W-3671

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

RECORD OF WELL



Location:

Town: LEON (N E / S W): County DECATUR

NE-SW-NW sec. 33 T 69 N., R. 25 W. E. Twp.

Well name and number Town of Leon - (1949)

Owner Town of Leon Address

Tenant Address

Contractor Thorpe Well Co. Address Des Moines

Drillers Guy Elam - Ed Asar

Drilling dates May 2, 1949 —

Well data:

Elevations: Drilling curb 1074 feet; Land surface 1074 feet

Determined by

Topographic position Side Hill

Total depth: Reported feet, Measured feet

Drilling method Cable Tool

Hole and casing date

Original depth to water ft. above / below Date

Original elevation of water level ft.; Source of data

Sources of water: Principal ; Others

Production data: Date _____

Static depth to water _____ Measuring point _____
Pumping level _____ at _____ g.p.m.

_____ _____
_____ _____
_____ _____

Specific capacity _____ g.p.m. per ft. drawdown; Temperature _____ °F.

Pump data; Type pump _____ Column Dia. _____ Length _____
Cylinder or bowls: Dia. _____ Length _____ Suction pipe _____
Power _____ Airline _____
Estimated rate of production: _____ g.p.m. for _____ hrs. a day
Use of water _____

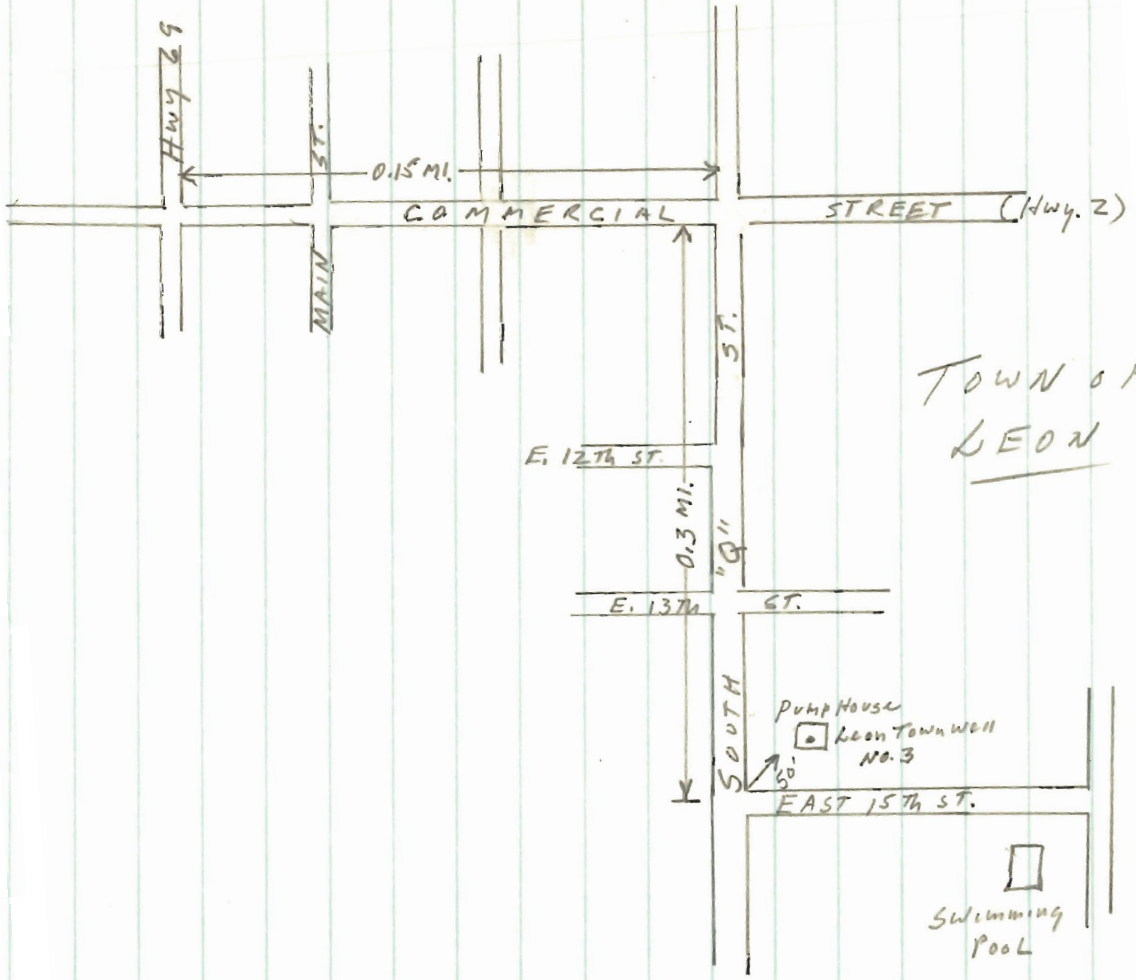
WATER AIALYSES (in parts per million)

