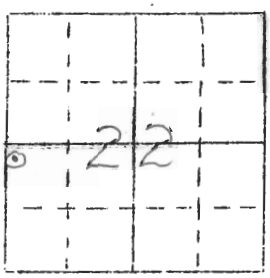
W-1346

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

RECORD OF WELL



Location:

Town: CALUMET (N E / S W); County O'BRIEN.

NW - NW - SW sec. 22 T. 94 N., R. 40 W. Liberty Twp.

Well name and number CALUMET CITY #1

Owner _____ Address _____

Tenant _____ Address _____

_____

Contractor Hoeg & Ames Address Lincoln, Iowa

Drillers H. White

Drilling dates Feb. 25, 1941 completed March 29, 1941

Well data:

Elevations: Drilling curb 1438 feet; Land surface 1436 feet

I.C.R.R

_____

Determined by hand level

Topographic position Upland

Total depth: Reported 555 feet, Measured _____ feet

_____

Drilling method cable tool

Hole and casing data 427' of 6" casing from +2.9' to 424'10"
(Give amount, size, kind, and depth of all casing; type and
157'6" of 5" casing 398'-555' perforated from 445'-472 + 510'-55'
position of seals and packers; cementing; how finished—perforated pipe, screen,
5/8" round holes 4 on circle
gravel pack, open hole, etc.)

_____

_____

_____

Original depth to water 243 ft. above below _____ Date _____

Original elevation of water level 1195 ft.; Source of data Pumping test
T.W. Robinson

Sources of water: Principal Dakota ; Others _____

_____

Production data: Date March 26, 1941

Static depth to water 243' 2" Measuring point 2.9' above l.s.

Pumping level 250 at 51 g.p.m.

Specific capacity 7.3 g.p.m. per ft. drawdown; Temperature 52 1/2 °F.

Pump data; Type pump _____ Column Dia. _____ Length _____

Cylinder or bowls: Dia. _____ Length _____ Suction pipe 2

Power _____ Airline _____

Estimated rate of production: _____ g.p.m. for _____ hrs. a day

Use of water City supply

WATER ANALYSES (in parts per million)

Date sampled	March 27/1941			
Sampled by	I.W. Robinson			
Total solids	1915.			
Insoluble matter	9.0			
Alkalinity (Meo)	294.0			
Alkalinity (Phn)	0.0			
pH	7.0			
Fe_2O_3+ Mn_2O_3+Al_2O_3	6.0			
Alkali as sodium	104.6			
Calcium	313.7			
Magnesium	83.4			
Iron (unfiltered)	tr.			
Manganese	0.50			
Nitrate	0.00			
Fluoride	tr.			
Chloride	17.0			
Sulfate	1022.3			
Bicarbonate	358.7			
Hardness (ppm)	1127			
Hardness (gpg)	65.1			

Remarks _____

Laboratory data: Sample storage location _____

Sample range 0-555 No. spls. 112 No. dupls. & cond. 112 good

Spls. prepared by Summerford Washed range _____ by _____

Driller's log and cond. Yes fair

Insoluble residues: Prepared by _____ Studied by _____ Strip log _____

Microscopic study 0-555 E.S. strip log 7-24-45 ES

Gen. log _____ Correl. by E. Schultz

5/19 field checked by L. Fischer

425644N -0953308-01

094-40W-22 DBBA

On 7½' Sutherland West Quad

IOWA GEOLOGICAL SURVEY
Well Log Record

County O'Brien

Name of well Town of Calumet (City Park) Town Calumet

Location ____ sec. 22 T. 94 N., R. 40 E. W. Liberty Twp.

Curb elevation ____ ft. Present depth ____ ft. Final depth 555 ft.

