THORPE WELL COMPANY
2340 SIXTH AVENUE
DES MOINES, IOWA

Drilled for City Water Works *at* Ft. Dodge, Iowa

Well is located ____ *miles N-E-S-W and* ____ *miles N-E-S-W from* ____

in the ____ ¼ ____ ¼ *Section* ____ *Township* ____ *Range* ____

Drilling started Autust 14, *19* 68 *Completed* October 16, *19* 70

Well No. 17 *Kind of Well* Drilled *Depth* ____ *Size hole started* 30" *in*

Finish 12" *G. P. M.* 2166 *Static Head* 190 *Pumping level from surface* 319'

Water was first encountered at ____ *in* ____ *Approx. Amt.* ____ *Temp.* ____

Remarks ____

(GIVE DETAILS OF PERFORATED PIPE AND SEALS)

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
30"	29'	29'	0'	Steel		
22"	182'	182'	75'	Steel		
18"	531'	531'	0'	Steel		
12"	1000'	1500'	500'	Steel		

Driller Dick Nichols *From Surface to* ____ *feet*

Driller Albert Jackson *From* ____ *feet to* ____ *feet*

Driller Willie Miller *From* ____ *feet to* ____ *feet*

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
2	Top Soil	2
14	Sandy yellow clay	16
9	Shale	25
40	Grey limestone	65
55	Lime & shale streaks	120
94	Grey limestone	214
51	Lime & Gupsun	265
175	Lime - Hard	440
14	Snale - Green	454
331	Limestone	785
5	Shale	790
26	Limestone	816
17	Shale - Green	833
257	Limestone	1090
3	Shale	1093
196	Limestone	1289
5	Shale Green	1294
21	Lime	1315
15	Shale - Green	1330
8	Limestone	1338
46	Shale - Green	1384
20	Sand	1404
2	Shale - Green	1406
311	Sandy Lime - Hard	1717
38	Limestone	1755
5	Lime - Sandy	1760
58	Sand stone	1818
4	Shale - Green	1822
62	Sandy Lime	1880

(over)

Amount in Feet	Kind of Soil or Formation	Total Depth Feet
48	Lime Hard	1928
2	Shale - Green	1930
45	Lime Hard	1975
6	Lime & Shale breaks	1981

DEPARTMENT OF MUNICIPAL UTILITIES

CITY OF FORT DODGE, IOWA / MUNICIPAL BUILDING / FORT DODGE, IOWA 50501
573-7156 / AREA CODE 515 / VINCENT B. GARDNER, MANAGER

May 30, 1973

Mr. Paul J. Horick, Chief
Groundwater Geology
Iowa Geological Survey
16 West Jefferson Street
Iowa City, Iowa 52240

Dear Mr. Horick:

I am enclosing a copy of the pump test record of the Fort Dodge City Well No. 17 and a copy of the soil information and record of permanent pipe.

The pump test record indicates the testing on the dates of September 3, 4, 5, 6, 7, 8 and 9 of 1970. The soil information form shows the well yield at 2,166 gallons per minute with a static head of 190 feet and a pumping level of 319 feet under date of October 16, 1970.

Please accept my apologies for failing to provide you with this information at the time of completion. If any further information is required, please contact me.

Very truly yours,

DEPARTMENT OF UTILITIES

Vincent B. Gardner
Manager

VBG:ks
Enclosures

GW Ft Dodge #17 folder

DEPARTMENT OF MUNICIPAL UTILITIES

CITY OF FORT DODGE, IOWA / MUNICIPAL BUILDING / FORT DODGE, IOWA 50501
573-7156 / AREA CODE 515 / VINCENT B. GARDNER, MANAGER

May 21, 1973

Mr. Paul J. Horick, Chief
Groundwater Geology
Iowa Geological Survey
16 West Jefferson Street
Iowa City, Iowa 52240

Dear Mr. Horick:

I have contacted the Thorpe Well Company of Des Moines asking for information on our Well No. 17 so that you may complete your files. As soon as this information reaches me, I will forward same to you.

Very truly yours,

DEPARTMENT OF UTILITIES

Vincent B. Gardner

Vincent B. Gardner
Manager

VBG:ks

May 14, 1973

Mr. Vincent Gardner, Manager
Dept. of Municipal Utilities
Municipal Building
Fort Dodge, Iowa 50501

Dear Mr. Gardner:

In going through our files I note that we have no information on the production and water levels in the Fort Dodge city well No. 17 drilled to a depth of 1980 feet in 1969. If you have a record of the final pumping test on this well I would very much appreciate a copy to complete our files.

