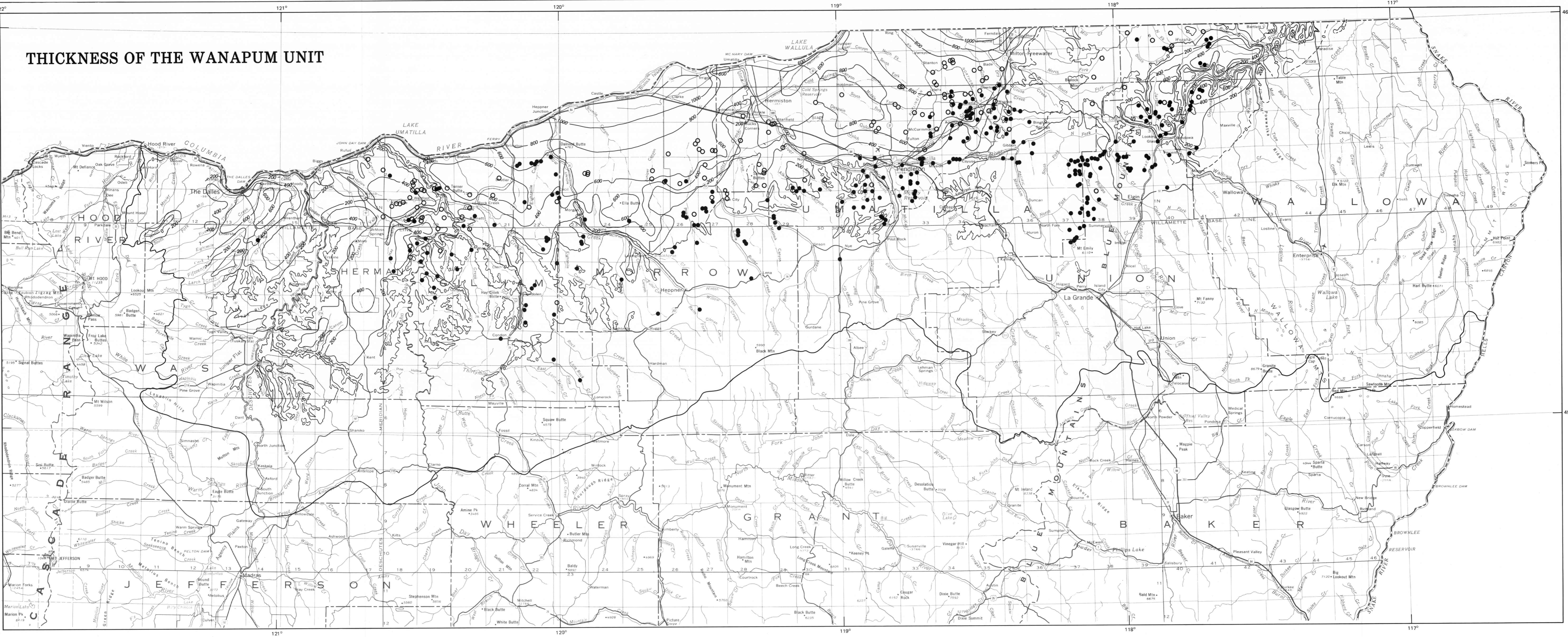


## THICKNESS OF THE WANAPUM UNIT



### THICKNESS OF THE WANAPUM UNIT

Lines of equal thickness shown on this sheet were compiled from point data at the locations shown, from the structure map, and from maps showing structure contours on the top of the Grande Ronde Basalt or the Wanapum Basalt. For Walla Walla County east of the Blue Mountains anticline, thicknesses were derived entirely from the structure contour maps because no located well data were available.

Although well data suggest that the Wanapum unit in Oregon rarely exceeds a thickness of 800 feet, two areas that exceed 1,000 feet are shown, one near Milton-Freewater, the other in the Boardman area, along the axis of the Dalles-Umatilla syncline. The thicknesses at both of these locations are based upon interpretations made by Drost and Whiteman (1985) in neighboring Washington, where the well data are more plentiful.

The thickness map shows that the main part of the Wanapum unit in Oregon is regionally continuous between the John Day River and the west flank of the Blue Mountains near Milton-Freewater, a distance of about 125 miles. Three smaller areas also contain significant thicknesses of Wanapum. From west to east, these are located in (1) a structural basin in the Dalles area of Wasco County, (2) Sherman County between the Deschutes and John Day Rivers, and (3) the Grouse Flat syncline in northern Union and western Walla Walla Counties. Thicknesses of numerous small erosional outcrops located between the above-mentioned areas and the Blue Mountain anticline have not been contoured because of their small size and because of the lack of well data. Presumably the thickness of the Wanapum in most of these outcrops is less than 200 feet.

The Wanapum Basalt in Oregon is subdivided into four members, only three of which need to be mentioned in this report for Oregon. The oldest, thickest, most extensive, and most important member is the Frenchman Springs Member; it is present in the Wanapum Basalt almost everywhere that the Wanapum is mapped. The Roza Member is younger than the Frenchman Springs Member and is present chiefly in northern Sherman and Wasco Counties, whereas the youngest, the Priest Rapids Member, is more extensive than the Roza Member and is present in northern Gilliam, Sherman, and Wasco Counties.

