

**IOWA DEPARTMENT OF NATURAL RESOURCES
WATER SUPPLY SECTION
CONSTRUCTION PERMIT APPLICATION**

SCHEDULE 5c, Well Profile

NOTICE

There is no fee for examination of this schedule

DATE PREPARED
7/2/92

PROJECT IDENTITY

Emmettsburg Well No. 6

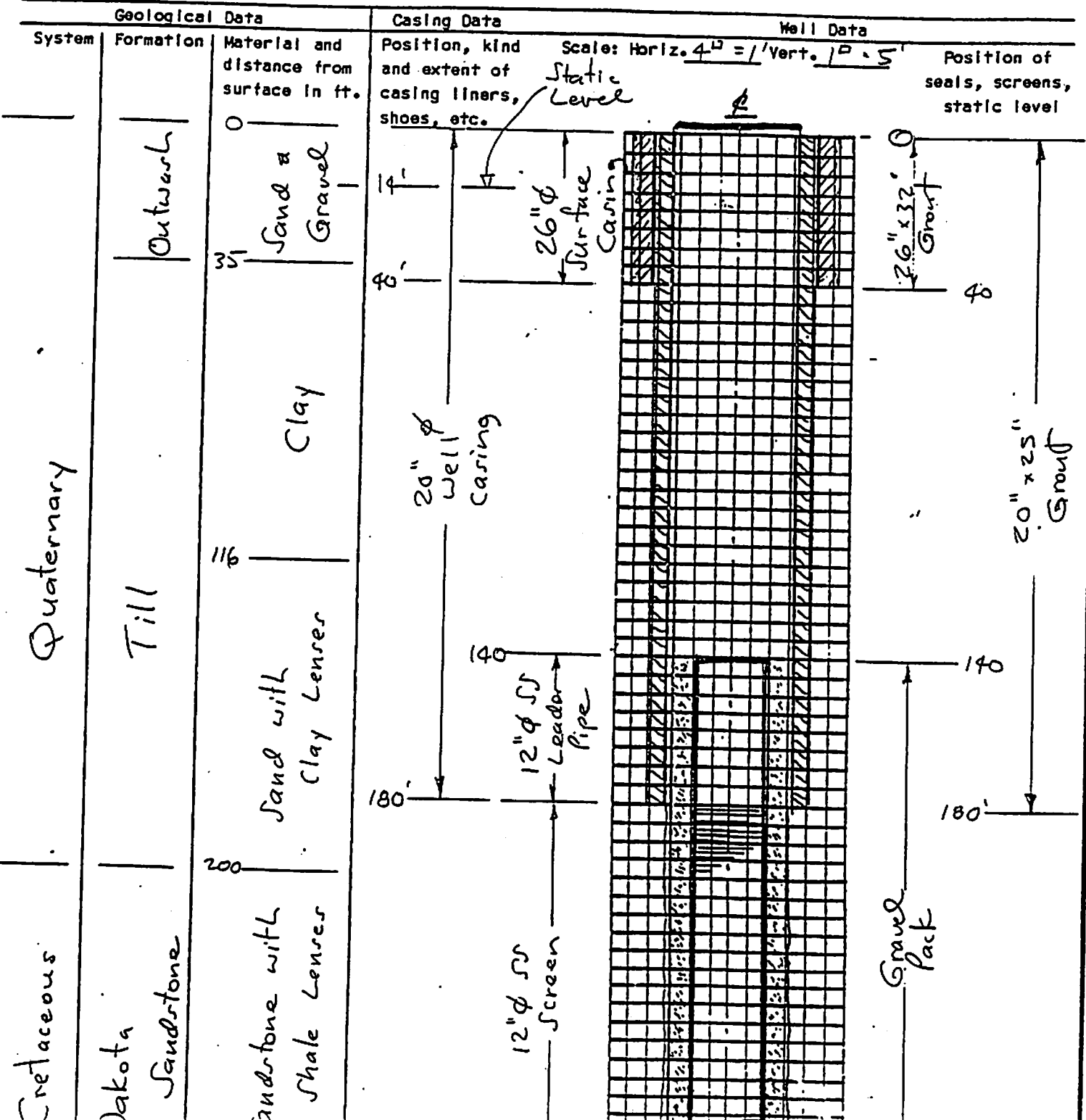
DNR USE

PROJECT NO.

PERMIT NO.

