

DISCUSSION

These stratigraphic columns were constructed from tape-and-compass mapping along eight traverses through parts of the Lower and Middle Banded series to the eastern part of the Stillwater Complex. The westernmost (Mountain View Ridge) traverse followed a north-south-trending ridge in the Banded series, the easternmost (Stillwater River Valley) traverse followed the road to the Stillwater River, the easternmost (Lower Mountain View Road) traverse followed the road to the Stillwater River, and the Stillwater River Valley traverse followed the road to the Stillwater River. The index map shows the approximate locations of the traverses and the locations of the drill-core locations.

This work was initiated to characterize the stratigraphy of the Banded series in the eastern part of the Stillwater Complex, particularly with regard to large-scale lateral variations that would serve as a guide for detailed mapping, structural analysis, and resource investigations. In this area, the Stillwater Complex is cut by layer-parallel faults that dip into the Horseshoe-Thrust (Jones and others, 1965, p. 197). The complex structural history of the Stillwater Complex, including the Horseshoe-Thrust and the J-M Reef, layer-parallel faults may truncate or repeat sections, including the J-M Reef. Detailed mapping will be required to understand the stratigraphy and its economic implications; the measured sections in this report illustrate the stratigraphic units in the complex that can be correlated and mapped. Major faults in the Stillwater Complex, Segers and Carlson (1982), shown as "Major fault" on the column, indicate positions of truncated or repeated sections. For this report, we did not attempt to reconstruct the stratigraphic sections; they show what was actually seen on the ground.

General correlations between the sections are apparent but substantial lateral variations can be observed. A vertical unit consisting entirely of plagioclase cumulate (pC) appears in the Mountain View Ridge, Vision Creek, and Prairie Creek traverses. This unit also appears in the upper parts of the Gray Rock and Bowlow (1980) and the Lower Anorthositic units of Segers and Carlson (1982) and forms the base of the Middle Banded series (Zientek and others, 1985). In addition, two laterally persistent pC units that are present lower in the section correlate with the J-M Reef as described by Segers and Carlson (1982) and the East Boulder Pluton as described by Zientek and others (1980) in the East Boulder Pluton. On the East Boulder Pluton, the stratigraphic interval is restricted to a distinctive but laterally discontinuous unit that is present in the head of the Anorthositic Lower (Olivine-bearing) zone II. In this area, the stratigraphic interval is a significant part of this stratigraphic interval in the eastern part of the Stillwater Complex.

The stratigraphic columns were compiled at a scale of 1 in. equals 100 ft, which allows illustration of modal variations across intervals as small as 2 ft. The compiled columns were reduced by 15 percent to a scale of approximately 1 in. equals 118 ft for publication. Modal estimates provide additional descriptive information that is not portrayed in the columns. These notes use the cumulus mode notation that has been applied to rocks of the Stillwater Complex (Zientek and others, 1985); abbreviations are as follows: p, plagioclase; a, augite; b, bronzite; o, olivine; C, cumulate. Additionally, olivine or interstitial minerals are designated as "O" or "I" respectively, after the "C" following the mineral abbreviation. Order of listing of cumulus minerals represents decreasing abundance from left to right. In some cases, larger-scale columns were generated for mineral stratigraphic columns. For Bowlow Road and especially Gray Rock traverses, the reported sections are compiled from more than one traverse line. Because thicknesses were almost invariable, these sections are generalized representations of this stratigraphy and do not show all details.

Several conventions used in constructing the stratigraphic columns should be noted. (1) Anisotropy used in strike-and-dip terrain corrections (Coomps, 1962) were measured along the traverses. However, when field notes indicated uncertainty in measurement or possible structural rotation of a small block, the anisotropy was not used. Anisotropy generally were measured on igneous lavas (typically modal layering or well-developed igneous foliation). The marginal notes include other anisotropy, when it differs from that which were not used to correct for terrain corrections. (2) Modes were visually estimated in the field. For some intervals, modes vary locally and were reported within a 10-15 volume percent range for each mineral component. Typically, in such cases, the mode pair for the interval range is shown on the stratigraphic column, but where more detailed information was provided, such as "plagioclase 100 percent" or "olivine 100 percent" on the marginal notes, the mode is shown in detail. (3) Modal estimates that did not sum to 100 volume percent were normalized to 100 percent assuming that the reported modal proportions are correct. (4) Some information shown was taken from outcrops shown distant (to as much as 100 ft) from the actual traverse line, where the traverse lacked outcrops, but was likely to have created the same type of rocks. (5) Stratigraphic columns start at south end of traverse (D) and run northward, from lower toward higher stratigraphic units, and descriptions in marginal notes for a given interval also start with the lowest unit. (6) Initial measurements were made in English or metric units based on convenience. For example, olivine sizes were generally reported in centimeters. Because the traverse were measured in centimeters, all metric data were converted to English units to provide uniformity of presentation. (7) In some data were converted to English units to provide uniformity of presentation. (8) In some data were converted to English units to provide uniformity of presentation. (9) In some data were converted to English units to provide uniformity of presentation. (10) In some data were converted to English units to provide uniformity of presentation.

