

yellow copy – County Health Officer



WELL INFORMATION - ROCK WELLS

Layne®-Western

a division of Layne Christensen Company

PROFESSIONAL SERVICES FOR WATER SYSTEMS

721 West Illinois Avenue • Aurora, Illinois 60506-2892 • Phone 630/897-6841

Name Of Job City of Ankeny ASR Well No. 2 Date April 30, 2008City Ankeny State IowaWell No. ASR No. 2 Drillers Bill Diehl, Kevin Mitchell - Toolpusher - Ed HallWell Location 500 ft. (N) and 1430 ft. (E) of the SW corner ofthe SW 1/4 of Section 6, Twp. 80 (N), Range 23 (W) Polk CountyOtherwise located as Otter Creek Golf Course, 500' N. of NE 36th St. (110th Ave.) and 1430' E. of NE Delaware Ave.41° 45' 43.80" N, 93° 34' 33.15" WWork Began: 11/27/2007 Work Completed: 3/12/2008 / 4/8/2008

Casing Record: Amount	Dia.	Wt. or Thickness	Material						
<u>347'</u>	<u>30" OD</u>	<u>0.500"</u>	<u>Steel</u>	with	<u>Weld</u>	joints from	<u>+0'</u>	To	<u>347'</u>
<u>819'</u>	<u>24" OD</u>	<u>0.500"</u>	<u>Steel</u>	with	<u>Weld</u>	joints from	<u>+2</u>	To	<u>817'</u>
<u>1324'</u>	<u>18" OD</u>	<u>0.500"</u>	<u>Steel</u>	with	<u>Weld</u>	joints from	<u>817'</u>	To	<u>2141'</u>
				with		joints from		To	

Hole Record:

<u>34</u>	Inch from	<u>0</u>	to	<u>347'</u>
<u>29</u>	Inch from	<u>347'</u>	to	<u>824'</u>
<u>22-3/4</u>	Inch from	<u>824'</u>	to	<u>2141'</u>
<u>16-3/4</u>	Inch from	<u>2141'</u>	to	<u>2526'</u>
	Inch from		to	bottom of hole

Cementing Record: 30" OD pressure grouted 347' to surface; 18" OD and 24" OD pressure grouted 2141' to ground level.Well Test Data: Static Level 370'; pumping level 540' after 6 hours pumping at 1317 g.p.m.Length of test 6 hrs. See Well Test Data Sheet Dated April 3, 2008 Preliminary TestRemarks 18"x24" 1/2" wall swage reducer @ 817'. Approximate Surface Elevation 951. City of Ankeny to have well tested by others at a later date.Layne Job No. 160030B Well Permit No.: 2008-081 PWSID# 7709053

LW-96

SEE OTHER SIDE

043008-lb

WELL LOG

Feet		Feet	Description
0	to	75	Clay
75	to	85	Sand
85	to	270	Sandy shale
270	to	330	Hard shale gray
330	to	405	Lime
405	to	480	Gray shaley lime
480	to	670	Tar lime
670	to	735	Gray sandy lime with shale
735	to	834	Gray and white lime
834	to	910	Dark gray lime
910	to	955	Dark brown lime
955	to	1240	Tar and gray lime
1240	to	1245	Gray and tan lime with traces of anhydrite
1245	to	1325	Tan and gray lime
1325	to	1465	Gray sandy lime
1465	to	1550	Dolomite wth chert and black shale
1550	to	1705	Sandy lime, chert
1705	to	1865	Sandy lime
1865	to	1955	Dolomite, lime, shale
1955	to	2045	Lime and sand
2045	to	2140	Lime and chert
2140	to	2150	Sandy lime dolomite
2150	to	2290	Sandstone and lime trace
2290	to	2445	Sandstone with sandy lime
2445	to	2526	Dolomite and lime
	to		
	to		
	to		
	to		
	to		

W64763

Northway Well and Pump Co.

