

Gravity Maps of the State of Washington

and adjacent areas

(scale 1:250,000)

by

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Twenty-nine thousand seven hundred thirty-three (29,733) gravity stations from the state of Washington (Fig. 1) have been compiled from an edited data set consisting of a number of sources: U.S. Defense Mapping Agency (DOD); Danes and Phillips (1983); Finn and Williams (1983); Sherrard and Flanigan (1982, 1983); Abrams (written comm., 1983); and Couch et. al.(1981). All gravity values were calculated using the Geodetic Reference System 1967 (International Association of Geodesy, 1971). The land gravity stations were corrected for terrain by computer from the station to 166.7 km [Richard Godson, unpublished program, U.S. Geological Survey (USGS)], implementing the procedure of Plouff (1977). The density used in these corrections as well as in the Bouguer correction is 2.67 g/cm^3 . For a complete description of the gravity reduction procedures currently in use by the USGS for defining the corrections and anomalies, see Cordell et. al. (1982).

Each of the gravity values was projected with a Universal Transverse Mercator projection. For the maps east of 120° West Longitude a central meridian of 117° West Longitude was used to project the data; maps west of 120° West Longitude have a central meridian of 123° West Longitude. The irregularly distributed field stations marked on plates 1-18 by x's were represented on a 1 km grid by means of a modified minimum curvature

interpolation formula programmed for the USGS by Webring (1981). The contouring on plates 1-18 were done by computer utilizing a program by Godson and Webring (1982) Free-air values are shown for offshore areas, complete Bouguer for onshore. The maps are at a scale of 1:250,000 to match the USGS 1° by 2° topographic quadrangles for the state of Washington and adjacent areas. To overlay these gravity maps on the 1° by 2° topographic quadrangles, the latitude and longitude tick marks, rather than the outside boundary lines, should be aligned for a good fit. Paper stretching or shrinkage can cause a slight (2m) distortion between the gravity maps and 1° by 2° topographic quadrangles. The contour interval is 2 milligals. Gravity lows are indicated by "L"'s, highs by "H"'s. A contour interval of 2 mgal is appropriate for most areas, except for, the free air anomalies offshore and the data in the Cascade region (122° West Longitude) which would be better at a 5 mgal interval.

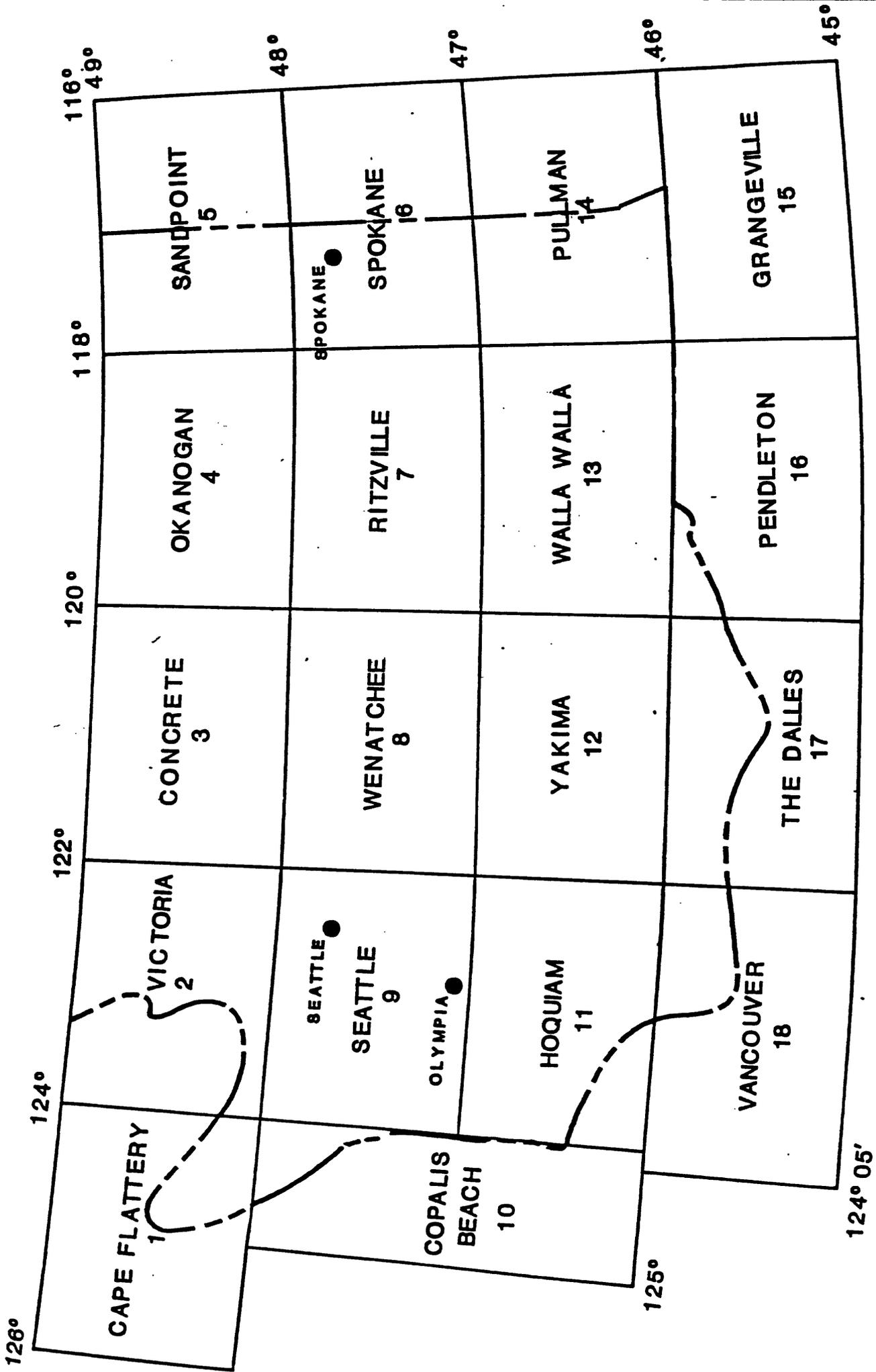


Figure 1: Index map showing the locations of the USGS 1° by 2° topographic quadrangle gravity maps for the state of Washington.

References

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