Very truly yours,

Paul J. Horick
Chief of Groundwater Geology

PJH:jn

GW Ft. Dodge Gen Data
Webster Co.

June 2, 1970

Mr. Vincent B. Gardner, Manager
Department of Municipal Utilities
Municipal Building
Fort Dodge, Iowa 50501

Dear Mr. Gardner:

Relative to your letter of May 11 concerning the planned testing of the new Fort Dodge city well, we are most interested in the results of the test. However, because of staff commitments it is doubtful if we will be able to have an observer present.

In view of the hydrologic complexity and the number of wells in the area it is our feeling that a carefully planned and executed pumping test will be necessary to permit proper evaluation of the hydrologic conditions. Therefore we would suggest a meeting at a later date to plan such a test to be conducted after the peak water demands of the summer are past.

Your thoughts on the desirability of conducting a comprehensive test at a later date will be appreciated.

Very truly yours,

Orville J Van Eck
Assistant State Geologist

OVE:cs

ORV

DEPARTMENT OF MUNICIPAL UTILITIES

CITY OF FORT DODGE, IOWA / MUNICIPAL BUILDING / FORT DODGE, IOWA 50501
573-7156 / AREA CODE 515 / VINCENT B. GARDNER, MANAGER

IOWA GEOLOGICAL SURVEY
MAY 12 1970

May 11, 1970

Dr. Samuel J. Tuthill, Director
Iowa Geological Survey
Geological Survey Building
Iowa City, Iowa 52240

Dear Dr. Tuthill:

The City of Fort Dodge, Iowa, have under contract with the Thorpe Well Company a deep drilled water well. This well, which is nearing completion, penetrates the Jordan sandstone and has been developed by shooting and removal of loosened Jordan sand through use of an air lift.

It is now proposed to perform a pumping test to determine the well capacity, drawdown, and specific yield. At the same time it is desired to determine insofar as possible the extent of interference between the new well and the city's other two wells taking water from the Jordan. In past years your department has been keenly interested in such testing and has generally had a staff member present during such tests to observe and consult with the city in conducting such performance tests. We are wondering if your department would wish to be represented during the test? If so, we would attempt to schedule the test for a time that would be mutually acceptable to yourselves and the Thorpe Well Company.

Opinions have been expressed that the fault in the Fort Dodge vicinity may limit the recharge in the area and the overall available capacity of the three Jordan wells. For this reason, we feel that a comprehensive test should be performed since the results obtained may indicate the direction to be taken in providing for the city's future water supply.

Please advise as to whether or not your department would be interested in being in attendance.

Very truly yours,

DEPARTMENT OF UTILITIES

Vincent B. Gardner
Manager

VBG:ks
cc T. R. Lovell, Buell & Winter Engineering
J. W. Thorpe, Thorpe Well Company

IOWA GEOLOGICAL SURVEY
JUN 23 1969

NOTICE OF HEARING ON AN APPLICATION FOR
A PERMIT AUTHORIZING CONTINUED WITHDRAWALS
OF WATER IN WEBSTER COUNTY, IOWA

Notice is hereby given that there is now on file in the Office of the Iowa Natural Resources Council, James Grimes Building, Des Moines, Iowa, an application from the City of Fort Dodge for a permit authorizing continued withdrawals of water in the maximum quantity of 3,250 million gallons per year at a maximum rate of 13 million gallons per day throughout each year from existing wells in Section 19, T89N, R28W, and a new Jordan well in the NW 1/4 of Section 24, T89N, R29W, all within the limits of Fort Dodge, Webster County, Iowa, for municipal use within and without said city. This use of water is presently authorized by Iowa Water Permit #635 which expires August 30, 1969.

Notice is further given that a public hearing will be held at 2:00 P.M., DST, on July 18, 1969, at the Office of the Water Commissioner, James Grimes Building, Des Moines, Iowa, at which time and place or at any adjournment, the Water Commissioner or his Deputy will adopt evidence of record relating to this use of water and will accept further evidence either in support of or in opposition to the granting of a permit. Any person desiring to appear at the hearing herein announced must file a written appearance at the Office of the Water Commissioner on or before July 14, 1969.

#94-E-4-W-(826)5363
6/16/69 mh

R. G. Bullard
Water Commissioner

21118

IOWA GEOLOGICAL SURVEY
SEP 8 1969

STATE OF IOWA

OFFICE OF THE WATER COMMISSIONER

DETERMINATION ON APPLICATION: #94-E-4-W-(826)5363

FROM: City of Fort Dodge
Department of Municipal Utilities
Municipal Building
Fort Dodge, Iowa 50501

Filed: September 2, 1969.

