



TEST HOLE REPORT

Layne-Western Company, Inc.

89082-3-Layne #31604

Contract Name City of Anamosa
Job No. 13-1135 Date 09/90 - 10/90
City Anamosa State Iowa

WELL No. 5

Driller Phil Harris

Test Hole Location
Distance and Direction from Permanent Landmark or Previous Test Hole

TEST LOG

Table with columns: FROM, TO, MARSH FUNNEL VISCOSITY SECONDS, MUD PIT LOSS INCHES, FORMATION. Rows include: 0-45 Top soil, clay, shale; 45-85 Sand and gravel, shale; 85-210 Brown-white weathered limestone, trace of chert; 210-240 Light brown-pink-gray limestone, trace of chert; 240-410 Light and dark gray Dolomite, trace of chert; 410-450 Light gray-brown Dolomite; 450-455 Gray Dolomite, trace of gray shale; 455-580 Gray-green shale, trace gray Dolomite; 580-655 Brown-gray limestone, trace sandy shale; 655-950 Brown-gray Dolomite, traces of chert; 950-1010 Sandstone; 1010-1115 Light gray Dolomite; 1115-1360 Light and dark gray Dolomite; 1360-1410 Sandstone, trace of Dolomite; 1410-1475 Gray Dolomite.

1475 Total depth

NOTES: Size of Pit X X DEEP

3 1 6 2 4

WELL RECORD

Well is located _____ miles S and _____ miles S from
N E
E E
W W
Div. Street
ANAMOSIA _____ in *Jones* _____
(Nearest Town) (County)

in the _____ 1/4 _____ 1/4 Sec. _____ T. _____ R. _____
Owner *ANAMOSIA* _____ Well No. *5* _____

Postoffice address _____

Contractor *LAYNE-WESTERN CO.*

Address *P.O. 6126 620 South 38th St.*

Driller *KE HANAS 66106*
Philip HARRIS

Well begun _____ *9-4* _____, 19 *90*

completed _____, 19 _____

Rig used—Cable *(Rotary)*, Jet, or _____

Depth of well _____
(Feet)

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

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.)*)

3 1 6 2 4

RECORD OF PERMANENT CASING

Size Pipe	Amount of Pipe	Depth to Bottom of Pipe	Depth to Top of Pipe	Type ^o and Weight of Pipe	DIAGRAM OF WELL
20"	87'	0	87		

^oAs 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-----

31624

SAMPLE NO.	DEPTH		THICKNESS
	From	To	
	0	15	
	15	40	
	40	85	
	85	210	
	210	240	
	240	410	
	410	450	
	450	580	
	580	655	
	655	665	
	665	950	
	950	995	
	995	1070	

DESCRIPTION OF BEDS

KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.

Topsoil Clay

Shale Clay

Sand Gravel

BR white Weathered limestone ^{Trace} chertL BR - gray - pink limestone - ^{Trace} chert

L-D gray limestone - chert.

L - gray Brown Dolomite

gray - limestone gray - green shale

BR + Gray limestone Dolo Sandy shale

gray Dolo - Weathered limestone

BR - gray Dolo traced Shales

Sandstone (perforation rate 30%)

Gray Dolomite

31624

WELL RECORD

Well is located _____ miles S and _____ miles S from
N E N
E E
W W

_____ in _____
(Nearest Town) (County)

in the _____ 1/4 _____ 1/4 Sec. _____ T. _____ R. _____

Owner Anamesa Well No. 5

Postoffice address _____

Contractor L. Ayne western

Address _____

Driller Philip Hall's

Well begun _____, 19____;
completed _____, 19____

Rig used—Cable, Rotary, Jet, or _____

Depth of well _____
(Feet)

Size of hole (note total amount of each size) 8 7/8" x 26"

20 Casing 8 7/8" - 1080 - 17 1/2" casing
1 1/2" tile from 1080 - 1475

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.)

31624

RECORD OF PERMANENT CASING

Size Pipe	Amount of Pipe	Depth to Bottom of Pipe	Depth to Top of Pipe	Type ^o and Weight of Pipe	DIAGRAM OF WELL
20"	87	87	0		
12 $\frac{3}{4}$ "	1060	1060	2		

^oAs 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-----

31624

SAMPLE NO.	DEPTH		THICKNESS
	From	To	
	1080	1115	
	1115	1130	
	1130	1360	
	1360	1415	
	1415	1475	

DESCRIPTION OF BEDS

KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.

L gray Dolomite
L gray Dolomite trace green shale
L-D gray Dolomite
Sandstone trace Dolomite
gray Dolomite



Hygienic Laboratory

The University of Iowa

Oakdale Hall
 Iowa City, IA 52242
 Telephone: (319) 335-4500
 FAX: (319) 335-4555

H.A. Wallace Building
 900 East Grand, Des Moines, IA 50319
 Telephone: (515) 281-5371
 FAX: (515) 243-1349

Report Results To	Sample Identification: 9013688
LAYNE WESTERN CO	Submitter Reference: WELL #5
705 S.DUFF AVE	Location: ANAMOSA
AMES, IA 50010	Sample Type: WATER
Date Received: 10/12/90	Date Collected: 10/10/90 12:00:00
Date Reported: 11/14/90	Collected by: HARRIS P.