Static level: (Depth to water ~~(above)~~ (below) curb) 243 ft. Pumping level 247 ft. (5 1 gpm)

Contractor Hoeg & Ames (H. White, drlr.) Date drilled to 3-29-41

Description*	FEET Thick	From	To	Description*	FEET Thick	From	To
Top soil	5	0	5	Gray shale with rock bands	70	360	430
Yellow drift	20	5	25	Sandstone	5	430	435
Blue drift	200	25	225	Gray shale	25	435	460
Yellow drift	73	225	298	Gray sandstone	15	460	475
Blue sand, very fine	39	298	337	shale & sandstone	30	475	505
Sandy green shale	2	337	339	good ss.	50	505	555
Sandstone	2	339	341				
gray shale	4	341	345				
Dark shale, tr. of coal	15	345	360				

*Abbreviate descriptions; use one line for each formation.

Remarks on water zones and casing 427' of 6" pipe 157' of 5" pipe

5" is perf. @ 465'-472' & 510'-555';

Canvas packer @ 460' and another @ 505'.

Temperature: Air ____ °F., Water ____ °F. at ____ A.M. P.M. ____ 194__

Record obtained from Hoeg & Ames Recorded by K. E. ANDERSON

Sheet No..... Name of Well..City Well..... Survey No...1346.....

Location ..Calumet (O'Brien)..... Date Drilled..... Analyst...Sch.....

00

Sand dkbr & bff leached

10

Till bff ox pat leached slty

Till bff slty w/ some ang. gravel to 12 mm

20

Till a fine gravel

a

a

30

a Minor amts sd & gravel

Till dkbbff slty crse sd & gravel

40

Till dkb not ox little gravel to 3 mm

Till dkb slty Minor amts crse, pol, sd & crse gravel

50

a, a grave V. crse

a

60

a, a

70

80

a, a

90

a, a

a, a

a a

Sheet No. 2 Name of Well Survey No.

Location Date Drilled Analyst

100

Till drb slty coarse sd & gravel minor clay

10 a a

gravel mainly & Dolo

20 a a

a

30 a

a a

40 a a

gravel finer & less

50 a a

a a gravel v. coarse & more than above 3 pcls

60 a

Till bfe drb not slty gravel Ig + Lg larger %

70 a a

a 10% gravel

Till drb slty less gravel

80 Till drb not silty not much gravel a a

(v. shale-like)

90 Till-med gr soft clayey structure irreg lam calc.

drk drb slty slty

a a

Sheet No. 3 Name of Well ..... Survey No. .....

Location ..... Date Drilled ..... Analyst .....

200	
	Till drb slty
10	a.a
	a.a
20	a.a
	Till bff ox not leached sd & Fg peb
30	Till bff & ox Sd & gravel.
	a
40	a.a
	Till drb not Minor amt Sd & gravel
50	a.a
	a.a
60	a.a some sd, no gravel
	Till drb sdy vfn gr Some med rd frost Sd. Reworked
70	Till drb slt, sdy Some Fg peb
	Till drb fn sdy
80	a.a
	a
90	a.a
	a little gravel
00	

Sheet No. 4 Name of Well ..... Survey No. .....

Location ..... Date Drilled ..... Analyst .....

298

00 drb
sd - duty white v fn A waxy luster

10 a blackish qtz (?) specks blk ?

sd drb fn crse predom med a. waxy pol (subang)

20 sd drb crse vvr waxy pol. blk & rel qtz

sd drb med p a. slty slty "

Iq. blk. (sec 535'-40

30 sd a.a. Rose, amber yel. qtz

sd a.a. (sub) a. waxy more opaque than above med & crse

339 40 sd - med. slty some gravel (minor amt)
341 sd & gravel - drb, or, & rust, crse slty sd. about 30%

Sh Hgr (or drb) waxy no structure slty soft

50 Sh a.a. Tr of Coal

Sh drb slty (or v fn sd) no structure dolc

60 Sh gr fn greasy no struc dolc Tr of Coal

a.a. coq

70 a.

Sh ltgr no struc slty

80 Sh drb no struc v sft & v slty

Calc. cement.