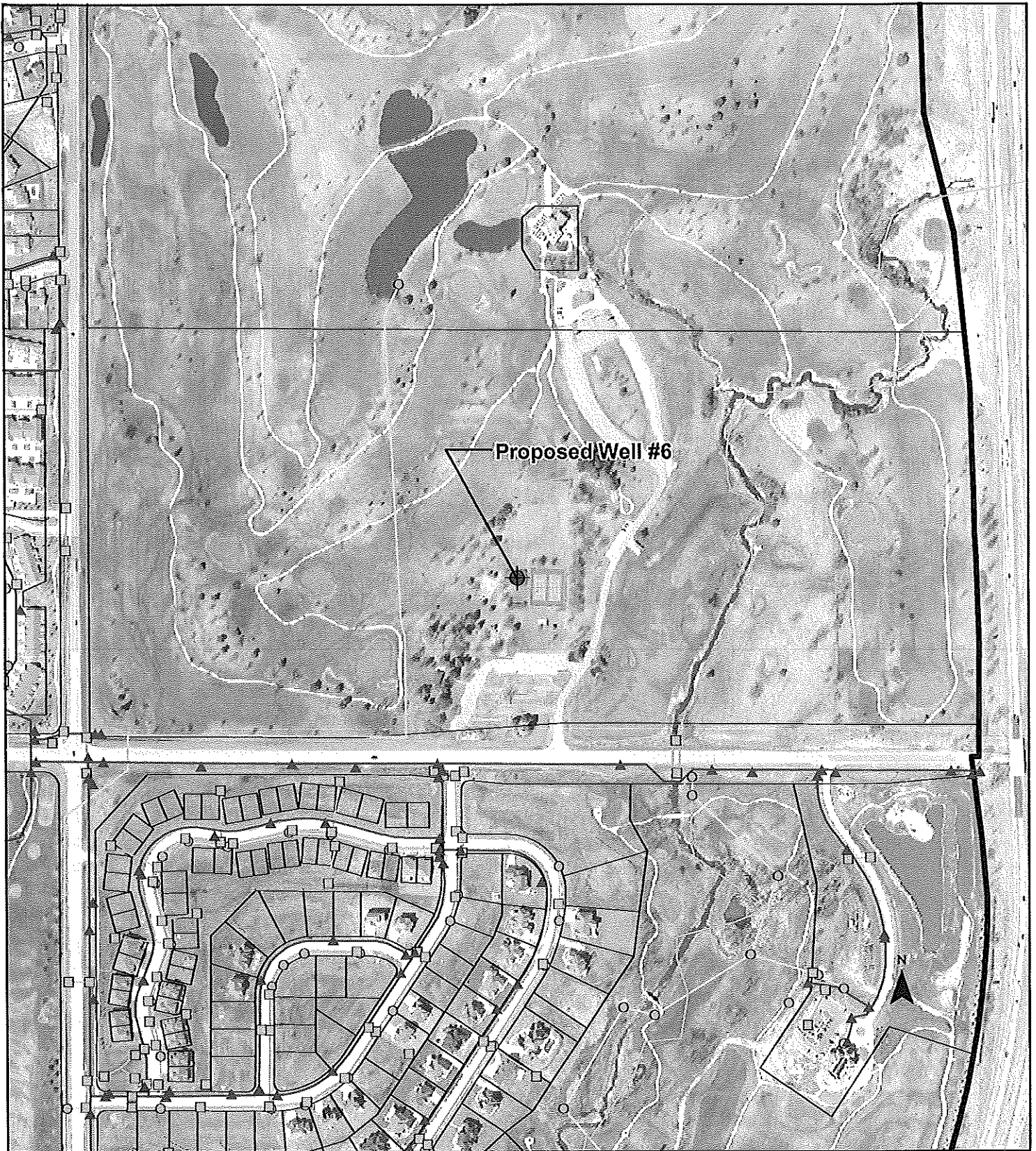
**4895 8th Avenue
Marion, Iowa 52302**

ASR WELL NO. 2 WELL PUMP OPERATION MANUAL

ANKENY, IOWA

2008

**INSALLATION DRAWING
ANALYTICAL REPORT
WOOD GROUP FIELD INSTALLATION REPORT
MOTOR, PUMP, & SEAL SECTION
FACTORY TEST PUMP CURVE
PITLESS UNIT
PVC PIPE
DEVELOPMENT TEST
TEST PUMPING REPORT
TV SURVEY
DRILLING LOG**



