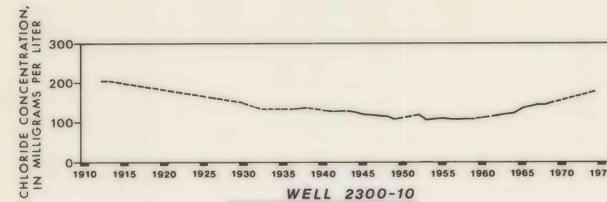
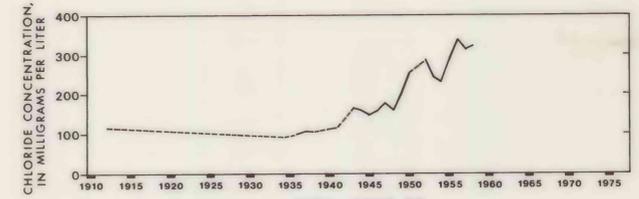


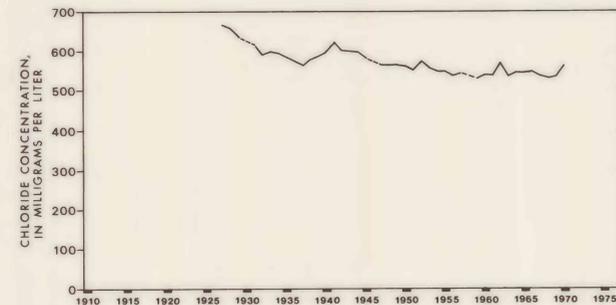
WELL 2101-03



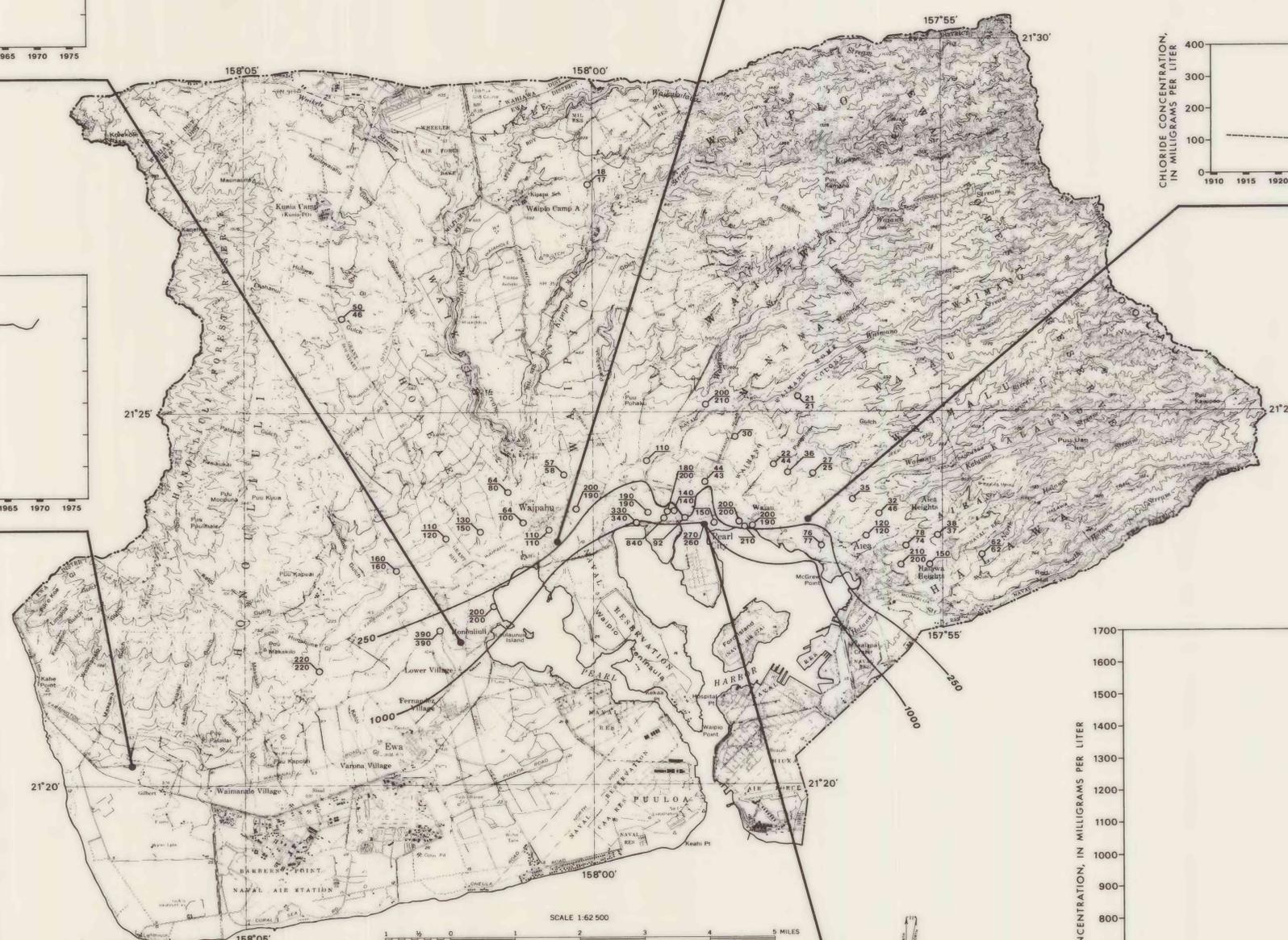
WELL 2300-10



WELL 2356-02



WELLS 2006-04 to 07



Base from U.S. Geological Survey  
1:62,500, Island of Oahu, 1960

SCALE 1:62 500

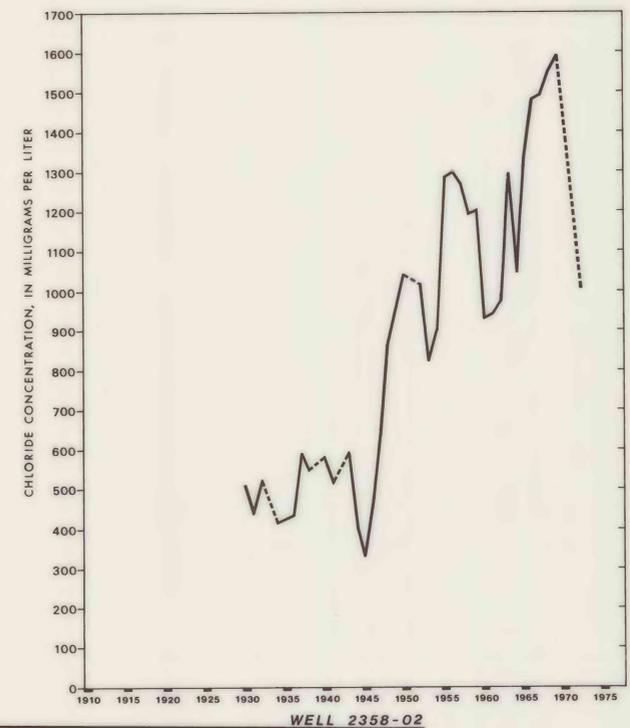
CONTOUR INTERVAL 80 FEET  
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN  
DECLINATION 1947

### CHLORIDE CONCENTRATION OF BASAL WATER, PEARL HARBOR AREA

#### EXPLANATION

- Sampling location
- Chloride concentration on 3/22/78 in milligrams per liter
- Chloride concentration on 8/9/78 in milligrams per liter
- Line of equal chloride concentration in milligrams per liter from Dale and Ewart, 1971
- Basin boundary



WELL 2358-02

**CHLORIDE CONCENTRATION**

The chloride concentration of the water from any particular well, shaft, or spring in the Pearl Harbor area is often dependent on (1) the quality of recharging waters; (2) the rate of discharge of the well and nearby wells; and (3) the position and depth of the well relative to the fresh, brackish transition, and saline zones. Dale (1967) showed a geochemical section through the Pearl Harbor aquifer that illustrates the variations in chloride concentration with geographic position and depth.

Rainfall and irrigation-water return from the Waiahole ditch system recharge the basal aquifer underlying the higher and inland parts of the Pearl Harbor area. These waters have chloride concentrations of less than 20 mg/L (milligrams per liter). Irrigation water pumped from wells, the return of which recharges the basal aquifer at lower altitudes, has a higher chloride concentration, perhaps as much as 800 mg/L.

