WELL RECORD

Well is located.....miles N/S and.....miles E/W from

..... in.....,
(Nearest Town) (County)

in the .....¼.....¼ Sec.....T.....R.....

Owner LOMBARDI LE Well No. 3

Postoffice address .....

Contractor .....

Address .....

Driller .....

Well begun 5-28, 19 59

completed....., 19.....

Rig used—Cable, Rotary, Jet, or.....

Depth of well.....
(Feet)

Size of hole (note total amount of each size) 406' OF 8" PIPE IN 12" HOLE 94' OF 7⅞" OPEN HOLE

Main water supply at .....
(Feet below surface)

Final water head.....
(Feet above or below surface)

Is well pumped?.....

Yield .....
(Gallons per minute)

Water level when pumping.....

Position of well.....
(Upland, valley, side hill, etc.)

Date and Time	Water Level	SOURCE OF WATER		Production in Gallons per Minute	Pumping Level
		Depth	Type of Rock		

NOTE: Water levels should be recorded at time of change AND at regular intervals; for example each morning before drilling starts or at the end of each 100 feet of drilling.

RECORD OF PERMANENT CASING

Size Pipe	Amount of Pipe	Depth to Bottom of Pipe	Depth to Top of Pipe	Type* and Weight of Pipe	DIAGRAM OF WELL
8	406	406	0	25#	

*As cast, wrought iron, steel, concrete, etc.

Is screen used?..... Diameter.....
(Inches)

Length..... Depth to bottom.....
(Feet)

Depth to top.....Slot size.....

Are packers or seals used?.....

Kind .....

Where used.....

Kind of pump .....Dia.....
(Inches)

Capacity of pump.....
(g.p.m.)

Power used.....
(Kind and amount)

Depth to bottom of pump line.....feet,

including .....feet tailpiece.

Remarks on construction of well.....

.....

Sample No.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	0	4	4	TOP SOIL
	4	10	6	GRAY CLAY
	10	15	5	YELLOW CLAY
	15	115	100	BLUE CLAY
	115	120	5	SANDY GRAY CLAY
	120	123	3	SANDY YELLOW CLAY
	123	145	22	BLUE CLAY
	145	148	3	SAND + GRAVEL
	148	164	16	BLUE CLAY
	164	165	1	GRAVEL
	165	168	3	YELLOW CLAY
	168	185	17	RUSTY COARSE SAND
	185	195	10	CLEAN COARSE SAND
	195	196	1	YELLOW SHALE
	196	202	6	CLEAN COARSE SAND
	202	220	18	GRAY SHALE
	220	234	14	DOLOMITE

Sample No.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	234	238	4	BLUE SHALE
	238	241	3	GRAY & RED SHALE
	241	245	4	GRAY SHALE
	245	250	5	BLUE SHALE
	250	255	5	RED & GRAY SHALE
	255	260	5	YELLOW SHALE
	260	270	10	BROWN & RED SHALE
	270	280	10	YELLOW SHALE
	280	290	10	GRAY SHALE
	290	312	22	BLUE SHALE
	312	318	6	COAL
	318	325	7	GRAY SHALE
	325	370	45	BLUE SHALE
	370	398	28	SAND STONE
	398	408	10	LIME STONE
	408	420	12	SAND STONE
	420	450	30	LIME STONE & SHA

Sample No.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	450	475	25	BLUE SHALE
	475	493	18	SANDSTONE
	493	499	6	GRAY SHALE
	499	500	1	DOLOMITE & LIMESTONE NO SAMPLE
	500			GREENY WHITE SHALE

LOHRVILLE CITY WELL
CONT.

Sample No.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS — KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	501	513	12	GREEN SHALE WITH THIN SEAMS OF HARD ROCK & DOLOMITE
	513	515	2	LIME STONE
	515	520	5	GREEN & GRAY SHALE WITH SEAM OF LIME STONE
	520	530	10	SHALY LIMESTONE
	530	535	5	WHITE SHALE & LIMESTONE
	535	540	5	WHITE SHALE
	540	545	5	GRAY SHALE & LIME STONE SEAM

Date and Time	Water Level	SOURCE OF WATER		Production in Gallons per Minute	Pumping Level
		Depth	Type of Rock		
7-3-59	93	562	LIME	25	93

NOTE: Water levels should be recorded at time of change AND at regular intervals; for example each morning before drilling starts or at the end of each 100 feet of drilling.

