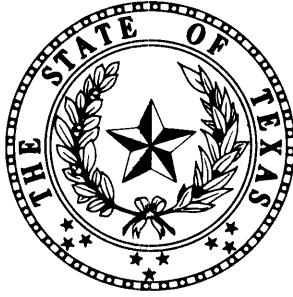


Quincy



R288

EVALUATING THE GROUND-WATER  
RESOURCES OF THE HIGH PLAINS  
OF TEXAS

FINAL REPORT

Volume 2  
Basic Data for Northern Third  
of Region

LP-173

Cooperators: TEXAS DEPARTMENT OF WATER RESOURCES  
U.S. GEOLOGICAL SURVEY  
HIGH PLAINS UNDERGROUND WATER CONSERVATION  
DISTRICT NO. 1  
NORTH PLAINS GROUND WATER CONSERVATION  
DISTRICT NO. 2  
PANHANDLE GROUND WATER CONSERVATION  
DISTRICT NO. 3  
TEXAS TECH UNIVERSITY

TEXAS DEPARTMENT OF WATER RESOURCES

January 1982

TEXAS DEPARTMENT OF WATER RESOURCES

LP-173

EVALUATING THE GROUND-WATER RESOURCES

OF THE HIGH PLAINS OF TEXAS,

FINAL REPORT

Volume 2

Basic Data for Northern Third  
of Region

Principal Investigators: Tommy Knowles  
Phillip Nordstrom  
William B. Klemt

Texas Department of Water Resources

Cooperators: Texas Department of Water Resources  
U. S. Geological Survey  
High Plains Underground Water Conservation District No. 1  
North Plains Ground Water Conservation District No. 2  
Panhandle Ground Water Conservation District No. 3  
Texas Tech University

The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies or recommendations of the cooperating entities.

January 1982

# TEXAS DEPARTMENT OF WATER RESOURCES

Harvey Davis, Executive Director

## TEXAS WATER DEVELOPMENT BOARD

Louis A. Beecherl Jr., Chairman

George W. McCleskey

Glen E. Roney

John H. Garrett, Vice Chairman

W. O. Bankston

Lonnie A. "Bo" Pilgrim

## TEXAS WATER COMMISSION

Felix McDonald, Chairman

Dorsey B. Hardeman, Commissioner

Lee B. M. Biggart, Commissioner

*Authorization for use or reproduction of any original material contained in this publication, i.e., not obtained from other sources, is freely granted. The Department would appreciate acknowledgement.*

Published and distributed  
by the  
Texas Department of Water Resources  
Post Office Box 13087  
Austin, Texas 78711

TABLE OF CONTENTS

INTRODUCTION . . . . .	Page 1
------------------------	-----------

TABLES AND MAPS

Page Numbers

County	Records of Wells	Location Map (Figure 1)	Base of Aquifer Map (Figure 2)	Water Level Map 1979-1980 (Figure 3)	Saturated Thickness Map, 1980 (Figure 4)
Armstrong	5	15	17	19	21
Carson	23	47	49	51	53
Dallam	55	91	93	95	97
Donely	99	111	113	115	117
Gray	119	135	137	139	141
Hansford	143	175	177	179	181
Hartley	183	213	215	217	219
Hemphill	221	235	237	239	241
Hutchinson	243	257	259	261	263
Lipscomb	265	279	281	283	285
Moore	287	317	319	321	323
Ochiltree	325	345	347	349	351
Potter	353	361	363	365	367
Roberts	369	383	385	387	389
Sherman	391	429	431	433	435
Wheeler	437	445	447	449	451

# EVALUATING THE GROUND-WATER RESOURCES OF THE HIGH PLAINS OF TEXAS

## Volume 2

### INTRODUCTION

This report consists of four volumes. Volume 1 contains interpretive information presented as text and related tables and regional figures. Volumes 2 through 4 contain supporting basic data including records of approximately 12,200 wells and county maps depicting well locations, elevation of the base of the High Plains aquifer, elevation of water levels in 1980, and saturated thicknesses in 1980. Volume 2 contains the basic data for the counties in the northern third of the study area as shown on the accompanying map.

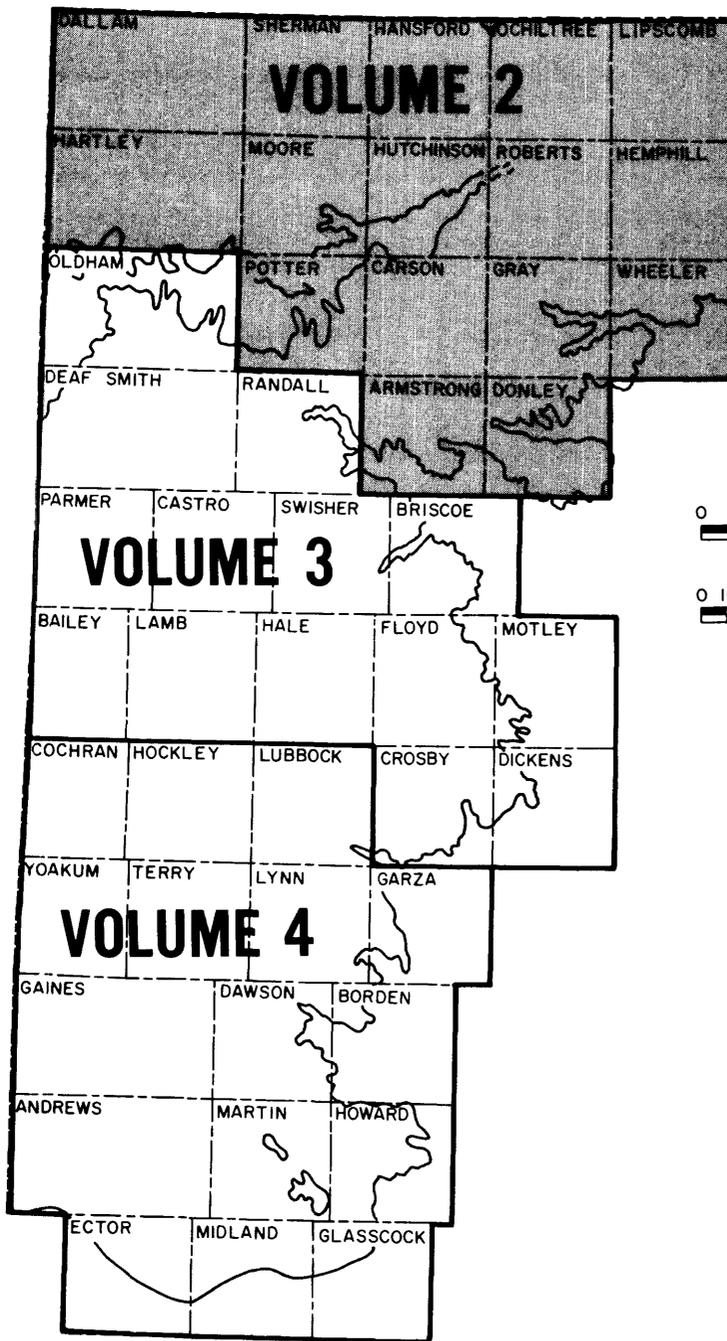
#### Well-Numbering System

To facilitate plotting the location of wells on maps and to avoid duplication of well numbers in present and future studies, the Texas Department of Water Resources has adopted a statewide well-numbering system. This system is based on division of the State into a grid of 1-degree quadrangles formed by degrees of latitude and longitude, and the repeated division of these quadrangles into smaller ones as shown in the following diagram.

Each 1-degree quadrangle is divided into sixty-four  $7\frac{1}{2}$ -minute quadrangles, each of which is further divided into nine  $2\frac{1}{2}$ -minute quadrangles. Each 1-degree quadrangle in the State has been assigned an identification number. The  $7\frac{1}{2}$ -minute quadrangles are numbered consecutively from left to right, beginning in the upper left-hand corner of the 1-degree quadrangle, and the  $2\frac{1}{2}$ -minute quadrangles within each  $7\frac{1}{2}$ -minute quadrangle are similarly numbered. The first two digits of a well number identify the 1-degree quadrangle; the third

and fourth digits, the 7 1/2-minute quadrangle; the fifth digit identifies the 2 1/2-minute quadrangle; and the last two digits or letter identify the well within the 2 1/2-minute quadrangle.

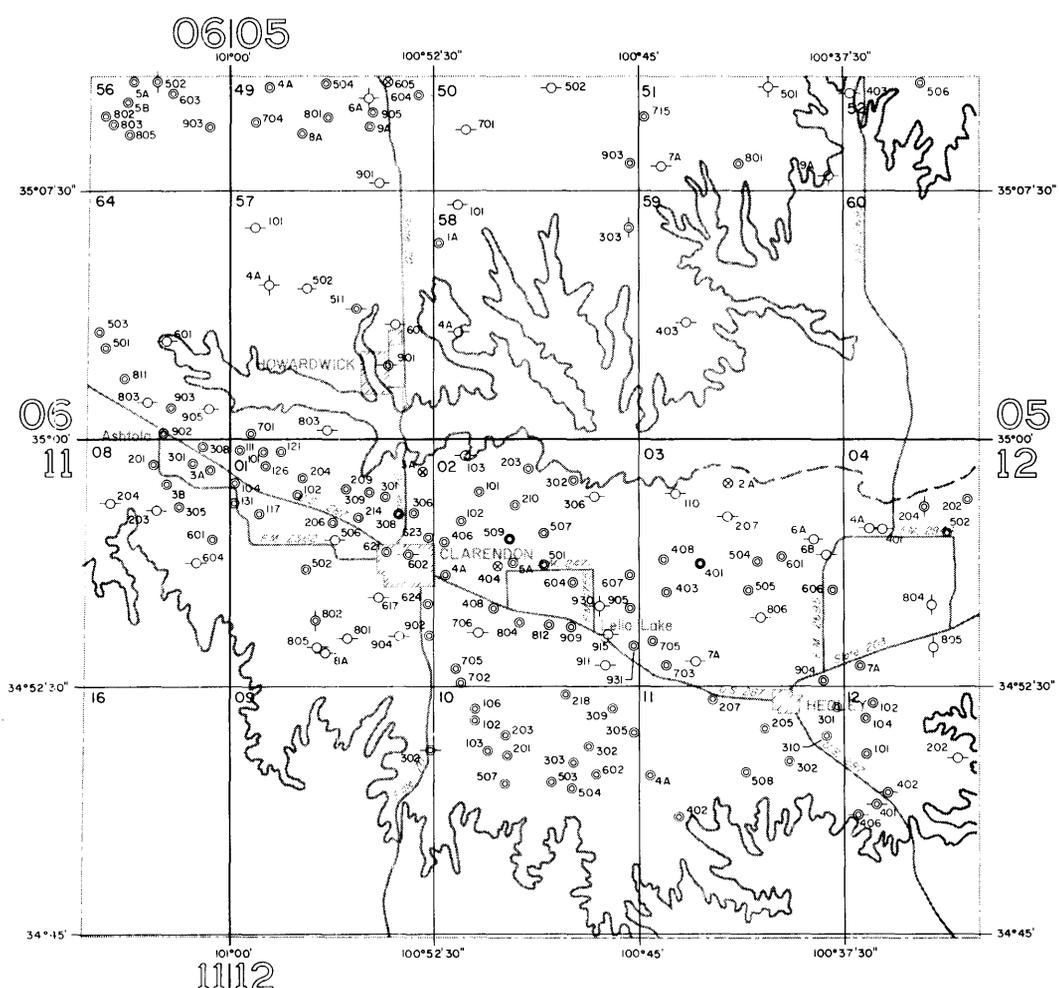
On the well-location maps in this report, the 1-degree grid lines are identified with large open-block numerals, and the 7 1/2-minute quadrangles are numbered in their northwest corners. The 3-digit number or number-letter shown with the well symbol contains the number of the 2 1/2-minute quadrangle in which the well is located and the number of the well within that quadrangle.