0 50 100 200 300
Feet

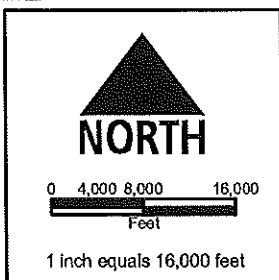
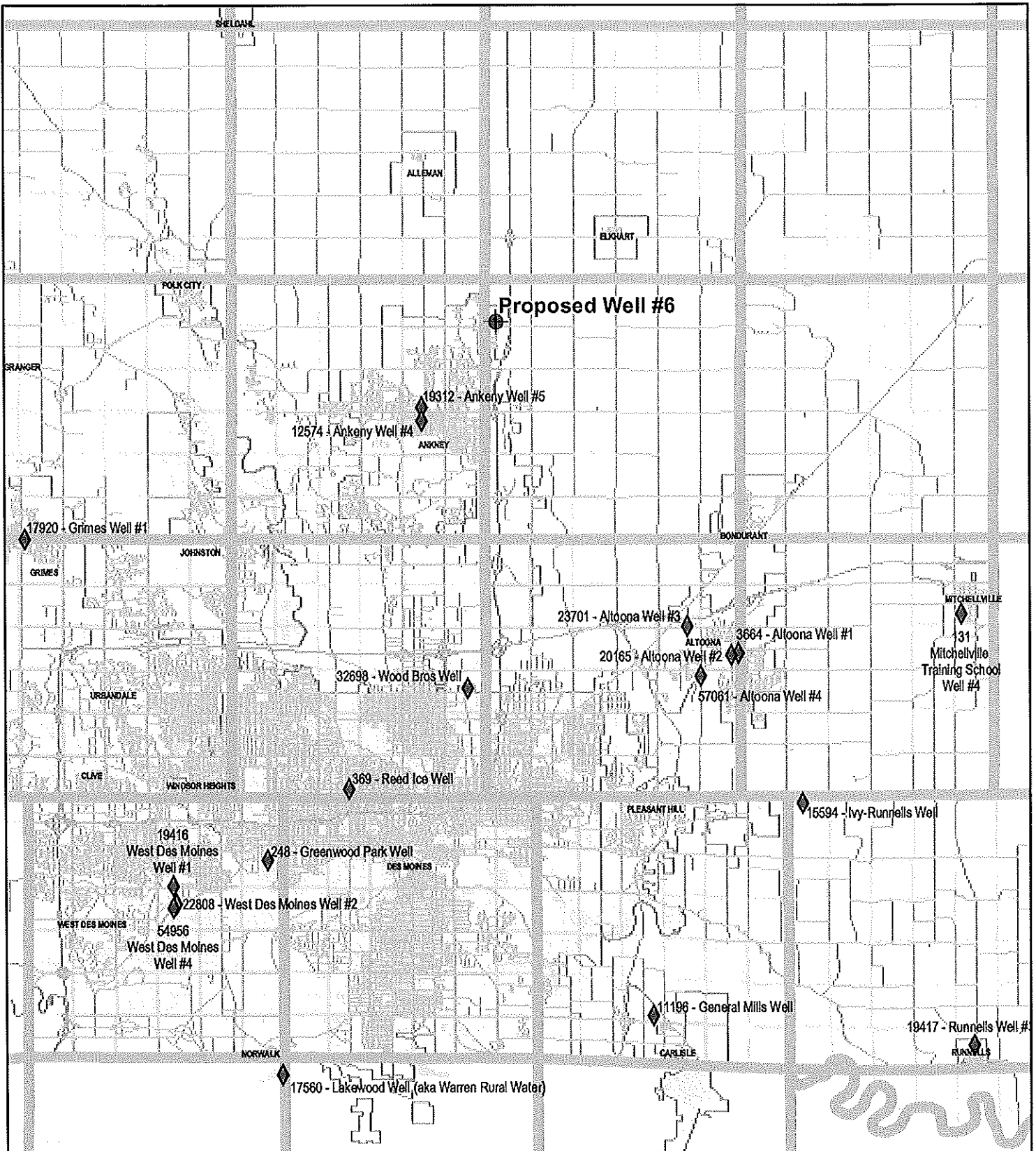
1 Inch equals 400 feet

Attachment B Ankeny Well #6

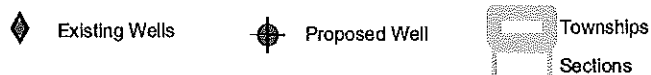
- | | | |
|---------------------|------------------|-----------------|
| ----- Sanitary Line | ----- Storm Line | ⊗ Proposed Well |
| ○ Sanitary Manholes | ▣ Storm Intakes | |
| — Water Line | ▭ Parcels | |
| ▲ Hydrants | | |



