

Temporary Pipe

Started 11/9/51 Finished 11/13/51 Depth 70'

Started 10" finished 6"

Static head 1' 10"

10"	21' 2"
8"	45'
6"	62' 4"

Water first encountered at 42' in gray sand
Static head went up to 5' 1" while City pump was
running in old well.

5	Black soil	5
2	Sand and gravel - boulders	7
5	Gray clay - coarse sand	12
30	Gray clay - sand and gravel streaks	42
3	Gray and fine	45
5	Coarse sand and gravel	50
20	Blue clay	70

5758

Town: Jewell { N E }
S W : County Hamilton
SW NW NW sec. 34 T 87 N., R. 24 E.
W. Twp.

[illegible]

Drilling dates

Elevations: Drilling curb feet; Land surface 1062' feet

Topographic position

Total depth: Reported 65 feet, Measured _____ feet

Drilling method

Hole and casing data. 10" pipe from +3 to 45'; 20' of 10" Everdur
1/8" slot screen 45 - 65'. Gravel pack

Original depth to water 14 ft. 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 ANALYSES (in parts per million)

Date samples _____

Sampled by _____

Total solids _____

Insoluble matter _____

Alkalinity (Meo) _____

Alkalinity (Phn) _____

pH _____

 $\text{Fe}_2\text{O}_3 + \text{Mn}_2\text{O}_3 + \text{Al}_2\text{O}_3$ _____

Alkali as sodium _____

Calcium _____

Magnesium _____

Iron (unfiltered) _____

Manganese _____

Nitrate _____

Fluoride _____

Chloride _____

Sulfate _____

Bicarbonate _____

Hardness (ppm) _____

Hardness (gpg) _____

Remarks _____

Laboratory data:

Sample storage location

EA4-8

Sample range

5-65

No. spls.

12

No. dupls. & Cond.

12 good

Spls. prepared by

McRame

Washed range

by

Driller's log and cond. _____

Insoluble residues: Prepared by _____

Studied by _____

Strip log _____

Microscopic study _____

Allison

strip log

Allison

Gen. log _____

Correl. by _____

Hamilton

August 1, 1951

Mr. Richard J. Gayer
Ames Engineering and Testing Service
218 East Lincoln Way
Ames, Iowa

Dear Mr. Gayer:

In response to your letter of July 17, Dr. Jeffords visited Jewell and the surrounding area on July 27 to check on the local occurrence of hydrogen sulfide in wells.

A faint but distinctive odor was noted at the city well in Ellsworth about 3 miles east of Jewell, and the farm supplies mentioned in your letter were visited together with other wells in the general vicinity. Seemingly, this hydrogen sulfide odor is relatively strong in the area from about 1 mile east to just west of town and extending about 4 miles to the north. Most, if not all, of these wells where the odor occurs penetrate the Gilmore City limestone insofar as we can determine from the available data. Some farm supplies do not encounter this difficulty because they depend on shallow drift aquifers or possibly because they penetrate only the uppermost Mississippian rocks.

It seems evident, therefore, that a well at Jewell to the Gilmore City-Hampton formations most probably will yield water having some sulfide odor. Possibly, the sulfide waters occur at the top or at definite levels within the water-bearing section. Thus, careful testing of the water at different levels during drilling might indicate a chance to case out some of the sulfide-bearing waters.

We do not have any appreciable data on the occurrence of shallow water-bearing gravel at Jewell, but the excellent service record at the present well and the several reported gravel wells in the adjacent area suggest that additional shallow wells may be possible. A suitable thickness of gravel, however, probably does not occur throughout all of this area. Seemingly, if test-drilling records available to the town do not cover the area adequately, a test drilling program is necessary to evaluate reliably the local occurrence of shallow gravel. A carefully planned pumping test at the present well and observation of water levels in nearby wells may be helpful in the interpretation of the perennial safe yield and the extent of the aquifer.

Mr. Richard J. Gayer

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August 1, 1951

You may be assured of our cooperation in planning and interpreting any desired test drilling and other testing. If we may be of further service on this or other projects, please do not hesitate to contact us.

Very truly yours,

H. G. Hershey

HGH:FMJ:emh

AMES ENGINEERING AND TESTING SERVICE

JUL 23 '51

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CONSULTING ENGINEERS

Soil Mechanics . Highways . Airports . Construction Materials

218 East Lincoln Way — Phone 3298

AMES, IOWA

July 20, 1951

Re: 40-599

Mr. H. G. Hershey
Iowa Geological Survey
Geology Annex
Iowa City, Iowa

Dear Sir:

Receipt is acknowledged of your letter of July 19, 1951 regarding the public water supply at Jewell, Iowa.

We would appreciate it very much if one of your geologists could make a brief field check on the local conditions in the area of Jewell. Of special interest is the occurrence of hydrogen sulfide in some private water supplies.