Sh a Concretion. Vfrd tran & clay

90 Sh a.a. tran nodule imbedded

Sh a.a. Tr of coq

00 Sh a.a. Tr of coal

Sheet No. 5 Name of Well ..... Survey No. 1346

Location ..... Date Drilled ..... Analyst Satwik

400

Sh a.a Tr coa

10 Sh a.a v.v dy hrd Tr coa

Sh a.a sdy soft

20 a.a Coal, sft waxy 170 more abundant

Sh drb a.a no coal

Some Sh. (cave)

30 Ss drb A fn-fn slty calc Coal

Sh drb no struc. dull

40 Sh. drb & gr thin lam slty unct

50 Sh. drb sdy slty

Sh drb & bff sdy

15% crse 55% med 20% fn 10% v fn + slt reverse poorly sorted

60 Ss variegtd Ig blk wht rose amb yel (sub) a. waxy opaque p med

Ss drb v fn & fn A & gr pol waxy slty

med 15% fn 60% v fn 15% slt 8%

crse & v crse 2%

70 a.a

a.a

80 Slts drb v argill micaceous sdy sol.

a.a Sdy. arke

90 a.a Sdy.

Ig. blk. (as 535-40

S variegated rose wht amber, med pol A fn

Ig zone (535'-40')

Ss variegated A & gr fn slty pol.

00

Sheet No. 6 Name of Well ..... Survey No. 346

Location ..... Date Drilled ..... Analyst .....

500

Slts dkb dkb v arg sdy no struc

lq. Blk. (see below 535-40)

10 Ss variegated dkbl vslty poorly sorted all grades present A. pol.

Ss wht, pa ± a clear fa ± med

20 Slts dkb. vv. argill. sdy

Ss as 505'-510'

30 Ss. a.a more med than above less crse

Ss as 52 25'

lq.- blk xtln glassy, pol. v. blk. less than the qtz

40 Ss. variegated v-l wht a. xtln waxy, pol poor sorted crse.

Ss Variegated med a pol slty slty

50 Ss. as 535'-40

a a

60

70

80

90

CALUMET, IOWA

Top of 6" casing is 0.70 feet below
Top of air line and 2.2 feet above land surface.

Top air line 2.9 feet above land surface.

March 28: D/w = 243.17 feet below top of 6" casing
2.2 feet above land surface by electric line.

Land surface of well is 2 - 3 feet above top of
rail I. C. R. R. at depot.

094-40W-22 CBB
KDD

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Calumet Town (1941)
W-1346

Water Quality
(ppm)

Card Q

State: Iowa (16) County: O'Brien (71) Town: Calumet

Well No. Latitude 42 56 39 N (5–11) Longitude 095 33 58 (12–18) Seq. No. 1 (19) Date M 06 D 12 Y 46 (20–25)

Sampling Depth 555 (26–29) Type 1 (30) $Kx10^6$ (31–35) pH 7.3 (36–38) Temp. °F (39–41)

SiO_2 (42–44) Ca 277 (45–49) Mg 90 (50–53) Na 96 (54–58) K .C (59–61)

HCO_3 237 (62–65) CO_3 0 (66–67) SO_4 1040 (68–72) Cl 15 (73–78) Source No. 3 9 (79–80)

Card R

Duplicate Columns 1-25 from Card Q

F .07 (26–28) NO_3 13 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .000 (42–45)

Mn .04 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 2000 (58–63) Calc. (64–69) Hardness Ca,Mg 1060 (70–73) Non-Carb. 866 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 194 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS .0 (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) .0 (61–63) U (ug/l) .0 (64–66)

No. S (80)

Recorded by: P.J. Horick

Punched by: Punched FCH Date:

Published: Verified ERC

094-40W-22 CBB
KDD

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Calumet town (1941)
W-1346

Water Quality
(ppm)

Card Q

State: Iowa [16] (1 2) County: O'Brien [71] (3 4) Town: Calumet

Well No. Latitude [425639N] (5–11) Longitude [0953358] (12–18) Seq. No. [1] (19) Date M D Y [03 27 41] (20–25)

Sampling Depth [555] (26–29) Type [1] (30) Kx10⁶ [ ] (31–35) pH [7.0] (36–38) Temp. °F [53] (39–41)

SiO_2 [.] (42–44) Ca [319.] (45–49) Mg [83.] (50–53) Na [105.] (54–58) K [.C] (59–61)

HCO_3 [359] (62–65) CO_3 [0] (66 67) SO_4 [1020.] (68–72) Cl [17.] (73–78) Source No. [3] (79) [Q] (80)

