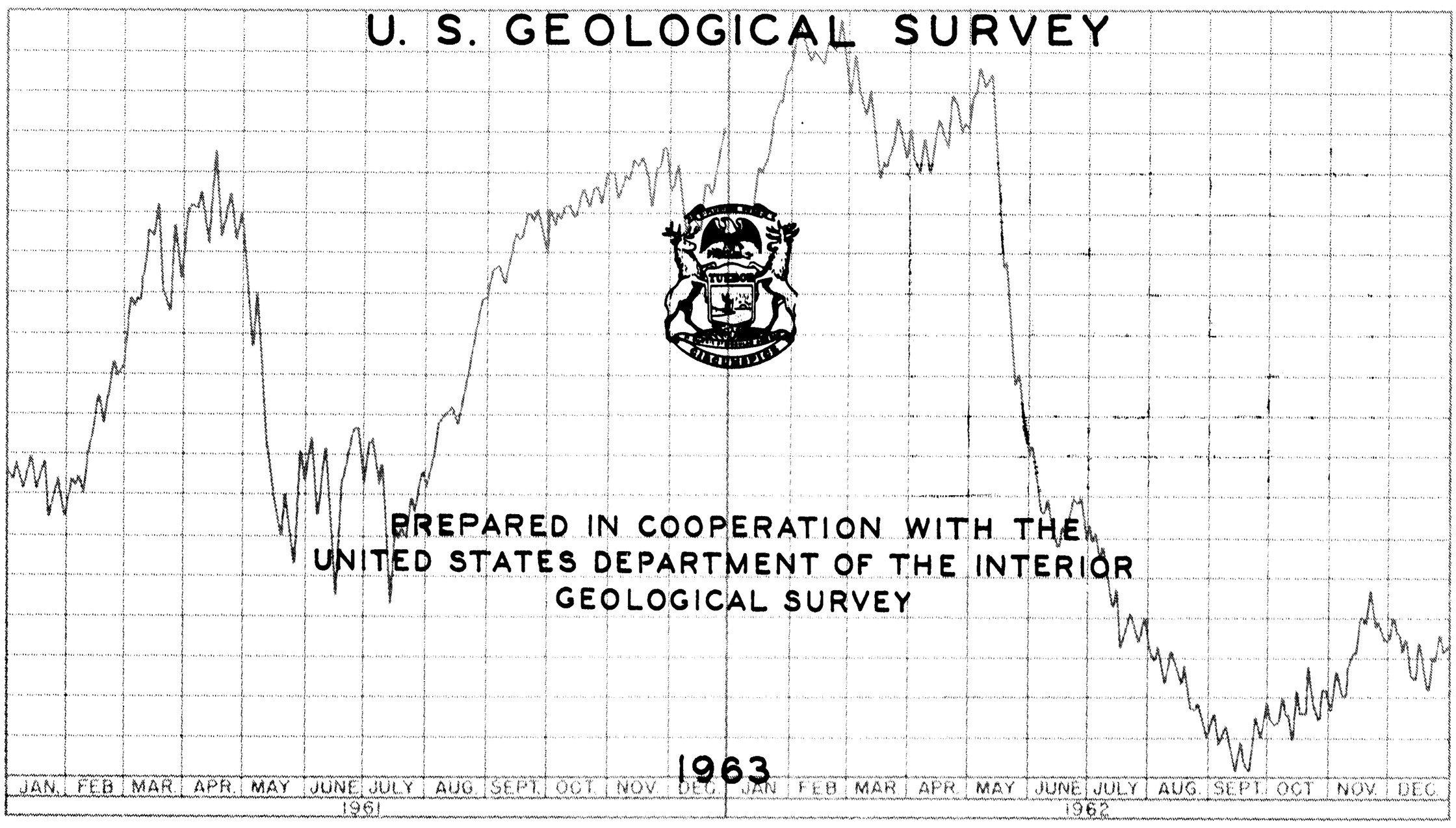
WATER SUPPLY REPORT NUMBER SEVEN

STATE OF MICHIGAN
DEPARTMENT OF CONSERVATION
GERALD E. EDDY, DIRECTOR
GEOLOGICAL SURVEY DIVISION
WILLIAM L. DAOUST, STATE GEOLOGIST

SUMMARY OF GROUND-WATER CONDITIONS IN MICHIGAN 1962

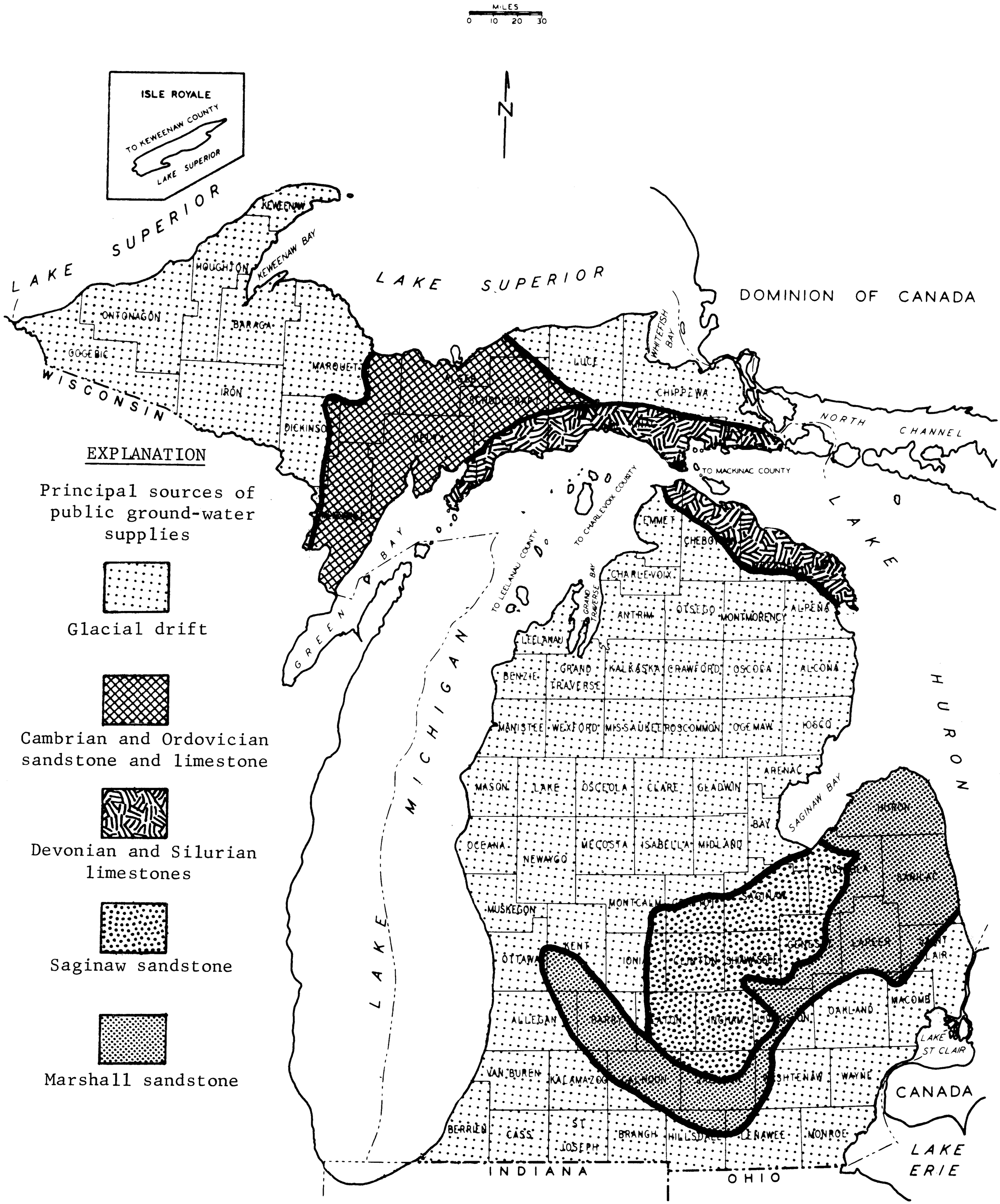
BY

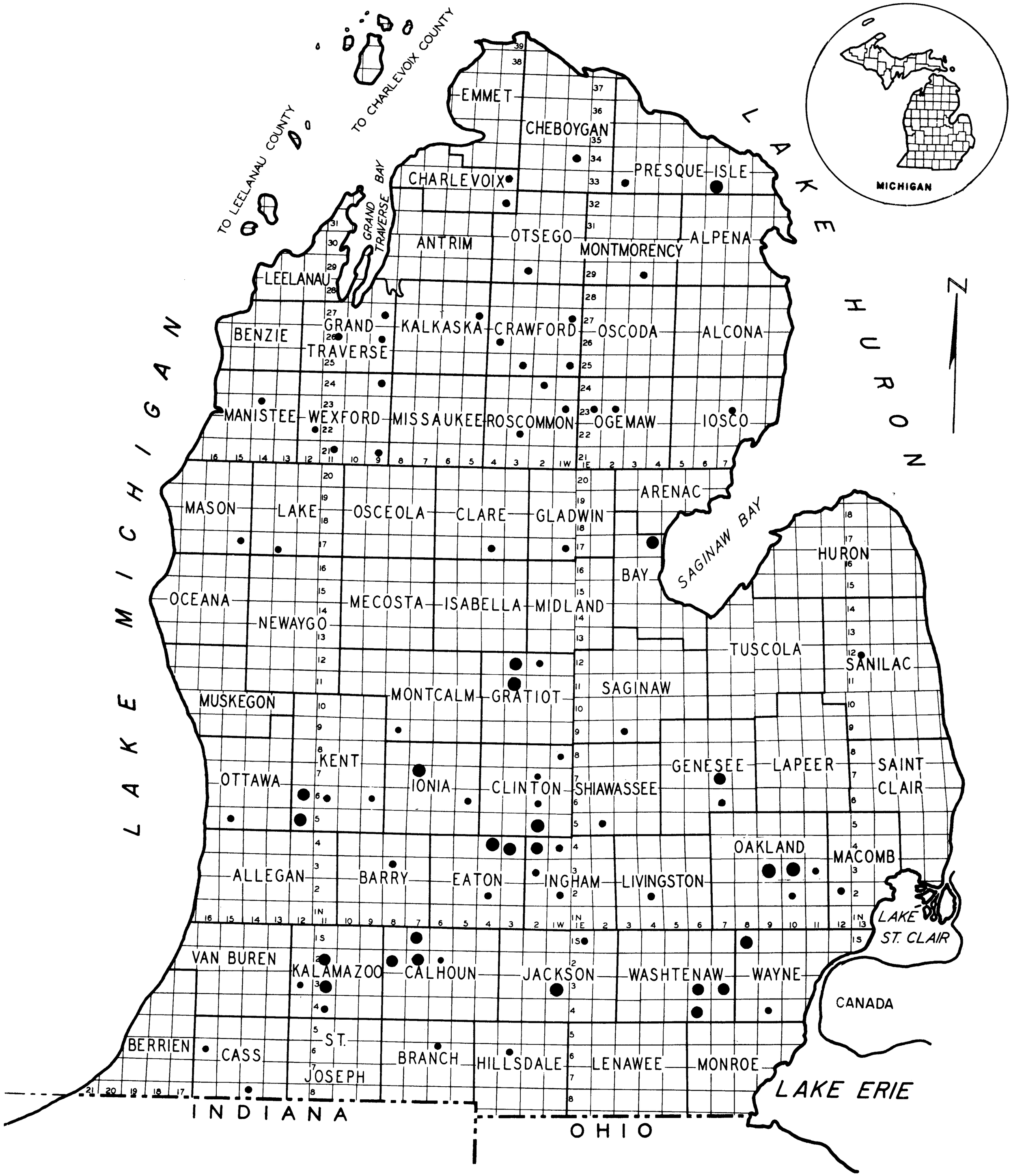
P. R. GIROUX AND G. C. HUFFMAN
U. S. GEOLOGICAL SURVEY



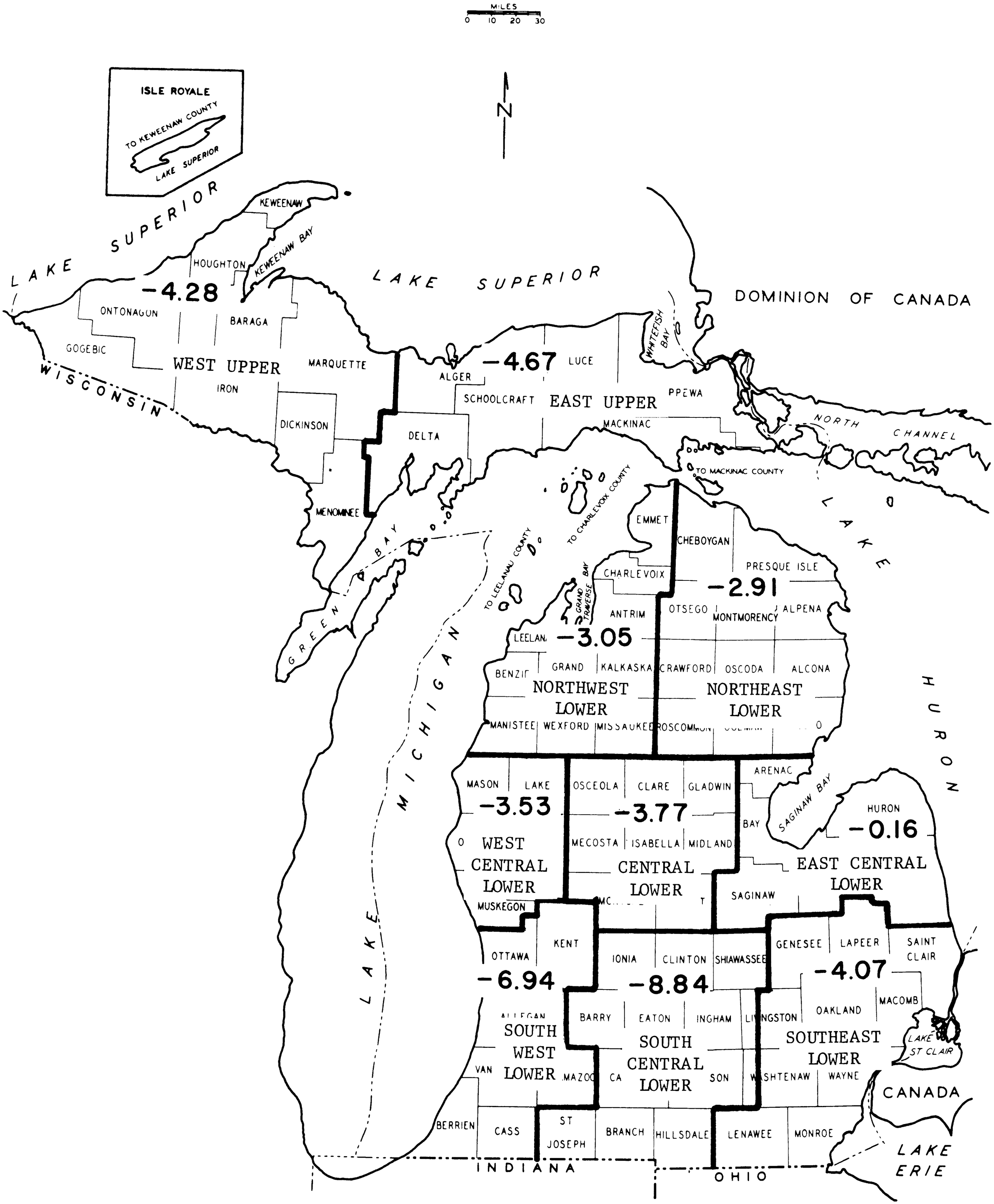
PREPARED IN COOPERATION WITH THE
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

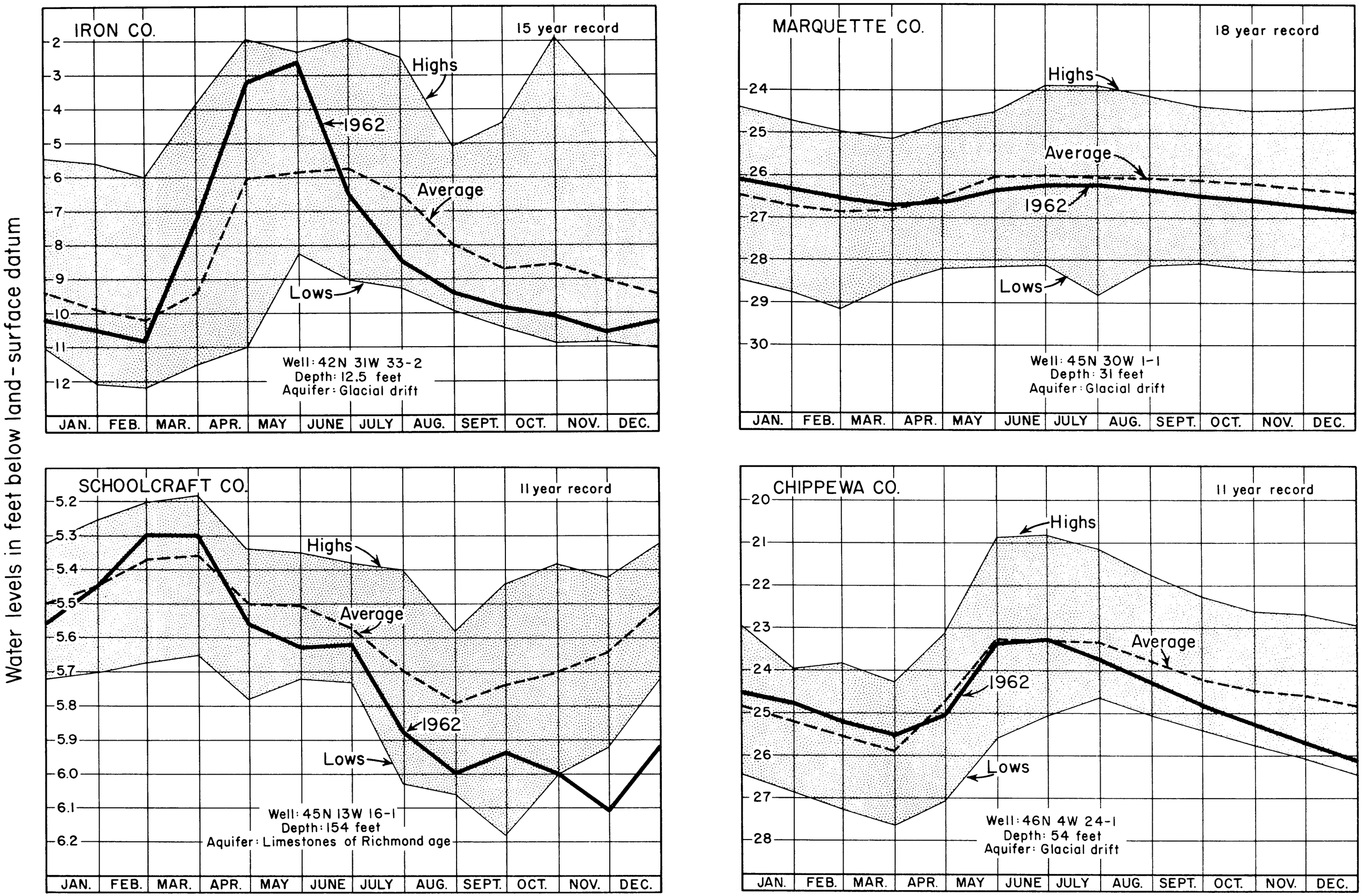
1963


MILES
0 10 20 30
N
ISLE ROYALE
TO KEWEENAW COUNTY
LAKE SUPERIOR
LAKE SUPERIOR
LAKE SUPERIOR
DOMINION OF CANADA
KEWEENAW
KEWEENAW BAY
HOUGHTON
ONTONAGON
BARAGA
GOGEBIC
MARQUETTE
IRON
DICKINSON
ALGER
SCHOOLCRAFT
DELTA
LUCE
CHIPPEWA
WHITEFISH BAY
NORTH CHANNEL
TO MACKINAC COUNTY
WISCONSIN
EXPLANATION
Principal sources of public ground-water supplies
Glacial drift
Cambrian and Ordovician sandstone and limestone
Devonian and Silurian limestones
Saginaw sandstone
Marshall sandstone
GREEN BAY
TO LEELANAU COUNTY
TO CHARLEVOIX COUNTY
GRAND TRAVERSE BAY
EMMET
CHEBOYGAN
CHARLEVOIX
ANTRIM
OTSEGO
MONTMORENCY
ALPENA
LEELANAU
BENZIE
GRAND TRAVERSE
KALKASKA
CRAWFORD
OSCODA
ALCONA
MANISTEE
WEXFORD
MISSAUKEE
ROSCOMMON
OGEMAW
IOSCO
MASON
LAKE
OSCEOLA
CLARE
GLADWIN
ARENAC
SAGINAW BAY
HURON
BAY
OCEANA
NEWAYGO
MECOSTA
ISABELLA
MIDLAND
TUSCOLA
SANILAC
MUSKEGON
MONTCALM
GENESEE
LAPEER
ST CLAIR
OTTAWA
KENT
IONIA
CLINTON
SHIAWASSEE
ALLEGAN
BARRY
EATON
INGHAM
LIVINGSTON
OAKLAND
MACOMB
LAKE ST CLAIR
VAN BUREN
KALAMAZOO
CALHOUN
JACKSON
WASHTENAW
WAYNE
CANADA
BERRIEN
CASS
ST JOSEPH
BRANCH
HILLSDALE
LENAWEE
MONROE
LAKE ERIE
LAKE MICHIGAN
INDIANA
OHIO

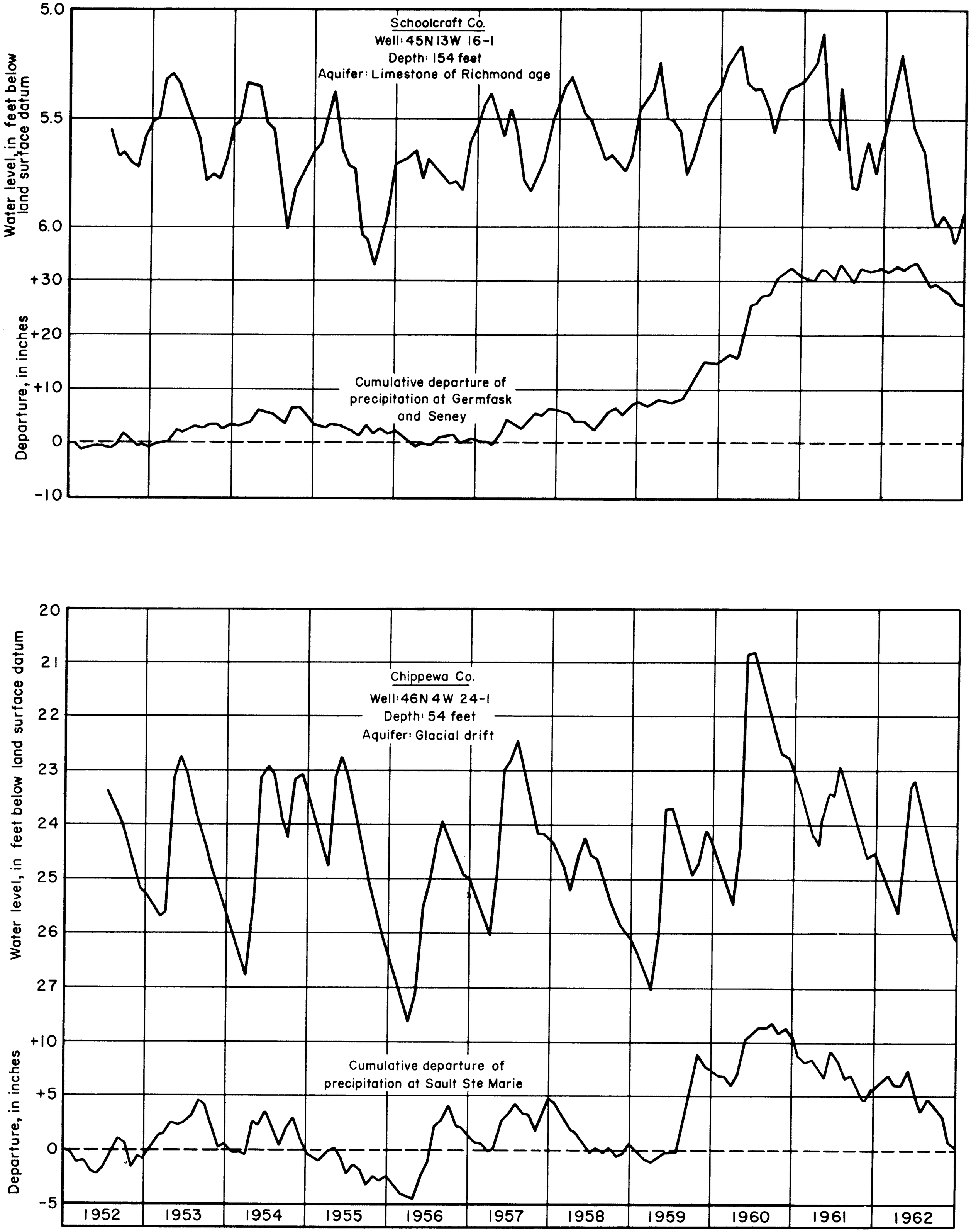

TO CHARLEVOIX COUNTY
TO LEELANAU COUNTY
GRAND TRAVERSE BAY
LAKE MICHIGAN
LAKE HURON
MICHIGAN
N
EMMET
CHEBOYGAN
PRESQUE ISLE
CHARLEVOIX
ANTRIM
OTSEGO
MONTMORENCY
ALPENA
LEELANAU
BENZIE
GRAND TRAVERSE
KALKASKA
CRAWFORD
OSCODA
ALCONA
MANISTEE
WEXFORD
MISSAUKEE
ROSCOMMON
OGEMAW
IOSCO
ARENAC
MASON
LAKE
OSCEOLA
CLARE
GLADWIN
SAGINAW BAY
HURON
BAY
OCEANA
NEWAYGO
MECOSTA
ISABELLA
MIDLAND
TUSCOLA
SANILAC
MUSKEGON
MONTCALM
GRATIOT
SAGINAW
KENT
OTTAWA
IONIA
CLINTON
SHIAWASSEE
GENESEE
LAPEER
SAINT CLAIR
ALLEGAN
BARRY
EATON
INGHAM
LIVINGSTON
OAKLAND
MACOMB
LAKE ST. CLAIR
VAN BUREN
KALAMAZOO
CALHOUN
JACKSON
WASHTENAW
WAYNE
CANADA
BERRIEN
CASS
ST. JOSEPH
BRANCH
HILLSDALE
LENAWEE
MONROE
LAKE ERIE
INDIANA
OHIO

ISLE ROYALE
TO KEWEENAW COUNTY
EXPLANATION
Observation well
Two or more observation wells
N
0 10 20 30 Miles
R.30 W.
T. 49 N.
Diagram of geographical township
LAKE SUPERIOR
KEWEENAW
KEWEENAW BAY
HOUGHTON
ONTONAGON
BARAGA
GOGEBIC
MARQUETTE
IRON
DICKINSON
ALGER
SCHOOLCRAFT
DELTA
LUCE
CHIPPEWA
MACKINAC
WHITEFISH BAY
WISCONSIN
Menominee River
MENOMINEE
GREEN BAY
LAKE MICHIGAN
LAKE HURON
TO MACKINAC COUNTY

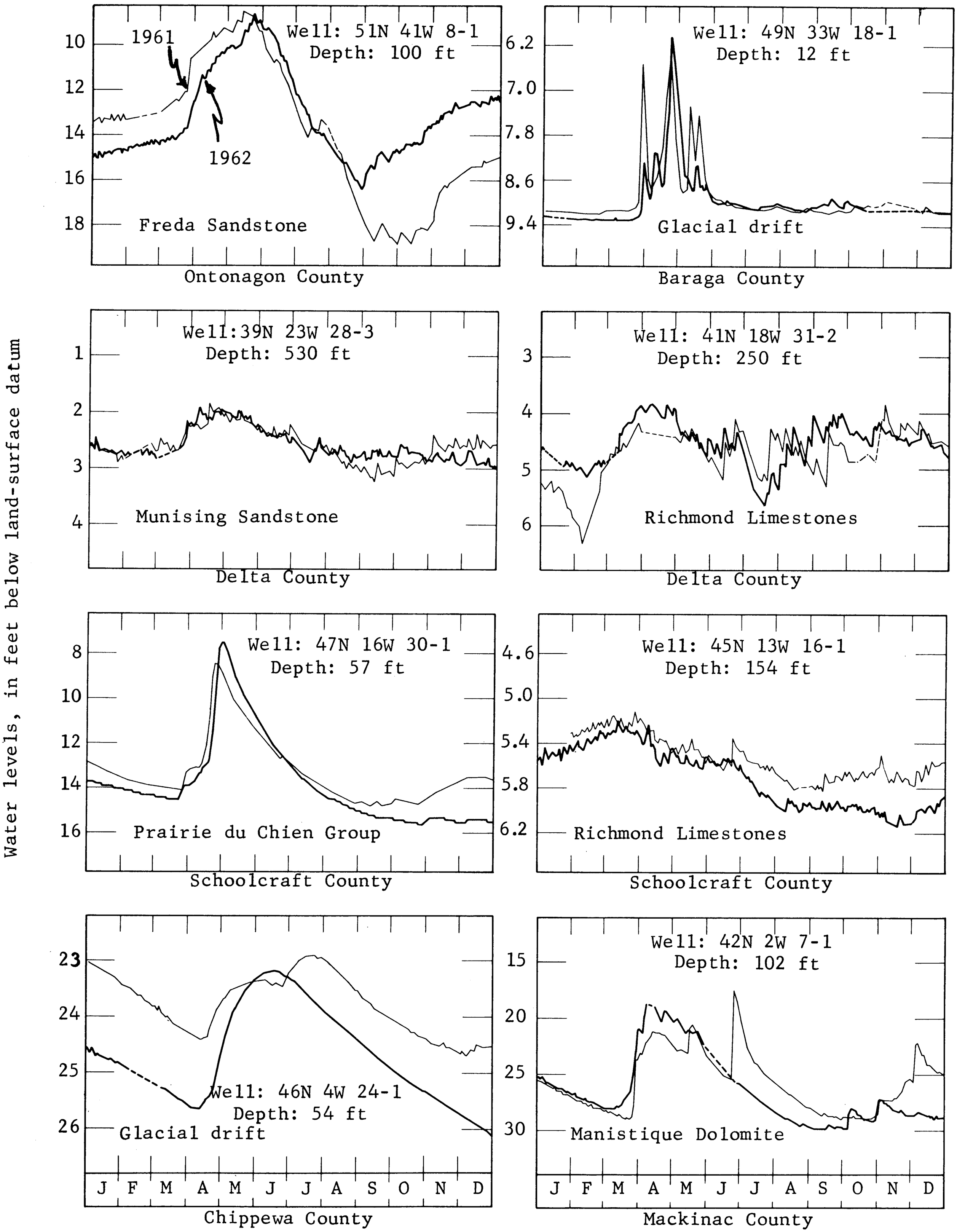

MILES
0 10 20 30
N
ISLE ROYALE
TO KEWEENAW COUNTY
LAKE SUPERIOR
LAKE SUPERIOR
KEWEENAW
KEWEENAW BAY
HOUGHTON
-4.28
ONTONAGON
BARAGA
GOGEBIC
WEST UPPER
MARQUETTE
IRON
WISCONSIN
DICKINSON
MENOMINEE
DELTA
LAKE SUPERIOR
DOMINION OF CANADA
WHITEFISH BAY
-4.67
ALGER
LUCE
SCHOOLCRAFT
EAST UPPER
PPEWA
MACKINAC
NORTH CHANNEL
TO MACKINAC COUNTY
LAKE HURON
GREEN BAY
MICHIGAN
TO LEELANAU COUNTY
TO CHARLEVOIX COUNTY
EMMET
CHEBOYGAN
PRESQUE ISLE
-2.91
CHARLEVOIX
GRAND TRAVERSE BAY
ANTRIM
OTSEGO
MONTMORENCY
ALPENA
LEELANAU
-3.05
BENZIE
GRAND
KALKASKA
CRAWFORD
OSCODA
ALCONA
NORTHWEST LOWER
NORTHEAST LOWER
MANISTEE
WEXFORD
MISSAUKEE
ROSCOMMON
MASON
LAKE
-3.53
OSCEOLA
CLARE
GLADWIN
-3.77
ARENAC
SAGINAW BAY
HURON
-0.16
BAY
WEST CENTRAL LOWER
MECOSTA
ISABELLA
MIDLAND
CENTRAL LOWER
EAST CENTRAL LOWER
MUSKEGON
SAGINAW
LAKE MICHIGAN
OTTAWA
KENT
IONIA
CLINTON
SHIAWASSEE
GENESEE
LAPEER
SAINT CLAIR
-6.94
-8.84
-4.07
ALLEGAN
BARRY
EATON
INGHAM
LIVINGSTON
OAKLAND
MACOMB
SOUTH WEST LOWER
SOUTH CENTRAL LOWER
SOUTHEAST LOWER
LAKE ST CLAIR
VAN BUREN
KALAMAZOO
CALHOUN
JACKSON
WASHTENAW
WAYNE
CANADA
BERRIEN
CASS
ST JOSEPH
BRANCH
HILLSDALE
LENAWEE
MONROE
LAKE ERIE
INDIANA
OHIO

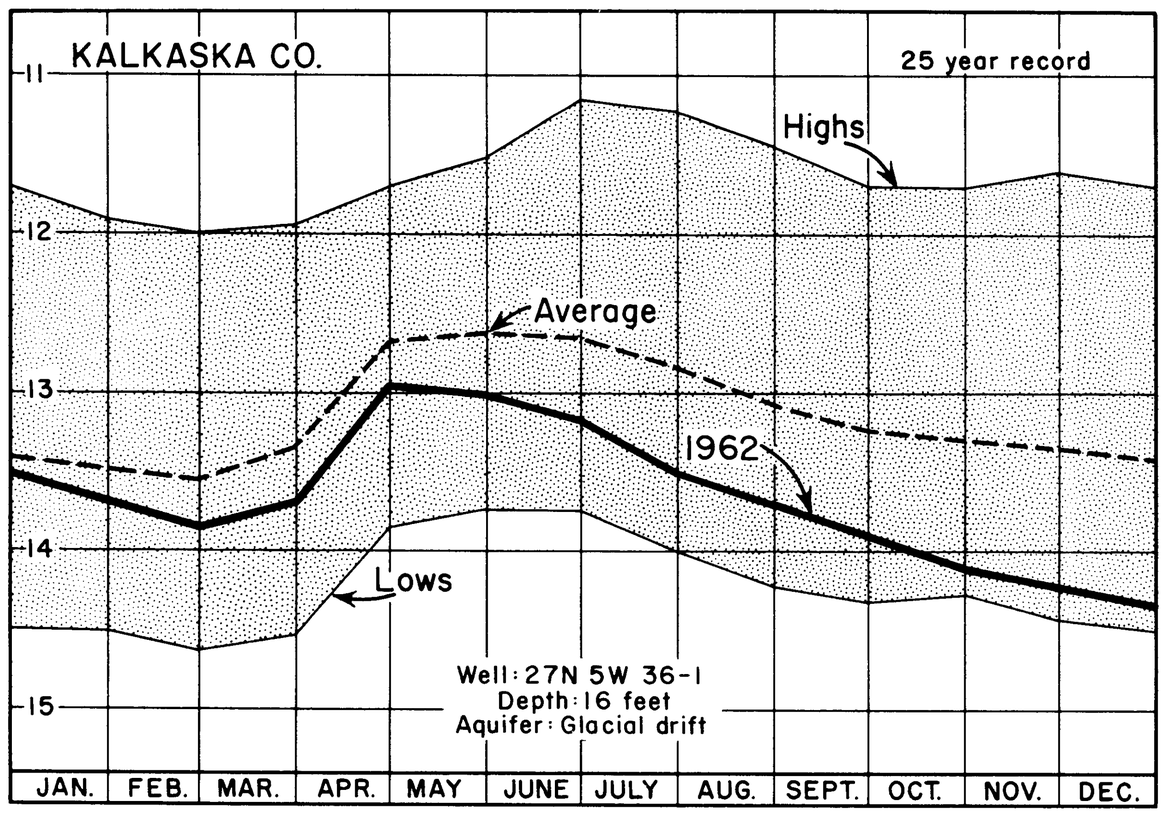


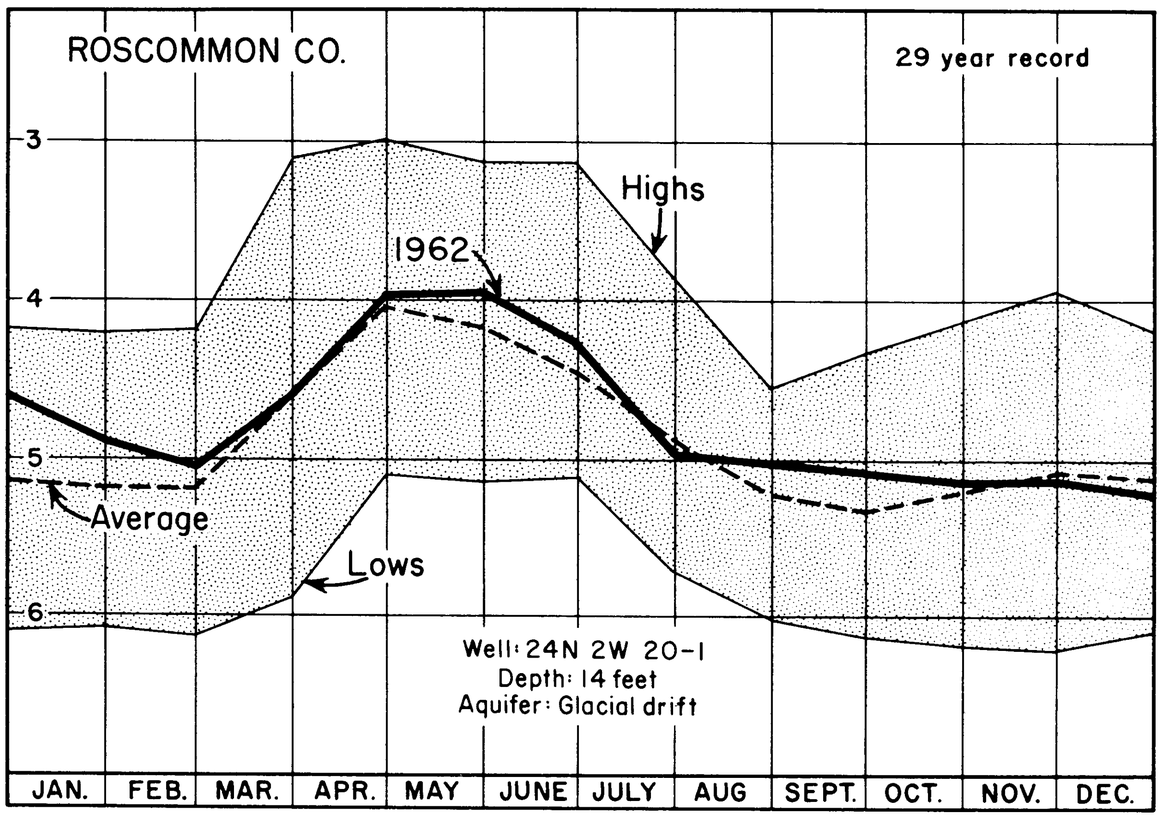
High, average, and low readings are for the period of record through 1961