Thank you for your kind interest in this matter.

Very truly yours,

AMES ENGINEERING & TESTING SERVICE

Richard J. Gayer
By: Richard J. Gayer
Partner

RJG:ml

Hamilton Co. Gen.

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July 19, 1951

Mr. Richard J. Gayer
Ames Engineering and Testing Service
218 East Lincoln Way
Ames, Iowa

Dear Mr. Gayer:

In response to your letter of July 17 regarding the old deep well and the hydrogen sulfide problem at Jewell, Iowa, we have further reviewed our records.

The only information we have on the deep well is contained in a 1927 list of public water-supply installations by the Iowa Insurance Service Bureau. This states that the public supply of Jewell was obtained then from a well 1,000 feet deep. The well flowed until 1922, and subsequently the yield was ample for the pump having a capacity of 60,000 gallons a day.

We do not have any records on the three wells you list in your letter, and our information on other wells nearby that penetrate the Gilmore City-Hampton formations does not include mention of the occurrence of hydrogen sulfide. This problem, however, has been encountered at some wells in the general vicinity. As farm wells are drilled for small to moderate supplies of water, some of this objectionable water may be derived from low-capacity aquifers in Pennsylvanian sandstones above the Mississippian rocks. It does not seem unreasonable, however, that sulfide might occur locally in these Mississippian rocks. This odor problem can be resolved commonly by aeration of the water supply.

If additional information on the occurrence of hydrogen sulfide in this vicinity is needed for your studies, it may be desirable to arrange for one of our geologists to make a brief field check on local conditions.

We shall be interested to learn of developments on this project, and please do not hesitate to contact us again if we may be of further service.

Very truly yours,

H. G. Hershey

HGH:emh

JUL 18 '51

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AMES ENGINEERING AND TESTING SERVICE

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218 East Lincoln Way — Phone 3298

AMES, IOWA

July 17, 1951

Re: 40-599

Mr. H. Garland Hershey
Iowa Geological Survey
Geology Annex
Iowa City, Iowa

Dear Sir:

We have your letter and report of July 12, 1951 regarding the ground water conditions at Jewell, Iowa.

We have communicated with the council at Jewell since receiving your report and have been advised that several farm wells within a three-mile radius of the town have water supplies which have a definite odor of hydrogen sulfide. One of these wells is located directly between Jewell and Ellsworth and it is supposedly 350 feet deep or approximately the same depth as the town well at Ellsworth. This well is located one mile east and one-half mile north of Jewell on the Cecil W. Anderson farm.

NE on 34-87-24

Other wells mentioned were:

1. Chris Vespestad - one mile north, 3/4 mile west - H₂S odor
2. George Barkema - three miles north (on U. S. Highway 69) - H₂S odor

± level to Jewell

*190' TD
18' SWL*

We do not at this time know the depths of these wells or the elevation of the source of water supply. Do you have any further information in this regard?

Do you have any information on conditions encountered in the drilling of the original deep well at Jewell? The well referred to was abandoned as a town supply some time ago. According to some council members the depth of this well is reported to be about 1900 feet.

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We wish to thank you for your past cooperation. Any information you can supply with regard to the odor problem mentioned above will be greatly appreciated.

Very truly yours,

AMES ENGINEERING & TESTING SERVICE

Richard J. Gayer

By: Richard J. Gayer
Partner

WJW:ml

July 12, 1951

Mr. Richard J. Gayer
Ames Engineering & Testing Service
218 East Lincoln Way
Ames, Iowa

Dear Mr. Gayer:

In response to your letter of July 10 regarding the ground-water conditions at Jewell, Iowa, we have assembled the pertinent data available in the open files of the Geological Survey.

The altitude of the C&NW Railroad station in Jewell is reported to be about 1,055 feet above sea level. Assuming this as a starting altitude, the generalized geologic section to the top of the Maple Mill shale is given below. These depths, however, may need adjustment somewhat because of differences between the actual and assumed altitude for the drilling site.

<u>Formation and description</u>	<u>Thickness (ft.)</u>	<u>Depth (ft.)</u>	
		<u>From</u>	<u>To</u>
Pleistocene system			
Glacial drift (buff to gray pebbly clay with thin beds of sand and gravel)	115±	0	115±
Mississippian system			
Gilmore City limestone	100	115±	215
Hampton formation (limestone and dolomite, cherty in lower part)	165	215	380
Maple Mill shale		380	

We have no records of wells penetrating the bedrock surface at Jewell so that the exact depth to rock is not known. Possibly, also, thin Pennsylvanian shale and sandstone overlies the Mississippian rocks here.