Card R

Duplicate Columns 1-25 from Card Q

F [.] (26–28) NO_3 [ø.0] (29–32) PO_4 [.] (33–35) B [.] (36–38) Al [.] (39–41) Fe [. *] (42–45)

Mn [ø.50] (46–49) Cu [.] (50–52) Pb [ ] (53 54) Zn [.] (55–57)

Solids Determined [1920] (58–63) Calc. [ ] (64–69) Ca,Mg [1130] (70–73) Hardness Non-Carb. [833] (74–77)

Color [ ] (78 79) No. [R] (80)

Card S

Duplicate Columns 1-25 from Card Q

Br [.] (26–28) I [.] (29–31) Alk. as $CaCO_3$ [294] (32–35) Free CO_2 [ ] (36–38) SAR [ ] (39–41)

RSC [ ] (42–44) ABS [.] (45–47) [.] (48–50) [ ] (51–54)

Alpha (pc/l) [ ] (55–57) Beta (pc/l) [ ] (58–60) Ra (pc/l) [.] (61–63) U (ug/l) [.] (64–66)

No. [S] (80)

Recorded by: P.J. Horick

Punched by: Punched FCH Date:

Published: Verified ERC

February 10, 1941

Mayor John Mehrens
Calumet, Iowa

Dear Sir:

Recently Mr. E. J. Marzec of the Department of Health requested that I send you information regarding the possibilities of obtaining suitable ground water above a depth of 520 feet at Calumet.

The following report is based on information in the files of the Iowa Geological Survey. All depth figures are based on a starting elevation of 1434 feet above sea level which is the elevation of the Illinois Central Railroad Station at Calumet.

The best available source of water in the vicinity of town is the Dakota sandstone. It is believed that a well to a depth of approximately 475 feet will penetrate the Dakota sufficiently to make a well.

Glacial drift and younger deposits are at the surface at Calumet and the drift continues to a depth of at least 225 feet. It is possible that it may be found at greater depth but our records are not complete enough to make a more definite forecast. Water-bearing sand and gravel beds may be found within the drift but waters from them are known to be highly mineralized. To give you some idea of the hardness and mineralization of waters from this source, we are inclosing an analysis of a sample taken from the shallow town well at Sutherland which utilizes glacial water. You will notice that the values for calculated hardness, calcium, magnesium, manganese, iron, and sulphate are exceptionally high.

If the glacial drift is considerably thicker than 225 feet and if a sand and gravel zone should occur at the base I suggest that you run a pumping test and collect a sample for mineral analysis to determine the suitability for a town supply.

The drift will be underlain by Cretaceous shales which should continue to a depth of 300 feet. These shales are clay-like in character and may be highly sandy in part. They will be underlain by the Dakota formation.

The upper portion of the Dakota is known to be fine grained and shaly in southeastern O'Brien County and it will be necessary to drill some

distance into it before a suitable horizon for a well is reached. Water from the Dakota will be relatively highly mineralized but much less so than the glacial drift waters. Inclosed are data sheets on analyses of water from the deep well at Sutherland and from the Larrabee town well, both of which are utilizing Dakota water.

If you have any questions regarding this report or if I can be of further service during the construction of your well, please do not hesitate to let me hear from you.

Very truly yours,

H. G. Hershey

HGH:N
Inc.

cc to Mr. E. J. Marzec

December 7, 1949

Mr. M. O. Nelson
State Department of Health
District No. 3
Spencer, Iowa

Dear Mr. Nelson:

In response to your telephone call of December 6, we have checked on the information that we have available regarding the well at Calumet drilled in 1941 to a depth of 555 feet.

From your report and the data that we have it is doubtful that we could do anything at the present time to assist on this well. Your recommendation that the town obtain the services of a well driller appears to be the soundest advice at the present time. Our geophysical equipment would be of little use.

If the work of the well driller or additional information that you obtain changes the picture it is possible that we would be able to be of some service. I will appreciate it therefore if you will keep me informed of developments. The Geological Survey, of course, would be very glad to help if possible.