0 10 20 30 40 50 60 70 Miles

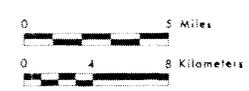
0 10 30 50 70 Kilometers

Index to Volumes



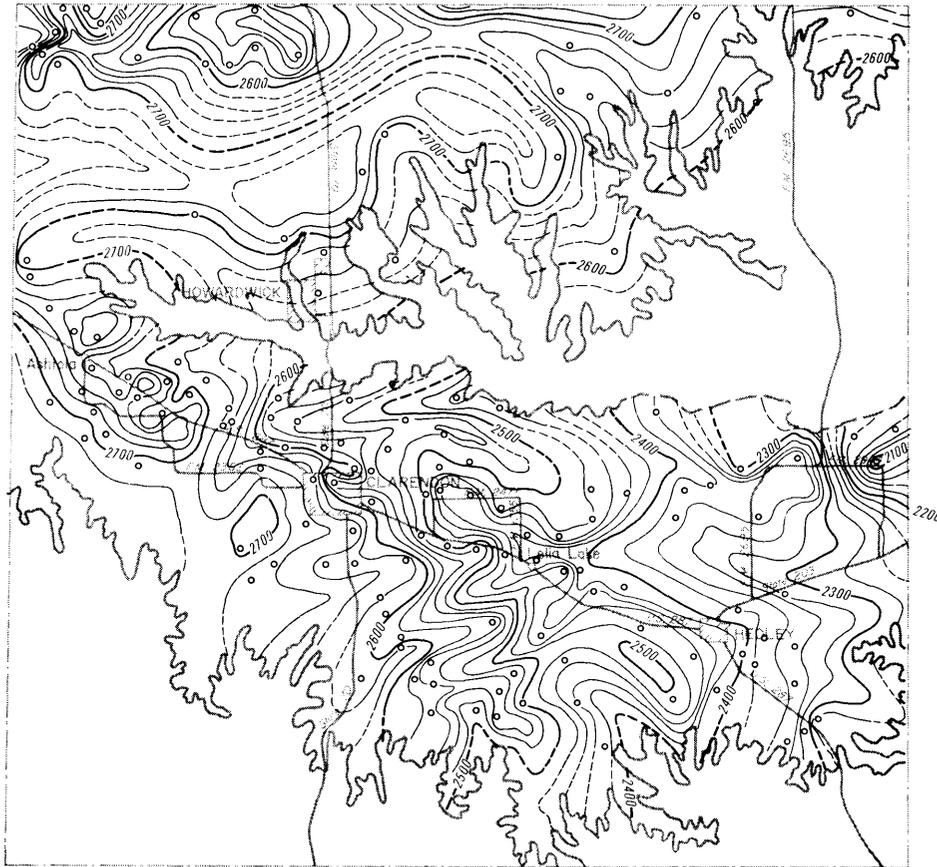
**EXPLANATION**

- |   |                            |       |                                  |
|---|----------------------------|-------|----------------------------------|
| ⊕ | Public supply well         | ⊗     | Test hole                        |
| ⊖ | Industrial well            | ⊕ ⊗ ⊖ | Unused or abandoned well         |
| ⊙ | Irrigation well            | 201   | Last three digits of well number |
| ⊘ | Domestic or livestock well | 2A    | Temporary well number            |
| ⊕ | Oil or gas well            |       |                                  |



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Location of Control Wells, Donley County, Texas**



**EXPLANATION**

○  
Well used for control  
— 2600 —

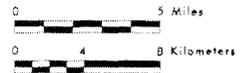
Line showing approximate altitude of the base of the High Plains Aquifer

Dashed where control is limited

Interval 20 feet

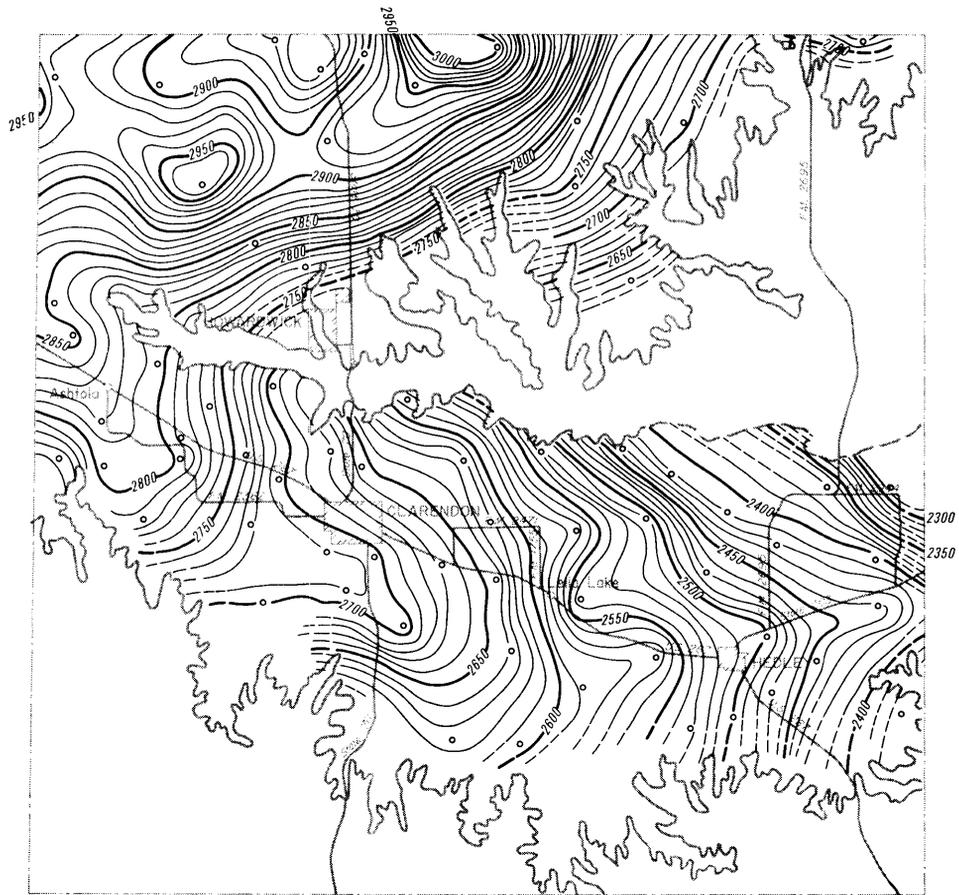
Datum is mean sea level

Note: Not all data points are presented which were used in contouring



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of the Base of the High Plains Aquifer, Donley County, Texas**



**EXPLANATION**

○  
Well used for control

——— 2800 ———  
Line showing approximate altitude of

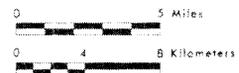
water levels in the High Plains Aquifer

Dashed where control is limited

Interval 10 feet

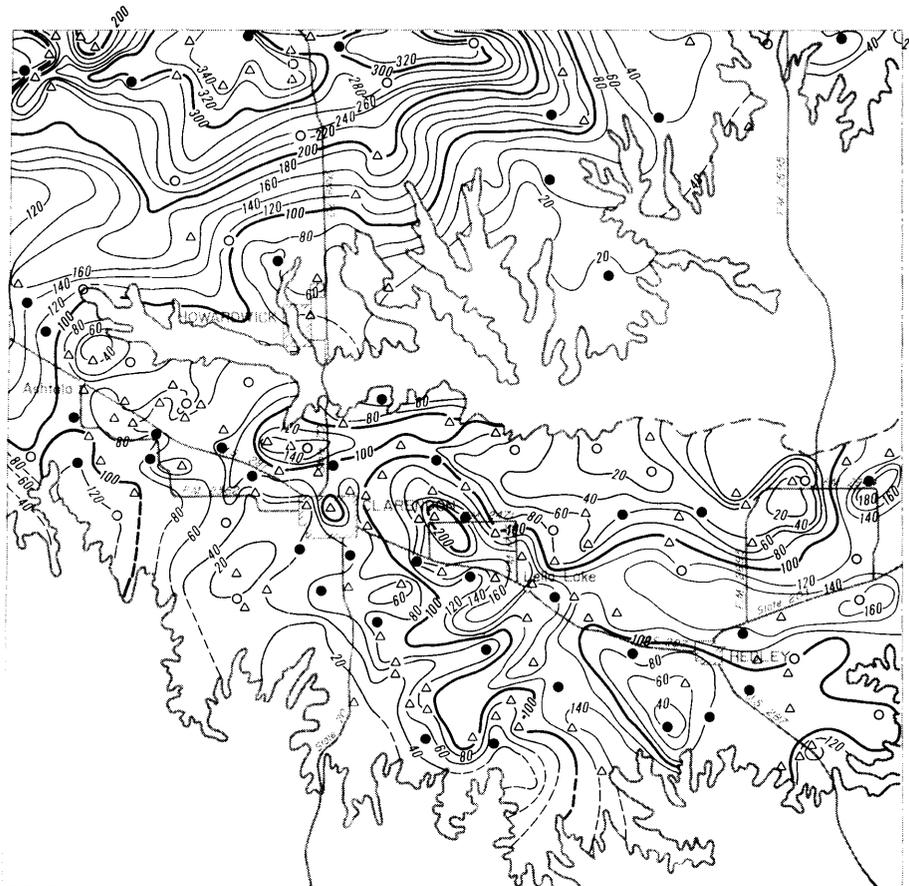
Datum is mean sea level

Note: Not all data points are presented  
which were used in contouring



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Donley County, Texas**

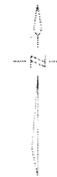


### EXPLANATION

- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- △ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

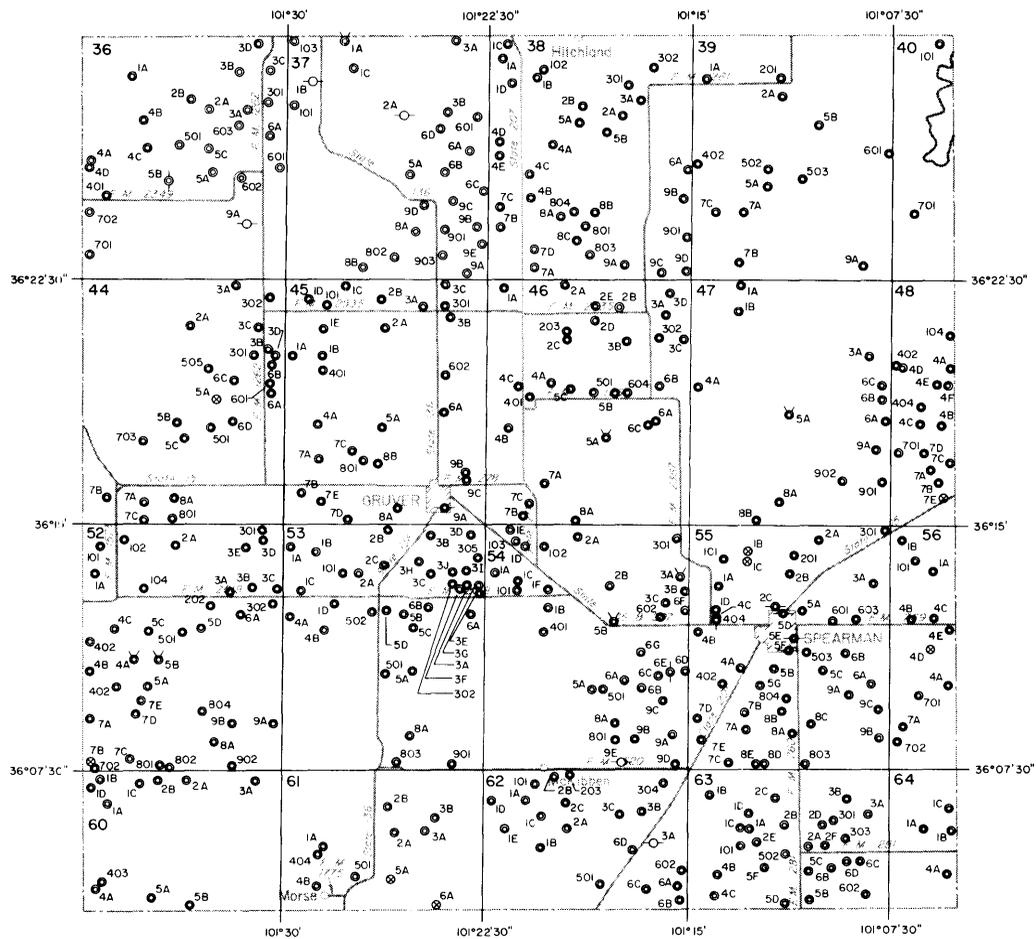
— 200 —  
 Line showing approximate saturated thickness of the High Plains Aquifer  
 Interval 20 feet

Note: Not all data points are presented which were used in contouring



Base adopted from county highway maps by the Texas Department of Highways and Public Transportation

## Approximate Saturated Thickness of the High Plains Aquifer, 1980, Donley County, Texas



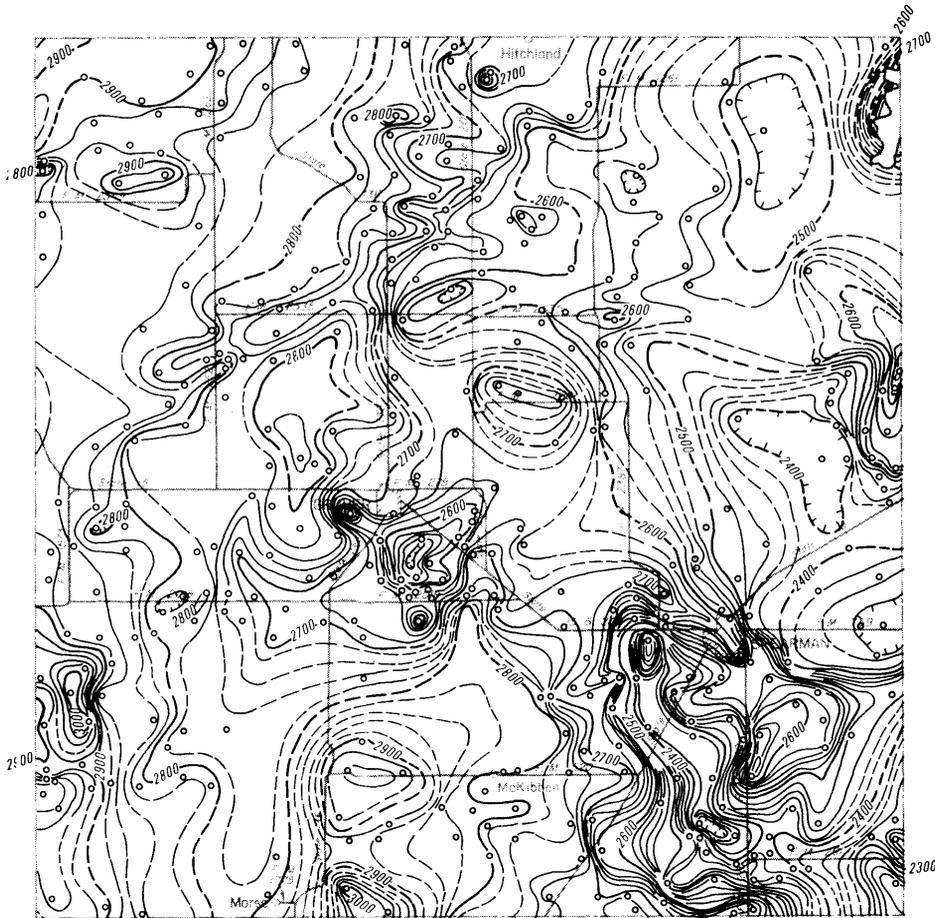
**EXPLANATION**

- |   |                            |         |  |
|---|----------------------------|---------|--|
| ○ | Public supply well         | ⊕ ⊗ ⊙ ⊚ | Unused or abandoned well   |
| ⊗ | Industrial well            | 201     | Last three digits of well number                                       |
| ○ | Irrigat on well            | 2A      | Temporary well number  |
| ○ | Domestic or livestock well |         | All wells in Hansford County are in 1-degree quadrangle number 03      |
| ⊕ | Oil or gas well            |         | Map completed by North Plains Ground Water Conservation District No. 2 |
| ⊗ | Test hole                  |         |  |