Date samples				
Sampled by				
Total solids				
Insoluble matter				
Alkalinity (Meo)				
Alkalinity (Phn)				
pH				
Fe_2O_3- Mn_2O_3-Al_2O_3				
Alkali as sodium				
Calcium				
Magnesium				
Iron (unfiltered)				
Manganese				
Nitrate				
Fluoride				
Chlordie				
Sulfate				
Bicarbonate				
Hardness (ppm)				
Hardness (gpg)				

Remarks _____

Laboratory data: Sample storage location _____

Sample range _____ No. spls. _____ No. dupls. & cond. _____
Spls. prepared by _____ Washed range _____ by _____
Driller's log and cond. _____
Insoluble residues: Prepared by _____ Studied by _____ Strip log _____
Microscopic study _____ strip log Rec'd Sept 7, 1949
Gen. log _____ Correl. by _____ O-1393



LOCATION SKETCH SHOWING LEON TOWN WELL NO. 3 (by J.W Cagle 5-26-72)
LOCATED IN NW, NE, SW, NW, Sec. 33, T. 69N. R. 25W.

9-230

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington .....
District .....
ere 6—9333

Production Test
Leon, Iowa - Sept 6, 1949

Pg-1

Time	Meter Rdg	GPM	PL	Pump Speed	°F Temp			Remarks				
9:10 am	574897.0	—	357	—								
9:52	574897.0	—	357	1635				Pump started				
9:57	574897.0	—	357	1635				Water flowing				
10:00	574898.8	34	357	1635								
10:13	574900.6	86	399	1635								
10:20	—	—	470	1635								
10:23	574907.7	71	472	—								
10:37	—	—	—	1635				Partial flow				
10:38	574910.0	16	—	—								
10:50	574924.7	98	475	1635								
11:25	574950.0	81	—	1635				Shut down				
1:35p	574,950.0	—	486	1635				Pump started				
2:30	574990.0	80	526	1635								
3:00	575014.3	81	523	1635								
3:30	575034.1	69	523	1660								
4:00	575051.7	56	525.5	1660								
4:30	575064.2	55	525	1643								
5:00	575085.5	69	525	1633								
5:30	575099.0	44	525	1633								
5:45	575101.0	80	575	1670				Production 99.3 gpm				
5:52	575101.0	—	575	—				Pump started				
6:15	575137.8	160	576.4	1740	66							
7:00	575186.9	109	577.0	1740	66							
7:11	575201.7	134	608	1780				Pump stopped				
7:18	575201.7	—	577.4	—				Water flowing				
7:35	575217.9	96	578	—								
7:45	575226.0	—	—	1740	66			Water flowing				
8:00	575238.8	80	575	—	66							
8:20	—	—	—	1780	66			Smpl #1				
8:30	575262.0	80	575	—								
8:47	575276.2	—	—	—				Pump stopped				
8:48	—	—	—	—				Pump started				

9-280

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington ____ / District ____

Leon, Iowa - Sept 6, 1949

Time	Meter Rdg.	GPM	PL	Pump Speed	OF Temp				Remarks			
9:15	575300	90	580.5		66							
9:45	575325	82	580.5									
10:15	575348	78	580.6									
10:45	575373	81	581.0									
11:15	575396	79	581.9		66							
11:45	575420	79	581.4									
12:15	575443	78	582.0						Sept. 7, 1949			
12:45	575467	80	582.8									
1:15	575491	78	583.6		66							
2:00	575526	56	583.8									
2:30	575548	74	583.9									
3:00	575571	71	584.1									
3:30	575594	76	584.3									
4:00	575617	76	583.5		66				Ave. since 9:15 - 78 GPM			
4:30	575639	73.7	583.2									
5:08	575666	70-	581.9									
5:30	575683	74.5	582.5									
5:58	575702	70.6	583						Pulley broke			
6:00			550									
6:16			500						331 GPM Rec.			*
6:22			490						177 GPM Rec.			*
6:35			475						106 GPM Rec.			
7:09			450						78 GPM. Rec.			
8:53			425						25.4 GPM. Rec.			
12:50p			410									
2:30			408									

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington .....
District .....