Well Number:

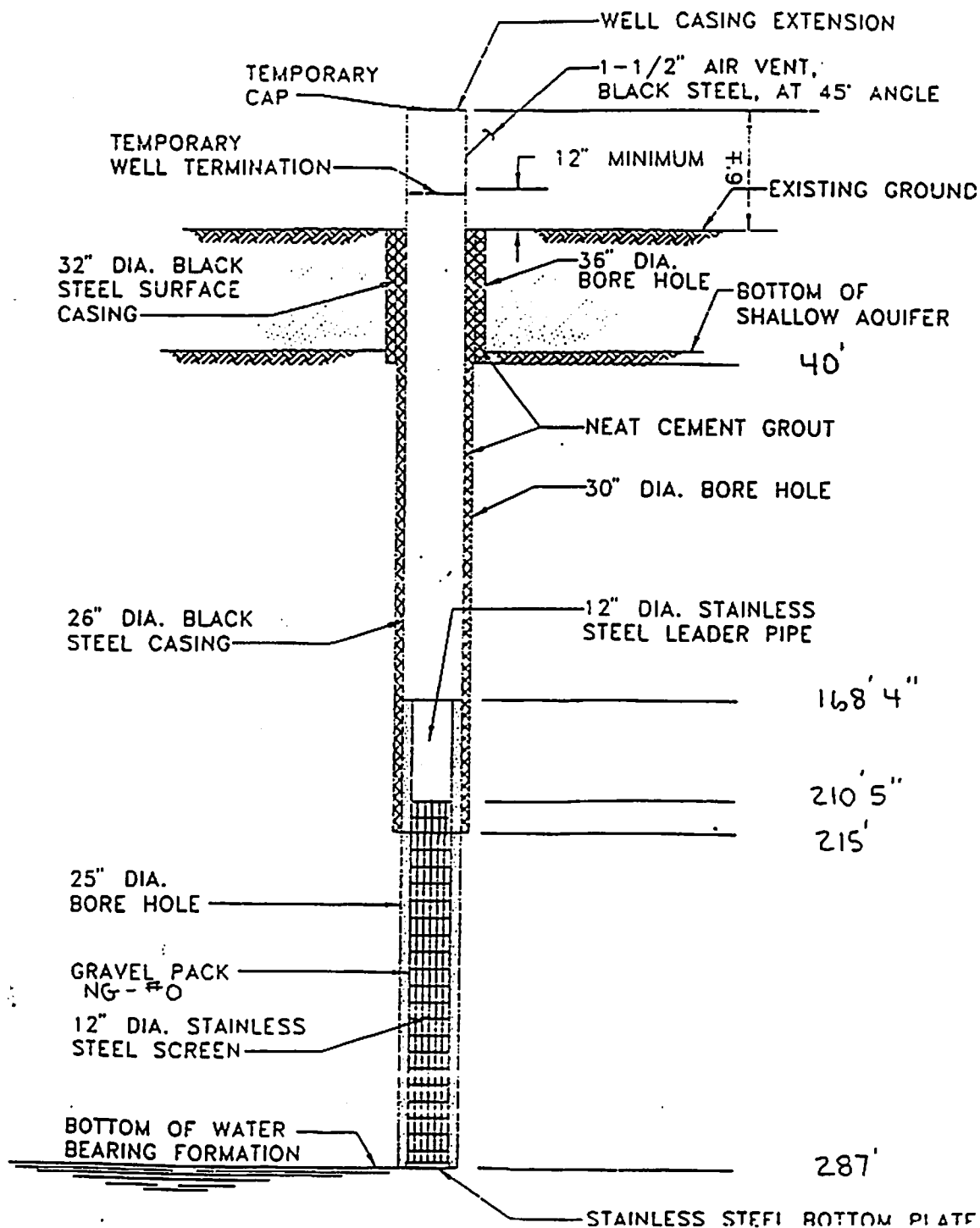
6



Layne-Western Company, Inc.

705 South Duff Avenue • Ames, Iowa 50010 • 515/232-3563 • Fax # 515/232-3004

EMMETSBURG WELL #6 AS CONSTRUCTED DRAWINGS 03/19/93



PROFESSIONAL SERVICES FOR WATER SYSTEMS



Layne-Western Company, Inc.