RECORD OF PERMANENT CASING

Size Pipe	Amount of Pipe	Depth to Bottom of Pipe	Depth to Top of Pipe	Type* and Weight of Pipe	DIAGRAM OF WELL

*As cast, wrought iron, steel, concrete, etc.

Is screen used?..... Diameter.....
(Inches)

Length..... Depth to bottom.....
(Feet)

Depth to top.....Slot size.....

Are packers or seals used?.....

Kind .....

Where used.....

Kind of pump.....Dia.....
(Inches)

Capacity of pump.....
(g.p.m.)

Power used.....
(Kind and amount)

Depth to bottom of pump line.....feet,

including .....feet tailpiece.

Remarks on construction of well.....

.....

Sample No.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	545	550	5	WHITE SHALE & MOTTLED LIMESTONE
	550	555	5	GRAY & GREEN SHALE & STREAKS OF MOTTLED LIMESTONE
	555	558	3	WHITE SHALE
	558	560	2	GRAY & BLACKISH SHALE
	560	561	1	OILY BLACKISH SHALE
	561	562	1	LIMESTONE NO SAMPLE
	562	572	10	LIMESTONE

Book #4

DRILLER'S NOTEBOOK

N10722

WELL RECORD

DRILLER Bob WINKLER

ADDRESS SCHALLER

572-645

OWNER LOHRVILLE

ADDRESS

RETURN TO
IOWA GEOLOGICAL SURVEY
IOWA CITY, IOWA

WELL RECORD

Well is located.....miles N/E/S/W and.....miles N/E/W from

..... in.....,
(Nearest Town) (County)

in the .....¼.....¼ Sec.....T.....R.....

Owner LOHRVILLE Well No.....

Postoffice address .....

Contractor M F MERKLEY

Address SCHALLER

Driller Bob WINKLER

Well begun 5-26-59, 19.....;

completed 7-14-59, 19.....

Rig used—Cable, Rotary, Jet, or.....

Depth of well 645
(Feet)

Size of hole (note total amount of each size).....

.....

Main water supply at 639 TO 645
(Feet below surface)

Final water head 68
(Feet above or below surface)

Is well pumped? YES

Yield 300
(Gallons per minute)

Water level when pumping NOT OVER 120'

Position of well 8' N OF WATER PLANT
(Upland, valley, side hill, etc.)

Date and Time	Water Level	SOURCE OF WATER		Production in Gallons per Minute	Pumping Level
		Depth	Type of Rock		
6-10-59	81	408 420	SAND STONE	45	132
7-3-59	93	562	LIME	25	95
7-10-59	88	645	LIME	300	Not to 122'

NOTE: Water levels should be recorded at time of change AND at regular intervals; for example each morning before drilling starts or at the end of each 100 feet of drilling.

TEMPORARY

RECORD OF PERMANENT CASING

Size Pipe	Amount of Pipe	Depth to Bottom of Pipe	Depth to Top of Pipe	Type* and Weight of Pipe	DIAGRAM OF WELL
2"	21'			PIPE	
"	406'			PIPE	
D	75'			CASING	

*As cast, wrought iron, steel, concrete, etc.

Is screen used?..... Diameter.....
(Inches)

Length..... Depth to bottom.....
(Feet)

Depth to top.....Slot size.....

Are packers or seals used?.....

Kind .....

Where used.....

Kind of pump..... .....Dia.....
(Inches)

Capacity of pump.....
(g.p.m.)

Power used.....
(Kind and amount)

Depth to bottom of pump line.....feet,

including .....feet tailpiece.

Remarks on construction of well.....

TEST HOLE

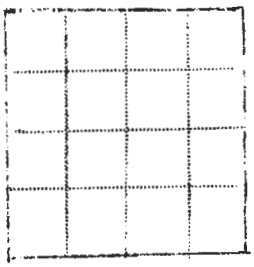
CONTINUED

Sample No.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS — KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	572	592	20	LIME [illegible]
	592	593	1	GRAY SHALE
	593	639	46	LIME STONE
	639	645	6	NO SAMPLE LOST
				CIACULATION IN C REVICE

7½' Lohrville Quad
421611N-0943253-01
86-32W-11 CCAD
1983 field located
Elev: 1152' CI=10'

