

Appendix D

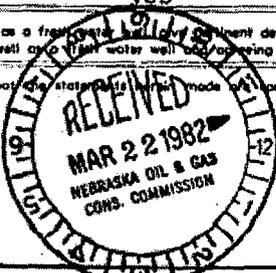
Well Plugging and Abandonment
Records

Appendix D-1

Oil and Gas Plugging Records

Chicoine 1 Oil and Gas Well Plugging Record

Nebraska Oil and Gas Conservation Commission
Form 6

PLUGGING RECORD						
Instructions: Within thirty days following the plugging of a dry hole, or the abandonment of a producing well, the owner or operator shall submit this form in duplicate for wells on patented or Federal lands, and in triplicate for wells on State lands. Geological information will be held confidential for a period of twelve months if requested in writing. Fill out form as completely as possible.						
Operator Petronomics, Inc. <i>J. C. Chan</i>						
Address 3603 Westcenter Drive, Houston, Texas 77042						
Well Number 1	Lease Name Vernon P. Chicoine	Field and reservoir (if wildcat, so state) Niobrara				
Location NW/4 NW/4 Sec. 30 Twp. 30N Range 50W					County Dawes	
Footage Location						
ft. from (E) (S) line		ft. from (E) (W) line of			1/4	
Spud Date 10-28-81	Date reached T.D. 10-31-81	Date Plugged 11-1-81	Total Depth 2641	P. B. T. D.		
Elevation 4455		Producing rate on initial completion				
Reference (indicate) (X) (B) (GL) (DR)		Oil (bbls/day)	Gas (MCF/day)	Water (bbls/day)		
Application to drill this well was filed in name of: Petronomics, Inc.		Producing rate at time of abandonment				
		Oil (bbls/day)	Gas (MCF/day)	Water (bbls/day)		
CONDITION OF HOLE						
Name each formation containing oil or gas. Indicate which formations open to well bore at time of plugging.		Fluid Content	Depth Interval	Size, kind and depth of plugs used. Indicate zones squeeze cemented giving amount of cement.		
Niobrara		water	2130'	Cement Plug 1900 - 2100'		
			484	Cement Plug 450 - 500'		
				Cement Plug 5 - 50'		
Size, kind and depth of any additional plugs						
CASING RECORD						
Size casing in O. D.	Weight lbs./ft.	Setting Depth	Sacks Cement	Amount Recovered	Amount left in well	Method of parting (shot, flooded, etc.)
8 5/8	24	484	500		484	
Was hole filled with mud-laden fluid? yes						
If this well was plugged back for use as a fresh water well, give pertinent details of plugging operations to base of fresh water sand. Attach letter from surface owner authorizing completion of this well as a fresh water well and agreeing to assume full liability for subsequent plugging which may be required.						
I/We hereby swear or affirm that the statements made are true, complete and correct.						
NO CORES NO TESTS NO LOGS LOST HOLE (if new log on)					<i>L. W. C. [Signature]</i> Vice Pres.	
				Title March 18, 1982 Date		

Chicoine 1-A Oil and Gas Well Plugging Record

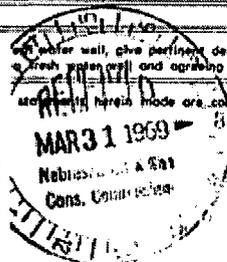
Nebraska Oil and Gas Conservation Commission
Form 6

PLUGGING RECORD						
<p>Instructions: Within thirty days following the plugging of a dry hole, or the abandonment of a producing well, the owner or operator shall submit this form in duplicate for wells on patented or federal lands, and in triplicate for wells on State lands. Geological information will be held confidential for a period of twelve months if requested in writing. Fill out form as completely as possible.</p>						
Operator PETRONOMICS, Inc.						
Address 630 N. Federal Highway, Suite 402, North Palm Beach FL 33408						
Well Number	Lease Name	Field and reservoir (if wildcat, so state)				
1-A	Chicoine	Wildcat				
Location		Sec.	Twp.	Range	County	
SW/NW		30	30N	50W	Dawes	
Footage Location 1820 ft. from (N) 26 line, 660 ft. from (W) line of Sec. 30 T30N $\frac{1}{4}$ R50W						
Spud Date	Date reached T.D.	Date Plugged	Total Depth	P. B. T. D.		
11-3-81	11-7-81	8-9-82	3069			
Elevation	Reference (indicate)	Producing rate on initial completion				
4490	(KB) 811X92X	Oil (bbls/day)	Gas (MCF/day)	Water (bbls/day)		
Application to drill this well was filed in name of:		Producing rate at time of abandonment				
Petronomics, Inc.		Oil (bbls/day)	Gas (MCF/day)	Water (bbls/day)		
CONDITION OF HOLE						
Name each formation containing oil or gas. Indicate which formations open to well bore at time of plugging.		Fluid Content	Depth Interval	Size, kind and depth of plugs used. Indicate zones squeeze cemented giving amount of cement.		
				20 sack cement plug		
				0-30 feet and		
				470-500 feet		
Size, kind and depth of any additional plugs						
CASING RECORD						
Size casing in O. D.	Weight lbs/ft.	Setting Depth	Sacks Cement	Amount Recovered	Amount left in well	Method of porting (shot, ribbed, etc.)
4 1/2"	10.5	2633	175	1175	1458	shot
Was hole filled with mud-laden fluid? Yes						
If this well was plugged back for use as a fresh water well, give pertinent details of plugging operations to base of fresh water sand. Attach letter from surface owner authorizing completion of this well as a fresh water well and agreeing to assume full liability for subsequent plugging which may be required.						
I/We hereby swear or affirm that the statements herein are complete and correct.						
(If new dry hole, complete well log on reverse side of form)				 A.B. McClelland President		
				8-23-82 Date		

Hollibaugh 1 Oil and Gas Well Plugging Record

Neb. Oil and Gas Conservation Commission
Form 6

② /

PLUGGING RECORD					
<small>Instructions: Within thirty days following the plugging of a dry hole, or the abandonment of a producing well, the owner or operator shall submit this form in duplicate for wells on patented or Federal lands, and in triplicate for wells on State lands. Geological information will be held confidential for a period of twelve months if requested in writing. Fill out form as completely as possible.</small>					
Operator GABLE DRILLING CO., INC. --- Joe Josephson & V. E. Autry					
Address 508 Patterson Bldg., Denver, Colo. 80202					
Well Number 1	Lease Name Hollibaugh	Field and reservoir (if wildcat, so state) Wildcat			
Location NE NE Sec. 12 Twp. 29 N Range 51 W		County Dawes			
Footage Location 660 ft. from (N) <input checked="" type="checkbox"/> line, 660 ft. from (E) <input checked="" type="checkbox"/> line of Northeast $\frac{1}{4}$ section					
Spud Date 1-13-69	Date reached T.D. 1-17-69	Date Plugged 1-18-69	Total Depth 3295 dlr. 3283100	P. B. T. D. NA	
Elevation Reference (indicate) 4244 KB (KB) (GL) (DF) 4236 GL		Producing rate on initial completion			
		Oil (bbls/day) NA	Gas (MCF/day)	Water (bbls/day)	
Application to drill this well was filed in name of:		Producing rate at time of abandonment			
		Oil (bbls/day) NA	Gas (MCF/day)	Water (bbls/day)	
CONDITION OF HOLE					
Name each formation containing oil or gas, indicate which formations open to well bore at time of plugging.		Fluid Content	Depth Interval	Size, kind and depth of plugs used. Indicate zones squeeze cemented giving amount of cement.	
Muddy - J, Zone 3		Water	2810-2930	#1 35 sacks cement	
Tertiary sands & gravels		Water	280-310	#2 10 sacks cement	
Top plug omitted at landowner's request for his conversion into a domestic water well.					
Size, kind and depth of any additional plugs Heavy drilling mud between cement plugs.					
CASING RECORD					
Size casing in O. D.	Weight lbs./ft.	Setting Depth	Amount Recovered	Amount left in well	Method of parting (shot, riced, etc.)
8 5/8	248'	216' KB	none	208'	NA
Was hole filled with mud-solids fluid?					
Niobrara Shale	1913	If water well, give pertinent details of plugging operations to base of fresh water sand. Attach letter from surface fresh water well and agreeing to assume full liability for subsequent plugging which may be required.			
Codell sandstone	2224	Additional notes here made are complete and correct.			
Greenhorn limestone	2465	<div style="text-align: center;">  </div>			
Dantonite Marker	2595				
Muddy J Zone 1	2731				
Zone 2	2771				
Zone 3	2848				
Zone 4	2927	Robert L. Kramer Signature		Geologist Title	
Cheyenne sandstone	3132	March 28, 1969 Date			
No cores or tests.					

Porter 1 Oil and Gas Well Plugging Record

AUG 2 1956

NO LOGS REIN PLUGGING AFFIDAVIT—STATE OF NEBRASKA

INSTRUCTIONS: Fill in completely as possible one copy and mail to Nebraska Geological Survey, Nebraska Hall, University of Nebraska, Lincoln, Nebraska within 15 days after plugging (Revised Statutes of Nebraska, 1943, sections 57-213 to 57-217, amended by Legislative Bill 432, 62nd Session, Legislature of Nebraska.) Underlines applicable words or letters, cross out those not applicable.

Lease Name PORTER Well No. 1

Legal Description Location (Example: C N/2-NE/4-NE/4):

0 SE/4SE/4 Sec. 20 Twp. 30N No. 52W (SW) County Dawes
660 Ft. (W) of 20N (E) line; 660 Ft. (N) (E) of 52W (S) line of SE/4

Operating Company Tom Potter

Complete Mailing Address 1032 Life of America Bldg., Dallas, Texas

Contractor Potter Drilling Co.

Complete Mailing Address 1032 Life of America Bldg., Dallas, Texas

Drilled with (cable) (rotary) tools. Spudding date 2/23/56; completion date 3/29/56; plugging date 3/28/56

Surface Pipe Data: Casing (new) 3000 Size 10-3/4" In. Weight 32.75 lbs.

Amount Set 250 ft.; Cement used 130 sac; kind Regular

Surface Hole Data: Size of hole 13-3/4 in.; Depth of hole 2621 ft.

Total Depth of hole 3779 ft. (Attach electric log - None Made) Elevation ground

Nature of Well (wildcat) Producing derrick floor

Reason for Abandonment Fishing Job and Dry Kelley bushing

Casing record other than surface pipe (indicate amount, size and weight of each string run, how set or cemented, whether pulled or left in hole and where cut if partially pulled)

Plugging Record (state in detail each step in plugging procedure)

Left 385' of pipe in hole
Put 50 sacks of cement at 3394'
Put 20 sacks of cement at 2550'
Put 15 sacks of cement at 2621'
Put 5 sacks of cement at surface pipe

Plugging Procedure Approved by Bill Painter Date March 29, 1956
 (insert "blanket approval" in case of fields or areas where standard plugging procedure has been approved by the Nebraska Geological Survey)

Name of Witness to Plugging Bill Painter Address Chadron, Nebraska

AFFIDAVIT

I, Tom Potter of the Potter Drilling Company
 Company, being first duly sworn on oath, state: That I have knowledge of the facts, statements and matters herein contained and that the same are true and correct.

Tom Potter

In Witness whereof I heretofore set my hand and affix my official seal this 31st day of July 19 56

My commission Expires: 6/1/57 Lawrence B. Miller
 Notary Public
 Dallas County, Texas

No Log Available

Royal 1 Oil and Gas Well Plugging Record

PLUGGING AFFIDAVIT—STATE OF NEBRASKA

INSTRUCTIONS: Fill in as completely as possible one copy and mail to Nebraska Geological Survey, Nebraska Hall, University of Nebraska, Lincoln, Nebraska within 10 days after plugging (Revised Statutes of Nebraska, 1943, sections 27-213 to 27-217, amended by Legislative Bill 433, 62nd Session, Legislature of Nebraska.) Underline applicable words or letters, cross out those not applicable.

Lease Name Roscoe Royal Well No. 1

Legal Description Location (Example: C N/3-NE/4-NE/4):

Q SW SW Sec. 23 Twp. 30 No., Rge. 51 (E) (W); County Dawes
860 Pl. (E) (W) of (S) (N) line; 960 Pl. (N) (S) of (E) (W) line of SW 1/4

Operating Company Gulf Oil Corporation

Office Address 134 E. Midwest Ave., Casper, Wyoming

Contractor Dunbar Drilling Company

Office Address Denver, Colorado

Drilled with ~~(rotary)~~ (rotary) tools. Spudding date 12-15-52; completion date 1-23-53

Surface Pipe Data: Casing (new) ~~(size)~~ Size 10-3/4 in. Weight 32.75 lbs.

Amount Set 377 ft.; Cement used 250 lbs.; kind Ash Grove Reg. Portland

Surface Hole Data: Size of hole 13-3/4 in.; Depth of hole 109 ft.

Total Depth of Hole 3956 ft. (Attach electric log or driller's log) Elevation: 4465' ground

Nature of Well: (wildcat) (field well) (offset) (abandoned producer) 4465' derrick floor

Reason for Abandonment Dry Hole 4469' Kelly bushing

Casing record other than surface pipe (indicate amount, size and weight of each string run, how set or cemented, whether pulled or left in hole and where cut if partially pulled) NONE

Plugging Record (state in detail each step in plugging procedure) Filled hole with heavy mud from total depth to 400', placed 40 sacks cement plug from 400' to 320', heavy mud from 320' to 22', 10 sacks cement plug from 22' to bottom of cellar.

Plugging Procedure Approved by E. C. Road Date 1-22-53
 (Insert "blanket approval" in case of fields or areas whose standard plugging procedure has been approved by the Nebraska Geological Survey)

Name of Witness to Plugging F. H. Frederick Address 740 South 15th St.,
Orland, Wyoming

AFFIDAVIT

I, Lester LaFavour of the Gulf Oil Corporation Company, being first duly sworn on oath, state: That I have knowledge of the facts, statements and matters herein contained and that the same are true and correct.

Lester LaFavour

In Witness whereof I hereinbefore set my hand and affix my official seal this 26th day of

January, 1953.

My commission Expires Jan 5 - 1957 B. J. Parker
 Notary Public

Smith 1-A Oil and Gas Well Plugging Record

Nebraska Oil and Gas Conservation Commission
Form 6

PLUGGING RECORD						
<small>Instructions: Within thirty days following the plugging of a dry hole, or the abandonment of a producing well, the owner or operator shall submit this form in duplicate for wells on patented or federal lands, and in triplicate for wells on State lands. Geological information will be held confidential for a period of twelve months if requested in writing. Fill out form as completely as possible.</small>						
Operator Toltek Drilling Company & O.N. Beer						
Address 340 Denver Club Bldg., Denver, Colorado 80202						
Well Number 1-A	Lease Name Smith	Field and reservoir (if wildcat, so state) wildcat				
Location NE NE		Sec. 29	Tap. 29 N	Range 50 W	County Dawes	
Footage Location ft. from (N) 1/4 line, 640 ft. from (E) 1/4 line of NE 1/4						
Spud Date 2-11-69	Date reached T.D. 2-14-69	Date Plugged 2-14-69	Total Depth 2901'	P. B. T. D.		
Elevation 4106'	Reference (indicate) 3216 (GL) 2895	Producing rate on initial completion				
		Oil (bbls/day)	Gas (MCF/day)	Water (bbls/day)		
Application to drill this well was filed in name of: Toltek Drilling Company		Producing rate at time of abandonment				
		Oil (bbls/day)	Gas (MCF/day)	Water (bbls/day)		
CONDITION OF HOLE						
Name each formation containing oil or gas. Indicate which formations open to well bore at time of plugging.		Fluid Content	Depth Interval	Size, kind and depth of plugs used. Indicate zones squeezed cemented giving amount of cement.		
Size, kind and depth of any additional plugs 10 sacks top of surface casing 15 sacks bottom of casing						
CASING RECORD						
Size casing in O. D.	Weight lbs/ft.	Setting Depth	Amount Recovered	Amount left in well	Method of getting (shot, flooded, etc.)	
Was hole filled with mud-taden fluid? Yes						
If this well was plugged back for use as a fresh water well, give pertinent details of plugging operations to base of fresh water sand. Attach letter from surface owner authorizing completion of this well as a fresh water well and agreeing to assume full liability for subsequent plugging which may be required.						
I/We hereby swear or affirm that the statements herein made are complete and correct.						
<small>(If new dry hole, complete well log on reverse side of form)</small>		 Signature				
		Executive Vice President Title				
		February 17, 1969 Date				

Appendix D-2

Water Well Abandonment
Records

Well 863A (G071432) Notice of Water Well Abandonment Record

JUL 13 '01 11:35AM NMS-R/L/PUBLIC R/LTH

P.2/2

NEBRASKA DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 34676, LINCOLN, NEBRASKA 68509-4676
(402) 471-2363