Comments

WELL #5 DISCHARGE. DEPTH=1475 PUMPED 2.5 HRS AT 537 GPM
 TESTS PER CALL TO ROY 10/12/90 10:15 LJL

--- Results of Analyses ---

Description: INORGANIC CHEMISTRY

Analyte	Concentration	Method	Analyst/Verifier	Date Analyzed
pH VALUE (LAB)	7.65 pH UNITS	EPA 150.1	SMM/DP	10/12/90
SPEC. CONDUCTANCE	950 uMHOS @ 25 C	EPA 120.1	SMM/DP	10/12/90
PHEN. ALKALINITY	NONE MG/L as CaCO3	EPA 310.1	SMM/DP	10/12/90
TOTAL ALKALINITY	266 MG/L as CaCO3	EPA 310.1	SMM/DP	10/12/90
TOTAL HARDNESS	286 MG/L as CaCO3	EPA 130.2	SMM/DP	10/29/90
TOTAL HARDNESS	16.7 GRAINS/GALLON	EPA 130.2	SMM/DP	10/29/90
SILICA	0.8 MG/L as SiO2	EPA 370.1	RS /DP	10/16/90
TOTAL SOLIDS	578 MG/L @103 C	EPA 160.3	RS /DP	10/29/90
DISSOLVED SOLIDS	578 MG/L @180 C	EPA 160.1	RS /DP	10/29/90
CALCIUM	60 MG/L	EPA 200.7	SR /DP	10/29/90
MAGNESIUM	33 MG/L	EPA 200.7	SR /DP	10/29/90
POTASSIUM	13 MG/L	EPA 200.7	SR /DP	10/29/90
SODIUM	81 MG/L	EPA 200.7	SR /DP	10/29/90
BICARBONATE	324 MG/L	S.M. 403	SMM/DP	10/12/90
CARBONATE	NONE MG/L	S.M. 403	SMM/DP	10/12/90
CHLORIDE	17 MG/L	EPA 325.3	SMM/DP	10/12/90
FLUORIDE	1.2 MG/L	USGS1432784	BR /DP	10/18/90
NO2+NO3 AS NITRATE	<0.1 MG/L	EPA 353.2	BR /DP	10/16/90
SULFATE	190 MG/L	EPA 275.4	SMM/DP	10/15/90
LANGELIER INDEX	0.2 UNITS	S.M. 203	SMM/DP	10/29/90
STABILITY INDEX	7.25 UNITS	S.M. 203	SMM/DP	10/29/90
AQUAPOISE PH	7.45 UNITS	S.M. 203	SMM/DP	10/29/90
ARSENIC	<0.01 MG/L	EPA 206.2	DC /DP	10/26/90
BARIUM	<0.05 MG/L	EPA 200.7	SR /DP	11/06/90
CADMIUM	<0.001 MG/L	EPA 213.2	DC /DP	11/06/90

PPM - Parts/Million
 PPB - Parts/Billion
 < - Less than
 Quantitation Limit - Lowest concentration reliably measured

MG/L - Milligrams/Liter
 uG/L - Micrograms/Liter
 > - Greater than

MG/KG - Milligrams/Kilogram
 uG/KG - Micrograms/Kilogram
 pCi/L - Pico Curies/Liter



Hygienic Laboratory

The University of Iowa

Page No: 2
UHL Sample No: 9013688

Description: INORGANIC CHEMISTRY

Analyte	Concentration	Method	Analyst/ Verifier	Date Analyzed
CHROMIUM	<0.01 MG/L	EPA 218.2	DC /DP	11/06/90
COPPER	<0.01 MG/L	EPA 220.1	SMM/DP	10/25/90
DISSOLVED IRON	0.40 MG/L	EPA 200.7	SR /DP	10/29/90
TOTAL IRON	0.40 MG/L	EPA 200.7	SR /DP	10/29/90
LEAD	<0.001 MG/L	EPA 239.2	DC /DP	10/26/90
MANGANESE	<0.02 MG/L	EPA 200.7	SR /DP	10/29/90
MERCURY	<0.001 MG/L	EPA 245.1	SMM/DP	10/17/90
SELENIUM	<0.01 MG/L	EPA 270.2	DC /DP	10/26/90
SILVER	<0.01 MG/L	EPA 272.1	ML /DP	10/19/90
ZINC	<0.02 MG/L	EPA 200.7	SR /DP	11/06/90

Description: RADIOCHEMISTRY

Analyte	Conc.	Units	Prec.	Quant. Limit	Method	Analyst/ Verifier	Date Analyzed
GROSS ALPHA	7.9	pCi/L	1.4	0.6	EPA 900.0	DR /MM	10/17/90
GROSS BETA	22.0	pCi/L	3.4	4.3	EPA 900.0	DR /MM	10/17/90
RADIUM-226	3.7	pCi/L	0.3	0.1	EPA 904.0	DCK/MM	11/09/90
RADIUM-228	2.0	pCi/L	1.6	0.9	EPA 904.0	DCK/MM	11/09/90
TOTAL RADIUMS	5.7	pCi/L			EPA 904.0	DCK/MM	11/09/90

Coordinator of analytical services - Lynn Hudachek @ (319) 335-4500

PPM - Parts/Million

PPB - Parts/Billion

< - Less than

Quantitation Limit - Lowest concentration reliably measured

MG/L - Milligrams/Liter

uG/L - Micrograms/Liter

> - Greater than

MG/KG - Milligrams/Kilogram

uG/KG - Micrograms/Kilogram

pCi/L - Pico Curies/Liter