Schoolcraft Co.
Well: 45N 13W 16-1
Depth: 154 feet
Aquifer: Limestone of Richmond age
Water level, in feet below land surface datum
5.0
5.5
6.0
Cumulative departure of precipitation at Germfask and Seney
Departure, in inches
+30
+20
+10
0
-10
Chippewa Co.
Well: 46N 4W 24-1
Depth: 54 feet
Aquifer: Glacial drift
Water level, in feet below land surface datum
20
21
22
23
24
25
26
27
Cumulative departure of precipitation at Sault Ste Marie
Departure, in inches
+10
+5
0
-5
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962

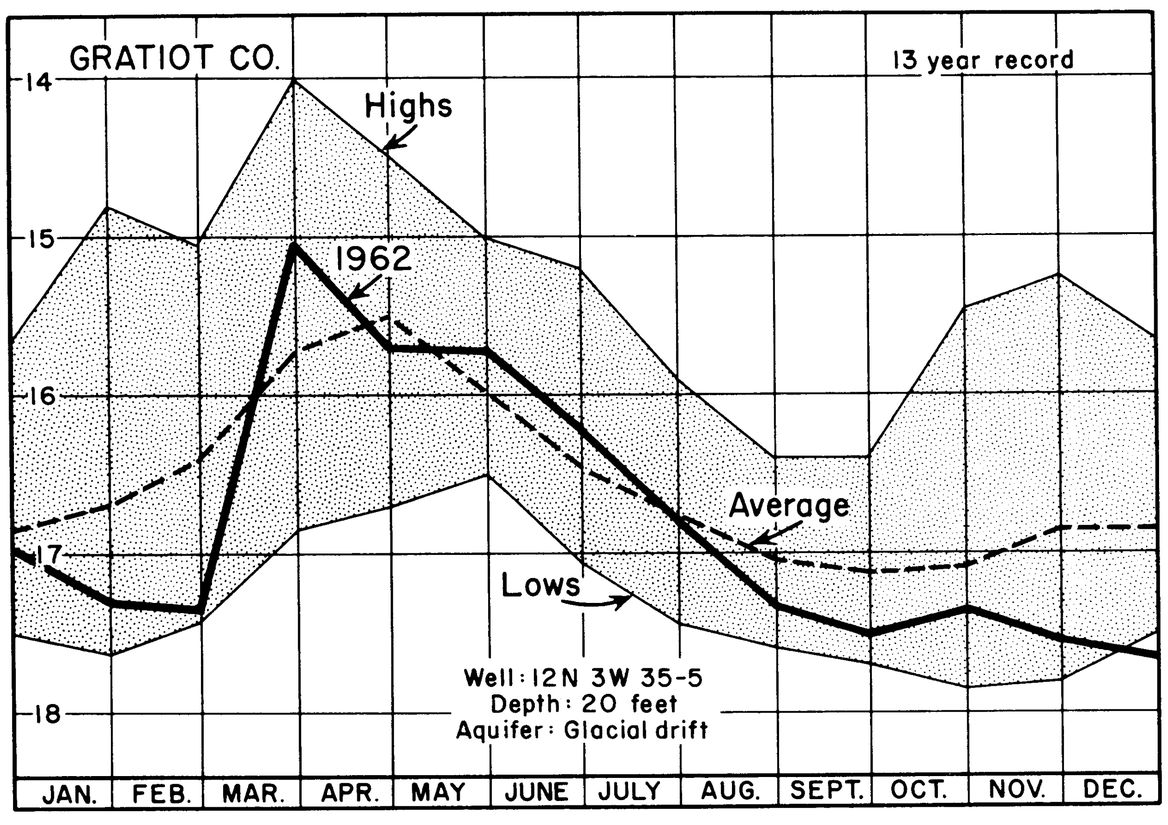
Heavy lines are 1962 water levels

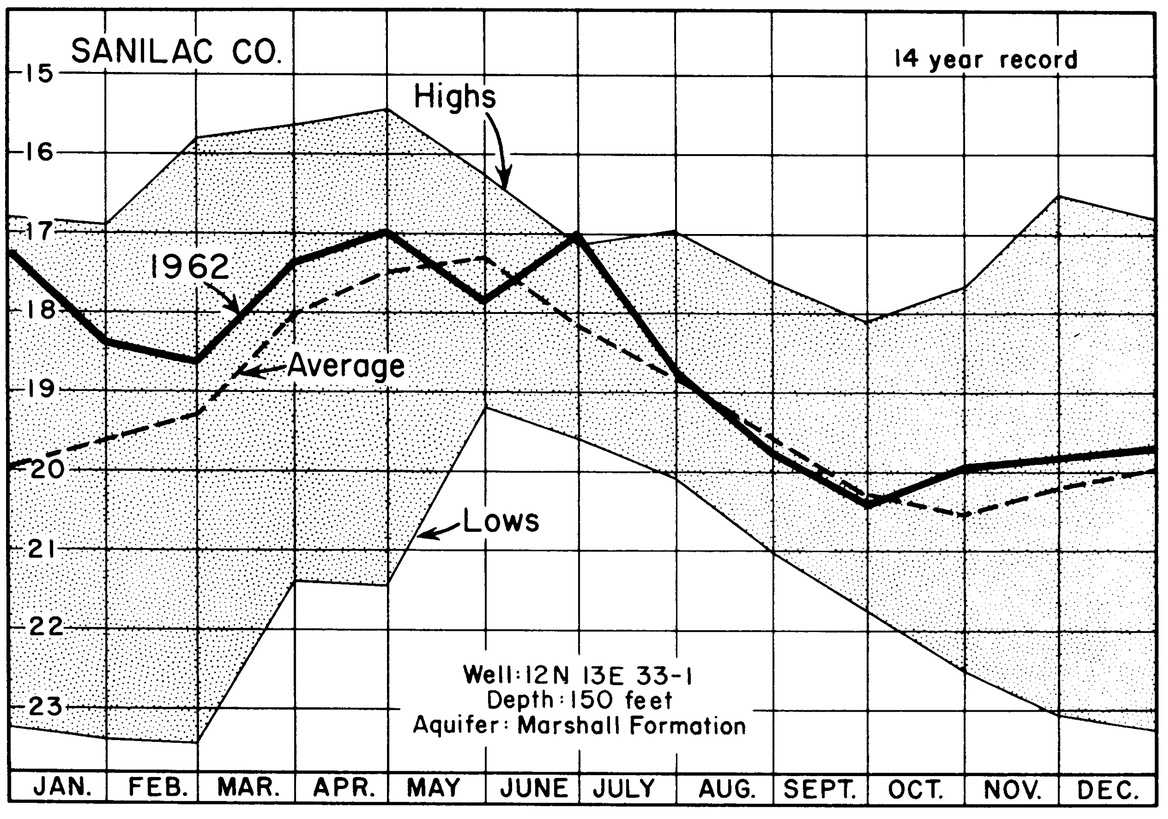




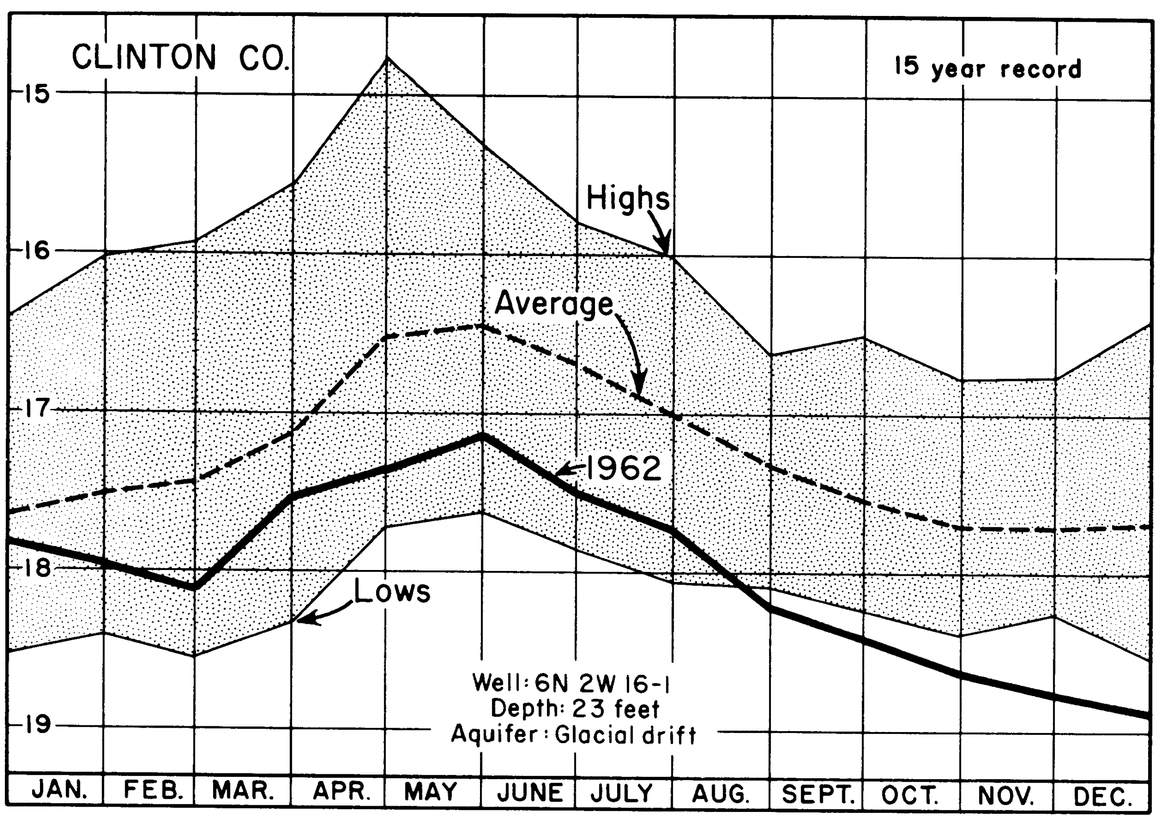


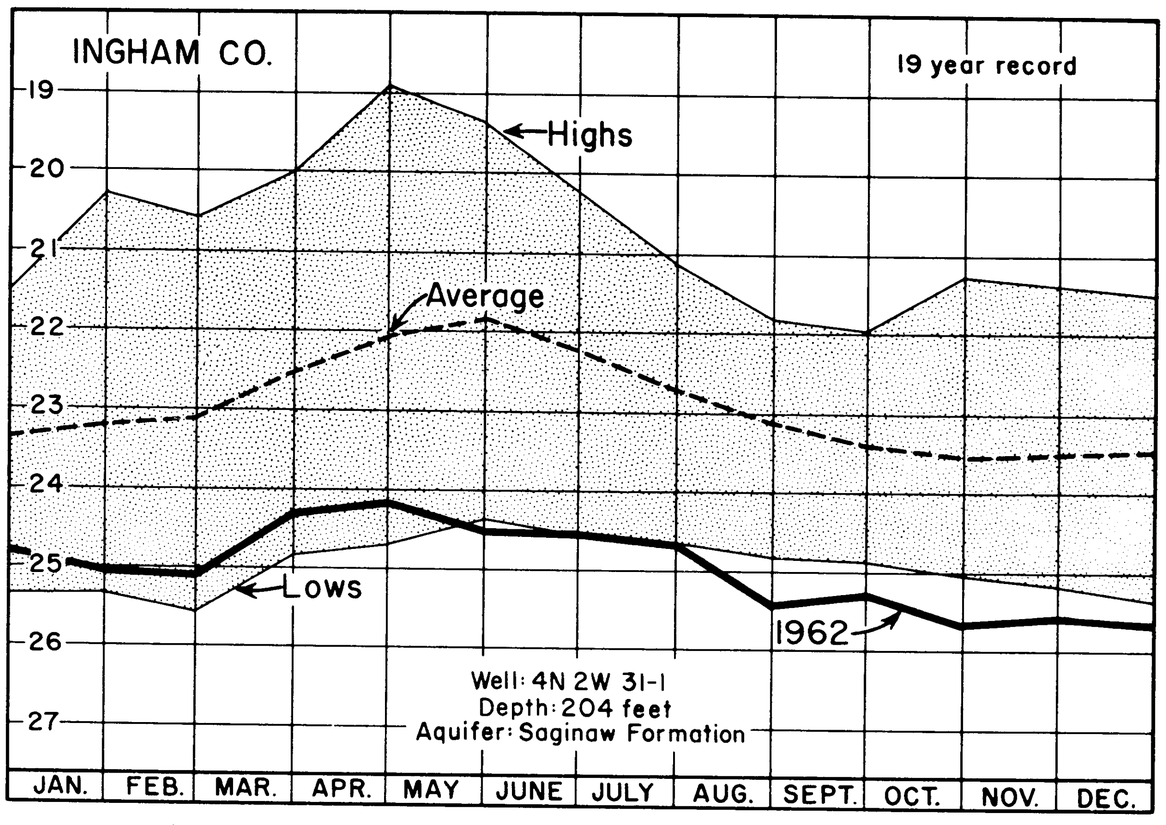
Water levels in feet below land-surface datum

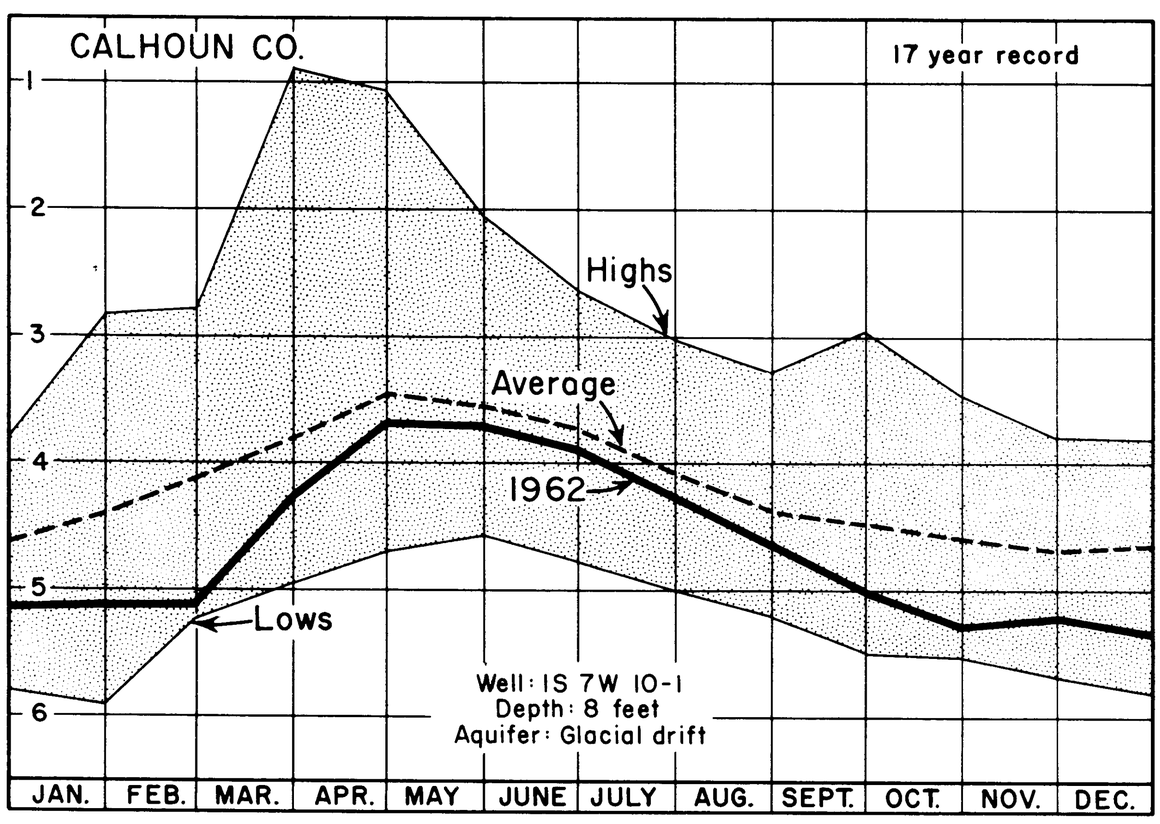


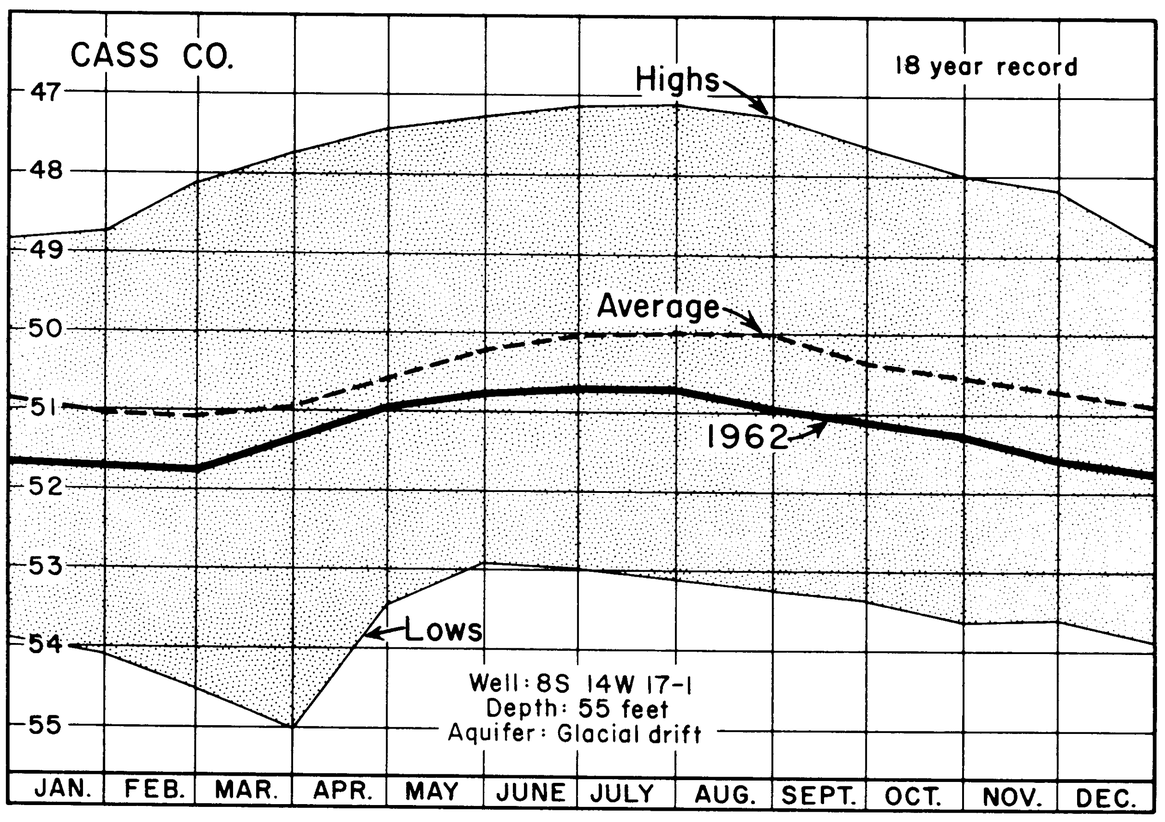


Water levels in feet below land-surface datum

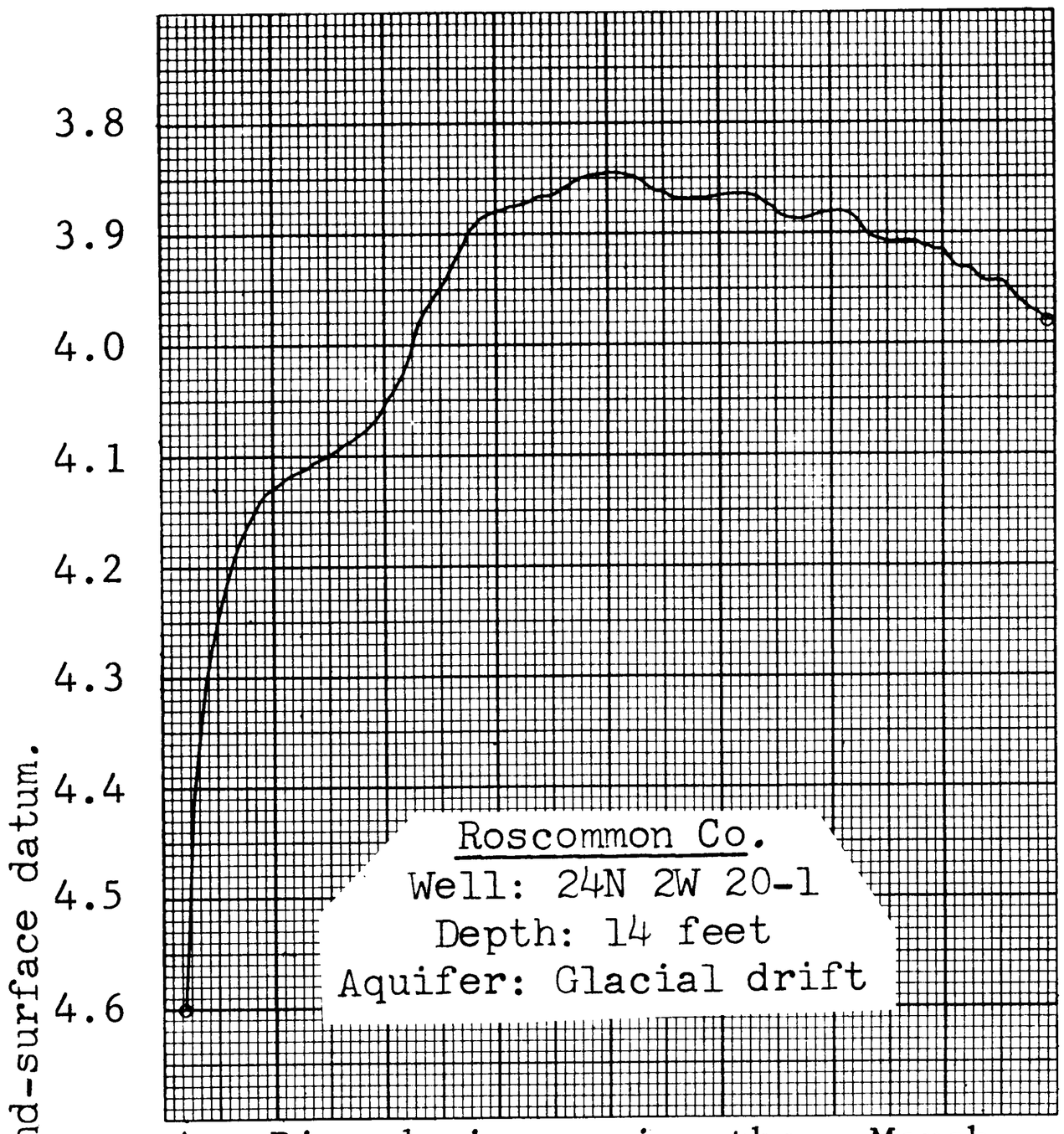




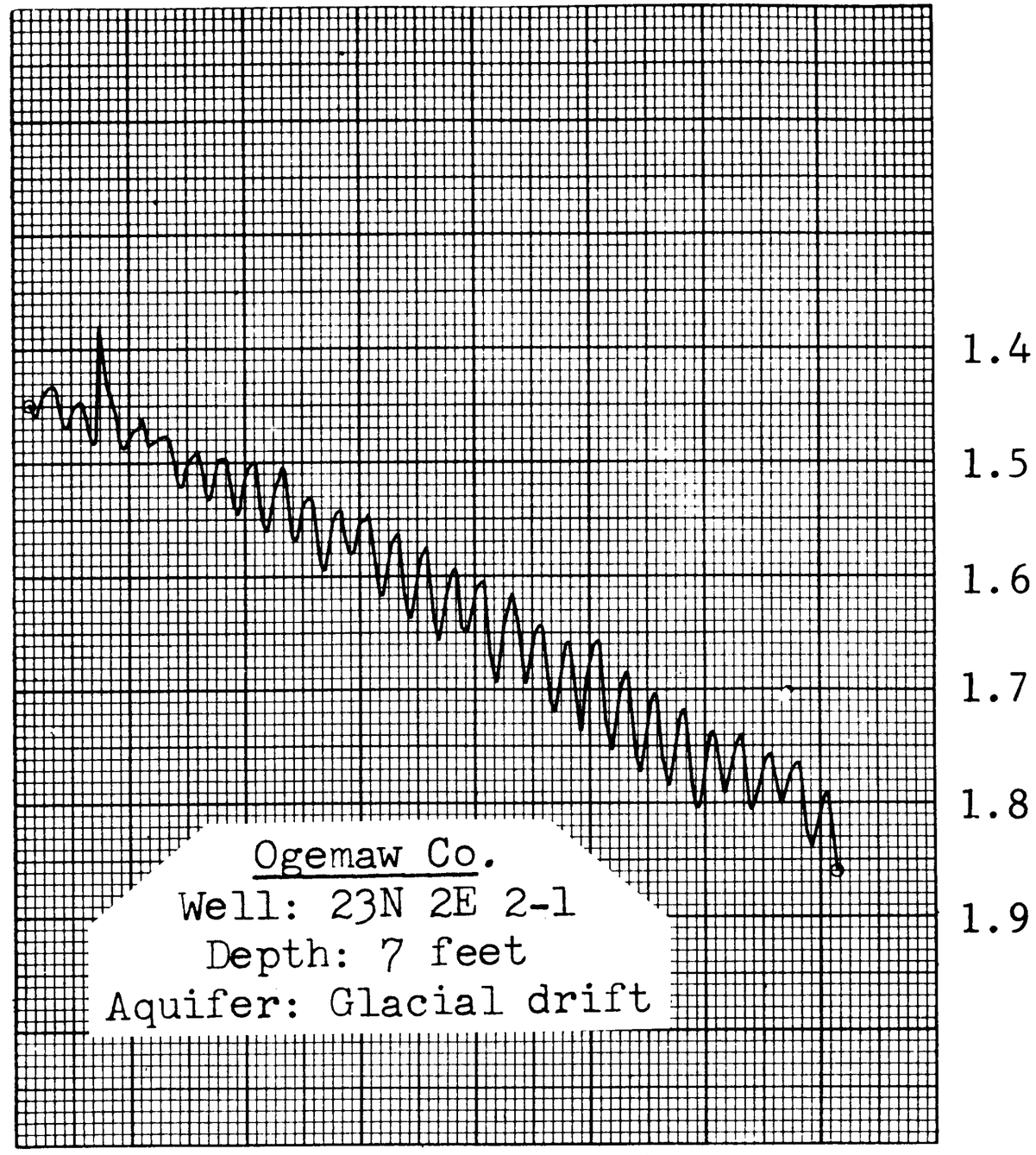




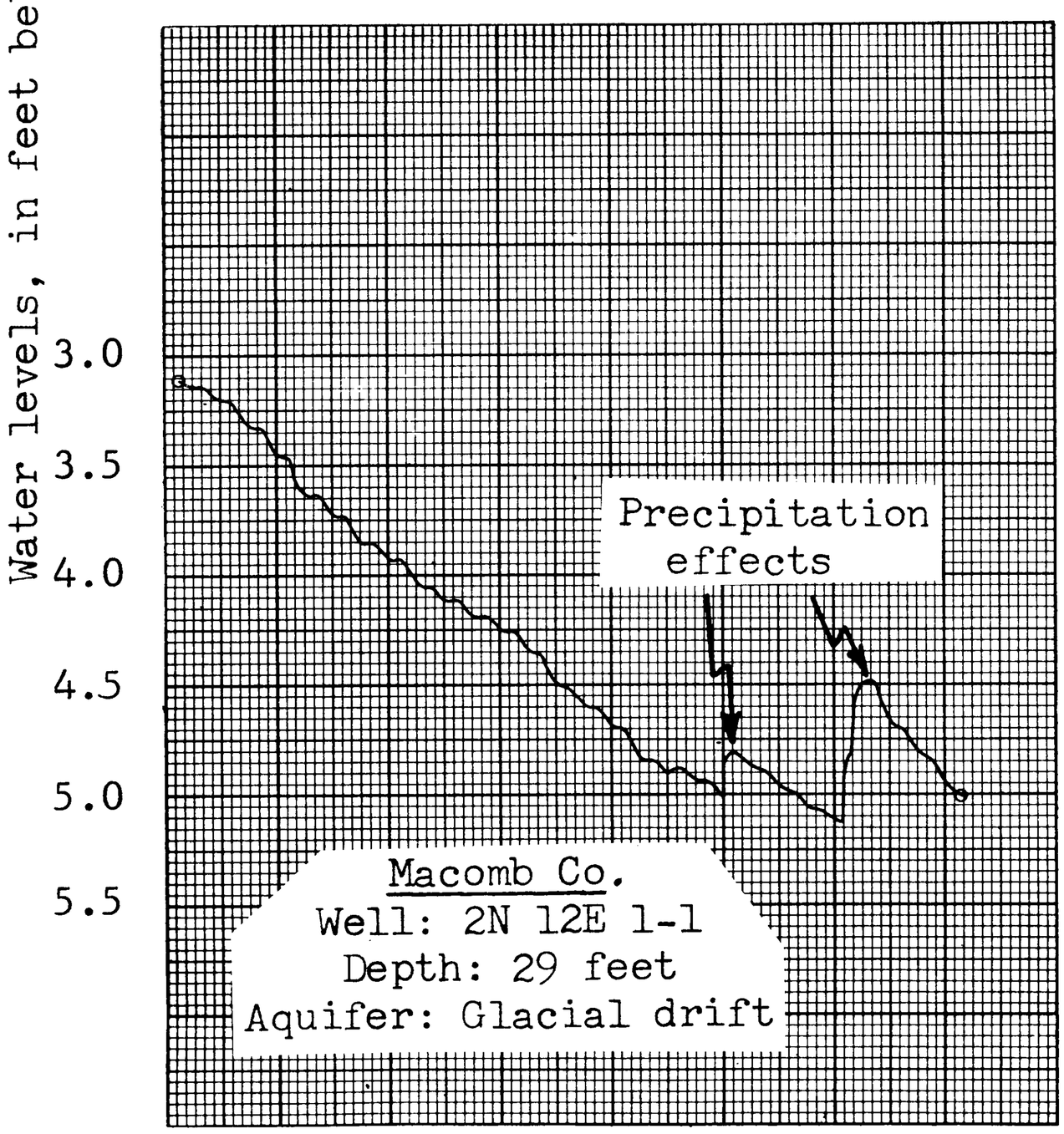
High, average, and low readings are for the period of record through 1961



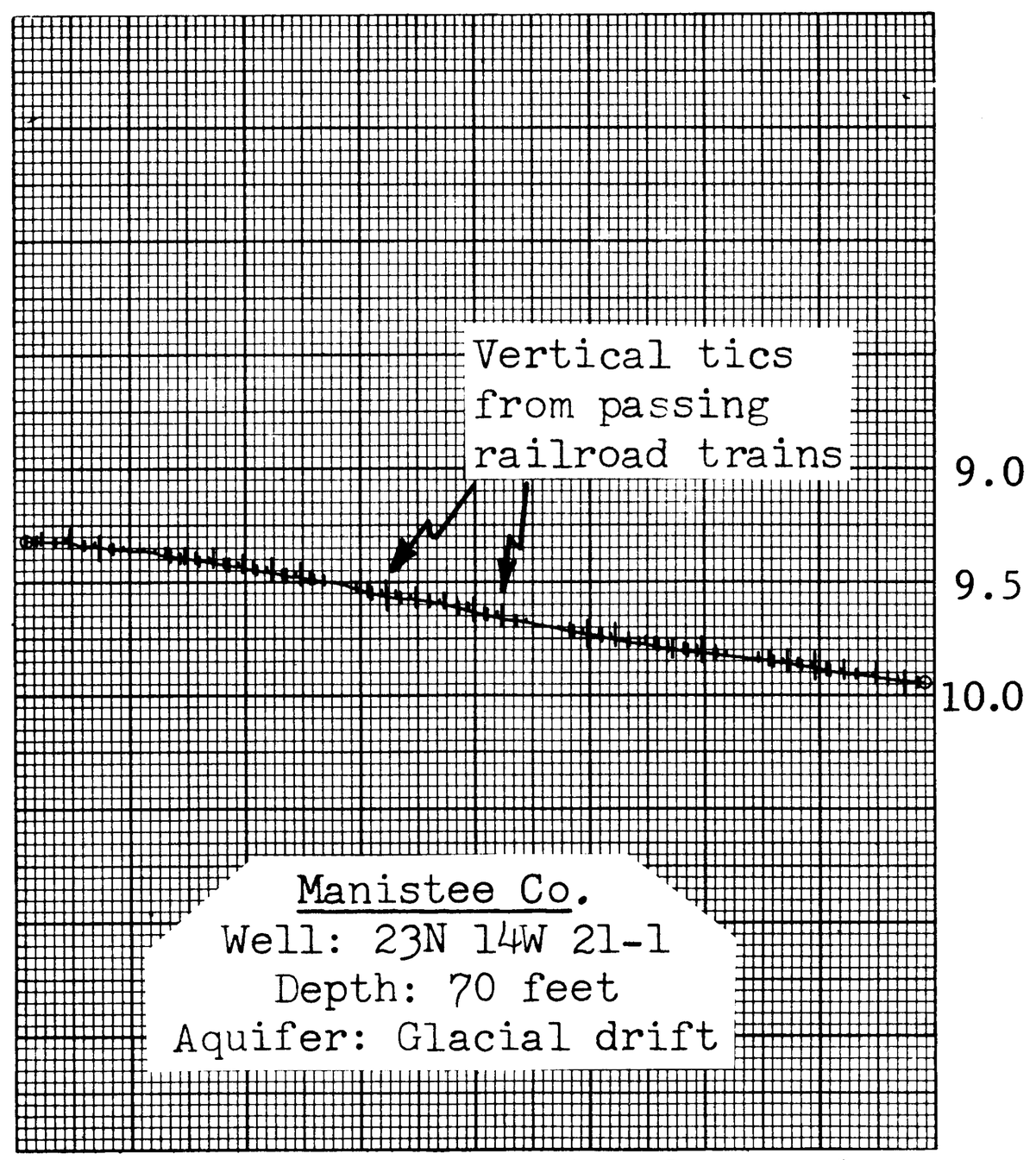
A. Rise during spring thaw, March 29-April 29, 1962.