DNR ABAM
JULY 2000

NOTICE OF WATER WELL ABANDONMENT

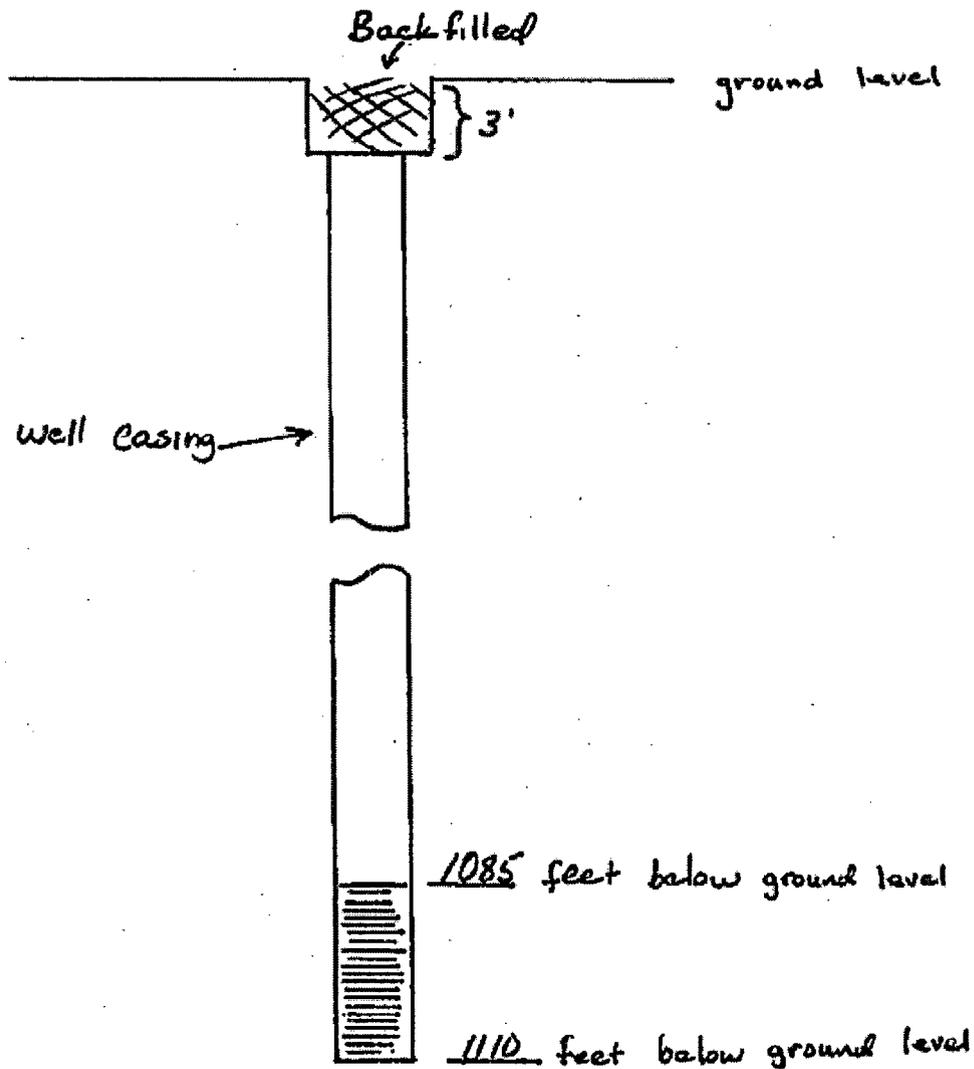
INSTRUCTIONS	FOR DEPARTMENT USE ONLY	
Complete by printing in ink or typing the appropriate information. Submit the completed form to the above address within 60 days of decommissioning.	Filing Date <u>7-25-2001</u>	Registration Number <u>G-71432</u>
1. Well Owner Information:	Owner Code <u>39475</u>	Sequence Number <u>79594</u>
Name: <u>CROW BUTTE RESOURCES</u>	NRD	
Address: <u>Box 169</u>	<input type="checkbox"/> 01-Up. Big Blue <input type="checkbox"/> 10-Papio-Missouri <input type="checkbox"/> 18-Central Platte <input type="checkbox"/> 02-Low. Big Blue <input type="checkbox"/> 11-Nemaha <input type="checkbox"/> 19-Low. Platte N. <input type="checkbox"/> 03-Up. Elkhorn <input type="checkbox"/> 12-Up. Niobrara <input type="checkbox"/> 20-Low. Platte S. <input type="checkbox"/> 04-Low. Elkhorn <input type="checkbox"/> 13-Mid. Niobrara <input type="checkbox"/> 21-Jp. Republican <input type="checkbox"/> 05-Little Blue <input type="checkbox"/> 14-Low. Niobrara <input type="checkbox"/> 22-Mid. Republican <input type="checkbox"/> 06-Up. Loup <input type="checkbox"/> 15-North Platte <input type="checkbox"/> 23-Low. Republican <input type="checkbox"/> 07-Low. Loup <input type="checkbox"/> 16-South Platte <input type="checkbox"/> 24-Tri-Basin <input type="checkbox"/> 08-Lewis/Clark <input type="checkbox"/> 17-Twin Platte	
City: <u>CRAWFORD</u> State: <u>NE</u> Zip: <u>69339</u>	4a. Actual Method for Decommissioning of Well. Use Sketch below (if appropriate), or illustrate method of decommissioning on a separate sheet.	
Contractor's Information		
Name: <u>LAJORILL EXPLORATION</u>	4b. Type of Back Fill Used in Upper Three Feet. (If excavated area is greater than three feet, indicate depth of excavation.)	
Address: <u>102 PINE</u>	4c. Type and Location of Well Cover Use.	
City: <u>CRAWFORD</u> State: <u>NE</u> Zip: <u>69339</u>	4d. Type, Amount, and Location of Materials Used in Lower Casing.	
Business Phone No. <u>208 665-2493</u> Work Phone No. <u>19019</u>	4e. Type and Thickness of Materials Used Between Confining Layers. Indicate plug depth(s) on left side of sketch.	
Contractor's License No. _____	2a. Well Registration No. (if applicable) <u>G-071432</u> 2b. Type of Ground Water Use <u>ADDITIONAL WELL</u> 2c. Date of Decommissioning <u>7/10/01</u> 2d. Legal Description of Well Location: County <u>DAWES</u> Township <u>29N</u> Range <u>51W</u> Section <u>1</u> <u>NW 1/4 of the NW 1/4</u> 2e. Street Address of Block, Lot and Subdivision (if applicable). 2f. Well Location in Feet from Section Lines <u>852</u> feet from <u>North</u> (circle one) section line <u>815</u> feet from <u>East</u> (circle one) section line 2g. Location of Water Use: County <u>DAWES</u> Township <u>29N</u> Range <u>51W</u> Section <u>1</u> <u>NW 1/4 of the NW 1/4</u> 2h. Date Well Last Operated <u>UNKNOWN</u> 2i. Well Casing Size <u>4.5" I. D.</u>	
I am familiar with the information submitted on this form and to the best of my knowledge, it is true.		
<u>Brian Z. Zick</u> Water Well Contractor's Signature	<u>7/25/01</u> Date	<u>Talor K. Kuehn</u> Water Well Owner's Signature
		<u>7/19/01</u> Date

JUL 25 2001
DEPARTMENT OF
NATURAL RESOURCES

Well 863A (G071432) Notice of Water Well Abandonment Record

G-071432.

54 sacks of bentonite grout (50 lbs. ea.) to make 910 gallons of slurry with approximately 25% solids. Material was placed from bottom with tremi pipe to three feet below ground level. Casing was cut off and capped. Concrete and bentonite was placed over casing. Ground was releveled.



Well 864A (G071433) Notice of Water Well Abandonment

JUL 13 '01 11:33AM NNS-RRL/PUBLIC H,TH

P.2/2

NEBRASKA DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 94676, LINCOLN, NEBRASKA 68509-4676
(402) 471-2363

ORCA ABAR
JULY 2001

NOTICE OF WATER WELL ABANDONMENT

INSTRUCTIONS		FOR DEPARTMENT USE ONLY	
Complete by printing in ink or typing the appropriate information. Submit the completed form to the above address within 60 days of decommissioning.		Filing Date <u>7-25-2001</u>	Registration Number <u>G-71433</u>
1. Well Owner Information:		Owner Code <u>39475</u>	Sequence Number <u>79595</u>
Name: <u>CROW BUTTE RESOURCES</u>		NRD <input type="checkbox"/> 01-Up. Big Blue <input type="checkbox"/> 10-Pawnee-Missouri <input type="checkbox"/> 18-Central Platte <input type="checkbox"/> 02-Low. Big Blue <input type="checkbox"/> 11-Nemaha <input type="checkbox"/> 19-Low. Platte N. <input type="checkbox"/> 03-Up. Elkhorn <input checked="" type="checkbox"/> 12-Up. Niobrara <input type="checkbox"/> 20-Low. Platte S. <input type="checkbox"/> 04-Low. Elkhorn <input type="checkbox"/> 13-Mid. Niobrara <input type="checkbox"/> 21-Jp. Republican <input type="checkbox"/> 05-Lincoln Blue <input type="checkbox"/> 14-Low. Niobrara <input type="checkbox"/> 22-Mid. Republican <input type="checkbox"/> 06-Up. Loup <input type="checkbox"/> 15-North Platte <input type="checkbox"/> 23-Low. Republican <input type="checkbox"/> 07-Low. Loup <input type="checkbox"/> 16-South Platte <input type="checkbox"/> 24-Tri-Basin <input type="checkbox"/> 08-Lewis/Clark <input type="checkbox"/> 17-Twin Platte	
Address: <u>BOX 169</u>		4a. Actual Method for Decommissioning of Well. Use Sketch below (if appropriate), or illustrate method of decommissioning on a separate sheet.	
City: <u>CRAWFORD</u> State: <u>NE</u> Zip: <u>69339</u>			
Home Phone No. <u>308) 665-2215</u> Work Phone No. _____			
2. Person Completing Decommissioning (if not owner) Contractor's Information		4b. Type of Back Fill Used in Upper Three Feet. (If excavated area is greater than three feet, indicate depth of excavation.)	
Name: <u>LANDRILL EXPLORATION</u>		4c. Type and Location of Well Cover Use.	
Address: <u>102 PINE</u>		4d. Type, Amount, and Location of Materials Used in Lower Casing.	
City: <u>CRAWFORD</u> State: <u>NE</u> Zip: <u>69339</u>		4e. Type and Thickness of Materials Used Between Confining Layers. Indicate plug depth(s) on left side of sketch.	
Business Phone No. <u>308) 665-2493</u> Contractor's License No. <u>19019</u>		RECEIVED JUL 25 2001 DEPARTMENT OF NATURAL RESOURCES	
3a. Well Registration No. (if applicable) <u>G-071433</u>			
3b. Type of Ground Water Use: <u>MONITOR WELL</u>			
3c. Date of Decommissioning <u>7/10/01</u>			
3d. Legal Description of Well Location: County <u>DAWES</u> Township <u>29N</u> Range <u>51W</u> Section <u>1</u> <u>SW 1/4 of the SW 1/4</u>			
3e. Street Address of Block, Lot and Subdivision (if applicable).			
3f. Well Location in Feet from Section Lines <u>650</u> feet from North or South (circle one) section line <u>1300</u> feet from East or West (circle one) section line			
3g. Location of Water Use: County <u>DAWES</u> Township <u>29N</u> Range <u>51W</u> Section <u>1</u> <u>SW 1/4 of the SW 1/4</u>			
3h. Date Well Last Operated <u>UNKNOWN</u>			
3i. Well Casing Size <u>4.5" I. D.</u>			

I am familiar with the information submitted on this form and to the best of my knowledge, it is true.

Ryan K. Del
Water Well Contractor's Signature

7/20/01
Date

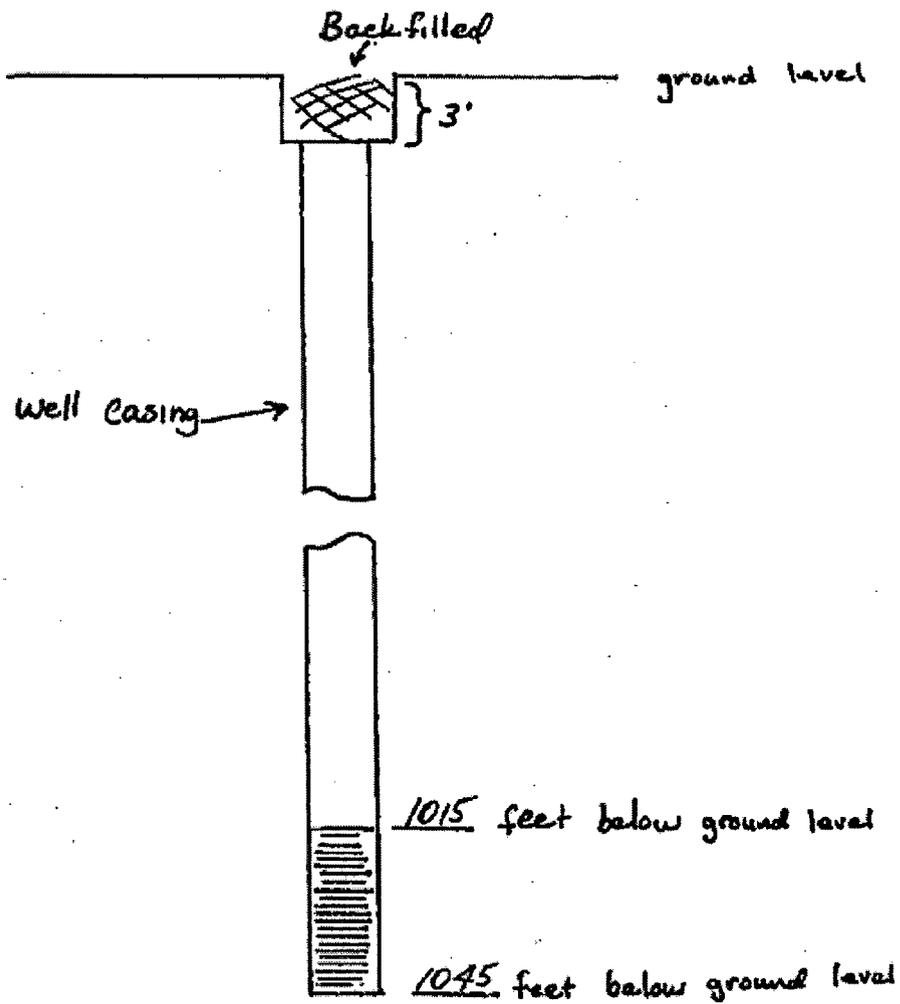
Ronald Hurd
Water Well Owner's Signature

7/19/01
Date

Well 864A (G071433) Notice of Water Well Abandonment

G-071433

40 sacks of bentonite grout (50 lbs. ea.) to make 860 gallons of slurry with approximately 25% solids. Material was placed from bottom with tremi pipe to three feet below ground level. Casing was cut off and capped. Concrete and bentonite was placed over casing. Ground was leveled.