Very truly yours,

H. G. Hershey

HGH:LFS

Iowa
State Department of Health
DISTRICT HEALTH SERVICE NO. 1
HEADQUARTERS
Le Mars, Iowa

WALTER L. BIERRING, M. D.
COMMISSIONER
DES MOINES, IOWA

IN REPLYING
ADDRESS
E. J. Marzec
Public Health Engineer

March 21, 1941

H. G. Hershey
Assistant State Geologist
Iowa Geological Survey
Iowa City, Iowa

Dear Dr. Hershey:

The driller at Inwood is in black shale at a depth of 232 feet. Some rock was encountered at 200 feet, which slowed down drilling.

The hole is down to 500 feet at Calumet. The completed hole will probably be 520 feet in depth. A soft sandstone was entered at about 450 feet. Testing of this well will begin sometime the forepart of next week, if all goes well.

Yours very truly,

E. J. Marzec
Public Health Engineer
Health District No. I

ejm/ns

cc-E.G.Fiala
Asst. Engineer
Iowa State Dept. of Health

State of Iowa

IOWA GEOLOGICAL SURVEY

Geology Annex
Iowa City

May 1, 1941

Mr. E. J. Marzec
Public Health Engineer
Health District No. 1
Le Mars, Iowa

Dear Mr. Marzec:

Inclosed is a report on the analysis of water from the Calumet town well as shown by a sample submitted by Mr. T. W. Robinson.

It is interesting that the laboratory determination of 7.0 pH is somewhat higher than the determination which you made at the well.

I am rather disappointed that the calcium, magnesium, sulphate, and calculated hardness values are so high, but apparently they are not far out of line when compared to other waters from the same source in that area.

I am sending a copy of this report to Hoeg and Ames at Lincoln. A copy is not being sent to the town because it is my thought that you may wish to send it to them or to deliver it in person. An extra copy is being inclosed for this purpose. If, however, you prefer to have us send the copy to the town direct please do not hesitate to say so.

I hope to be in northwestern Iowa for the pumping test on the Inwood well and plan to spend some additional time there in order that we may go over some of the geological problems which have come up in your area.

Very truly yours,

H. G. Hershey
Assistant State Geologist

HGH:N

Inc.

August 14, 1940

Mr. Charles D. Mullinex
Division of Public Health Engineering
State Department of Health
Des Moines, Iowa

Dear Mr. Mullinex:

Following is a report on ground water possibilities at Calumet, O'Brien County based on information in the files of the Iowa Geological Survey. All depth figures are based on a starting elevation of 1434 feet which is the elevation of the Illinois Central Railroad Station at Calumet.

The best available source of water in the vicinity of town is the Dakota sandstone. It is believed that a well to a depth of 475 feet will penetrate the Dakota sufficiently to make a well.

Glacial drift and younger deposits are at the surface at Calumet and the drift continues to a depth of at least 225 feet. It is possible that it may be found at greater depth, but our records are not complete enough to make a more definite forecast. Water bearing sand and gravel beds may be found within the drift but waters from them are known to be highly mineralized. The only exception to this is a possible sand zone at the base of the drift and in case such a zone should occur it may be well to test it for quantity and quality provided it is of sufficient thickness.

The drift will be underlain by Cretaceous shales which should continue to a depth of 325 - 350 feet. The shales are clay-like in character and may be highly sandy in part. They will be underlain by the Dakota sandstone.

The upper portion of the Dakota is known to be fine-grained and shaly in southeastern O'Brien County and it will be necessary to drill some distance into it before a suitable horizon for a well is reached. Water from the Dakota will be relatively highly mineralized but much less so than glacial drift water. Since you have the analyses from Sutherland

and Larabee in your office it will not be necessary for me to discuss the mineralogical character of these waters. The static water level of the Dakota should be approximately 232 feet.

Casing will be necessary through the glacial drift and Cretaceous shales. I would suggest also that casing be used through the upper portion of the Dakota sandstone if it is found to be fine-grained and unusable as an aquifer. Unless conditions are abnormal no screen should be necessary in that portion of the Dakota from which the water is to be derived. However, the best results will probably be obtained if perforated pipe is emplaced through the aquifer.