Leon Lawn Sept 8, 1949 Pg 4

Time	Meter Read	GPM	PL	Pump Speed	OF Temp	Motor Speed		Remarks			
12:00N	576385.0	78	600	1786	66	823	Mercury off Gage.				
12:30	576407.5	75	600	"	"	"					
1:00	576432	82	600	"	"	"					
1:30	576455.3	78	599	"	"	"					
2:00	576479.6	81	599	"	"	"					
2:30	576504.0	81	600	"	"	"					
9:00	576240.8	88	607	1786	66	823					
9:30	576265.0	83	605				Water Gage, Muddy.				
10:05	576293.0	80	603	1786	66	823					
10:30	576313.6	83	601	"	"	"					
11:00	576332.2	79	599	"		"	Mercury on Gage.				
12:00											

Pump setting 608'
M.P. Top of csg approx .5 ft above ls
By J.B.C & C.W.L

RESOLUTION ORDERING CONSTRUCTION OF IMPROVEMENT AND NOTICE TO CONTRACTORS

WHEREAS, pursuant to the Resolution of Necessity proposed and approved at a meeting of the City Council of Leon, Iowa, on August 16th, 1948, and duly passed and approved on September 27th, 1948, after publication of Public Hearing and holding the Hearing thereon in the manner provided by law, the construction of the improvement of the water supply described in said Resolution of Necessity should be ordered by the City Council of Leon, Iowa, in the manner provided by law, and in accordance with the provisions of said Resolution of Necessity; and

WHEREAS, no objections have been filed, nor have any objectors appeared in person:

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF LEON, IOWA:

1. It is hereby ordered that the improvement of the water supply for the City of Leon, Iowa, be constructed at the location specified and in accordance with the plans and specifications now on file in the office of the City Clerk and also as set out in said Resolution of Necessity.

2. It is further ordered that the kinds of material and the method of construction shall be as set forth in the Resolution of Necessity.

3. It is further ordered that the costs and expenses of the proposed improvement to the water supply for the City of Leon, Iowa, and all other costs and expenses incurred on the part of the City of Leon, Iowa, by reason of the making and constructing of said improvement shall be paid for out of moneys received from the sale of bonds for this purpose, or from such other funds as may be legally used for this purpose.

4. It is further ordered that the work of construction of the proposed improvement shall be commenced within thirty days after the award of the contract, and all of said construction shall be completed on or before May 1, 1949

5. It is further ordered that the Mayor and City Clerk be and they are hereby authorized and directed to advertise for bids in the Leon Journal Reporter, Leon, Iowa, for the construction of said improvement.

6. It is further ordered that all bids must be accompanied, in a separate envelope, by a check on an Iowa bank, certified by such bank and payable to the order of the City Treasurer at his office, in the sum of 10% of the total amount of the bid, as security that the bidder will enter into a contract for the doing of the work and will furnish a bond as required by law. Such checks will be returned to the respective bidders whose bids are not accepted. All bids may be rejected and new bids ordered.

7. It is further ordered that the official records of the City of Leon, shall show that this improvement was made on motion of the Council, and not petitioned for.

PASSED, ADOPTED and APPROVED this _____ day of _____, 1948.

_____
Mayor

ATTEST:

_____
City Clerk

RESOLUTION OF NECESSITY

(deep well, et al)

Be it resolved by the City Council of Leon, Iowa:

That it is hereby declared, determined and deemed necessary and advisable to secure a new source of water supply, including all other necessary appurtenances and connections to the present water mains in the City of Leon, Iowa, said improvement to consist of a deep well approximately 800 to 3,000 feet deep and located on the following described property:

"That area dedicated as streets of Twelfth Street between the west line of Mill Street and the west line of Poplar Street, City of Leon, Decatur County, Iowa",

all as shown on plat now on file in the office of the City Clerk. That said improvement is necessary to insure an adequate water supply and fire protection for the City of Leon, Iowa

The kinds of material to be used in the construction of said well are to be standard well casing and screen, of diameters and lengths as specified in the specifications, and to be subject to A.S.T.M. specifications.

The method of construction of the well shall be of a type approved by the industry and shall be constructed in such a manner as to accomplish the purposes herein recited.

The kind of pumping equipment shall be a standard deep well turbine pump, chlorination unit and pump building, of capacities, depths, lengths, sizes and types as specified in the specifications, and all to be subject to the A.W.W.A. and A.S.T.M. specifications.