W10722

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey
RECORD OF WELLS



Location:

Town: Lohrville (NE) (SW), County Calhoun

SW SW sec. 13 T. 86 N., R. 32 (W.) Twp

Well name and number

Owner Lohrville Town Well #3 Address LOHRVILLE, IOWA

Tenant Address

Contractor M. F. MERKLEY Address Schaller, IOWA

Drillers BOB WINKLER

Drilling dates 5/28/59 – 7/14/59

Well data:

Altitudes: Drilling curb feet; Land surface feet

Determined by

Topographic position

Total depth: Reported 645 feet; Measured feet

Drilling method ROTARY

Hole and casing data 21' OF 12" CASING
406' - 8" in 12" hole
575' OF 6¼" CASING

Original depth to water 88' ft. above below Date

Source of data

Sources of water: Principal 645

Others

PRODUCTION DATA

Date ______________________

Static water level 88

Pumping water level 120

Yield (g.p.m.) 300

Measuring point ______________________

Duration of pumping ______________________

Specific capacity ______________________

LABORATORY DATA

SA3-10,11

Well No. W10722 Sample range 0-639 No. of samples 138

No. of dupls. and cond. 138-good Washed range 20-639

Samples prepared by Roger Sunlent Date Aug 10, 1959

Logged by Northup Date July-Aug. 1959

Correlations by ______________________ Date ______________________

9-230

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington ____ District ____

Report on Water Use Town of Lohrville (Calhoun Co.) Permit No. 674

Day of Month	May 1960 Thousand GPD	Hours	SWL	DD.	June 1960 Thousand GPD	Hours	SWL	DD	July 1960 Thousand GPD	Hours	SWL	DD
1					68	7	97	2	42	5	96	1
2					49	6	97	2	61	7	96	1
3					62	7	97	2	48	6	96	1
4					62	7	97	2	40	5	96	1
5					45	5	97	2	52	6	96	1
6					60	7	97	2	60	7	96	1
7					63	7	97	2	53	6	96	1
8					69	8	96	1	54	6	96	1
9					53	6	96	1	48	6	96	1
10	55	6	97	2	62	7	96	1	51	6	96	1
11	57	7	97	2	54	6	96	1	67	8	96	1
12	67	8	97	2	48	5	96	1	69	8	96	1
13	63	7	97	2	70	8	96	1	50	6	96	1
14	70	8	97	2	54	6	96	1	67	8	96	1
15	41	5	97	2	62	7	96	1	44	5	96	1
16	70	8	97	2	57	6	96	1	65	8	96	1
17	51	6	97	2	48	5	96	1	33	4	96	1
18	58	7	97	2	74	8	96	1	67	8	95	0
19	61	7	97	2	39	5	96	1	62	7	95	0
20	57	7	97	2	72	8	96	1	59	6	95	0
21	64	7	97	2	59	7	96	1	59	6	95	0
22	39	4	97	2	61	7	96	1	61	7	95	0
23	83	9	97	2	68	8	96	1	79	9	95	0
24	56	6	97	2	64	7	96	1	29	4	95	0
25	47	5	97	2	66	7	96	1	73	8	95	0
26	76	8	97	2	34	4	96	1	50	6	95	0
27	52	6	97	2	69	8	96	1	53	6	95	0
28	70	8	97	2	70	8	96	1	53	6	95	0
29	41	5	97	2	51	6	96	1	76	9	95	0
30	54	6	97	2	49	6	96	1	67	8	95	0
31	77	8	97	2					43	5	95	0

U. S. GOVERNMENT PRINTING OFFICE 16—40791-1

Iowa
Iowa Department of Health
REGIONAL HEALTH SERVICE NO. 2
Fort Dodge, Iowa

EDMUND G. ZIMMERER, M. D.
COMMISSIONER
DES MOINES, IOWA

IN REPLYING ADDRESS
X. P. Boyles
Regional Engineer

2

April 28, 1959

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

Dear Dr. Hershey:

Re: New well development at Lohrville

The town of Lohrville has recently awarded a contract to McClure and Culver Consulting Engineers of Jefferson for the preparation of design and plans for a new deep well. The existing municipal wells and the municipal lime soda ash water softening plant is located in Sec. 11, T. 86, N. R. 32 W. in the town of Lohrville, Calhoun county. The No. 1 well is located within the water treatment building, is 205' deep, previously pumped at 50 g.p.m. and has now failed. The No. 2 drilled gravel packed well 210' deep, is located approximately 80' north of well #1. This new well #2 was constructed in 1946 and is confined in a separate small pumphouse located approximately 40' north of the water treatment building. This well #2 was drilled by the Thorpe Well Co.