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Location of Control Wells, Hansford County, Texas**



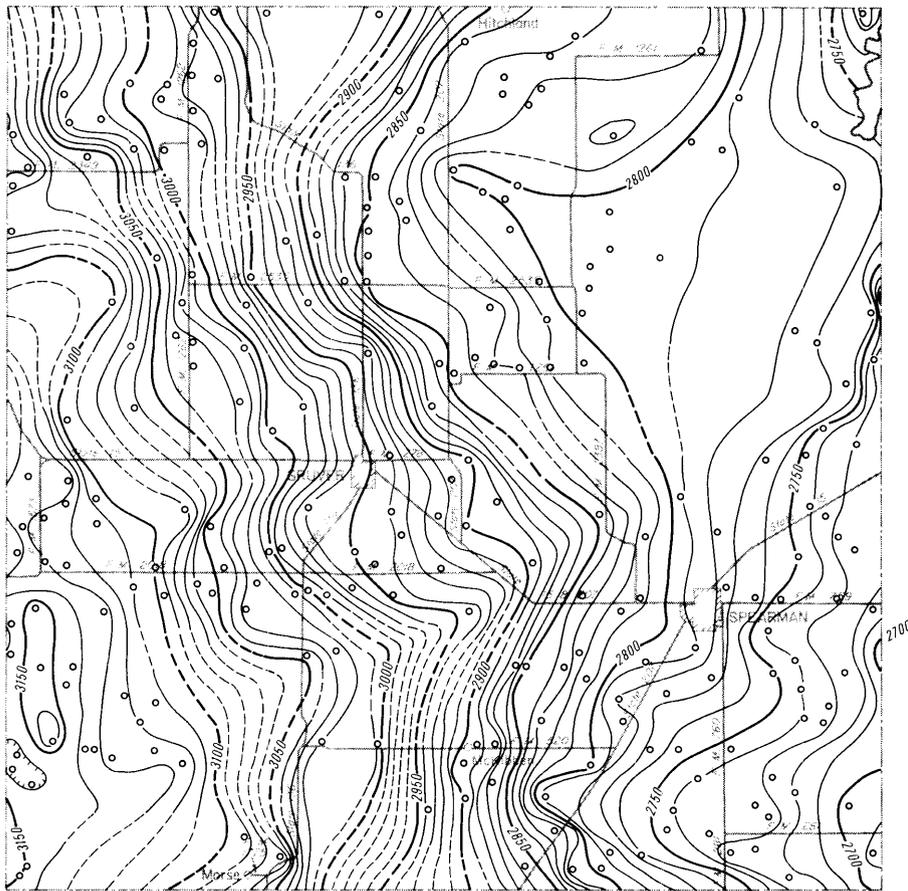
**EXPLANATION**

- Well used for control
- 2700—  
Line showing approximate altitude of the base of the High Plains Aquifer  
Dashed where control is limited  
Interval 20 feet  
Datum is mean sea level
- Note: Not all data points are presented which were used in contouring
- Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of the Base of the High Plains Aquifer, Hansford County, Texas**



**EXPLANATION**

○  
Well used for control

— 2900 —  
Line showing approximate altitude of  
water levels in the High Plains Aquifer  
Dashed where control is limited  
Interval 10 feet

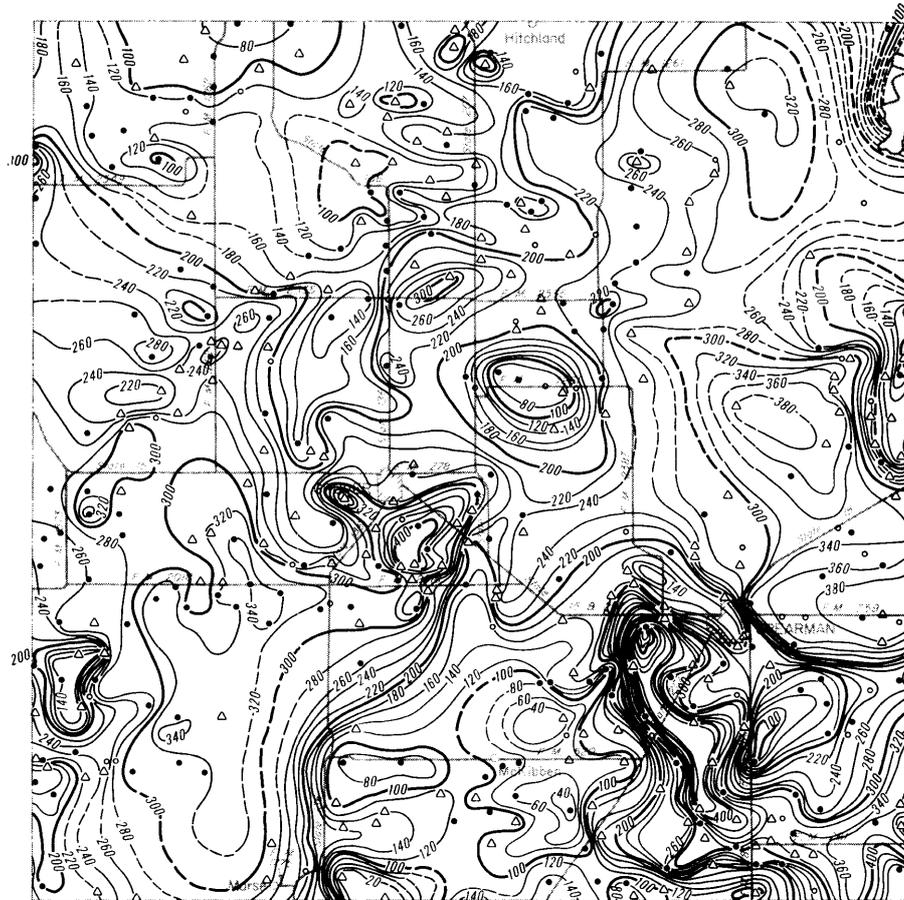
Datum is mean sea level

Note: Not all data points are presented  
which were used in contouring  
Map completed by North Plains Ground  
Water Conservation District No. 2



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Hansford County, Texas**



**EXPLANATION**

- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- △ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

———— 200 ————

Line showing approximate saturated thickness of the High Plains Aquifer

Interval 20 feet

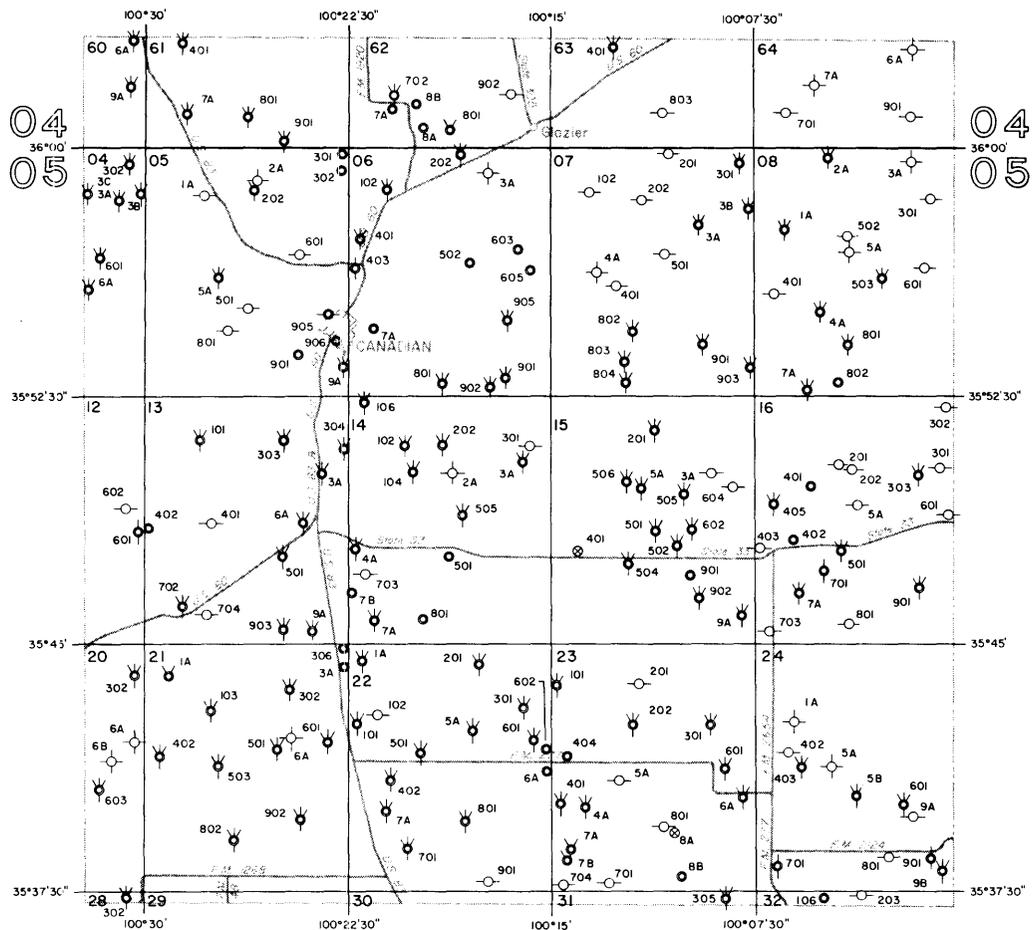
Note: Not all data points are presented which were used in contouring

Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Saturated Thickness of the High Plains Aquifer, 1980, Hansford County, Texas**



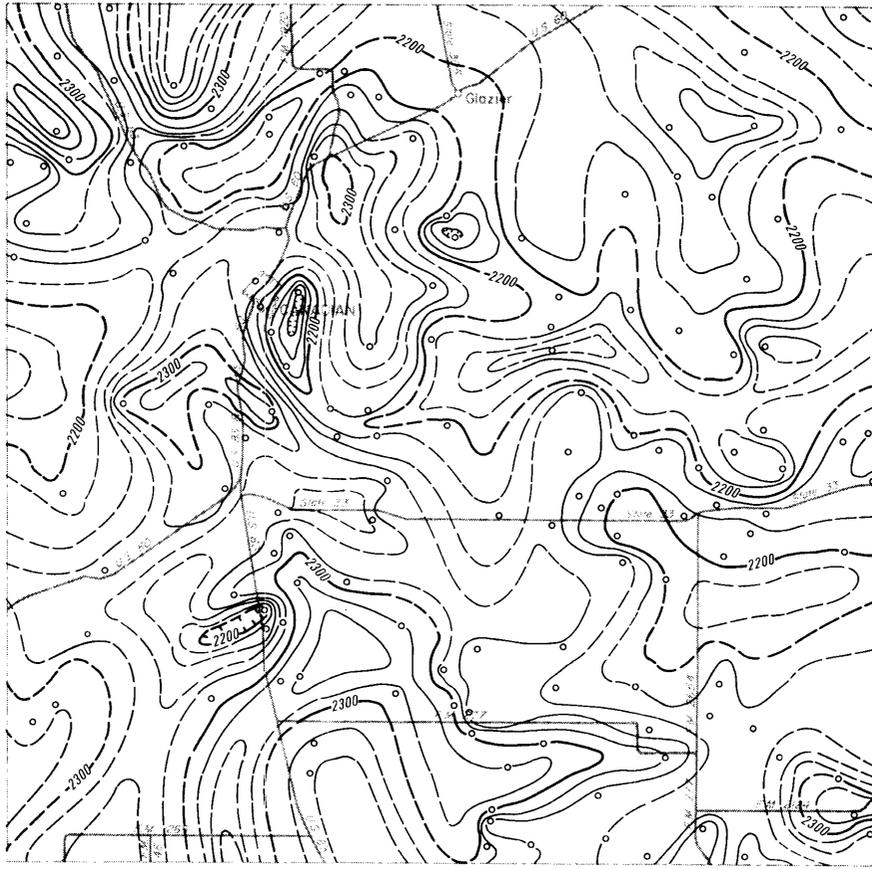
**EXPLANATION**

- |                            |                                  |
|----------------------------|----------------------------------|
|                            |                                  |
| Public supply well         | Test hole                        |
|                            |                                  |
| Industrial well            | Unused or abandoned well         |
|                            | 201                              |
| Irrigation well            | Last three digits of well number |
|                            | 2A                               |
| Domestic or livestock well | Temporary well number            |
|                            |                                  |
| Oil or gas well            |                                  |



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Location of Control Wells, Hemphill County, Texas**