Hearing held at Des Moines, Iowa, on July 18, 1969.

APPEARANCES:

None - applicant stood on application as submitted and there was no opposition.

File #5303

21118

To the Iowa Natural Resources Council:

Pursuant to Chapter 455A, Iowa Code 1966, a public hearing on the application of the City of Fort Dodge, Iowa, for a permit authorizing continued withdrawals of water for municipal use was conducted, commencing at 2:00 P.M.,DST, on July 18, 1969, at the Office of the Water Commissioner, James Grimes Building, Des Moines, Iowa, at which time evidence of record relating to this use of water was adopted.

FINDINGS:

On the basis of the application, evidence of record relating to this use of water, and consideration of other pertinent factors, the following findings are made:

1. The City of Fort Dodge, Iowa, has submitted an application for a permit authorizing continued withdrawals of water in the maximum quantity of 3,250 million gallons per year at a maximum rate of 13 million gallons per day throughout each year from existing wells in Section 19, T89N, R28W, and a new Jordan well in the NW 1/4 of Section 24, T89N, R29W, all within the limits of Fort Dodge, Webster County, Iowa, for municipal use within and without said city.

2. The requested withdrawal of water was authorized by Iowa Water Permit #635 which was granted on August 31, 1959, upon Application #94-E-4-W-826. Said permit terminated on August 30, 1969.

3. Notice of the public hearing on this application was duly published on June 23 and 30, 1969, in the Fort Dodge Messenger, a newspaper published at Fort Dodge, Iowa, and of general circulation in Webster County, Iowa.

4. Well #16 was completed in 1962 and is located near the center of the NW 1/4 of said Section 19. It is a Jordan well 1850 feet deep cased and cement grouted to a depth of 1412 feet with a 13 inch open hole below this point. The static water level is about 80 feet with a drawdown of about 150 feet when pumped at its capacity of 2100 gallons per minute.

   Well #17 is currently being constructed and is located near the east line of the NE 1/4 of the SE 1/4 of the NW 1/4 of said Section 24. It will be similar to well #16.

5. All other factors considered herein are substantially the same as set forth and available in the determination (File #1190) on said Application #94-E-4-W-826 and are not repeated herein.

6. There is no evidence that the use of water pursuant to a permit granted in accordance with the conclusions contained herein (a) will constitute a waste of the water resources of the State, (b) will be incompatible with the state comprehensive plan for water resources, (c) will impair the effect of pollution control laws of this State or the navigability of any navigable watercourse, or (d) will be

property owners with prior or superior rights who might be

property owners with prior or superior rights who might be affected.

7. The requests for Permit #635 and for a permit authorizing continued withdrawals of water were not contested.

CONCLUSIONS:

1. A permit should be granted to the City of Fort Dodge, Iowa, to withdraw water from existing wells in Section 19, T89N, R28W, and a new Jordan well in the NW 1/4 of Section 24, T89N, R29W, all within the limits of Fort Dodge, Webster County, Iowa.

2. The permit should provide that:

   a. Permittee may withdraw only that quantity of water that can be used beneficially but not in excess of 3,250 million gallons per year at a maximum rate of 13 million gallons per day throughout each year.

   b. Water withdrawn pursuant to this permit may be used within and without the corporate limits of said City of Fort Dodge, consistent with the municipal distribution system and other provisions of law.

   c. This permit will terminate on August 30, 1979.

   d. Permittee shall furnish to the Iowa Geological Survey, Iowa City, Iowa, the well log, cutting samples, and results of pumping tests for any additional well or wells completed on said land.

   e. Permittee shall maintain accurate and up-to-date records of water use, pumping rates and water levels in each well, and shall furnish such records pursuant to direction of the Water Commissioner.

3. Permittee is advised that pursuant to Section 455A,28, Iowa Code 1966, the authority to withdraw water provided by this permit may be modified, cancelled or suspended if the permitted withdrawals result in substantial injury to any private or public interests.

DETERMINATION:

A permit consistent with these findings and conclusions may properly be granted under the authority of the Water Commissioner of the State of Iowa

R. G. Bullard
Water Commissioner

Filed with the Iowa Natural Resources Council, James Grimes Building, Des Moines, Iowa, on September 2, 1969.

September 9, 1969

Thorpe Well Co.
2340 6th Avenue
Des Moines, Iowa

Dear Mr. Thorpe: 17

Mr. Northup has made a preliminary study of the drill cuttings from the City of Fort Dodge No. ~~16~~ 17 well. The following notations are pertinent to the final drilling phase for this well and they will verify the tops as reported to you by telephone:

1815 - 1835	Jordan - St. Lawrence transitional beds.
1835 -	St. Lawrence

We will complete the log of this drill hole upon receipt of the bottom - hole samples and then a copy of the log will be prepared for your use.

