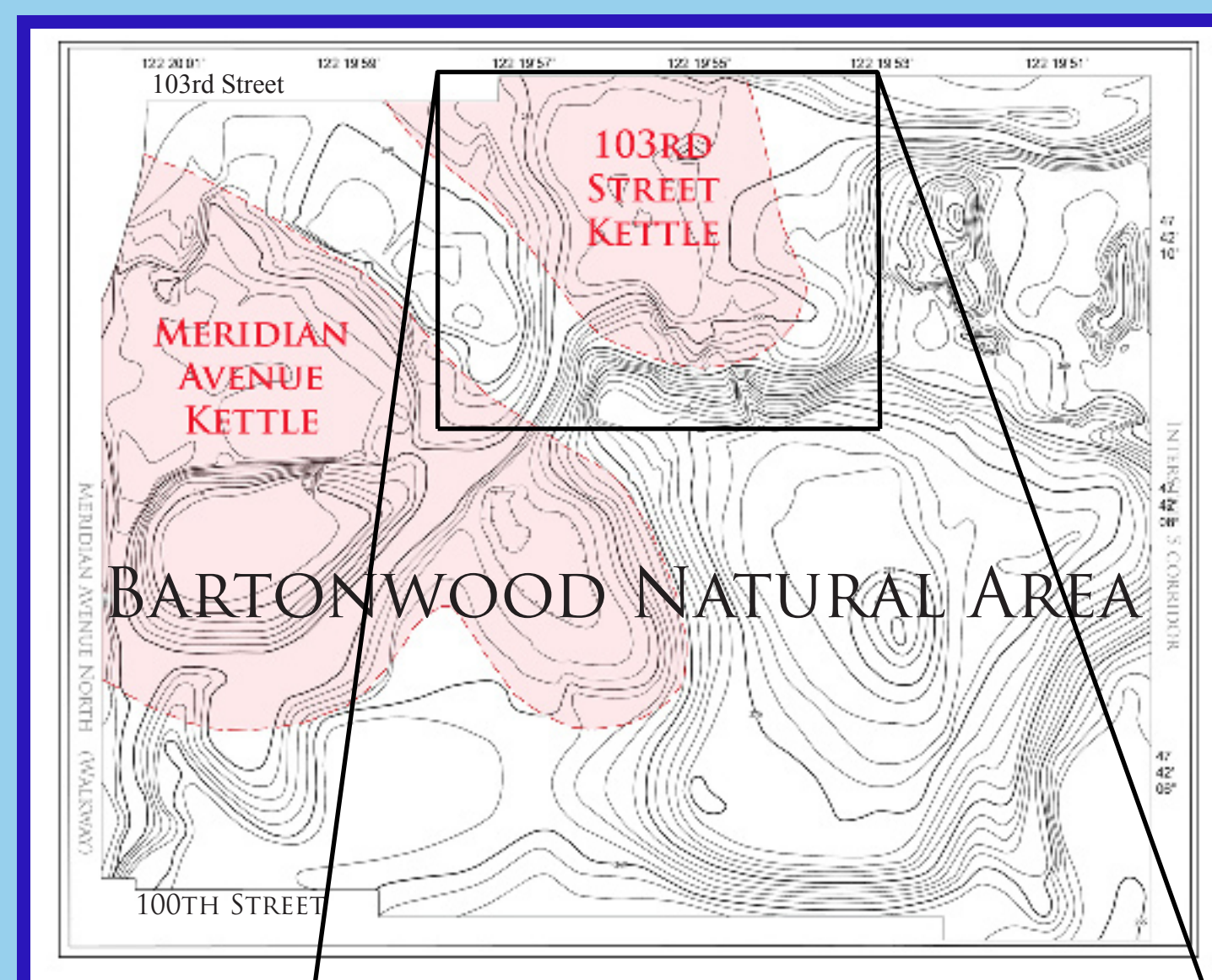
STUDY AREA

The study area lies on the north end of the North Seattle College Campus, in a preserve known as the Bartonwood Natural Area.