B. Daily evapotranspiration superimposed on summer decline, June 21-July 19, 1962.

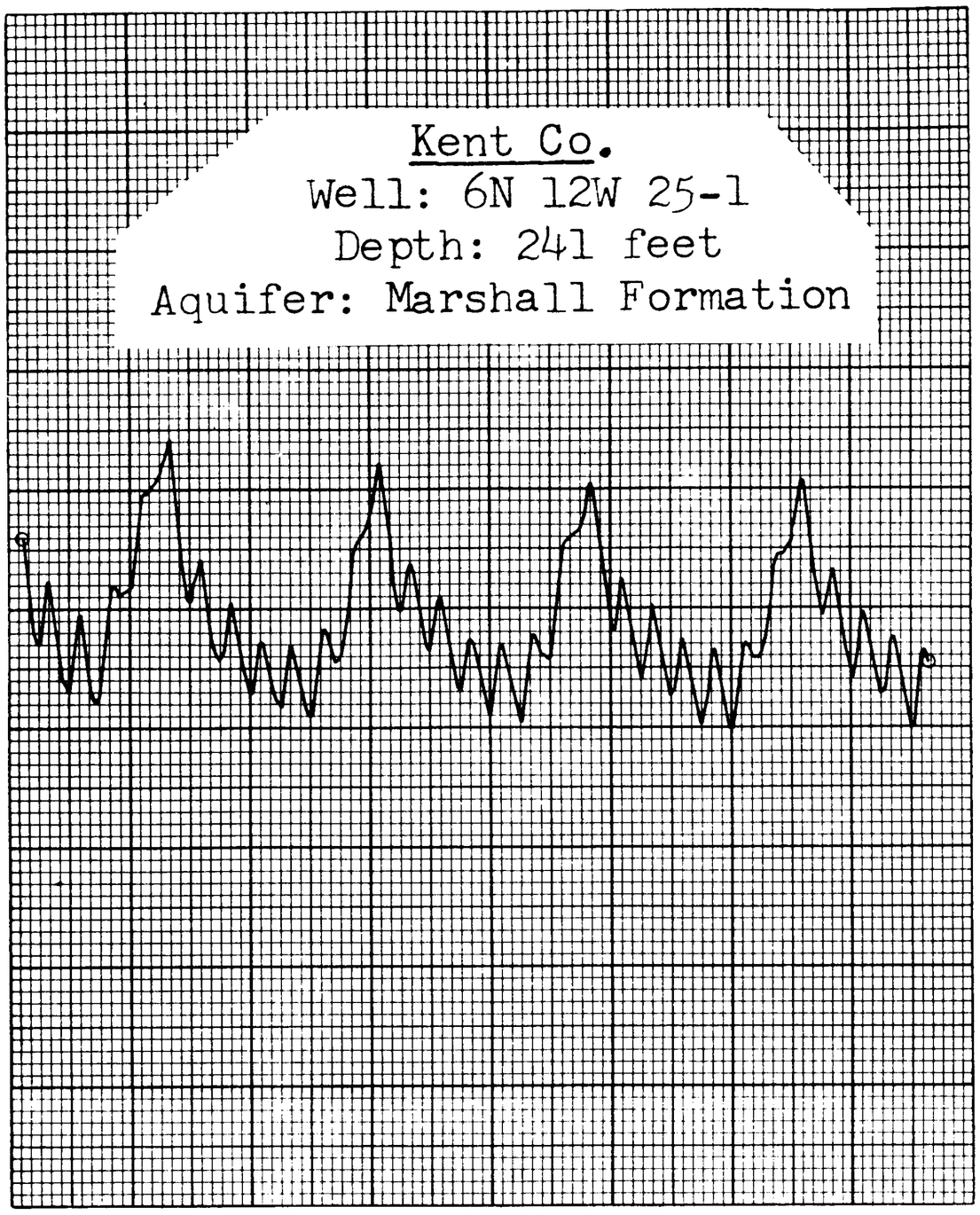


C. Daily evapotranspiration superimposed on summer decline, and effects of precipitation, May 12-June 9, 1962.

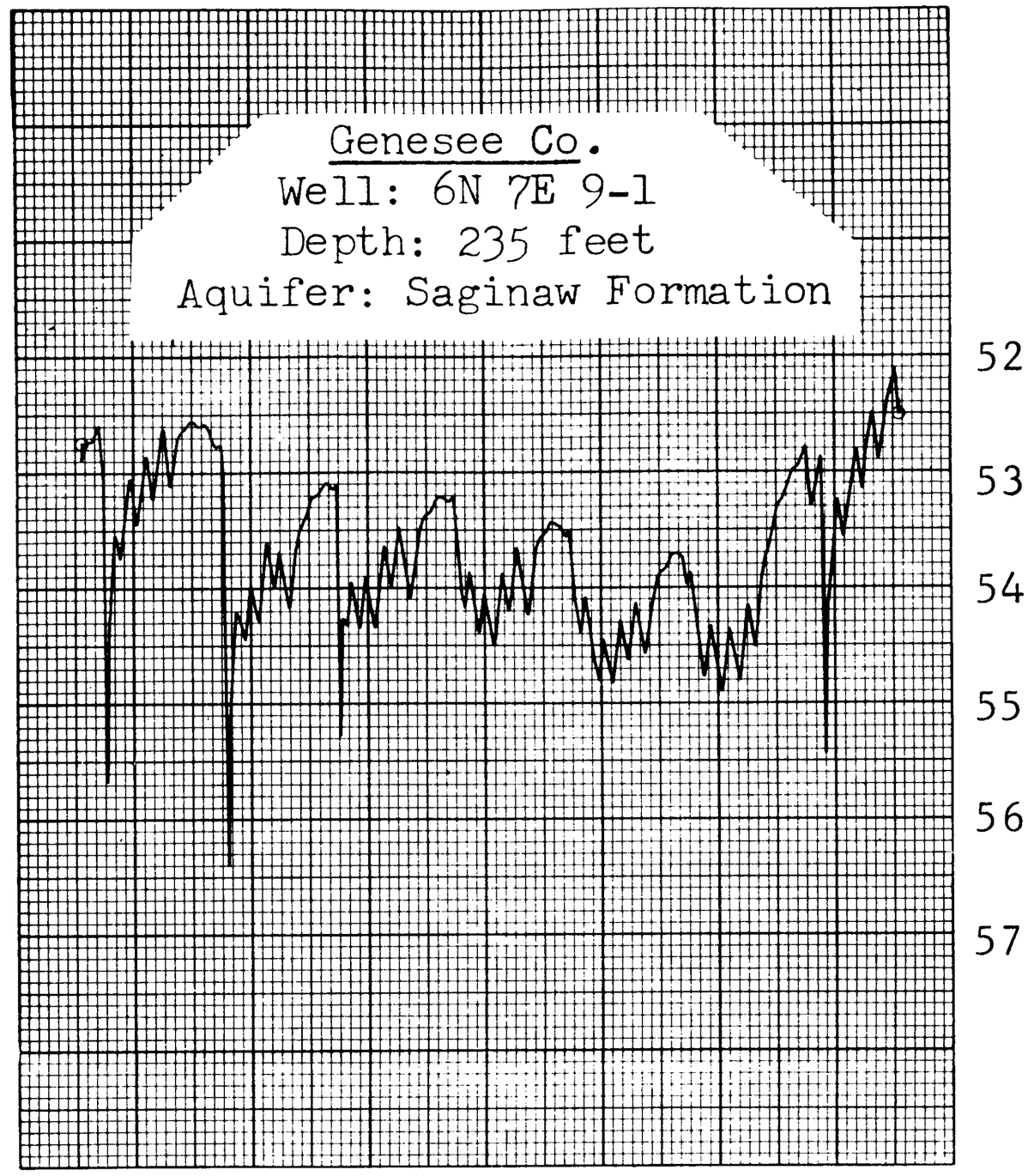


D. Summer decline and effects of passing railroad trains, May 9-June 11, 1962.

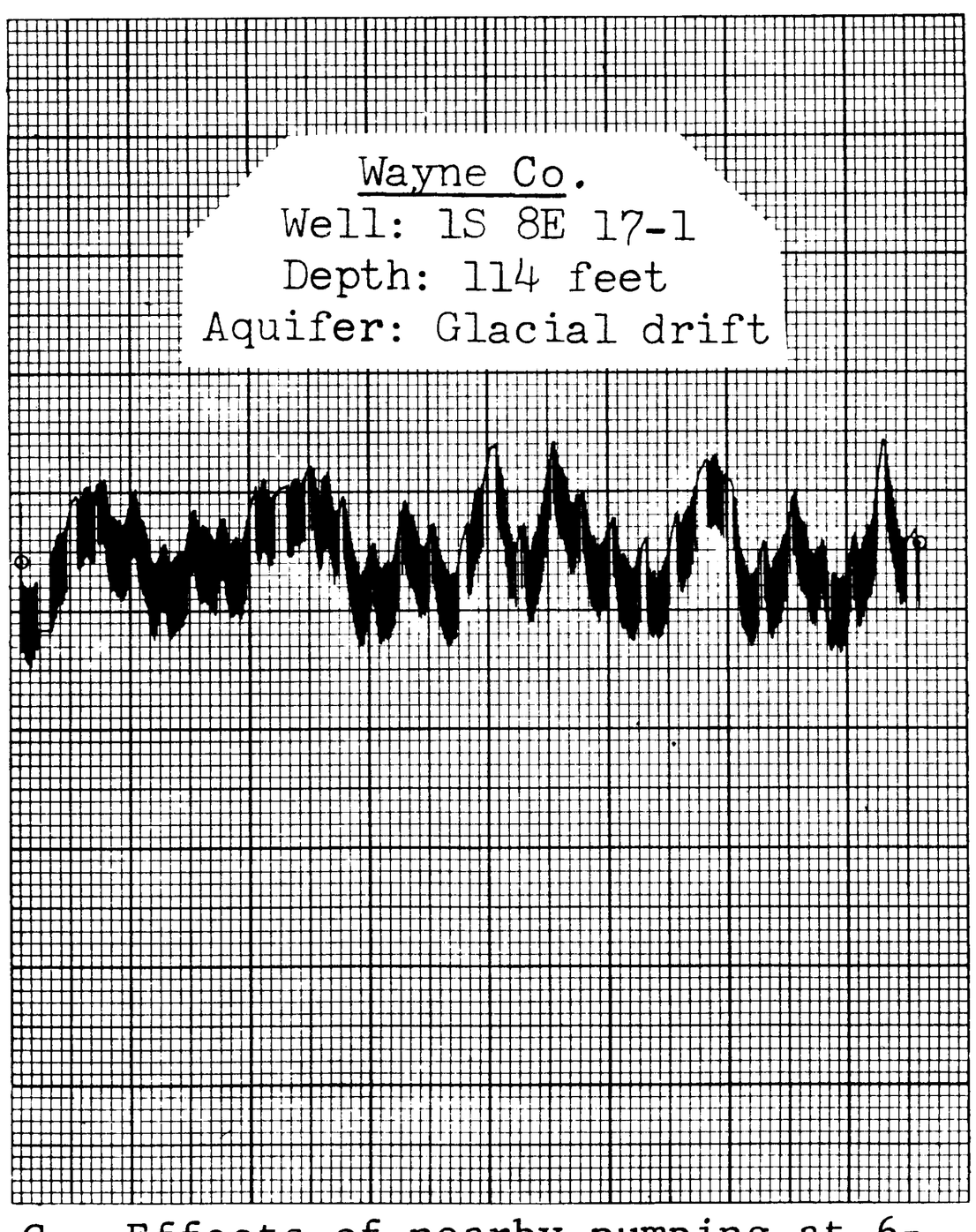
(Charts about one-third actual size)



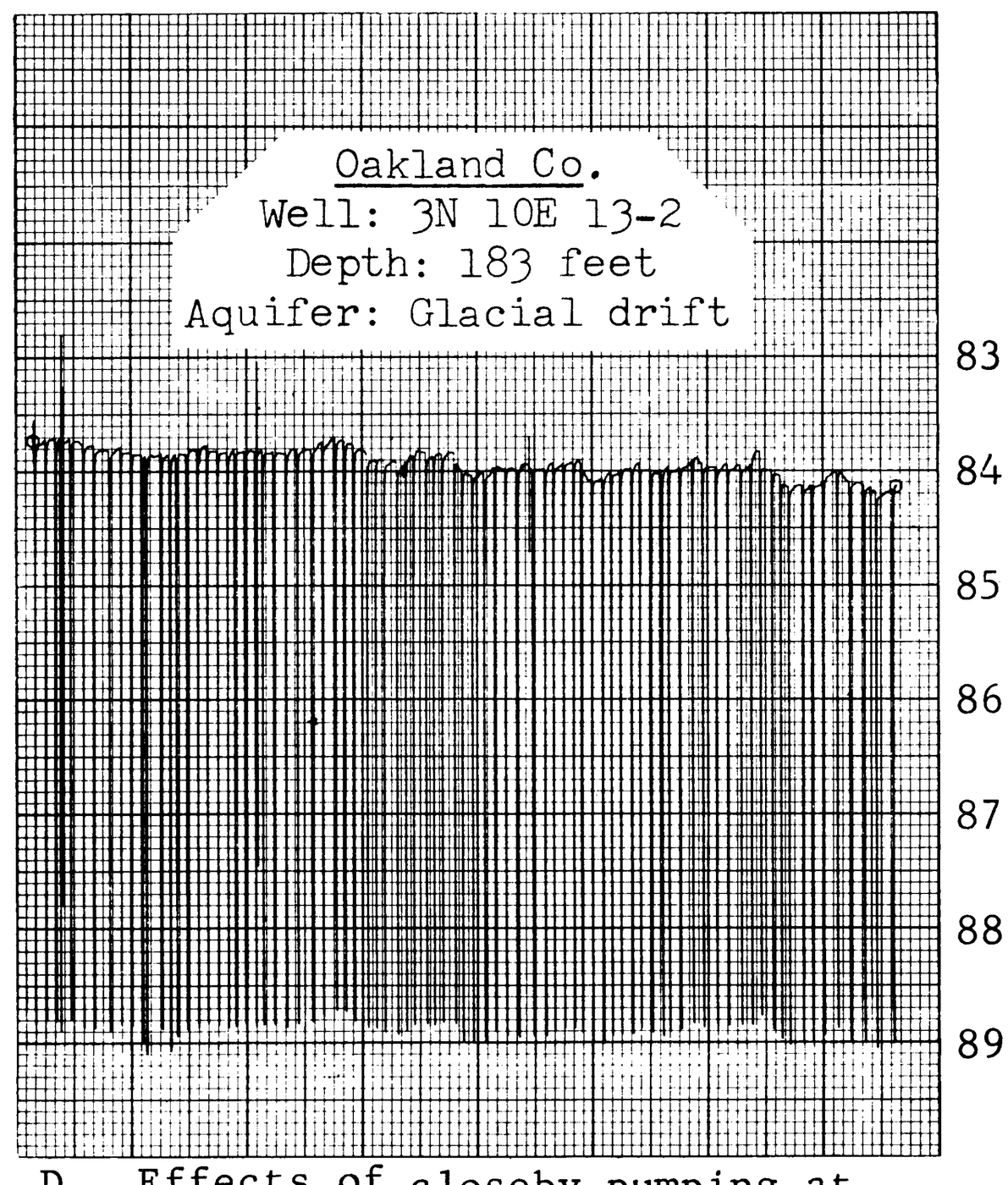
A. Effects of nearby pumping at Wyoming and weekend recoveries, Jan. 3-Feb. 2, 1962.



B. Effects of nearby pumping at Fisher Body Plant, Grand Blanc, Sept. 9-16, 1962.

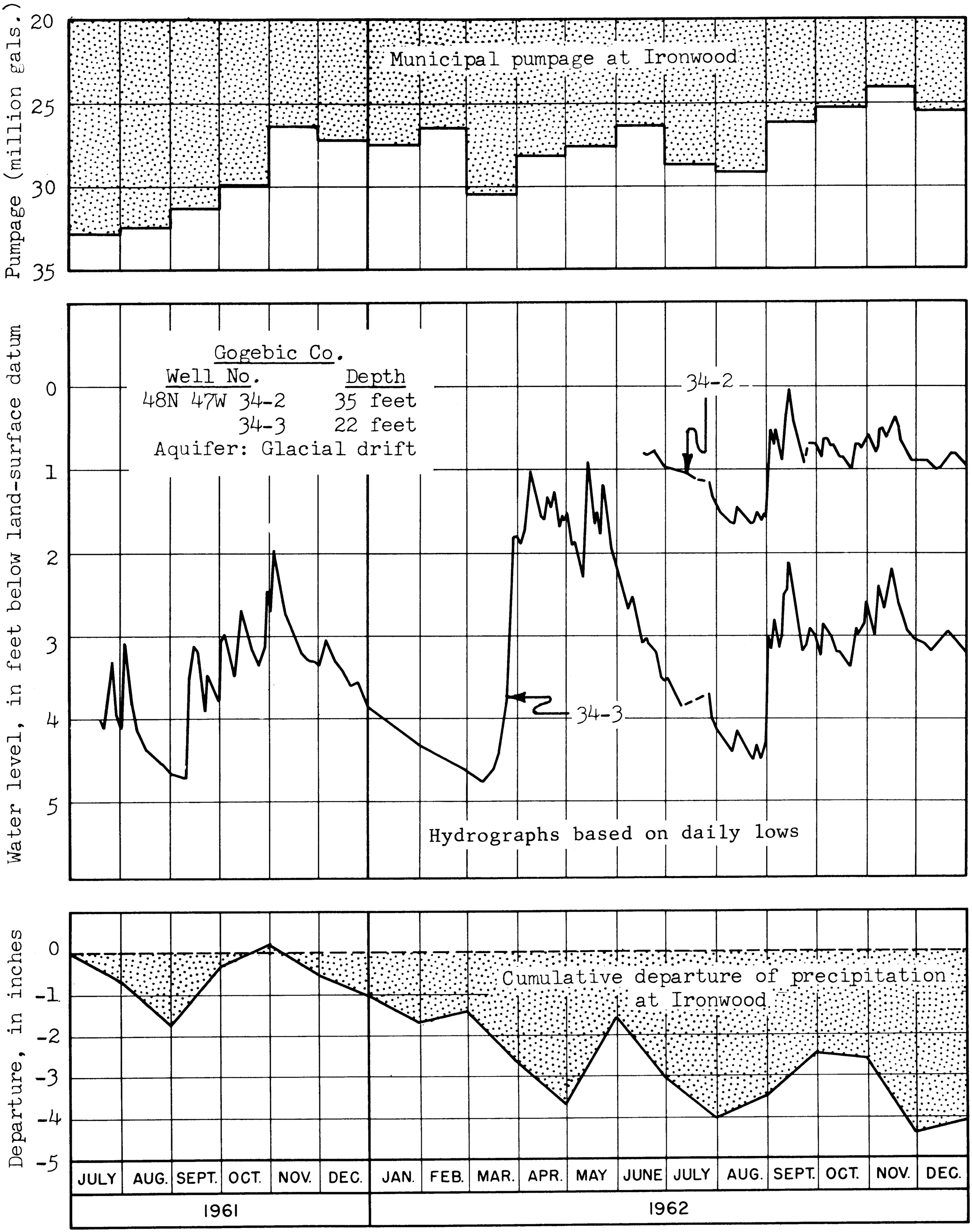


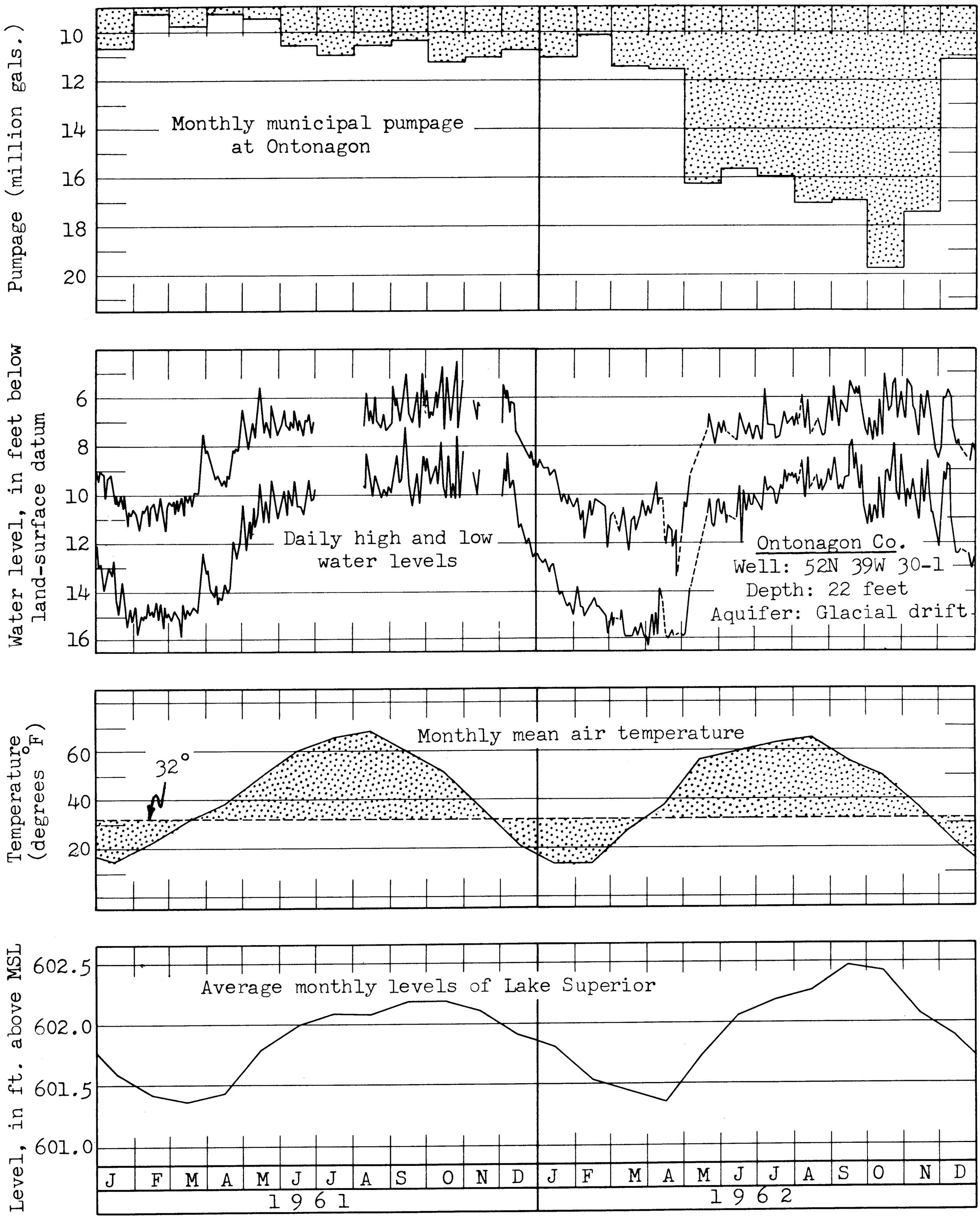
C. Effects of nearby pumping at 6-Mile Road well field near Plymouth, Oct. 12-Nov. 11, 1962.

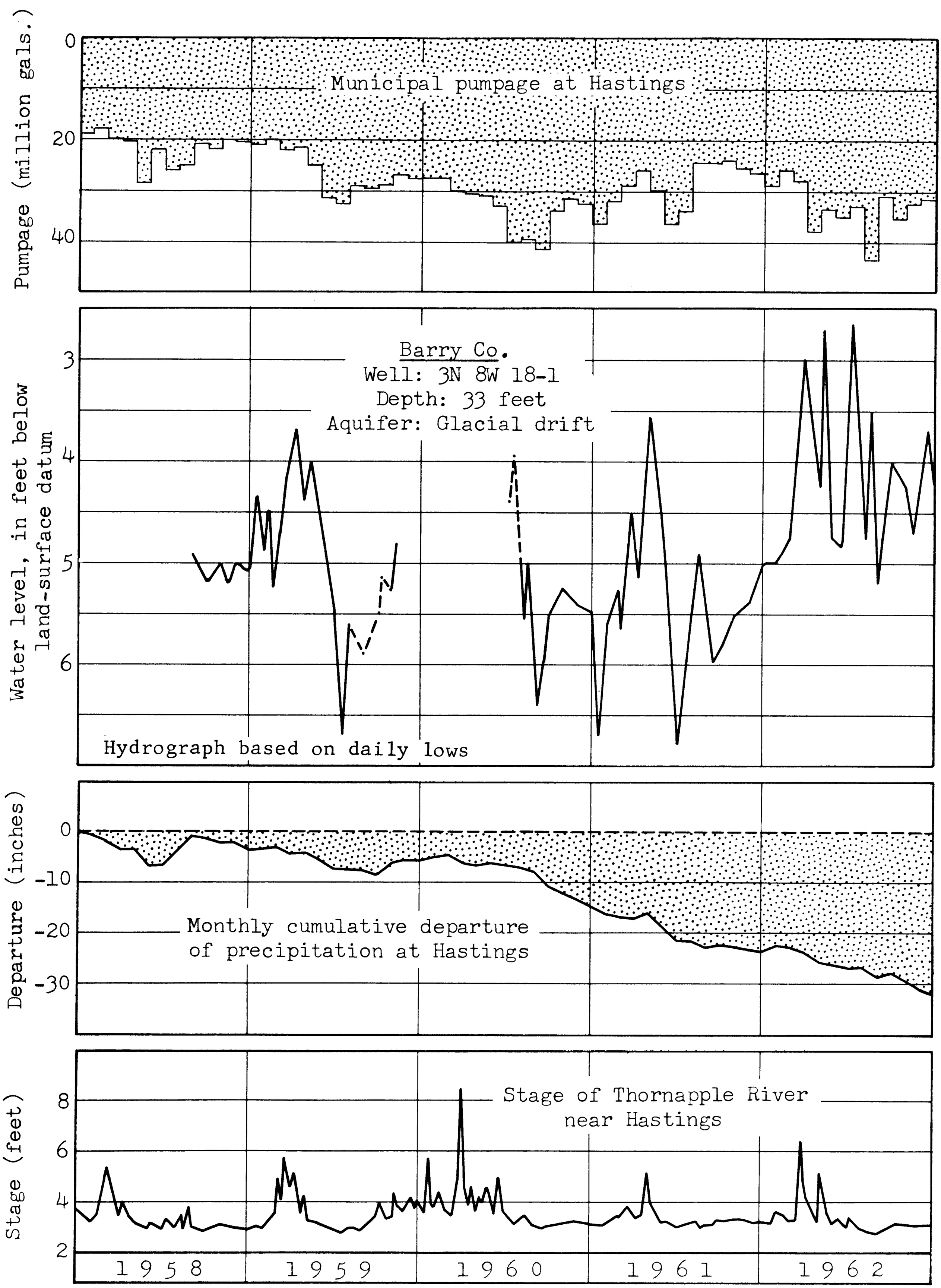


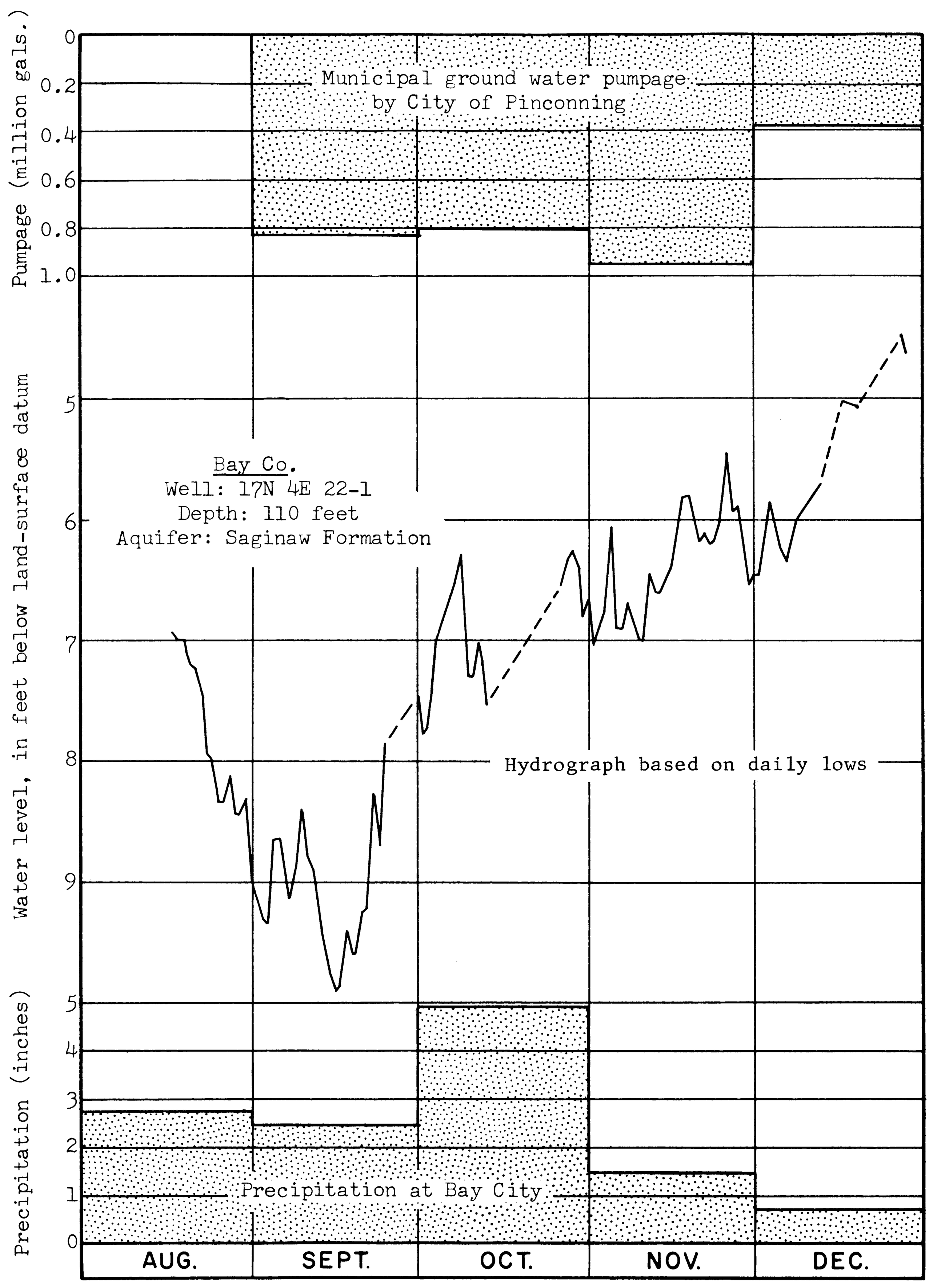
D. Effects of closeby pumping at Oakland University, Sept. 27-Oct. 27, 1962.

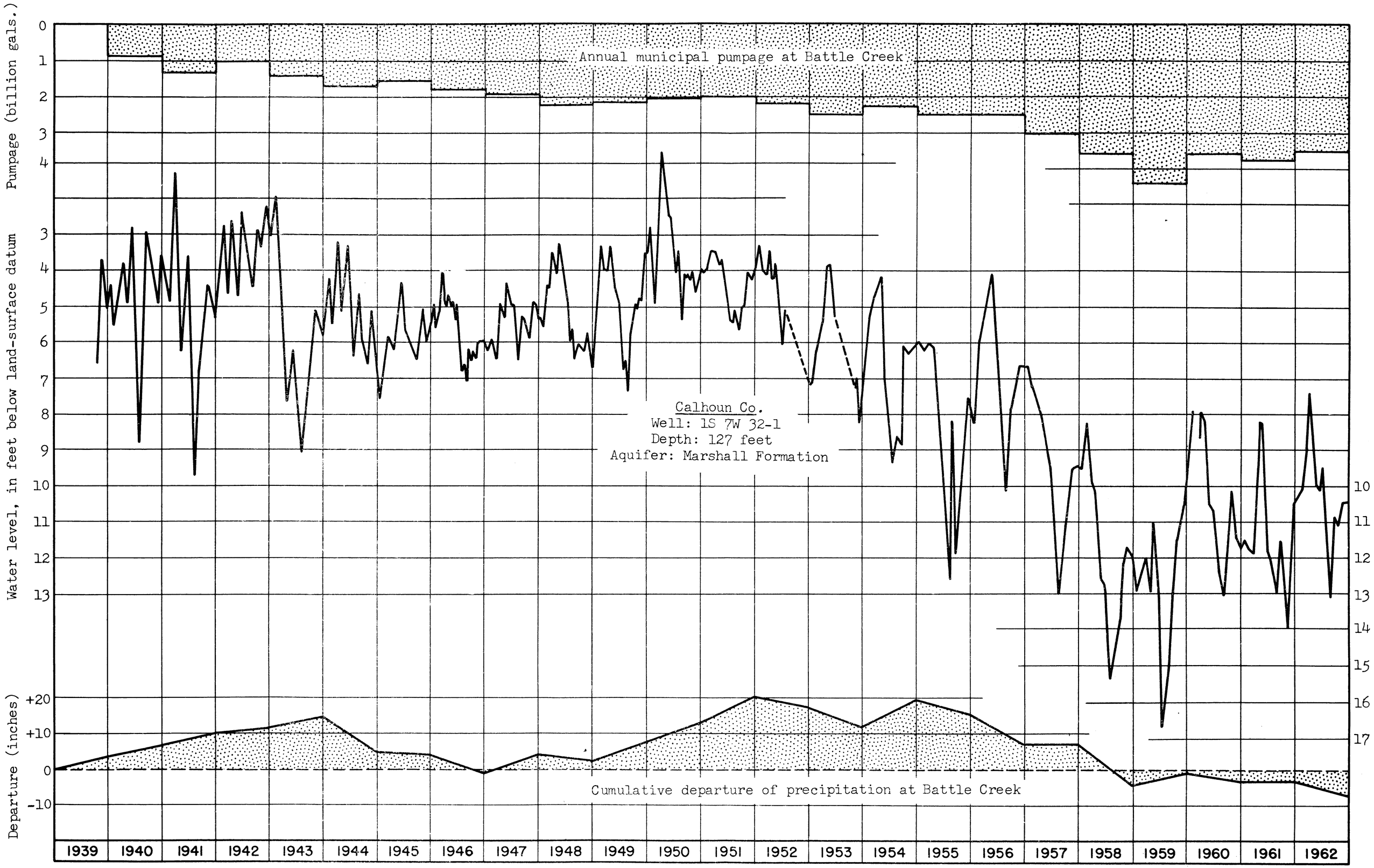
Water level, in feet below land-surface datum

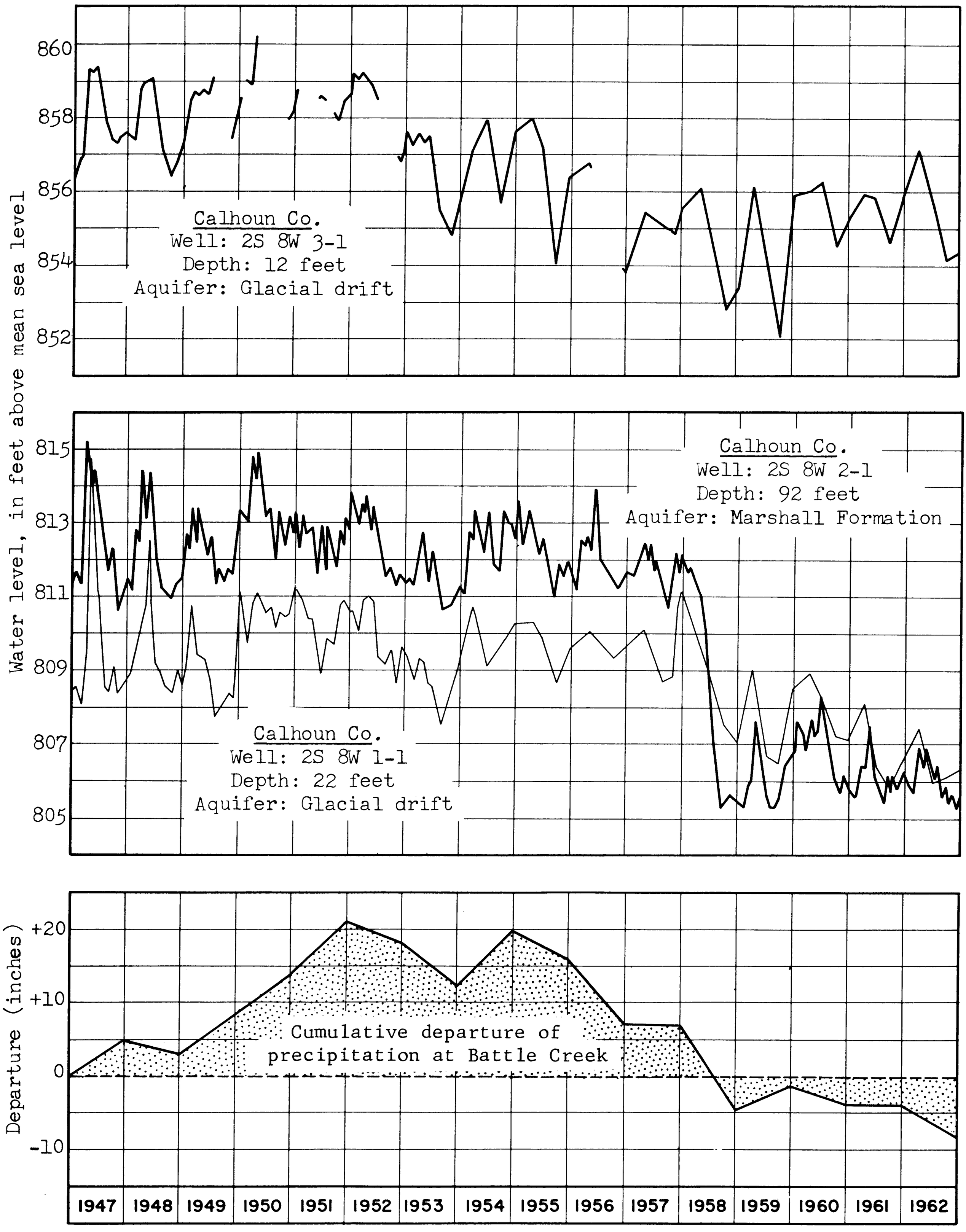

Pumpage (million gals.)
20
25
30
35
Municipal pumpage at Ironwood
Water level, in feet below land-surface datum
0
1
2
3
4
5
Gogebic Co.
Well No. Depth
48N 47W 34-2 35 feet
34-3 22 feet
Aquifer: Glacial drift
34-2
34-3
Hydrographs based on daily lows
Departure, in inches
0
-1
-2
-3
-4
-5
Cumulative departure of precipitation at Ironwood
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
1961
1962


Pumpage (million gals.)
10
12
14
16
18
20
Monthly municipal pumpage at Ontonagon
Water level, in feet below land-surface datum
6
8
10
12
14
16
Daily high and low water levels
Ontonagon Co.
Well: 52N 39W 30-1
Depth: 22 feet
Aquifer: Glacial drift
Temperature (degrees °F)
60
40
20
32°
Monthly mean air temperature
Level, in ft. above MSL
602.5
602.0
601.5
601.0
Average monthly levels of Lake Superior
J F M A M J J A S O N D
1961
J F M A M J J A S O N D
1962