If you have any question regarding this report, please let me hear from you. I will appreciate it if you will let me know of any further developments at Calumet and particularly if a contract is let for the drilling.

Very truly yours,

H. G. Hershey

HGH:N

WALTER L. BIERRING, M. D.
COMMISSIONER

State of Iowa
Department of Health
Des Moines

DIVISION OF
PUBLIC HEALTH ENGINEERING
AND INDUSTRIAL HYGIENE

July 11, 1940.

Dr. H. G. Hershey,
Iowa Geological Survey,
Iowa City, Iowa.

Dear Dr. Hershey:

We have received information from the Currie Engineering Company, Webster City, that a water supply is being proposed for Calumet, Iowa, located in O'Brien County.

We would appreciate very much any forecast information that you might have for the development of a water supply at Calumet.

You will note Calumet is approximately six miles north of Larabee in Cherokee County, however, it is also in the immediate proximity of Sutherland.

Very truly yours,

A. H. Wieters, Director,
Division of Public Health Engineering.

CDM:LQ

By Chas. D. Mullinex

Times
Paullina, Ia.

JAN 23 1941

ADVERTISEMENT FOR BIDS

TO WHOM IT MAY CONCERN:

Sealed proposals will be received for the construction of a water well at the office of the Town Clerk of the Incorporated Town of Calumet, Iowa at 8:00 P. M. on the 11th day of February, 1941.

The well will be a drilled well 6 inches in diameter at the bottom and approximately 400 feet deep.

The contract documents may be examined at the office of the Town Clerk of Calumet, Iowa, or may be obtained from the Currie Engineering Company of Webster City, Iowa, upon a deposit of $10.00, one-half of which will be refunded if a bona fide bid is filed and the documents are returned within five days from the date of receiving bids.

Each bid shall be made on form furnished by the Town and must be accompanied by bid security in the form of a check, certified by an Iowa bank, or a cashier's check, or a bid Bond, and filed in an envelope separate from the one containing the bid, sealed, and in an amount of $150.00. The bid security shall be made payable to the Town Treasurer of the Incorporated Town of Calumet, Iowa, and may be cashed by the Town as liquidated damages in the event the successful bidder fails to enter into a contract within ten days and posts a bond satisfactory to the Town insuring faithful fulfillment of the contract.

Work is to commence within ten days after the award of the contract and be fully completed within sixty consecutive calender days.

Payment to the Contractor will be made in cash on the basis of monthly estimates issued in amounts equal to 90% of the work performed and acceptable materials suitably stored on the site. Final payment will be made 31 days after acceptance of the well by the Town Council.

By virtue of Statutory authority, a preference will be given to products and provisions grown and coal produced within the State of Iowa.

The Town reserves the right to reject any or all bids and to waive requirements of formalities.

Dated at Calumet, Iowa, this 21st day of January, A. D., 1941.

INCORPORATED TOWN OF CALUMET, IOWA
By John Mehrens,
Mayor
By Carl J. Kruse
Clerk

6-2

NOTICE OF TIME AND PLACE OF HEARING ON PROPOSED PLANS AND SPECIFICATIONS AND PROPOSED FORM OF CONTRACT FOR WATER WORKS SYSTEM FOR CALUMET, IOWA

TO WHOM IT MAY CONCERN:

You are hereby notified that at 7:30 o'clock P. M. on the 11th day of February A. D., 1941, in the Council Room in the Town Hall in the Town of Calumet, County of O'Brien, State of Iowa, there will be conducted a hearing on the proposed plans and specifications and proposed form of contract which have been filed with the Clerk of said town and have been adopted by the Council of the Town of Calumet, Iowa for the construction of a water works system in said Town of Calumet, Iowa at an estimated cost of $13,612.00 to be financed in part by a W. P. A. grant and the balance to be paid by bonds to be issued by the Town of Calumet, Iowa. At such hearing, any person interested may appear and file objection to the proposed plans, specifications or contract for, or costs of such construction.

Dated at Calumet, Iowa, this 21st day of January, A. D., 1941.

John Mehrens,
Mayor
Carl J. Kruse,
Clerk

6-1