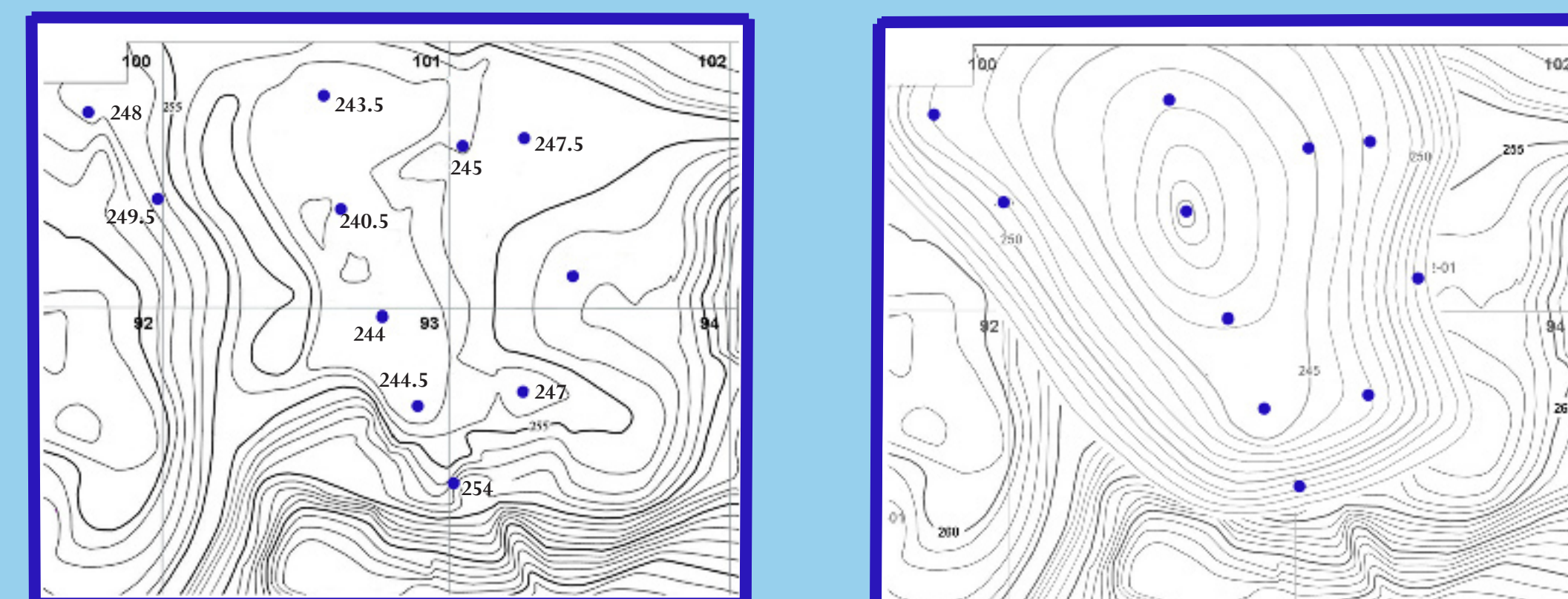
The 103rd Street Kettle sits in the north-central part of that area, one of at least two kettle basins on this parcel. These are distinguished by thick accumulations of peat.

