

WATER-TABLE MAP, SEPTEMBER 20-21, 1967

This map represents low water-table conditions of late summer, 1967. Water from the Charles River Basin and the Muddy River recharged adjacent parts of the peninsula.
The Prudential Center complex (area A, key map) occupies the site of old railroad yards. The water table is interrupted by watertight basement units of this complex. Dewatering at the northeast corner of the complex at this time may have accentuated the water-table low along Boylston Street (B), but a low also existed there in the 1930's. This low represented major discharge into the sewer system. Depression of the water table in the area of the old John Hancock Building suggests dewatering, and apparently small amounts of water were pumped daily by basement sump pumps.
The Massachusetts Turnpike from the Prudential Center eastward (C) is constructed in a depressed watertight compartment, which also interrupted the water table in 1967. Destruction of wells before 1967 along East Berkeley Street (D) meant little data were available for defining the probable ground-water trough in this area. The water table southwest of Union Park Street (E) showed recharge and discharge areas similar to those during 1936-40. However, control was limited because many of the wells that were located in 1967 were affected by surface runoff and had poor hydraulic connection with the ground-water reservoir; they were not used in contouring.
Filling of South Bay (F) was completed on September 30, 1967, and ground-water discharge along the old South Bay area was reduced. Information is lacking, but the water-table contours along Albany Street (G) indicate that the water table was about 1 foot higher than on the 1936-40 lowest water-table map.

EXPLANATION

- 2365 Observation well. Number is well with hydrograph.
- Observation well not used because it was plugged or had poor hydraulic connection.
- Water-table contour. Shows altitude of water table. Dashed line represents 1936-40 composite low water table. Contour interval is 1 foot. See level down of 1936.
- Direction of ground-water movement near the Charles River Basin and Muddy River.
- Channel of Muddy River under roadways.
- Artificial pond (perched).
- Pumping station.
- City of Boston major sewer and storm drain distribution system. Where two intersecting lines are solid, sewers or drains are interconnected; where two lines cross but are not interconnected, the solid line over the intersected line. Only major sewers and drains are shown; minor ones under most streets but are not shown.
- Metropolitan District Commission combined sewer and storm drain. P, pressurized line of 1936.
- Brook conduit.
- Interceptor and combined sewer.
- Sanitary sewer.
- Storm drain.
- Recharge in unpaired area or partly unpaired area.
- Possible recharge from water-main leak.