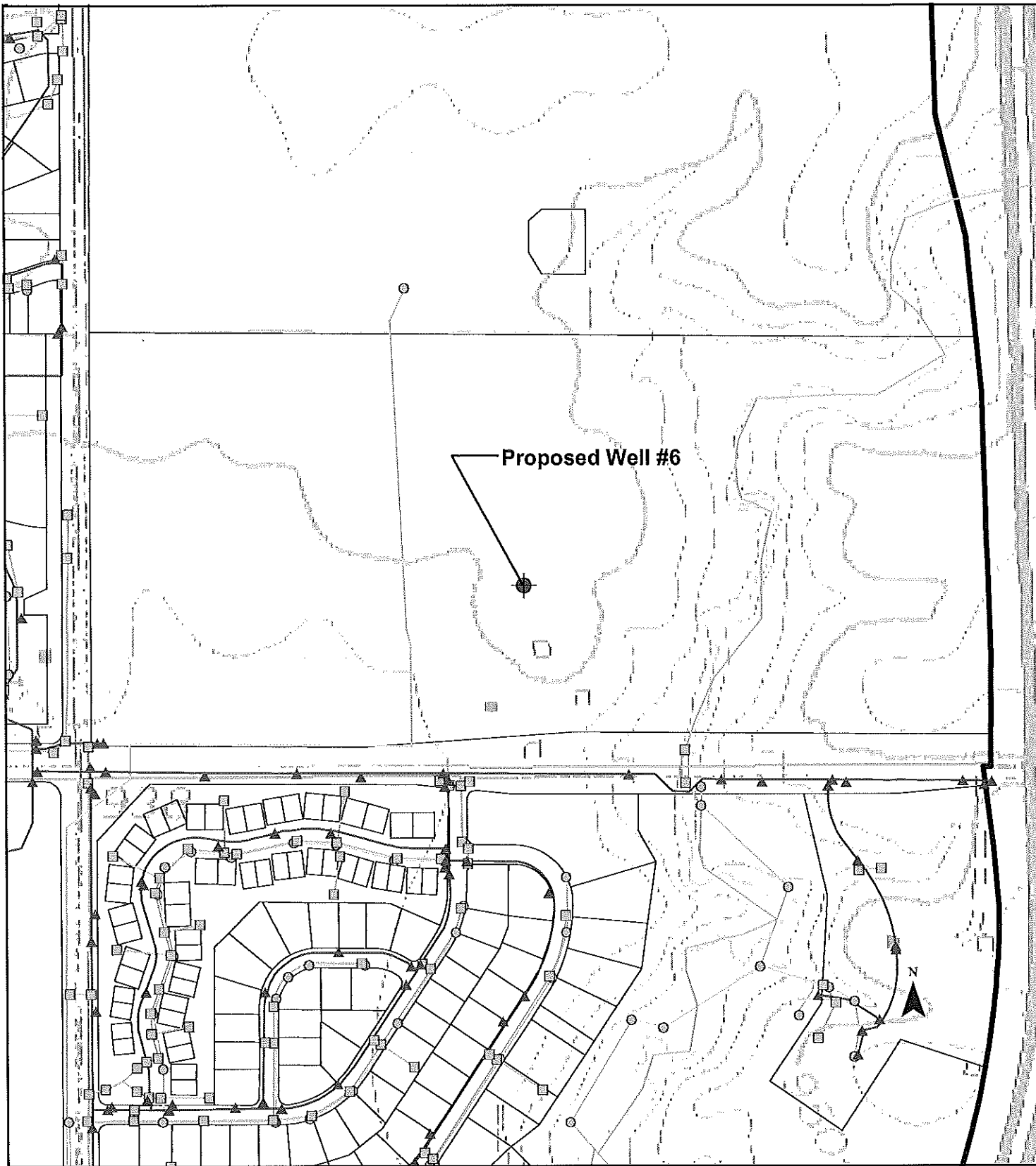
Date: 7/11/2007
Prepared by: AMP
Data: 2006 Polk Co aeriels
Project No: 3379-07A.300