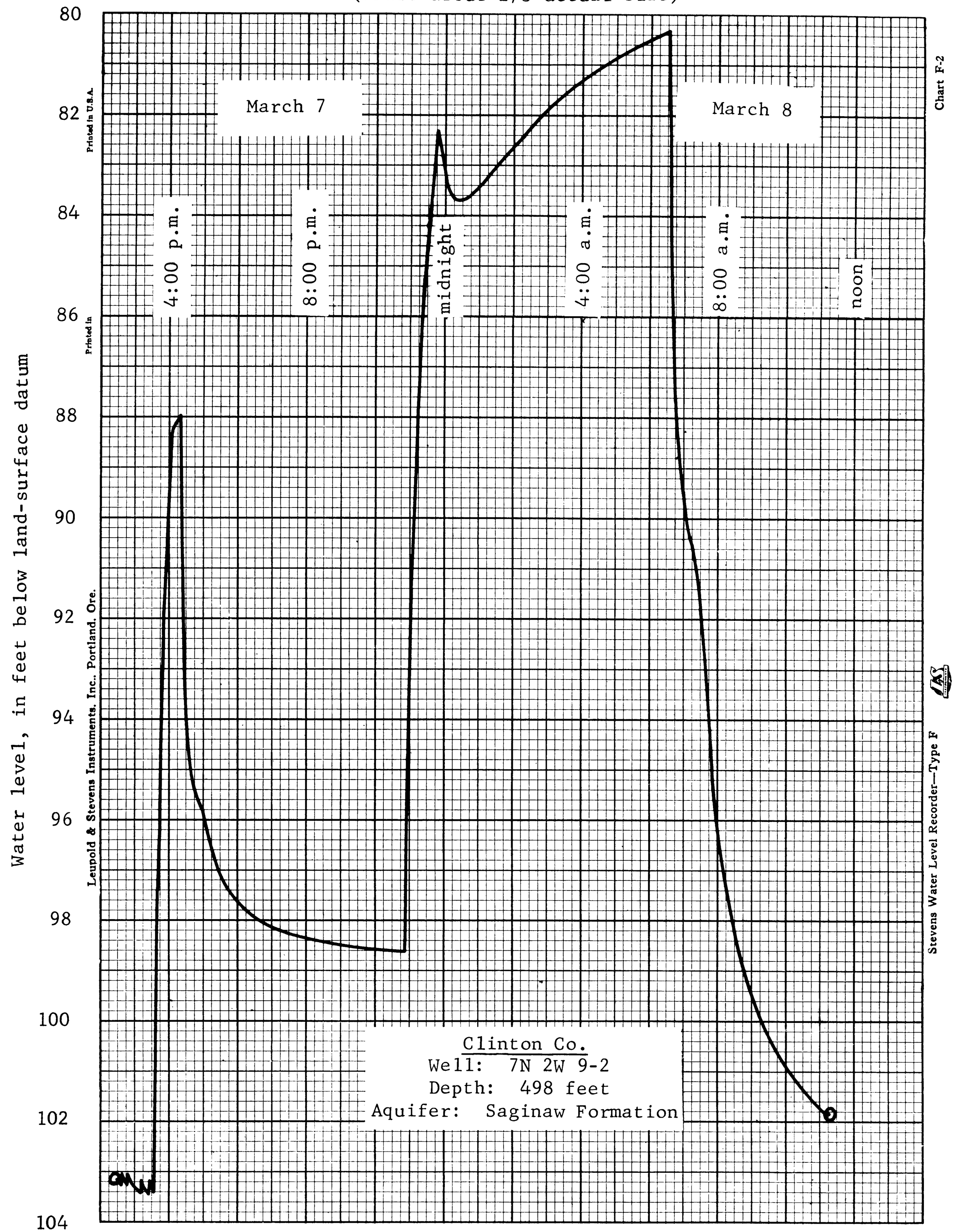

Pumpage (million gals.)
0
20
40
Municipal pumpage at Hastings
Water level, in feet below land-surface datum
3
4
5
6
Barry Co.
Well: 3N 8W 18-1
Depth: 33 feet
Aquifer: Glacial drift
Hydrograph based on daily lows
Departure (inches)
0
-10
-20
-30
Monthly cumulative departure of precipitation at Hastings
Stage (feet)
8
6
4
2
Stage of Thornapple River near Hastings
1958
1959
1960
1961
1962

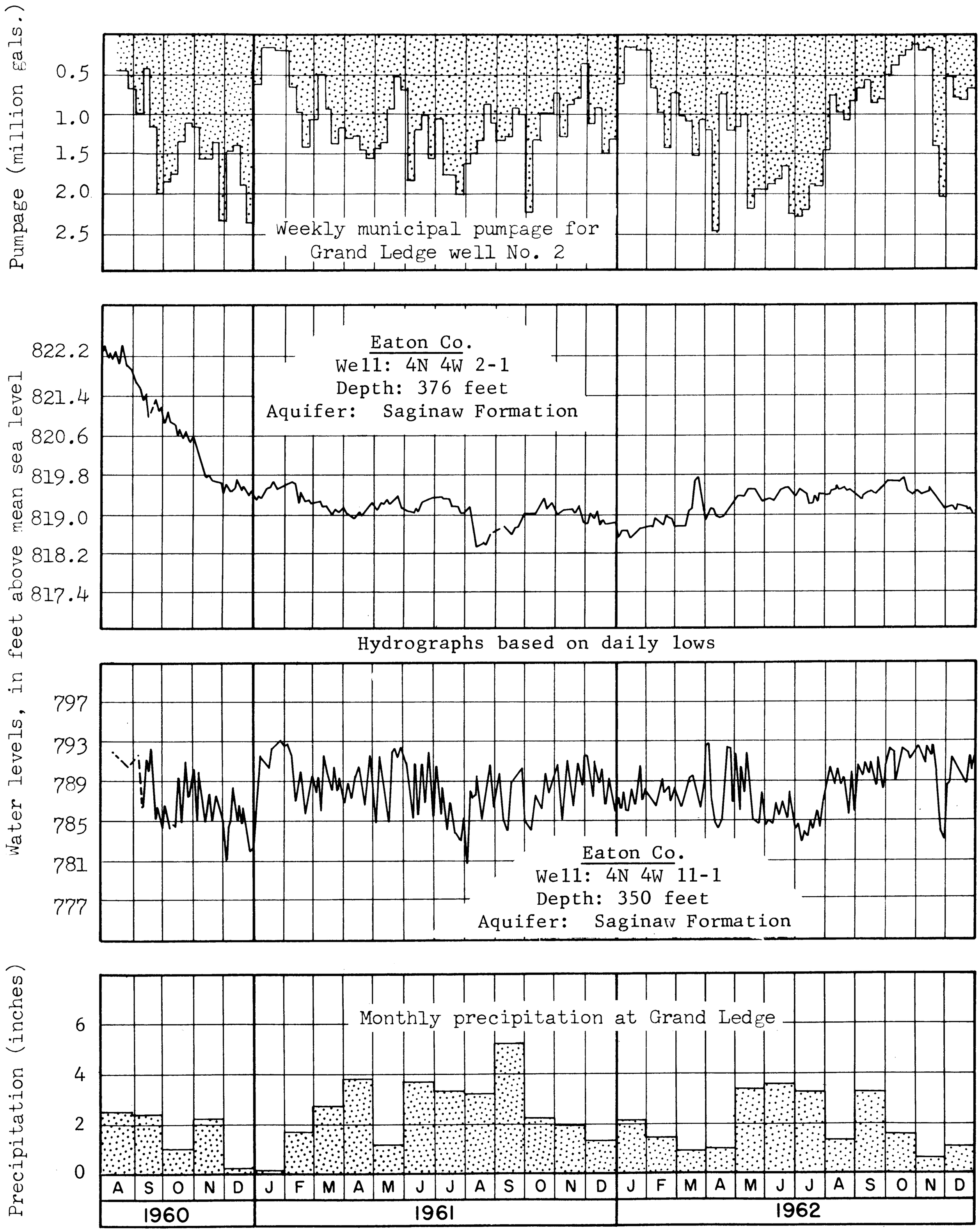

Pumpage (million gals.)
0
0.2
0.4
0.6
0.8
1.0
Municipal ground water pumpage by City of Pinconning
Water level, in feet below land-surface datum
5
6
7
8
9
Bay Co.
Well: 17N 4E 22-1
Depth: 110 feet
Aquifer: Saginaw Formation
Hydrograph based on daily lows
Precipitation (inches)
5
4
3
2
1
0
Precipitation at Bay City
AUG.
SEPT.
OCT.
NOV.
DEC.

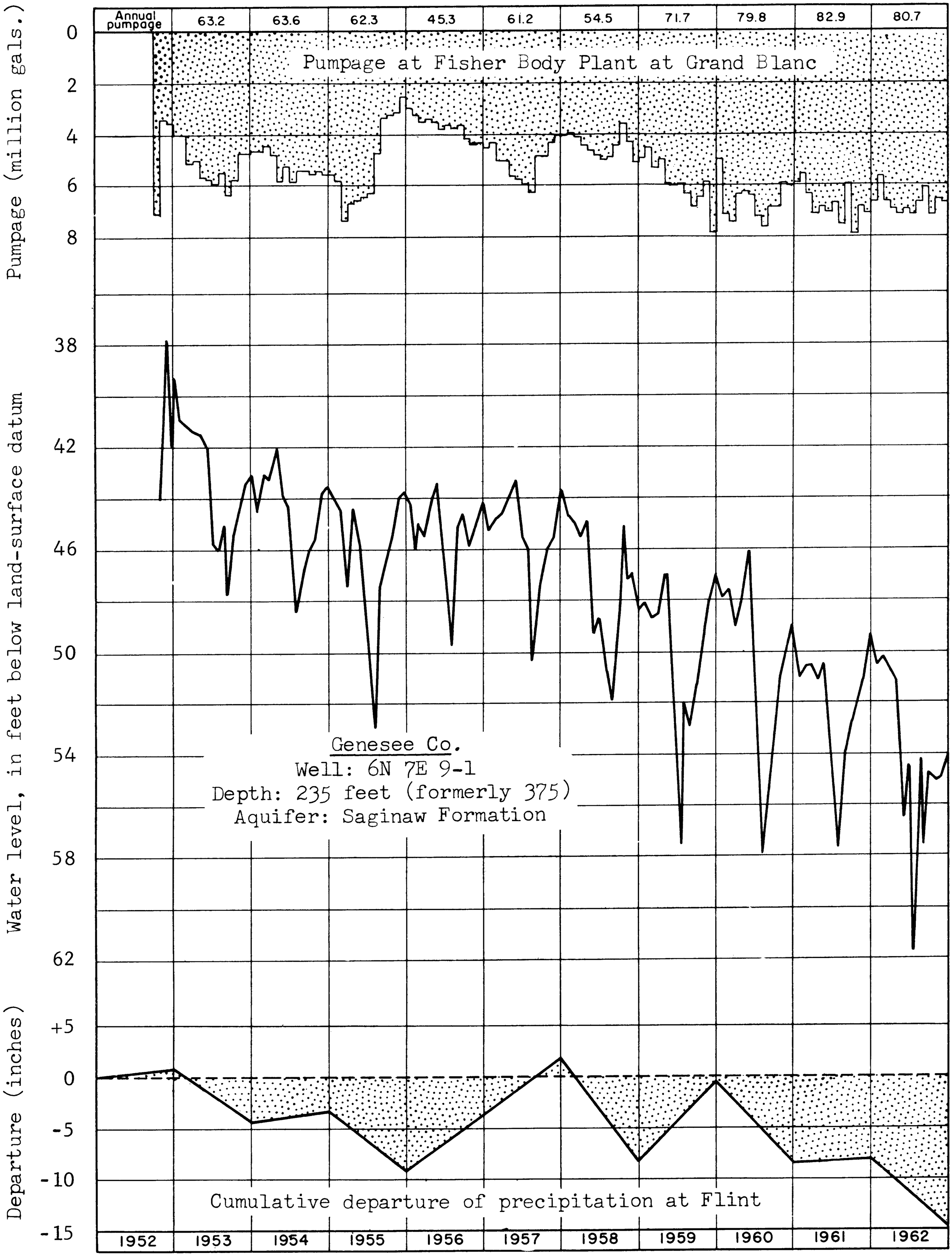

Pumpage (billion gals.)
0
1
2
3
4
Annual municipal pumpage at Battle Creek
Water level, in feet below land-surface datum
3
4
5
6
7
8
9
10
11
12
13
Calhoun Co.
Well: 1S 7W 32-1
Depth: 127 feet
Aquifer: Marshall Formation
10
11
12
13
14
15
16
17
Departure (inches)
+20
+10
0
-10
Cumulative departure of precipitation at Battle Creek
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962

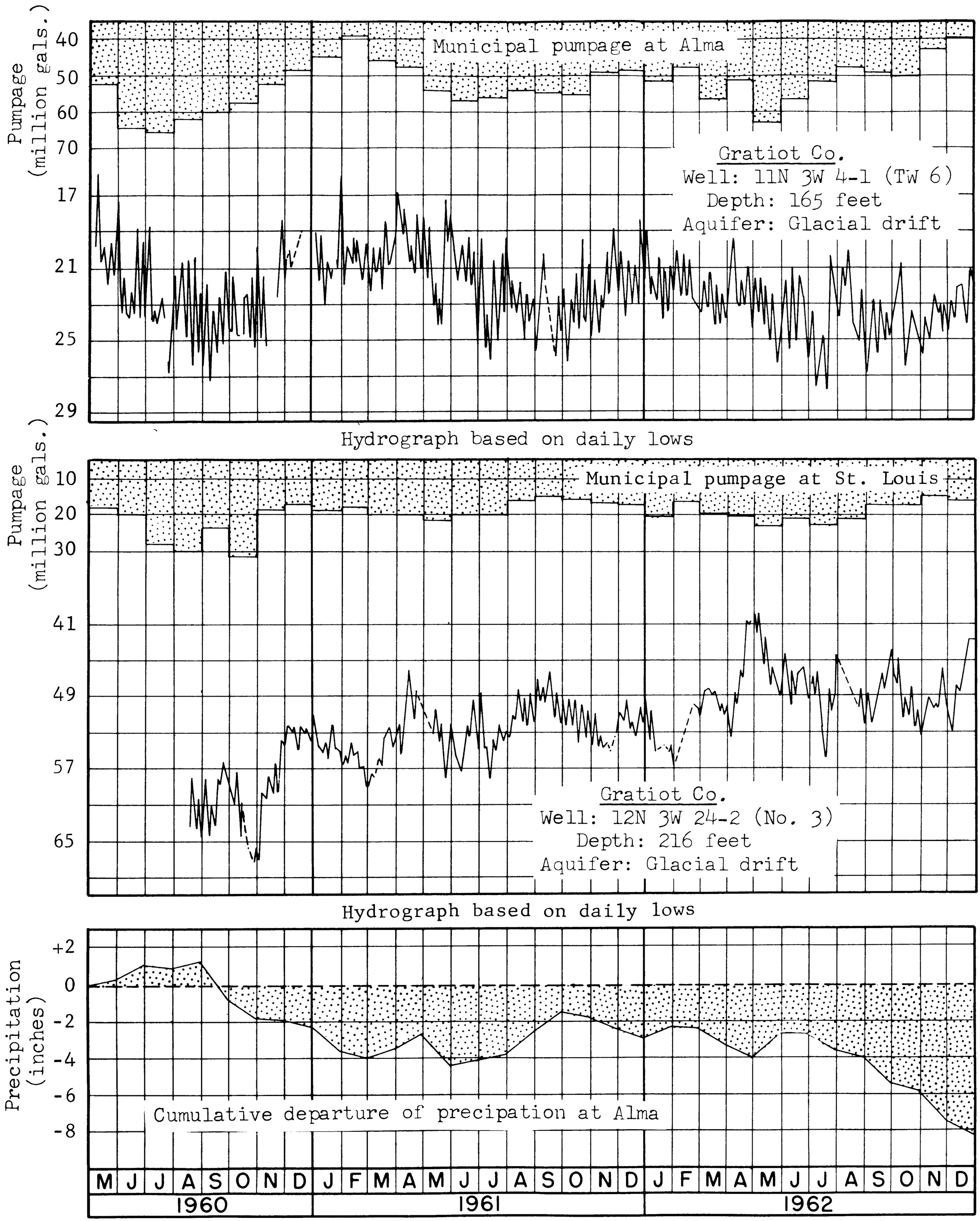

Water level, in feet above mean sea level
860
858
856
854
852
Calhoun Co.
Well: 2S 8W 3-1
Depth: 12 feet
Aquifer: Glacial drift
815
813
811
809
807
805
Calhoun Co.
Well: 2S 8W 2-1
Depth: 92 feet
Aquifer: Marshall Formation
Calhoun Co.
Well: 2S 8W 1-1
Depth: 22 feet
Aquifer: Glacial drift
Departure (inches)
+20
+10
0
-10
Cumulative departure of
precipitation at Battle Creek
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962

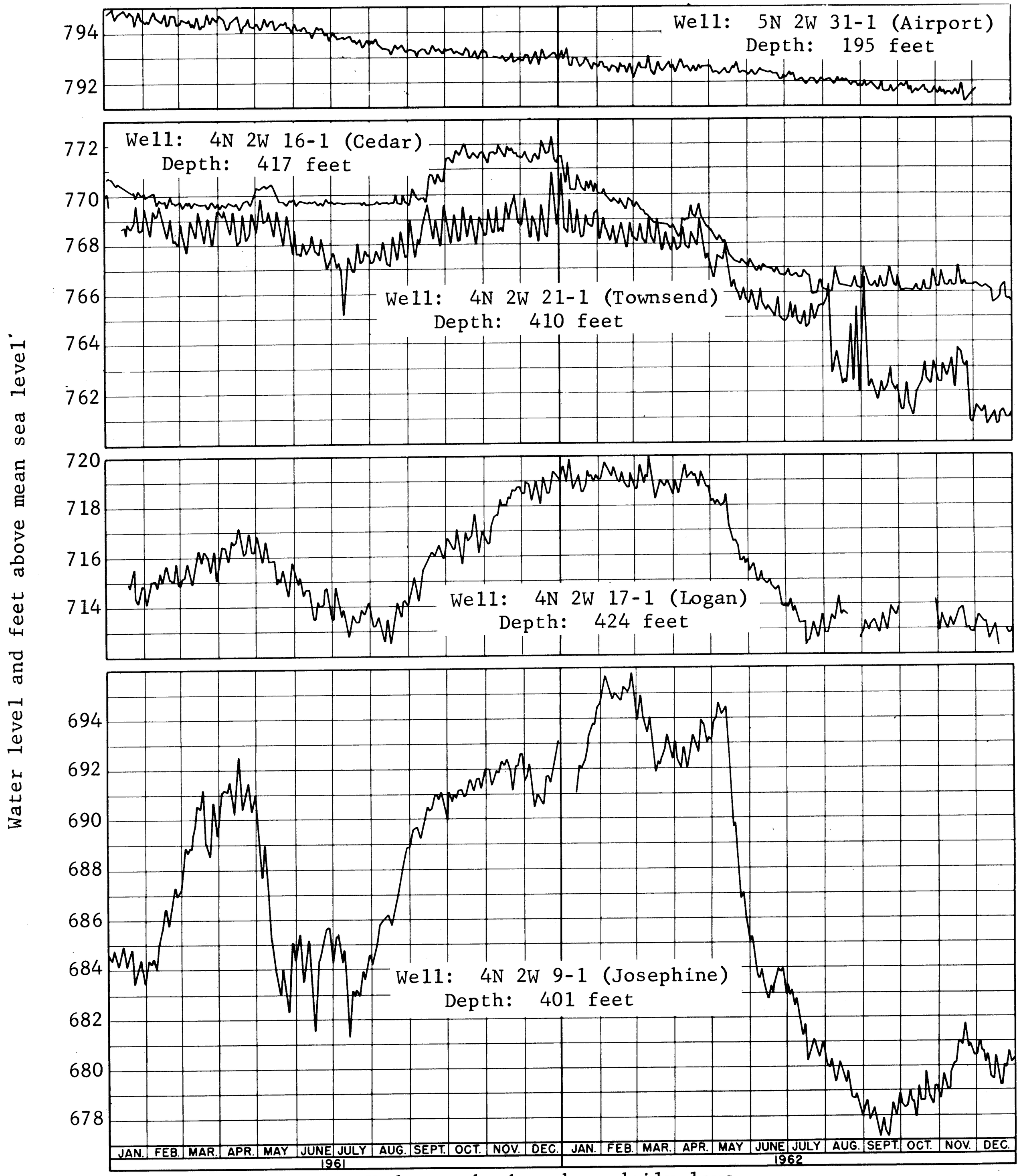
(Chart about 2/3 actual size)



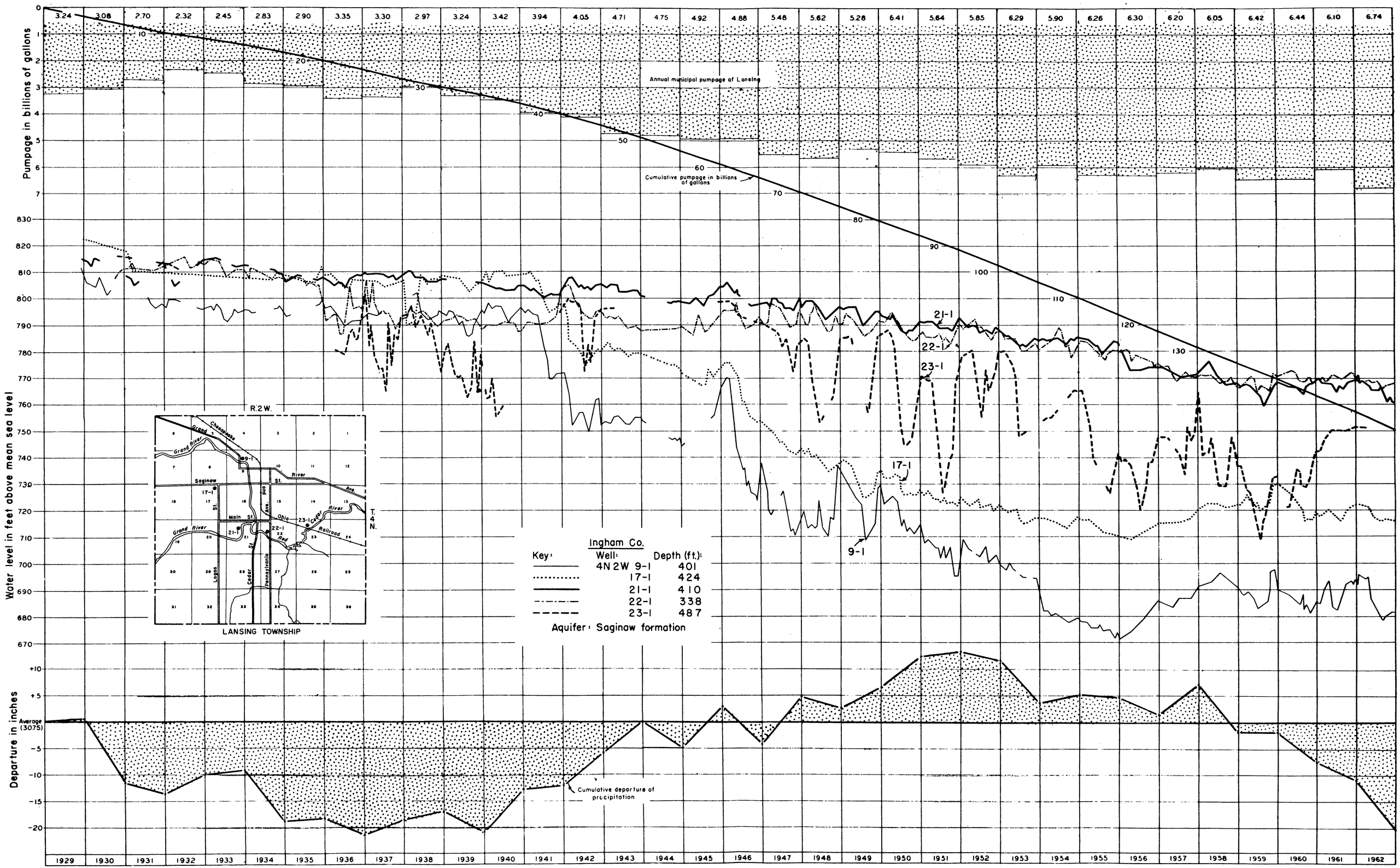

Pumpage (million gals.)
0.5
1.0
1.5
2.0
2.5
Weekly municipal pumpage for
Grand Ledge well No. 2
Water levels, in feet above mean sea level
822.2
821.4
820.6
819.8
819.0
818.2
817.4
Eaton Co.
Well: 4N 4W 2-1
Depth: 376 feet
Aquifer: Saginaw Formation
Hydrographs based on daily lows
797
793
789
785
781
777
Eaton Co.
Well: 4N 4W 11-1
Depth: 350 feet
Aquifer: Saginaw Formation
Precipitation (inches)
6
4
2
0
Monthly precipitation at Grand Ledge
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1960
1961
1962

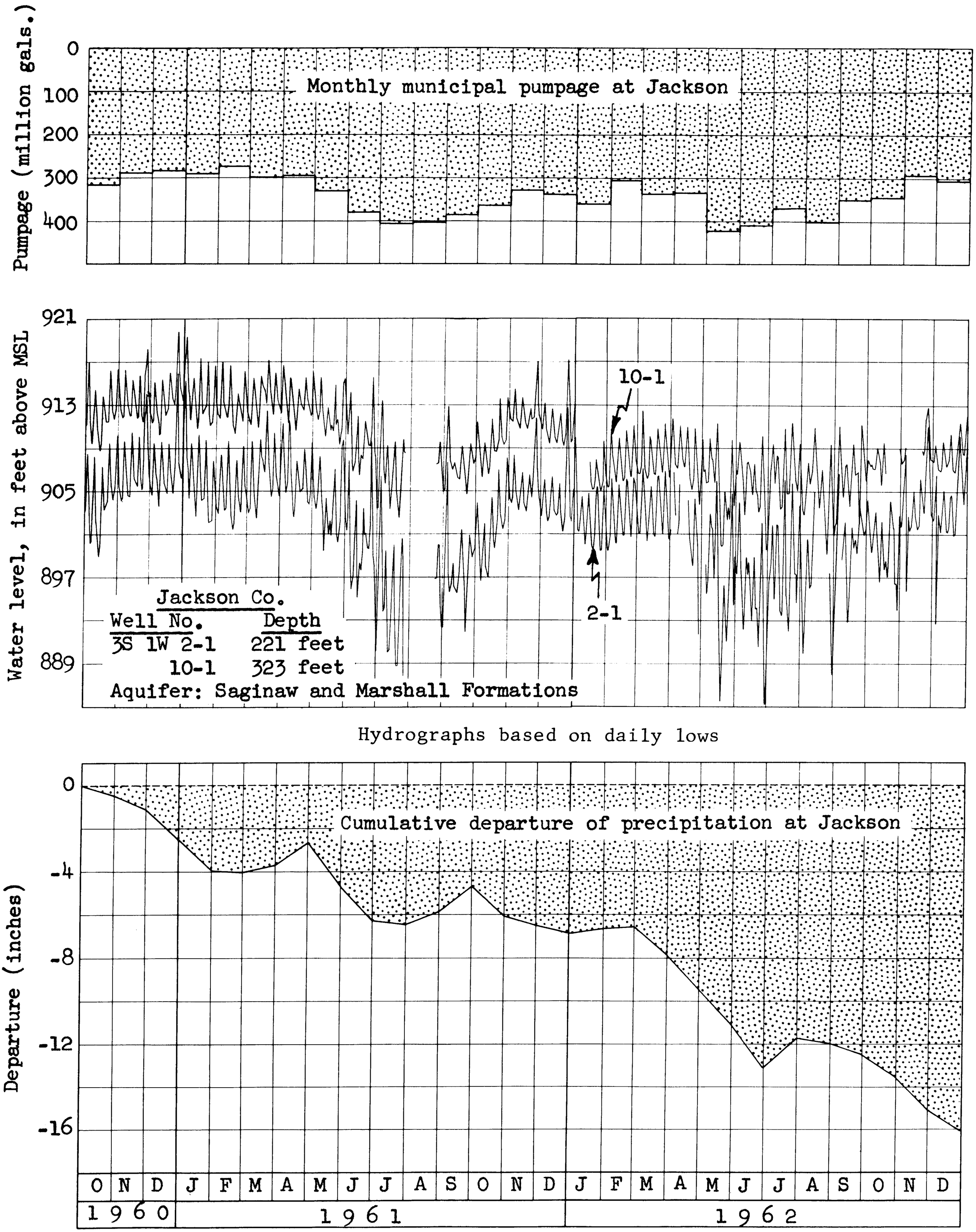

Annual pumpage
63.2
63.6
62.3
45.3
61.2
54.5
71.7
79.8
82.9
80.7
Pumpage at Fisher Body Plant at Grand Blanc
Pumpage (million gals.)
0
2
4
6
8
Water level, in feet below land-surface datum
38
42
46
50
54
58
62
Genesee Co.
Well: 6N 7E 9-1
Depth: 235 feet (formerly 375)
Aquifer: Saginaw Formation
Departure (inches)
+5
0
-5
-10
-15
Cumulative departure of precipitation at Flint
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962

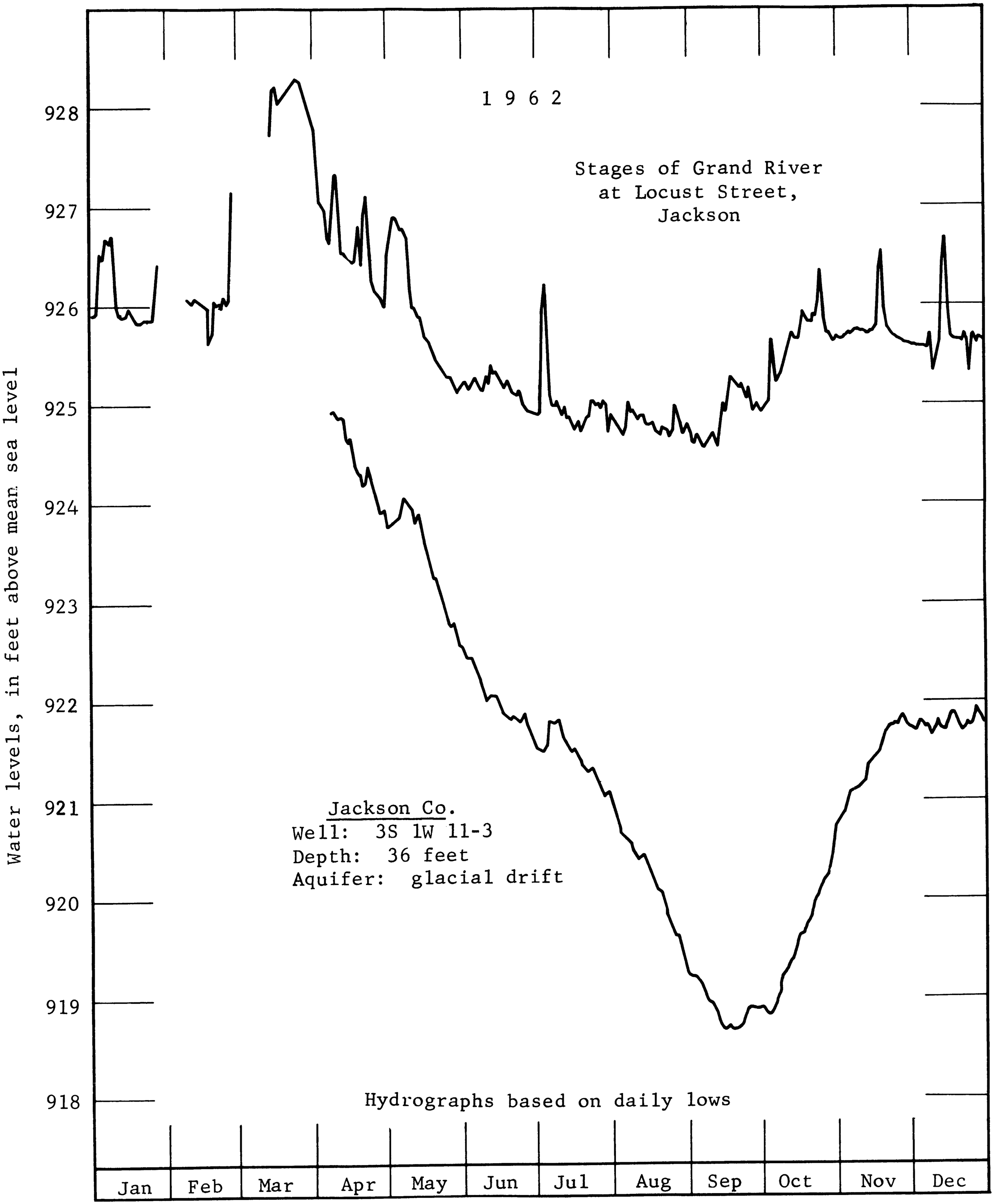

Water levels, in feet below land-surface datum
Pumpage (million gals.)
40
50
60
70
17
21
25
29
Municipal pumpage at Alma
Gratiot Co.
Well: 11N 3W 4-1 (TW 6)
Depth: 165 feet
Aquifer: Glacial drift
Hydrograph based on daily lows
Pumpage (million gals.)
10
20
30
41
49
57
65
Municipal pumpage at St. Louis
Gratiot Co.
Well: 12N 3W 24-2 (No. 3)
Depth: 216 feet
Aquifer: Glacial drift
Hydrograph based on daily lows
Precipitation (inches)
+2
0
-2
-4
-6
-8
Cumulative departure of precipation at Alma
M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1960
1961
1962