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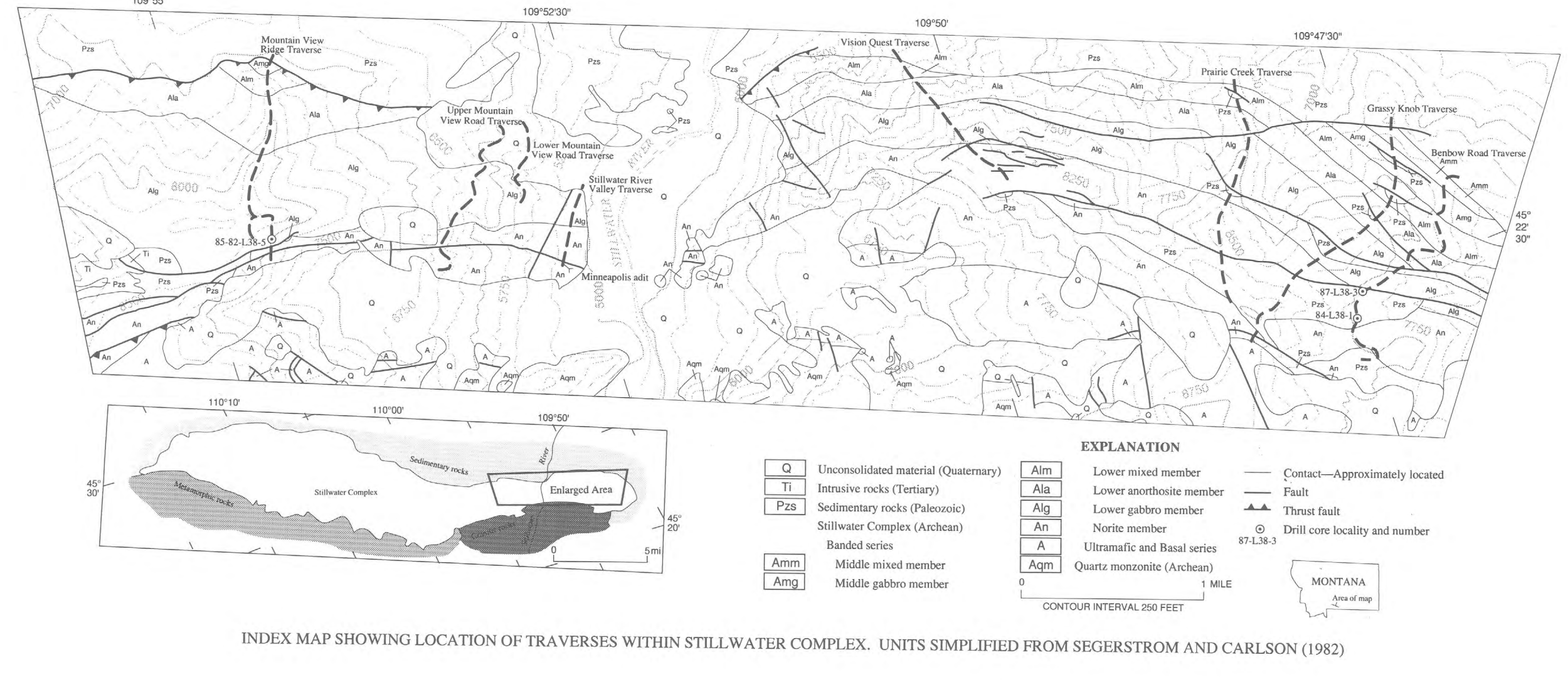
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STRATIGRAPHIC COLUMNS FOR TRAVERSES THROUGH THE LOWER AND MIDDLE BANDED SERIES, STILLWATER COMPLEX, STILLWATER COUNTY, MONTANA

By
Jocelyn A. Peterson, Michael L. Zientek, and Roger W. Cooper