**EXPLANATION**

○  
Well used for control  
— 2200 —

Line showing approximate altitude of the base  
of the High Plains Aquifer

Dashed where control is limited

Interval 20 feet

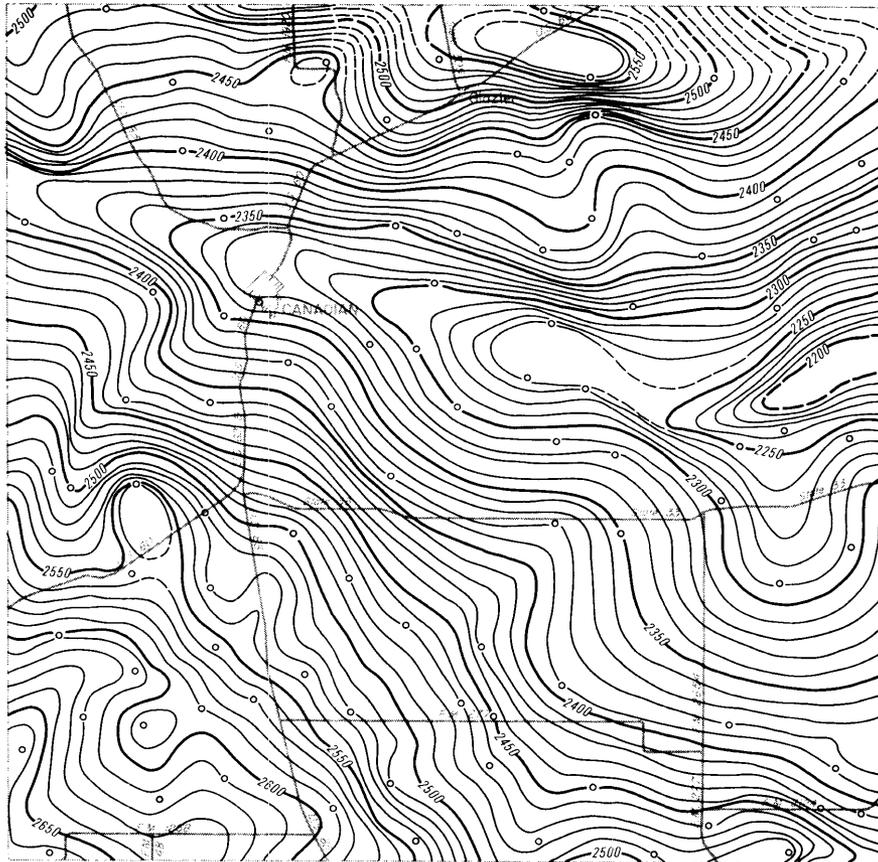
Datum is mean sea level

Note: Not all data points are presented  
which were used in contouring



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of the Base of the  
High Plains Aquifer, Hemphill County, Texas**



**EXPLANATION**

○  
Well used for control  
—— 2300 ——

Line showing approximate altitude of  
water levels in the High Plains Aquifer

Dashed where control is limited

Interval 10 feet

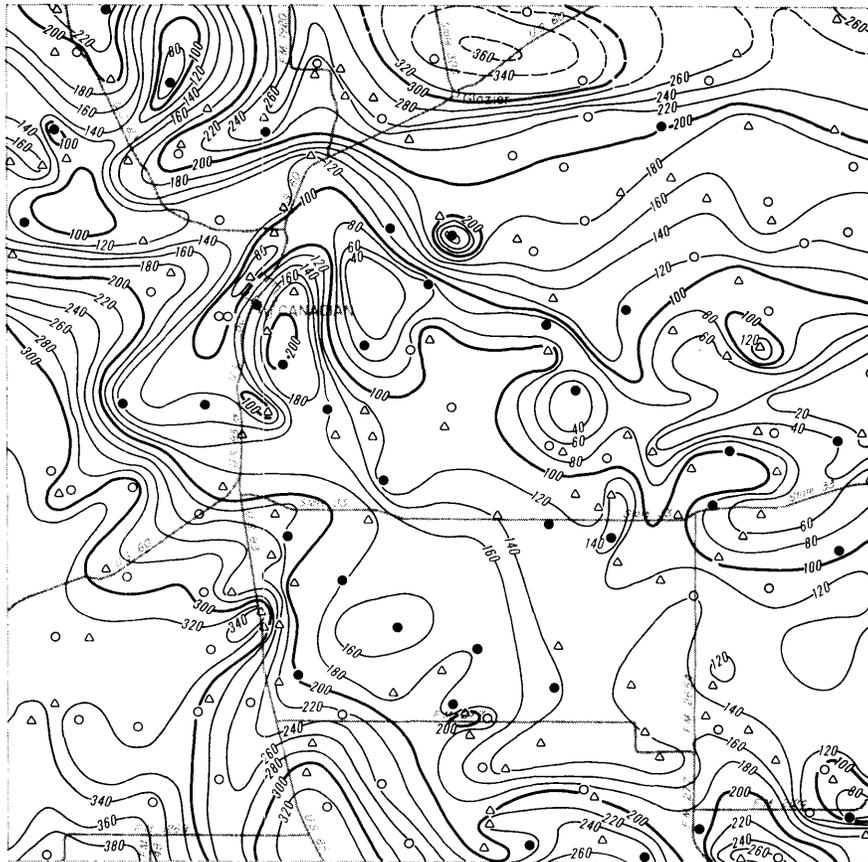
Datum is mean sea level

Note: Not all data points are presented  
which were used in contouring



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Hemphill County, Texas**



**EXPLANATION**

- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- ▲ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

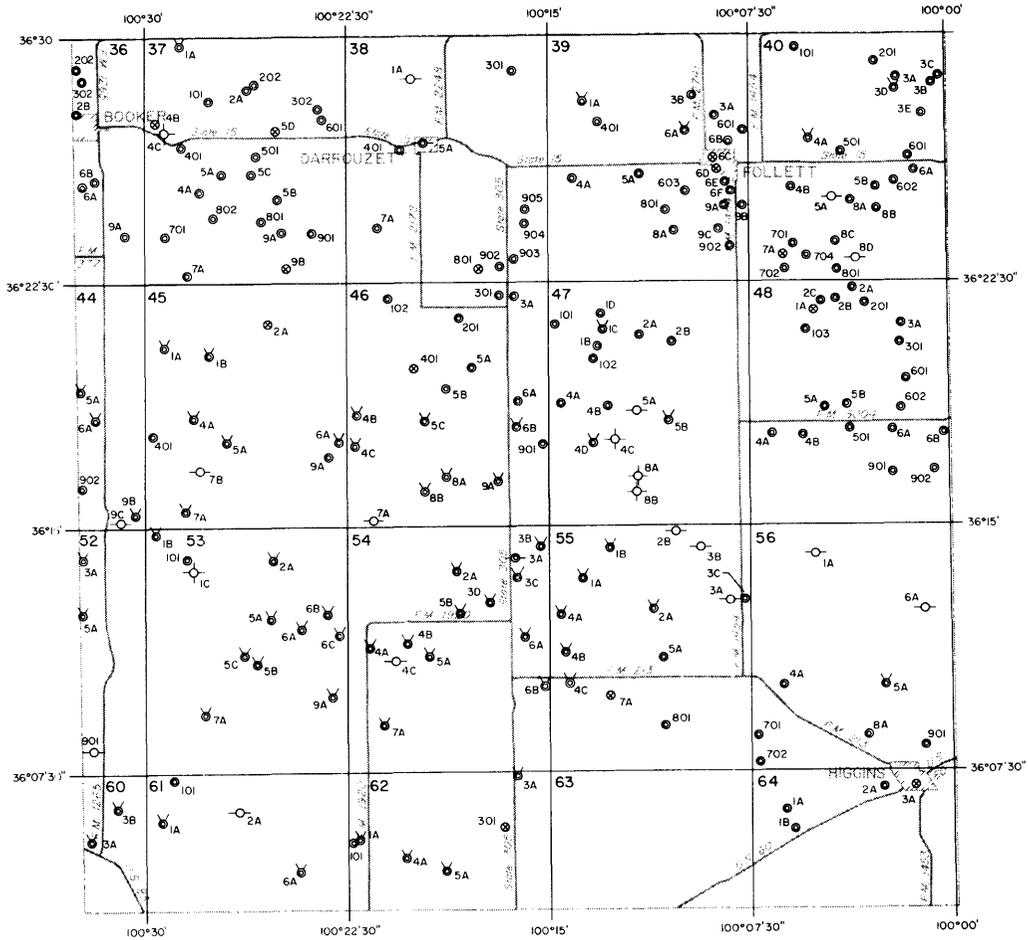
————— 300 —————  
 Line showing approximate saturated thickness of the High Plains Aquifer  
 Interval 20 feet

Note: Not all data points are presented which were used in contouring



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Saturated Thickness of the High Plains Aquifer, 1980, Hemphill County, Texas**



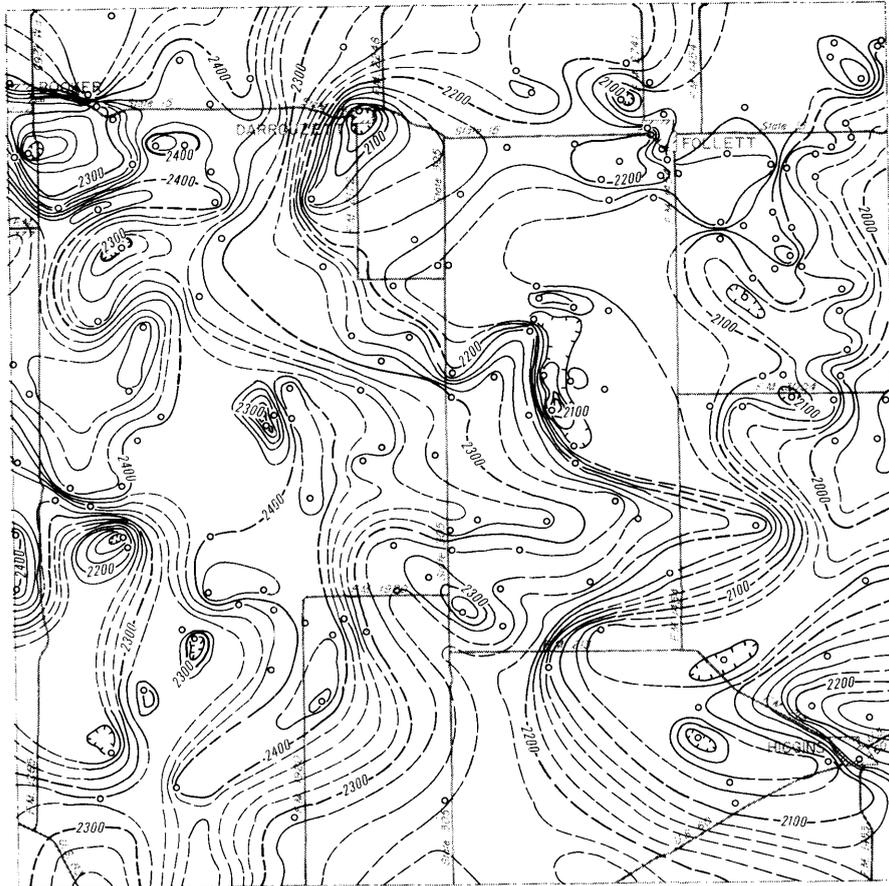
**EXPLANATION**

- |   |                            |  |                                  |
|---|----------------------------|--|----------------------------------|
| ○ | Public supply well         | ⊕ ⊕ ⊕  | Unused or abandoned well         |
| ⊗ | Industrial well            | 201  | Last three digits of well number |
| ○ | Irrigation well            | 2A   | Temporary well number            |
| ○ | Domestic or livestock well | All wells in Lipscomb County are in 1-degree quadrangle number 04      |                                  |
| ⊕ | Oil or gas well            | Map completed by North Plains Ground Water Conservation District No. 2 |                                  |
| ⊗ | Test hole                  | Water Conservation District No. 2                                      |                                  |



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Location of Control Wells, Lipscomb County, Texas**



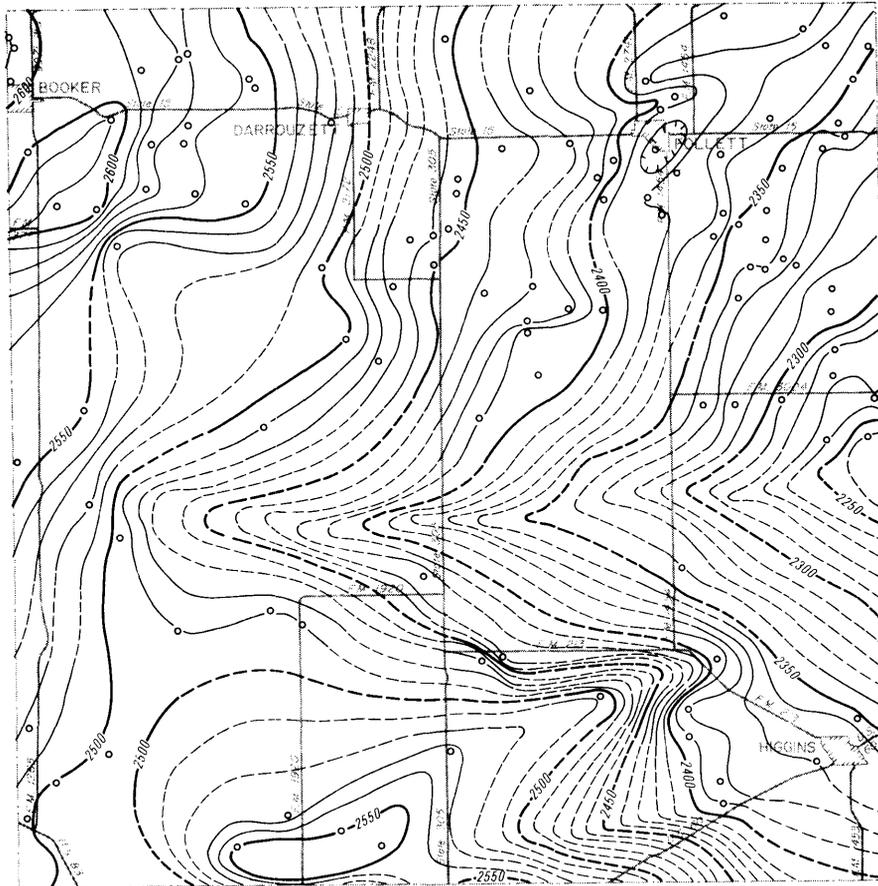
**EXPLANATION**

- Well used for control
- 2200 —  
Line showing approximate altitude of the base  
of the High Plains Aquifer
- - - -  
Dashed where control is limited
- Interval 20 feet
- Datum is mean sea level
- Note: Not all data points are presented  
which were used in contouring
- Map completed by North Plains Ground  
Water Conservation District No. 2