Very truly yours,

H. G. Hershey

HGH/DKK:cs

GW Ft. Dodge Gen Data
Webster Co.

May 6, 1968

Mr. W. McElhiney
Varner Well Company
121 East 4th Street
Dubuque, Iowa 52001

Dear Mr. McElhiney,

Enclosed is the copy of the log of Fort Dodge city well #16 that was requested recently.

As closely as can be judged from available data, the site proposed for the location of city well #17 lies outside the graben structure. A review of the data seems to indicate that this fact should not have a marked affect on the expected production. Several other Jordan wells in the Fort Dodge vicinity have been developed outside the graben structure with success. Although the specific capacities have not been comparable to those in the city wells, it is felt that this has been the result of less extensive development of the industrial wells. In light of the various means of development set forth in the well specifications, a well comparable to earlier city wells probably can be developed at the proposed site.

If any questions remain or if I can be of any other help, please let me know.

Very truly yours,

H. G. Hershey

HGH:OVE:wg

Office Memorandum

To: Orv Van Eck May 6, 1968

From: Paul J. Horick

Re: Proposed Ft. Dodge city well No. 17. Information for Bill McElhiney, Varner Well Company

It is hard to figure exactly where this well will be located, but from the information supplied by McElhiney and from previous correspondence with a Buell & Winter Engineering Company consultant, the site apparently lies on high ground north of Lizard Creek and south of Riverview Heights addition about a quarter of a mile north of the center of sec. 24, T. 89 N., R. 29 W. (Douglas township), Webster County. Available data indicate the locality is outside (north) of ~~north fault of~~ the graben structure. The Ft. Dodge topographic map indicates a ground elevation of about 1,095 feet above sea level there. Please observe that this is about 112 feet higher than the elevation of the Ft. Dodge city well No. 16. Some younger strata probably will overlie the St. Louis formation at this new drilling location. The Pleistocene section probably also will be thicker.

As far as I can ascertain drilling a Jordan well at this location will not adversely affect the production. The permeability of the strata within and adjacent to the graben probably were increased

by shattering of the rocks as a result of the faulting. However, the specifications probably should include plans to develop the well by shooting or acidizing the Jordan Sandstone followed by overpumping.

Well No 16, which was drilled by Thorpe in 1962, originally tested at about 1,100 gpm with a drawdown of 220 feet from a static head of 30 feet below land surface. ~~Thorpe drilled well No. 16~~. Apparently well No. 16 was later developed in some way because a mineral analysis of the water obtained in February 1963 reported a yield of 2,000 gpm after pumping for 96 hours.

Other successful wells pumping from the Jordan aquifer in the Ft. Dodge vicinity but outside of the graben structure are the Iowa Beef Company well, the Certain-Teed Products Company well, and the Celotex Corp. well. Although the specific capacity of these wells does not measure up to the Ft. Dodge city wells I feel this is because the industrial wells were not developed as extensively.

So, on the whole, I am inclined to think a satisfactory Jordan well can be developed at the locality selected for well No. 17. I would make sure to emphasize that the well should be properly developed for best results.

(over)

A copy of the Ft. Dodge city well No. 10 log is enclosed.

P J Horick

Paul:

McEllhiney 5/2/68

We had a call from Bill ~~McIlheny~~, Varner's, about the Jordan (well 17) to be drilled ~~for~~ Fort Dodge.

First, he would like a copy of Well 16 log.

Second, the specifications call for drilling well 17 just north and 4000 ft. west of well 16. Bill is concerned that this will take them out of the graben area and hence result in a lower production or reduced recharge. What is your feeling on this?

Varner wants to make a bid on this to drill it with rotary.