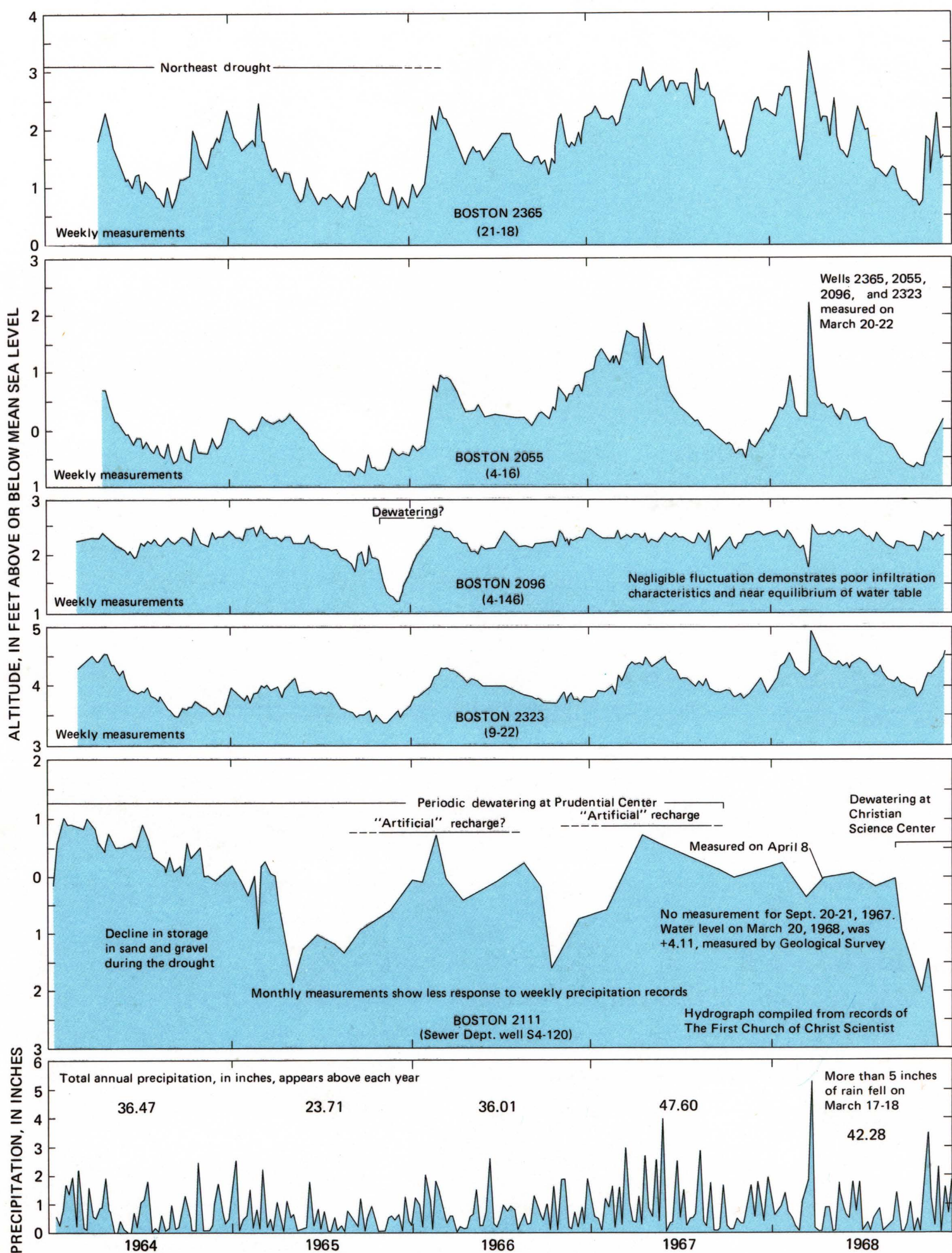
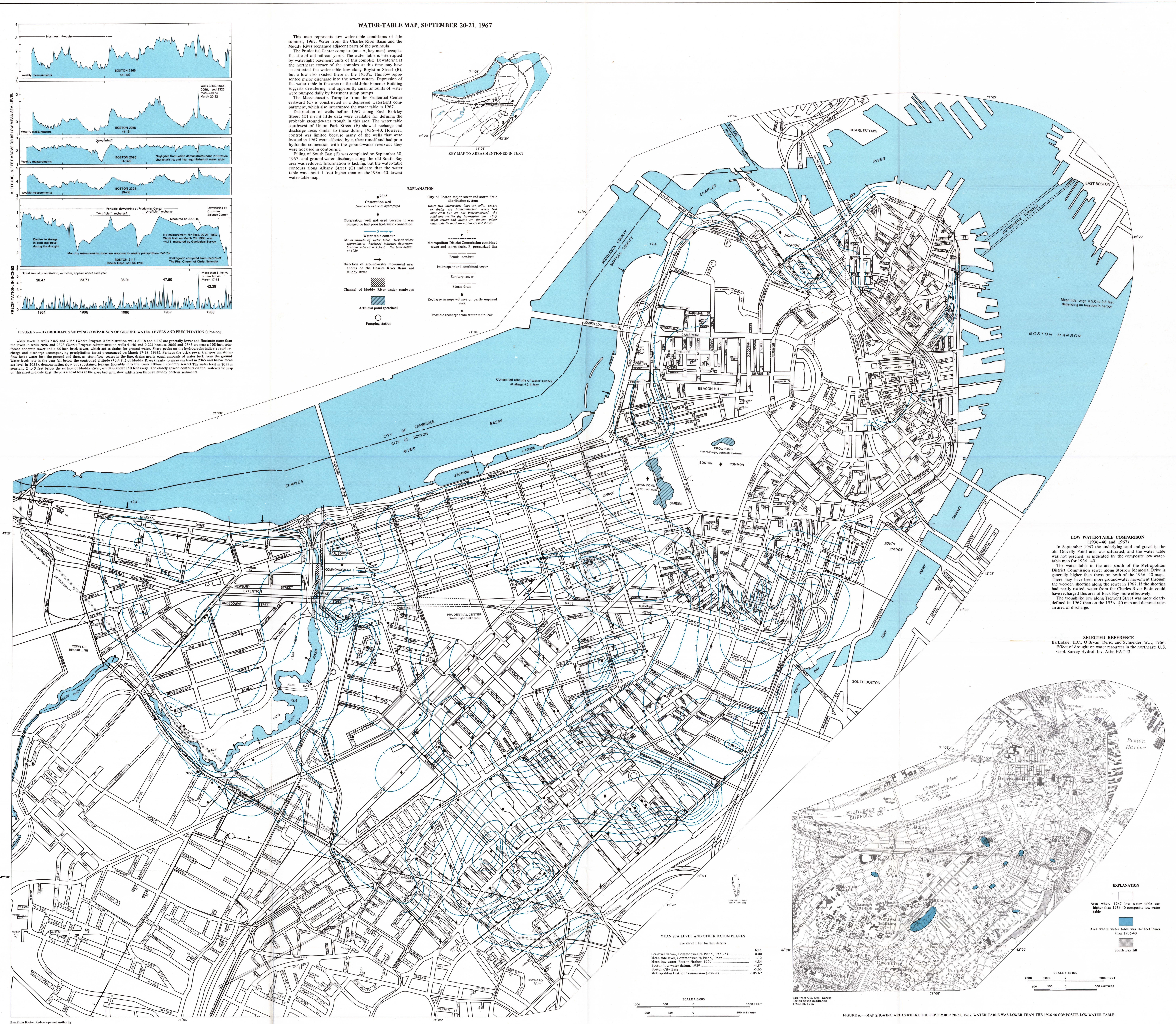