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of the Base of the  
High Plains Aquifer, Lipscomb County, Texas**



**EXPLANATION**

○  
Well used for control  
—— 2400 ——

Line showing approximate altitude of water levels in the High Plains Aquifer

Dashed where control is limited  
Interval 10 feet

Datum is mean sea level

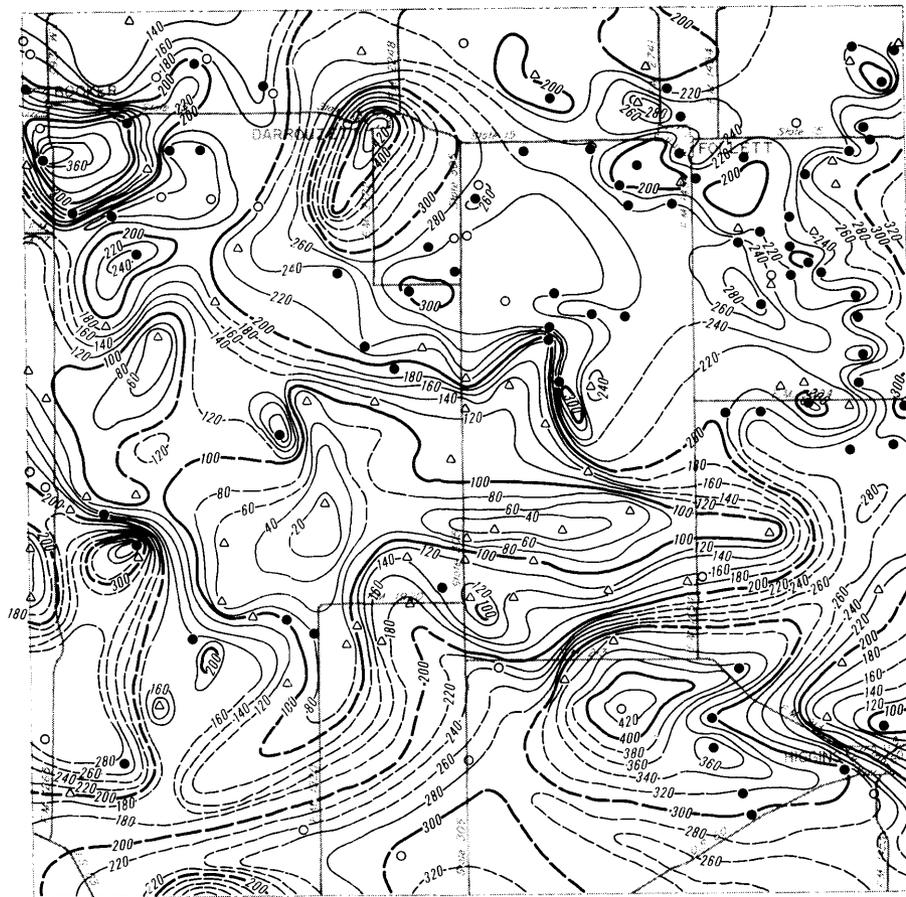
Note: Not all data points are presented which were used in contouring

Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Lipscomb County, Texas**



### EXPLANATION

- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- △ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

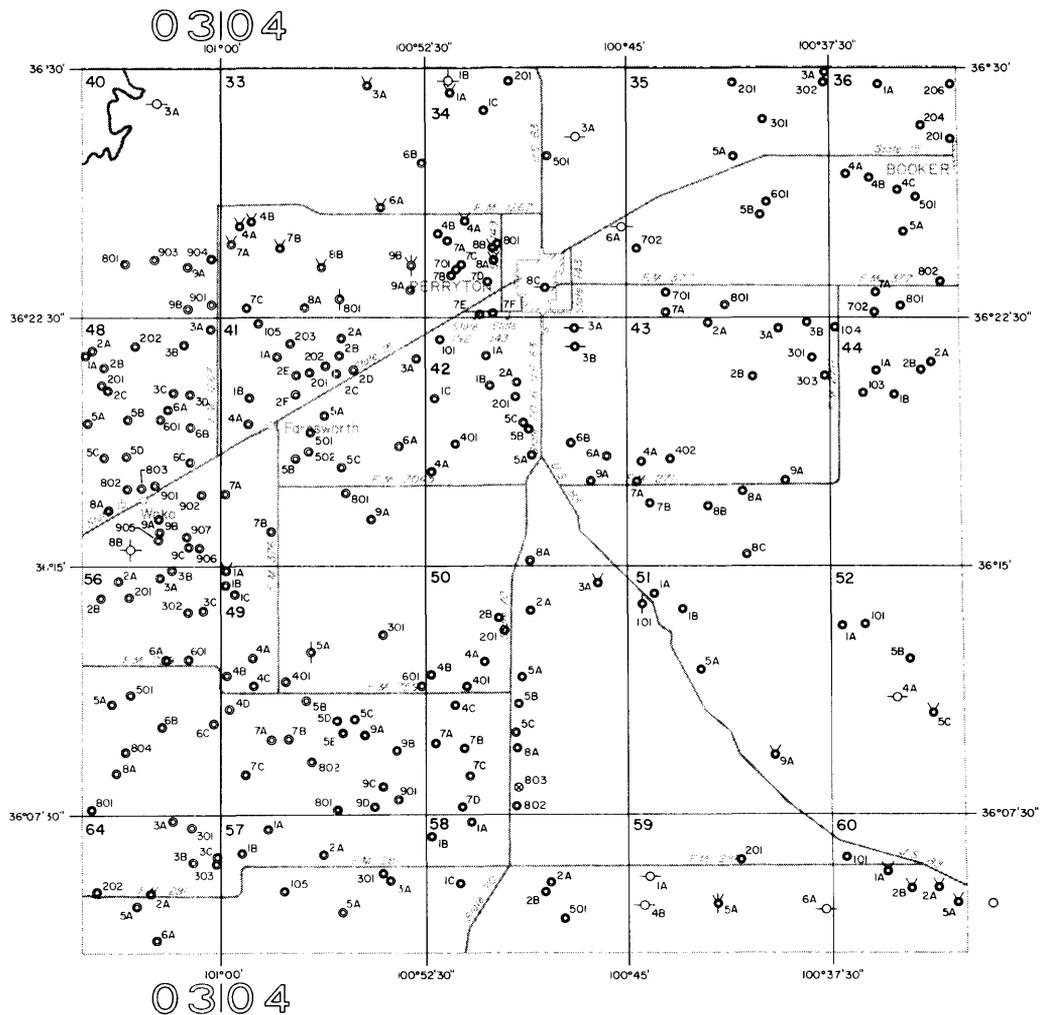
— 200 —  
 Line showing approximate saturated thickness of the High Plains Aquifer  
 Interval 20 feet

Note: Not all data points are presented which were used in contouring  
 Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

## Approximate Saturated Thickness of the High Plains Aquifer, 1980, Lipscomb County, Texas



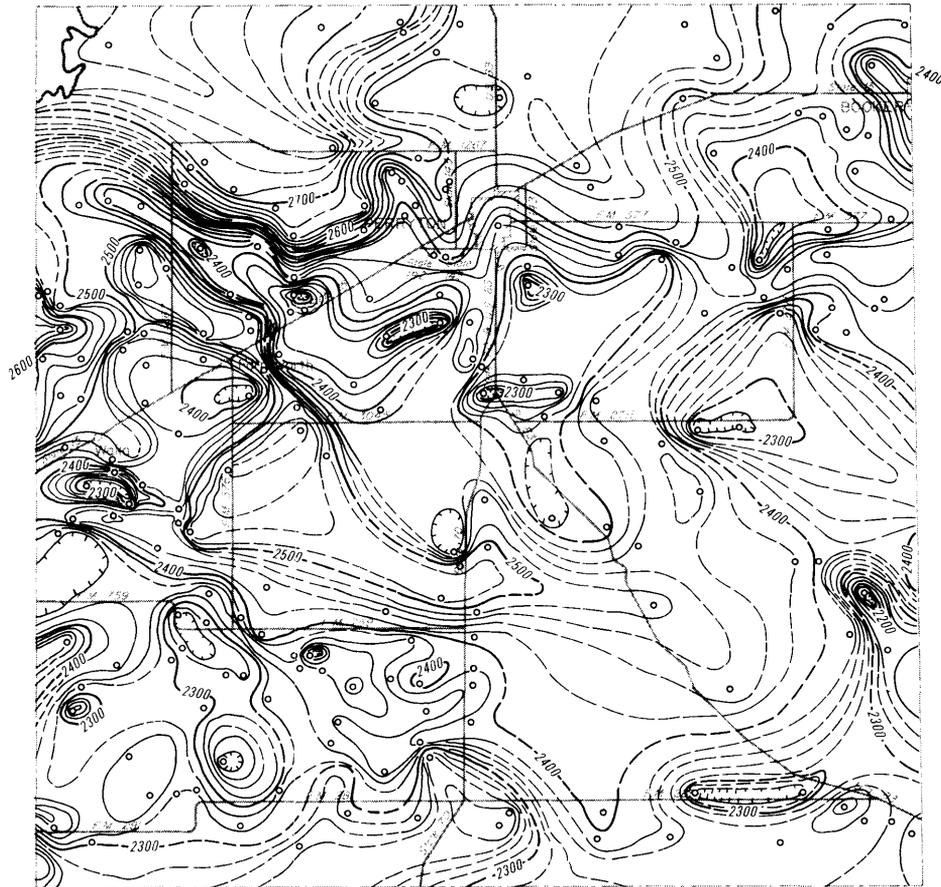
**EXPLANATION**

- |   |                            |  |                                  |
|---|----------------------------|--|----------------------------------|
| ○ | Public supply well         | ⊕ ⊗ ⊙  | Unused or abandoned well         |
| ⊗ | Industrial well            | 201  | Last three digits of well number |
| ○ | Irrigation well            | 2A   | Temporary well number            |
| ○ | Domestic or livestock well | Map completed by North Plains Ground Water Conservation District No. 2 |                                  |
| ⊕ | Oil or gas well            |  |                                  |
| ⊗ | Test hole                  |  |                                  |



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Location of Control Wells, Ochiltree County, Texas**



**EXPLANATION**

○  
Well used for control  
—— 2400 ——

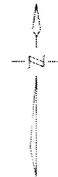
Line showing approximate altitude of the base of the High Plains Aquifer

Dashed where control is limited  
Interval 20 feet

Datum is mean sea level

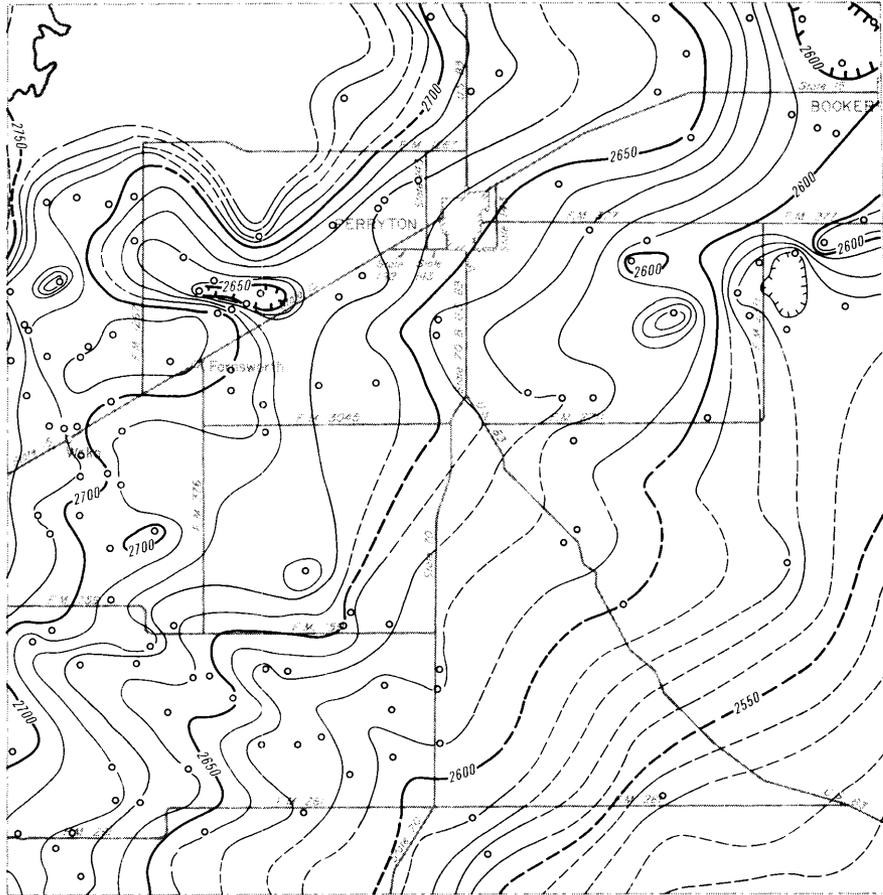
Note: Not all data points are presented which were used in contouring

Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of the Base of the High Plains Aquifer, Ochiltree County, Texas**



**EXPLANATION**

○  
Well used for control  
—— 2600 ——

Line showing approximate altitude of  
water levels in the High Plains Aquifer

Dashed where control is limited  
Interval 10 feet

Datum is mean sea level

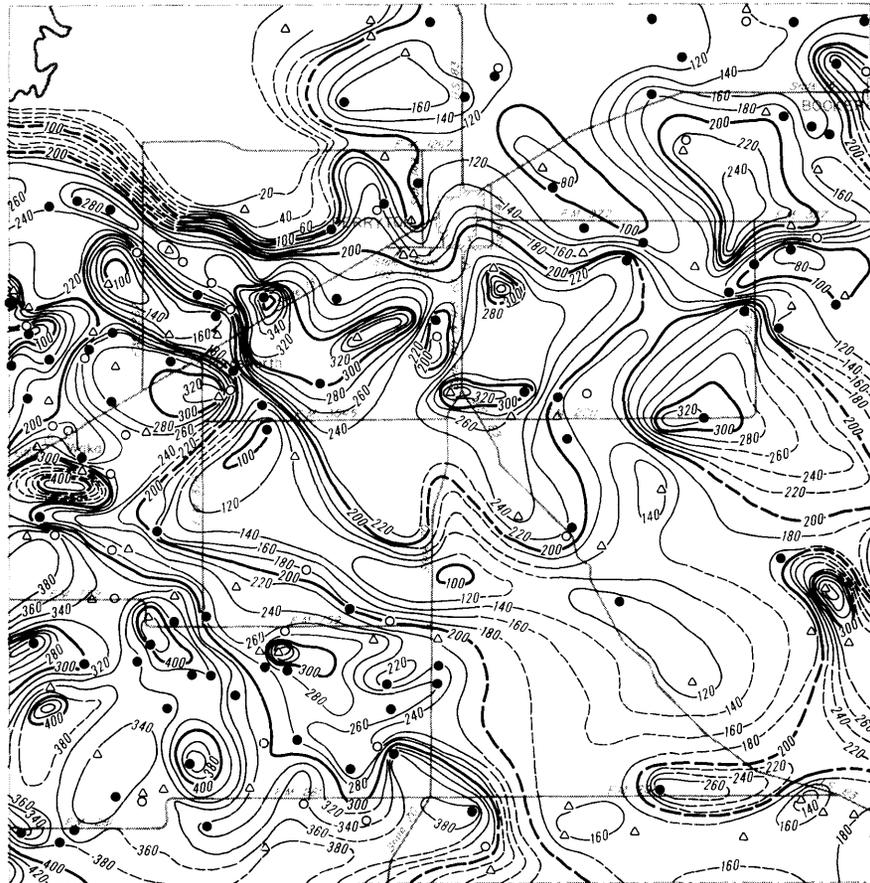
Note: Not all data points are presented  
which were used in contouring  
Map completed by North Plains Ground

Water Conservation District No. 2



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Ochiltree County, Texas**



**EXPLANATION**

- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- △ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

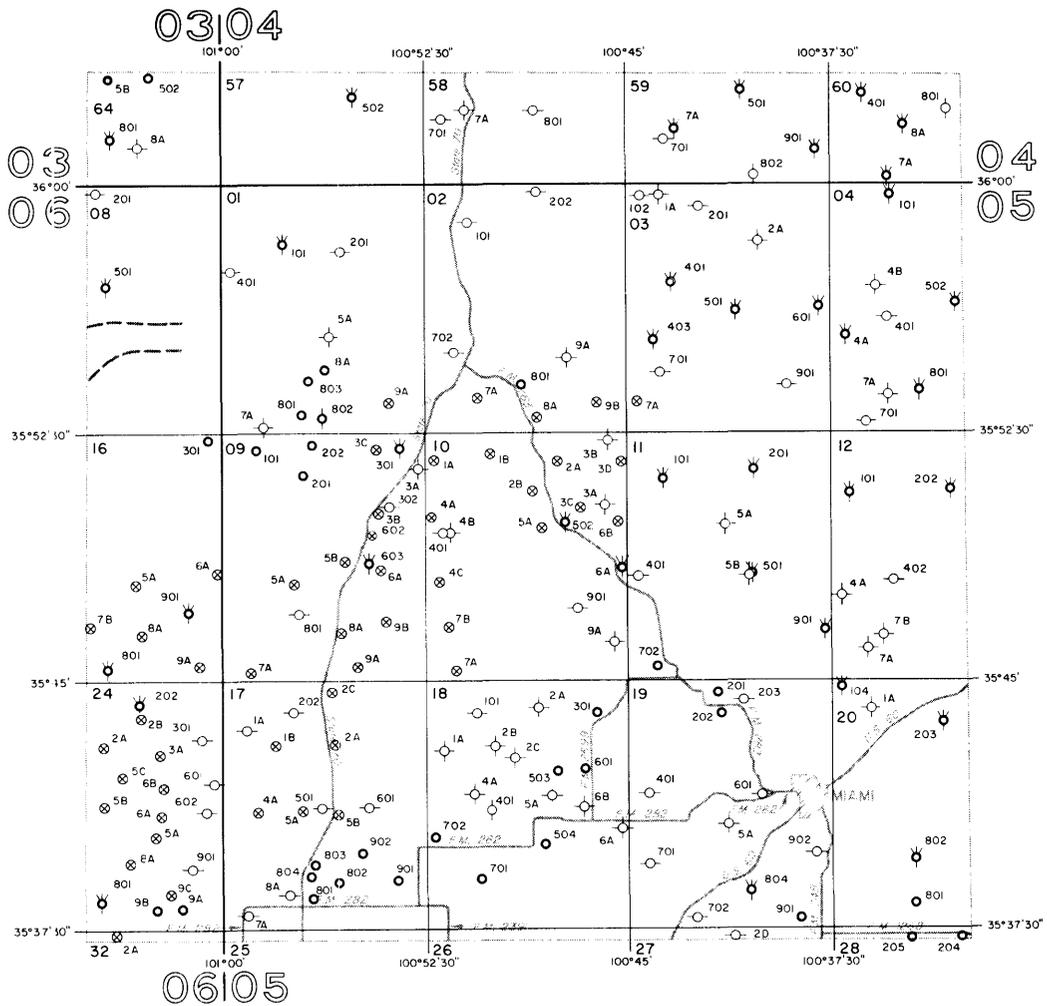
— 300 —  
 Line showing approximate saturated thickness of the High Plains Aquifer  
 Interval 20 feet

Note: Not all data points are presented which were used in contouring  
 Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Saturated Thickness of the High Plains Aquifer, 1980, Ochiltree County, Texas**



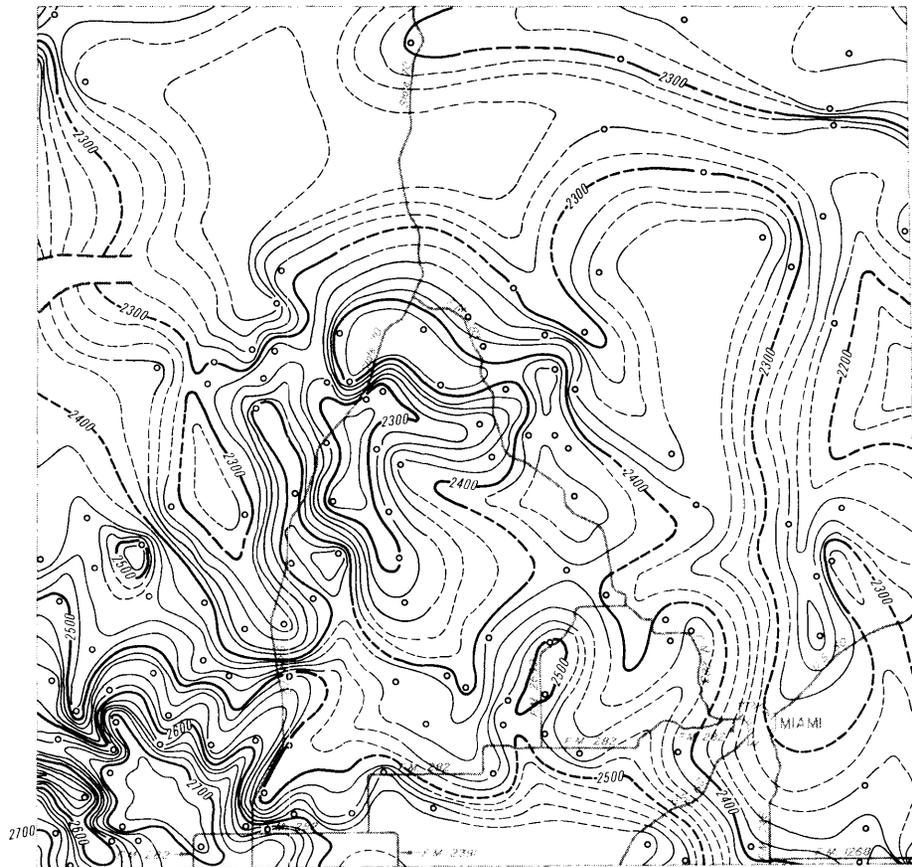
**EXPLANATION**

- |                            |                                  |
|----------------------------|----------------------------------|
|                            |                                  |
| Public supply well         | Test hole                        |
|                            |                                  |
| Industrial well            | Unused or abandoned well         |
|                            | 201                              |
| Irrigation well            | Last three digits of well number |
|                            | 2A                               |
| Domestic or livestock well | Temporary well number            |
|                            |                                  |
| Oil or gas well            |                                  |



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Location of Control Wells, Roberts County, Texas**



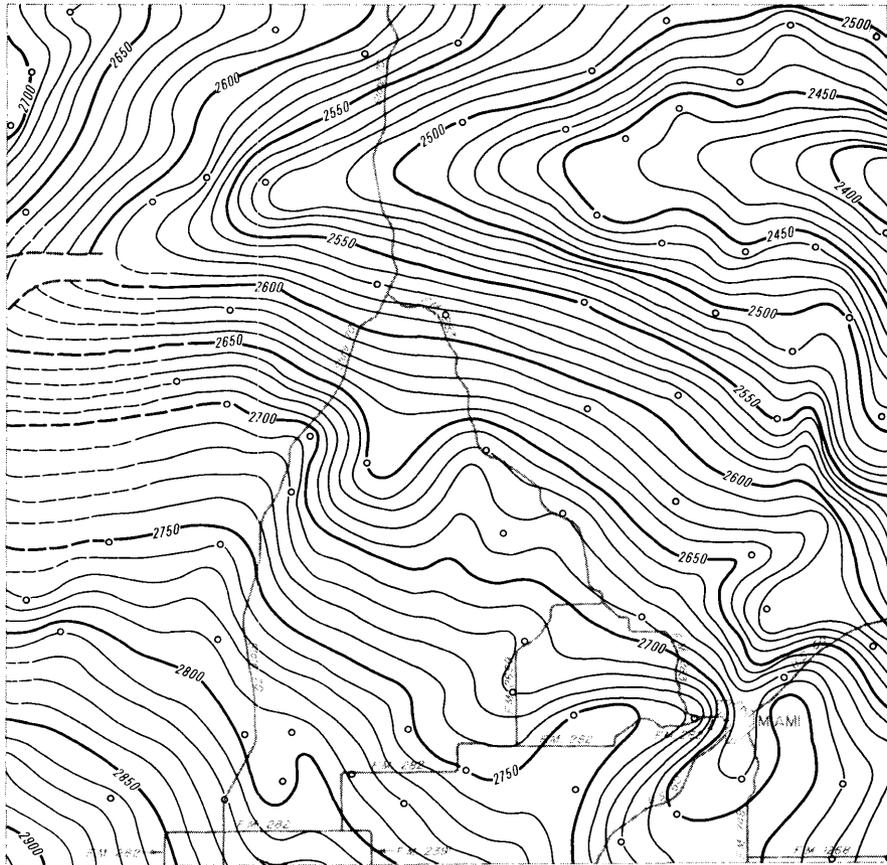
**EXPLANATION**

- Well used for control
- 2400 —  
Line showing approximate altitude of the base  
of the High Plains Aquifer
- Dashed where control is limited
- Interval 20 feet
- Datum is mean sea level
- Note: Not all data points are presented  
which were used in contouring



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of the Base of the  
High Plains Aquifer, Roberts County, Texas**