### EXPLANATION

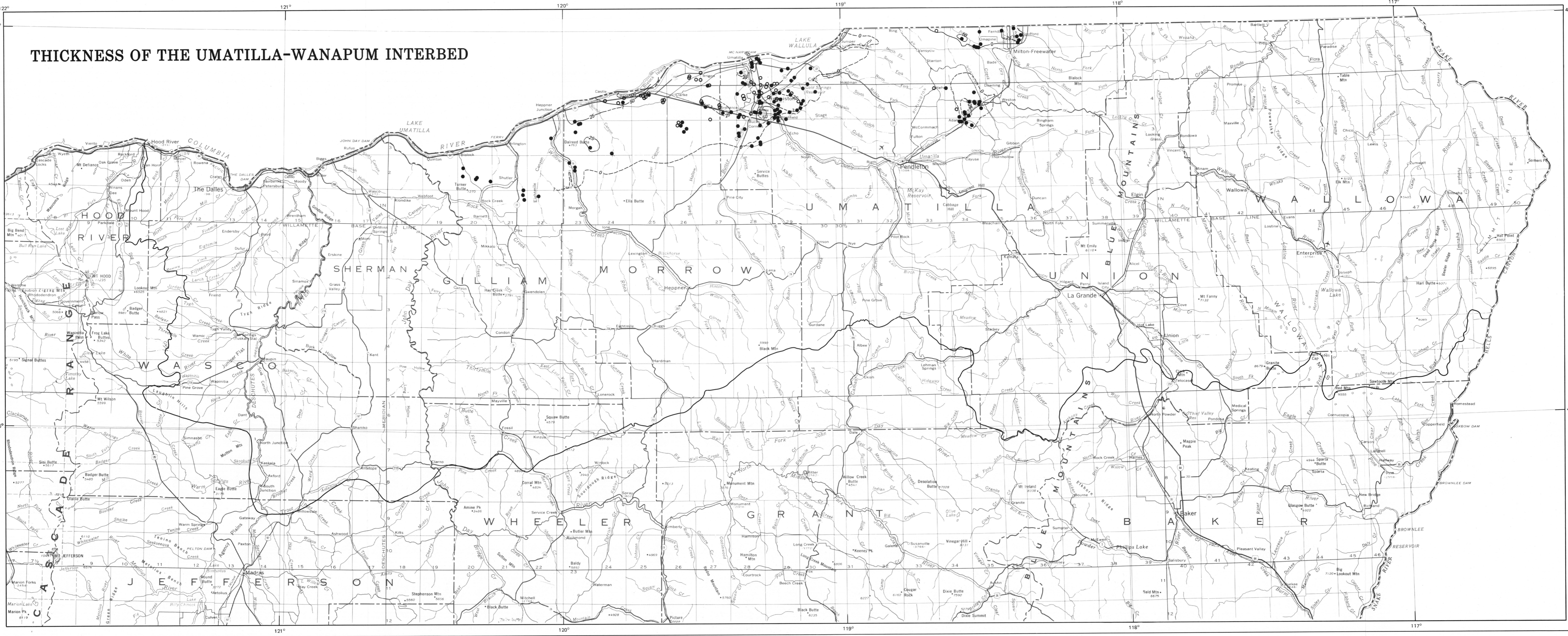
— STUDY AREA BOUNDARY

— 200 — LINE OF EQUAL THICKNESS OF THE WANAPUM UNIT—Approximately located, dashed where inferred. Interval 200 feet.

○ WELL PARTIALLY PENETRATING WANAPUM UNIT

● WELL PENETRATING WANAPUM UNIT

## THICKNESS OF THE UMATILLA-WANAPUM INTERBED



### THICKNESS OF THE UMATILLA-WANAPUM INTERBED

The Wanapum Basalt and the overlying Saddle Mountains Basalt are generally separated by a thin sedimentary interbed and each separate member within the Saddle Mountains Basalt is, in turn, separated by a sedimentary interbed. The Umatilla Member is the oldest member of the Saddle Mountains Basalt. The interbed between Wanapum Basalt and the Umatilla Member of the Saddle Mountains Basalt is probably equivalent to the Matton interbed (informal name) of the Ellensburg Formation. The Umatilla Member is overlapped by the younger Pomona Member in one area south of Arlington and may be missing in others. This map shows the thickness of the Umatilla-Wanapum interbed where the Umatilla Member is present. The zero thickness line marks the approximate position of the edge of the Umatilla Member where it does not coincide with the contact of the Saddle Mountains Basalt.

The map is compiled from thickness data at the indicated data points. The Umatilla-Wanapum interbed is generally described by drillers as clay or claystone. No attempt was made to show the thickness of the interbed in the Grouse Flat syncline, where well data were not available, or in the Grande Ronde Valley, where the stratigraphic relations are very uncertain.

### EXPLANATION

— STUDY AREA BOUNDARY

— 25 — LINE OF EQUAL THICKNESS OF THE UMATILLA-WANAPUM INTERBED—Approximately located, dashed where inferred. Interval 25 and 50 feet.

○ WELL PARTIALLY PENETRATING SADDLE MOUNTAINS BASALT

● WELL PENETRATING SADDLE MOUNTAINS BASALT

## GEOLOGY, STRUCTURE, AND THICKNESS OF HYDROGEOLOGIC UNITS IN PART OF THE COLUMBIA PLATEAU, OREGON

By  
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1990