METHOD

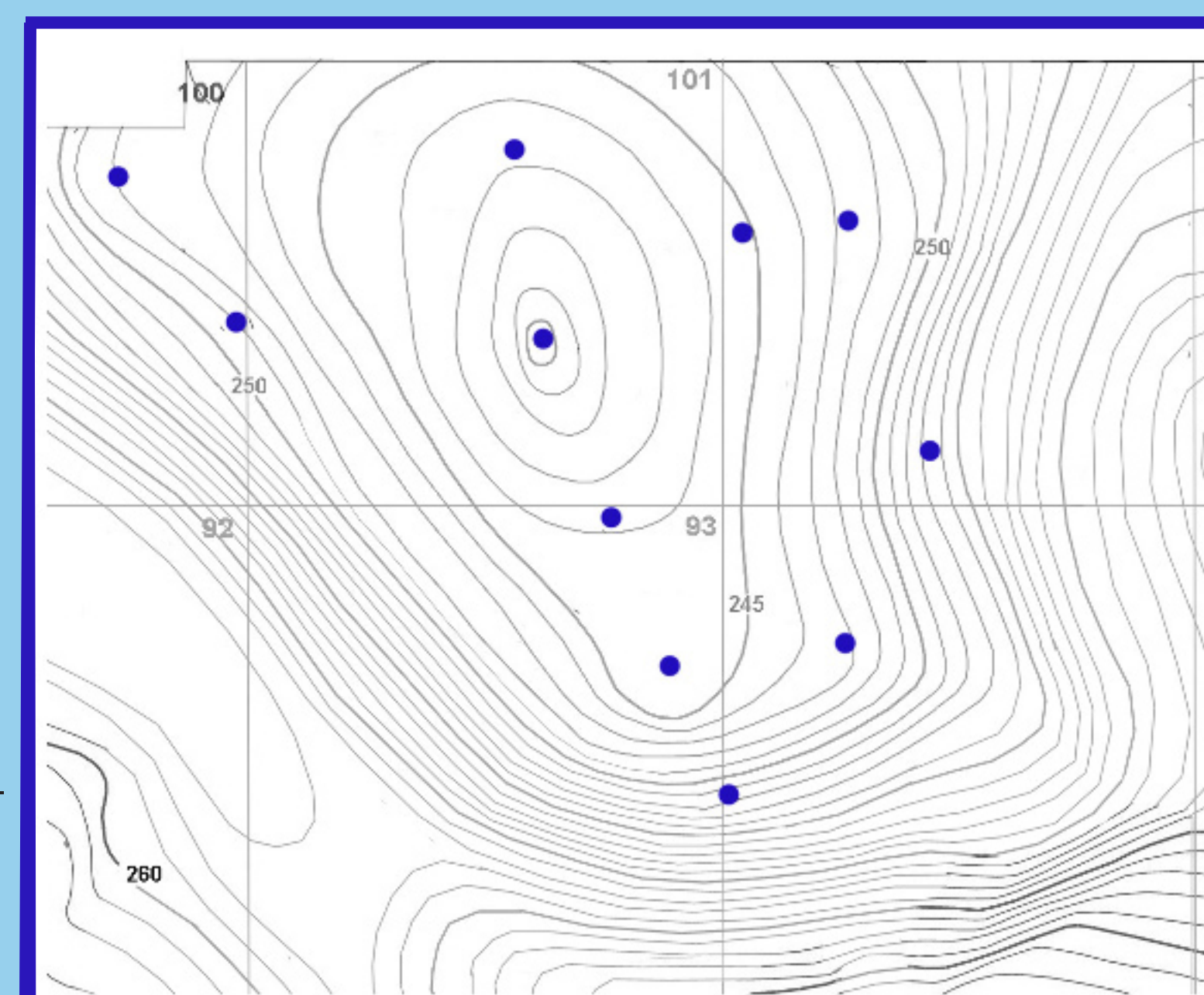
The principal method of investigation was by borehole study. The deepest borehole for this project was driven to 13 feet. A total of 12 borehole sites were used in this study, including four sites from previous studies. Map to the right shows study sites.