OE

FT. DODGE NO 17 WELL

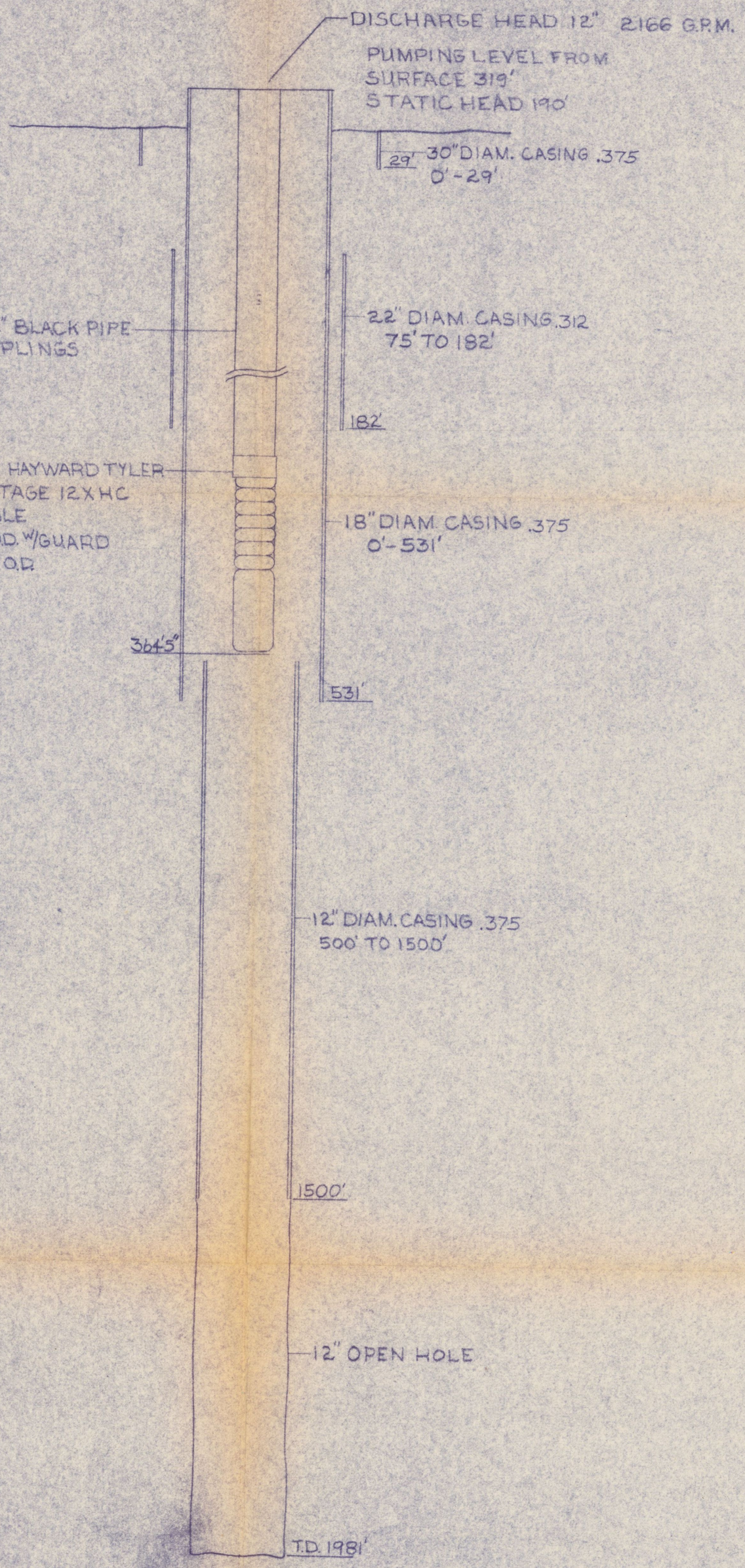
SCALE: ~ | DRAWN BY: | APPROVED BY: | DATE: FEB. 21, 72 | REVISED

THORPE WELL CO

DRAWING NUMBER 9021

ST-AUG 14, 68 FH OCT 16, 70

9' 2'-TOP SOIL 2'
14'-SANDY YELLOW CLAY 16'
9'-SHALE 25'
40'-GRAY LIMESTONE 65'
55'-LIME + SHALE STREAKS 120'
94'-GREY LIMESTONE 214'
51'-LIME + GUPSUN 265'
175'-LIME - HARD 440'
14'-SHALE - GREEN 454'
331'-LIMESTONE 785'
5'-SHALE 790'
26'-LIMESTONE 816'
17'-SHALE GREEN 833'
257'-LIMESTONE 1090'
3'-SHALE 1093'
196'-LIMESTONE 1289'
5'-SHALE-GREEN 1294'
21'-LIME 1315'
15'-SHALE-GREEN 1330'
8'-LIMESTONE 1338'
46'-SHALE - GREEN 1384'
20'-SAND 1404'
2'-SHALE GREEN 1406'
311'-SANDY LIME-HARD 1717'
38'-LIMESTONE 1755'
5'-LIME-SANDY 1760'
58'-SANDSTONE 1818'
4'-SHALE GREEN 1822'
62'-SANDY LIME 1880'
48'-LIME HARD 1928'
2'-SHALE-GREEN 1930'
45'-LIME HARD 1975'
6'-LIME + SHALE BREAKS 1981'



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