Well 865A (G071430) Notice of Water Well Abandonment Record

JUL 13 '01 11:35AM NNS-RRL/PUBLIC HLTH

P.2/2

NEBRASKA DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 34476, LINCOLN, NEBRASKA 68509-4476
(402) 471-3263

DNR ABAN
JULY 2000

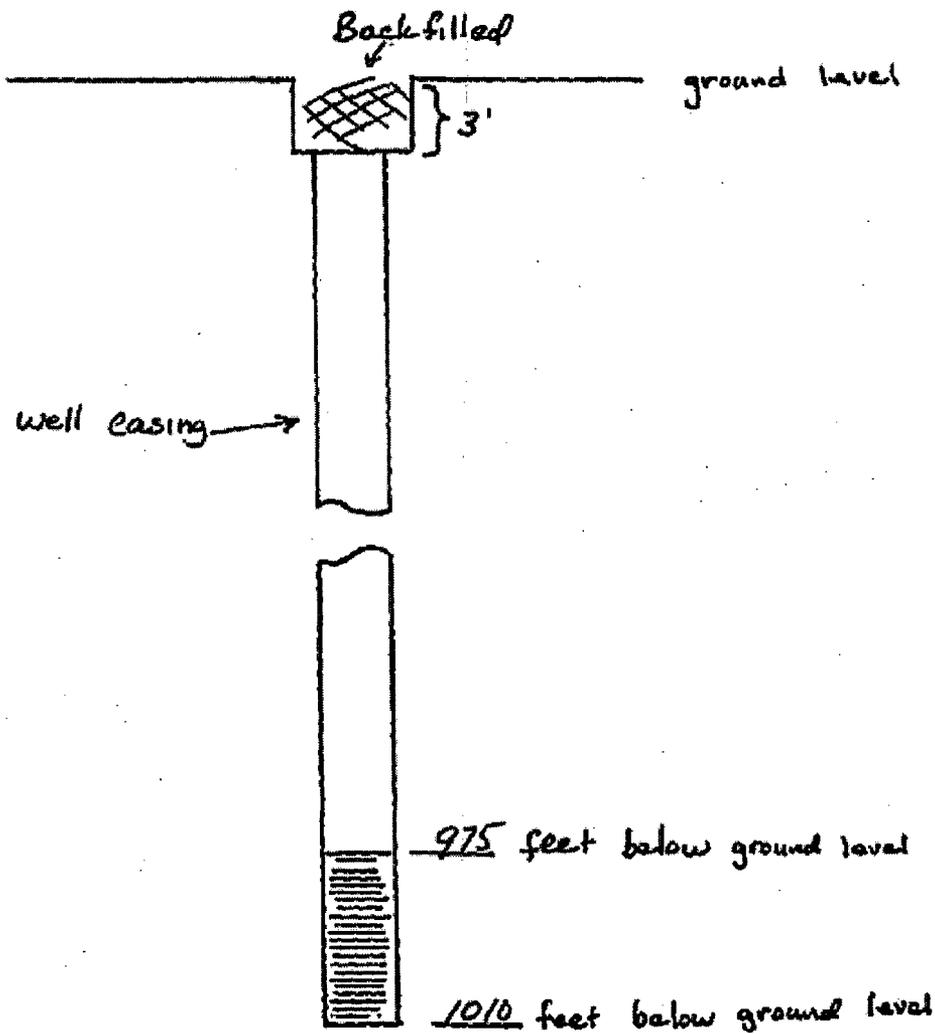
NOTICE OF WATER WELL ABANDONMENT

INSTRUCTIONS		FOR DEPARTMENT USE ONLY	
Complete by printing in ink or typing the appropriate information. Submit the completed form to the above address within 60 days of decommissioning.		Filing Date <u>7-25-2001</u>	Registration Number <u>G-71430</u>
1. Well Owner Information:		Owner Code <u>39475</u>	Sequence Number <u>79592</u>
Name: <u>CROW BUTTE RESOURCES</u>		NRD	
Address: <u>Box 169</u>		<input type="checkbox"/> 01-Up. Big Blue <input type="checkbox"/> 10-Papio-Missouri <input type="checkbox"/> 18-Central Platte <input type="checkbox"/> 02-Low. Big Blue <input type="checkbox"/> 11-Nemaha <input type="checkbox"/> 19-Low. Platte N. <input type="checkbox"/> 03-Up. Elkhorn <input checked="" type="checkbox"/> 12-Up. Nebraska <input type="checkbox"/> 20-Low. Platte S. <input type="checkbox"/> 04-Low. Elkhorn <input type="checkbox"/> 13-Mid. Nebraska <input type="checkbox"/> 21-Jp. Republican <input type="checkbox"/> 05-Little Blue <input type="checkbox"/> 14-Low. Nebraska <input type="checkbox"/> 22-Vid. Republican <input type="checkbox"/> 06-Up. Loup <input type="checkbox"/> 15-North Platte <input type="checkbox"/> 23-Low. Republican <input type="checkbox"/> 07-Low. Loup <input type="checkbox"/> 16-South Platte <input type="checkbox"/> 24-Tri-Basin <input type="checkbox"/> 08-Lewis/Clark <input type="checkbox"/> 17-Twin Platte	
City: <u>CHAMFORD</u> State: <u>NE</u> Zip: <u>69339</u>		4a. Actual Method for Decommissioning of Well. Use Sketch below (if appropriate), or illustrate method of decommissioning on a separate sheet.	
Home Phone No. <u>308 665-2215</u> Work Phone No. _____			
2. Person Completing Decommissioning (if not owner) Contractor's Information Name: <u>LANSRILL EXPLORATION</u>			
Address: <u>102 PINE</u>		4b. Type of Back Fill Used in Upper Three Feet. (If excavated area is greater than three feet, indicate depth of excavation.)	
City: <u>CHAMFORD</u> State: <u>NE</u> Zip: <u>69339</u>		4c. Type and Location of Well Cover Use.	
Business Phone No. <u>308 665-2493</u> Contractor's License No. <u>19019</u>		4d. Type, Amount, and Location of Materials Used in Lower Casing.	
3a. Well Registration No. (if applicable) <u>G-071430</u>		4e. Type and Thickness of Materials Used Between Confining Layers. Indicate plug depth(s) on left side of sketch.	
3b. Type of Ground Water Use <u>MONITOR WELL</u>		JUN 25 2001 DEPARTMENT OF NATURAL RESOURCES	
3c. Date of Decommissioning <u>7/11/01</u>			
3d. Legal Description of Well Location: County <u>DAWES</u> Township <u>29N</u> Range <u>50W</u> Section <u>18</u> <u>SW 1/4 of the NW 1/4</u>		I am familiar with the information submitted on this form and to the best of my knowledge, it is true.	
3e. Street Address of Block, Lot and Subdivision (if applicable).		<u>Ryan K. Zick</u> <u>7/20/01</u> Water Well Contractor's Signature Date	
3f. Well Location in Feet from Section Lines <u>970</u> feet from <u>(North)</u> or South (circle one) section line <u>780</u> feet from East of <u>(West)</u> (circle one) section line		<u>Paul H. Hunk</u> <u>7/19/01</u> Water Well Owner's Signature Date	
3g. Location of Water Use: County <u>DAWES</u> Township <u>29N</u> Range <u>50W</u> Section <u>18</u> <u>NW 1/4 of the NW 1/4</u>			
3h. Date Well Last Operated <u>UNKNOWN</u>			
3i. Well Casing Size <u>4.5" I.D.</u>			

Well 865A (G071430) Notice of Water Well Abandonment Record

G-071430

40 sacks of bentonite grout (50 lbs. ea.) to make 830 gallons of slurry with approximately 25% solids. Material was placed from bottom with tremi pipe to three feet below ground level. Casing was cut off and capped. Concrete and bentonite was placed over casing. Ground was leveled.



Well 866A (G071431) Notice of Well Abandonment Record

JUL 13 '01 11:35AM NMS-RSL/PUBLIC HLTH

P.2/2

NEBRASKA DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 94676, LINCOLN, NEBRASKA 68509-4676
(402) 471-3363

DNK ABAN
JULY 2000

NOTICE OF WATER WELL ABANDONMENT

Instructions	FOR DEPARTMENT USE ONLY	
Complete by printing in ink or typing the appropriate information. Submit the completed form to the above address within 60 days of decommissioning.	Filing Date <u>7-25-2001</u>	Registration Number <u>G-71431</u>
	Owner Code <u>39475</u>	Sequence Number <u>79593</u>
1. Well Owner Information:	<input type="checkbox"/> 01-Up, Big Blue <input type="checkbox"/> 10-Papio-Missouri <input type="checkbox"/> 18-Central Platte <input type="checkbox"/> 02-Low, Big Blue <input type="checkbox"/> 11-Nemaha <input type="checkbox"/> 19-Low, Platte N. <input type="checkbox"/> 03-Up, Elkhorn <input checked="" type="checkbox"/> 12-Up, Niobrara <input type="checkbox"/> 20-Low, Platte S. <input type="checkbox"/> 04-Low, Elkhorn <input type="checkbox"/> 13-Mid, Niobrara <input type="checkbox"/> 21-Up, Republican <input type="checkbox"/> 05-Little Blue <input type="checkbox"/> 14-Low, Niobrara <input type="checkbox"/> 22-Mid, Republican <input type="checkbox"/> 06-Up, Loup <input type="checkbox"/> 15-North Platte <input type="checkbox"/> 23-Low, Republican <input type="checkbox"/> 07-Low, Loup <input type="checkbox"/> 16-South Platte <input type="checkbox"/> 24-Tri-Basin <input type="checkbox"/> 08-Lewis/Clark <input type="checkbox"/> 17-Twin Platte	
Name: <u>CROW BUTTE RESOURCES</u>	NRD	
Address: <u>BOX 169</u>		
City: <u>CRAWFORD</u> State: <u>NE</u> Zip: <u>69339</u>		
Home Phone No: <u>308) 665-2215</u> Work Phone No:		
2. Person Completing Decommissioning (if not owner) Contractor's Information	4a. Actual Method for Decommissioning of Well. Use Sketch below (if appropriate), or illustrate method of decommissioning on a separate sheet.	
Name: <u>LANNILL EXPLORATION</u>		
Address: <u>102 PINE</u>		
City: <u>CRAWFORD</u> State: <u>NE</u> Zip: <u>69339</u>	4b. Type of Back Fill Used in Upper Three Feet. (If excavated area is greater than three feet, indicate depth of excavation.)	
Home Phone No: <u>308) 665-2493</u> Contractor's License No.:	4c. Type and Location of Well Cover Use.	
Business Phone No.:	4d. Type, Amount, and Location of Materials Used in Lower Casing.	
3a. Well Registration No. (if applicable): <u>G 071431</u>	4e. Type and Thickness of Materials Used Between Confining Layers. Indicate plug depth(s) on left side of sketch. RECEIVED	
3b. Type of Ground Water Use: <u>MONITOR WELL</u>	JUL 25 2001 DEPARTMENT OF NATURAL RESOURCES	
3c. Date of Decommissioning: <u>7/11/01</u>		
3d. Legal Description of Well Location: County <u>DAWES</u> Township <u>29N</u> Range <u>50W</u> Section <u>29</u> <u>NW 1/4 of the NW 1/4</u>		
3e. Street Address of Block, Lot and Subdivision (if applicable):		
3f. Well Location in Feet from Section Lines <u>500</u> feet from (North or South (circle one) section line) <u>1240</u> feet from East or West (circle one) section line		
3g. Location of Water Use: County <u>DAWES</u> Township <u>29N</u> Range <u>50W</u> Section <u>29</u> <u>NW 1/4 of the NW 1/4</u>		
3h. Date Well Last Operated: <u>UNKNOWN</u>		
3i. Well Casing Size: <u>4.5" 20.</u>		

I am familiar with the information submitted on this form and to the best of my knowledge, it is true.

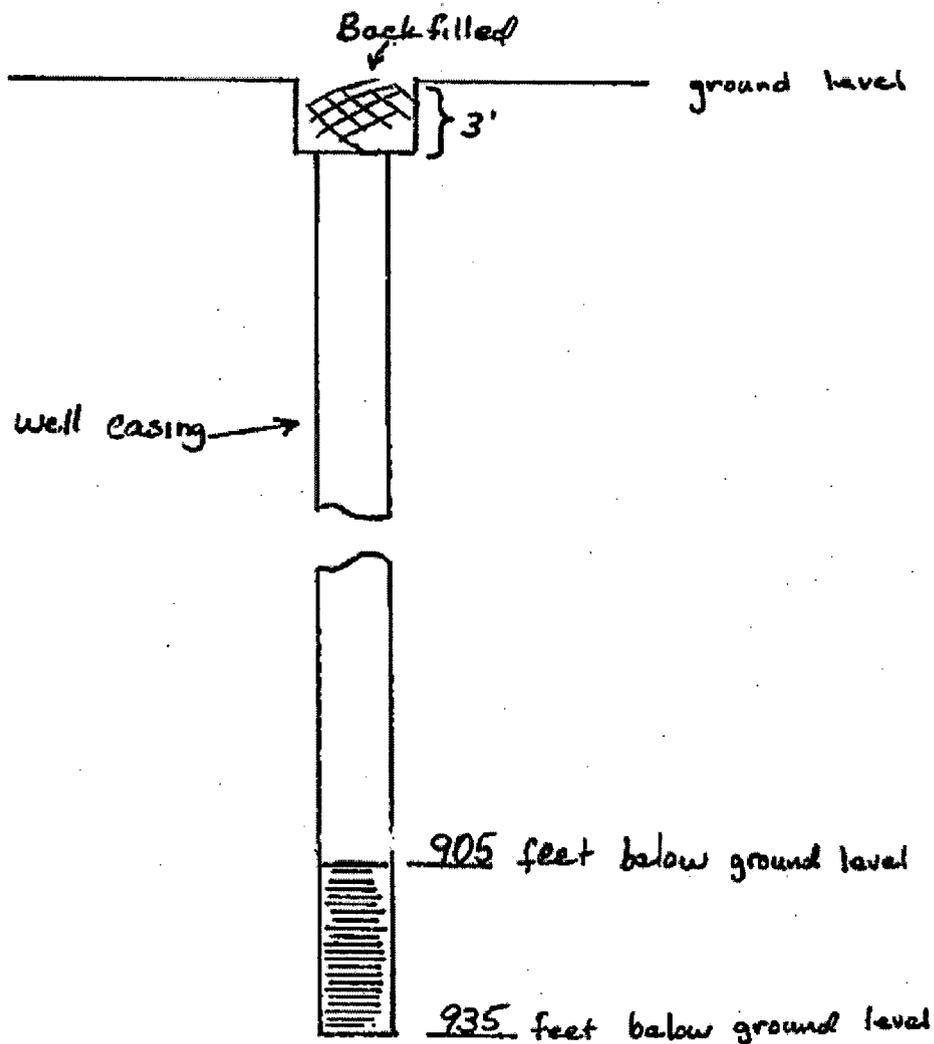
Don R. Z... 7/20/01
Water Well Contractor's Signature Date

Paul H... 7/19/01
Water Well Owner's Signature Date

Well 866A (G071431) Notice of Well Abandonment Record

G-071431

36 sacks of bentonite grout (50 lbs. ea.) to make 770 gallons of slurry with approximately 25% solids. Material was placed from bottom with tremi pipe to three feet below ground level. Casing was cut off and capped. Concrete and bentonite was placed over casing. Ground was releveled.



Appendix E

Water Well Registration and
Completion Records

Appendix E-1

Water Well Registration Records

Well 723 (G100831) Water Well Registration

October 1985
DWR Form 243

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
Water Well Registration

Page one of 1

FOR DEPARTMENTAL USE ONLY		
Registration Date <u>6-7-1999</u>	Sequence No. <u>118707</u>	Registration No. <u>G-100831</u>
Owner Code No. <u>53453</u>	Receipt No. <u>100705</u>	<u>Upper Niobrara Whitens</u>

- Well Owner JOHN KRANE
Address 1008 EAST 2ND
City MCCOOK
Telephone Number (305) 305-6413
State NE Zip Code 68101 +
- Drilling Firm CHUBB WATER WELLS
Address 21 West 2nd Creek Road
City Crawford
Telephone Number (308) 665-1410
Contractor's License No. 39035
State NE Zip Code 69339 +
- Permit Number(s)
- Purpose of well (Indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with spacing 45-638) Public Water Supply (without spacing) Recovery Aquaculture
 Other _____
- Replacement and abandoned well information.
A. Is this well a replacement well? Yes No
B. Replacement well is _____ feet from abandoned well.
C. Original well pump column size: _____ inches.
D. Location of water use of abandoned well: _____
E. Registration number of abandoned wells: _____
F. Abandoned well last operated: _____
G. Completion of original well abandonment on: _____
- A. Well Location: SE 1/4 of the SE 1/4 of Section 11, Township 29 North, Range 51 West, SAVES County.
B. The well is _____ feet from the North/South section line and _____ feet from the East/West section line.
C. Street address or block, lot and subdivision, if applicable:
D. Location of water use, if applicable (give legal descriptions):
E. If for irrigation, the land to be irrigated is _____ acres.
F. Well reference letter(s), if applicable:
- Pump Information.
Is pump installed at this time? Yes No
If yes, complete items A through F.
If no, complete items A and B with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: 10.00 gallons per minute. Measured Estimated
B. Pump column diameter: 1 inches. C. Length of pump column: 288 feet.
D. Pumping equipment installed: 93/26/39 E. Brand/Type: DIAPHRAGM / SUBMERSIBLE
F. Pump installed by: Contractor Owner Pump Installer License No. 39035

-- CONTINUED ON NEXT PAGE --

Water Well 725 (G94856) Water Well Registration

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 2-19-98 Sequence No. 110776 Registration No. G-94856
Owner Code No. 50448 Receipt No. 94914 Upper Nebraska-White NRD

1. Well Owner Bennis Chapman Telephone Number 800 632-7269
Address 1899 Oxford Drive
City Chadron State NE Zip Code 67901

2. Drilling Firm Nelson Wells, Inc. Telephone Number 888 762-1593
Address 2511 205 Hwy 385 Contractor's License No. 39318
City Allamore State NE Zip Code 68701

3. Permit Number(s) _____

4. Purpose of well (indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with specs (46 csc)) Public Water Supply (without specs) Recovery Aquaculture
 Other _____
(Indicate one)

5. Replacement and abandoned well information.
A. Is this well a replacement well? Yes No B. Registration number of abandoned well: _____
C. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated _____, 19____
E. Original well pump column size: _____ inches. F. Completion of original well abandonment on _____, 19____
G. Location of water use of abandoned well: _____

6. A. Well location: NW 1/4 of the SE 1/4 of Section 7, Township 29 North, Range 50 East (West) Dawes County.
B. The well is 226 feet from the (North or South) section line and 238 feet from the (East or West) section line.
(Circle one)
C. Street address or block, lot and subdivision, if applicable: _____
D. Location of water use, if applicable (give legal descriptions): Part of Section 7 T.29 R.50 W
E. If for irrigation, the land to be irrigated is _____ acres.
F. Well reference letter(s), if applicable: _____