Attachment C Cambrian-Ordovician Wells



Date: 7/11/2007
Prepared by: AMP
Data: 2006 Polk Co aeriels
Project No: 3379-07A.300



NORTH

0 50 100 200 300
Feet

1 Inch equals 400 feet

**Attachment B
Ankeny Well #6**

Sanitary Line	Storm Line	Proposed Well
Sanitary Manholes	Storm Intakes	
Water Line	Parcels	
Hydrants		

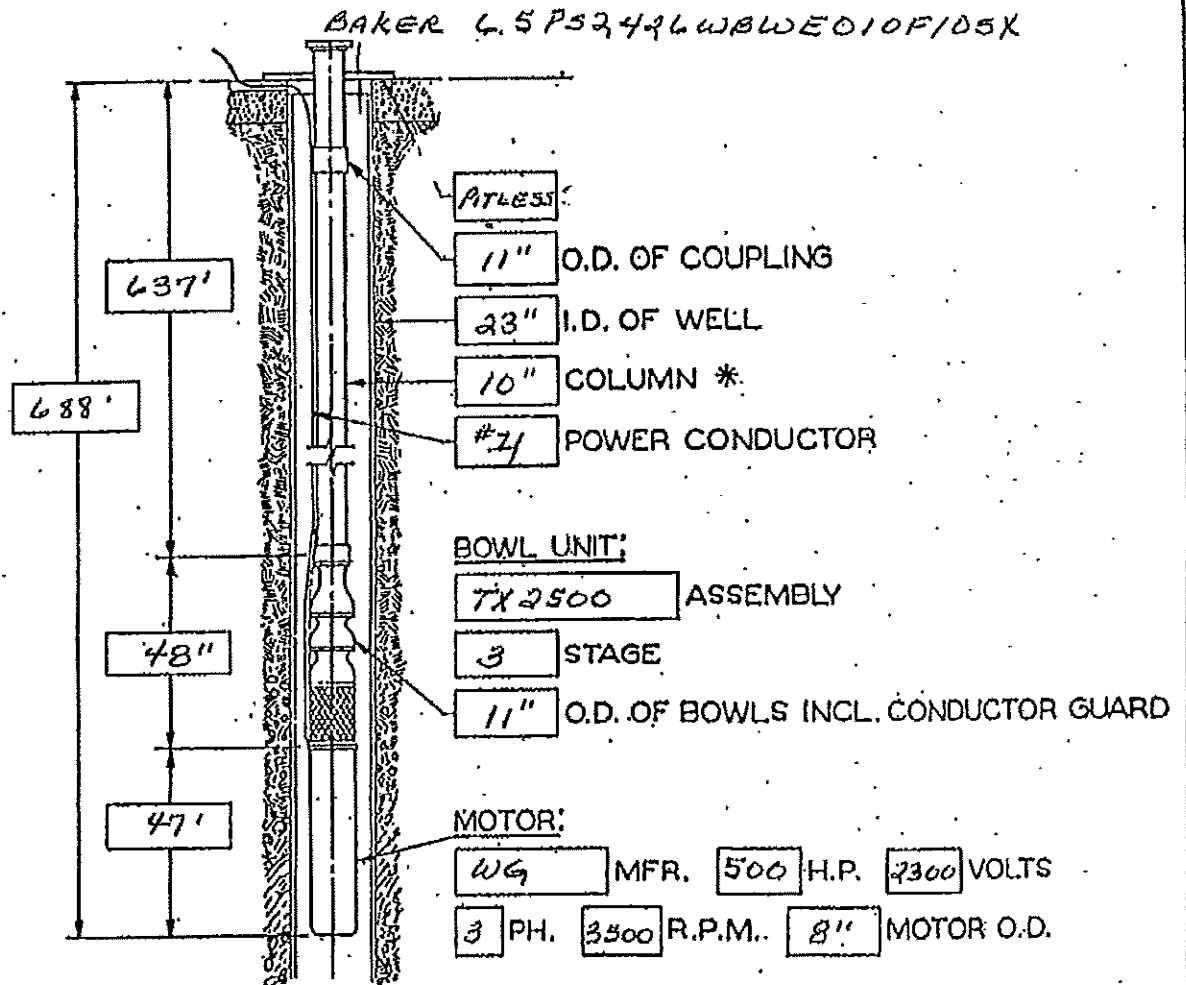
FOX
engineering

Date: 7/11/2007
Prepared by: AMP
Data: 2006 Polk Co aerials
Project No: 3379-07A.300

Northway Well and Pump Co.

