

State Department of Geology and Mineral Industries

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EXHUMED FOREST AT OXBOW PARK

Multnomah County

Introduction. Oxbow Park was recently established on county land adjacent to the Sandy River a few miles east of Gresham and is located in the SE $\frac{1}{4}$ sec. 10, T. 1 S., R. 4 E. In December 1964, the Sandy River washed away much of the park area during the high flood period just before Christmas. After the waters had receded, personnel from the County Park Bureau noticed that the river, in cutting away part of its south bank, had exposed a number of trees, still in an upright position, which had been buried by river deposits at some earlier period. The Bureau requested that a geologist visit the locality to study these trees and determine, if possible, the time of their burial.

Geology. The oldest bedrock exposed at the surface in this general area is composed of conglomerates, sandstones, and mudstones of the Troutdale Formation and Sandy River Mudstone (Trimble, 1963). These sediments are probably no older than lower or middle Pliocene in age (approximately 10 million years) and are therefore geologically quite young. The cobbles and pebbles that make up the conglomerates are mostly andesitic and basaltic debris from the Cascade Mountains and Columbia Plateau, but quartzite pebbles sometimes constitute as much as 30 percent of the total. Since quartzites are not known to occur in Oregon, they are presumed to have been transported by the ancestral Columbia River from the very old pre-Cambrian Belt Series in northeast Washington or southern British Columbia. The light-colored quartzite pebbles are a distinguishing feature of the Troutdale beds.

The high cliffs that border the lower Sandy River are composed of the conglomerates and sandstones of the Troutdale Formation. Much of the river bottom has been partially filled by alluvial deposits of sand, silt, and gravel, probably of Recent age. Several terraces, representing past periods of local flooding, are present along the sides of the main channel.

Examination of the site. The trees are particularly abundant along the south bank of the river where a long meander has been steadily undercutting one of the Recent terraces (see photo). The top of the terrace is about 50 feet above the present river level. As mentioned above, the trees all appear to be standing in their original growth position, the largest observed being about 2 $\frac{1}{2}$ feet in diameter. The wood is quite fresh and does not appear to have rotted or altered to any great degree during the time it was buried. The roots of one of the trees have been exposed, and they appear to have been growing in a tan-colored conglomerate of the Troutdale Formation at the time it was buried (see photo).

The terrace material is composed of medium to very coarse friable sand with a few included volcanic pebbles as much as one inch in diameter. The

sand is moderately sorted and shows only indistinct cross-bedding. The direction of bedding appears to be mostly inward toward the bank of the river, but behind each tree the sediments have piled up in the opposite direction (see photo).

The cross-bedded character and general coarseness of the terrace material indicates that the trees were probably buried by river sands during a period of local flooding. The most likely cause of the flooding would be downstream damming by landslide. The steep cliffs of Troutdale sandstones and conglomerates are constantly being undercut by the meanders of the Sandy River, and ancient landslides can be seen in several places.

Dale Christianson, forester for Multnomah County Park Bureau, took a core from the largest observed tree growing on top of the terrace. This tree was about 3 feet thick, 5 feet above the base, and a tree-ring count showed that it was approximately 160 years old. By allowing 30-50 years for vegetation to establish a foothold on the fresh terrace deposits, it would seem that the older trees were buried by the flood about 200 years ago.

Report by: R. E. Corcoran
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Reference: Trimble, D. E., 1963, Geology of Portland, Oregon, and adjacent areas: U.S. Geol. Survey Bull. 1119.