7. Pump Information.
Is pump installed at this time? Yes No
If yes, complete items A through F.
If no, complete items A and D with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: 3 1/2 gallons per minute. Measured or Estimated
B. Pump column diameter: 1 1/4 inches. C. Length of pump column: 186 feet.
D. Pumping equipment installed: 1 Delta 23, 1997. E. Brand/Type: 2" Elish Cap Co. Index
Pump Installer License No. 27 79718

Water Well 725 (G94856) Water Well Registration

8. Well Construction Information.

A. Total well depth: 240 feet. B. Static water level: 139 feet. C. Pumping water level: 220 feet.
 Estimated or Measured
 D. Well Construction began: 12/18, 1997 E. Well Construction completed: 12/19, 1997
 F. Bore hole diameter: 9" inches.
 G. Plain Casing: Diameter 4 1/2" ID 5" OD inches. Type of material: Sch 40 PVC
 Wall thickness: .250 inch(es). Joints: Welded/Flug/Threaded/Other:
 Length(s) and placement(s) depth from 0 ft. to 190 ft. from ft. to ft.
 H. Screen: 4 1/2" ID 5" OD in. Type of material: Sch 40 PVC
 Screen openings (slot size): .016" Trade name: Eagle / E
 Length(s) and placement(s) depth from 180 ft. to 240 ft. from ft. to ft. Guides at Nines.
 I. Gravel pack interval(s) from 10 ft. to 240 ft. from ft. to ft. Grade size: Concrete
 J. Grouted/Sealed from 4 ft. to 10 ft. with Chip Bentonite
 (type)
 from 1 1/2 ft. to 0 ft. with Concrete Mortar
 (type)
 K. Drilling method: Straight Rotary L. Drilling fluid: Poly-gel Bentonite
 M. Well development technique (total time and method): 2 hrs. Air Lift Pumping
 N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? Yes No
 If yes, what will be used:

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
<u>0</u>	<u>2</u>	<u>Dark brown silty topsoil</u>	<u>53</u>	<u>160</u>	<u>Limestone + fine gravel</u>
<u>2</u>	<u>10</u>	<u>Med. brown silty sand</u>	<u>160</u>	<u>240</u>	<u>Soft silty sandstone +</u>
<u>10</u>	<u>21</u>	<u>Limestone, very silty</u>			<u>some limestone</u>
		<u>sand</u>			
<u>21</u>	<u>35</u>	<u>Coarse sandstone +</u>			
		<u>limestone</u>			
<u>35</u>	<u>45</u>	<u>Coarse sandstone, limestone</u>			
		<u>trace of med. gravel</u>			
<u>45</u>	<u>53</u>	<u>Cemented sand, fine</u>			
		<u>gravel</u>			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Rich Nelson
 Water Well Contractor's Signature

1/14/98
 Date

Loonie Chapman
 Water Well Owner's Signature

12-29-97
 Date

Well 728 (G88070) Water Well Registration

Revised 1995
DWR Form 141

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 5-28-96 Sequence No. 100059 Registration No. G-88070
 Owner Code No. 12-1119 Receipt No. 86479 12 - Upper Nebraska White NRD

X 1. Well Owner Consulting Allway & Bonnie Chapman Telephone Number (308) 734-8327
 Address P.O. Box 9439 Casper, Wyo. 82409-3059 1988 Col. Dr. Drive Cheyenne Wyo 82001
 City _____ State _____ Zip Code _____

2. Drilling Firm Nelson Wells, Inc. Telephone Number (308) 763-1592
 Address P.O. Box 76 Contractor's License No. 39318
 City Allamore State NE Zip Code 69301

3. Permit Number(s) _____

4. Purpose of well (Indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
Ground Water Source Heat Pump Industrial Injection Irrigation X Livestock Monitoring
Observation Public Water Supply (with casing (16-42)) Public Water Supply (without casing) Recovery Aquaculture
 Other _____

5. Replacement and abandoned well information.
 A. Is this well a replacement well? Yes X No B. Registration number of abandoned well: _____
 C. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated _____, 19____
 E. Original well pump column size: _____ inches. F. Completion of original well abandonment on _____, 19____
 G. Location of water use of abandoned well: _____

6. A. Well location: NE 1/4 of the NE 1/4 of Section 1, Township 29 North, Range 57 East, Dundy County.
 B. The well is 160 feet from the (North or South) section line and 1450 feet from the (East or West) section line.
 (Circle one) (Circle one)
 C. Street address or block, lot and subdivision, if applicable: _____
 D. Location of water use, if applicable (give legal descriptions): Livestock water on section 1 S1 T29 R57
 E. If for irrigation, the land to be irrigated is _____ acres.
 F. Well reference letter(s), if applicable: _____

7. Pump Information.
 Is pump installed at this time? X Yes No
 If yes, complete items A through F.
 If no, complete items A and D with estimated information for those wells in which pump will be installed.
 A. Actual pumping rate, if applicable: 5-121 gallons per minute. Measured or Estimated
 B. Pump column diameter: 1 1/2 inches. C. Length of pump column: 100 feet.
 D. Pumping equipment installed: 5-20-1996 E. Brand/Type: Coulds Submersible
 F. Pump installed by: Contractor Owner Pump Installer License No. 39318

Well 728 (G88070) Water Well Registration

8. Well Construction Information.

A. Total well depth: 260 feet. B. Static water level: 112 feet. C. Pumping water level: 200 feet.
 Estimated or Measured
 D. Well Construction began: 4-27-1976 B. Well Construction completed: 5-20-1976
 E. Bore hole diameter: 9 inches.
 G. Plain Casing Diameter: 4 1/2 ID 5 OD inches. Type of material: Sch 40 PVC
 Wall thickness: 1.250 inch(es). Joints - Welded/Clued/Threaded/Other:
 Length(s) and placement(s) depth from 0 ft. to 180 ft. from _____ ft. to _____ ft.
 H. Screen: 4 1/2 ID 5 OD in.; Type of material: Sch 40 PVC
 Screen openings (slot size): 0.16 Trade name: Eagle
 Length(s) and placement(s) depth from 180 ft. to 260 ft. from _____ ft. to _____ ft. Guides at _____ ft.
 I. Gravel pack interval(s) from 10 ft. to 260 ft. from _____ ft. to _____ ft. Grads size: _____
 J. Cased/Sealed from 6 ft. to 10 ft. with Chipped Bentonite (type)
 from _____ ft. to _____ ft. with _____ (type)
 K. Drilling method: Straight Rotary L. Drilling fluid: Poly Gel ~~Aluminum~~ Bentonite
 M. Well development technique (total time and method): Air Lift Pumping - 2 hrs
 N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? Yes No
 If yes, what will be used: _____

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
<u>0</u>	<u>2</u>	<u>Dark brown silty sand</u>	<u>230</u>	<u>260</u>	<u>Thin sandstone, some</u>
<u>2</u>	<u>8</u>	<u>Dark brown silty sand</u>			<u>limestone & silty sand</u>
		<u>some brown rock</u>			
<u>8</u>	<u>20</u>	<u>Limestone</u>			
<u>20</u>	<u>30</u>	<u>Med. brown sand & limestone</u>			
<u>30</u>	<u>80</u>	<u>Med. brown sandstone</u>			
		<u>fine limestone</u>			
<u>80</u>	<u>110</u>	<u>Med. brown sandstone</u>			
		<u>fine limestone</u>			
<u>110</u>	<u>230</u>	<u>Soft silty light brown sand w/ limestone ledges</u>			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Arb. Nelson Water Well Contractor's Signature Date 5/21/76
Leardine Alloway Co. P.P.
Thomas J. Chapman Water Well Owner's Signature Date 5/21/76

Well 731(G90120) Water Well Registration

Revised 1988
DWA Form 103

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 12-28-96 Sequence No. 105200 Registration No. G-90120
 Owner Code No. 45911 Receipt No. 8967 12 Upper Neoloma White NRD

307-234-8377 307-633-3269
 1. Well Owner Donald Williams Donald Williams Telephone Number _____
 Address P.O. Box 50675 1808 Oxford Blvd.
 City Casper, WY 82408 Casper, WY State WY Zip Code 82408

2. Drilling Firm Nelson Wells, Inc. Telephone Number 308-762-1592
 Address P.O. Box 28 Contractor's License No. 39318
 City Alliance State NE Zip Code 69301

3. Permit Number(s) _____

4. Purpose of well (check one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
Observation Public Water Supply (with spacing (40-45ft)) Public Water Supply (without spacing) Recovery Aquaculture
Other _____
(check one)

5. Replacement and abandoned well information.
 A. Is this well's replacement well? Yes No B. Registration number of abandoned well: _____
 C. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated _____ 19____
 E. Original well pump column size: _____ inches. F. Completion of original well abandonment on _____ 19____
 G. Location of water use of abandoned well: _____

6. A. Well location: S1/4 of the N1/4 of Section 18, Township 29 North, Range 50 West, Dawes County.
 B. The well is 1980 feet from the (North or South) section line and 330 feet from the (East or West) section line.
(Circle one)
 C. Street address or block, lot and subdivision, if applicable: _____
 D. Location of water use, if applicable (give legal descriptions): _____
 E. If for irrigation, the land to be irrigated is _____ acres.
 F. Well reference letter(s), if applicable: _____

7. Pump Information.
 Is pump installed at this time? Yes No
 If yes, complete items A through F.
 If no, complete items A and D with estimated information for those wells in which pump will be installed.
 A. Actual pumping rate, if applicable: 3 gallons per minute. Measured or Estimated
 B. Pump column diameter: 1 1/2 inches. C. Length of pump column: 117 feet.
 D. Pumping equipment installed: 13-6, 1996. E. Brand/Type: Clouton Mack Cylinder
 F. Pump installed by: Contractor Owner Pump Installer License No. 39318

Well 731(G90120) Water Well Registration

8. Well Construction Information

A. Total well depth: 180 feet. B. Static water level: 106 feet. C. Pumping water level: 147 feet.
 D. Well Construction began: 12-2, 1976 B. Well Construction completed: 12-6, 1976
 F. Bore hole diameter: 9 inches.
 G. Casing: 4 1/2 ID 5 OD inches. Type of material: 2" Sch. 40 PVC
 Wall thickness: 0.250 inch(es). Joints: Welded/Glued/Threaded/Other:
 Length(s) and placement(s) depth from 0 ft. to 130 ft. from _____ ft. to _____ ft.
 H. Screen: 4 1/2 ID 5 OD in.; Type of material: Sch. 40 PVC
 Screen openings (slot size): 0.16 Trade name: Bayle
 Length(s) and placement(s) depth from 130 ft. to 180 ft. from _____ ft. to _____ ft. Guides at _____ ft.
 I. Gravel pack interval(s) from 10 ft. to 180 ft. from _____ ft. to _____ ft. Gravel size: _____
 J. Grouted/Sealed from 5 ft. to 10 ft. with Chipped Bentonite
 from _____ ft. to _____ ft. with _____ (Type)
 K. Drilling method: Straight Rotary L. Drilling fluid: Poly gel
 M. Well development technique (total time and method): 1 hr air lift pumping
 N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? Yes No
 If yes, what will be used: _____

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
<u>0</u>	<u>3</u>	<u>Ord. med. brn. clay shale</u>	<u>130</u>	<u>180</u>	<u>Soft med. brn. clay sand</u>
<u>3</u>	<u>14</u>	<u>Med. brn. sand</u>			
<u>14</u>	<u>35</u>	<u>Roll'd limestone 1/4 x 1/8</u>			
<u>35</u>	<u>50</u>	<u>Fine gravel 1/8" some roll'd fine limestone</u>			
		<u>fine gravel 1/8" fine sandstone</u>			
<u>75</u>	<u>110</u>	<u>Limestone, fine gravel med. brn. sandstone</u>			
<u>110</u>	<u>130</u>	<u>Soft med. limestone, fine gravel, alt. sandstone</u>			

(Additional sheets may be submitted)

Well 731(G90120) Water Well Registration

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Rick Nelson

Water Well Contractor's Signature Date

12/1/96

Bonnie F. Chapman

Water Well Owner's Signature

12/1/96

12/1/96

Date

Water Well 734 (G94138) Water Well Registration

October 1995
DWR Form 10

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 1-5-98 Sequence No. 109906 Registration No. G-94138
Owner Code No. 50020 Receipt No. 94092 12 UPPER NIAGARA-WHITE NRD

X 1. Well Owner Geraldine Alloway AKA Jean Alloway Telephone Number (307) 234-6377
Address P.O. Box 50679
City Casper State WY Zip Code 82605 40675

2. Drilling Firm Nelson Wells Inc. Telephone Number (308) 762-1592
Address 2511 #2 S. Hwy 385 Contractor's License No. 39318
City Allamore State NE Zip Code 69301

3. Permit Number(s) _____

4. Purpose of well (indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with approval (16-630)) Public Water Supply (without approval) Recovery Aquaculture
 Other _____
(Indicate use)

5. Replacement and abandoned well information.
A. Is this well a replacement well? Yes No B. Registration number of abandoned well: _____
C. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated _____, 19____
E. Original well pump column size: _____ inches. F. Completion of original well abandonment on _____, 19____
G. Location of water use of abandoned well: _____

X 6. A. Well location: SW 1/4 of the NW 1/4 of Section 31, Township 30 North, Range 50 East/ West, Dawes County.
X B. The well is 2000 feet from the (North or South) section line and 1100 feet from the (East or West) section line.
(Circle one) (Circle one)
C. Street address or block, lot and subdivision, if applicable: _____
D. Location of water use, if applicable (give legal descriptions): _____
E. If for irrigation, the land to be irrigated is _____ acres.
F. Well reference letter(s), if applicable: _____

7. Pump Information.
X Is pump installed at this time? Yes No
If yes, complete items A through F.
If no, complete items A and D with estimated information for those wells in which pump will be installed.
X A. Actual pumping rate, if applicable: _____ gallons per minute. Measured or Estimated
X B. Pump column diameter: 1 1/2 inches. C. Length of pump column: 278 feet.
X D. Pumping equipment installed: Tanuary, 1998. E. Brand/Type: Midland 2" cylinder pump
X F. Pump installed by: Contractor Owner Pump Installer License No. 24259
with

Water Well 734 (G94138) Water Well Registration

8. Well Construction Information.

A. Total well depth: 300 feet. B. Static water level: 1 feet. C. Pumping water level: 260 feet.
 Estimated or Measured
 D. Well Construction began: 12-2, 1997 E. Well Construction completed: 12-3, 1997
 F. Bore hole diameter: 9 inch(es).
 G. Plain Casting: Diameter 4 1/2 ID 5 OD inches. Type of material: sch 40 PVC
 Wall thickness: .250 inches. Joints: Welded/Chased/Flanged/Other:
 Length(s) and placement(s) depth from 0 ft. to 240 ft. from _____ ft. to _____ ft.
 H. Screen: 4 1/2 ID 5 OD in.; Type of material SDR 17 PVC
 Screen openings (slot size): .010 Trade name: Keagle Grains at _____ ft.
 Length(s) and placement(s) depth from 240 ft. to 300 ft. from _____ ft. to _____ ft.
 I. Gravel pack interval(s) from 10 ft. to 300 ft. from _____ ft. to _____ ft. Gravel size: _____
 J. Grouted/sealed from 3 ft. to 10 ft. with clay grout bentonite (type)
 from _____ ft. to _____ ft. with _____
 K. Drilling method: Straight Rotary L. Drilling fluid: Bentonite - Poly Gel (type)
 M. Well development technique (total time and method): air lift pumping - 2 hours
 N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? Yes No
 If yes, what will be used: _____

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
0	3	Sandy soil	90	140	dk. brn sandstone
3	5	Clay shale	140	165	dk. brn sandstone, fine
5	40	dk. brn sandstone + clay shale (40-22')	165	170	Arkansas sandstone
40	65	dk. brn sandstone	170	190	dk. sand, fine to coarse
		tanish silty sand			mixed w/ fine gravel
65	75	dk. brn sandstone	190	200	light sand, some limestone
		bits of limestone	200	224	dk. sand, Arkansas
75	90	dk. brn sandstone, fine gravel	224	260	dk. sandstone, Arkansas
			260	280	dk. sand + fine gravel
			280	300	dk. sand + fine gravel

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Rich Nelson 12/4/97 Goldie (Joan) Murray 12-9-97
 Water Well Contractor's Signature Date Water Well Owner's Signature Date

Water Well 735 (G148049) Water Well Registration

Mail to
Department of Natural Resources
PO Box 94676
Lincoln, NE 68509-4676
Phone (402)471-2363

July 2006
DNCR Form 141

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Date Filed 1/22/08 Owner Code No. 88935 Registration No. 6-148049
01222008 189921 WNRR(3) 822718 UNW NRD

1. a. Well Owner's First Name PATTI Last Name Hollibaugh
 OR Company Name _____
 b. Attention Name _____
 c. Address 971 Square Mount Rd
 City Crawford State Ne Zip 69339 Telephone _____
 2. a. Contractor's License No. 39482 Contractor's Name Jim Pauer
 Contractor's Email Address _____
 b. Drilling Firm Name Jim's Well Service
 Address 316 Jim
 City Crawford State Ne Zip 69339 Telephone 665 2254
 Drilling Firm's Email Address _____
 3. a. Well location SE 1/4 of the SW 1/4 of Section 31, Township 30 North, Range 50E, W 8, Howe County.
 b. Natural Resources District UNW
 c. The well is 200 feet from the (N S) section line and 1824 feet from the (E W) section line
 OR Latitude Degree 42 Minute 31 Second 30
 Longitude Degree 103 Minute 14 Second 14
 d. Street address and subdivision, if applicable _____
 Block _____ Lot _____
 e. Location of water use (give legal descriptions) Area 00 39
 f. If for irrigation, the land to be irrigated is _____ acres.
 g. Well reference letter(s), if applicable _____ HHSS PWSID _____
 4. Permits
 Management Area Permit Number _____ Surface Water Permit Number _____
 Geothermal Permit Number _____ Industrial Permit Number _____
 Municipal Permit Number _____ Transfer Out-Of-State Permit Number _____
 Well Spacing Permit Number _____ Conduct Permit Number _____
 Other Permit Number _____
 HHSS _____ NDEQ _____
 5. Purpose of well (indicate one) Aquaculture Commercial/Industrial Dewatering (over 90 days)
 Domestic Ground Heat Exchanger Groundwater Source Heat Pump Irrigation Injection
 Livestock Monitoring Observation Public Water Supply (with spacing req-4 step)
 Public Water Supply (without spacing) Recovery Other _____
 6. Wells in a Series.
 a. Is this well a part of a series? Yes go to part b of this section No go to part 7 of this application
 b. If one or more of the wells in the series is currently registered, give all well registration numbers _____
 c. How many wells in the series are you registering at this time? _____

Water Well 735 (G148049) Water Well Registration

G-148049

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
375	0	gravel	1/4" minus

12. Geologic Materials Logged

Depth in Feet		Description	Depth in Feet		Description
From	To		From	To	
0	1	top soil			
1	10	white clay			
10	25	gross gravel			
25	375	fine sand & sandstone			

(Additional sheets may be submitted)

13. I hereby certify that the information provided on this registration is true and accurate to the best of my knowledge.