4895 8th Avenue
Marion, Iowa 52302

ANKENY ASP #2



637' OF 1 1/4" PVC A LONG COLUMN

PUMP PERFORMANCE

U.S.G.P.M.-----2100

FT. TOTAL HD.-690'

R.P.M.-----3500

PUMP NO. _____

P.O. NO. _____

ANALYTICAL REPORT

June 30, 2009

Work Order: 19F1069

Page 1 of 3

Report To
Gale McIntosh
Northway Well & Pump Co. - Wauke
PO Box 745
Wauke, IA 50263

Work Order Information
Date Received: 06/22/2009 9:10AM
Collector: McIntosh, Gale
Phone: (800) 747-4575
PO Number:

Project : New Well Analysis - Ankeny

Project Number: Ankeny ASR #2

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
19F1069-01 Ankeny ASR # 2 New Well				Matrix: Drink Wtr		Collected: 06/22/09 08:30	
Vinyl Chloride	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
1,1-Dichloroethylene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Dichloromethane	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
trans-1,2-Dichloroethylene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
cis-1,2-Dichloroethylene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
1,1,1-Trichloroethane	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Carbon Tetrachloride	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Benzene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
1,2-Dichloroethane	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Trichloroethylene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
1,2-Dichloropropane	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Toluene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
1,1,2-Trichloroethane	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Tetrachloroethylene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Monochlorobenzene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Ethylbenzene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Xylenes (total)	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Styrene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
o-Dichlorobenzene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
p-Dichlorobenzene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
1,2,4-Trichlorobenzene	<0.50 ug/l	0.50	1F92612	524.2	TVK	06/26/09 22:00	
Surrogate: Dibromofluoromethane	104 %			68-137	TVK	06/26/09 22:00	
Surrogate: 1,2-Dichloroethane-d4	91.8 %			78-124	TVK	06/26/09 22:00	
Surrogate: Toluene-d8	96.4 %			84-117	TVK	06/26/09 22:00	
Surrogate: 4-Bromofluorobenzene	100 %			79-120	TVK	06/26/09 22:00	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.

ANALYTICAL REPORT

November 12, 2008

Work Order: 18J1392

Page 1 of 6

Report To
Gale McIntosh
Northway Well & Pump Co. - Waukee
PO Box 745
Waukee, IA 50263

Work Order Information
Date Received: 10/29/2008 10:25AM
Collector: Not available
Phone: (800) 747-4575
PO Number:

Project : New Well Analysis - Ankeny

Project Number: New Well Analysis

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
18J1392-01 Ankeny WL 02				Matrix: Drink Wtr		Collected: 10/28/08 18:30	
Benzo(a)pyrene	<0.020 ug/l	0.020	1K80445	550	KRM	11/10/08 16:40	
Surrogate: Triphenylene	99.8 %			63-136	KRM	11/10/08 16:40	
Bis(2-ethylhexyl)adipate	<1.0 ug/l	1.0	1J83034	525.2	BPP	11/03/08 12:08	
Bis(2-ethylhexyl)phthalate	<1.0 ug/l	1.0	1J83034	525.2	BPP	11/03/08 12:08	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	105 %			70-130	BPP	11/03/08 12:08	
Surrogate: Triphenyl phosphate	102 %			70-130	BPP	11/03/08 12:08	
Surrogate: Perylene-di2	5.92 %			70-130	BPP	11/03/08 12:08	S-GC
Atrazine	<0.10 ug/l	0.10	1K80442	507	BPP	11/10/08 13:58	
Simazine	<0.10 ug/l	0.10	1K80442	507	BPP	11/10/08 13:58	
Alachlor	<0.10 ug/l	0.10	1K80442	507	BPP	11/10/08 13:58	
Cyanazine	<0.10 ug/l	0.10	1K80442	507	BPP	11/10/08 13:58	
Surrogate: 2-Nitro-m-xylene	90.0 %			60-128	BPP	11/10/08 13:58	
Dalapon	<2.00 ug/l	2.00	1J83126	515.1	BPP	11/03/08 17:32	
2,4-D	<2.00 ug/l	2.00	1J83126	515.1	BPP	11/03/08 17:32	
Pentachlorophenol	<0.200 ug/l	0.200	1J83126	515.1	BPP	11/03/08 17:32	
2,4,5-TP (Silvex)	<0.500 ug/l	0.500	1J83126	515.1	BPP	11/03/08 17:32	
Picloram	<1.00 ug/l	1.00	1J83126	515.1	BPP	11/03/08 17:32	
Dinoseb	<0.500 ug/l	0.500	1J83126	515.1	BPP	11/03/08 17:32	
Surrogate: 2,5-Dichlorobenzoic Acid	33.8 %			60-110	BPP	11/03/08 17:32	S-07
Alkalinity, as CaCO3	259 mg/l	10	1K80513	SM 2320B	SAI	11/05/08 23:29	
Carbon Dioxide, Free, as CO2	193 mg/l	10.0	1J82937	SM 4500-CO2 C	WAS	10/30/08 10:45	
Conductivity	2840 uS/cm	2.0	1K80533	SM 2510B	DRB	11/06/08 10:00	
Nitrogen, Ammonia	0.78 mg/l	0.10	1K80328	SM 4500-NH3 BF	WAS	11/03/08 13:14	
pH	6.1 pH	0.5	1J83003	BPA 150.1	LJG	10/29/08 13:12	I-03
Silica, total	15.0 mg/l	5.0	1K80613	SM 4500-Si D	WAS	11/06/08 11:36	
Solids, total dissolved	2450 mg/l	10	1J83107	SM 2540C	LJG	10/31/08 7:27	
Solids, total suspended	6 mg/l	3	1J83105	USGS 1-3765-85	LJG	10/31/08 7:20	
Chloride	703 mg/l	20.0	1J83036	BPA 300.0	KRM	10/30/08 12:42	
Fluoride	2.0 mg/l	0.1	1J82932	BPA 300.0	KRM	10/29/08 16:35	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.

Northway Well & Pump Co. - Waukec
PO Box 745
Waukec, IA 50263

November 12, 2008

Page 2 of 6

Work Order: 18J1392

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
18J1392-01	Ankeny WL 02			Matrix: Drink Wtr		Collected: 10/28/08 18:30	
Nitrogen, Nitrite	<0.10 mg/l	0.10	1J82932	EPA 300.0	KRM	10/29/08 16:35	
Nitrogen, Nitrate	0.8 mg/l	0.1	1J82932	EPA 300.0	KRM	10/29/08 16:35	
Sulfate	172 mg/l	20.0	1J83036	EPA 300.0	KRM	10/30/08 12:42	
Arsenic, total	<0.0020 mg/l	0.0020	1K80531	200.8	RVV	11/05/08 17:56	
Barium, total	0.0284 mg/l	0.0040	1K80531	200.8	RVV	11/05/08 17:56	
Calcium, total	264 mg/l	0.1	1K80333	200.7	SAA	11/04/08 19:48	
Cadmium, total	<0.0010 mg/l	0.0010	1K80531	200.8	RVV	11/05/08 17:56	
Chromium, total	0.0090 mg/l	0.0040	1K80531	200.8	RVV	11/05/08 17:56	
Copper, total	0.0044 mg/l	0.0040	1K80531	200.8	RVV	11/05/08 17:56	
Iron, total	9.07 mg/l	0.030	1K80333	200.7	SAA	11/04/08 19:48	
Hardness, Total as CaCO ₃	1190 mg/l	1	1K80333	200.7	SAA	11/04/08 19:48	
Mercury, total	<0.00050 mg/l	0.00050	1J83022	EPA 245.1	SAA	10/31/08 14:42	
Potassium, total	11.4 mg/l	1.0	1K80333	200.7	SAA	11/04/08 19:48	
Magnesium, total	128 mg/l	0.10	1K80333	200.7	SAA	11/04/08 19:48	
Manganese, total	0.325 mg/l	0.0040	1K80531	200.8	RVV	11/05/08 17:56	
Sodium, total	69.8 mg/l	1.0	1K80333	200.7	SAA	11/04/08 19:48	
Antimony, total	0.0031 mg/l	0.0010	1K80531	200.8	RVV	11/05/08 17:56	
Selenium, total	<0.0020 mg/l	0.0020	1K80531	200.8	RVV	11/05/08 17:56	
Thallium, total	<0.0020 mg/l	0.0020	1K80531	200.8	RVV	11/05/08 17:56	
Zinc, total	0.0710 mg/l	0.0100	1K80531	200.8	RVV	11/05/08 17:56	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.