FIGURE 5.—HYDROGRAPHS SHOWING COMPARISON OF GROUND-WATER LEVELS AND PRECIPITATION (1964-68).

Water levels in wells 2365 and 2065 (Works Progress Administration wells 21-18 and 4-16) are generally lower and fluctuate more than the levels in wells 2066 and 2223 (Works Progress Administration wells 4-140 and 9-223) because 2065 and 2365 are near a 108-inch open-topped concrete sewer and a 46-inch brick sewer, which act as drains for ground water. Sharp peaks on the hydrographs indicate rapid recharge and discharge accompanying precipitation (most pronounced on March 17-18, 1968). Perhaps the brick sewer transporting storm-flow leaks water into the ground and then, as stormflow ceases in the line, drains nearby equal amounts of water back from the ground. Water levels in the year fall below the controlled altitude (+2.4 ft.) of Muddy River (likely to mean sea level in 2365 and below mean sea level in 2065), demonstrating slow but substantial leakage (possibly into the lower 108-inch concrete sewer). The water level in 2065 is generally 2 to 3 feet below the surface of Muddy River, which is about 150 feet away. The closely spaced contours on the water-table map on this sheet indicate that there is a head loss at the river bed with slow infiltration through muddy bottom sediments.



LOW WATER-TABLE COMPARISON
(1936-40 and 1967)

In September 1967 the underlying sand and gravel in the old Gravelly Point area was saturated, and the water table was not perched, as indicated by the composite low water-table map for 1936-40.
The water table in the area south of the Metropolitan District Commission sewer along Storrow Memorial Drive is generally higher than those on both of the 1936-40 maps. There may have been more ground-water movement through the wooden sheeting along the sewer in 1967. If the sheeting had partly rotted, water from the Charles River Basin could have recharged this area of Back Bay more effectively.
The troughlike low along Tremont Street was more clearly defined in 1967 than on the 1936-40 map and demonstrates an area of discharge.

SELECTED REFERENCE

Barkdale, H.C., O'Brien, Deric, and Schneider, W.J., 1966. Effect of drought on water resources in the northeast: U.S. Geol. Survey Hydrol. Inv. Atlas HA-243.



FIGURE 6.—MAP SHOWING AREAS WHERE THE SEPTEMBER 20-21, 1967, WATER TABLE WAS LOWER THAN THE 1936-40 COMPOSITE LOW WATER TABLE.

GROUND-WATER LEVELS ON BOSTON PENINSULA, MASSACHUSETTS

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1975