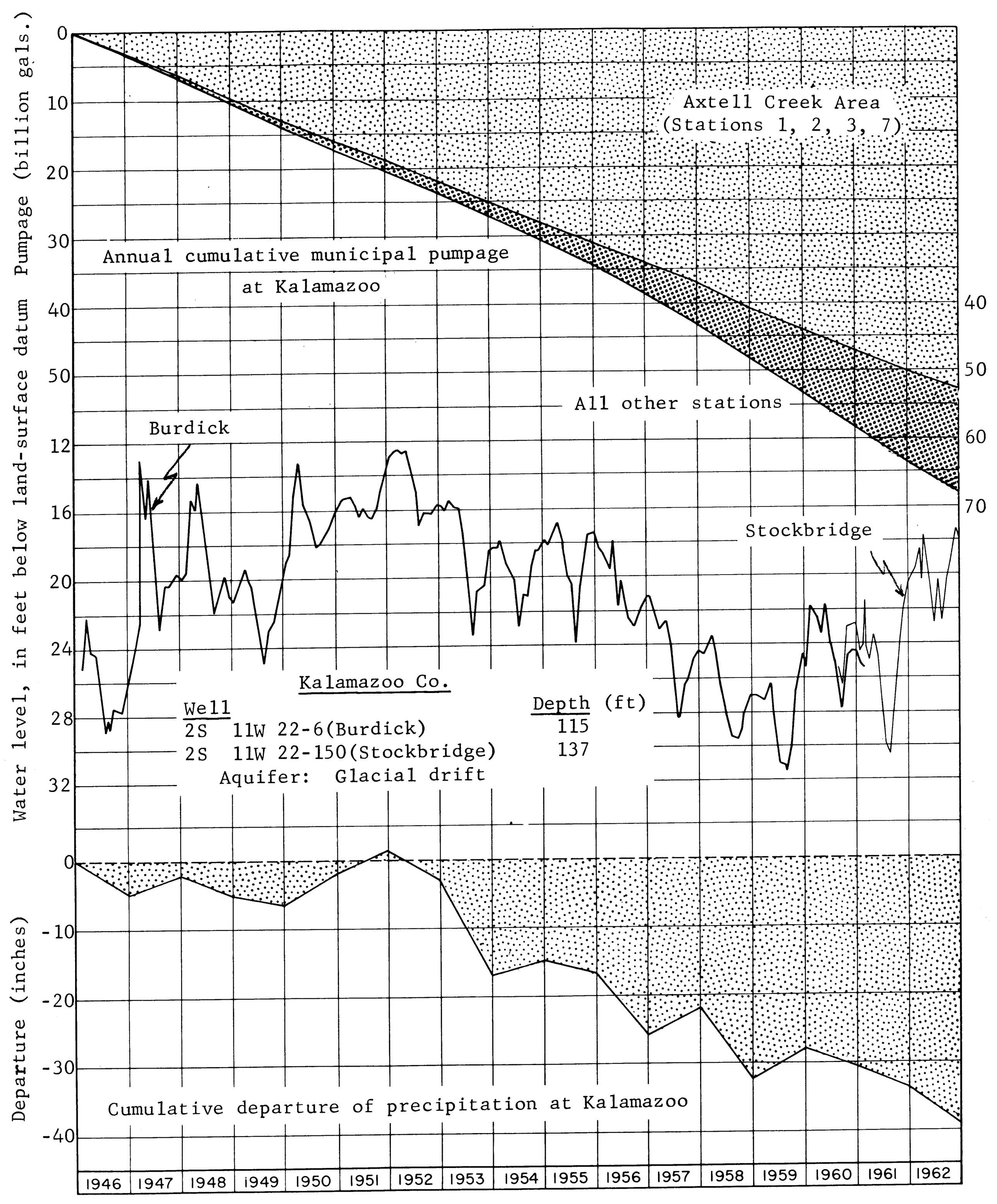


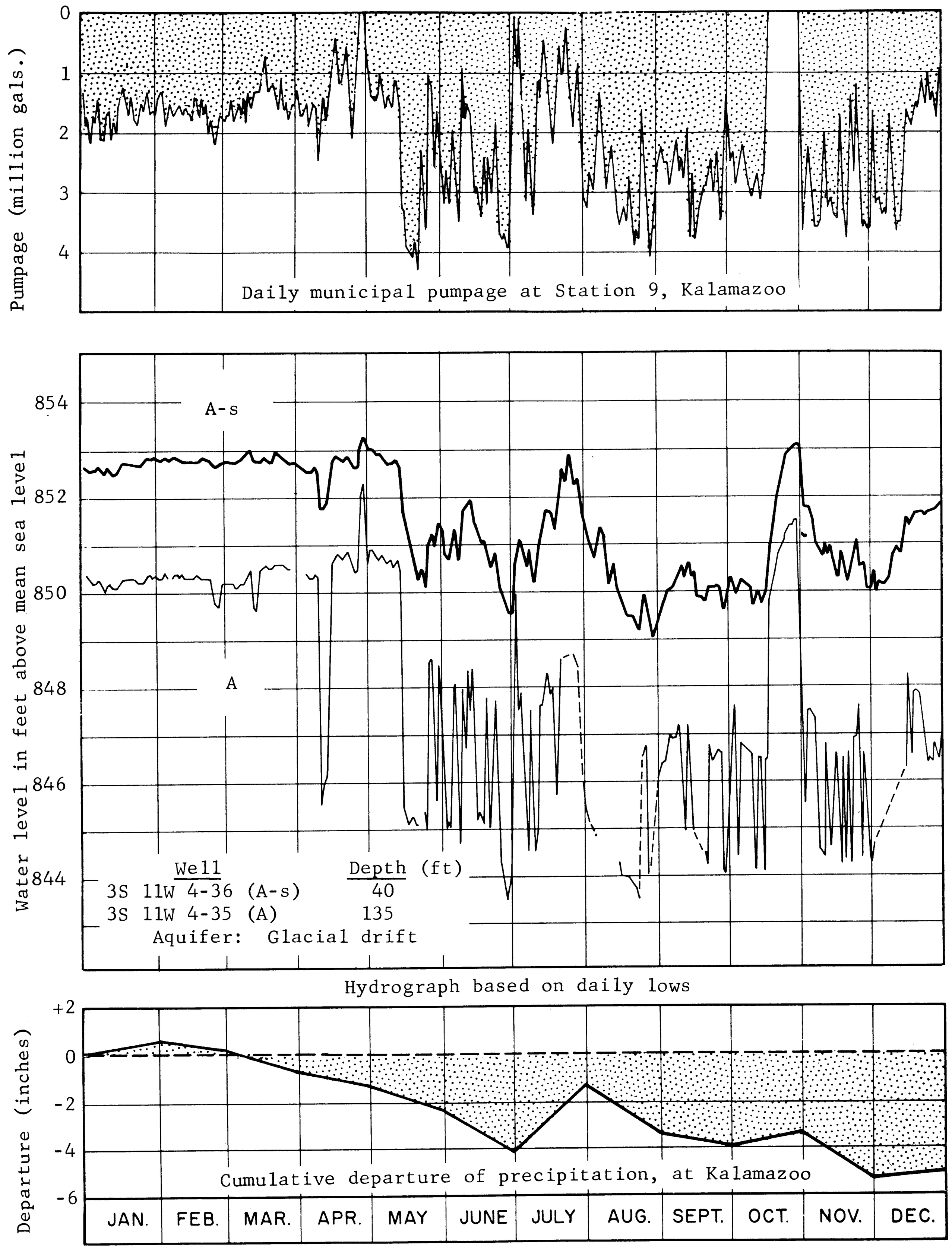
Hydrographs based on daily lows

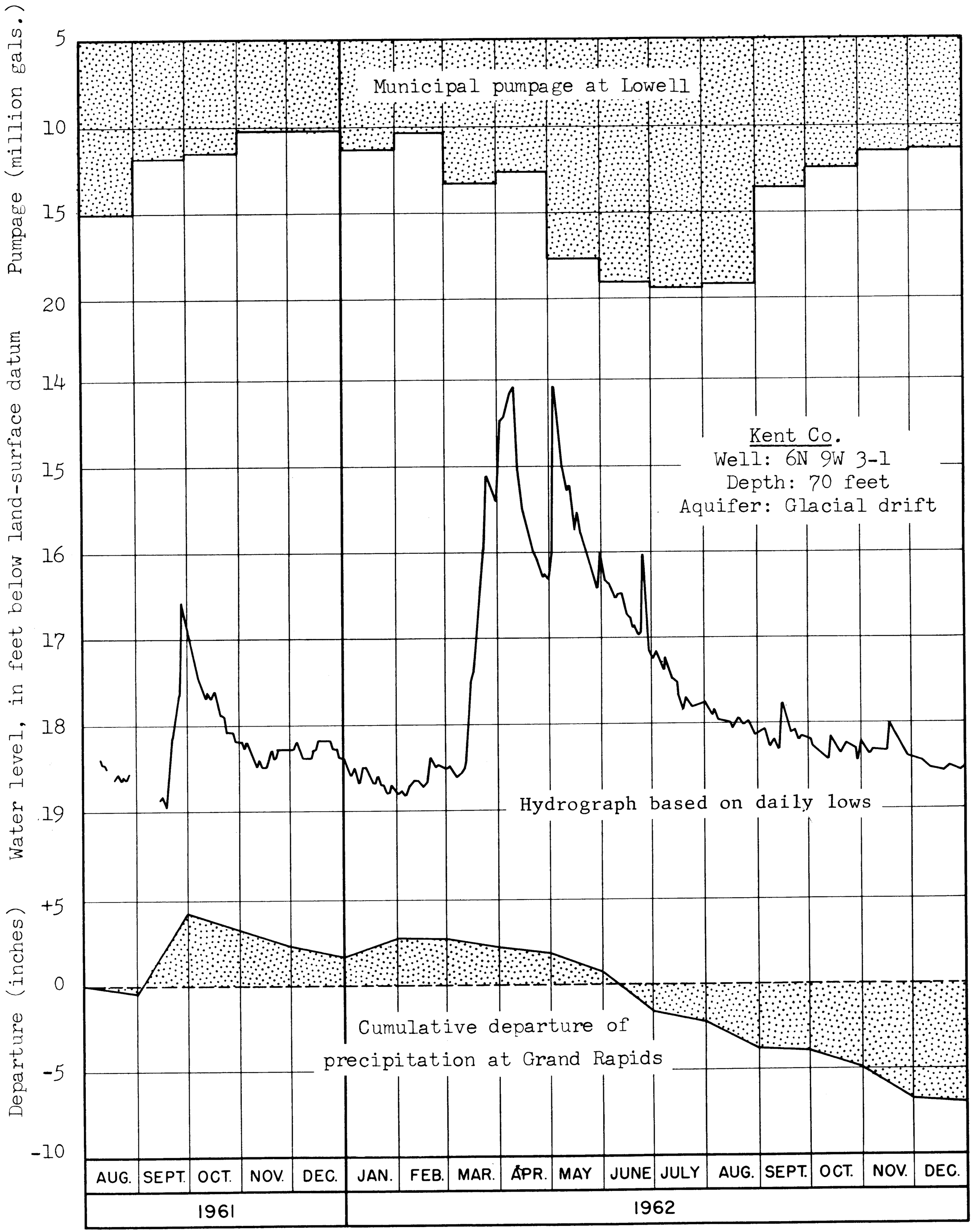

Pumpage in billions of gallons
Water level in feet above mean sea level
Departure in inches
Annual municipal pumpage of Lansing
Cumulative pumpage in billions of gallons
Cumulative departure of precipitation
Average (30.75)
21-1
22-1
23-1
17-1
9-1
Ingham Co.
Key: Well: Depth (ft.):
4N 2W 9-1 401
17-1 424
21-1 410
22-1 338
23-1 487
Aquifer: Saginaw formation
R.2W.
T. 4 N.
LANSING TOWNSHIP
Grand River
Chesapeake and Ohio Railroad
Saginaw St.
Main St.
Logan St.
Cedar St.
Pennsylvania Ave.
Red Cedar River
Ave.

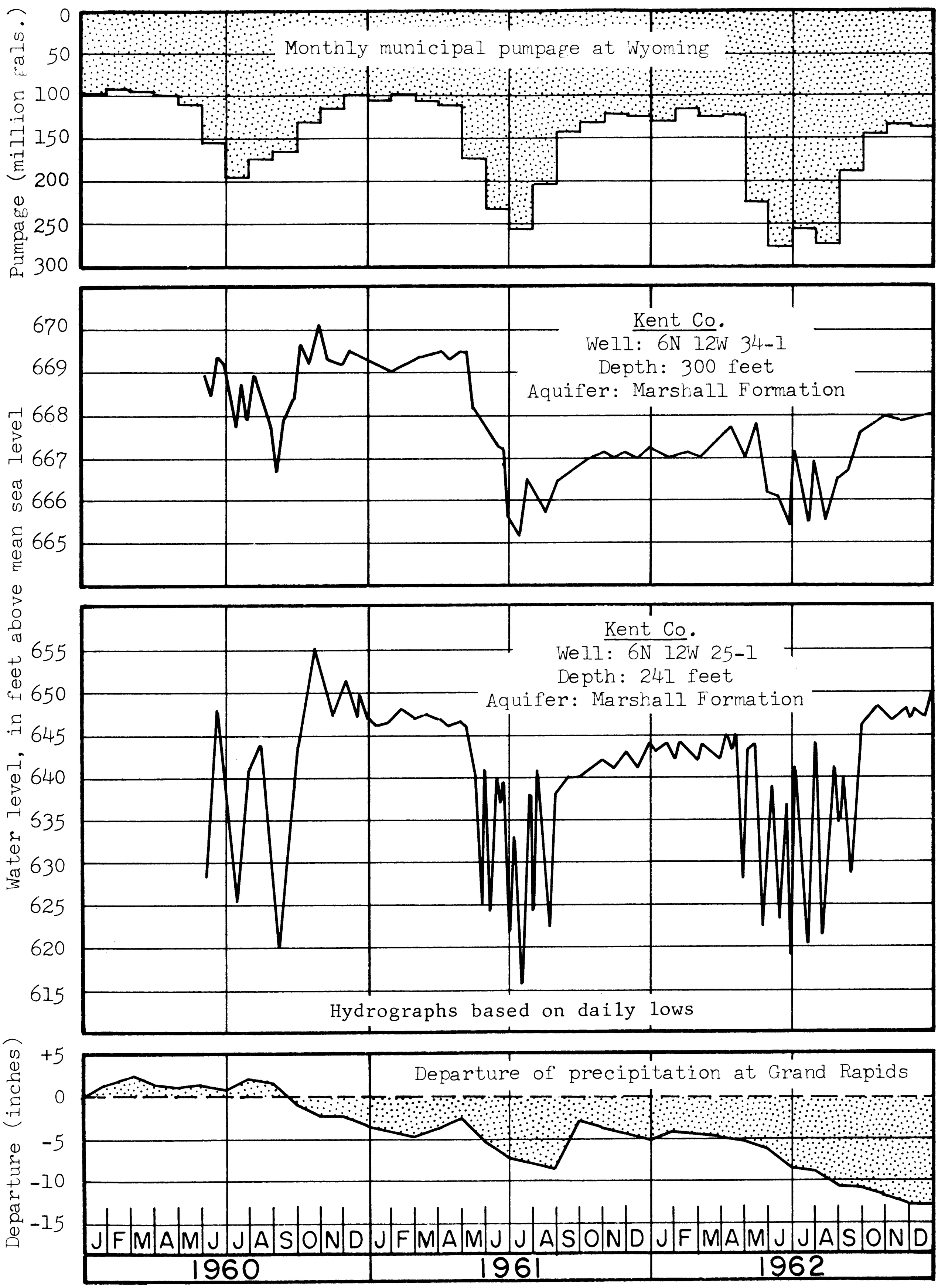

Pumpage (million gals.)
0
100
200
300
400
Monthly municipal pumpage at Jackson
Water level, in feet above MSL
921
913
905
897
889
10-1
2-1
Jackson Co.
Well No. Depth
3S 1W 2-1 221 feet
10-1 323 feet
Aquifer: Saginaw and Marshall Formations
Hydrographs based on daily lows
Departure (inches)
0
-4
-8
-12
-16
Cumulative departure of precipitation at Jackson
O N D J F M A M J J A S O N D J F M A M J J A S O N D
1960
1961
1962

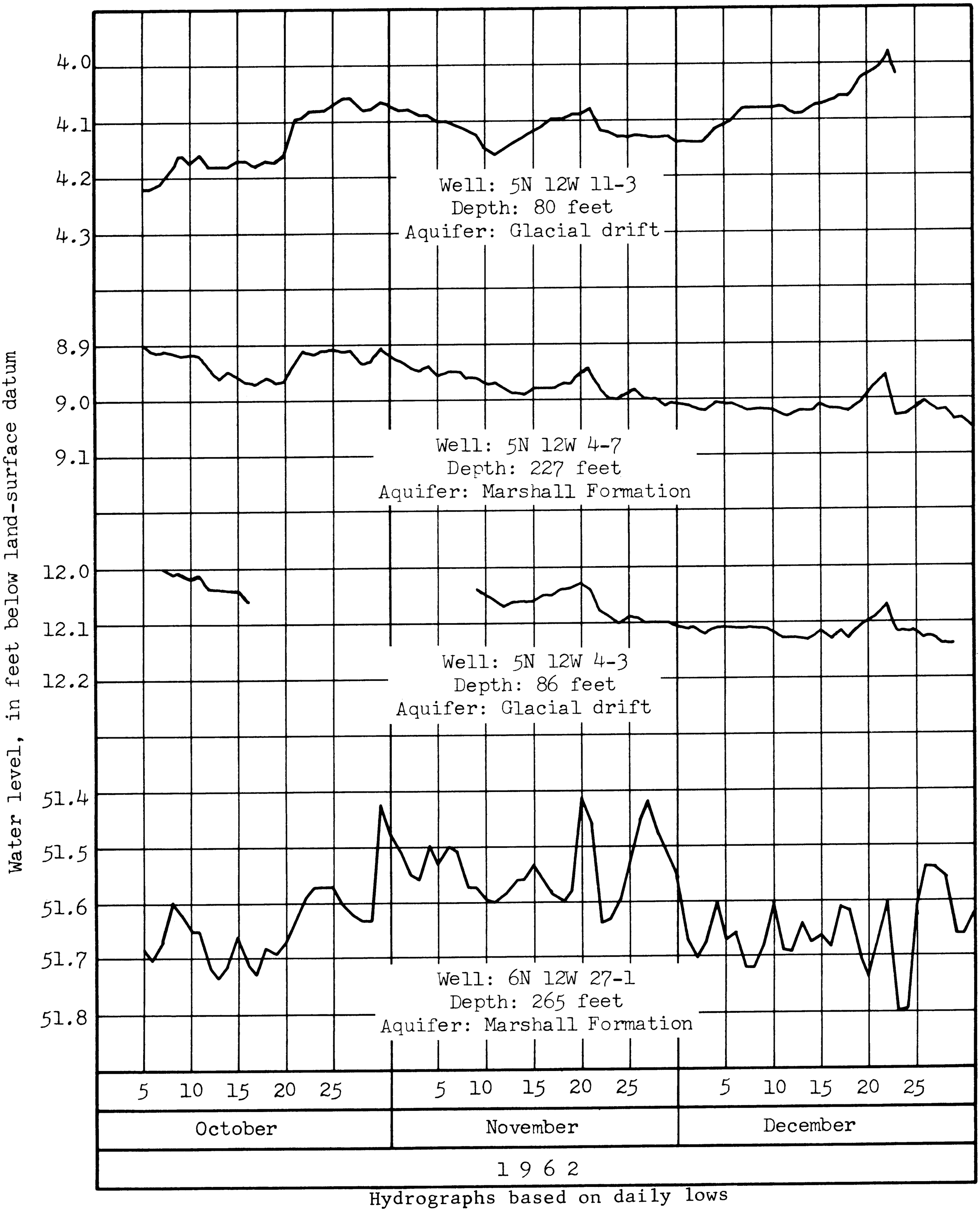

1 9 6 2
Stages of Grand River
at Locust Street,
Jackson
Water levels, in feet above mean sea level
928
927
926
925
924
923
922
921
920
919
918
Jackson Co.
Well: 3S 1W 11-3
Depth: 36 feet
Aquifer: glacial drift
Hydrographs based on daily lows
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Water level, in feet below land-surface datum Pumpage (billion gals.)
0
10
20
30
40
50
60
70
12
16
20
24
28
32
Axtell Creek Area
(Stations 1, 2, 3, 7)
Annual cumulative municipal pumpage
at Kalamazoo
All other stations
Burdick
Stockbridge
Kalamazoo Co.
Well
Depth (ft)
2S 11W 22-6(Burdick) 115
2S 11W 22-150(Stockbridge) 137
Aquifer: Glacial drift
Departure (inches)
0
-10
-20
-30
-40
Cumulative departure of precipitation at Kalamazoo
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962

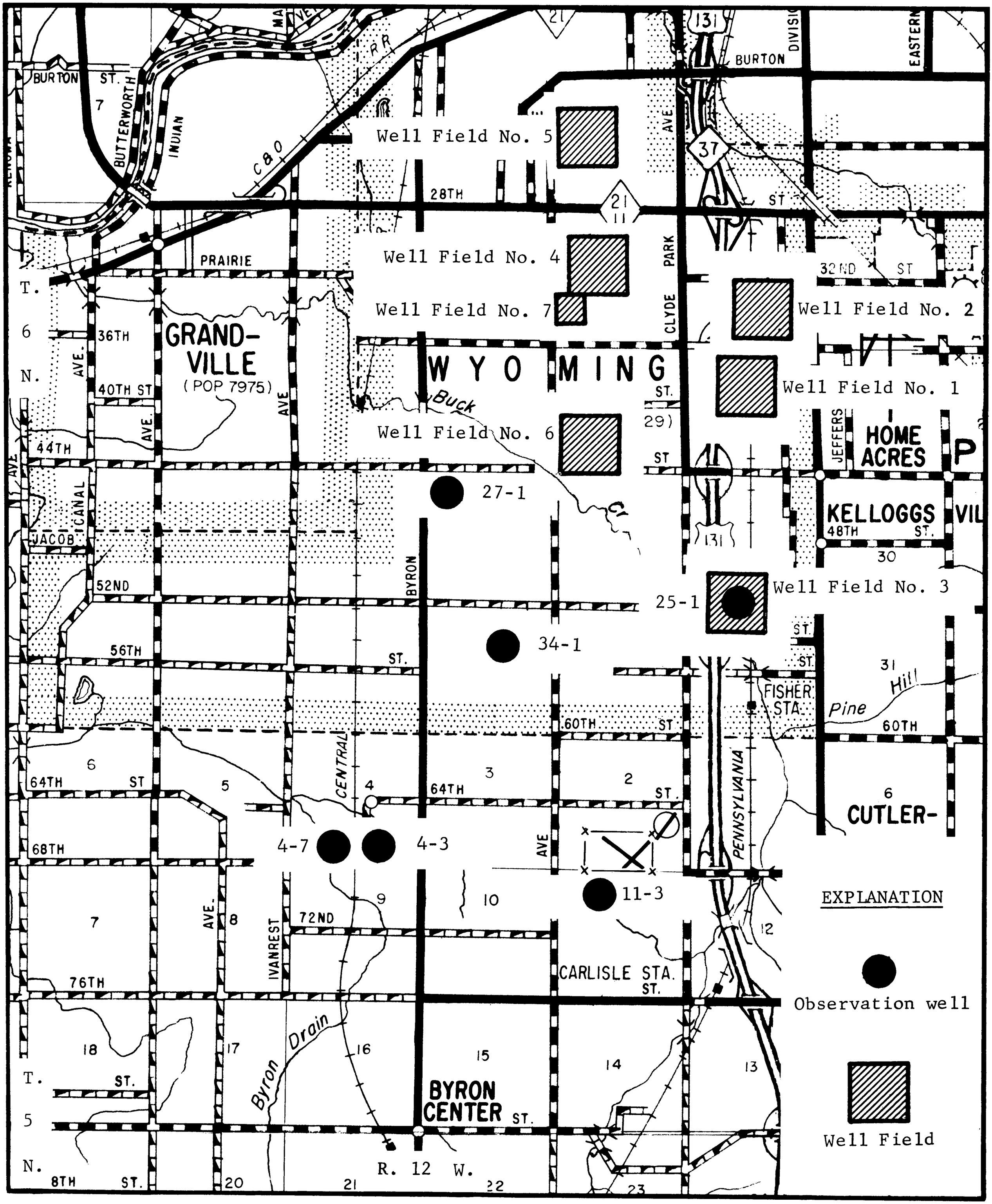

Pumpage (million gals.)
0
1
2
3
4
Daily municipal pumpage at Station 9, Kalamazoo
Water level in feet above mean sea level
854
852
850
848
846
844
A-s
A
Well
Depth (ft)
3S 11W 4-36 (A-s) 40
3S 11W 4-35 (A) 135
Aquifer: Glacial drift
Hydrograph based on daily lows
Departure (inches)
+2
0
-2
-4
-6
Cumulative departure of precipitation, at Kalamazoo
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.

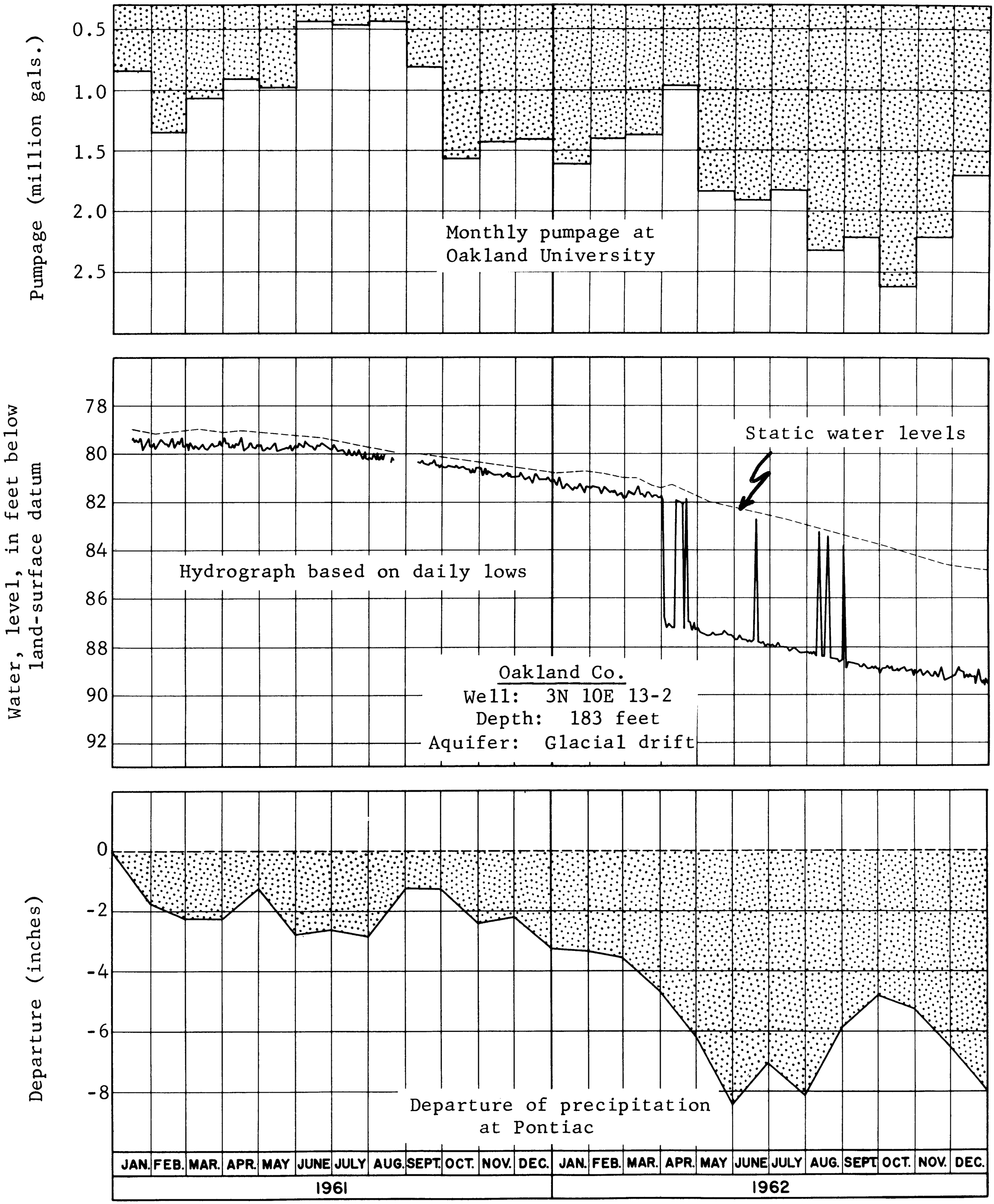

Pumpage (million gals.)
5
10
15
20
Municipal pumpage at Lowell
Water level, in feet below land-surface datum
14
15
16
17
18
19
Kent Co.
Well: 6N 9W 3-1
Depth: 70 feet
Aquifer: Glacial drift
Hydrograph based on daily lows
Departure (inches)
+5
0
-5
-10
Cumulative departure of
precipitation at Grand Rapids
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
1961
1962

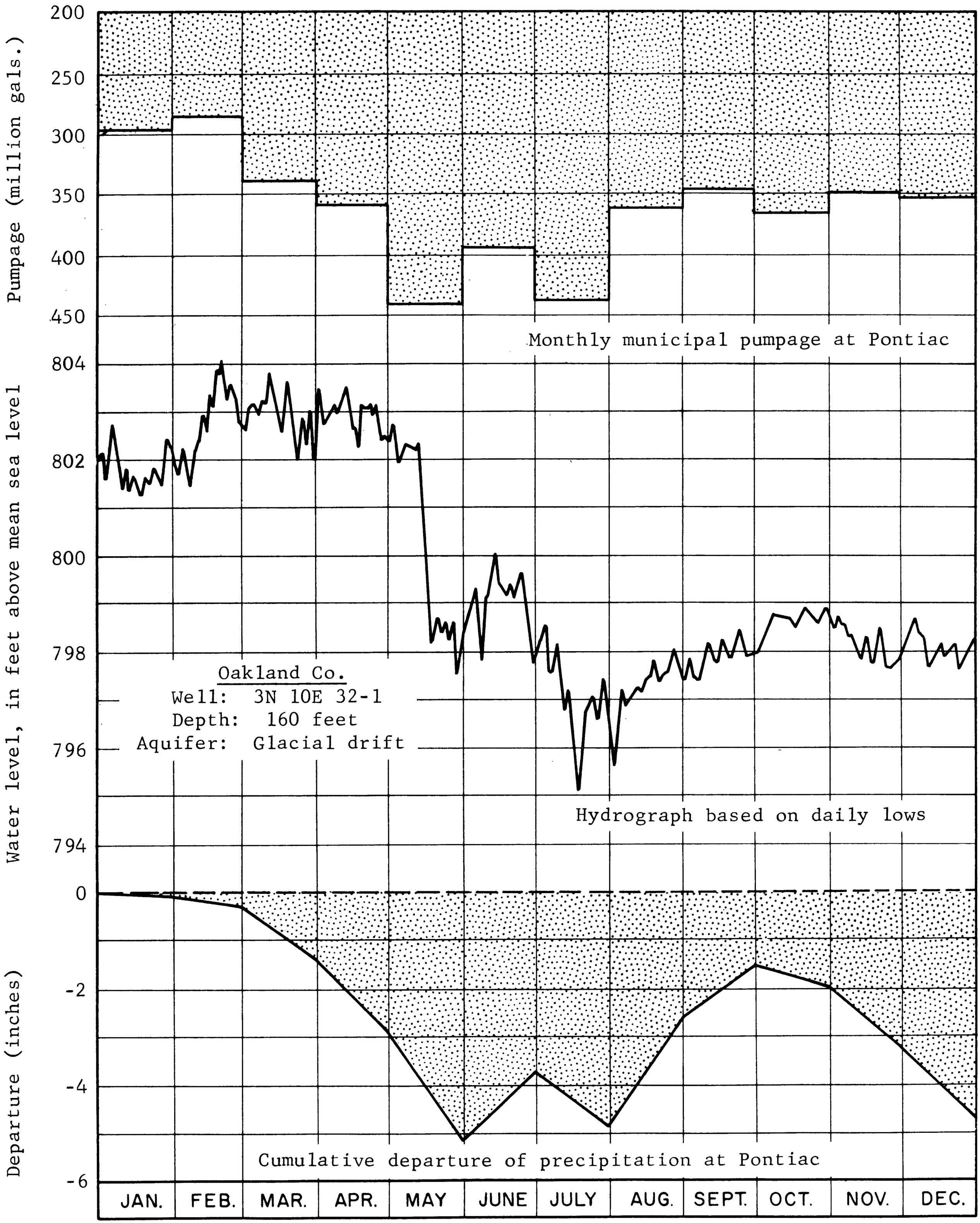

Monthly municipal pumpage at Wyoming
Pumpage (million gals.)
0
50
100
150
200
250
300
Kent Co.
Well: 6N 12W 34-1
Depth: 300 feet
Aquifer: Marshall Formation
Water level, in feet above mean sea level
670
669
668
667
666
665
Kent Co.
Well: 6N 12W 25-1
Depth: 241 feet
Aquifer: Marshall Formation
655
650
645
640
635
630
625
620
615
Hydrographs based on daily lows
Departure of precipitation at Grand Rapids
Departure (inches)
+5
0
-5
-10
-15
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1960
1961
1962

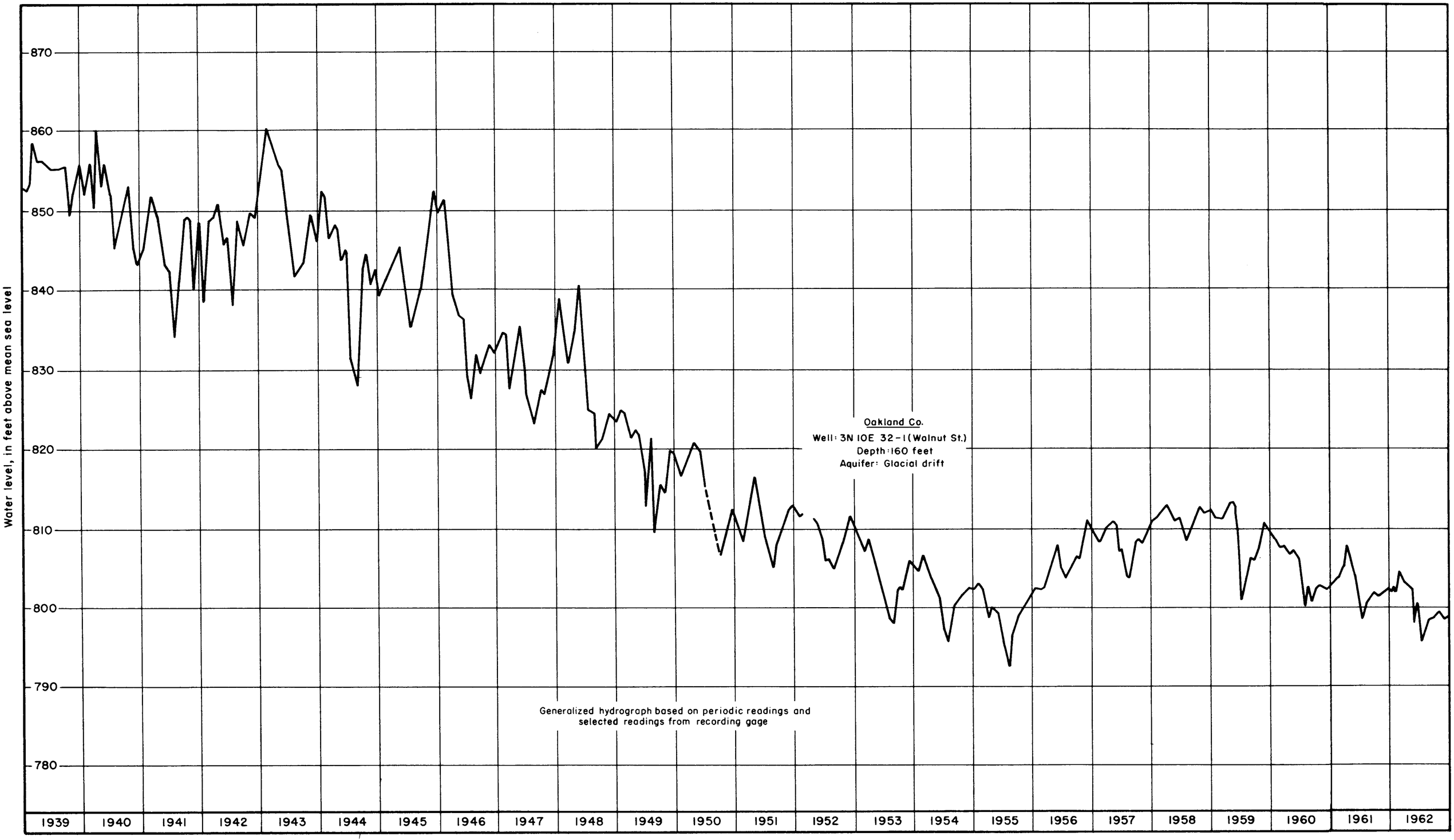


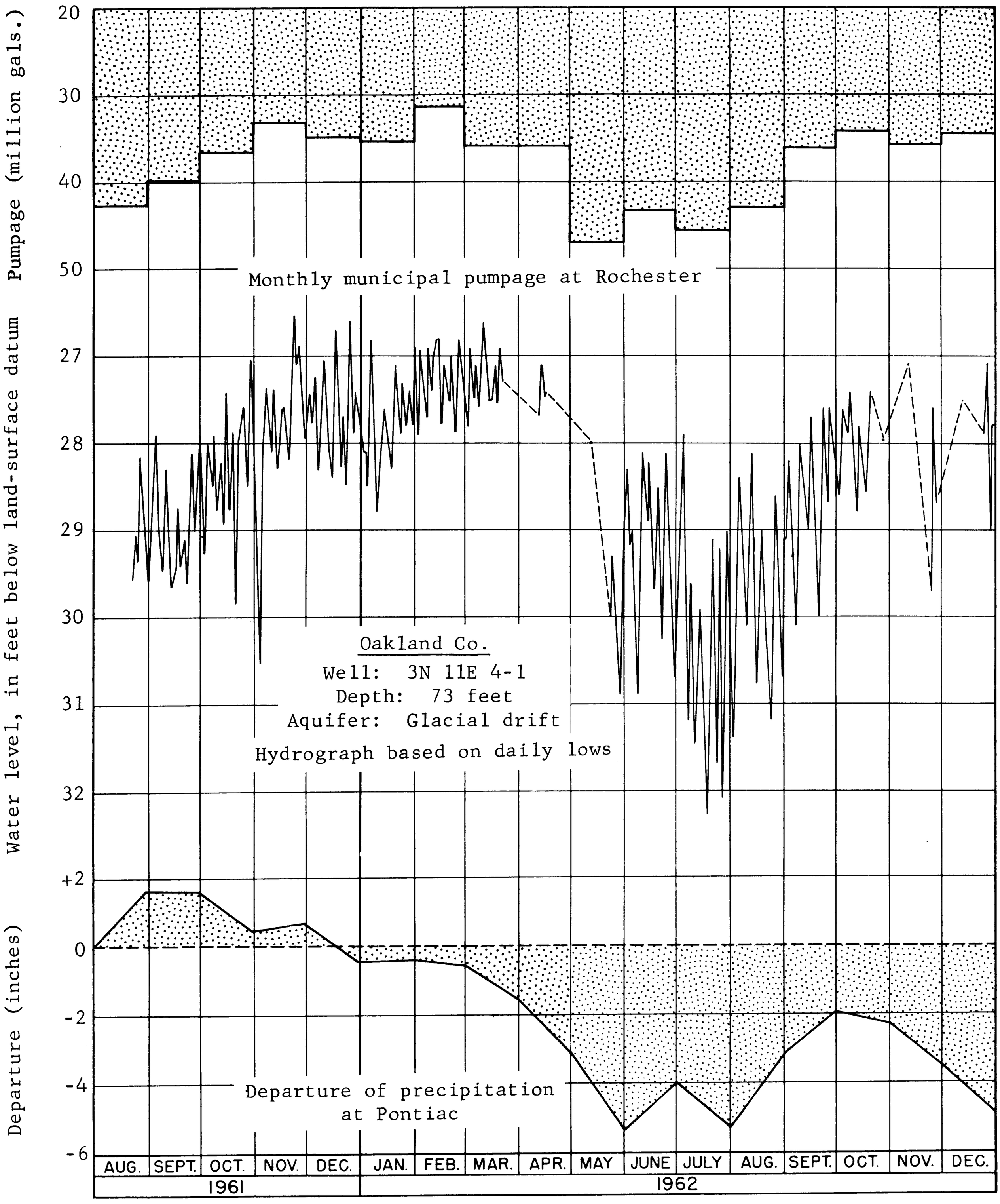
Hydrographs based on daily lows

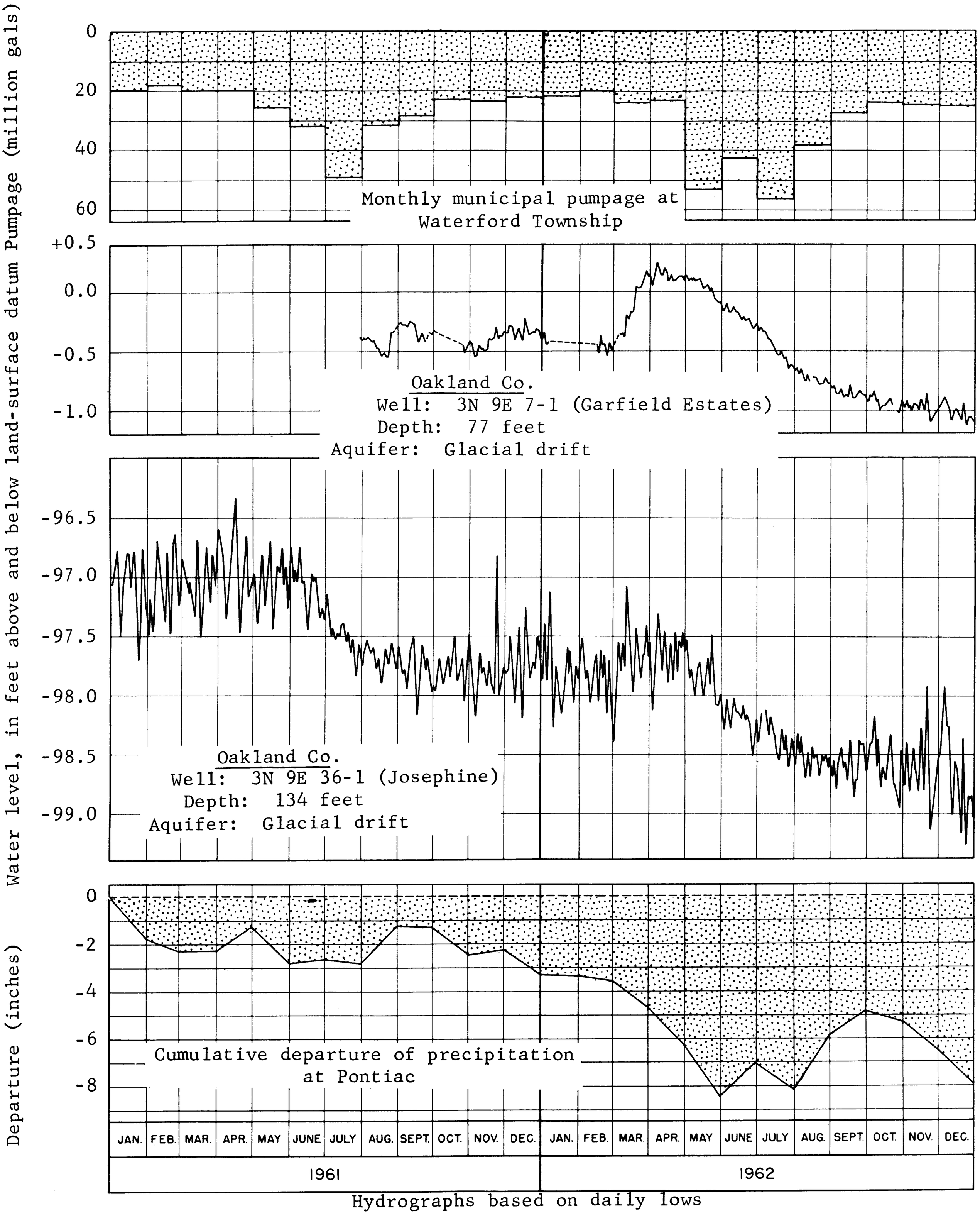

Well Field No. 5
Well Field No. 4
Well Field No. 7
Well Field No. 2
Well Field No. 1
Well Field No. 6
Well Field No. 3
GRAND-
VILLE
(POP 7975)
WYOMING
HOME
ACRES
KELLOGGS
CUTLER-
BYRON
CENTER
CARLISLE STA.
FISHER
STA.
27-1
25-1
34-1
4-7
4-3
11-3
BURTON ST.
BUTTERWORTH
INDIAN
PRAIRIE
28TH
32ND ST
CLYDE PARK AVE
DIVISION
EASTERN
36TH
40TH ST
44TH
JACOB
CANAL
52ND
56TH
ST.
60TH ST
64TH ST
68TH
72ND
76TH
BYRON
CENTRAL
IVANREST
PENNSYLVANIA
JEFFERS
Buck
Pine Hill
Byron Drain
T. 6 N.
T. 5 N.
R. 12 W.
EXPLANATION
Observation well
Well Field