**EXPLANATION**

○  
Well used for control  
—— 2400 ——

Line showing approximate altitude of  
water levels in the High Plains Aquifer

Dashed where control is limited  
Interval 10 feet

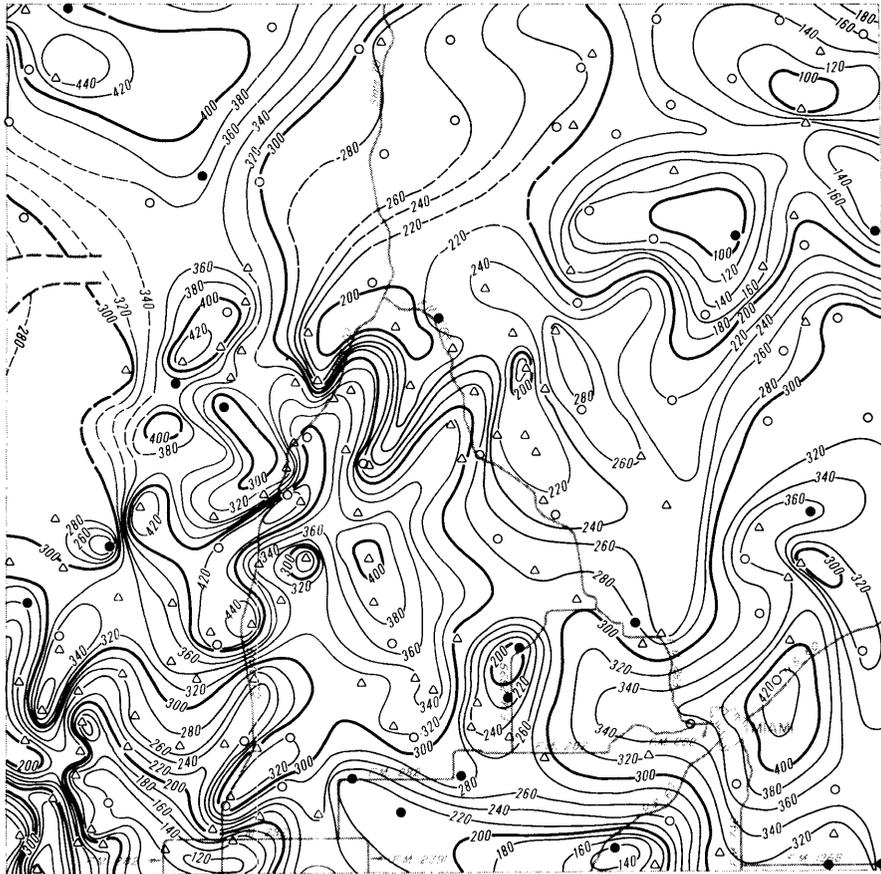
Datum is mean sea level

Note: Not all data points are presented  
which were used in contouring



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Roberts County, Texas**



### EXPLANATION

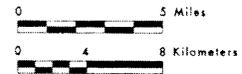
- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- △ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

— 200 —

Line showing approximate saturated thickness of the High Plains Aquifer

Interval 20 feet

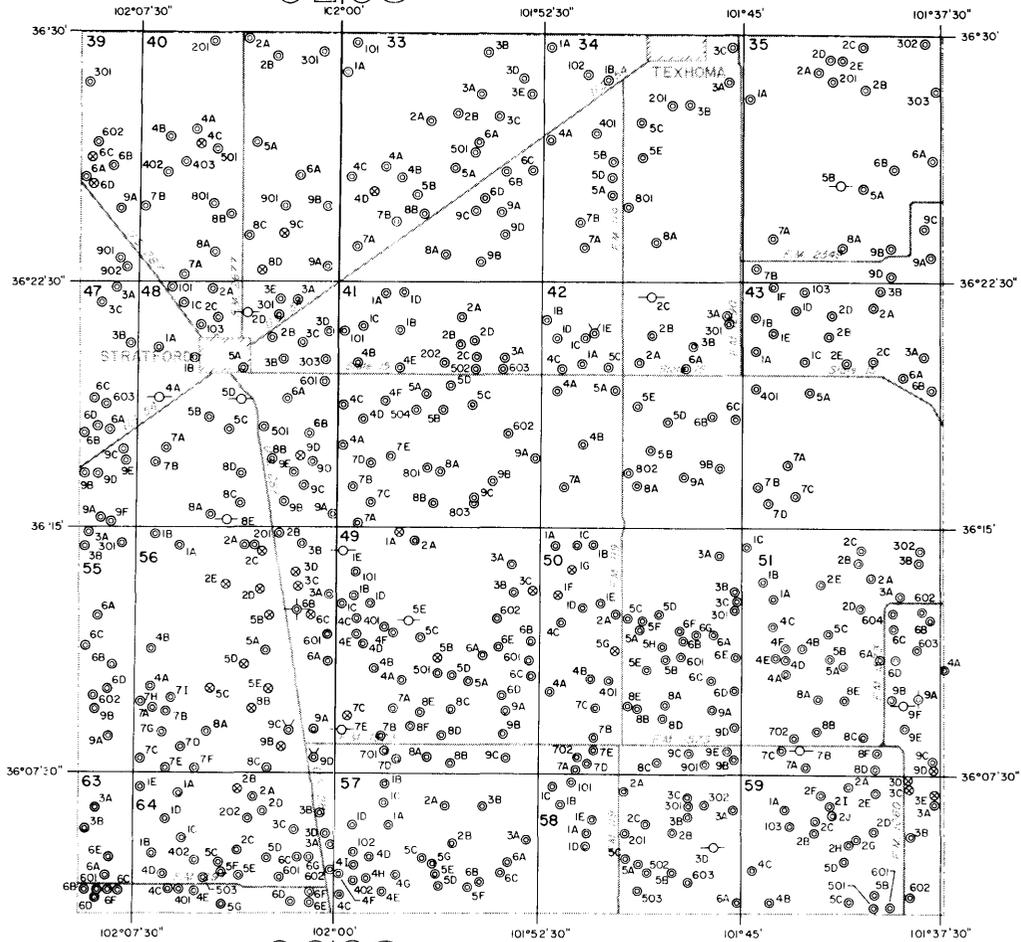
Note: Not all data points are presented which were used in contouring



Base adopted from county highway maps by the Texas Department of Highways and Public Transportation

## Approximate Saturated Thickness of the High Plains Aquifer, 1980, Roberts County, Texas

02103



02103

EXPLANATION

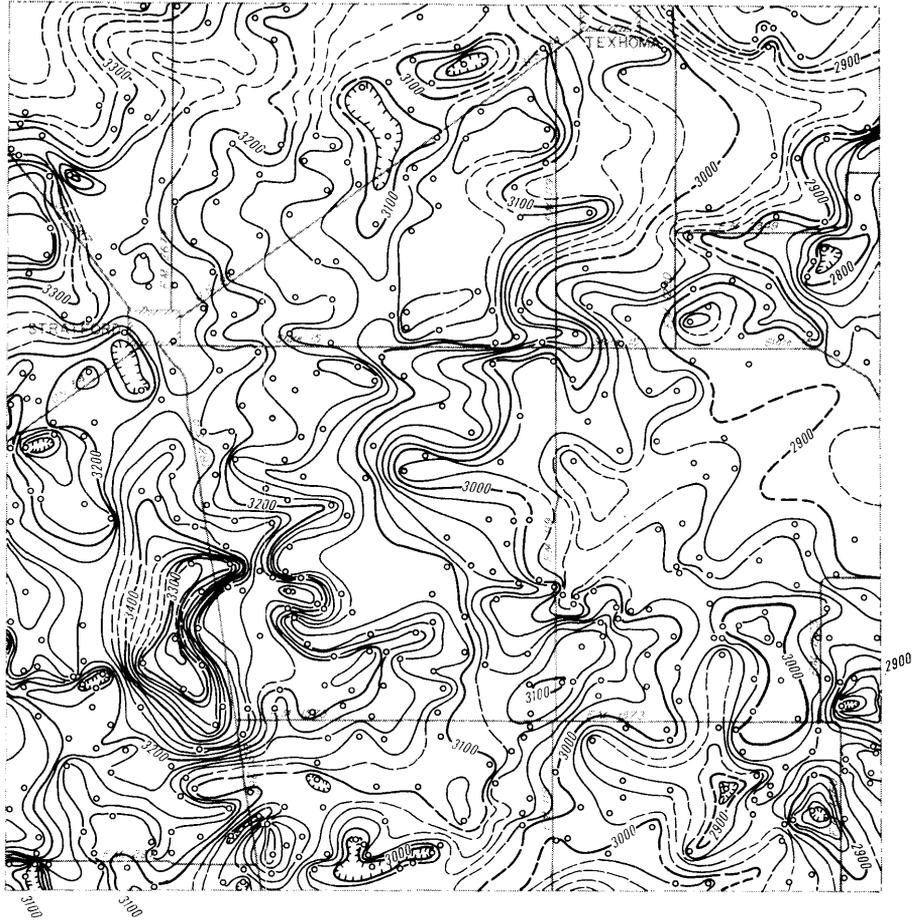
- ⊙ Public supply well
- ⊙ Industrial well
- ⊙ Irrigation well
- ⊙ Domestic or livestock well
- ⊙ Oil or gas well
- ⊙ Test hole
- ⊙ Unused or abandoned well
- 201 Last three digits of well number
- 2A Temporary well number

Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

Location of Control Wells, Sherman County, Texas



**EXPLANATION**

○  
Well used for control  
—3000—

Line showing approximate altitude of the base  
of the High Plains Aquifer

Dashed where control is limited

Interval 20 feet

Datum is mean sea level

Note: Not all data points are presented  
which were used in contouring

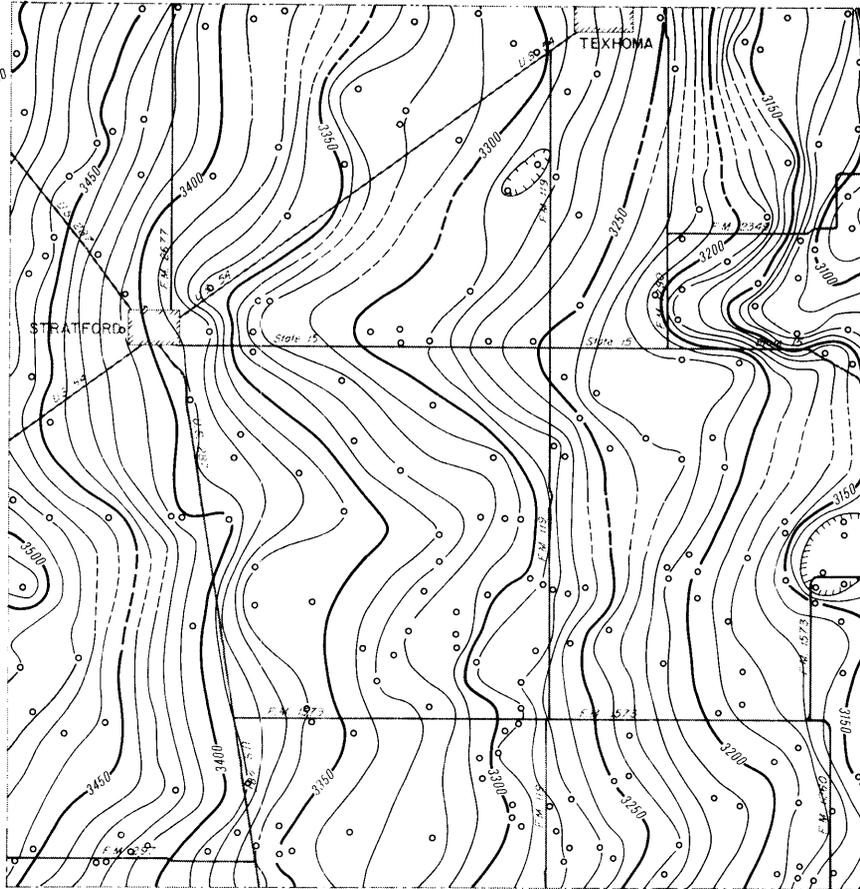
Map completed by North Plains Ground

Water Conservation District No. 2



Base adapted from county highway maps  
by the Texas Department of Highways  
and Public Transportation

**Approximate Altitude of the Base of the  
High Plains Aquifer, Sherman County, Texas**



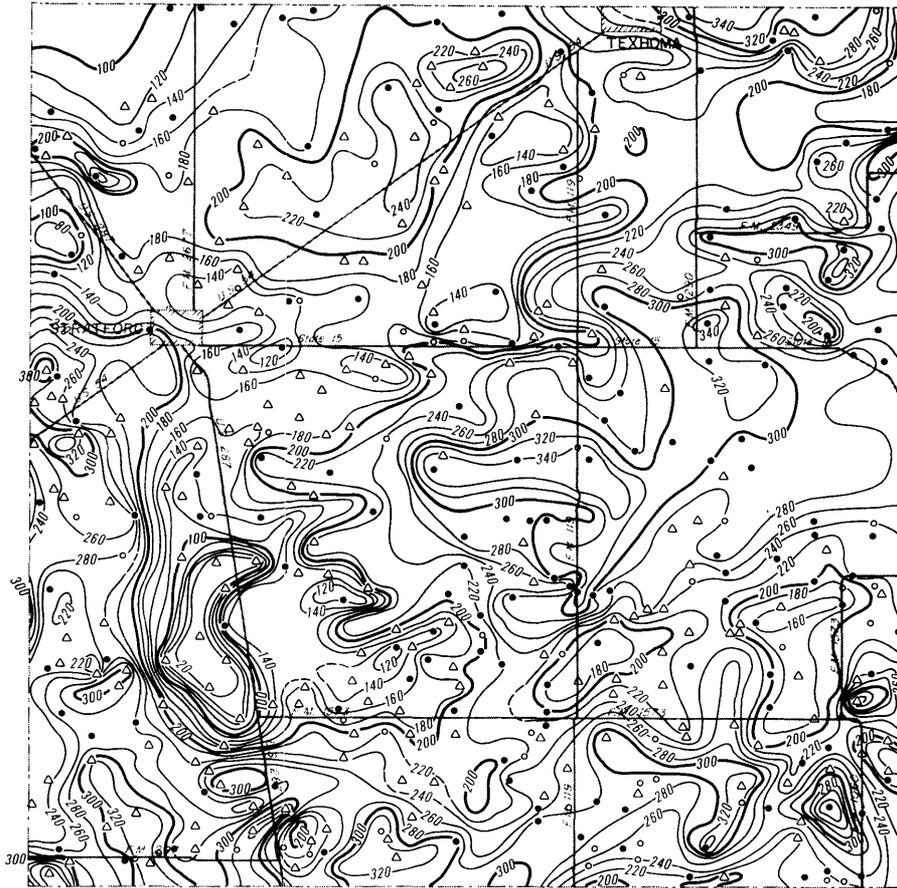
**EXPLANATION**

- Well used for control
- 3200 —  
Line showing approximate altitude of water levels in the High Plains Aquifer  
Dashed where control is limited  
Interval 10 feet
- Datum is mean sea level
- Note: Not all data points are presented which were used in contouring
- Map completed by North Plains Ground Water Conservation District No. 2