Water for private domestic and stock purposes has been obtained from sand and gravel within or near the base of the glacial drift in the vicinity of Jewell. Besides the 62-foot town well, wells of L. D. Camp in the SE $\frac{1}{4}$ sec. 31 and A. W. Ewing in the NE $\frac{1}{4}$ sec. 21 of Lyon Township obtain water from this source. Should an appreciable thickness of gravel be encountered by a well, an adequate supply of water may be available. Commonly,

Mr. Richard J. Gayer

- 2 -

July 12, 1951

however, the perennial yield of these gravels in this area is not sufficient for the town supply. This water seems moderately hard and rather high in iron, although satisfactory for many uses.

The Gilmore City and Hampton formations of Mississippian age are the source of water for many wells in this part of Iowa. At farm and domestic wells in Hamilton County, yields of 6 to 20 gallons a minute are reported commonly. The Blairsburg town well had a reported yield of 69 gallons a minute at the end of a 7-hour test with a drawdown of 71 feet from a static water level of 56 feet. The Ellsworth town well (1948) was pumped at about 190 gallons a minute for 10 hours with a drawdown of 30 feet from a static water level of about 22 feet below the surface.

The Maple Mill shale is not a water-bearing formation, but the Devonian limestones and dolomites which occur probably 25 to 50 feet below the top of the shale probably would also yield water.

The available information, therefore, indicates that an adequate supply of water for a town supply at Jewell probably can be obtained from the Gilmore City-Hampton formations. This water seems to occur largely in crevices, however, so that it may be necessary to penetrate these beds to or nearly to the Maple Mill shale in order to encounter an adequate supply. Careful acidizing of the well may be desirable to increase the yield if only a moderate supply is encountered.

Mineral analyses of the water at the present town supply and from wells penetrating Mississippian rocks nearby are attached.

Very truly yours,

H. G. Hershey

HGH:RMJ:emh

IOWA GEOLOGICAL SURVEY
TABULATION OF WATER ANALYSES
(Dissolved constituents in parts per million)

COUNTY Hamilton

TOWN - Well No. Use - Location	Date of coll.	Depth (ft.)	Geol. source	°F.	Diss. solids	Fe	Mn	Ca	Mg	Na+ K(as Na)	HCO ₃	SO ₄	Cl	F	NO ₃	Hardness (calc. as CaCO ₃)			pH	Cond.
																Tot.	Carb.	Non- carb.		
Jewell Town well	7/3/34	62	Pleist.		387	5.5	.25	87	31	14	447	14	8	Tr.	.0	345	345	0	7.2	
do	7/28/49	do	do											.2		382				
Ellsworth Town well	7/22/49	365	Miss.		436	3.5	.0	62	28	51	461	3.1	1.0	378	.0	270	270	0	7.4	
Blairsburg Town well	4/2/41	360	Miss.		507	3.1	.0	85	40	37	525	42	4	1.0	.0	377	377	0	7.3	
Williams Town well	12/22/37	252	Miss.	49	430	.1	.03	80	44	22	512	1.8	8	1.0	.18	381	381	0	7.1	

NOTES:

JUL 11 '51

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AMES ENGINEERING AND TESTING SERVICE

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218 East Lincoln Way — Phone 3298

AMES, IOWA

July 10, 1951

Re: 40-599

Mr. H. Garland Hershey
Iowa Geological Survey
Geology Annex
Iowa City, Iowa

Dear Sir:

As engineers for the town of Jewell, Iowa, we have been asked to gather information for a proposed new water well for that town. We have been advised of the new well at Ellsworth which is 365 feet deep. Information is desired as to whether or not Jewell might hit a supply of water at the same approximate depth.

Any data concerning this problem will be most appreciated.

Very truly yours,

AMES ENGINEERING & TESTING SERVICE

Richard J. Gayer

By: Richard J. Gayer
Partner

RJG:ml

*Hamilton (28-27)
33-34) 87N-24W*

IOWA PRESS
CLIPPING BUREAU

Des Moines, Iowa

Record
Jewell, Iowa

NOV 29 1951

TEST WELL DRILLED FOR TOWN OF JEWELL

The town of Jewell Junction has taken the first step in securing new town well. A test well has been drilled by the Thorpe Well Co. of Des Moines, the low bidder. Lane Western, who maintain branch office at Ames, was the other bidder.

The test well was drilled to depth of about 70 feet and is located a short distance north of the present well.

The Ames Engineering Co. of Ames has been employed by the town of Jewell Jct. to supervise the new well project. This company drew up the contract and specifications upon which the bids were made by the two above well companies. The Ames Engineering Co. will now test the capacity output of water in the new well. Also, they will analyze the mineral content of the water.

If the test well proves to have an abundance of water, free from undesirable minerals, the Thorpe Well Co will get the go ahead signal to drill the new town well. They will also build a new pump house, install a new turbine pump and a motor to be used for pumping in the event electrical current is not available due to a storm.

When the new well is completed the town of Jewell will have an unlimited supply of water. Use of both wells will be alternated to supply water, perhaps on an every other week basis. This will insure pure water at all times without taxing either well to the limit.