



**OCCURRENCE, QUALITY, AND USE OF GROUND WATER IN ORCAS, SAN JUAN, LOPEZ, AND SHAW ISLANDS,
SAN JUAN COUNTY, WASHINGTON**

Location of Major Ground-Water Withdrawals by Water-Use Category for 1980

By K. J. Whiteman, Dee Molenaar, G. C. Bortleson, and J. M. Jacoby
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Base from U.S. Geological Survey
Orcas Island, Richardson 1:62,500, 1957.
Sucia Island, 1973; Stuart Islands, 1953.
Malcolm Island, 1954; Roche Harbor, 1954.
Friday Harbor, 1954; False Bay, 1:24,000,
1954.

INTRODUCTION

In San Juan County, land use and growth trends are affected by the islands' topography and isolation from the Washington mainland. Instead of large farms, urban sprawl, or industrial parks, the islands of San Juan County foster small communities, residential development along coastlines, and heavy tourism and part-time residency patterns that increase the number of people on the islands from 8,000 in winter to a 30-40,000 peak in summer. Consequently, water-use demands are directed toward domestic and public-service needs of individuals rather than the needs of a complex technological region.

This sheet, along with sheet 11, depicts ground-water use on Orcas, San Juan, Lopez, and Shaw Islands. Sheet 10 shows the locations of major (all uses except single-family domestic) ground-water withdrawals by water use; sheet 11 gives the estimated amount of pumpage during 1980. The text of these sheets also evaluates relations between water use and water-quality problem areas (sheet 7) and discusses population growth and development trends as they relate to increasing demands on the ground-water resource.

DATA COLLECTION AND ANALYSIS

The adjacent map shows the locations of major ground-water withdrawals, by water use, for 1980. These locations were identified from field visits by U.S. Geological Survey personnel, San Juan County Health Department records, Washington Department of Ecology (DOE) water-rights records, and the Washington Department of Social and Health Services (DSHS) water-facilities inventory. The Agricultural Stabilization and Conservation Service (ASCS) in Friday Harbor provided detailed information concerning the use of ground water for stock and irrigation purposes.

For the purpose of this study, a public-supply system is defined as one in which at least two homes are served by a single well, and therefore includes small installations as well as large municipal ground-water systems. It is probable that some small public-supply systems were overlooked because they are not on record with the DOE, DSHS, or the San Juan County Health Department.

The locations of major ground-water withdrawals have been differentiated by the rock type from which the water is withdrawn, as defined on sheet 2. A few of the well locations shown on this map were plotted only to the center of a 40-acre tract (see sheet 1) due to a lack of more reliable location information.

DISCUSSION

Sheet 10 shows that the greatest concentration of water users is on Lopez and San Juan Islands. The lack of ground-water-supply systems on the eastern half of Orcas Island is due partly to the lack of development around Mt. Constitution. In addition, the high elevation of the mountain causes increased precipitation (sheet 2), which in turn makes ample surface water available for storage in Mountain and Cascade Lakes; residents in this area obtain their water supplies from these lakes. Shaw Island has few large water users because it is less developed.

Two-thirds of the ground-water systems shown on the adjacent map are public supply—water that is used largely for domestic purposes, but also for some commercial uses. Livestock use accounts for 16 percent of the systems shown, commercial use for 11 percent, and 2 percent each for irrigation, industry, and recreation. Surface-water ponds are often used for irrigation and stock watering, but these supplies are not shown here unless the ponds are maintained by ground water from wells.

Sheet 11 contains a more detailed discussion of these water-use categories as they relate to pumpage rates.