Jan 7 2007 11 2907
 Water Well Contractor's Signature Date Well Owner's Signature Date
 if Contractor is unknown or Deceased

Please note this document contains three pages.

Water Well 736 (G68634) Water Well Registration

Revised December, 1978

DWR Form 601

DO NOT WRITE IN THIS SPACE

Registration No. G-68634 County Dawes Date Filed 2/23/83 **1**

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WELL REGISTRATION

1. General information:

A. Connected well

Is this well connected to another well? Yes No
If yes, give registration number of previously registered well _____

(If new installation consists of a series of wells with one outlet, complete registration forms and driller's certificates for each and submit \$7.50)

B. Replacement well

Is this well to replace a permanently abandoned well? Yes No
If yes, give registration number of abandoned well _____

C. Permit No. _____ (required only in a Ground Water Control Area)

Type of well to be registered:
(Check One)

IRRIGATION

MUNICIPAL

INDUSTRIAL

Other _____

2. Name & address of well owner:

Tomahawk Ranch & Cattle Co. % Burwell Lake (39455)
Marland, Nebraska

Zip Code 69354 Phone (308) 665-1785

3. Name & address of well driller:

Midwest Farm Service
Gering, Nebraska

Zip Code 69341 Phone: (308) 632-6137

4. Location & purpose of the well:

A. D-Upper White, Niobrara Natural Resources District (Identify)

B. SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 17, Township 29, Range 50 E W.
(check one)
Dawes County.

C. The well is 1000 feet from the nearest municipal, irrigation, or industrial well. The nearest well is owned by you someone other than you.
(check one)

D. The well is intended to irrigate 200 acres of land, and it is intended to irrigate all or parts of the following land: Section 17, Township 29 N, Range 50 W

OR
E. The well shall be used for purposes of: Irrigation and stock water

5. Well and pump specifications:

A. Pumping rate under normal conditions: 900 gallons per minute.

B. Total well depth: 200 feet.

C. Inside diameter of the casing: 16 inches.

D. Static (non-pumping) water level in the well: 115 feet below ground surface.

E. Depth of water under normal pumping conditions: 174 feet below ground surface.

F. Pump column: Diameter 8 inches. Length 180 feet.

G. The well was completed on or about Feb. 7, 19 69.

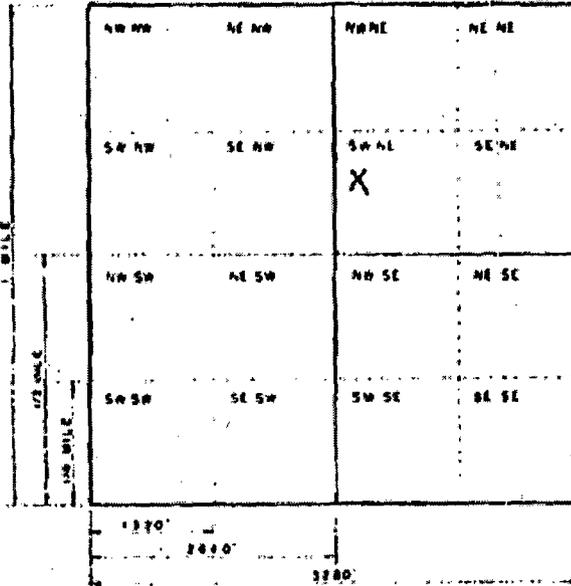
MORE ON BACK

10-27-83

MORE ON BACK

Water Well 736 (G68634) Water Well Registration

(With an "X" mark the location of the well)



This drawing represents one square mile (a section).
Each small subdivision is a 40-acre tract.

I certify that I am familiar with the information contained on this registration, and that to the best of my knowledge and belief such information is true, concise and accurate.

Tomhawk Ranch & Cattle Co.
Well Owner's Signature
Bruce Joke 18 Feb 1983
Date

Both a Well Registration and Driller's Certificate must be completed in triplicate and in full. An incomplete or defective form will be returned. A non-refundable \$7.50 fee (payable to the Director of Water Resources) must accompany your submittal. No fee is required to register: (1) a permitted well within a Ground Water Control Area; (2) a well constructed to replace a previously registered well; or (3) a well connected in a series with another well previously registered. Forward to:

State of Nebraska
Department of Water Resources
301 Centennial Mall-South
P.O. Box 94676
Lincoln, Nebraska 68509

Water Well 736 (G68634) Water Well Registration

Revised April 1, 1988
 Cr. 73

1

Registration No. G-68634 County of Dawes Date Filed 2/23/83

STATE OF NEBRASKA
 CERTIFICATE OF WELL DRILLER

I, Midwest Farm Service, Inc. of Box 766, Gering, Nebraska 69341
(Name of Driller) (Postoffice Address)

County of Scotts Bluff State of Nebraska, do hereby certify that:

1. I am the driller of a well located on the SW NE Quarter, Section No. 17
 Township 29 North, Range 50 W, owned by
 whose postoffice address is _____ State of _____

2. That the drilling was begun on the 25 day of October, 1968, and completed on
 the 27 day of October, 1968

3. That the well is cased and screened in the following manner: 0-120 16" logs Plain
(Give kind of casing, lengths and position of pipe and screen casing, weight of metallic casing, etc.)
120-200 16" Sgs Perf.

4. That the diameter of drilled hole is 0-76-36 inches.
36-200 25"

5. That Reveres Rotary type of drilling machinery was used.

6. That the drilled hole is not sealed, as follows: _____

7. That the following is an accurate log of the depth, thickness and character of the different strata penetrated, and the location of water-bearing strata:

DEPTH IN FEET		MATERIAL DRILLED
FROM	TO	
0	11	Soil & Clay
11	20	Br rock Med sand
20	35	Br rock SS Soft SS VG Sand
35	50	Soft Clay
50	65	3" clay VG sand gravel soft SS
65	80	Soft Clay
80	95	2/3 soft clay w/streaks VG sand
95	110	Small gravel VG sand
110	119	Small gravel w/clay layer

Date Signed 11-17-69

MIDWEST FARM SERVICE, INC.
[Signature]
 Driller

(If more space is required please use reverse side of this page.)

Water Well 736 (G68634) Water Well Registration

119	125	Small gravel VC sand chatter
125	128	Same chatter
128	140	Soft clay w/layer small gravel chatter
140	145	Soft clay
145	155	Small gravel VC sand chatter
155	170	Small gravel VC sand men sand
170	185	Coarse gravel Br roc ledge @ 186'
185	200	Small gravel, layer clay chatter

Water Well 737 (G68635) Water Well Registration

Revised December, 1978

DWR Form 602

DO NOT WRITE IN THIS SPACE

Registration No. G-68635 County Dawes Date Filed 2/23/83

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WELL REGISTRATION

1. General information:

A. Connected well

Is this well connected to another well? Yes No

If yes, give registration number of previously registered well _____

(If new installation consists of a series of wells with one outlet, complete registration forms and driller's certificates for each and submit \$7.50)

B. Replacement well

Is this well to replace a permanently abandoned well? Yes No

If yes, give registration number of abandoned well _____

C. Permit No. _____ (required only in a Ground Water Control Area)

Type of well to be registered:
(Check One)

IRRIGATION

MUNICIPAL

INDUSTRIAL

Other _____

2. Name & address of well owner:

Tomahawk Ranch & Cattle Co.
Mareland, Nebraska

Ch Bruce Blake (39455)

Zip Code 69354 Phone (308) 665-1765

3. Name & address of well driller:

Chase Drilling Co.

This company is no longer in business.

Zip Code _____ Phone: (____) _____

4. Location & purpose of the well:

A 1/2 Upper White, Hiobrara _____ Natural Resources District (Identify)

B. SE 1/4 of the NE 1/4 of Section 17, Township 29, Range 50 E W.
Dawes County. (check one)

C. The well is 1000 feet from the nearest municipal, irrigation, or industrial well. The nearest well is owned by you someone other than you.
(check one)

D. The well is intended to irrigate 200 acres of land, and it is intended to irrigate all or parts of the following land: Section 17, Township 29 N, Range 50 W

OR
E. The well shall be used for purposes of: Irrigation and stock water

5. Well and pump specifications:

A. Pumping rate under normal conditions: 1200 gallons per minute.

B. Total well depth: 340 feet.

C. Inside diameter of the casing: 16 inches.

D. Static (non-pumping) water level in the well: 110 feet below ground surface.

E. Depth of water under normal pumping conditions: 200 feet below ground surface.

F. Pump column: Diameter 8 inches. Length 240 feet.

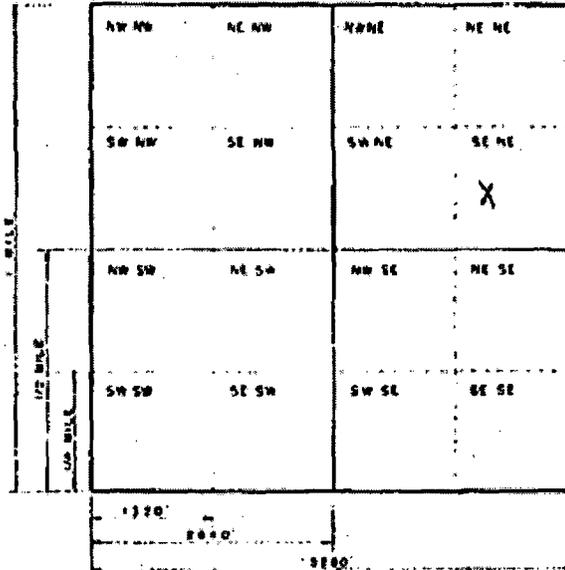
G. The well was completed on or about Dec., 19 73

MORE ON BACK

MORE ON BACK

Water Well 737 (G68635) Water Well Registration

(With an "X" mark the location of the well)



This drawing represents one square mile (a section). Each small subdivision is a 40-acre tract.

I certify that I am familiar with the information contained on this registration, and that to the best of my knowledge and belief such information is true, concise and accurate.

Tomahawk Ranch & Cattle Co.
 Well Owner's Signature *Bruce Voke* Date *18 Feb 1983*

Both a Well Registration and Driller's Certificate must be completed in triplicate and in full. An incomplete or defective form will be returned. A non-refundable \$7.50 fee (payable to the Director of Water Resources) must accompany your submittal. No fee is required to register: (1) a permitted well within a Ground Water Control Area; (2) a well constructed to replace a previously registered well; or (3) a well connected in a series with another well previously registered. Forward to:

State of Nebraska
 Department of Water Resources
 301 Centennial Mall-South
 P.O. Box 9-1676
 Lincoln, Nebraska 68509

Well 738 (G97537) Water Well Registration

October 1995
 OWR Form 145

STATE OF NEBRASKA
 DEPARTMENT OF WATER RESOURCES
 Water Well Registration

Page out 1 of 1

FOR DEPARTMENTAL USE ONLY

Registration Date 8-21-98 Sequence No. 113701 Registration No. G-097537
 Owner Code No. 37641 Receipt No. 98096 Upper Nebraska-White 110

1. Well Owner LOUIS WILKINS Telephone Number (308) 665-2440
 Address P.O. BOX 216 State NE Zip Code 69336
 City HARSLAND

2. Drilling Firm CHODD WATER WELLS Telephone Number (308) 665-1418
 Address 11 West Ash Creek Road Contractor's License No. 35035
 City Crawford State NE Zip Code 69339

3. Permit Number(s)

4. Purpose of well (indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with spacing 46-636) Public Water Supply (without spacing) Recovery Aquaculture
 Other _____

5. Replacement and abandoned well information.

A. Is this well a replacement well? Yes No
 B. Registration number of abandoned well: _____
 C. Replacement well is 15 feet from abandoned well.
 D. Abandoned well last operated 10/10/97
 E. Original well pump column size: 1 1/4 inches.
 F. Completion of original well abandonment on 04/30/98
 G. Location of water use of abandoned well:

6. A. Well location: SW 1/4 of the SW 1/4 of Section 26, Township 29 North, Range 51 W, DAVIS County.
 B. The well is 1050 feet from the North/South section line and 1050 feet from the East/West section line
 C. Street address or block, lot and subdivision, if applicable: XX
 D. Location of water use, if applicable (give legal descriptions):
 E. If for irrigation, the land to be irrigated is _____ acres.
 F. Well reference letter(s), if applicable:

7. Pump Information.

Is pump installed at this time? Yes No
 If yes, complete items A through F.
 If no, complete items A and B with estimated information for those wells in which pump will be installed.
 A. Actual pumping rate, if applicable: 3.00 gallons per minute. Measured Estimated
 B. Pump column diameter: 1 1/4 inches. C. Length of pump column: 234 feet.
 D. Pumping equipment installed: 03/14/98 E. Brand/Type: WINDMILL
 F. Pump installed by: Contractor Owner Pump Installer License No. 35035

-- CONTINUED ON NEXT PAGE --

Water Well 739 (G113923) Water Well Registration

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION or AREA PERMIT

Total Fee	960.00
HBSS Fee	550.00
Get Billing	442-8

FOR DEPARTMENT USE ONLY

NOL ID	10107845103139	NOL Status	Accepted	Well Status	A	Registration Code	G-113923	Print Add
Owner ID	43206	NOL Date	01/12/2002	Call Up Code		Registration Date	01/14/2002	
Seq Num	157618	Call Up Date						

Monday, January 14, 2002

Page 1 of 3

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION or AREA PERMIT

FOR DEPARTMENT USE ONLY

NOL ID	101078451
Owner ID	43206

a. Owner's Name: BRUCE TROESTER

b. Company Name: _____

c. Correspondent Name: _____ Attention Name: _____

d. Address: BOX 215

e. City: MARSLAND State: NE Zip Code: 68354 Phone: 308-645-2353

f. HBSS Contractor Lic ID: 1165492 Contractor's Name: Leonard H. Chubb

g. Contractor's License No: 39036 Contractor's Email Address: lchubb@nrc.state.nj.us

h. Doing Firm Name: Chubb Water Wells

i. Address: Box 101

j. City: Crawford State: NE Zip Code: 68339 Phone: 308-665-1243

k. Doing Firm's Email Address: _____

l. Well Location: NW/SE of Section 30 Township 29 North Range 50 W (E/W) Dewey County

m. Natural Resource District: Upper Missouri-White

n. The well is _____ feet (N/S) and _____ feet (E/W) from the nearest section line

o. GPS of Location: 42 27' 28.00" Longitude: -103 13' 54.00" Differential GPS D

p. Street address or block, lot and subdivision, if applicable: _____ Block No _____ Lot _____

q. Location of water use, if applicable (give legal descriptions): NW1/4SE1/4S30T29R50

r. If for irrigation, the land to be irrigated is _____ Acres

s. Well Preference letter(s), if applicable: _____

Permits	Permits Number	Date	Permits	Permits Number	Date
Management Area Permit			Transfer Out-Of-State		
Surface Water			Well Spacing		
Geothermal			Conduct Water		
Industrial			Municipal		
Industrial/Treasury Notice			Other		

t. Purpose of Well: Livestock Other: _____

Water Well 739 (G113923) Water Well Registration

Monday, January 14, 2002

Page 2 of 3

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION or AREA PERMIT *G-113923*

FOR DEPARTMENT USE ONLY

NOL ID
Owner ID

a) Is this well a replacement well? 0
b) If one or more of the wells in the series is currently registered, give the well registration number
c) How many wells in the series are you registering at this time?