The kind of materials to be used in the connections from the new well to the present water system are to be cast iron water pipe and cast iron valves and fittings, of diameters and lengths as shown on the plans and all to be subject to A.W.W.A. and A.S.T.M. specifications.

The method of construction of the connections between the new well and the present water mains shall be standard water works construction as set out in the specifications.

That the costs and expenses of constructing said new water source and the necessary connections, and all other costs and expenses incurred on the part of the City of Leon, Iowa, by reason of the making of said improvement shall be paid for out of moneys received from the sale of bonds for this purpose, or from such other funds as may be legally used for this purpose.

Be it further resolved, that the foregoing improvement be located and constructed as aforesaid is hereby proposed to be constructed and located as above set forth and that this proposed Resolution of Necessity be and the same is hereby set down for Hearing and further consideration and passage at a meeting of the City Council of Leon, Iowa, to be held on the 27th day of September, 1948, at 7:00 o'clock P.M. in the Council Chambers of the City Hall of Leon, Iowa. That the City Clerk be and is hereby instructed to cause notice of (1) the pendency of this Resolution of Necessity; (2) the time and place said Resolution of Necessity will be considered for final passage; and (3) that at said Hearing, objections will be heard to the passage thereof and to the making of said improvement; such notice to be given by two publications in the Leon Journal Reporter, a newspaper of general circulation published in the City of Leon, Iowa, in the manner and for the time prescribed by law.

Be it further resolved, that unless the property owners at the time of final consideration of said Resolution of Necessity have on file with the City Clerk or appear in person, with their objections to the proposed improvement, they shall be deemed to have waived all objections thereto.

The above resolution of Necessity was proposed and ordered placed on file for final action this 16th day of August, 1948.

_____

Mayor

Attest:

_____

City Clerk

June 3, 1949

Thorpe Well Company
2340 Sixth Avenue
Des Moines, Iowa

Attention: Mr. Wesley Thorpe

Gentlemen:

In response to the request of Mr. Wesley Thorpe for a forecast of the geologic strata at Leon, we are pleased to present the following table listing the general anticipated section at the new well site at Leon.

Formation and Description	Thickness	From	To
Pleistocene system (glacial deposits) (clay with some sand and gravel beds)	305	0	305
Pennsylvanian system (undifferentiated) (shale with thin beds of limestone)	275±	305	580
(sandstone and shale with thin beds of limestone)	370±	580	950
Mississippian system (undifferentiated) (limestone and sandstone)	100±	950	1050
(shale, gray)	40±	1050	1090
(limestone and dolomite, some chert)	300±	1090	1390
(shale, green)	40±	1390	1430
Devonian system (undifferentiated) (limestone and dolomite with some gypsum in lower part)	600±	1430	2030
Ordovician system Maquoketa formation (cherty dolomite)	50±	2030	2080
Galena-Decorah-Platteville formations (dolomite, cherty in places, some shale beds)	300±	2080	2380
St. Peter formation (sandstone)	20±	2380	2400
Prairie du Chien formation (dolomite, sandy and some sandstone)	470±	2400	2870
Cambrian system Jordan formation (sandstone)	40±	2870	2910
St. Lawrence formation (dolomite)	50±	2910	2960

As samples of the well cuttings are received and examined we will be glad to inform you of the correlation of the strata that have been drilled and of any changes in the estimates of the section yet to be drilled.

We feel that this is one of the most important wells being drilled in the state and are following the progress with interest. If at any time we can be of assistance to you or the engineer on this project, please let us know.

Very truly yours,

H. G. Hershey

HGH:WEH:AEH

Decatur C

3

MEMORANDUM

To: H. G. Hershey
From: Keith E. Anderson
Date: June 3, 1949
Re: Leon City well

T. W. Thorpe advised that Leon city well was drilling at a depth of 585 feet today.

Keith E. Anderson

KEA:IFT

7

October 5, 1945

Mr. George E. Warren
Water Superintendent
Leon, Iowa

Dear Mr. Warren:

I have your letter of October 3rd and the sample scraped from the inside of the water pipes carrying Leon City water. We will analyze the sample as far as possible and report to you just as soon as the analytical work is completed.

Very truly yours,

H. G. Hershey

HGH:lih

Decatur Co.
GW
4

October 10, 1945

Mr. George E. Warren
Water Superintendent
Leon, Iowa

Dear Mr. Warren:

We have received and made preliminary analysis of the sample which you sent us from the water pipes carrying Leon City water. The results of our work appear to indicate that the material is Calcium Carbonate or "lime". Apparently the material being deposited on the pipes comes directly from the water.