Pumpage (million gals.)
0.5
1.0
1.5
2.0
2.5
Monthly pumpage at
Oakland University
Water, level, in feet below
land-surface datum
78
80
82
84
86
88
90
92
Static water levels
Hydrograph based on daily lows
Oakland Co.
Well: 3N 10E 13-2
Depth: 183 feet
Aquifer: Glacial drift
Departure (inches)
0
-2
-4
-6
-8
Departure of precipitation
at Pontiac
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1961
1962

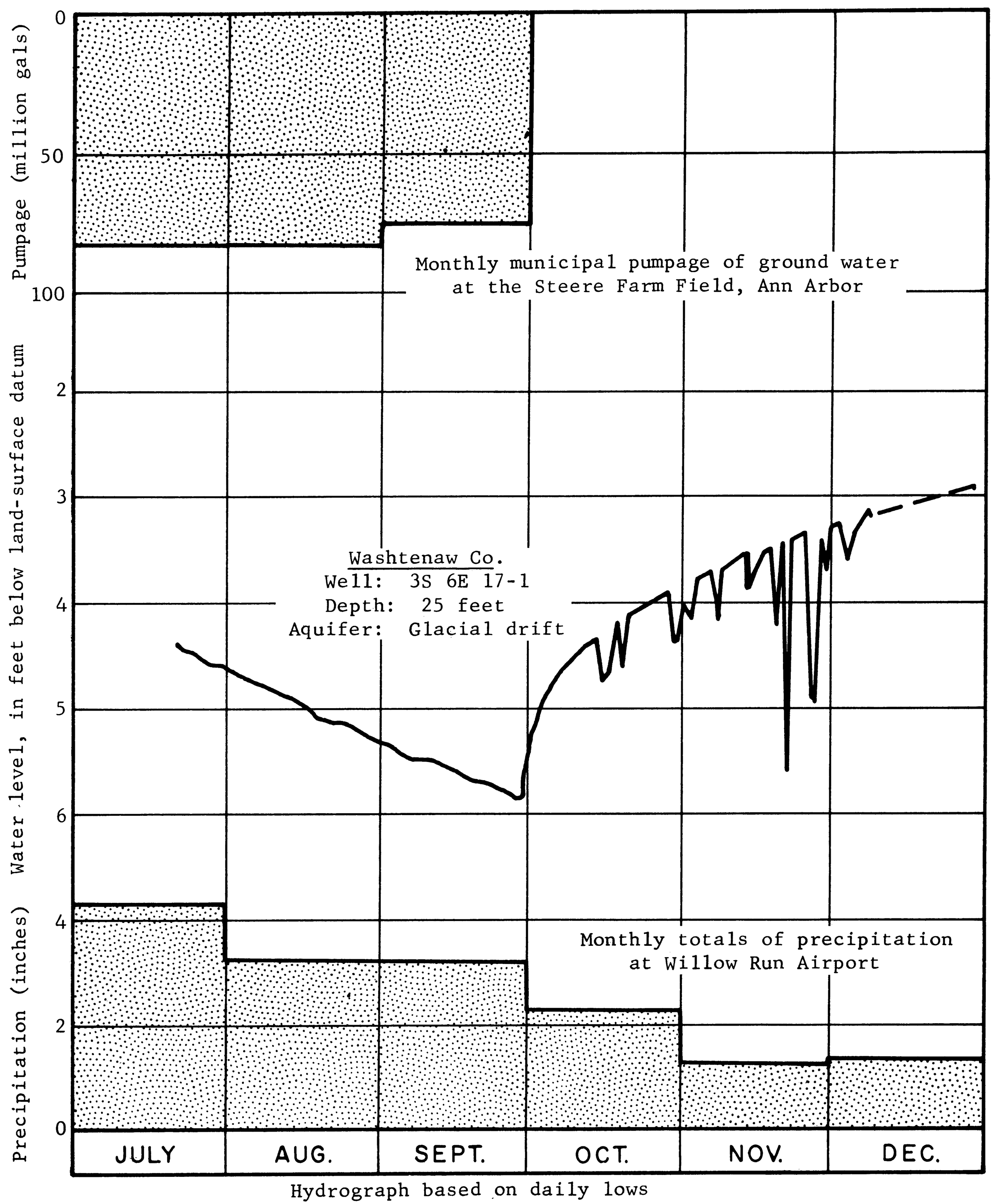

Pumpage (million gals.)
200
250
300
350
400
450
Monthly municipal pumpage at Pontiac
Water level, in feet above mean sea level
804
802
800
798
796
794
Oakland Co.
Well: 3N 10E 32-1
Depth: 160 feet
Aquifer: Glacial drift
Hydrograph based on daily lows
Departure (inches)
0
-2
-4
-6
Cumulative departure of precipitation at Pontiac
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.


Water level, in feet above mean sea level
870
860
850
840
830
820
810
800
790
780
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
Oakland Co.
Well: 3N 10E 32-1 (Walnut St.)
Depth: 160 feet
Aquifer: Glacial drift
Generalized hydrograph based on periodic readings and selected readings from recording gage

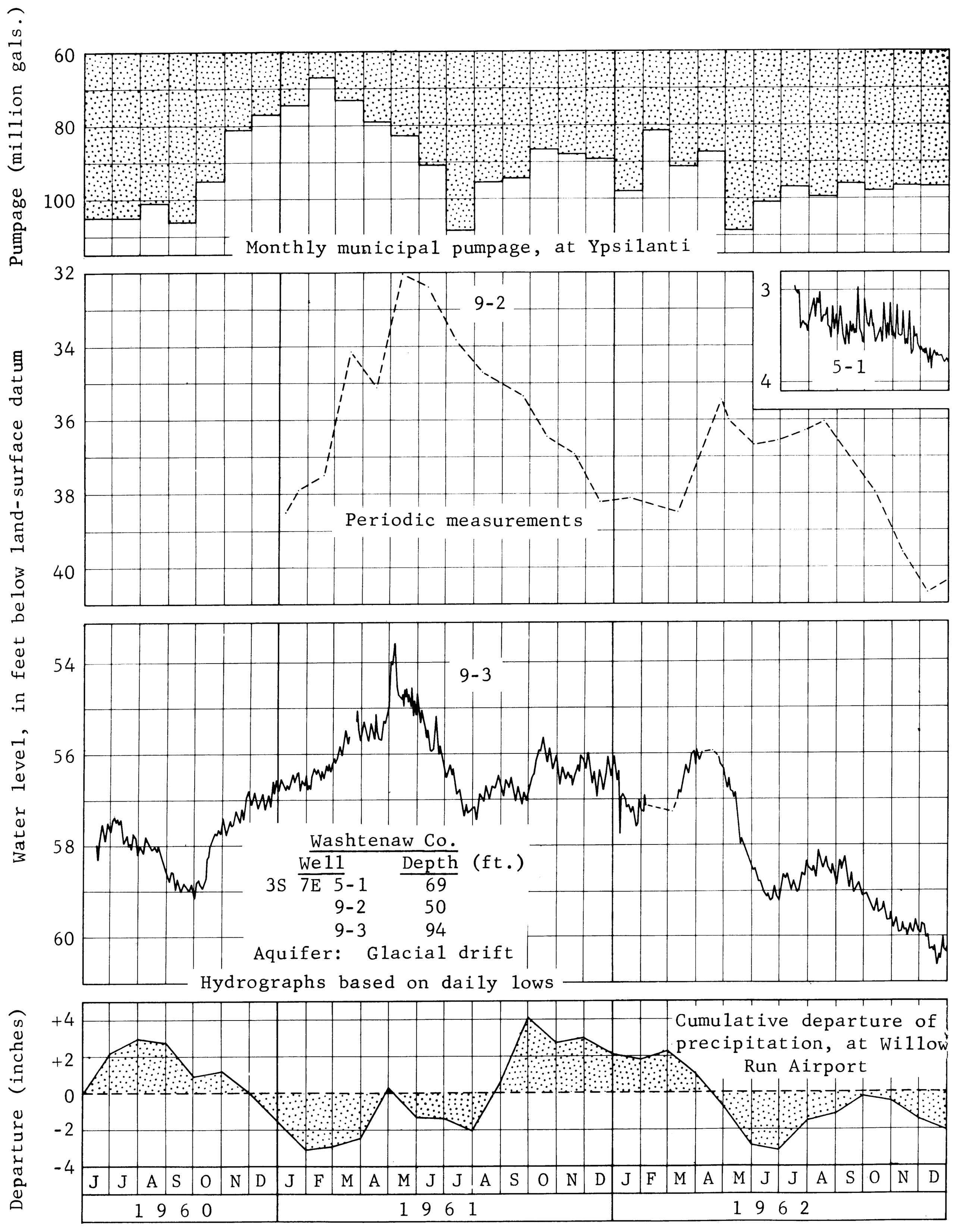

Pumpage (million gals.)
20
30
40
50
Monthly municipal pumpage at Rochester
Water level, in feet below land-surface datum
27
28
29
30
31
32
Oakland Co.
Well: 3N 11E 4-1
Depth: 73 feet
Aquifer: Glacial drift
Hydrograph based on daily lows
Departure (inches)
+2
0
-2
-4
-6
Departure of precipitation
at Pontiac
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
1961
1962

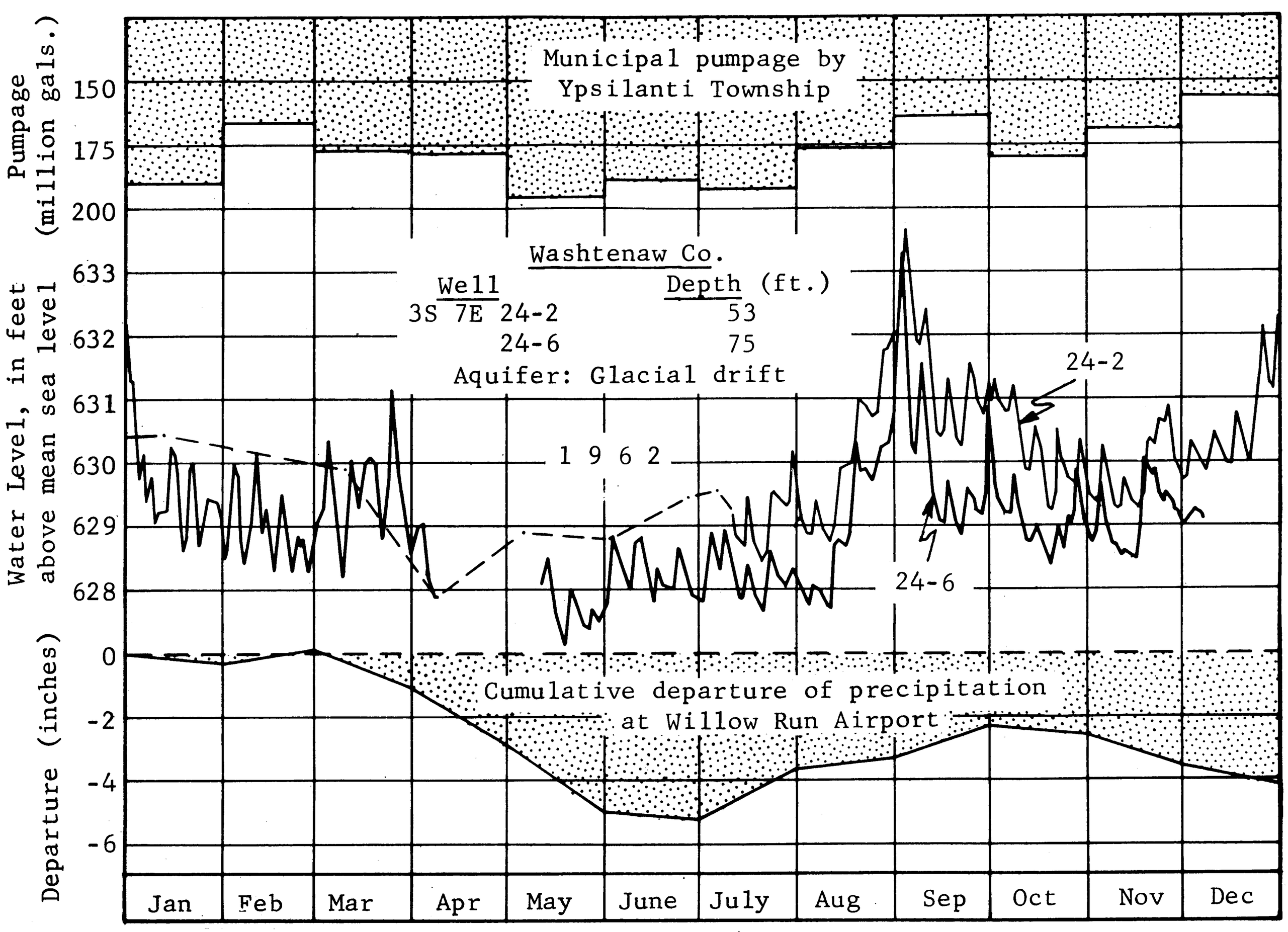


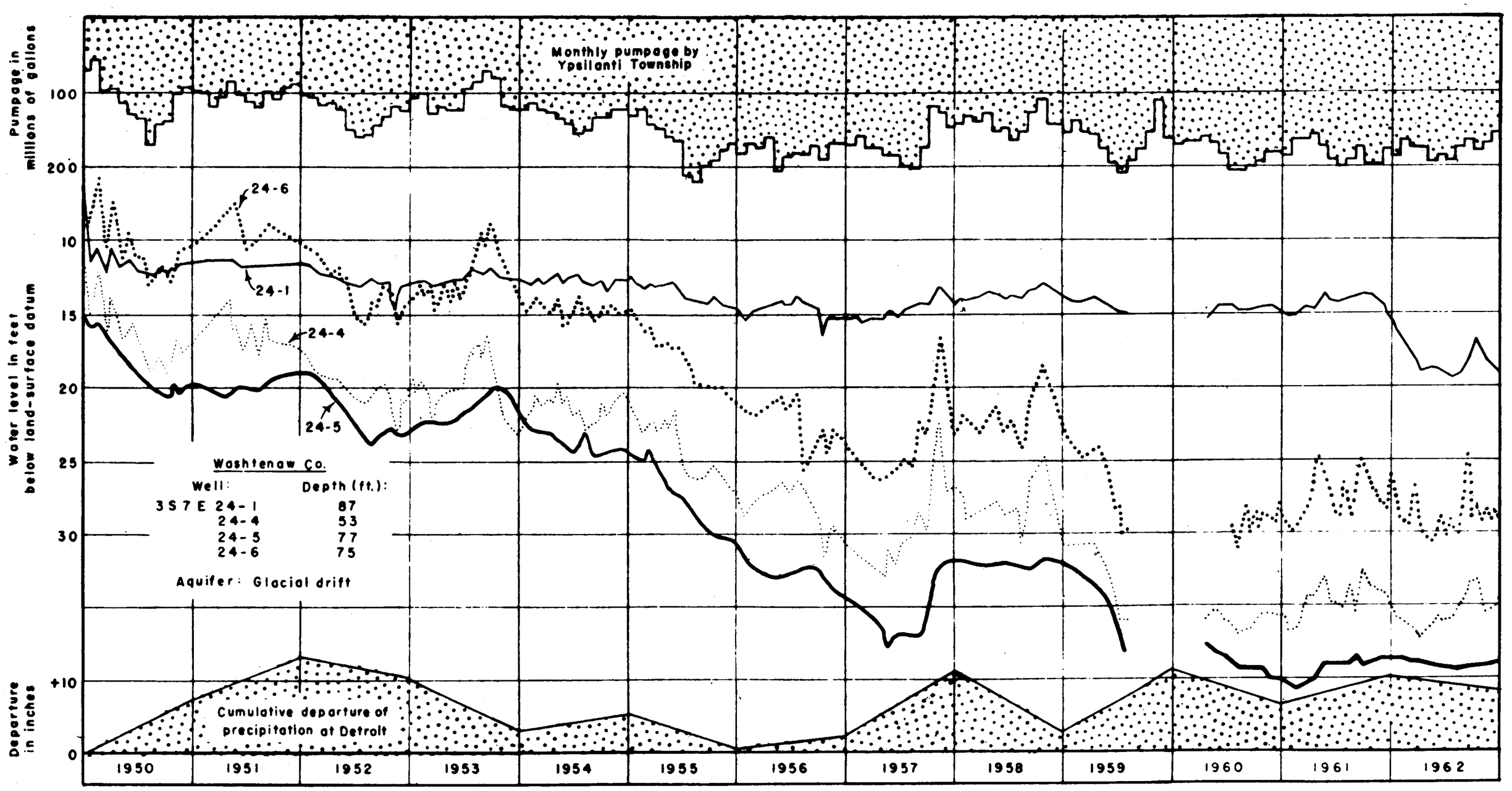
Hydrographs based on daily lows

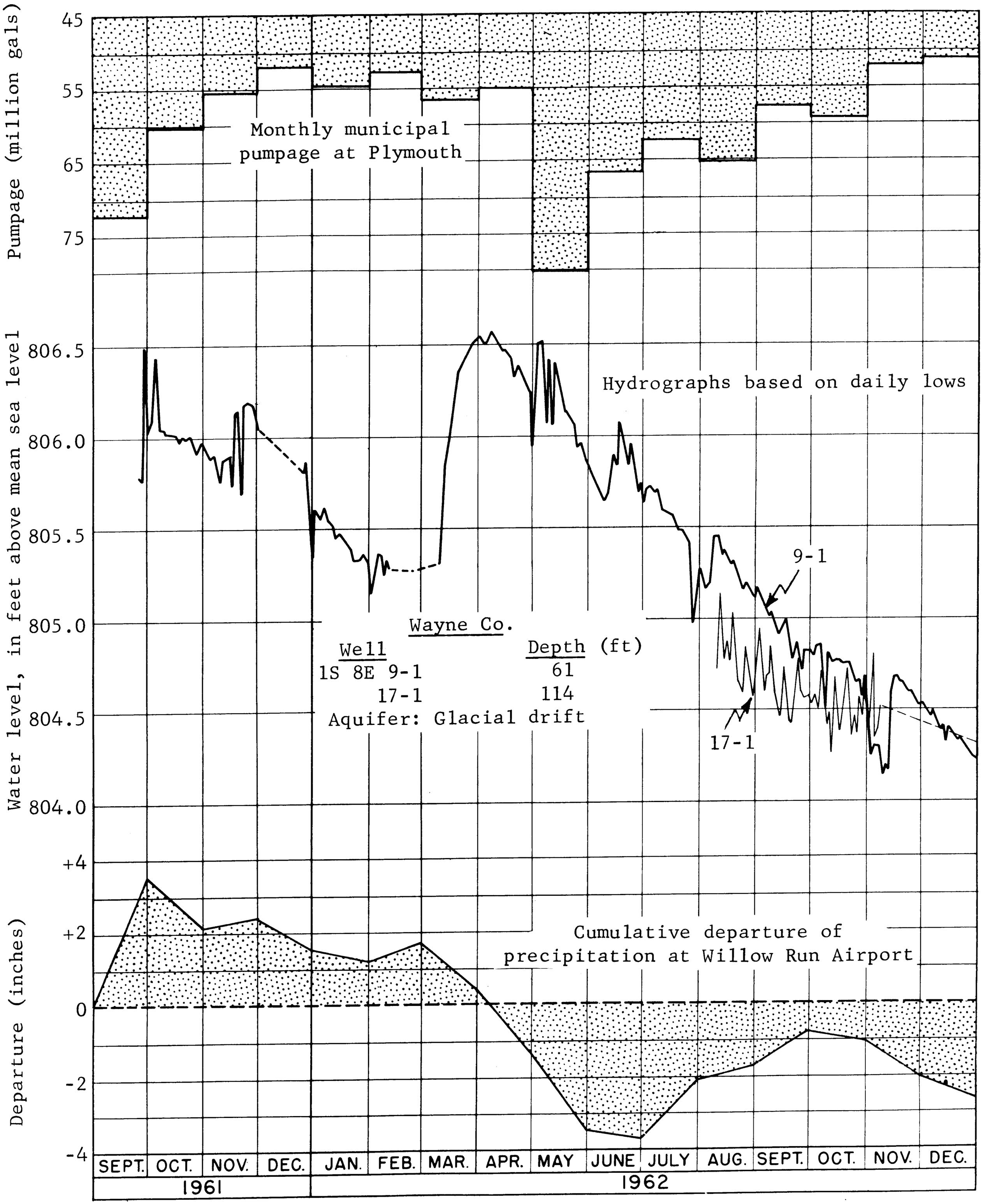


Hydrograph based on daily lows


Pumpage (million gals.)
60
80
100
Monthly municipal pumpage, at Ypsilanti
Water level, in feet below land-surface datum
32
34
36
38
40
9-2
Periodic measurements
3
4
5-1
54
56
58
60
9-3
Washtenaw Co.
Well Depth (ft.)
3S 7E 5-1 69
9-2 50
9-3 94
Aquifer: Glacial drift
Hydrographs based on daily lows
Departure (inches)
+4
+2
0
-2
-4
Cumulative departure of precipitation, at Willow Run Airport
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1960
1961
1962


Pumpage (million gals.)
150
175
200
Municipal pumpage by Ypsilanti Township
Water Level, in feet above mean sea level
633
632
631
630
629
628
Washtenaw Co.
Well
Depth (ft.)
3S 7E 24-2
53
24-6
75
Aquifer: Glacial drift
24-2
1962
24-6
Departure (inches)
0
-2
-4
-6
Cumulative departure of precipitation at Willow Run Airport
Jan
Feb
Mar
Apr
May
June
July
Aug
Sep
Oct
Nov
Dec


Pumpage in millions of gallons
100
200
Monthly pumpage by Ypsilanti Township
Water level in feet below land-surface datum
10
15
20
25
30
24-6
24-1
24-4
24-5
Washtenaw Co.
Well:
Depth (ft.):
3 S 7 E 24-1
87
24-4
53
24-5
77
24-6
75
Aquifer: Glacial drift
Departure in inches
+10
0
Cumulative departure of precipitation at Detroit
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962


Pumpage (million gals)
45
55
65
75
Monthly municipal pumpage at Plymouth
Water level, in feet above mean sea level
806.5
806.0
805.5
805.0
804.5
804.0
Hydrographs based on daily lows
9-1
17-1
Wayne Co.
Well
Depth (ft)
1S 8E 9-1
61
17-1
114
Aquifer: Glacial drift
Departure (inches)
+4
+2
0
-2
-4
Cumulative departure of precipitation at Willow Run Airport
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
1961
1962

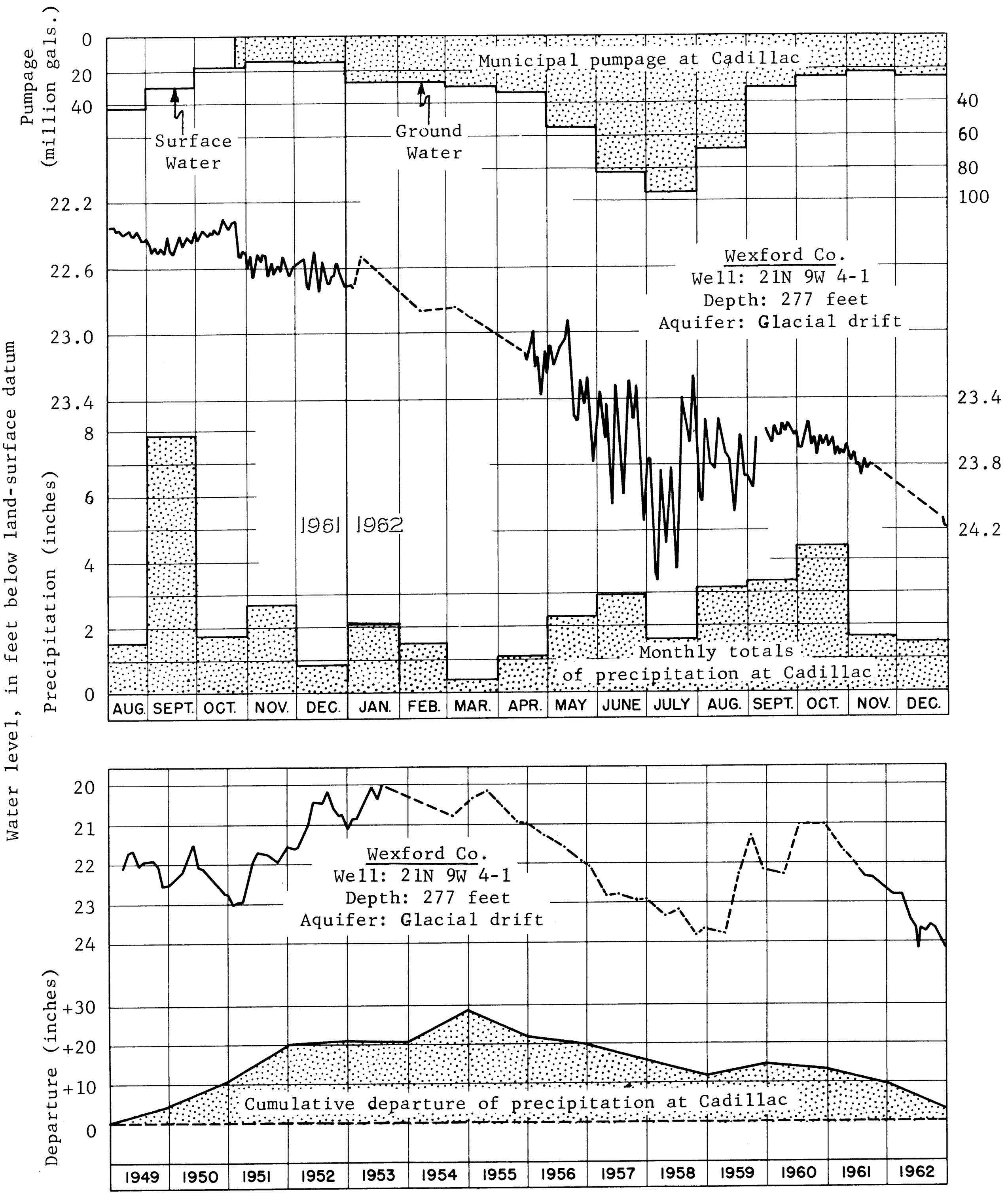

Pumpage (million gals.)
0
20
40
Municipal pumpage at Cadillac
Surface Water
Ground Water
40
60
80
100
Water level, in feet below land-surface datum
22.2
22.6
23.0
23.4
23.4
23.8
24.2
Wexford Co.
Well: 21N 9W 4-1
Depth: 277 feet
Aquifer: Glacial drift
Precipitation (inches)
8
6
4
2
0
1961
1962
Monthly totals of precipitation at Cadillac
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
20
21
22
23
24
Wexford Co.
Well: 21N 9W 4-1
Depth: 277 feet
Aquifer: Glacial drift
Departure (inches)
+30
+20
+10
0
Cumulative departure of precipitation at Cadillac
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962

Table 1.--Records of Michigan observation wells and extremes in water levels observed in 1962 and for the period of record.

Owner: MDC - Mich. Dept. of Conservation; WMP - Wisconsin-Michigan Power Co.; MSHD - Mich. State Highway Dept.; USFS - U. S. Forest Service

Chief Aquifer:

- Qgd - Glacial drift deposits of Pleistocene (Quaternary) age
- IPs - Saginaw Formation of Pennsylvanian age
- Mb - Bayport Limestone of Mississippian age
- Mm - Marshall Formation of Mississippian age
- Dt - Traverse Group of Middle and Late Devonian age
- Dtb - Thunder Bay Limestone of Middle and Late (?) Devonian age
- Ds - Sylvania Sandstone of Middle Devonian age
- Ss - Salina Formation of Late Silurian age
- Sm - Manistique Dolomite of Middle Silurian age
- Or - Limestones of Richmond age (Late Ordovician)
- Otb - Black River and Trenton Limestones of Middle Ordovician age
- Op - Prairie du Chien Group of Early Ordovician age (previously designated as Au Train Formation)
- Ꞓm - Munising Sandstone of Cambrian age
- pꞒ - Rocks of Precambrian age (undifferentiated)
- pꞒf - Freda Sandstone of Keweenawan age (Precambrian)

Altitude: Land-surface datum in feet above mean-sea level

F - 62: Frequency of measurement in 1962. R - Continuous recorder; D - Daily; W - Weekly; M - Monthly; Q - Quarterly; S - Semiannual

Observed water-level extremes: 1962 measurements underscored are new extremes for entire period of record (in feet below or above (+) land surface).

Remarks: P - water level affected by pumping. Water-level measurements are made by the U. S. Geological Survey unless otherwise noted.

Well number	Location in section ¼ ¼		Owner	Depth (ft)	Dia. (in)	Chief aquifer	Altitude	Years of record	F 62	Observed water level extremes: Through 1961 Highest	Through 1961 Date	Through 1961 Lowest	Through 1961 Date	In 1962 Highest	In 1962 Date	In 1962 Lowest	In 1962 Date	Remarks
								NORTHERN PENINSULA										
								Alger County										
45N 19W 25-1	SW	NE	USFS	66	6	Qgd		1959-62	M	6.35	6-29-60	12.66	8-26-59	11.20	5-23	12.60	10-22	
								Baraga County										
49N 33W 18-1	NE	SW	Mich. College of Mining and Tech.	12	16	Qgd		1958-62	R	e4.90	4-25-60	9.40	2-9-59	6.03	4-23	9.26	2-12	Meas. by owner
48N 32W 12-1	SE	SE	MSHD (WMP14)	10	1¼	Qgd		1948-62	M	4.19	5- 3-51	6.72	3-15-49	4.93	5-1	7.33	2-28	Meas. by WMP
								Chippewa County										
46N 4W 24-1	NE	SE	USFS (Raco CCC Camp)	54	6	Qgd		1952-62	R	20.70	7- 3-60	27.77	4-12-56	23.18	6-17	26.14	12-31	
								Delta County										
43N 19W 24-3	NW	NW	Harry Clarage	405	4	Otb		1958-62	M	77.02	7-29-60	80.06	4- 9-59	79.31	7-6	79.87	4-5	
42N 19W 20-3	NE	NE	USFS	134	6	Or		1958-62	M	23.76	6-27-60	25.85	3-31-59	25.26	5-23	25.70	10-22	
42N 18W 17-2	SW	NE	USFS	60	6	Qgd		1958-62	M	21.20	5-25-60	24.97	3-31-59	23.54	5-23	24.89	10-22	
41N 19W 17-1	NE	SW	USFS	58	6	Or	635±	1958-62	M	0.50	4-29-60	4.01	9-29-61	0.30	4-30	3.74	7-31	
41N 18W 31-2	SE	SW	Charles Thompson	250	4	Or		1958-62	R	3.77	5- 7-60	6.31	2- 7-61	3.83	4-8	5.64	7-19	
40N 22W 4-4	NE	NW	USFS	34	5	Qgd		1959-62	M	14.87	7-29-60	17.10	4-29-60	16.24	7-16	16.90	3-8	
39N 23W 28-3	SW	NE	Marshall and Sherman Blake	530	5	Ꞓm	680±	1958-62	R	1.32	5- 6-60	3.86	9-28-58	1.90	4-28	3.06	12-31	
38N 22W 24-1	NW	SE	USFS (3)	36	6	Or	585±	1958-62	M	1.10	4-29-60	5.53	10-27-58	0.75	4-30	4.70	12-4	
								Dickinson County										
43N 29W 32-1	NW	NE	Dickinson Co. (WMP 11)	12	1¼	Qgd		1948-62	M	5.12	4-18-51	dry	10-12-48	6.85	5-1	10.42	8-31	Meas. by WMP

								Dickinson County (Continued)											
42N 27W 33-1	NE	NW	E. W. La Freniere (WMP 10)	12	36	Qgd		1945-46, 58-62	M	2.74	5-3-60	10.75	10-3-55	3.40	4-30	8.82	8-1	Meas. by WMP
41N 30W 25-1	NE	SW	Dickinson Co. (WMP 1)	20	1¼	Qgd		1948-62	M	2.66	5-3-60	dry	10-3-55	4.74	4-30	dry	1-30	Do.
25-2	NW	SE	Wm. Carrola (WMP 2)	16	36	Qgd		1945-46, 48-62	M	1.69	5-3-60	dry	1-30-59	2.84	4-30	9.76	3-2	Do.
25-3	SE	NE	Oscar Martinson (WMP3)	12	48	Qgd		1945-46, 48-62	M	1.57	5-3-60	dry	11- -48	1.60	4-30	7.93	3-2	Do.
								Gogebic County										
48N 47W 34-2	NE	SE	City of Ironwood (SE Well, Gp2)	35	6	Qgd		1962	R					0.00	9-14	1.69	8-22	P, Record started 6-15-62
34-3	NE	SE	City of Ironwood (SE Well, Gp 3)	22	6	Qgd		1961-62	R	1.73	11-4-61	4.71	9-9-61	+0.14	5-13	4.61	3-13	P
								Iron County										
46N 34W 14-1	NE	NW	Oliver Iron Mining Co. (WMP 18)	12	1¼	Qgd		1945-62	M	3.65	6-2-54	8.60	3-15-49	5.70	6-1	7.70	2-28	Meas. by WMP
46N 33W 18-1	SW	NW	MSHD (WMP 17)	12	1¼	Qgd		1948-62	M	2.80	4-18-49	dry	2-28-56	5.55	5-1	7.84	12-27	Do.
45N 37W 23-1	SW	NE	USFS (WMP 28)	8	1¼	Qgd		1948-62	M	0.73	8-31-51	4.72	9-11-48	1.51	4-30	2.84	1-30	Do.
45N 35W 33-1	SE	NW	MSHD (WMP 34)	12	1¼	Qgd		1948-62	M	1.93	7-6-53	8.44	3-15-49	3.43	5-31	6.07	3-28	Do.
45N 33W 8-1	SW	SW	Basilio Prandi (WMP 20)	33	36	Qgd		1945-62	M	22.71	5-3-60	32.16	3-15-49	25.61	7-3	28.11	3-29	Do.
44N 37W 14-1	NW	NW	USFS (Former James Lake CCC Camp)	102	6	Qgd		1959-62	R	93.8	11-29-60	95.75	10-22-59	94.05	1-7	95.24	10-29	
44N 35W 6-1	SW	SW	USFS (Paint River Profile 1)	6	1¼	Qgd	1468.15	1948-62	M	+0.10	5-2-51	2.32	8-31-61	0.42	4-30	2.02	7-31	Meas. by WMP
6-2	SW	SW	USFS (Paint River Profile 2)	13	1¼	Qgd	1475.14	1948-62	M	5.08	7-6-53	8.92	11-15-48	6.35	4-30	8.52	10-1	Do.
6-3	NW	SW	USFS (Paint River Profile 3)	12	1¼	Qgd	1476.35	1948-62	M	4.03	7-6-53	9.20	11-15-48	6.08	4-30	8.92	3-1	Do.
7-1	NW	NW	USFS (Paint River Profile 4)	4	1¼	Qgd	1469.28	1948-62	M	1.12	5-2-51	3.73	8-1-47	1.49	4-30	3.31	7-31	Do.
7-2	NW	NW	USFS (Paint River Profile 5)	13	1¼	Qgd	1471.25	1948-62	M	2.30	7-6-53	9.44	10-26-48	3.45	4-30	5.18	11-29	Do.
7-3	NW	NW	USFS (Paint River Profile 6)	17	1¼	Qgd	1475.83	1948-62	M	8.48	5-2-51	13.40	10-26-48	10.69	4-30	12.70	11-29	Do.
44N 33W 10-1	SW	SW	Iron Co. (WMP 21)	8	1¼	Qgd		1948-62	M	1.95	4-29-54	7.94	1-12-51	2.26	5-1	7.03	2-28	Do.
43N 36W 1-1	SW	NE	Iron Co. (WMP 27)	9	1¼	Qgd		1948-62	M	6.48	5-2-60	9.02	6-30-52	7.42	4-30	8.46	3-1	P, Meas. by WMP
43N 35W 11-1	SE	NE	J. J. Javoroski (WMP 23)	47	36	Qgd		1945-62	M	38.61	9-1-60	47.08	8-15-49	41.69	10-31	42.80	4-30	Do.
13-1	SW	SE	F. V. Gendzwill (5)	65	36	pG		1945-62	S	47.90	9-11-46	63.68	11-30-46	52.11	10-1	53.10	5-9	Mine drainage study
13-2	SW	SE	Boyington (hole 4-44)	?	?	?		1945, 47-62	S	66.39	1-14-52	71.56	3-24-49	68.98	10-1	69.12	5-9	Do.
20-1	SW	SE	Mrs. B. Hendrikson (WMP 25)	48	1¼	Qgd		1945-62	M	41.66	6-20-53	48.29	8-15-49	43.57	7-2	44.37	3-1	Meas. by WMP
24-1	SE	NE	Spies-Johnson No. 73 (7)	?	3	Qgd?		1945-62	S	67.20	10-5-61	86.05	1-19-49	68.07	10-1	68.34	5-9	Mine drainage study
26-1	SW	NE	City of Iron River (1)	130	2	Qgd		1945-62	S	18.52	5-9-61	44.58	3-24-50	26.25	10-1	27.51	5-9	P
43N 34W 19-1	NW	SW	Spies-Johnson No. 3004 (8)	?	3	Qgd?		1945-62	S	59.87	10-5-61	89.5	10-20-45	60.92	10-1	61.24	5-9	Mine drainage study
19-2	NE	SW	Spies-Johnson No. 3c (9)	?	3	Qgd?		1945-62	S	66.23	10-5-61	84.10	12-21-48	67.14	10-1	67.39	5-9	Do.
29-1	SW	NE	Rogers Mine (11)	?	48	Qgd		1947-53, 56-62	S	10.31	8-15-53	20.69	3-24-50	14.71	5-9	15.12	10-1	Do.
43N 32W 26-3	SW	NE	Caya Mine	200+	4	?		1959-62	M	29.79	5-2-60	37.50	2-24-61	32.11	5-31	37.41	2-26	Do.
42N 36W 15-1	NE	SW	MSHD (Brule River Profile No. 1)	6	1¼	Qgd	1543.92	1948-62	M	0.81	4-29-54	3.17	10-26-48	1.35	4-30	2.87	12-28	Meas. by WMP
15-2	NE	SW	MSHD (Brule River Profile No. 2)	7	1¼	Qgd	1545.60	1948-62	M	0.46	7-6-53	3.10	10-26-48	0.30	4-30	2.32	12-28	Do.
15-3	NW	SW	W. Young Estate (Brule Riv. Profile No. 3)	14	1¼	Qgd	1554.36	1948-62	M	3.67	4-29-54	8.29	10-26-48	4.65	4-30	7.68	8-30	Meas. by WMP
42N 34W 7-1	SW	NE	Zimmerman No. 1 (13)	171	12	Qgd	1165.32	1945-62	S	128.22	10-5-61	153.27	4-21-50	102.10	10-1	109.99	5-9	P, Mine drainage study
42N 31W 33-1	NW	SE	Iron Co. (WMP 7)	11	1¼	Qgd		1948-62	M	+0.20	5-2-60	6.28	10-13-48	0.38	4-30	4.04	2-28	Meas. by WMP