Replacement and abandoned well information Replacement Number
a) Is this a replacement well? 1
b) Registration number of abandoned well
If not registered, date abandoned well was constructed
c) Replacement well is feet from abandoned well.
d) Abandoned well last operated
e) Original well pump column size inches.
f) Completion of original well abandonment on
g) Reason of water use of abandoned well

h) Is this well installed by well owner in section 27? 1
i) Is pump installed by contractor in section 27? 1
j) Is this well installed by pump installer?
k) Installer's name
l) Pump installer's name
m) State Zip Code Phone
n) Installer's firm email address

o) Pump flow rate gallons per minute measured or estimated
p) Pump capacity inches
q) Length of drop pipe feet
r) Pump brand
s) This well will be used to pump less than 60 gpm 1

t) Well construction information
u) Total well depth feet
v) Static Water Level feet
w) Pumping Water Level feet
x) Well construction began
y) Well construction completed
z) Bore hole diameter in inches. Top Bottom
aa) Casing and Screen Joints Other

bb) Well Construction (Casing and Screen) Error in Case Screen Table

From Depth	To Depth	Inside Diam	Outside Diam	Case Thickness	Screen Slot Siz	Material	Screen Trade #	Case
0	30	4.454	4.950	.496		PVC	EAGLE	
30	60	4.454	4.850	.496	.016	PVC	ROBERTS	

Water Well 739 (G113923) Water Well Registration

Monday, January 14, 2002

Page 3 of 3

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES

WATER WELL REGISTRATION or AREA PERMIT G-113923

FOR DEPARTMENT USE ONLY

NOL ID
 Owner ID

1. Well Construction (Grout and Gravel) Error in Grout Gravel Table

NOL ID	From Depth	To Depth	Material	
10107845103	8 12		BENTONITE CHIPS	1
10107845103	12 60		2A	2

2. Geology Material Logged Error in Geolog Table

NOL ID	From Depth	To Depth	Description
10107845103	0 4		TOPSOIL
10107845103	4 12		BRULE CLAY
10107845103	12 60		WATER SAND

Water Well 740 (G108894) Water Well Registration

Mail to:
PO Box 94676
Lincoln, NE 68509-4676
Phone: (402)471-2363

July 2000
DNR Form 100

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 2-13-2001 Sequence No. 123384 Registration No. G108894
Owner Code No. 43206 Receipt No. 4854 Upper Nebraska Water NRD

1. Well Owner Bruce Troester Telephone Number 308 665-2353
Address Box 523 River Rd
City Marsland State NE Zip Code 68354

2. Drilling Firm Nelson Wells, Inc Telephone Number 308 762-1592
Address 2511 #2 S Hwy 385 Contractor's License No. 39318
City Allamore State NE Zip Code 68301

3. Permit Number(s) UNR 00-0005

4. Purpose of well (indicate one):
 Dewatering (over 90 days) Domestic Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation (important, see 6D and 6E)
 Livestock Monitoring Observation Public Water Supply (see 6D and 6E)
 Public Water Supply (see 6D and 6E) Recovery Aquaculture Other _____

5. Replacement and abandoned well information.

A. Is this well a replacement well? Yes No
B. Registration number of abandoned well: _____
If not registered, date well construction completion 1/1/01
C. Replacement well is _____ feet from abandoned well.
D. Abandoned well last operated 1/1/01
E. Original well pump column size: _____ inches.
F. Completion of original well abandonment on 1/1/01
G. Location of water use of abandoned well: _____

6. A. Well location: SW 1/4 of the SE 1/4 of Section 30, Township 29 North, Range 2 West, Dawes County.
B. The well is 350 feet from the (North South) section line and 2200 feet from the (East West) section line.
C. Street address or block, lot and subdivisions, if applicable: _____
D. Location of water use, if applicable (give legal descriptions): Part of South half of Section 30
E. If for irrigation, the land to be irrigated is 180 acres. As cross hatched
F. Well reference letter(s), if applicable: _____

7. Pump Information.

Is pump installed at this time: Yes No Planned as listed below in Spring of 2001

If yes, complete items A through F.

If no, complete items A and D with estimated information for those wells in which pump will be installed.

A. Actual pumping rate, if applicable: 850 gallons per minute. Measured or Estimated
B. Drop pipe diameter: 6" inches. C. Length of drop pipe: 70 feet
D. Pumping equipment installed: (month) _____ (year) _____ (year) _____ E. Brand/Type: Scudde 4 stage 1100
F. Company Name Nelson Wells, Inc Pump Installer Name _____
Address 2511 #2 S Hwy 385 Telephone Number 308 762-1592
City Allamore State NE Zip Code 68301 Contractor's License No. 39318

Water Well 741 (G81600) Water Well Registration

November 1993
DWR Form 131

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

INSTRUCTIONS

For Department Use Only

To register a ground water well, forward the following to the Department of Water Resources, P.O. Box 94676, Lincoln, Nebraska 68509-4676. Telephone number: 402/471-2563:

1. Water Well Registration form (DWR Form 131).
2. The most recent United States Department of Agriculture aerial photograph(s), available at the county Agricultural Stabilization and Conservation Service, marked to show the following:
 - a) The location of the well to be registered.
 - b) The location of wells owned by you in the same section. Each well should be labeled to show the use of water and the registration number. Abandoned wells should be shown, also.
 - c) If the well is for irrigation, the land to be irrigated should be shown by a crosshatch pattern and the number of acres irrigated from the well should be indicated.
3. Fees:
 - For monitoring and observation wells -- \$60.
 - For wells which pump less than 50 gallons per minute -- \$60.*
 - For wells which pump 50 gallons per minute or more -- \$100.*

* For wells permitted pursuant to the Industrial Ground Water Regulatory Act, a separate registration fee is required for each of the first ten wells registered under the permit. For each additional group of ten or fewer wells registered under the permit only one registration fee is required.

Registration Number: G-81600
 Registration Date: 6-6-94
 Receipt Number: 77879
12-UPPER NIobrARA NRD

41124

1. Name of well owner Gary Othman (owner) Telephone Number (385) 665-6714
 Address 3211 River Rd.
 City Madison State NE Zip Code 69357

2. Drilling Firm Chubb water wells Telephone Number 306 665-1418
 Address 11 W Ash Creek Rd Contractor's License No. 39035 Pump Installer License No. _____
 City Crawford State NE Zip Code 69339
 Well Logger (Name) _____ Well Driller (Name) Leonard Chubb

3. Permit Number(s) NA

4. This well will be for (indicate one): Irrigation Industrial Use Public Water Supply Domestic Livestock
Recovery Injection Observation (Ground Water Levels) Monitoring (Ground Water Quality)
Dewatering (over 90 days) Other _____
(Indicate one)

5. Replacement and abandoned well information (Notice of abandonment procedure is required for all abandoned, registered wells.):
 A. Is this well a replacement well? Yes No B. Registration number of abandoned well: _____
 C. Replacement well is 15 feet from abandoned well. D. Abandoned well last operated _____, 19____
 E. Original well pump column size: _____ inches. F. Abandoned well plugged _____, 19____

6. A. Well location: NE 1/4 SW 1/4 of Section 29, Township 29 North, Range 52 East (West), Pawnee County.
 B. The well is 1000 feet from the North/South section line and 2000 feet from the East/West section line.
 (If possible, measurements should be from nearest section line.) (2000 N 1640 E)
 C. Street address or block, lot and subdivision, if applicable: _____
 D. Location of use (give legal description): NE 1/4 SW 1/4 of 29 29 5-11
 E. If for irrigation, the land to be irrigated is _____ acres.

Water Well 741 (G81600) Water Well Registration

7. Pump Information. If a timed pump test was conducted, submit complete pumping and drawdown data including depth of observation wells, if any, on separate page.

A. Pumping rate: 20 gallons per minute. Measured or Estimated
 B. Pump: Column diameter: 2 inches. C. Depth to pump: 160 feet
 D. Pumping equipment installed: 3/24, 1994 E. Brand/Type: Robbins

8. Well Information.

A. Total well depth: 190 feet. B. Static water level: 42 feet. C. Pumping water level: 60 feet
 D. Construction began: 3-19-94, 1994. E. Construction completed: 3-19, 1994
 F. Bore hole diameter: 8 inches.
 G. Casing: Diameter: 4 1/2 ID 5 OD in.; Type of material: PVC
 Wall thickness: 0.25 in. Joints: Welded/Clued/Threaded/Other: Glued; Guides at ft.
 Length(s) and placement(s) depth from ft. to ft. from ft. to ft.
 H. Screen: 4 1/2 ID 5.0 OD in.; Type of material: PVC
 Screen openings (slot size): 0.16; Trade name: Roberts; Guides at ft.
 Length(s) and placement(s) depth from 10 ft. to 70 ft. from 170 ft. to 190 ft.
 I. Gravel pack interval(s) from 10 ft. to 190 ft. from ft. to ft. Grade size:
 J. Grouted/Sealed from 10 ft. to 6 ft. with Bentonite
 from 6 ft. to 0 ft. with Drill Cuttings
 K. Drilling method: Rotary L. Drilling fluid: Bentonite
 M. Well development technique (total time and method): Air Lifted 2 hr
 N. Will chemicals or fertilizer be injected into the distribution system? Yes No

GEOLOGIC MATERIALS LOGGED

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
0	10	Surface Sand			
10	25	Sand			
25	60	Gravel			
60	175	Sandstone			
175	185	Water Sand			
185	190	Clay			

(Additional sheets may be submitted)

I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Leonard H. Dubt 3-23-94 Gene Patton 3/24/94
 Water Well Contractor's Signature Date Water Well Owner's Signature Date

Water Well 742 (G86157) Water Well Registration

February 1995
DWR Form 911

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration No. G-86157 Sequence No. 97608 Registration Date: 12-4-95
Owner Code No. 43200 Receipt No. 83970 12 Upper-Niobrara NRD

1. Well Owner Bruce Troester Telephone Number (308) 665-2353
Address Box 215
City Muscogee State NE Zip Code 69357 +

2. Drilling Firm Chubb Water Wells Telephone Number (308) 665-1418
Address 1144 1st St NE Contractor's License No. 39026 Pump Installer License No.
City Conroy State NE Zip Code 69297 +

3. Permit Number(s)

4. Purpose of well (indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with spacing 449-634) Public Water Supply (without spacing) Recovery
 Other _____

(Indicate use)

5. Replacement and abandoned well information.

A. Is this well a replacement well? Yes No B. Registration number of abandoned well: _____
C. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated _____, 19____
E. Original well pump column size: _____ inches. F. Abandoned well plugged _____, 19____

6. A. Well location: NE 1/4 NW 1/4 of Section 31, Township 29 North, Range 50 East/West, Dawes county.

B. The well is 430 feet from the North/South section line and 2310 feet from the East/West section line.
(Indicate one) (Indicate one)

C. Street address or block, lot and subdivision, if applicable: _____

D. Location of water use, if applicable (give legal descriptions): _____

E. If for irrigation, the land to be irrigated is _____ acres.

F. Well reference letter(s), if applicable: _____

7. Pump Information.

Is pump installed at this time? Yes No

If yes, complete items A through E.

If no, complete items A and D with estimated information for those wells in which pump will be installed.

A. Actual pumping rate, if applicable: 20 gallons per minute. Measured or Estimated

B. Pump column diameter: 2" inches. C. Length of pump column: 40 feet.

D. Pumping equipment installed: cat 2, 1995. E. Brand/Type: 2hp Silencer

Water Well 742 (86157) Water Well Registration

8. Well Construction Information.

A. Total well depth: 60 feet. B. Static water level: 18 feet. C. Pumping water level: 25 feet.
 D. Construction began: Sept 4, 1995. E. Construction completed: Sept 4, 1995.
 F. Bore hole diameter: 9 inches.
 G. Casing: Diameter 6.115 ID 6.625 OD inches. Type of material: PVC
 Wall thickness: .255 inches. Joints: Welded/Glued/Threaded/Other. Guides at None ft.
 Length(s) and placement(s) depth from 0 ft. to 40 ft. from — ft. to — ft.
 H. Screen: 6.115 ID 6.625 OD in.; Type of material: PVC
 Screen openings (slot size): 0.16 Trade name: Palmer Guides at None ft.
 Length(s) and placement(s) depth from 40 ft. to 60 ft. from — ft. to — ft.
 I. Gravel pack interval(s) from 10 ft. to 60 ft. from — ft. to — ft. Grade size: 2A
 J. Grouted/Sealed from 0 ft. to 10 ft. with Drill Cuttings (type)
 from — ft. to — ft. with — (type)
 K. Drilling method: Rotary L. Drilling fluid: Benstonite
 M. Well development technique (tool and method): —
 N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? — Yes — No
 If yes, what will be used: —

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
<u>0</u>	<u>12</u>	<u>Surface Sand</u>			
<u>12</u>	<u>30</u>	<u>Sandstone</u>			
<u>30</u>	<u>60</u>	<u>Sand & Gravel</u>			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Thomas H. Chubb 10-25-95 Bruce P. Rowland 11-18-95
 Water Well Contractor's Signature Date Water Well Owner's Signature Date

Well 743 (G016423) Water Well Registration

October 1995
DWR Form 743

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
Water Well Registration

Page set 1 of 1

FOR DEPARTMENTAL USE ONLY

Registration Date 7-17-2000 Sequence No. 122883 Registration No. G-106423
 Owner Code No. 37704 Receipt No. 2101 Upper Niobrara Water

1. Well Owner JOHN HANNING Telephone Number (308) 665-2167
 Address 1761 RIVER ROAD BOX 276
 City HANSLAND State NE Zip Code 69334 *

2. Drilling Firm CHUBB WATER WELLS Telephone Number (308) 665-3418
 Address 11 West Ash Creek Road Contractor's License No. 39035
 City Crawford State NE Zip Code 69339 *

3. Permit Number(s)

4. Purpose of well (Indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with spacing 46-638) Public Water Supply (without spacing) Recovery Agriculture
 Other _____

5. Replacement and abandoned well information.

A. Is this well a replacement well? Yes No
 B. Replacement well is _____ feet from abandoned well.
 C. Original well pump column size: _____ inches.
 D. Location of water use of abandoned well: _____
 E. Registration number of abandoned well: _____
 F. Abandoned well last operated _____
 G. Completion of original well abandonment on _____

6. A. Well location: SW 1/4 of the NE 1/4 of Section 26, Township 30 North, Range 51 W, DAWES County.
 B. The well is _____ feet from the North/South section line and _____ feet from the East/West section line
 C. Street address or block, lot and subdivision, if applicable: NE
 D. Location of water use, if applicable (give legal descriptions):
 E. If for irrigation, the land to be irrigated is _____ acres.
 F. Well reference letter(s), if applicable:

7. Pump Information.

Is pump installed at this time? Yes No
 If yes, complete items A through F.
 If no, complete items A and D with estimated information for those wells in which pump will be installed.
 A. Actual pumping rate, if applicable: 0.00 gallons per minute. Measured Estimated
 B. Pump column diameter: _____ inches. C. Length of pump column: 0 feet.
 D. Pumping equipment installed: _____ E. Brand/Type: _____
 F. Pump installed by: Contractor Owner Pump Installer License No. _____

Water Well 775 (G95954) Water Well Registration

October 1995
DWR Form 165

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
Water Well Registration

Page not 1 of 1

FOR DEPARTMENTAL USE ONLY

Registration Date 5-11-98 Sequence No. 112372 Registration No. G-095954
Owner Code No. 51176 Receipt No. 96235 Upper Nebraska-White IID

1. Well Owner STEV OSTERS
Address 369 6572ND ROAD
City CRAWFORD

Telephone Number (308) 661-1300

State NE Zip Code 69333

2. Drilling Firm CHUBB WATER WELLS
Address 11 West 4th Creek Road
City Crawford

Telephone Number (308) 661-1430
Contractor's License No. 39035

State NE Zip Code 69333

3. Permit Number(s)

4. Purpose of well (indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with spacing 65-625) Public Water Supply (without spacing) Recovery Aquaculture
 Other _____

5. Replacement and abandoned well information.

A. Is this well a replacement well? Yes No

B. Registration number of abandoned well: _____

C. Replacement well is _____ feet from abandoned well.

D. Abandoned well last operated _____

E. Original well pump column size: _____ inches.

F. Completion of original well abandonment on _____

G. Location of water use of abandoned well: _____

6. A. Well location: SW 1/4 of the SW 1/4 of section 33, Township 20 North, Range 51 W, DAVIS County.
B. The well is _____ feet from the North/South section line and _____ feet from the East/West section line
C. Street address or block, lot and subdivisions, if applicable: NE
D. Location of water use, if applicable (give legal description):
E. If for irrigation, the land to be irrigated is _____ acres.
F. Well reference letter(s), if applicable:

7. Pump Information.

Is pump installed at this time? Yes No

If yes, complete items A through F.