WATER SUPPLY CONTRACTORS

705 SO. DUFF AVE.

AMES, IOWA 50010

Phone 515 232-3563

Name of Job Emmetsburg Municipal Utilities Date 04/08/93

City or Village Emmetsburg State Iowa

Well No. 6 Drillers: McCracken & Hrabick

Well Location: _____ ft. (____) and _____ ft. (____) of the _____ corner of

Section _____, Twp. _____ (____), Range _____ (____) Palo Alto County.

Otherwise located as 100' west of water treatment plant

Work Began: 02/08/93 Work Completed: 03/05/93 Well Depth: 287'

All measurements made from existing ground level at time well was drilled.

Casing Record:

Amount	Dia.	Wt. or Thickness	Material	
<u>40</u>	<u>32</u>	<u>.375</u>	<u>BLK Steel</u>	with _____ joints from <u>0'</u> to <u>40'</u>
<u>221</u>	<u>26</u>	<u>.500</u>	<u>BLK Steel</u>	with _____ joints from <u>+6'</u> to <u>215'</u>

Screen Record: Type wirewrap

Amount	Dia.	Opening	Material	
<u>42'4"</u>	<u>12"</u>	<u>Blank</u>	<u>Stainless Steel</u>	with _____ joints from <u>168'4"</u> to <u>210'5"</u>
<u>76'5"</u>	<u>12"</u>	<u>.038"</u>	<u>"</u>	with _____ joints from <u>210'5"</u> to <u>287'</u>

Type of Seal at Bottom Stainless steel plate x .025"

Hole Record:

<u>36"</u>	inch from	<u>0</u>	to	<u>40'</u>
<u>30"</u>		<u>40'</u>		<u>215'</u>
<u>25"</u>	inch from	<u>215'</u>	to	<u>287'</u>

Gravel Pack Record:

Amount	Size	Source	From	To
<u>40,000#</u>	<u>NG - #0</u>	<u>Northern Gravel</u>	<u>169</u>	<u>287</u>

Cementing Record: 0 - 215' between 30" borehole & 26" casing

0 - 40' between 36" borehole & 32" casing

Backfill Record: N/A



TEST HOLE REPORT

Layne-Western Company, Inc.

Contract Name Emmetsburg Municipal Utilities
Job No. 72-1942 Date Jan. 15, 1993
City Emmetsburg State Iowa

TEST HOLE
No. 1-93

Driller Dennis Auld

Test Hole Location _____

Distance and Direction from Permanent Landmark or Previous Test Hole

TEST LOG

FROM	TO	MARSH FUNNEL VISCOSITY SECONDS	MUD PIT LOSS INCHES	Static Water Level_____Measured
				_____Hours After Completion
				FORMATION
0	2			Black top soil
2	5			Brown sandy loam
5	10			Dirty red brown sand and gravel with cobbles
10	15			Dirty brown sand and gravel
15	40			Gray brown sand & gravel (coarse), cobbles at 28'
40	47			Green clay till
47	57			Brown clay
57	63			Blue till
63	70			Gray brown clay
70	75			Brown clay till
75	80			Blue till
80	87			Brown clay with sand and gravel seams
87	117			Blue gray till
117	134			Gray sand coarser at top and bottom of formation
				Cobble at 134'

NOTES: Size of Pit _____ X _____ X _____ DEEP



TEST HOLE REPORT

*Layne-Western Company, Inc.*Contract Name Emmetsburg Municipal UtilitiesJob No. 72-1942 Date Jan. 15, 1993City Emmetsburg State IowaDriller Dennis Auld

TEST HOLE

No. 1-93

Test Hole Location _____

Distance and Direction from Permanent Landmark or Previous Test Hole _____

TEST LOG

FROM	TO	MARSH FUNNEL VISCOSITY SECONDS	MUD PIT LOSS INCHES	Static Water Level_____Measured
				_____ Hours After Completion
				FORMATION
134	142			Blue till
142	184			Fine sand with clay lenses
184	186			Gray clay with sand lenses
186	189			Gray sand
189	193			Brown clay with sand lenses
193	199			Gray brown sand
199	212			Gray sand with clay lenses
212	236	37	3	Gray white sandstone, fine
236	250	37	1	Brown sandstone, fine
250	250.5			White limestone
250.5	254			Sandstone with gray shale seams
254	260	38	2	Brown sandstone
260	268			White coarser sandstone with white shale seams
268	285	38	3	Brown sandstone, fine
185				Weathered Sioux Quartsite

NOTES: Size of Pit _____ X _____ X _____ DEEP