Chloride surveys were made on March 22 and August 9, 1978, during which samples were collected in a pattern designed to give as broad a geographic coverage as possible in as short a time as possible. Chloride concentrations of the samples were plotted as shown on sheet 2. The number of sampling sites was insufficient to construct isochlors (lines of equal chloride concentration). The 250- and 1,000-mg/L isochlors from Dale and Ewart (1971) are shown here for comparison, even though the data base was somewhat different.

Annual means of monthly chloride concentrations from long-term records of five wells in the Pearl Harbor area are shown. Gaps in the records are indicated by broken lines.

The graphs of chloride concentration in the water from wells 2300-10, 2101-03, and 2006 indicate no significant trends. They all indicate declines until 1955, followed by slight rises for wells 2300-10 and 2101-03 to about 1970. The declines may be due to freshening by the application of Waiahole ditch water for irrigation in the western part of the Pearl Harbor area since about 1913. Water from well 2006 (multiple well field) shows a general decline in chloride concentration, owing to the sealing of the deeper wells in the group.

The long-term chloride records of wells 2358-02 and 2356-02 in the eastern part of Pearl Harbor show a general increase since the 1940's. This probably reflects shrinking of the basal lens and the thickening or migration inland of the brackish transition zone.

## GROUND-WATER STATUS REPORT, PEARL HARBOR AREA, HAWAII, 1978

By  
Ronald L. Soroos and Charles J. Ewart  
1979