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Sherman County, Texas**



**EXPLANATION**

- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- ▲ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

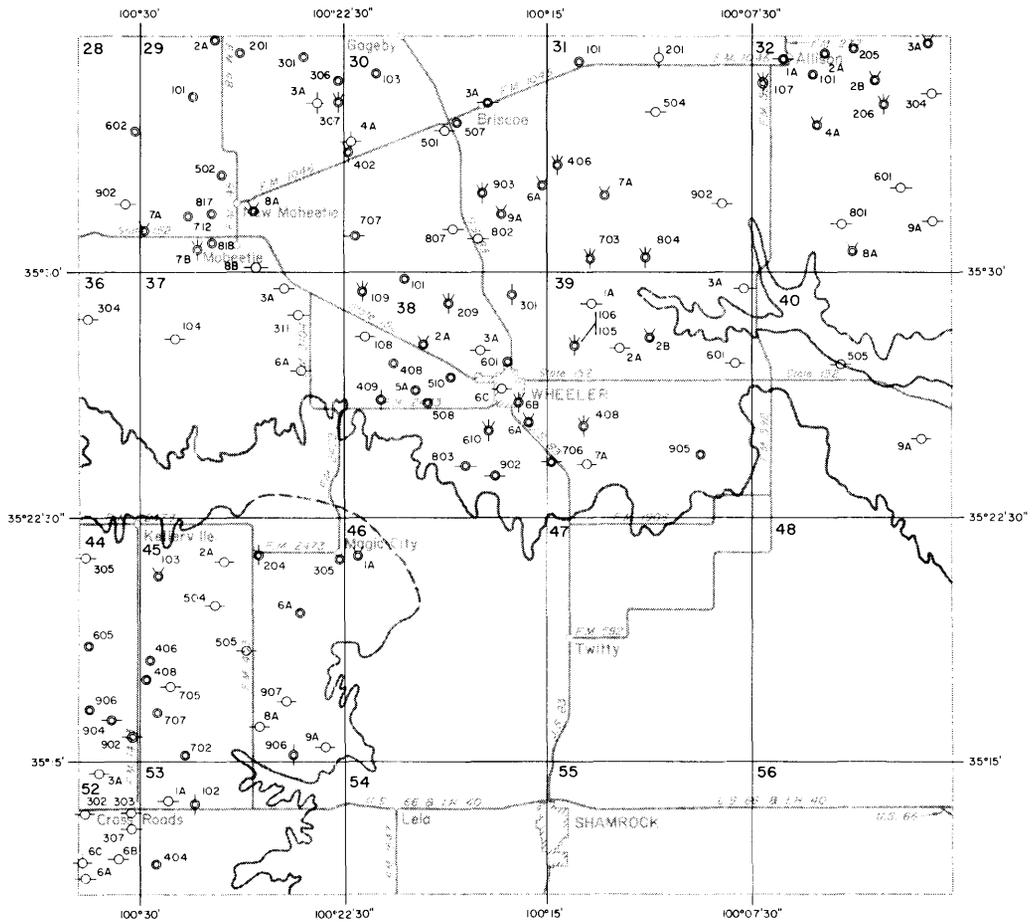
—— 160 ——  
 Line showing approximate saturated thickness of the High Plains Aquifer  
 Interval 20 feet

Note: Not all data points are presented which were used in contouring  
 Map completed by North Plains Ground Water Conservation District No. 2



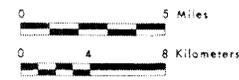
Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Saturated Thickness of the High Plains Aquifer, 1980, Sherman County, Texas**



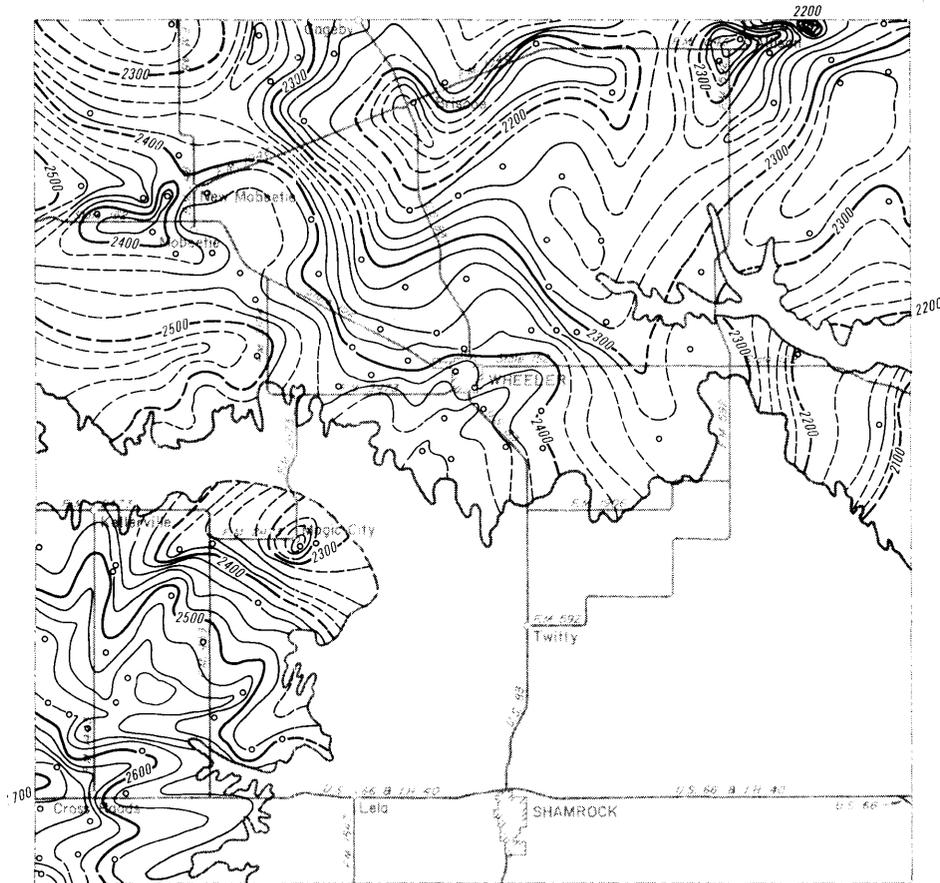
**EXPLANATION**

- Public supply well
- ⊗ Industrial well
- Irrigation well
- Domestic or livestock well
- ◇ Oil or gas well
- ⊗ Test hole
- ⊗ Unused or abandoned well
- 201 Last three digits of well number
- 2A Temporary well number
- All wells in Wheeler County are in 1-degree quadrangle number 05



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Location of Control Wells, Wheeler County, Texas**



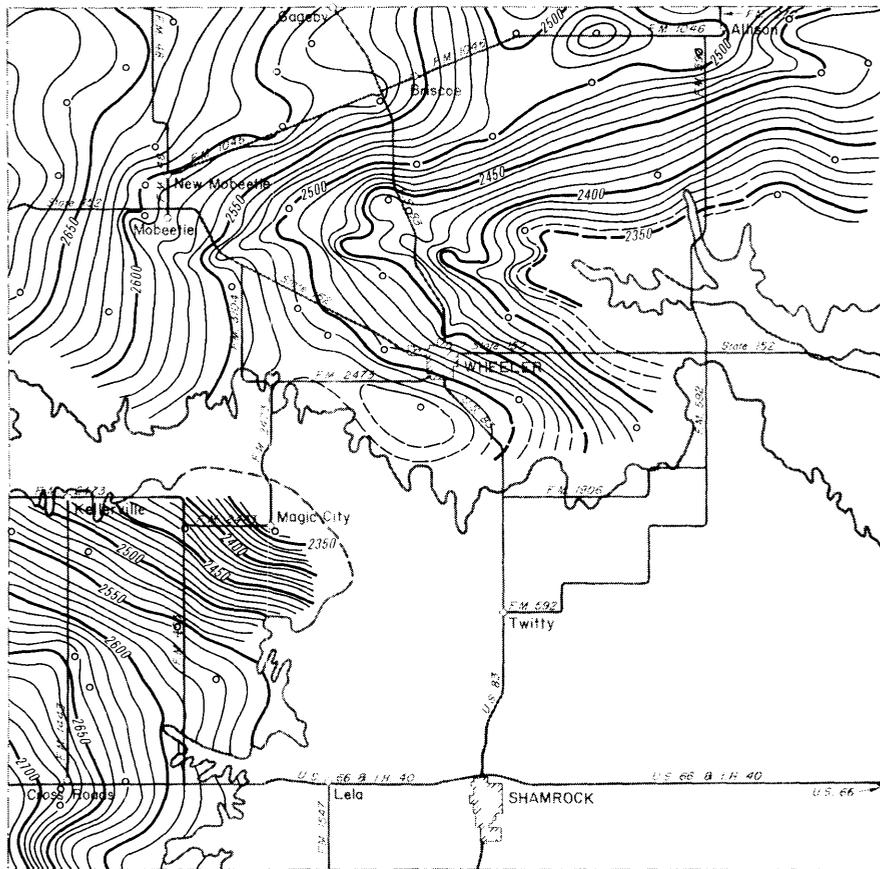
**EXPLANATION**

- Well used for control
- 2400 —  
Line showing approximate altitude of the base of the High Plains Aquifer
- - - - -  
Dashed where control is limited
- Interval 20 feet
- Datum is mean sea level
- Note: Not all data points are presented which were used in contouring



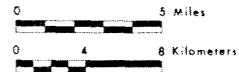
Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of the Base of the High Plains Aquifer, Wheeler County, Texas**



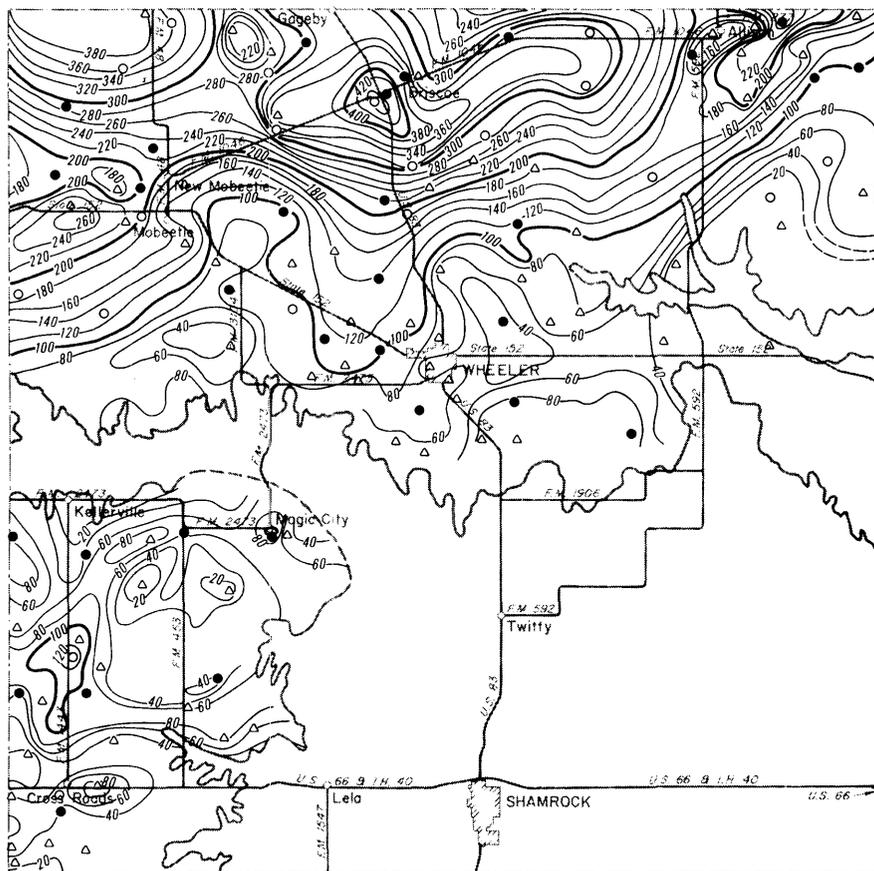
**EXPLANATION**

- Well used for control
- 2600 —  
Line showing approximate altitude of water levels in the High Plains Aquifer  
Dashed where control is limited  
Interval 10 feet
- Datum is mean sea level
- Note: Not all data points are presented which were used in contouring



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Altitude of Water Levels in the High Plains Aquifer,  
Winter 1979-80, Wheeler County, Texas**



**EXPLANATION**

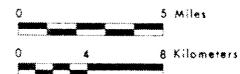
- Location of well having a Winter 1979-80 water-level elevation and a known elevation of base of aquifer
- △ Location of well having a known elevation of base of aquifer and an estimated Winter 1979-80 water-level elevation
- Location of well having a Winter 1979-80 water-level elevation and an estimated elevation of base of aquifer

———— 200 ————

Line showing approximate saturated thickness of the High Plains Aquifer

Interval 20 feet

Note: Not all data points are presented which were used in contouring



Base adapted from county highway maps by the Texas Department of Highways and Public Transportation

**Approximate Saturated Thickness of the High Plains Aquifer, 1980, Wheeler County, Texas**