It is proposed to drill a new well in the near vicinity of the treatment building and due to the congestion of the area it will probably be necessary to locate this new well adjacent to the north wall of the water treatment building approximately midway between wells #1 and #2 and approximately 30 to 35' south from the active 210' deep well.

At the moment it is the council's thought to tap an aquifer a fair distance below the one serving the active 210' gravel packed deep well.

It is therefore desired to secure your forecast on possibilities in the area and as near as I know at the present time the town is thinking of a well similar in depth to the 825' one completed in August 1958 by the Thorpe Well Co. at Farnhamville.

It is very possible that Jon McClure of the McClure & Culver Consulting Engineers at Jefferson may contact you regarding a forecast. If so, they will be referrin to the same well probabilities as discussed in this letter. Since the Farnhamville well #4, completed in August 1958, is probably the latest and closest deep well to the Lohrville area, and since a log of that well is not available either in the Regional Office or at Lohrville in the town files, we would also like to have that log, if available.

Thank you for past favors regarding general forecasts and will keep you informed on the developments at Lohrville.

Very truly yours,

X. P. Boyles
Regional Engineer

XPB:DES
Div. of Public Health Engineering
State Dept. of Health

Calhoun

April 30, 1959

Mr. X. P. Boyles
Regional Engineer
Iowa Department of Health
Fort Dodge, Iowa

Dear Mr. Boyles:

In Dr. Hershey's absence we are replying to your letter of April 28 requesting information on the water supply possibilities at Lohrville, Iowa.

A copy of the report which we recently prepared on Lohrville is enclosed. Note that this report includes a forecast of the anticipated geologic section at Lohrville down to the top of the Maquoketa formation. This section is based chiefly on the log of the nearby Farnhamville town well put down in 1932. Although we have the sample cuttings from the new Farnhamville well (1958), our subsurface man has not got around to studying them yet. At present he is away on vacation. We will arrange to have a copy of the log made for you as soon as possible.

We hope this information will aid in developing a new well at Lohrville. Please feel free to call or write us if we can provide additional help in any way.

Very truly yours,

H. G. Hershey

PJH:mc
Enclosure

GROUND-WATER CONDITIONS AT LOHRVILLE, IOWA

The following statements represent an interpretation of the available hydrologic data on Lohrville in the files of the investigations of the Iowa and Federal Geological Surveys.

The town of Lohrville is located in sections 10, 11, 14, and 15, T. 86N., R. 32W., Calhoun County on the flat to gently rolling Mankato till plain at a general elevation of between 1140 to 1150 feet above sea level. Based on an assumed starting elevation of 1150 feet a generalized log of the formations expected to underlie the town as far as the top of the Maquoketa cherty dolomite is summarized as follows:

Formation	Thickness (ft)	Depth Range (ft)
Quaternary system		
Pleistocene series (glacial drift and sand and gravel)	210±	0-210±
Pennsylvanian system		
Desmoinesian series (mostly shale, perhaps some thin coal seams)	70	210±-280
Mississippian system		
St. Louis and Warsaw formations (dolomite, may include some chert and shale)	65	280-345
Keokuk-Burlington formations (limestone and dolomite, cherty)	60	345-405
Gilmore City limestone, partly oolitic	85	405-490
Hampton formation (dolomite and limestone, cherty in lower part)	210	490-700
North Hill limestone	5	700-705
Prospect Hill siltstone	5	705-710
Maple Mill shale	10	710-720
Devonian system		
Lime Creek formation (dolomite and minor shale)	140	720-860
Cedar Valley formation (dolomite, minor limestone)	260	860-1120

Formation	Thickness (ft)	Depth Range (ft)
Wapsipinicon formation (dolomite, minor shale)	130	1120-1250
Ordovician system		
Maquoketa formation (cherty dolomite)		1250-

Allowance should be made for minor adjustments in this forecast since the nearest deep well records are at Farnhamville, Somers, and Rockwell City and the structure and thickness of the formations may vary from one locality to another.