Table 1.--Records of Michigan observation wells and extremes in water levels observed in 1962 and for the period of record.--Continued

Well number	Location in section ¼	¼	Owner	Depth (ft)	Dia. (in)	Chief aquifer	Altitude	Years of record	F 62	Observed water level extremes: Through 1961 Highest	Date	Lowest	Date	In 1962 Highest	Date	Lowest	Date	Remarks
								Iron County (Continued)										
42N 31W 33-2	NW	SE	Joseph Giachino (WMP 8)	12	15	Qgd		1945-62	M	1.89	10-30-51	12.22	2-25-53	2.65	5-31	10.81	2-28	Meas. by WMP
41N 31W 10-1	SW	NE	Iron Co. (WMP 5)	17	1¼	Qgd		1948-62	M	8.47	1- 3-52	dry	12-15-48	12.00	7-2	15.95	3-28	Do.
								Luce County										
49N 11W 2-5	NW	NE	State (5)	7	1¼	Qgd		1959-62	M	+0.40	5-26-60	6.34	7-30-59	0.29	5-28	5.35	11-30	Lake Hdr. Study
49N 10W 6-6	SW	SW	State (6)	8	1¼	Qgd		1959-62	M	1.98	5-31-60	8.02	8-26-59	2.76	5-28	8.00	11-30	Do.
								Mackinac County										
42N 2W 7-1	NE	NE	USFS (Pontchartrain)	102	6	Sm		1956-62	R	13.1	5-11-60	29.35	11-5-57	18.70	4-8	29.83	9-15	
9-1	NE	NW	Kenneth Kerr	84	2	Sm		1956, 59-62	M	+1.0		4.52	9-28-61	+1.08	5-29	5.49	9-25	Often flows-freezes in winter
41N 5W 23-1	SW	NW	MDC (Round Lake)	47	6	Ss		1956-62	M	4.30	5-7-59	17.48	3-19-59	7.19	4-27	15.73	8-24	
								Marquette County										
49N 30W 22-1	SW	NE	Marquette Co. (WMP 13)	17	1¼	Qgd		1948-62	M	0.64	5-3-51	13.32	9-2-48	7.78	5-1	10.82	1-31	Meas. by WMP
48N 26W 28-1	NW	NW	Marquette Co. Airport	55	6	Qgd	1416.1	1962	M					16.74	6-29	17.99	5-16	Record started 5-16
47N 29W 3-1	NE	SW	Bill Koski	28	6	Qgd		1962	M					11.98	6-26	12.64	8-13	Record started 5-16
47N 28W 1-1	NW	SE	Inland Steel Co. (Morris Mine No. 1)	216	38	Qgd		1961-62	R	e62.5	12-31-61	70.99	10-26-61	27.10	12-23	55.46	1-10	P-recovery
3-1	SW	SW	Ely Township	75	8	Qgd		1961-62	R	13.60	8-22-61	14.87	12-2-61	13.72	5-24	16.67	3-27	
4-1	NE	NE	Inland Steel Co. (Blueberry Mine 8B)	68	8	Qgd	1577	1961-62	R	17.27	10-17-61	18.03	12-31-61	15.71	5-24	19.60	12-27	
10-1	NW	NW	Clarance Carlson	17	6	Qgd		1961-62	M	8.35	9-27-61	10.18	12-22-61	9.54	5-16	12.82	2-14	
47N 28W 10-3	NE	NW	Greenwood Cabins	65	6	Qgd		1962	M					11.99	5-16	15.16	10-19	Record started 5-16
47N 25W 15-1	SW	SW	Frank Bollero	245	6	Qgd		1962	M					92.09	10-19	99.09	6-26	Record started 5-16
46N 30W 13-1	NW	NE	Arolas Bottling Co.	47	6	Qgd		1962	M					10.47	5-16	15.76	11-15	Record started 5-16
46N 29W 18-2	NE	SW	Republic Township	39	1¼	Qgd		1962	M					11.36	5-16	14.05	10-19	Record started 1-22
30-1	NE	NE	Kountry Kitchen	42	6	Qgd		1962	M					19.69	6-26	21.96	8-13	Record started 5-16
46N 28W 1-1	SE	NW	Clarance Carlson	96	6	Qgd		1961-62	M	35.59	8-22-61	37.05	11-14-61	35.61	1-22	39.79	10-19	
12-2	NW	SW	USGS	16	1¼	Qgd		1962	M					2.29	9-18	2.70	10-15	Record started 9-18
12-3	NW	SW	USGS	19.5	1¼	Qgd		1962	M					2.35	9-18	2.71	11-15	Record started 9-18
46N 27W 2-1	SW	NE	Cleveland Cliffs Iron Co.	180	1½	Qgd		1962	M					58.62	8-16	49.82	11-27	Record started 6-5
46N 25W 11-1	NW	SW	Pine Ridge Trailer Court	193	6	Qgd		1962	M					135.04	10-19	139.96	2-14	Record started 1-22
36-4	SE	NW	U. S. Air Force	82	12	Qgd		1962	R					82.10	1-11	82.82	12-29	Record started 1-11

								Marquette County (Continued)											
45N 30W 1-1	SW	NW	Arnold Janofski (WMP 4)	31	36	Qgd		1945-62	R	23.82	7-18-60	29.28	3-15-49	26.12	1-1	26.89	12-31	Fed. key well
45N 25W 23-1	NW	SE	USGS	65	1¼	Qgd		1962	M					19.42	11-27	20.83	10-30	Record started 10-30
28-3	NW	NE	Forsyth Twp.	39	1¼	Qgd		1961-62	W	14.74	7-24-61	16.63	8-30-61	16.26	6-26	16.79	5-28	P
28-4	NE	NW	Village of Gwinn	40	6	Qgd		1962	M					13.37	9-25	13.52	10-19	Record started 9-25
44N 26W 28-1	NE	SE	MDC (Esc. Riv. CCC)	31	6	Qgd		1953-62	M	1.90	5-17-60	2.83	8-30-57	2.06	4-24	2.65	7-19	Meas. by MDC
								Menominee County										
37N 26W 19-1	NE	SE	MSHD	164	4	Otb		1959-62	M	3.70	5-2-60	6.77	2-24-61	4.33	4-25	6.15	8-28	
								Ontonagon County										
52N 39W 30-1	NW	NW	Village of Ontonagon	22	240	Qgd		1960-62	R	2.0	10-26-61	13.4	3-11-61	5.0	10-16	16.6	4-3	P
51N 41W 8-1	SE	NW	Mich. Corrections Dept.	100	6	pef		1958-62	R	8.18	4-15-59	18.12	10-13-60	8.6	5-23	16.4	8-29	
								Schoolcraft County										
47N 16W 30-1	NW	NW	MDC (Cusino CCC Camp)	57	6	Op		1957-62	R	5.7	5-10-60	15.51	11-7-57	7.5	5-1	15.6	10-25	
45N 18W 31-1	NE	SW	USFS	229	5	Otb		1958-62	M	13.71	6-29-60	16.69	1-27-59	15.15	5-23	16.40	10-22	
45N 13W 16-1	SW	SW	U.S. Fish and Wildlife Service	154	4	Or		1952-62	R	4.80	5-8-60	6.28	9-26-55	5.20	3-12	6.14	11-18	
								SOUTHERN PENINSULA										
								Barry County										
3N 8W 18-1	SE	NE	City of Hastings	33	6	Qgd		1958-62	R	2.32	4-5-59	6.81	7-12-61	2.48	5-8	5.25	1-23	P
								Bay County										
17N 4E 15-1	SW	SE	Pinconning Twp.	61	2	Ps		1962	M					2.38	12-3	5.00	8-16	Record started 8-62
22-1	SW	SE	Pinconning Twp.	110	6	Ps		1962	R					4.09	12-26	9.90	9-15	P
22-2	SE	NE	Sterling Tube Co.	170	6	Ps		1962	M					9.72	12-3	12.97	9-14	Record started 8-62
27-1	SW	SE	Walter Wolan	72	2	Ps		1962	M					1.74	12-3	4.14	9-14	Do.
								Branch County										
6S 6W 22-1	NE	SW	City of Coldwater (3)	130	6	Qgd		1949-62	W	10.08	4-8-50	16.67	1-15-54	11.35	4-6	16.91	8-24	P, Meas. by owner
								Calhoun County										
1S 7W 10-1	NW	NW	K. N. Sabin	8	15	Qgd	907.99	1946-62	W	0.89	3-28-50	5.98	2-11-59	3.70	4-25	5.35	12-23	
32-1	NE	SE	City of Battle Creek (Verona 22)	127	8	Mm	830.79	1939-62	D	0.7	4-26-50	16.75	7-16-59	7.40	4-15	13.15	8-30	P, Meas. by owner
32-2	NE	NW	Mrs. Harriett Rice	43	2	Mm	842.88	1946-62	Q	8.98	4-25-50	18.93	9-23-59	15.89	4-3	17.67	10-5	P
2S 8W 1-1	SW	SE	Sherman Mfg. Co.	22	2	Qgd	825.19	1946-62	Q	10.49	4-11-47	19.47	9-18-61	17.77	4-3	19.26	7-3	
2-1	NW	SE	Oliver Elec. Mfg. Co.	92	10	Mm	819.99	1946-62	R	4.75	4-9-47	14.95	9-11-59	12.93	5-15	14.78	12-7	P
3-1	SE	SE	Dominic Conto	12	2	Qgd	862.02	1946-62	Q	1.75	4-28-50	9.89	9-23-59	4.89	4-3	7.84	10-5	
3-2	SE	NE	Eaton Mfg. Co.	80	10	Mm	833.39	1946-62	Q	13.43	4-25-50	25.41	9-23-59	20.75	4-3	23.03	12-20	P
14-1	NE	SE	City of Battle Creek	62	2	Qgd	916.05	1939-62	Q	9.10	5-31-52	32.76	3-26-41	11.48	10-5	12.22	4-3	
14-2	SE	SE	City of Battle Creek (TW 1)	89	26	Qgd	914.97	1945-62	Q	6.22	5-29-50	12.86	10-18-46	8.27	7-3	9.04	12-20	

Table 1.--Records of Michigan Observation wells and extremes in water levels observed in 1962 and for the period of record.--Continued

Well number	Location in section ¼	¼	Owner	Depth (ft)	Dia. (in)	Chief aquifer	Altitude	Years of record	F 62	Observed water level extremes: Through 1961 Highest	Date	Lowest	Date	In 1962 Highest	Date	Lowest	Date	Remarks
								Calhoun County (Continued)										
2S 7W 7-1	SW	NE	Oliver Farm Implement Company	74	6	Mm	834.30	1946-62	Q	15.00	4-11-47	24.68	9-23-59	18.74	4-3	22.33	10-5	P
17-1	NW	SW	City of Battle Creek	87	2	Mm	841.78	1945-62	Q	6.57	4-25-50	11.38	9-23-59	8.57	4-3	10.67	10-5	P
18-1	SW	SW	City of Battle Creek	87	2	Mm	832.49	1945-62	Q	+0.50	4-25-50	3.24	9-21-49	0.24	4-3	1.88	10-5	P
2S 6W 25-1	NE	NE	City of Marshall (Ferguson)	59	6	Mm	904.85	1950-62	M	5.46	5- 9-50	9.59	10- 6-58	7.90	4-30	8.80	12-21	P, Meas. by owner
								Cass County										
6S 16W 1-1	SW	NE	City of Dowagiac	159	10	Qgd	750.19	1949-62	W	+5.20	2-20-60	-5.97	7-24-53	+1.12	5-11	-4.46	12-21	P, Meas. by owner
8S 14W 17-1	NE	NW	Ted Little	55	28	Qgd		1945-62	W	46.20	7-16-50	55.03	3-10-57	50.65	7-8	51.77	12-26	
								Charlevoix County										
33N 4W 2-1	SW	NE	MDC	94	6	Qgd		1948-62	Q	69.49	7-14-60	75.85	4-16-56	70.58	7-16	73.74	4-18	
32N 4W 10-1	NE	SE	MDC (33)	17	2	Qgd		1934-41, 48-62	M	1.19	3-30-58	7.42	2-12-59	2.09	5-14	5.07	3-12	
								Cheboygan County										
34N 1W 1-1	NW	SW	MDC (7)	11	2	Qgd		1938-41, 48-52, 55-62	Q	2.75	3-28-38	5.55	10-13-55	3.58	4-16	4.65	12-16	
								Clare County										
17N 4W 33-1	NW	NW	Watervliet Paper Co.	15	1¼	Qgd		1958-62	M	8.52	5- 2-60	10.56	2-27-59	8.18	3-31	9.84	1-31	Well destroyed 6-30
								Clinton County										
8N 1W 13-1	SW	NW	Village of Elsie	298	12	IPs	699.68	1947-62	M	+3.78	6- 3-50	37.55	10-15-57	1.15	2-27	12.78	12-27	P, Resumed meas. 2-62
7N 2W 9-2	SW	NW	City of St. Johns	498	10	IPs	746.93	1962 (fr 11-19)	R					72.3	12-30	112.1	12-13	
6N 2W 16-1	SE	SE	MSHD	23	14	Qgd	803.32	1948-62	M	14.59	4-19-52	18.55	2-27-61	17.15	5-28	18.89	12-27	Fed. Key well
5N 2W 31-1	NW	SW	Mich. Dept. of Aeronautics	195	6	IPs	e850	1949, 55, 60-62	R	45.0	3-21-49	57.33	12-15-61	56.25	1-7	58.80	11-24	P
32-1	SW	SE	Mich. Health Dept.	135	4	IPs	849.21	1944-62	M	42.02	9-14-44	90.80	11-27-61	88.64	5-29	94.80	3-31	P
								Crawford County										
27N 1W 20-1	SW	SW	MDC (22)	15	2	Qgd		1934-57, 60-62	Q	1.55	7-11-43	5.92	10-12-55	3.41	4-16	4.93	12-5	
26N 4W 11-1	NW	SW	MDC	12	15	Qgd	1147.59	1942-62	R	4.03	6- 1-43	9.85	9- 3-58	5.81	4-9	9.36	9-8	
25N 3W 28-1	SW	SW	MDC (8)	13	1¼	Qgd	1175.14	1934-37, 39-62	Q	8.60	7-28-60	11.28	10-22-58	9.57	4-23	10.02	7-18	
25N 1W 15-1	SE	SE	USFS	56	6	Qgd		1948-62	R	29.36	7-27-60	35.97	4- 4-51	29.89	7-8	31.86	4-3	
								Eaton County										
4N 4W 2-1	SW	SW	City of Grand Ledge	376	12	IPs	846.59	1948-62	R	21.34	5- 5-50	29.72	9-14-59	26.06	5-4	28.08	1-14	P
11-1	NW	NE	City of Grand Ledge	350	8	IPs	788.9	1960-62	R	+3.8	9-19-60	-8.3	12- 4-60	+3.9	4-5	-6.8	7-7	P
4N 3W 10-1	SE	NE	John Schneeberger	121	3	IPs	855.99	1944-62	M	31.28	5-27-48	39.36	11-27-61	39.26	4-27	40.54	10-29	P
12-1	SE	SW	F. A. Wheeler	381	6	IPs	861.91	1953-62	R	67.51	11-23-53	79.8	8-19-61	74.4	1-1	82.2	7-20	P
2N 4W 19-1	NW	SW	City of Charlotte	25	240	Qgd	889.44	1947-62	Q	8.04	4- 7-47	16.48	9-23-59	11.72	4-3	16.70	10-5	P

									Genessee County										
7N	7E	17-1	SE	NE	Consumers Power Co.	222	12	IPs	757.83	1946-62	R	24.23	2-12-50	37.99	8-24-55	24.30	4-13	31.13	7-19	P
		20-2	SW	SW	City of Flint	169	2	Qgd	749.48	1947-62	Q	1.09	4-26-50	9.07	9-15-55	4.77	4-2	9.10	9-18	
		29-1	SE	SW	C. F. Crain	14	1¼	Qgd	776.63	1946-62	Q	1.69	12-22-49	10.66	10-10-60	4.06	5-1	10.62	9-18	
		29-2	SW	SE	Jack Palmer	8	18	Qgd	779.86	1946-62	Q	+0.20	6-29-48	dry	10-10-60	1.60	5-1	dry	9-18	Meas. Discontinued 12-62
		32-1	SW	SW	A. W. Arndt	140	2	Qgd	792.27	1946-62	Q	18.51	6- 2-47	35.36	9- 2-59	34.14	5-1	37.76	9-18	P
6N	7E	9-1	SW	SE	Fisher Body Div., GMC	375	6	IPs	841.71	1952-62	R	37.79	11-24-52	59.9	8- 9-60	46.9	1-1	64.1	8-1	P
									Gladwin County										
17N	1W	7-1	SW	NW	City of Beaverton	93	12	Qgd	721.50	1950-62	W	27.94	4-6-59	49.35	6-26-50	30.20	3-26	33.62	7-25	P, Meas. by owner
									Grand Traverse County										
27N	9W	4-1	NW	NE	MDC (18)	15	2	Qgd	687.01	1934-37, 41-44, 48-52, 55-62	M	0.74	5-19-60	2.54	7-26-35	0.84	4-18	1.45	11-14	
26N	11W	27-1	NW	SW	MDC (2)	14	2	Qgd	914.25	1935-37, 41-44, 48-62	Q	1.20	4-14-59	4.02	8-18-36	1.12	4-17	2.68	9-20	
26N	9W	13-1	SW	SW	MDC (2)	14	2	Qgd	961.78	1934-37, 41-44 48-62	M	4.66	5-19-61	7.87	10-11-49	4.63	5-14	6.76	9-20	
									Gratiot County										
12N	3W	24-2	NE	SE	City of St. Louis (3)	216	16	Qgd		1960-62	R	44.6	4-17-61	67.6	10-28-60	41.2	6-25	56.0	7-18	P
		34-1	SW	SE	S. J. Brown	55	2	Qgd	727.12	1947-62	M	6.08	4-26-48	40.87	6-28-50	22.05	2-27	26.19	9-28	P
		35-3	NW	SW	Walter Stone	26	2	Qgd	732.62	1947-62	M	10.07	5-3-48	24.30	8-27-58	20.24	4-27	22.16	9-28	P
		35-5	SW	NW	Reed Excavating Co.	20	36	Qgd	738.78	1950-62	M	13.74	4-7-50	17.91	11-12-53	15.05	3-30	17.66	12-27	
12N	2W	18-1	NE	NW	Mich. Chemical Co.	1350	5½	Mm		1957-62	R	195.71	12-31-61	267.7	8-30-57	e175.50	12-31	197.08	1-1	
11N	3W	3-6	NW	NW	E. H. Waber	49	2	Qgd	733.20	1946-62	M	4.99	2-27-59	32.98	12-16-55	17.95	3-30	31.72	10-29	P
		4-1	SW	NE	City of Alma (TW 6)	165	8	Qgd	732.31	1955-58, 60-62	R	12.06	6-14-55	27.3	9-9-60	15.8	1-2	27.8	7-19	P
		36-1	SE	SE	Village of Ithaca	785	8	IPs	804.50	1947-62	M	78.25	1-22-52	83.96	9- 4-49	79.87	4-27	81.14	11-30	Meas. Resumed 2-62
									Hillsdale County										
6S	3W	23-2	NW	NW	City of Hillsdale (TW 6)	26	6	Qgd		1957-62	W	1.62	6-27-60	12.96	9-18-57	1.97	3-19	11.30	9-24	P
									Ingham County										
4N	2W	4-1	NW	SW	C & O R. R. (East 1)	38	12	Qgd	842.19	1953-62	M	25.98	3- 3-53	34.38	12-28-59	34.36	1-30	35.39	12-28	P
		9-1	SE	NW	City of Lansing (Seymour 1)	401	14	IPs	828.81	1929-62	R	15.63	3-26-31	154.77	4-10-56	132.5	2-26	151.7	9-14	P
		16-1	NE	SE	City of Lansing (Cedar)	417	12	IPs	829.11	1945-62	R	42.01	3-11-46	67.0	8-22-49	57.31	1-1	63.50	12-17	P
		17-1	NW	NE	City of Lansing (Logan)	424	20	IPs	858.72	1929, 31, 33-62	R	34.34	12- ?-29	149.64	4-11-56	138.4	2-5	146.4	12-20	P
		17-2	NW	NW	Olds Drop Forge (4)	417	12	IPs	872.55	1946-62	Q	104.86	12-10-46	149.47	9-26-61	146.75	3-29	151.70	12-20	P
		19-1	SW	SW	Waverly Hills Assoc.	87	2	IPs	833.94	1947-62	Q	0.00	3-29-50	8.74	12-29-60	5.75	7-3	8.04	12-20	P
		21-1	NE	NW	City of Lansing (Townsend)	410	14	IPs	834.10	1906, 19, 29-62	R	2.0	5-9-06	74.33	8-21-59	62.78	1-7	73.47	12-20	P
		22-1	SW	NW	City of Lansing (P-5)	338	12	IPs	823.64	1930-62	M	7.1	7-?-32	58.68	10-16-59	53.95	4-27	57.43	8-30	P
		23-1	NE	NW	City of Lansing (RS-7)	467	12	IPs	824.86	1930-32, 36-62	M	7.55	11-17-30	116.28	7-23-59	73.61	2-28	73.86	1-26	P, Meas. suspended 3-62
		24-1	NE	SW	Mich. State University	453	10	IPs	853.45	1945-62	R	25.47	3-25-46	e80.0	7-17-59	55.5	1-2	85.2	6-2	P
		28-1	NE	NW	Atlas Drop Forge (2)	425	8	IPs	849.20	1944-45, 48-62	Q	30.28	4-23-48	54.57	6-27-61	53.63	7-3	59.69	12-20	P
		31-1	SW	SW	C. A. Weber	204	3	IPs	880.15	1944-62	M	18.92	4-26-52	25.57	2-27-59	24.19	4-27	25.69	10-29	P
4N	1W	18-1	SE	NE	Marble School	175	3	IPs	847.85	1952-62	M	20.09	4-27-53	36.63	7-27-61	35.76	4-27	38.47	8-30	P
3N	2W	23-2	SE	NE	Delhi Twp.	268	8	IPs	e880	1959-62	R	2.07	3-31-60	6.09	8-17-61	3.60	3-21	6.75	10-13	P
2N	1W	5-1	SE	SE	City of Mason (old 2)	150	6	IPs		1948-62	W	0.08	6-29-49	8.96	9-10-60	3.31	5-26	7.64	2-10	P, Meas. by owner
									Ionia County										
7N	7W	23-1	NW	NW	Michigan Tng. Unit at Ionia	127	6	Qgd	741.65	1960-62	R	28.36	4-28-61	34.12	10-13-61	28.78	5-4	31.89	9-13	P
		25-1	SW	NE	Ionia State Hospital	23	6	Qgd	635.76	1960-62	R	9.34	4-28-61	17.42	10-28-61	4.23	3-22	18.07	9-13	P

Table 1.--Records of Michigan observation wells and extremes of water levels observed in 1962 and for the period of record.--Continued

Well number	Location in section ¼	¼	Owner	Depth (ft)	Dia. (in)	Chief aquifer	Altitude	Years of record	F 62	Observed water level extremes: Through 1961 Highest	Date	Lowest	Date	In 1962 Highest	Date	Lowest	Date	Remarks
								Ionia County (Continued)										
6N 5W 33-1	-	NE	Barley-Earhart Co.	15	180	Qgd		1957-62	M	4.55	4- 1-60	10.25	7-17-59	6.73	3-29	10.45	9-13	
								Iosco County										
23N 7E 7-1	NE	SE	USFS	341	6	Qgd		1948-62	Q	25.13	8- 3-52	28.10	4-27-59	26.70	4-9	26.72	7-18	Meas. discontinued 7/62
								Jackson County										
1S 1E 36-9	SE	SE	MDC (9)	9	1¼	Qgd	920.28	1956-62	W	0.42	5-10-56	6.80	12-30-58	1.68	4-3	5.76	9-8	Meas. by owner
3S 1W 2-1	SE	NW	City of Jackson	221	8	Ips, Mm	e935	1960-62	R	17.5	11-28-60	46.0	7-27-61	20.8	11-25	49.8	6-29	P
10-1	SW	SE	Summit Township	323	12	Ips,Mm	e935	1960-62	R	14.3	1- 2-61	32.4	7-20-61	20.3	4-23	35.9	8-19	P
11-2	NE	NE	City of Jackson (4a)	360	6	Ips,Mm		1957-62	D	18.6	1- 2-61	93.0	8-26-59	25.8	11-4	84.4	6-29	P, Meas. by owner
11-3	NE	NE	Do.	36	3	Qgd	928.82	1962	R					3.68	4-9	10.13	9-19	Record began 4-6-62
								Kalamazoo County										
2S 11W 3-60	NE	NE	KVP Co. (61)	36	6	Qgd	763.18	1956-62	W	9.61	4- 4-60	12.90	7-17-61	9.75	3-26	12.75	9-17	P
15-18	NE	SE	Consumers Power Co.	64	12	Qgd	766.17	1946-62	Q,M	9.20	3-28-50	18.20	9-15-61	13.52	4-4	17.72	12-14	P
20-7	SW	SE	Western Mich. Univ.	78	8	Qgd	868.68	1946-62	Q,M	33.44	6-19-50	38.15	9-17-59	36.00	4-4	36.68	10-19	
22-150	SE	SW	City of Kalamazoo (Stockbridge)	137	4	Qgd	764.7	1960-62	R	18.97	12-26-61	31.08	8-19-61	17.27	12-13	22.76	8-25	P
27-52	NE	NE	Allied Paper Co. (7)	113	12	Qgd	802.59	1946-62	M	34.46	5- 5-50	64.37	9- 1-46	42.87	6-1	44.75	1-9	P
29-3	SW	SE	Oakwood, Inc.	47	2	Qgd	880.72	1946-62	Q,M	26.12	8- 1-52	30.59	11-13-61	30.18	5-17	30.80	12-14	
3S 12W 11-1	SE	NW	City of Kalamazoo (Atwater)	248	3	Qgd		1961-62	R	+1.96	3-27-61	+1.41	9- 8-61	+1.65	7-22	+1.19	12-23	
3S 11W 4-35	SE	NE	City of Kalamazoo (A-D)	135	3	Qgd	854.03	1959-62	R	1.34	10-30-61	12.89	11- 3-59	1.5	4-30	10.5	6-28	P
4-36	SE	NE	City of Kalamazoo (A-S)	40	3	Qgd	854.01	1959-62	R	0.04	10-30-61	9.12	11- 4-59	0.45	3-12	5.02	8-30	P
4S 11W 21-2	NW	SW	Willis Chamberlain	19	1¼	Qgd		1957-62	Q	10.77	7-20-60	15.12	2- 8-59	12.62	4-25	15.24	2-7	
								Kalkaska County										
27N 5W 36-1	SE	NW	MDC (100)	16	1¼	Qgd		1939-62	W	11.12	7-11-43	13.80	9- 8-61	12.93	5-4	14.32	12-21	
								Kent County										
6N 12W 17-1	SE	NE	Jervis Corp (1)	30	12	Qgd		1950-62	M	6.88	6- 8-56	16.45	2-12-54	8.32	6-25	11.33	2-13	P, Meas. by owner
17-2	SE	NE	Do.	26	6	Qgd	606.05	1950-62	M	7.34	6- 1-56	16.32	2-12-54	6.85	4-10	11.35	11-20	P, Do.
25-1	SW	SW	City of Wyoming	241	12	Mm	e666	1960-62	R	10.0	10-24-60	50.4	7-12-61	14.4	12-26	47.4	6-29	P
27-1	NW	NW	City of Wyoming (44th)	265	14	Mm		1962	R					51.3	10-30	51.80	12-23	Recorder installed 10/4/62
34-1	SE	NE	City of Wyoming	300	8	Mm	e735	1960-62	R	64.82	10-26-60	69.85	7-12-61	66.75	12-27	69.67	6-30	P
6N 11W 19-1		SE	Lear Mfg. Co.	301	8	Mm		1960-62	R	34.3	12- 5-60	e75.2	7- 1-61	40.7	1-8	48.0	1-5	P, well destroyed 4-62
6N 9W 3-1	SW	NE	City of Lowell	70	12	Qgd		1961-62	R	13.52	9-29-61	18.98	9-18-61	11.22	5-4	18.83	2-5	
5N 12W 4-3	SW	SE	City of Wyoming (Wobma)	86	6	Qgd		1962	R					11.98	10-22	12.14	12-28	Recorder installed 10-4-62
4-7	SE	SW	City of Wyoming (DeHaan)	227	8	Mm		1962	R					8.88	10-22	9.05	12-31	Do.
11-3	NE	NW	Do. (DeJager)	80	8	Qgd		1962	R					3.97	10-23	4.24	10-24	Do.

								Lake County										
17N 13W 4-1	SE	NE	C & O R. R. (West Well)	83	8	Qgd		1957-62	Q	17.17	7- 6-60	20.36	5-23-58	17.86	4-10	19.34	12-12	
								Livingston County										
2N 4E 3-1	NW	SW	Howell State Sanitarium	148	8	IPs	916.13	1958-62	R	10.2	4-30-59	27.8	12-13-58	11.32	3-20	27.02	5-29	P
								Macomb County										
2N 12E 1-1	SE	NE	B. H. Tolley	29	48	Qgd		1959-62	R	0.50	1-13-60	7.45	10-31-60	0.86	3-12	6.98	8-6	
								Manistee County										
23N 14W 21-1	NE	SW	Village of Kaleva	70	8	Qgd		1959-62	R	8.49	5-15-60	11.19	8-25-61	8.25	4-1	10.59	8-8	P, Record discontinued 8/62
								Mason County										
17N 15W 3-1	SE	SW	USFS	32	6	Qgd	737.37	1948-62	M	13.90	6-30-60	19.45	8-24-58	15.19	5-31	16.43	12-1	
								Montcalm County										
9N 8W 15-1	SW	NW	City of Greenville (9)	65	12	Qgd		1950-62	M	11.40	4- 1-50	17.40	8- 1-58	12.40	4-2	16.08	11-1	P, Meas. by owner
								Montmorency County										
29N 3E 21-1	NW	NE	MDC (32)	14	2	Qgd		1945-62	Q	2.54	7- 6-60	5.91	1-27-56	2.85	7-2	4.50	12-3	
								Oakland County										
3N 9E 7-1	NE	SW	Garfield Estates	77	6	Qgd		1961-62	R	+0.05	8- 5-61	0.55	11- 4-61	+0.31	4-8	-1.13	12-24	
36-1	NW	NE	Waterford Twp. (Josephine St.)	134	12	Qgd		1960-62	R	95.92	4-16-61	98.26	12-16-61	96.61	1-7	99.26	12-24	P
3N 10E 13-2	SW	NE	Oakland University (formerly MSU-0)	183	6	Qgd		1961-62	R	78.84	2-25-61	81.3	12-15-61	80.3	1-6	89.6	12-20	P
31-1	NE	SW	City of Pontiac (Orchard Lake Road)	173	12	Qgd	926.4	1952-62	R	107.7	2-16-59	128.0	8-16-55	117.5	3-4	126.0	7-19	P
32-1	SE	NW	City of Pontiac (6)	160	8	Qgd	921.88	1939-62	R	59.55	4-22-40	129.5	8- 5-55	116.6	3-12	126.8	7-19	P
3N 11E 4-1	SE	NW	Village of Rochester	73	6	Qgd		1961-62	R	23.2	12-25-61	30.6	11- 3-61	22.8	2-14	32.3	7-19	
2N 10E 22-1	NE	NW	Cranbrook School (3)	65	6	Qgd		1950-62	W	11.00	4-30-56	17.60	9-26-55	11.79	4-23	16.55	10-22	P, Meas. by owner
								Ogemaw County										
23N 1E 4-1	SE	NE	MDC (15)	21	4	Qgd		1934, 55-62	Q	1.14	4-27-60	4.26	10-10-55	1.34	4-23	3.09	12-21	
23N 2E 2-1	NE	NW	Charles Hudson	7	36	Qgd		1951-62	R	0.37	5- 5-52	4.30	3- 5-59	0.94	5-3	2.83	12-31	
								Otsego County										
29N 3W 29-1	SW	SE	MDC (106)	15	2	Qgd		1933-62	Q	5.56	5-14-47	9.74	10- 7-58	7.31	4-16	8.77	12-21	
								Ottawa County										
5N 15W 28-71	SE	SE	City of Holland	108	1¼	Qgd		1946-55, 57-62	M	56.44	8- 8-46	dry	9-14-54	64.94	12-3	69.60	1-16	Meas. by owner
								Presque Isle County										
33N 2E 30-1	NE	SE	MDC (19)	14	2	Qgd		1934-44, 48-62	Q	0.61	7-12-60	5.69	1-27-56	1.97	7-16	3.74	12-4	
33N 6E 8-1	NW	NW	Albert Styma	61	6	Dt		1959-62	M	5.66	4- 4-60	15.92	12- 1-60	6.27	4-4	16.24	12-4	
15-1	NW	NW	Harley Ennest	31	5	Dt		1959-62	R	2.8	5-10-60	11.6	8-26-60	3.28	5-3	11.55	8-31	P
21-1	NE	NE	Mike Ardycan	43	5	Dt		1959-62	M	4.27	4- 4-61	7.20	8- 6-59	2.47	4-4	7.04	2-2	

Table 1.--Records of Michigan observation wells and extremes of water levels observed in 1962 and for the period of record.--Continued

Well number	Location in section (¼ ¼)	Owner	Depth (ft)	Dia. (in)	Chief aquifer	Altitude	Years of Record	F 62	Observed water level extremes: Through 1961 Highest	Through 1961 Date	Through 1961 Lowest	Through 1961 Date	In 1962 Highest	In 1962 Date	In 1962 Lowest	In 1962 Date	Remarks
							Roscommon County										
24N 2W 20-1	NE NW	MDC (1)	14	8	Qgd	1145.30	1934-62	R	2.78	5- 3-51	6.23	12- 6-49	3.52	4-5	5.26	12-31	Fed. key well
23N 1W 3-1	SE SE	MDC (50)	12	2	Qgd	1188.95	1939-62	Q	1.62	6-15-43	7.31	12-14-49	3.85	4-23	5.51	12-21	
22N 3W 22-1	SE NE	MDC (7)	14	2	Qgd	1170.58	1934-62	Q	2.56	4-27-60	5.70	12-20-61	4.38	4-23	6.60	12-21	
							Saginaw County										
9N 3E 16-2	SE NW	Ray Ellis	129	3	Ps		1958-62	W	35.41	1-27-59	53.84	9- 8-59	36.79	1-23	50.19	8-28	P
							Sanilac County										
12N 13E 33-1	SE SE	MSHD	150	3	Mm		1948-62	W	15.45	4-25-51	23.60	2-11-59	16.50	5-9	20.78	10-10	
							Shiawassee County										
5N 2E 16-1	NE SE	A. B. Cobb	26	1½	Qgd	896.00	1948-62	Q	17.28	5- 3-50	22.18	2-27-59	20.38	4-2	22.40	12-12	
							Washtenaw County										
3S 6E 16-1	SW NW	City of Ann Arbor	23	2	Qgd	817.43	1920-62	W	e+2.5	2- ?-30	e10.0	11- ?-27	2.41	1-10	7.90	8-29	P, Meas. by owner
16-2	SE NW	City of Ann Arbor	23	192	Qgd		1948-62	W	+2.00	6-30-51	15.50	8-21-57	7.97	1-10	16.79	8-22	P, Do.
17-1	NE SE	City of Ann Arbor	25	12	Qgd	e825	1962	R					2.9	12-28	5.84	9-28	P, recorder installed 7/62
3S 7E 5-1	NW NW	City of Ypsilanti	69	8	Qgd		1962	R					2.71	7-20	3.87	12-12	Do.
9-2	SW NE	City of Ypsilanti (NR)	50	6	Qgd		1944-46, 48-53, 60-62	M	29.12	11- 5-45	40.8	7- 2-49	35.44	4-27	40.71	12-8	P
9-3	SE NE	City of Ypsilanti (GP)	94	6	Qgd		1944-46, 48-53, 60-62	R	29.12	11- 5-45	59.15	10- 1-60	55.30	4-	60.62	12-20	P
24-1	NE SW	Ford Motor Co. (104)	87	4	Qgd	665.56	1943-45, 49-62	M	5.79	1- 5-50	16.43	10-16-56	16.39	1-13	19.44	7-27	P
24-2	NE SW	Ford Motor Co. (106)	53	4	Qgd	664.51	1943-45, 49-62	M,R	11.81	7-13-43	36.33	1-21-61	30.58	9-4	36.58	4-7	P
24-4	NE SW	Ford Motor Co. (107)	53	4	Qgd	664.05	1943-45, 49-62	M	11.55	1- 5-50	36.93	8- 5-60	33.55	9-16	37.12	4-7	P
24-5	NW SW	Ford Motor Co. (109)	77	4	Qgd	665.56	1943-45, 49-62	M	15.15	6- 6-45	40.70	2-18-61	38.58	1-13	39.39	8-17	P
24-6	SW SW	Federal Works Agency (117)	75	6	Qgd	657.83	1944-45, 49-62	R	5.69	2-15-50	e31.25	8- 5-60	23.67	9-4	30.70	5-19	P
4S 6E 9-1	NW NW	Ypsilanti State Hosp. (TW 20)	184	6	Qgd		1946-62	W	51.22	5-15-48	88.14	6-17-49	67.15	5-1	72.47	11-30	P, Meas. by owner
10-1	SW NW	Ypsilanti State Hosp. (TW 22)	173	6	Qgd		1946-62	W	56.77	10- 9-61	88.27	7- 8-55	56.64	10-1	76.64	6-29	P, Do.
							Wayne County										
1S 8E 9-1	SW NW	City of Plymouth	61	6	Qgd	820	1961-62	R	e11.0	9-28-61	e16.9	9-11-61	10.98	6-17	15.86	11-10	P
17-1	NE NE	City of Plymouth	114	6	Qgd	856	1962	R					50.45	8-12	51.88	12-?	P, recorder installed 8-62
4S 9E 32-1	SW SE	Village of Waltz Improvement Assoc.	190	6	Ds		1959-62	R	6.75	2-10-60	13.94	7-19-61	8.32	1-6	10.91	9-3	P
							Wexford County										
24N 9W 19-1	SW NW	MDC (38)	11	2	Qgd	944.16	1935-37, 41-44, 49-62	Q	0.49	4- 6-59	3.74	8-19-36	1.16	4-17	2.63	9-10	
22N 12W 13-1	NW	Harrietta State Fish Hatchery	141	4	Qgd		1961-62	R	+13.55	2- 7-61	+6.85	1-25-61	+12.03	12-21	+6.75	3-1	P, Record started 1-61
21N 11W 13-1	NW NE	USFS	62	6	Qgd		1948-62	M	46.28	6- 5-52	51.13	11- 1-58	48.60	7-9	49.91	4-9	Destroyed 8-62
21N 9W 4-1	NW NE	City of Cadillac	277	6	Qgd		1949-62	R	19.99	7- 6-53	23.83	10- 6-58	22.53	1-8	24.51	7-7	P

e - estimated

Table 2.--Reported ground-water pumpage by some Michigan municipalities, institutions, and industries (in million gallons).