If no, complete items A and B with anticipated information for those wells in which pump will be installed.

A. Actual pumping rate, if applicable: _____ 30.00 gallons per minute. Measured Estimated

B. Pump column diameter: 1 inches. C. Length of pump column: 200 feet.

D. Pumping equipment installed: 04/10/98 E. Brand/Type: DANFOSER / SUBMERSIBLE

F. Pump installed by: Contractor Owner Pump Installer License No. 39035

-- CONTINUED ON NEXT PAGE --

Water Well 782 (G134034) Water Well Registration

Mail to
DNR
PO Box 94676
Lincoln, NE 68509-4676
Phone (402)471-2363

06/06/2015 - 168230 June f (2)
Department of Natural Resources

January 2004
DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 6-6-2015 Sequence No. 168230 Registration No. W-134034
Owner Code No. 73232 Receipt No. 818128 Harold Dickerson W-782

1. a. Well Owner's First Name Chuck Last Name Turnbull
b. Company Name _____
c. Correspondent Name _____ Attention _____
Address 377 Shelton City Chadron State NE Zip 69337 Telephone 308-432-3460

2. a. Contractor's License No. _____ Contractor's Name Peelstek
Contractor's Email Address _____
b. Drilling Firm Name Midwest Farm Service
Address _____
City Scottsbluff State _____ Zip _____ Telephone _____
Drilling Firm's Email Address _____

3. a. Well location NE 1/4 of the NE 1/4 of Section 28, Township 29 North, Range 50E W Dawes County.
b. Natural Resources District LNW
c. The well is 600 feet from the (N S) section line and 600 feet from the (E W) section line
(circle one) (circle one)
or Latitude Degree _____ Minute _____ Second _____
Longitude Degree _____ Minute _____ Second _____
d. Street address and subdivision, if applicable _____
Block _____
e. Location of water use, if applicable (give legal descriptions) NE 1/4 sect. 28 NW 1/4 sect. 27 29 1/2 N
f. If for irrigation, the land to be irrigated is 80 acres.
g. Well reference letter(s), if applicable _____ HHSS PWSID _____

4. Permits
Management Area Permit Number N/A Surface Water Permit Number _____
Geothermal Permit Number _____ Industrial Permit Number _____
Municipal Permit Number _____ Transfer Out-Of-State Permit Number _____
Well Spacing Permit Number _____ Conduct Permit Number _____
HHSS _____ Other Permit Number _____
NDEQ _____

5. Purpose of well (indicate one) Aquaculture Commercial/Industrial Dewatering (over 90 days)
 Domestic Ground Heat Exchanger Groundwater Source Heat Pump Irrigation Injection
 Livestock Monitoring Observation Public Water Supply (with spacing (44-6-12))
 Public Water Supply (without spacing) Recovery Other _____
(SEE INSTRUCTIONS)

6. Wells in a Series.
a. Is this well a part of a series? Yes go to part b of this section No go to part 7 of this application
b. If one or more of the wells in the series is currently registered, give the well registration number _____
c. How many wells in the series are you registering at this time? _____

7. Replacement and abandoned well information.
a. Is this well a replacement well? Yes No
b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m) ____ / (d) ____ / (yr) ____
c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m) ____ / (d) ____ / (yr) ____
e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m) ____ / (d) ____ / (yr) ____
g. Location of water use of abandoned well _____

Water Well 783 (G150312) Water Well Registration

Mail to
 Department of Natural Resources
 PO Box 94676
 Lincoln, NE 68509-4676
 Phone (402)471-2363

May 2007
 DNR Form 143

STATE OF NEBRASKA
 DEPARTMENT OF NATURAL RESOURCES
 WATER WELL REGISTRATION

Please indicate NA for items unknown

FOR DEPARTMENT USE ONLY

Date Filed 9/2/07 Owner Code No. 43206 Registration No. 6-150312
091022018 - 192378 - WWRP(3) Receipt R23250 UNW NRD
 Well ID

1. a. Well Owner's First Name BRUCE Last Name TROESTER
 OR Company Name _____
- b. Attention Name _____
- c. Address 3143 RIVER ROAD
 City MARSLAND State NE Zip 69354 Telephone _____
2. a. Contractor's License No 39035 Contractor's Name LEONARD CHUBB
 Contractor's Email Address _____
- b. Drilling Firm Name CHUBB WATER WELLS
 Address 3632 HWY. 20
 City CRAWFORD State NE Zip 69339 Telephone 308.665.1418
 Drilling Firm's Email Address _____
3. a. Well location NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 28, Township 29 North, Range 50 E W , DAWES County.
- b. Natural Resources District UPPER NIOBRARA-WHITE
- c. The well is _____ feet from the (N S) section line and _____ feet from the (E W) section line
 OR Latitude Degree 42 Minute 27 Second 59
 Longitude Degree 103 Minute 11 Second 21

Location of well for a pit is the location of the pump

- d. Street address and subdivision, if applicable _____
 Block _____ Lot _____
- e. Location of water use (give legal descriptions) SAME AS 3A
- f. If for irrigation, the land to be irrigated is _____ acres. Location of water use is required on all wells
- g. Well reference letter(s), if applicable _____ HHSS PWSID _____
4. Permits
 Management Area Permit Number _____ Surface Water Permit Number _____
 Geothermal Permit Number _____ Industrial Permit Number _____
 Municipal Permit Number _____ Transfer Out-Of-State Permit Number _____
 Well Spacing Permit Number _____ Conduct Permit Number _____
 HHSS _____ Other Permit Number _____
 NDEQ _____
5. Purpose of well (indicate one) Aquaculture Commercial/Industrial Dewatering (over 90 days)
 Domestic Ground Heat Exchanger Groundwater Source Heat Pump Irrigation Injection
 Livestock Monitoring Observation Pit (for irrigation) Public Water Supply (with spacing (40-4311))
 Public Water Supply (without spacing) Recovery Other _____
(further description of use can be provided under other) (include use)
6. Wells in a Series.
 a. Is this well a part of a series? Yes go to part b of this section No go to part 7 of this application
 b. If one or more of the wells in the series is currently registered, give all well registration numbers _____
 c. How many wells in the series are you registering at this time? _____

Water Well 783 (G150312) Water Well Registration

G-150312

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	5	FILLDIRT	NATIVE SOIL
5	9	GROUT	BENTONITE CHIPS
9	70	GRAVEL PAC	

12. Geologic Materials Logged

Depth in Feet			Description	Depth in Feet			Description
From	To			From	To		
0	4		SURFACE SOIL				
4	25		SAND				
25	70		WATER BEARING SANDSTONE				

From in sec 11&12 must start at zero, sec 10 not less than zero (Additional sheets may be submitted)

13. I hereby certify that the information provided on this registration is true and accurate to the best of my knowledge.


5-23-08

Water Well Contractor's Signature _____ Date _____ Well Owner's Signature _____ Date _____
 (not required for pits) (if Contractor is unknown or Deceased or for pits)

Please note this document contains three pages.

Sections 9F, 9G, 10, 11 & 12 are not required if registering a pit.

Water Well 801 (G116402) Water Well Registration

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

Fee Paid DNR Cash Fund
 HHSS Fee HHSS-DNR Cash Fund
 Get Billing

FOR DEPARTMENT USE ONLY

NOL ID	<input type="text" value="10262508211328"/>	NOL Status	<input type="text" value="Accepted"/>	Well Status	<input type="text" value="A"/>	Registration Code	<input type="text" value="G-116402"/>	Print
Owner ID	<input type="text" value="61027"/>	NOL Date	<input type="text" value="07/10/2002"/>	Call Up Code	<input type="text"/>	Registration Date	<input type="text" value="07/10/2002"/>	Add
Seq Num	<input type="text" value="141301"/>	Call Up Date	<input type="text"/>					

Wednesday, July 10, 2002

Page 1 of

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

NOL ID	<input type="text" value="10262508211328"/>	NOL Status	<input type="text" value="Accepted"/>	Well Status	<input type="text" value="A"/>	Registration Code	<input type="text" value="G-116402"/>	Print
Owner ID	<input type="text" value="61027"/>	NOL Date	<input type="text" value="07/10/2002"/>	Call Up Code	<input type="text"/>	Registration Date	<input type="text" value="07/10/2002"/>	Add
Seq Num	<input type="text" value="141301"/>	Call Up Date	<input type="text"/>					

1a Owner's Name
 b Company Name
 c Correspondent Name Attention Name
 Address
 City: State Zip Code Phone

2a HHSS Contractor Lic ID: Contractor's Name:
 Contractor's License No: Contractor's Email Address:
 b Drilling Firm Name
 Address
 City: State Zip Code Phone
 Drilling Firm's Email Address

3a Well Location of Section Township North, Range W (E/W), County
 b Natural Resource District
 c The well is feet from the (N/S) section line and feet from the (E/W) section line
 GPS: or Latitude: Longitude:
 d Street address or block, lot and subdivision, if applicable: Block No Lot
 e Location of water use, if applicable (give legal descriptions)
 f If for irrigation, the land to be irrigated is Acres
 g Well Reference letter(s), if applicable

4 Permits	Permits Number	Date	Permits	Permits Number	Date
Management Area Permit			Transfer Out-Of-State		
Surface Water			Well Spacing		
Geothermal			Conduct Water		
Industrial			Municipal		
Industrial Transfer Notice			Other		

5 Purpose of Well Other
 Notes

6 Wells in a Series

Water Well 801 (G116402) Water Well Registration

Wednesday, July 10, 2002

Page 2 of 3

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

NOL ID	10262508211328	NOL Status	Accepted	Well Status	A	Registration Code	G-116402	Print
Owner ID	61027	NOL Date	07/10/2002	Call Up Code		Registration Date	07/10/2002	Add
Seq Num	11/30	Call Up Date						

a Is this well a part of a series?

b If one or more of the wells in the series is currently registered, give the well registration number

c How many wells in the series are you registering at this time?

7 Replacement and abandoned well information Replacement Number

a Is this well a replacement well?

b Registration number of abandoned well
If not registered, date abandoned well was constructed

c Replacement well is feet from abandoned well.

d Abandoned well last operated

e Original well pump column size: inches.

f Completion of original well abandonment on

g Location of water use of abandoned well

8 Pump Information

a Is pump installed at this time?

Is pump installed by well owner in section 17 Is pump installed by contractor in section 27

Else installed by pump installer.

b NHSS Installer's License ID.

Pump Installer's License No. Pump Installer's Name

Pump Installer's Email Address

Pump Installer's Firm Name

Pump Installer's Firm Address

City: State Zip Code -0000 Phone

Pump Installer's Firm Email Address

c Pumping Rate 15 gallons per minute measured or estimated

d Drop pipe diameter 1.00 inches

e Length of drop pipe 208 feet.

f Pumping equipment installed 07 / 06 / 2002

g Pump Brand dempster

h This well will be used to pump less than 50 gpm

9 Well Construction Information

a Total well depth 220 feet.

b Static Water Level 70 feet.

c Pumping Water Level 200 feet.

d Well construction began: 07 / 02 / 2002

e Well construction completed: 07 / 06 / 2002

f Bore hole diameter in inches. Top 9 Bottom 9

g Casing and Screen Joints Glued Other

10 Well Construction (Casing and Screen)

From Depth	To Depth	Inside Diam	Outside Diam	Thickness	Screen Slot Siz	Material	Trade name	Cas
6	160	4.454	4.950	.496		pvc	roberts	
160	220	4.454	4.950	.496	.016	pvc	roberts	

Water Well 801 (G116402) Water Well Registration

Wednesday, July 10, 2002

Page 3 of 3

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

NOL ID	10262508211328	NOL Status	Accepted	Well Status	A	Registration Code	G-116402	Print
Owner ID	61027	NOL Date	07/10/2002	Call Up Code		Registration Date	07/10/2002	Add
Seq Num	141301	Call Up Date						

11 Well Construction (Grout and Gravel)

NOL ID	From Depth	To Depth	Material	
102625082113	6	15	benlonite chips	1
102625082113	15	220	2a	2

12 Geolog Material Logged

NOL ID	From Depth	To Depth	Description
102625082113	0	3	surface sand
102625082113	3	12	white rock
102625082113	12	60	sand
102625082113	60	70	sandstone with hard ledges
102625082113	70	190	water bearing sandstone with hard ledges
102625082113	190	200	water bearing sand
102625082113	200	220	sandstone

NO Return to NOL

Return to NOL

Duplicate

Unbo

NOTIFY NOL

Water Well 836 (G100106) Water Well Registration

October 1991
 178 Form 145

STATE OF NEBRASKA
 DEPARTMENT OF WATER RESOURCES
 Water Well Registration

Page set 1 of 1

FOR DEPARTMENTAL USE ONLY

Registration Date 4-5-1999 Sequence No. 117825 Registration No. G-100106
 Owner Code No. 104104 Receipt No. 100932 Upper Wabara - White WIS

1. Well Owner ARLIX + BRVY PSILSIF3 Telephone Number (308) 407-3576
 Address 7600 DODGE RD.
 City BEKINGFORD State NE Zip Code 68310 +

2. Drilling Firm CHUBB WATER WELLS Telephone Number (308) 653-1410
 Address 11 West Ash Creek Road Contractor's License No. 31035
 City Crawford State NE Zip Code 68339 +

3. Permit Number(s)

4. Purpose of well (Indicate one): Dewatering (over 30 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Monitoring
 Observation Public Water Supply (with spacing 46-638) Public Water Supply (without spacing) Recovery Agriculture
 Other _____

5. Replacement and abandoned well information.
 A. Is this well a replacement well? Yes No
 B. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated _____
 E. Original well pump column size: _____ inches. F. Completion of original well abandonment on _____
 G. Location of water use of abandoned well: _____

6. A. Well Location: NE 1/4 of the SE 1/4 of Section 23, Township 30 North, Range 51 W, DAWES County.
 B. The well is 1330 feet from the North South section line and 520 feet from the West section line
 C. Street address or block, lot and subdivision, if applicable: NE
 D. Location of water use, if applicable (give legal descriptions):
 E. If for irrigation, the land to be irrigated is _____ acres.
 F. Well reference letter(s), if applicable:

7. Pump Information.
 Is pump installed at this time? Yes No
 If yes, complete items A through F.
 If no, complete items A and D with estimated information for those wells in which pump will be installed.
 A. Actual pumping rate, if applicable: 8.00 gallons per minute. Measured Estimated
 B. Pump column diameter: _____ inches. C. Length of pump column: 0 feet.
 D. Pumping equipment installed: _____ E. Brand/Type: _____
 F. Pump installed by: Contractor Owner Pump Installer License No. _____

Well 841 (G100105) Water Well Registration

October 1995
 801 Form 105

STATE OF NEBRASKA
 DEPARTMENT OF WATER RESOURCES
 Water Well Registration

PAGE ONE 1 OF 3

FOR DEPARTMENTAL USE ONLY

Registration Date 4-5-1999 Sequence No. 117824 Registration No. G-100105
 Owner Code No. 10104 Receipt No. 100932 Upper Nebraska-White

1. Well Owner ARLEE + BETTY PHILLIPS Telephone Number (308) 417-3976
 Address 7600 DODGE RD. State NE Zip Code 69340
 City HEMINGFORD

2. Drilling Firm CHUBB WATER WELLS Telephone Number (308) 464-2118
 Address 11 West Ash Creek Road Contractor's License No. 31935
 City Crawford State NE Zip Code 69339

3. Permit Number(s)

4. Purpose of well (indicate one): Dewatering (over 90 days) Domestic Geothermal Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock Mastectory
 Observation Public Water Supply (with spacing 46-638) Public Water Supply (without spacing) Recovery Aquaculture
 Other _____

5. Replacement and abandoned well information.
 A. Is this well a replacement well? Yes No
 B. Replacement well is _____ feet from abandoned well.
 C. Original well pump column size: _____ inches.
 D. Location of water use of abandoned well: _____
 E. Registration number of abandoned wells: _____
 F. Abandoned well last operated: _____
 G. Completion of original well abandonment on: _____

6. A. Well Location: SE ^{1/4} of the SE ^{1/4} of Section 22, Township 30 North, Range 31 W, 31N75 County.
 B. The well is 500 feet from the South section line and 1000 feet from the West section line.
 C. Street address or block, lot and subdivision, if applicable: NE
 D. Location of water use, if applicable (give legal descriptions):
 E. If for irrigation, the land to be irrigated is _____ acres.
 F. Well reference letter(s), if applicable:

7. Pump Information.
 Is pump installed at this time? Yes No
 If yes, complete items A through F.
 If no, complete items A and B with estimated information for those wells in which pump will be installed.
 A. Actual pumping rate, if applicable: 0.00 gallons per minute. Measured Estimated
 B. Pump column diameter: _____ inches. C. Length of pump column: 0 feet.
 D. Pumping equipment installed: _____ E. Brand/Type:
 F. Pump installed by: Contractor Owner Pump Installer License No. _____

Water Well 851 (G000345A) Water Well Registration

Submit to:
 Department of Natural Resources
 301 Centennial Mall South
 P.O. Box 94676
 Lincoln, Nebraska 68509-4676

STATE OF NEBRASKA
 DEPARTMENT OF NATURAL RESOURCES
 WATER WELL REGISTRATION MODIFICATION

0801 8005-003611-MODF(2)
 Department of Natural Resources

July 2002
 DNRR Form 667

FOR DEPARTMENT USE ONLY

Date Filed: 2-1-2005 Sequence No. 3611 Registration No. G-000345A
 Owner Code No. 10081 Receipt No. _____
Upper Niobrara White (NRD)

1. Well Owner (Required) Steve Klies Work Telephone Number () _____
 Home Telephone Number (308) 665-1503
 Address 3332 River Road
 City Marland State NE Zip Code 69354

2. Contractor (Required) _____ Telephone Number () _____
 Address _____ Pump Installer License No. _____
 City _____ State _____ Zip Code _____

3. Water Well Registration No. G-000345A
 IDENTIFY WHAT NEEDS TO BE CORRECTED: Legal Location

4. LOCATION OF WELL (Information in ITEMS 4A and 4B are required)
 LIST LEGAL:
 A. Well location: NW 1/4 SE 1/4 of Section 21 Township 29 North, Range 50 E W Y Dawes County.
 B. The well is _____ feet from the (N S) section line and _____ feet from the (E W) section line.