In all probability the most direct method of correcting the trouble would be to contact one of the water softening companies. They undoubtedly would run some analyses and make recommendations for removing the material being deposited.

One of the members of our staff will call on you just as soon as possible. Unfortunately we have a very limited personnel and cannot do work as promptly as we should like. For this reason I cannot set a definite date for our visit at the present time.

Meanwhile if you have any questions or if we can be of other service please do no hesitate to let us hear from you.

Very truly yours,

H. G. Hershey

HGH:lih

GW

1

November 27, 1945

Mr. George E. Warren, Water
Superintendent
Leon, Iowa

Dear Mr. Warren:

The material which you sent to us some time ago has been examined. It is made up of the mineral substances dissolved in natural waters. We found it to contain carbonates, sulphates, magnesium, calcium and iron. Since these substances occur in all ground waters in Iowa, it is expected that they will be deposited on the evaporation of the water.

Sand grains and pieces of wood were also found in the material which you sent. Probably they were picked up from the basement wall or floor when the sample was collected.

Very truly yours,

H. G. Hershey

HGH:SEH:BH

Decatur

1

MEMORANDUM

To: Dr. Hershey
From: J. B. Cooper
Re: Visit to Leon.

I contanted Mr. Larson at the Leon Creamery on May 24, 1949

The log of the new Town well (now drilling) shows 10 feet of Sandy Blue Clay from 225-235 feet. The driller report that there was some water in the clay.

The log of the old Town well gives 14 feet of gravel from 226 to 240 feet. The elevation of the creamery lot is about 6 to 8 feet lower than that of the old Town well.

I discussed these probable water-bearing beds with Mr. Larson and the depth at which they could be expected to occur at the site of his business location.

There are reports of shallow wells in the vicinity which formerly supplied water before the town had a water system. These wells have been filled in and at present there are no open wells in the area.

Mr. Larson does not appear to want to spend much money drilling a well, although he does want to try another auger hole.

On the basis of the logs of the two town wells I suggested that water might be found at an approximate depth of 225 feet with a drilled well, and in the event that a hole was au ered that water might be present in small quantities in the yellow clay in the first 60 feet of the hole.

The sention between 60 feet and 225 feet is mostly blue clay with some yellow clay logged and there is no available record of possible water-bearing sand or gravel.

Leon, Iowa
May 10-1949

2

Iowa Geological Survey
Geology Annex
Iowa City, Iowa

MAY 12 1949

Attn: H. S. Hershey

Dear Sir,

We are having quite a problem with water in our city. As you may already know we are out of water a large part of the time.

The writer operates a creamery, milk and ice cream plant like and the lack of water causes us a lot of grief every day.

We tried digging a shallow well on our lot but struck a dry hole at 60 ft. There was some yellow clay and gravel mixture at about 38 ft. Then at about 45 ft we hit blue clay and we never got through the blue clay at 60 ft.

There are some shallow wells all around us that furnish water enough to help out. They tell me there used to be such a well on our lots. We would like to get one as it would help out.

We are desperately in need of water but don't know what to do so we were told to write you, at what depth should we strike water in a shallow well? How far should we move to try again? What type of soil formation should we look for to find water? Should we go deeper with our present dry hole?

Answering our questions may not be possible but we will appreciate some advise. We are located on the ridge here about 2½ blocks from the present City well to the North East.

Yours Truly

J. B. Larson

Leon Creamery

CITY OF LEON, IOWA

H. R. PERKINS, Mayor
A. B. WORLEY, City Treasurer
ROBERT BURDETTE, City Attorney
LLOYD HOWELL, Water Superintendent
J. C. BROOKS, City Marshal

WILLIAM BOOS, First Ward
O. R. STOUT, Second Ward
DR. J. D. MYERS, Third Ward
CURTIS BIGLEY, At Large
FLOYD BROWN, At Large

WALTER OSBORN, City Clerk

Leon, Iowa, July 31st. 1948. AUG. 2 1948

Dr. H.G.Hershey ,

Iowa City, Iowa

State Geoligist ,

Dear Dr. Hershey;

I am writing to say that our city is making preliminary arrangements now to hold an ele tion and vote upon the propisition of issuing bonds for the purpose of digging a deep well in order to supp lement our present water supply. This is a municipally owned and oper ated plant and the question we wished to ask ,is what help can we get in way of information or help from your office in determining the pro bable source of supply and at what depth and cost if possible.