Water User	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1962 Total	Max. Day	Min. Day
						NORTHERN	PENINSULA								
ALGER COUNTY															
Burt Township	1.66	1.20	1.79	1.59	1.87	2.09	2.48	1.63	1.37	1.71	1.33	1.51	20.23	.142	.030
CHIPPEWA COUNTY															
Kincheloe Air Force Base near Kinross	16.3	14.6	16.4	17.1	20.6	27.5	41.3	34.0	19.4	17.5	16.3	17.9	258.9	----	----
GOGEBIC COUNTY															
City of Bessemer	11.11	10.52	11.85	9.91	10.48	10.09	10.50	10.75	9.63	8.98	9.32	9.43	122.57	.375	.300
City of Ironwood	27.4	26.4	30.4	28.1	27.5	26.3	28.6	29.1	26.1	25.2	24.0	25.4	324.5	1.373	.464
City of Wakefield	6.60	5.25	3.35	4.10	6.20	6.51	6.38	6.38	6.17	6.07	5.79	6.45	69.25	----	----
HOUGHTON COUNTY															
City of Hancock	13.8	12.9	15.0	14.7	15.2	14.7	15.3	16.1	14.4	14.8	14.3	13.5	174.7	.575	.412
City of Houghton	26.0	24.8	27.6	26.8	29.8	25.6	25.5	25.9	22.6	24.8	e17.0	23.7	e300.1	1.136	.589
IRON COUNTY															
City of Caspian	7.42	6.61	7.57	7.36	7.60	8.01	9.11	9.00	8.91	7.71	7.30	7.40	94.00	.325	.225
City of Crystal Falls	18.3	17.6	18.4	19.1	19.7	19.5	22.2	19.0	15.7	15.4	13.6	14.7	213.2	.930	.543
City of Iron River	11.38	11.56	12.69	11.78	11.92	11.48	12.72	10.19	12.39	10.12	9.55	9.12	134.90	----	----
City of Stambaugh	7.14	6.60	7.28	6.78	7.93	7.58	8.29	8.39	6.78	6.98	6.19	6.06	86.00	.415	.136
Stambaugh Township	e.524	e.420	e.520	e.525	e.530	e.645	e.650	e.650	e.524	e.600	e.500	e.578	e6.666	e.026	e.016
LUCE COUNTY															
City of Newberry	e10.90	e10.27	e11.00	e10.00	e10.20	e11.00	e12.00	e12.00	e10.00	e9.50	e9.00	e9.00	e124.87	----	----
State Hospital at Newberry	9.69	9.67	15.38	10.01	11.42	11.81	13.48	15.37	10.54	10.50	12.39	13.71	143.97	----	----
MARQUETTE COUNTY															
State House of Corr. and Br. Prison at Marquette	7.86	6.72	7.54	7.32	8.00	7.60	8.71	8.76	8.57	8.09	7.67	7.36	94.20	.240	.180
KI Sawyer Air Force Base near Gwinn	21.3	22.7	23.8	25.0	37.1	36.3	52.1	39.2	24.6	27.3	27.1	28.5	365.0	----	----
ONTONAGON COUNTY															
Village of Ontonagon	11.1	10.2	11.5	11.6	16.3	15.7	16.0	17.1	17.0	19.8	17.5	11.2	175.0	.777	.250
						SOUTHERN	PENINSULA								
ALCONA COUNTY															
City of Harrisville	1.17	1.21	1.07	.89	1.07	1.17	1.90	1.88	1.32	1.07	.91	.93	14.59	.160	.024
ALLEGAN COUNTY															
City of Allegan	22.9	25.1	26.0	26.5	22.5	39.6	39.3	42.1	40.2	24.4	26.0	22.7	357.3	2.256	.503
City of Plainwell	8.74	7.88	9.22	10.25	15.11	17.55	16.67	17.66	11.48	11.50	9.26	9.50	144.82	.912	.127
City of Otsego	13.5	12.2	14.2	13.3	18.1	20.8	21.8	23.3	15.4	15.1	15.9	15.4	199.0	1.076	.282
ANTRIM COUNTY															
Village of Mancelona	11.16	9.42	10.28	11.65	13.82	14.36	14.55	12.16	12.24	12.81	12.39	11.97	146.81	.586	.214
BARRY COUNTY															
City of Hastings	28.8	26.1	27.7	38.0	33.4	35.0	32.9	43.5	31.2	35.3	32.4	31.6	395.9	1.710	.590
Village of Middleville	17.6	15.0	16.3	15.3	17.4	18.3	19.1	18.9	18.9	19.8	17.4	16.5	210.5	----	----
BAY COUNTY															
City of Pinconning	----	----	----	----	----	----	----	----	e.81	e.80	e .92	e.37	ce2.90	----	----
BENZIE COUNTY															
City of Frankfort	6.75	8.87	8.57	7.83	7.85	9.47	13.34	9.80	6.31	5.80	8.81	5.74	99.14	.630	.137
BERRIEN COUNTY															
Village of Berrien Springs	6.26	5.83	6.64	7.00	8.75	9.76	9.25	10.98	13.27	7.22	6.36	6.29	97.61	.493	.205
City of Buchanan	38.8	38.8	46.2	48.0	57.1	63.4	57.9	59.8	50.3	47.6	47.5	46.0	601.4	3.208	.873
City of Coloma	4.54	4.06	4.54	4.76	5.03	5.19	5.52	5.68	5.35	5.03	4.54	5.03	59.27	e.185	e.144
City of Niles	86.2	76.4	83.6	76.2	86.0	96.2	79.6	102.7	82.8	81.2	73.9	77.7	1002.5	4.79	1.4
BRANCH COUNTY															
City of Bronson	17.2	18.4	22.7	25.4	27.6	29.9	23.5	24.0	22.3	25.3	19.6	17.7	273.6	1.267	.160
City of Coldwater	42.2	36.0	33.7	45.7	59.2	64.0	58.6	75.0	52.1	51.5	46.6	48.2	612.8	3.809	.807
State Home and Tng. School at Coldwater	13.0	11.8	13.0	12.1	15.6	12.2	15.8	13.6	13.1	13.1	12.5	12.8	158.6	.824	.257
CALHOUN COUNTY															
City of Albion	127.	122.	136.	121.	145.	146.	130.	146.	128.	134.	119.	121.	1575.	6.204	----
American Legion Hosp. at Battle Creek	.542	.544	.501	.498	.498	.500	.476	.381	.339	.496	.422	.485	5.668	----	----
Village of Athens	.39	.39	.39	.57	.58	2.67	2.67	2.67	2.67	2.67	2.67	5.97	24.31	----	----
City of Battle Creek	254.	240.	270.	277.	344.	343.	316.	356.	293.	294.	261.	267.	3515.	15.05	6.36
Battle Creek Twp.	20.4	20.3	22.8	20.0	39.8	45.9	34.4	46.2	27.0	23.4	21.6	23.3	345.1	----	----
City of Marshall	27.4	20.9	23.8	30.9	41.9	43.5	39.0	44.4	34.5	34.7	30.9	28.1	400.0	1.959	.500

Table 2.--Reported ground-water pumpage by some Michigan municipalities, institutions, and industries (in million gallons).--Continued

Water User	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1962 Total	Max. Day	Min. Day
CASS COUNTY															
City of Dowagiac	24.0	22.6	20.9	15.8	21.0	31.2	29.5	28.5	25.2	23.4	23.2	14.2	279.5	----	----
Village of Marcellus	1.76	1.75	1.93	1.66	2.55	2.80	2.46	4.00	1.99	1.93	1.45	1.65	25.93	.263	.035
CHARLEVOIX COUNTY															
City of East Jordan	7.62	6.95	8.13	7.22	11.15	12.90	19.12	12.91	8.43	8.20	6.58	6.51	115.72	1.010	.120
CHEBOYGAN COUNTY															
City of Cheboygan	e10.0	e12.3	e11.0	e12.2	e12.0	e13.0	e14.5	e15.0	e12.2	15.7	14.2	19.3	e161.4	.727	.364
Village of Mackinac City	3.17	3.52	5.33	3.28	3.67	5.32	9.03	7.26	4.45	3.01	1.93	1.81	51.78	.395	.042
CLARE COUNTY															
City of Clare	17.6	18.2	16.0	16.0	22.9	37.0	29.5	19.4	16.6	14.2	15.2	15.0	237.6	----	----
City of Harrison	2.92	2.97	3.37	2.76	3.34	3.53	4.07	3.64	4.52	2.67	2.11	1.83	37.73	.197	.044
CLINTON COUNTY															
Village of Elsie	e1.44	e1.38	e1.41	e1.41	e1.47	e1.56	e1.89	e1.86	e1.80	e1.77	e1.77	e1.62	e19.38	----	----
Village of Ovid	1.71	1.51	2.01	2.16	2.90	2.63	3.87	3.00	2.10	2.22	1.62	2.78	28.51	.290	.058
City of St. Johns	28.3	25.9	28.8	27.3	31.4	32.4	29.0	25.4	23.6	25.9	23.1	23.0	324.1	1.286	.454
EATON COUNTY															
Village of Bellevue	e2.0	e2.0	e2.0	e2.0	e2.0	e2.0	e2.5	e2.5	e2.5	e2.0	e2.0	e2.0	e25.5	----	----
City of Olivet	----	----	----	----	----	----	----	----	----	----	----	----	e21.3	----	----
City of Charlotte	33.9	27.6	33.0	35.1	38.3	37.8	34.3	40.3	35.3	34.0	29.7	30.0	409.3	1.46	----
City of Eaton Rapids	31.5	28.5	25.2	29.1	24.5	35.0	34.5	32.1	32.3	25.1	24.3	25.9	348.0	1.117	.760
City of Grand Ledge	11.3	10.3	11.3	11.0	14.3	14.9	16.4	16.1	13.1	12.1	11.0	11.6	153.4	.847	.237
EMMET COUNTY															
City of Harbor Springs	7.40	7.63	6.99	8.51	8.34	21.51	29.98	25.62	16.36	8.53	8.59	7.77	157.23	1.693	.133
GENESEE COUNTY															
Beecher Metr. Dist.	27.8	25.9	27.3	25.2	31.1	26.6	31.7	29.6	26.2	25.8	23.8	25.5	326.5	1.410	.581
Village of Clio	3.54	7.32	4.11	4.73	4.20	5.04	4.64	4.14	5.02	4.00	3.66	3.19	53.59	.120	.082
City of Davison	9.04	7.76	9.50	11.62	9.14	11.62	10.05	11.02	9.75	9.77	8.71	9.21	117.19	.730	.162
Village of Fenton	16.0	14.8	17.8	15.9	20.6	19.7	21.7	19.2	18.0	17.7	15.7	16.8	213.9	1.404	.267
Fisher Body Div., at Grand Blanc	6.70	5.73	6.68	6.98	7.24	6.97	7.19	6.71	6.07	7.16	6.58	6.68	80.69	----	----
Village of Flushing	6.83	6.15	7.01	7.28	10.02	9.02	9.38	7.11	6.96	7.24	7.15	6.98	91.13	----	----
Village of Linden	.276	.111	.200	.163	.450	.926	.467	.456	.192	e.150	e.150	e.150	e3.691	----	----
Village of Montrose	1.56	1.73	1.96	1.93	2.86	2.83	3.62	2.73	2.20	2.55	2.39	1.07	27.43	.214	.055
City of Mt. Morris	6.11	5.28	6.35	5.92	6.94	6.54	7.04	7.63	6.65	6.71	6.44	6.76	78.37	.351	.152
Village of Otisville	1.03	1.11	1.23	1.09	1.11	1.30	2.03	2.05	1.01	1.05	.93	1.02	14.96	.060	.030
GLADWIN COUNTY															
City of Beaverton	2.52	2.42	2.91	3.32	3.11	1.87	3.30	1.32	1.89	2.55	2.01	2.19	29.41	----	----
GRATIOT COUNTY															
City of Alma	51.3	47.4	56.1	50.9	63.1	56.6	51.4	47.8	48.8	50.1	43.1	39.4	606.0	2.590	.900
Village of Breckenridge	2.70	2.46	2.70	2.65	2.70	2.99	3.64	3.10	2.76	2.84	2.58	2.81	33.93	.180	.062
City of Ithaca	5.23	5.00	5.01	5.44	5.32	5.48	5.74	5.47	5.32	5.60	5.06	5.45	64.12	.265	.113
City of St. Louis	20.6	16.4	20.1	20.4	23.0	21.1	22.9	20.9	17.6	17.7	14.9	16.6	232.2	1.043	.428
HILLSDALE COUNTY															
Village of Jonesville	6.99	6.65	6.72	9.77	10.11	10.78	9.92	8.54	8.66	9.45	8.63	8.15	104.37	.523	.207
City of Hillsdale	----	----	----	----	----	9.99	33.47	33.80	29.96	----	----	----	107.22b/c	----	----
HURON COUNTY															
Village of Pigeon	e2.90	e2.60	e2.90	e2.80	e3.10	e3.40	e4.46	e4.56	e4.10	e3.50	e2.90	e2.90	e40.12	.145	.090
Village of Sebewaing	9.54	10.15	10.58	15.03	10.03	10.70	13.47	12.65	10.73	10.78	10.08	7.15	130.89	----	----
INGHAM COUNTY															
City of East Lansing	34.5	38.0	41.9	39.1	56.8	52.1	52.3	53.3	53.8	55.2	52.1	51.2	580.3		
City of Lansing	525.	467.	522.	515.	628.	629.	623.	631.	553.	569.	531.	548.	6741.	27.16	----
Lansing Twp.	51.2	28.7	37.8	38.6	52.7	47.8	60.7	44.9	49.8	50.2	35.4	47.1	544.9	----	----
Village of Leslie	4.75	3.74	4.46	4.66	7.68	7.21	6.68	7.90	4.98	4.69	4.02	4.42	65.19	.460	.109
City of Mason	11.5	10.3	11.7	12.1	14.1	14.2	13.6	13.6	12.8	11.8	10.1	11.4	147.2	.741	.264
Meridian Twp.	14.86	14.27	15.03	15.58	23.02	16.96	19.43	20.96	2.76	2.32	2.26	2.46	149.91	----	----
Mich. State Univ. at East Lansing	88.1	86.4	90.0	91.8	111.3	97.0	94.0	90.9	81.8	95.1	86.4	75.6	1088.4	3.9	1.2
Oldsmobile Forge Plant at Lansing	12.9	14.3	12.3	13.8	14.9	13.7	13.5	11.7	13.8	11.9	12.0	13.2	158.0	----	----
Village of Stockbridge	1.95	1.69	1.85	1.97	2.24	2.34	2.52	2.68	2.40	2.34	2.05	1.99	26.02	----	----
IONIA COUNTY															
City of Ionia	34.7	32.4	36.3	35.4	40.1	35.7	31.7	31.3	27.9	26.8	23.4	26.5	382.2	----	----
State Hosp. at Ionia	10.24	9.58	10.12	9.84	10.50	11.35	12.27	12.48	10.47	10.72	10.01	10.19	127.77	.435	.329
Mich. Reform. at Ionia	17.1	14.0	15.8	14.8	17.8	19.6	23.3	22.3	20.0	26.6	13.9	13.9	219.1	1.000	.450
Mich. Tng. Unit at Ionia	1.51	1.29	1.17	1.44	2.56	2.67	3.62	5.57	2.72	2.26	1.96	1.57	28.34	e.232	e.039
City of Portland	9.02	8.41	8.80	9.08	11.92	13.72	13.48	13.09	10.30	9.97	8.42	8.98	125.19	.457	.281
Village of Saranac	7.57	7.48	8.07	7.47	9.86	10.92	10.40	10.96	10.13	10.85	9.73	10.52	113.96	.551	.070
IOSCO COUNTY															
Wurtsmith Air Force Base	21.3	21.8	26.6	30.9	34.7	41.2	41.2	35.6	26.9	24.0	23.8	23.6	351.6	1.741	.492
ISABELLA COUNTY															
City of Mt. Pleasant	42.9	39.7	50.3	47.3	58.6	55.4	58.5	45.4	49.0	50.4	46.0	44.4	587.9	2.67	0.96
Village of Shepherd	g	g	g	g	2.29	2.26	2.44	2.50	1.64	2.09	2.06	1.67			

Table 2.--Reported ground-water pumpage by some Michigan municipalities, institutions, and industries (in million gallons).--Continued

Water User	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1962 Total	Max. Day	Min. Day
JACKSON COUNTY															
Village of Concord	1.60	1.28	1.96	1.45	1.81	1.90	2.42	2.13	1.76	1.72	1.71	1.61	21.35	.108	.040
Village of Grass Lake	e.93	e.83	e1.08	e1.09	e1.03	e1.00	e1.50	e1.51	e1.44	e1.03	e1.00	e1.08	e13.52	----	----
City of Jackson	359.	306.	338.	335.	423.	411.	371.	402.	349.	344.	292.	306.	4236.	19.3	5.7
State Prison of S. Mich., at Jackson	43.6	37.0	37.7	35.8	51.8	44.9	55.2	48.7	47.1	51.9	39.7	38.1	531.5	2.294	1.074
KALAMAZOO COUNTY															
Village of Augusta	1.17	1.51	1.73	1.90	1.71	e1.05	1.88	3.52	1.81	1.84	1.42	1.82	e21.36	.657	----
City of Galesburg	2.39	2.19	2.50	2.33	3.72	3.83	3.83	4.73	3.36	3.41	3.11	3.17	38.57	----	----
City of Kalamazoo	308.	265.	356.	324.	475.	562.	467.	567.	380.	370.	325.	326.	4725.	28.4	6.9
State Hosp. at Kalamazoo	20.2	17.2	16.8	15.2	16.5	16.7	17.8	17.8	17.2	19.6	18.2	17.9	211.1	.750	.425
Village of Vicksburg	6.10	5.72	6.10	5.25	10.99	11.79	9.43	12.76	6.97	6.79	6.05	5.77	93.72	.401	.200
Upjohn Co. near Kal.	241.	218.	225.	243.	326.	308.	304.	310.	286.	288.	234.	214.	3197.	13.0	5.0
KVP-Sutherland Paper Co. at Parchment	e71.0	e82.3	e85.9	e118.1	e101.8	e106.0	e125.7	e101.8	e103.9	e49.8	e17.8	e9.8	e973.9	----	----
KALKASKA COUNTY															
Village of Kalkaska	3.62	3.97	4.35	3.89	3.88	4.66	4.96	4.51	3.96	3.90	3.27	3.17	48.14	.246	.073
KENT COUNTY															
City of Grandville	11.9	11.4	13.5	15.3	27.8	40.4	37.7	42.0	23.3	17.7	13.8	14.1	268.9	2.194	.278
Jervis Corp. at Grandville	13.06	10.23	9.32	9.02	9.42	5.89	7.45	6.19	5.38	6.94	5.65	7.51	96.06	----	----
City of Lowell	e11.3	e10.3	e13.3	e12.6	e17.7	e19.1	e19.4	e19.2	e13.6	e12.5	e11.5	e11.4	e171.9	1.069	.229
Paris Twp.	24.4	19.8	22.5	23.0	40.4	e55.3	e37.5	45.4	29.8	20.8	20.3	18.8	e358.0	1.513	.291
Village of Sparta	11.4	10.4	12.8	12.6	14.6	15.4	14.8	15.1	13.6	13.5	12.1	13.6	159.9	.800	.200
City of Wyoming	130.	116.	127.	125.	224.	279.	257.	273.	188.	144.	133.	135.	2131.	15.3	2.10
LAPEER COUNTY															
Village of Imlay City	10.83	7.00	9.58	9.72	8.95	11.69	14.55	11.27	8.38	9.68	6.60	5.59	113.84	----	----
City of Lapeer	17.7	15.2	19.3	17.6	19.8	17.3	18.7	19.4	16.3	16.3	14.3	14.5	206.4	----	----
State Home and Trng. School at Lapeer	21.1	21.0	24.0	22.9	23.4	21.7	20.4	21.5	21.3	23.1	22.1	20.6	263.1	----	----
LENAWEE COUNTY															
Village of Clinton	----	----	a16.9	----	----	a17.5	----	----	a16.9	----	----	a15.6	66.9	.195	.110
City of Hudson	7.88	7.26	8.12	6.87	8.39	9.04	8.63	10.03	8.13	8.53	8.11	8.05	99.04	.484	.125
City of Morenci	4.54	4.23	5.37	4.83	5.54	5.29	5.18	6.26	5.52	5.14	4.76	5.23	61.89	.315	.115
City of Tecumseh	76.3	66.6	73.4	71.0	74.6	68.0	76.5	70.2	72.3	74.6	64.7	68.4	856.6	3.075	1.474
LIVINGSTON COUNTY															
City of Brighton	6.61	6.29	6.87	8.68	12.86	13.50	12.43	10.88	8.84	6.62	5.24	8.22	107.04	----	----
City of Howell	19.7	19.3	21.6	21.2	24.5	23.6	25.1	23.9	26.3	20.1	19.7	19.5	264.5	----	----
State Hosp. at Howell	2.24	1.93	2.50	2.49	6.64	3.40	4.49	4.41	3.05	2.89	2.31	2.77	39.12	.475	.041
MACOMB COUNTY															
City of Fraser	13.8	12.3	14.8	16.3	28.6	21.3	25.9	20.2	16.4	16.4	14.8	15.2	216.0	1.500	.355
Village of Richmond	6.94	6.21	8.09	7.21	7.95	8.18	9.00	8.41	8.24	8.25	6.52	8.04	93.04	.385	.189
Village of Romeo	10.8	10.3	11.0	10.9	11.2	12.8	15.0	14.3	13.1	11.3	11.2	11.0	142.9	.475	.334
MANISTEE COUNTY															
City of Manistee	36.9	34.8	34.7	36.3	47.1	56.2	56.1	44.9	36.3	37.6	32.3	33.7	486.9	2.923	.863
MASON COUNTY															
City of Scottville	4.21	4.39	5.55	4.87	6.46	8.01	8.95	8.81	6.55	6.67	7.00	5.61	77.08	----	----
MONROE COUNTY															
Village of Carleton	2.71	2.28	2.53	2.77	3.26	3.10	3.09	3.27	2.79	2.94	2.60	3.15	34.49	.150	.062
MONTCALM COUNTY															
City of Carson City	10.73	7.55	6.56	8.83	8.63	8.71	8.42	8.40	7.95	8.50	9.23	7.55	101.06	.498	.133
City of Greenville	23.4	25.8	23.9	23.1	28.8	32.3	30.5	30.4	25.1	26.5	23.9	e23.0	e316.7	1.76	.29
Village of Howard City	.97	.78	1.00	.92	1.28	1.78	2.00	1.75	1.33	1.37	1.18	1.17	15.53	.062	.014
Village of Lakeview	----	----	ae4.0	----	----	ae5.0	----	----	ae7.0	----	----	ae4.0	e20.0	----	----
Village of Sheridan	1.16	1.07	1.36	1.15	2.51	2.45	4.32	3.20	2.25	1.24	1.41	1.24	23.36	.310	.035
MUSKEGON COUNTY															
City of Montague	4.36	3.14	5.29	6.81	10.59	11.51	9.71	6.34	5.65	4.54	4.10	4.57	76.61	.625	.150
City of Whitehall	9.49	8.94	9.70	7.66	15.94	22.48	18.04	15.24	12.77	11.80	11.02	11.16	154.24	1.642	.262
NEWAYGO COUNTY															
City of Fremont	22.2	15.0	15.5	18.0	28.8	27.3	26.6	24.2	26.9	18.6	16.6	14.7	254.4	2.588	.203
OAKLAND COUNTY															
City of Birmingham	7.96	6.59	5.71	4.88	14.02	7.45	9.08	10.48	0.44	10.02	4.87	4.32	f85.81	----	----
Cranbrook School	8.75	8.15	8.55	7.96	18.47	10.92	11.15	9.06	9.62	10.00	7.23	3.75	113.61	----	----
Oakland University	1.61	1.40	1.37	.959	1.84	1.91	1.82	2.33	2.21	2.62	2.21	1.70	22.0	.220	.016
Village of Oxford	5.58	4.15	5.56	4.38	6.85	7.02	5.65	5.30	4.12	4.67	5.73	5.08	64.09	----	----
City of Pontiac	297.	286.	339.	359.	441.	394.	438.	361.	346.	366.	349.	353.	4329.	20.89	6.45
Village of Rochester	35.3	31.3	35.8	35.8	46.9	43.2	45.5	42.9	36.0	34.1	35.6	34.4	456.8	2.278	.803
City of South Lyon	48.2	44.0	48.4	42.0	49.4	43.3	34.0	52.4	39.6	41.6	39.9	40.2	523.0	1.5	.9
City of Sylvan Lake	4.15	3.13	3.33	3.87	5.10	3.86	5.33	5.34	4.32	4.24	4.14	3.79	50.60	----	----
City of Troy	29.2	25.7	29.7	29.3	48.9	39.0	52.6	42.6	37.9	38.5	33.6	36.4	443.4	----	----
Waterford Twp.	22.0	20.1	24.1	23.3	53.3	42.9	56.4	38.3	27.8	24.0	24.8	25.0	382.0	----	----
OCEANA COUNTY															
City of Hart	10.06	9.57	9.96	9.49	15.29	27.48	48.40	20.94	17.29	19.13	13.49	11.18	212.28	2.730	.259
OGEMAW COUNTY															
City of West Branch	6.07	6.22	6.94	5.68	7.40	5.36	8.92	7.76	12.01	7.18	6.80	5.96	86.30	----	----

Table 2.--Reported ground-water pumpage by some Michigan municipalities, institutions, and industries (in million gallons).--Continued

Water User	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1962 Total	Max. Day	Min. Day
OSCEOLA COUNTY															
City of Evart	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	e37.0	444.0 eh	----	----
OTSEGO COUNTY															
City of Gaylord	18.99	8.62	9.54	9.17	9.38	9.75	11.27	10.98	9.61	10.05	9.13	10.04	126.53	.396	.179
N.Mich. T.B. San. at Gaylord	1.35	1.35	1.43	1.40	1.40	1.34	1.55	1.41	1.35	1.44	1.35	1.48	16.85	.062	.028
OTTAWA COUNTY															
City of Grand Haven															
Lake Infil. Wells	52.0	52.1	50.8	50.3	79.9	121.6	110.3	108.3	69.8	67.3	54.3	50.1	866.8	6.400	.626
Drift Wells	17.6	15.4	17.4	16.9	17.1	15.5	14.9	15.3	13.9	17.6	16.5	16.2	194.3	.735	----
City of Hudsonville	----	----	a11.0	----	----	a14.8	----	----	a36.1	----	----	a12.8	74.7	----	----
Village of Spring Lake	7.58	6.14	9.62	8.87	14.76	22.82	19.21	21.83	11.41	8.47	7.00	7.07	144.78	1.078	.110
City of Zeeland	23.9	19.7	23.8	23.0	29.1	31.4	28.1	34.5	30.8	30.6	28.1	25.0	328.0	1.495	.428
Village of Coopersville	3.15	3.19	3.89	4.18	4.19	3.40	4.81	4.83	3.61	3.29	3.42	3.85	45.8	.156	.129
PRESQUE ISLE COUNTY															
City of Onaway	e2.0	e2.0	e2.0	e2.0	e2.0	e2.4	e3.0	e3.5	e3.2	e2.5	e2.0	e2.0	e28.6	e.085	e.035
City of Rogers City	6.23	6.01	7.26	6.48	7.27	7.96	13.23	8.38	6.29	6.40	6.18	6.28	87.97	.764	.145
SAGINAW COUNTY															
Bridgeport Twp.	6.34	4.96	6.22	6.10	8.00	7.83	9.97	9.71	8.27	8.06	6.24	5.55	87.25	----	----
Village of St. Charles	5.08	3.30	2.54	3.11	4.74	4.47	5.06	6.39	3.93	5.92	4.15	4.41	53.10	.211	.112
Thomas Twp.	3.57	3.27	3.50	3.43	4.72	4.74	5.18	5.14	4.26	4.83	3.72	3.53	49.89	.200	.116
ST. CLAIR COUNTY															
Village of Capac	3.19	1.50	1.54	1.12	2.82	2.40	3.83	3.39	2.67	2.55	2.78	2.17	29.96	.123	.036
City of Yale	5.18	4.99	5.33	5.46	6.41	6.56	6.95	7.08	6.51	6.05	5.20	3.63	69.35	----	----
ST.JOSEPH COUNTY															
Village of Constantine	----	----	a6.00	----	----	a6.84	----	----	a8.02	----	----	a6.93	27.79	----	----
City of Sturgis	48.9	43.2	46.6	46.5	58.7	60.5	56.4	70.9	54.1	55.3	48.6	48.1	637.7	3.525	.715
City of Three Rivers	24.7	24.4	25.0	24.9	33.8	39.7	34.7	39.0	28.8	27.5	13.0	12.1	327.6	1.898	.138
SANILAC COUNTY															
City of Croswell	10.23	9.54	9.95	13.07	14.90	14.75	24.61	34.32	19.81	18.78	17.33	17.94	205.23	1.360	.151
Village of Deckerville	4.74	4.70	4.92	4.90	5.70	5.72	6.71	6.85	9.01	6.85	5.70	4.97	70.77	----	----
City of Sandusky	e9.5	e9.4	e9.8	e9.9	e10.2	e10.4	e13.6	e12.3	e10.7	e10.6	e9.9	e11.0	e127.3	e.695	e.225
SHIAWASSEE COUNTY															
City of Corunna	5.98	4.69	5.44	5.28	6.05	5.71	6.73	6.33	5.62	5.63	5.38	5.03	67.51	.265	.115
City of Durand	9.70	9.46	11.11	10.09	11.41	11.65	9.59	9.39	9.13	9.13	8.65	9.30	118.61	.450	.300
City of Owosso	78.3	71.1	84.3	78.3	95.0	95.7	98.8	91.7	81.6	82.5	75.7	73.5	1006.5	3.987	2.099
Village of Perry	1.76	1.52	1.69	1.61	2.46	2.51	2.51	2.28	2.07	2.01	1.70	1.84	23.96	----	----
TUSCOLA COUNTY															
State Hosp. at Caro	9.34	8.94	9.72	10.53	12.11	12.11	12.63	9.69	9.29	8.48	9.11	8.99	120.94	.481	.216
Village of Cass City	6.40	5.31	5.92	5.41	6.33	6.41	9.23	7.01	6.36	5.86	5.05	5.06	74.35	.393	.111
VAN BUREN COUNTY															
Village of Bangor	19.1	17.1	18.3	13.0	16.3	16.1	17.9	22.9	e18.2	17.1	16.3	14.3	206.6	----	----
Village of Hartford	5.36	4.79	5.92	5.43	8.02	11.60	9.91	11.94	5.85	5.02	5.17	5.13	84.14	.960	.228
Village of Lawton	14.8	12.0	12.1	24.0	29.2	26.4	32.9	32.7	39.2	41.9	19.0	16.7	310.9	1.9	.45
WASHTENAW COUNTY															
City of Ann Arbor	61.4	58.6	81.0	83.7	103.7	109.5	100.4	114.5	100.8	61.8	54.7	54.6	c984.7	----	----
Boys Tng. School at Whitmore Lake	e.725	e.649	e.744	e.718	e.740	e.722	e.698	e.826	e.914	e.827	e.717	e.770	e9.05	----	----
Cassidy Lake Technical School	e1.2	e1.2	e1.3	e1.4	e1.4	e1.5	e1.5	1.4	1.3	1.1	1.2	1.2	e15.7	----	----
Village of Dexter	4.02	4.01	3.93	3.27	4.45	3.62	6.75	4.93	5.89	5.01	4.39	3.74	54.01	.299	.110
City of Saline	7.86	4.68	5.28	6.01	8.12	8.06	7.56	7.25	6.60	6.08	5.39	5.51	78.40	.508	.102
City of Ypsilanti	97.9	81.5	91.2	87.3	108.6	100.9	96.8	99.5	95.9	97.7	96.5	96.7	1150.5	5.255	1.830
Ypsilanti Twp.	189.	166.	177.	178.	195.	188.	192.	176.	164.	180.	169.	156.	2130.	7.869	2.704
State Hosp. at Ypsilanti	13.9	13.4	14.6	13.8	17.5	18.0	18.5	19.4	15.8	15.9	14.8	15.1	190.7	.701	.317
Village of Manchester	4.34	4.21	4.71	4.39	5.16	5.13	5.41	5.23	4.45	4.45	4.04	4.16	55.68	.332	.088
WAYNE COUNTY															
City of Belleville	4.58	----	a16.34	----	----	a17.21	----	----	a16.54	----	5.65	4.03	64.35	----	----
State Hosp. at Northville	22.3	18.3	18.7	19.3	20.4	18.8	19.0	19.5	18.9	18.9	20.5	21.5	236.1	----	----
City of Plymouth	e54.4	e52.6	e56.4	e54.9	e79.8	e66.4	e62.0	e65.0	e57.4	e59.1	e51.9	e51.1	e711.0	3.50.	1.30
Ply. State Home and Tng. School at Northville	2.69	2.16	2.33	2.77	3.16	2.61	2.61	3.08	2.78	2.80	2.45	2.99	32.93	.313	.043
WEXFORD COUNTY															
City of Cadillac	27.5	28.0	30.5	33.8	55.4	83.0	94.7	69.3	31.8	25.4	22.7	26.2	528.3	6.0	.60

a) Meters read quarterly
b) Pumped in summer months only
c) Also use surface water
d) Water purchased from Copper Range Co., Painesdale
e) Estimated wholly or in part
f) 84.9 MG of this total sold to City of Troy (Birmingham uses Detroit water)
g) No meters on pumps during these months
h) One industry used 383 MG of this total