The existing municipal well at Lohrville is 210 feet deep and apparently derives its supply from glacial sand and gravel. Some reworked Dakota sandstone might be represented in the bottom of this well. A gravel pack type construction was used with a screen in the lower part of the well. The original production test in 1946 reportedly produced 135 gallons a minute with 70 feet of drawdown from a static water level of 70 feet below the surface. Mineral analysis indicates the water to be acceptable for drinking and other domestic uses, but having a hardness of more than 800 parts per million.

A new well of this type might be drilled at Lohrville that will yield sufficient water. In this case, the well should be located as far as possible from the existing town well or from any other heavily pumped well drawing upon the same gravel formation, to prevent excess interference.

Bedrock is expected to occur just below the bottom of the present 210-foot well although there is some chance that strata of Cretaceous age including the Dakota sandstone might have been encountered in the bottom several feet of the town well and will continue for a short distance below. The Dakota sandstone is the source of supply at Lake City, although it may lense out or be too thin to have much value as a water bed farther east toward Lohrville. The water from the Dakota aquifer at Lake City is of good quality and considerably softer than the water developed at the Lohrville well.

Additional drilling will penetrate the shale formations belonging to the Desmoinesian series of Pennsylvanian age. For all practical purposes this interval will not yield water since the shale strata are a relatively impermeable type of rock. These strata will have to be cased out to prevent them from caving into and filling the well.

Small to moderate supplies of water normally can be obtained from the underlying limestone and dolomite formations of Mississippian age

in this part of Iowa. Whether adequate water will be found in the Mississippian formations at Lohrville is difficult to predict. The yield from limestone and dolomite strata depends on the presence of large crevices or a shattered condition of the rock which provide passageways for the movement of the water to the pumped well. Since the two Farnhamville town wells both extended through the complete Mississippian section into the underlying Devonian rocks, the Mississippian formations may be rather tightly cemented in this region. Under such conditions the yields will be correspondingly low. Acidizing the water beds may appreciably increase the production if necessary. A yield of 35 gallons a minute with 65 to 75 feet of drawdown and a pumping level of 100 to 110 feet was obtained in the Farnhamville well sunk in 1932 to 775 feet. Last year the new well at Farnhamville went an additional 50 feet to a depth of 825 feet and reportedly produced 170 g.p.m. during a 3-hour test. No data were supplied on water levels. Mineral analyses indicate the water from the deep Farnhamville wells to be almost twice as soft as the Lohrville water supply. However, the water from the new Farnhamville well showed 3.4 parts per million iron in solution which could cause trouble by staining laundry and plumbing fixtures.

A few years ago a new municipal well at Harcourt penetrated about 400 feet into the Devonian rocks. It was reported to be pumped at 60 g.p.m. Perhaps larger supplies could have been obtained from this well, but no data were received on the production test and water levels. The water was of acceptable mineral quality and not much different from the water in the new Farnhamville well.

Several mineral analyses of the water from the various source rocks are given on a separate sheet included with this report.

To summarize, this report indicates 2 or 3 possibilities for developing an adequate ground-water supply at Lohrville as follows: 1) Glacial sand and gravel, 2) the Dakota sandstone, and 3) the combined Mississippian and Devonian rocks. Actual drilling, test pumping and water sampling will provide the most reliable information on the water potential and quality of these sources.

PJH 4/59

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

Town - Well No Owner	Date of coll.	Depth (ft.)	Geol. source	°F	Diss. solids	Fe	Mn	Ca	Mg	K	Na	CO_3	HCO_3	SO_4	Cl	F	NO_3	Hardness cal. as $CaCO_3$ tot	carb	non carb	pH	Cond
Lohrville Town	12/46	210	Plaist.		1256	0.0	3.5	214	71		84	-	408	462	1.0	0.6	.8	826	408	328	7.2	1447
Lake City No. 1	11/56	300	Dakota		907	.56	1.2	171	54	4.0	50	-	581	261	4.5	.39	<.44	649	476	173	7.5	1160
(1932) Farnhamville Town	1/37	776	Miss. Dev.	53	728	1.1	0.0	150	45		22		371	253	20	2.	2.2	560	304	156	6.9	
(1958) Farnhamville Town	2/58	825	"		763	3.6	.05	110	80	13	45	0	410	265	14	2.2	14	480	336	144	7.2	1110

NOTES: < = less than