The city council has been talking of starting with a 24inch hole and had the idea of going deep if something did mot mater ialize and soemwhere near the present well water level which is I think around 1185 feet.

What it seems the council most desire now is a survey of the ground and advice as to what would be the best location to dig and a guess as to approximately how deep we will have to go.

We may sound crazy to you in making these statements but would appreciate knowing just what service your office can render us the cost of such service and any other thing that you would consider we should know about before commencing the project.

Thank you for any information you may send us.

Very truly yours

Walter Osborn

Walter Osborn
city clerk.

JAN 23 1950

Belmond, Iowa
January 21, 1950

COPY

CITY of LEON
Leon, Iowa

Re: Leon Deep Well No. 3

Gentlemen:

May we transmit attached hereto in one BW copy a print showing "As Built" information concerning the above mentioned well.

Copies of these prints are being supplied other interested parties.

Very truly yours,

ROWAT & MURRAY, ENGINNERS

LWM laa

Laurence W. Murray

LWM:laa
Att: 1 print
CC: Division of Public Health Engineering
CC: Thorpe Well Company
CC: Iowa Geological Survey
CC: Globe Machinery Company

December WEK

SEP 21 1949

Belmond, Iowa
September 17, 1949

City Council
Leon, Iowa

Re: Leon Deep Well No. 3

Gentlemen:

For record, may we submit the following summary of perforations placed in the 22, 20, 16, and 12 inch pipe casing.

Pipe Size	Level Perf.	Length of Perf. Sec. (feet)	Size of Perf.	Perf./lin.ft.
22" O. D.	533 - 553	20	½" x 3"	1½
* 20" O.D.	577.8 - 601	23.2	½" x 3"	1
16" O.D.	945 - 955	10	1" x 4"	2
16" O.D.	872 - 892	20	1" x 4"	2
16" O.D.	860 - 870	10	1" x 4"	2
16" O.D.	824 - 834	10	½" x 3"	2
16" O.D.	800 - 815	15	½" x 3"	2
16" O.D.	775 - 795	20	½" x 3"	2
12" O.D.	1012 - 1032	20	½" x 3"	2
12" O.D.	1090 - 1095	5	½" x 3"	2
12" O.D.	1210 - 1230	20	½" x 3"	2
12" O.D.	1316 - 1336	20	½" x 3"	2
12" O.D.	1391 - 1394	3	½" x 3"	2

* These perforations are closed out by overlapping pipe.

Very truly yours,

ROWAT & MURRAY, ENGINEERS

Laurence W. Murray

LWM:ih
cc. Geological Survey
Thorpe Well Company
Globe Machinery Company

COPY

OCT 30 1945

Leon Ia
Oct-29-45

Mr. Geo. Dennis
Iowa City Ia.

Dear Sirs

Enclosed you will find a Sample of some kind of Mineral or Substance we have in our City water here at Leon Ia

This Sample was chiped off the floor and side wall of a Basement. The plumbing in this basement developed a small leak or fine Spray and of course when the water vaporated this Sample what ever it may be was left. would appreciate it

very much if we could have a report on the Same. also which ever that is a small leak or Seepage in the plumbing this Sloution gathers

Resp Yours.

Geo E. Warren
W. Supt.
Leon Ia

Memo to. H G H.

From E. S.

Oct. 5, 1945

6

Re:- Sample from Geo. E. Warren, Leon, Iowa of material scraped from inside water pipe.

Material is very light gray, very soft to medium soft, crystalline, and is soluble in acid. Part of the material is transparent, and is not quite as readily soluble in acid. There seems to be quite a bit of silt also.

5

Leon:-

Two city wells, one 1100± deep and another 800' deep. Casing in the second of these wells was replaced in July or August 1945. Water from both wells is used by the town. For the past few years only the 1185' well was being used.

E. Schultz

Both Mr Tinsley & I would like to know how to overcome this Substance if there is any way at all.

Respt Yours.
Geo E. Warren
Water Supt.
Leon Iowa.

P.S. This Sample was Scraped from the inside of another Water pipe.

Leon Ia
Oct 3 - 15

Ia. Geological Survey
Iowa City Ia.

Gentlemen:

Im Sending in Seperate container the Sample of Mineral or what ever it may be which our water here at Leon Ia Contains. In due time it collects in pipes & water cuts enough to stop the flow of water. it acts the Same whether the water is hot or cold. I wrote you Some time ago about one of our Hatchery Men Mr Earl Tinsley installing a new Machine and plan on using City water if possible