RECONSTRUCTING THE 103RD STREET BASIN

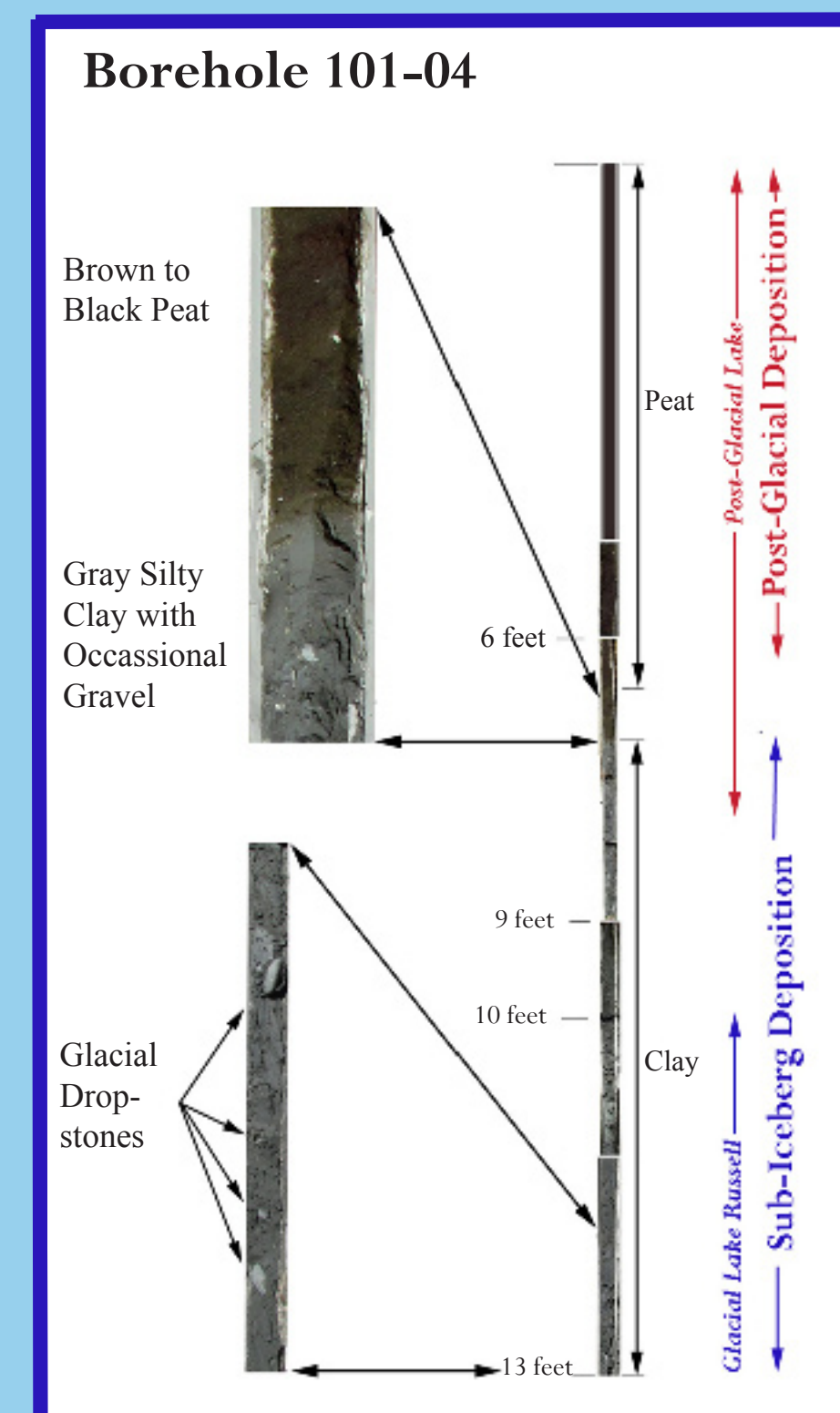
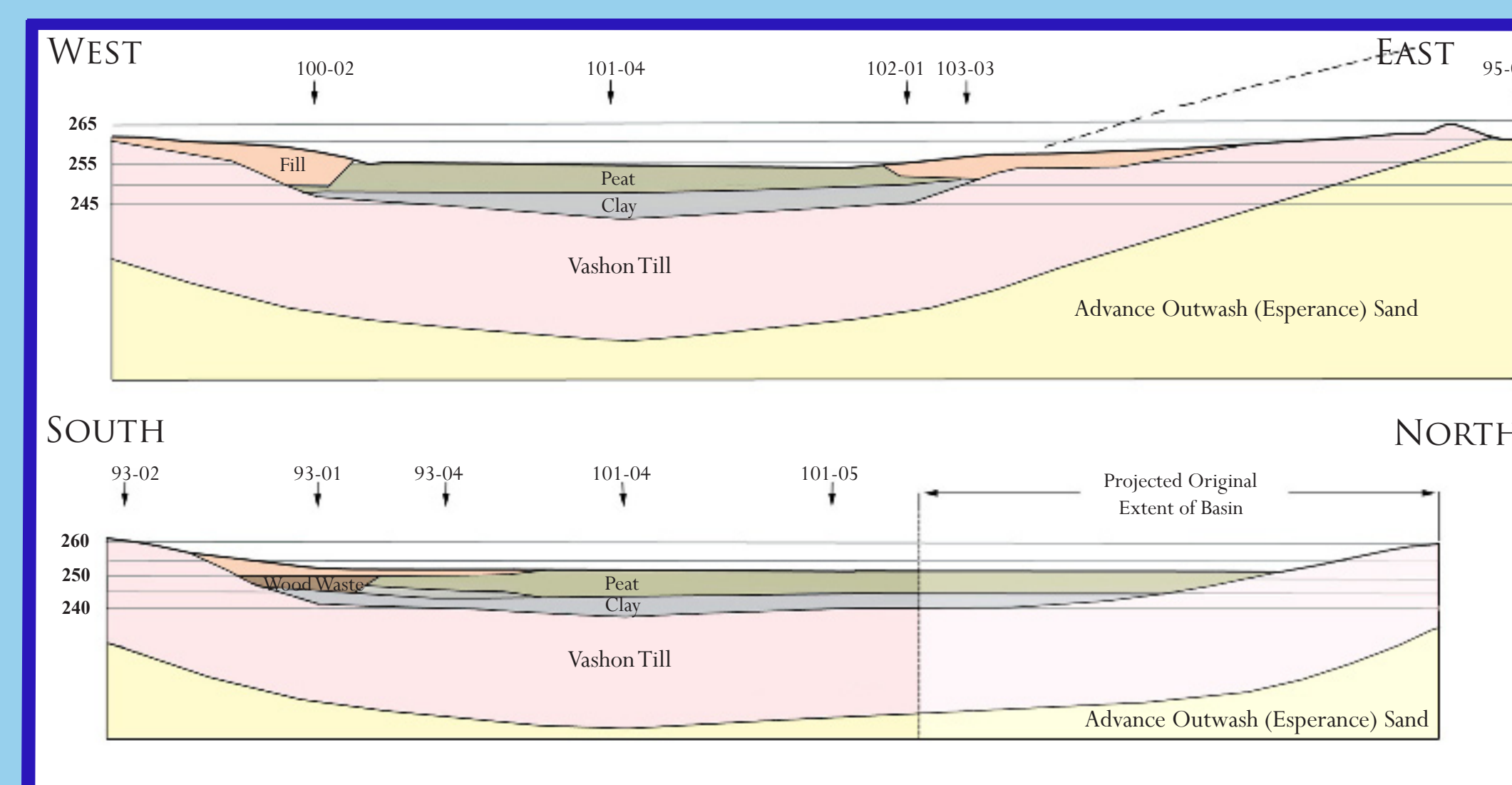


