Groundwater from thirty-three wells which are randomly distributed within 42 square miles of the residential, agricultural and industrial area of East Portland Terraces have been analyzed. The area is moderately wet, with an annual precipitation of about 37 inches.

Residual and transported sediments from different sources, dominantly volcanic, comprise the subsurface lithology. The sedimentary units that were deposited by means of rivers and lakes have filled an original structural and erosional valley in the area. This relatively unconsolidated valley filling is about 900 feet of predominantly lenticular,
stratified and cross-bedded lenses of clay, silt, sand, gravel, cobbles and boulders.

The topsoil throughout the area has generally similar mechanical characteristics with good drainage. Due to the physical characteristics of the rocks, soils and topography, the area has an open hydraulic system that contains a substantial amount of usable subsurface water. The wells sampled are relatively shallow and their aquifers receive their main recharge from percolated rainfall water. Most of these aquifers occur within the Troutdale Formation rock unit.

The major sources of the dissolved elements in the water are the rock units and the organic material of present or buried soils. These sources, along with mixing of water through subsurface migration, created similar compositions in all the tested aquifers, except nitrates and probably phosphates which show a general minor change from east to west, generally correlative with population density. These major mechanisms, manmade activities and/or analytical errors produced only minor differences in the analyses. No major change was detected which could be related to the minor lithologic differences or of the small changes in soils. Comparison with a few older analyses did not indicate a change with time.

Alkaline earths in the water exceeded alkalies and weak acids also exceeded strong ones. This meteoric ground water is bicarbonaceous-siliceous and is good for general use. It is diluted, neutral, fresh, moderately hard and has low salinity hazard.