Hygienic Laboratory

The University of Iowa

RECEIVED

DEC 03 2008

Date of report: 11-24-2008

|||||
KEYSTONE LABS INC
600 E 17 ST SOUTH SUITE B
NEWTON IA 50208

Sample Number 2008041704
Date Received 10-29-2008 NORTHWAY WELL & PUMP
Project
Date Collected 10-28-2008 18:30
Collection Site new asr well #2
Collection Town Ankeny
Description water
Reference NORTHWAY WELL & PUMP
Collector MURPHY DON
Phone (800) 747-4575
Purchase Order W-618

Comments

Upon arrival, sample met container and preservation requirements for the analysis requested. Please review carefully your sample results for additional analyte comments or method exceptions. Paperwork lists collection date as 10-22-08; per phone call to Don collected 10-29-08.

Results of Analyses

Gross alpha including Uranium

Analyte	Concentration pCi/L	Uncertainty %	Quantitation Limit pCi/L
Gross Alpha	14.9	2.1	0.8

Date Analyzed: 11-07-2008
Method: EPRP 00-02

Analyst: SMC
Verified: MM

Sequential Radium 226 and 228

Analyte	Concentration pCi/L	Uncertainty %	Quantitation Limit pCi/L
Radium-226	6.9	0.7	0.6
Radium-228	1.5	0.7	0.6
Combined Radiums	8.4		1.0

The United States Environmental Protection Agency has designated a maximum contaminant level of 5 pCi/L for combined Radium 226 and Radium 228 in public drinking water supplies. Effective since July 9, 1976. For any Radium 226 and or 228 result less than our detection limit a value of zero is to be assumed for the purposes of combining the results.

Date Analyzed: 11-20-2008
Method: EPA 904.0, 903.0

Analyst: SMC
Verified: MM

Description of units used within this report

pCi/L - PicoCuries per Liter

The results of this report relate only to the items analyzed. This report shall not be reproduced except in full without the written approval of the laboratory.

Iowa Environmental Laboratory ID #027.

Page 1 - Continued on next page

Michael D. Wichman, Ph.D.
Michael A. Penella, Ph.D.
Associate Directors

102 Oakdale Campus, #101 OH
Iowa City, Iowa 52242-5002
319/335-4500 Fax: 319/335-4555

<http://www.uhl.uiowa.edu>

Iowa Laboratories Complex
2220 S. Ankeny Blvd, Ankeny, Iowa 50
515/725-1600 Fax: 515/725-1642

4895 8th Avenue • Marion, Iowa 52302 • 319-377-6339
100 North 6th Street • Waukee, Iowa 50263 • 515-987-4575

WATERWELL LOG

CUSTOMER	City of Ankeny	WELL NO.	ASR #2	DATE	05/27/08
LOCATION	Offer Creek ASR	CITY	Ankeny, IA		
TYPE OF CASING	Steel	SIZE	24" & 18"		
CASING LENGTH	817' of 24" - 1318' of 18"		YEAR INSTALLED	2008	

FOOTAGE	CLOSED CIRCUIT TELEVISION FINDINGS
	Readings start @ ground level
0 - 815	Top of 24" x 18" reducer
344'	Static water level
817'	Top of 18"
2135'	Top of grout shoe
2136'	Bottom of grout shoe
2136' - 2143'	23" Drill hole
2143	16 3/4 " Open hole
2344	Bridge of shale and bandit
	ID of casing has a film on it
	Casing Joints
	16', 56', 96', 136', 176', 216', 256', 296', 336', 376', 417', 456', 496', 536', 576', 616', 656', 696', 736',
	776', 856', 896', 936', 976', 1016', 1056', 1096', 1136', 1178', 1216', 1256', 1296', 1336', 1376', 1416',
	1456', 1496', 1536', 1576', 1616', 1656', 1696', 1736', 1776', 1816', 1856', 1896', 1936', 1976', 2016',
	2056', 2096'

KNOWLEDGE • EQUIPMENT • RELIABILITY • EXPERIENCE