Using till-surface elevations (above map, in feet), it was possible to create a map of the original basin, located on the existing topography (top right). The final reconstruction was produced by blending the two maps (right).



ASSEMBLING BASIN CROSS-SECTIONS

Using borehole data, basin cross-sections were constructed. These illustrate that this basin was formed as the Vashon Till was depressed into the landscape, and was subsequently filled with clay and peat deposits. On the margins of the basin, it appears that adjoining areas may have been locally uplifted as the basin was depressed. Sections are to scale, no vertical exaggeration. Elevations are in feet.



EVALUATING THE STRATIGRAPHY

The stratigraphy of the basin includes a lower clay unit with occasional gravel, interpreted as accumulating at the base of the iceberg which originally deformed the basin. Here, the gravel appear to be glacial dropstones.

The upper unit consists of peat, which was accumulated in a post-glacial lake which occupied this area until the late 1800's. The gradual transition between these units suggests that the last of the iceberg melted in the post-glacial lake.

CONCLUSIONS

This study provides evidence that the 103rd Street Kettle Basin was a feature created by depression of the landscape, as revealed in the deformed structure of the underlying till layer. Based on the fill of the basin, it appears that the basin was formed as a large iceberg was deposited on either the floor of Recessional Glacial Lake Russell, or on the floor of a post-glacial lake which later occupied this basin. In either case, the sediments in the floor of the lake were water-saturated, and apparently yielded to the weight of the ice above. The subsequent melting of the iceberg produced the clay that accumulated at its base, along with the glacial dropstones in that layer. Once the ice had melted, peat began to accumulate on the floor of the (post-glacial) lake.

The 103rd Street Kettle is the smallest of at least three such basins located on the North Seattle College Campus. On-going research will further evaluate these features, which appear to reflect a unique set of local conditions at the last glacial-nonglacial transition.

ACKNOWLEDGEMENTS

This study is part of a larger campus research project conducted by students under the direction of our instructor John Figge. Most of all, I am indebted to him for his guidance and support over the course of this project. I am further indebted to at least a dozen students who have worked with me on this project over the last several quarters, and to a much larger number who have contributed to our understanding of this area over the past few years. A particular note of thanks is due to Dr. Tracy Furutani, head of the Department of Geology and Space Sciences, and to Brian Saunders, of the Undergraduate Research Program, for their support in this project.