5. LOCATION OF WELL
 LIST LEGAL CORRECT LEGAL AND/OR FOOTAGE:
 A. Well location: NW 1/4 SE 1/4 of Section 22 Township 29 North, Range 50 E W Y Dawes County.
 B. The well is _____ feet from the (N S) section line and _____ feet from the (E W) section line.
 C. Latitude Degree: _____ Minute: _____ Second: _____
 D. Longitude Degree: _____ Minute: _____ Second: _____
 E. Street address and subdivision, if applicable: _____
 F. Block _____ Lot _____

6. Number of acres irrigated: 130
 A. Location of water use (given legal description) SE 1/4 of 22-29N-50W

7. Change of use (select from this category) Dewatering (over 90 days) Domestic Ground Heat Exchanger
 Ground Water Source Heat Pump Industrial Injection Irrigation Livestock
 Monitoring Observation Public Water Supply (with spacing (46-638)) Public Water Supply (without spacing)
 Recovery Other _____
 (indicate use)
 A. Well was used for: _____ C. New use is: _____
 B. New gallons per minute: _____ D. Date of Change: _____

8. Wells in a Series
 A. Is this well a part of a series? Yes go to part b of this section NO
 B. If one or more of the wells in the series is currently registered, give the well registration number (s): _____

RECEIVED
 FEB 1 2005
 WATER WELL REGISTRATION

Water Well 851 (G000345A) Water Well Registration

9. Replacement and abandoned well information.

- A. Is this well a replacement well? Yes No **G-000345A**
 B. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (mo) / (da) / (yr) _____
 C. Replacement well is _____ feet from abandoned well. D. Abandoned well last operated (mo) / (da) / (yr) _____
 E. Original well pump column size _____ inches. F. Completion of original well abandonment on (mo) / (da) / (yr) _____
 G. Location of water use of abandoned well _____

10. Well Construction Information.

- A. Total well depth _____ feet. B. Static water level _____ feet.
 C. Pumping water level _____ feet. D. Well Construction begun (month) / (day) / (year) _____
 E. Well Construction completed (month) / (day) / (year) _____ F. Bore hole diameter in inches Top _____ Bottom _____
 G. Casing and Screen Joints are Welded Glued Threaded Other _____

11. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

A		B	C	D	E	F	G	H
Placement Depth in Feet		Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
From	To							

12. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		

13. Geologic Materials Logged

Depth in Feet	Description
From	To

14. REQUIRED: State Reason for Change: Well is currently registered in section 21.
Needs to be moved to section 22.

15. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Contractor's Signature _____ Date _____ Water Well Owner's Signature Steve Pless Date 1/24/05

Water Well 852 (G000345B) Water Well Registration

July 2006
DNR Form 667

Submit to:
Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, Nebraska 68509-6676
Phone (402) 471 2363

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION MODIFICATION
OWNER USE ONLY

FOR DEPARTMENT USE ONLY

Date Filed 3-15-2007 Owner Code No. 10081 Registration No. G-000345B
03152007-003612 - MOD(2) Upper Nebraska - White NRD

ALL ITEMS IN SECTION 1 AND SIGNATURE IN SECTION 3 ARE REQUIRED

SECTION 1:

A. Well Owner's First Name Steve Last Name Klaes
OR Company Name _____
Attention Name _____
Address 3333 River Rd.
City Maxwell State NE Zip 69354 Telephone 308 665 1803

B. Well Registration No. G-000345B

C. For All Wells: Location of water use (give complete legal description) 29 50 22 SWNE
For Irrigation Wells: Number of acres irrigated: _____
If the location of use is different than what is currently registered, and/or the number of acres irrigated is more than what is currently registered, and you are located in an area that has stays or a moratorium on newly irrigated acres, you MUST obtain the written approval of the Natural Resources District PRIOR TO FILING THIS FORM. This approval can be the submission of a Natural Resources District Approval form by the NRD.

UNWRD (Natural Resources District) Jason W. Mandy (Signature of NRD Staff) 12/28/06 (Date)

D. State Reason for Change: well is no longer active as an irrigation well, but would like to keep as an inactive well.

CORRECTIONS NEEDED Complete only those items being modified

SECTION 2:

A. If location of well needs corrected, items 1 and 2 are required. Item 3 required when applicable.

1. Well location: _____ 1/4 of the _____ 1/4 of Section _____, Township _____ North, Range _____ E W _____ County.

2. The well is _____ feet from the (N or S) section line and _____ feet from the (E W) section line.

OR Latitude Degree: _____ Minute: _____ Second: _____
Longitude Degree: _____ Minute: _____ Second: _____

3. Street address or block, lot and subdivisions: _____

RECEIVED
MAR 15 2007
RECEIVED
JAN 03 2007
DEPARTMENT OF NATURAL RESOURCES

Water Well 852 (G000345B) Water Well Registration

B. Change to use, complete items 1, 2 and 3. Identify use from this Listing: Dewatering (over 90 days), Domestic, Ground Heat Exchanger, Ground Water Source Heat Pump, Industrial, Injection, Irrigation, Livestock, Monitoring, Observation, Public Water Supply (with spacing (46-638), Public Water Supply (without spacing), Recovery, Other (if well use falls in this category - add specific use).

G-000345B

1. Well was used for: _____ 2. New well use is: _____
 3. Date of Change: _____

C. Well Construction Information.

1. Total well depth: _____ feet. 2. Static water level: _____ feet.
 3. Pumping water level: _____ feet 4. Well Construction began: (m)____/(d)____/(y)____
 5. Well Construction completed: (m)____/(d)____/(y)____ 6. Bore hole diameter in inches: Top _____ Bottom _____
 7. Casing and Screen Joints are: Welded , Glued , Threaded , Other _____

D. Wells in a Series.

1. Is this well a part of a series? Yes No.
 2. If one or more of the wells in the series is currently registered, give all well registration numbers: _____

E. Replacement and decommissioned/modified well information.

Department of Natural Resources Decommission/Modification Certification form or Notice of Decommissioning form is Required for replacement wells

1. Is this well a replacement well? Yes No
 2. Registration number of original well: _____ If original well is not registered, date well construction completed (m)____/(d)____/(y)____
 3. Original well last operated (m)____/(d)____/(y)____
 4. Completion of original well decommission/modification on (m)____/(d)____/(y)____
 5. Complete location of water use of original well: _____

F. Pump information.

1. Pumping rate: _____ gallons per minute. Measured or Estimated
 2. Drop Pipe diameter: _____ inches. 3. Length of drop pipe: _____ feet.
 4. Pumping equipment installed: (m)____/(d)____/(y)____ 5. Brand/Type: _____
 6. Static Water Level: _____ feet.
 7. Pumping water level: _____ feet.
 8. Amount of time pumped: _____

G. Active to Inactive

On 12/28, 2006, I altered the status of this water well from active to inactive by removing the NA inch pump and pumping column and properly capping the water well according to state standards. (\$46-1207.02)

H. Well Construction Modification.

1. Total well depth: _____ feet. 2. Static water level: _____ feet.
 3. Pumping water level: _____ feet 4. Well Modification began: (m)____/(d)____/(y)____
 5. Well Modification completed: (m)____/(d)____/(y)____ 6. Casing diameter in inches: Top _____ Bottom _____
 7. Casing and Screen Joints are: Welded , Glued , Threaded , Other _____

I certify that the well has been modified according to information given in section 2 E, F, & H, such that it will pump 50 gallons per minute or less. Pumping Rate: _____

Change to use (Check one of the following): Livestock Monitoring Observation
 nonconsumptive or de minimus use approved by the applicable natural resources district. State use: _____

SECTION 3:

I hereby certify that the information provided on this form is true and accurate to the best of my knowledge.

Steve R. Jones
 Water Well Owner's Signature

12/28/06
 Date

The Department reserves the right to request verification of information provided.

Water Well 853 (G126273) Water Well Registration

Monday, March 08, 2004

Page 1 of 3

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

147650 - G-126273 - WWRJ

FOR DEPARTMENT USE ONLY

NOL ID	107334562410840	NOL Status	Accepted	Well Status		Registration Code	G-126273
Owner ID	10051	NOL Date	03/06/2004	Call Up Code		Registration Date	03/08/2004
Seq Num	147650			Call Up Date			

1a Owner's Name: Steve [Last Name] [Last Name]
 b Company Name: [Company Name]
 c Correspondent Name: [Name] Attention Name: [Name]
 Address: 3335 River Road
 City: Mansfield State: NE Zip Code: 69354 Phone: 308 - 665-1443

2a HHSS Contractor Lic ID: 325970 Contractor's Name: David L. Deines
 Contractor's License No: 39399 Contractor's Email Address: kellydeinosirrigation@hotmail.com
 b Drilling Firm Name: Kelly-Deines Irrigation, Inc.
 Address: 2510 North 10th Street
 City: Goings State: NE Zip Code: 69341 Phone: 308 - 635-5344
 Drilling Firm's Email Address: [Email Address]

3a Well Location: NENW of Section 22 Township 29 North, Range 50 W (E/W), Daws County
 b Natural Resource District: Upper Niobrara-White
 c The well is [] feet from the [] (N/S) section line and [] feet from the [] (E/W) section line
 GPS: or Latitude: 42 28' 48.40" Longitude: -103 10' 45.20"
 d Street address or block, lot and subdivision, if applicable: [] Block No [] Lot []
 e Location of water use, if applicable (give legal descriptions): Pt NE 1/4 Sec 22 & Pt NW 1/4 Sec 23 T29N R50W
 f If for irrigation, the land to be irrigated is 130 Acres
 g Well Reference letter(s), if applicable: []

4 Permits	Permits Number	Date	Permits	Permits Number	Date
Management Area Permit	UNW-030049	02/12/2003	Transfer Out-Of-State		
Surface Water			Well Spacing		
Geothermal			Conduct Water		
Industrial			Municipal		
Industrial Transfer Notice			Other		

5 Purpose of Well: Irrigation Other []
 Notes: []

6 Wells in a Series
 a Is this well a part of a series?
 b If one or more of the wells in the series is currently registered, give the well registration number []
 c How many wells in the series are you registering at this time? []

7 Replacement and abandoned well information Replacement Number: 2
 a Is this well a replacement well?
 b Registration number of abandoned well []
 If not registered, date abandoned well was constructed []
 c Replacement well is [] feet from abandoned well.
 d Abandoned well last operated []
 e Original well pump column size: [] inches.
 f Completion of original well abandonment on []

Water Well 853 (G126273) Water Well Registration

Monday, March 08, 2004

Page 2 of 3

STATE OF NEBRASKA DEPARTMENT OF WATER RESOURCES WATER WELL REGISTRATION

147650 - G-126273 - WWRP

FOR DEPARTMENT USE ONLY

NOL ID	107334562410840	NOL Status	Accepted	Well Status		Registration Code	G-126273	
Owner ID	10081	NOL Date	03/05/2004	Call Up Code		Registration Date	03/08/2004	
Seq Num	147650			Call Up Date				

g Location of water use of abandoned well _____

8 Pump Information

a Is pump installed at this time?

Is pump installed by well owner in section 1? Is pump installed by contractor in section 2?

Else installed by pump installer.

b HHSS Installer's License ID. _____

Pump Installer's License No. _____ Pump Installer's Name _____

Pump installer's Email Address _____

Pump installer's Firm Name _____

Pump Installer's Firm Address _____

City: _____ State _____ Zip Code 4000 Phone _____

Pump Installer's Firm Email Address _____

c Pumping Rate 600 gations per minute M measured or estimated

d Drop pipe diameter _____ inches e Length of drop pipe _____ feet.

f Pumping equipment installed _____ / _____ / _____ g Pump Brand _____

h This well will be used to pump less than 50 ppm

9 Well Construction Information

a Total well depth 180 feet. b Static Water Level 63 feet.

c Pumping Water Level 140 feet. d Well construction began: 10 / 30 / 2003

e Well construction completed: 11 65 2003 f Bore hole diameter in inches. Top 25 Bottom 25

g Casing and Screen Joints Welded Other _____

10 Well Construction (Casing and Screen)

From Depth	To Depth	Inside Diam.	Outside Diam.	Thickness	Screen Slot Siz.	Material	Trade name	Cas
0	80	15.6	16	.219		Steel		
80	160	15.6	16	.219	.085	Steel	Millslot	

11 Well Construction (Grout and Gravel)

NOL ID	From Depth	To Depth	Material	Q
10733456241	0	6	Top soil	2
10733456241	6	11	Bentonite	1
10733456241	11		160 1/4" x 3/8" gravel	2

Water Well 853 (G126273) Water Well Registration

Monday, March 08, 2004

Page 3 of 3

**STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION**

147650 - G-126273 - WWRP

FOR DEPARTMENT USE ONLY

NOL ID	107334562410840	NOL Status	Accepted	Well Status	1	Registration Code	G-126273	
Owner ID	10081	NOL Date	03/06/2004	Call Up Code		Registration Date	03/08/2004	
Seq Num	147650			Call Up Date				

12 Geolog Material Logged

NOL ID	From Depth	To Depth	Description
10733456241	0	6	Top soil
10733456241	6	16	Mag rock & brown clay
10733456241	16	82	Sand & gravel little clay
10733456241	82	98	Medium sand little clay
10733456241	98	131	Sand & gravel
10733456241	131	160	Siltstone

NO Return to NOL

Return to NOL



NOTIFY NOL

Water Well 858 (G68633) Water Well Registration

Revised December, 1978

DWR Form 602

DO NOT WRITE IN THIS SPACE

Registration No. G-68633 County Dawes Date Filed 2/23/83 1

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WELL REGISTRATION

<p>1. General information:</p> <p>A. Connected well Is this well connected to another well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, give registration number of previously registered well _____ (If new installation consists of a series of wells with one outlet, complete registration forms and driller's certificates for each and submit \$7.50)</p> <p>B. Replacement well Is this well to replace a permanently abandoned well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, give registration number of abandoned well _____</p> <p>C. Permit No. _____ (required only in a Ground Water Control Area)</p>	<p>Type of well to be registered: (Check One)</p> <p><input checked="" type="checkbox"/> IRRIGATION</p> <p><input type="checkbox"/> MUNICIPAL</p> <p><input type="checkbox"/> INDUSTRIAL</p> <p><input type="checkbox"/> Other _____</p>
---	--

2. Name & address of well owner:

Tomahawk Ranch & Cattle Co. *1/2 Bruce Lake (39455)*
Harland, Nebraska

Zip Code 69354 Phone (308) 665-1765

3. Name & address of well driller:

Unknown - Well was drilled prior to 1968

Zip Code _____ Phone: (____) _____

4. Location & purpose of the well:

A. Upper White, Niobrara 12 Natural Resources District (Identify)

B. NW 1/4 of the SW 1/4 of Section 15, Township 29, Range 50 E W, Dawes County. (check one)

C. The well is 4000 feet from the nearest municipal, irrigation, or industrial well. The nearest well is owned by you someone other than you. (check one)

D. The well is intended to irrigate 200 acres of land, and it is intended to irrigate all or parts of the following land: Section 15, Township 29 N, Range 50 W

OR

E. The well shall be used for purposes of: Irrigation & Stock water

5. Well and pump specifications:

A. Pumping rate under normal conditions: 1000 gallons per minute.

B. Total well depth: 200 feet.

C. Inside diameter of the casing: 16 inches.

D. Static (non-pumping) water level in the well: 105 feet below ground surface.

E. Depth of water under normal pumping conditions: 140 feet below ground surface.

F. Pump column: Diameter 8 inches; Length 180 feet.

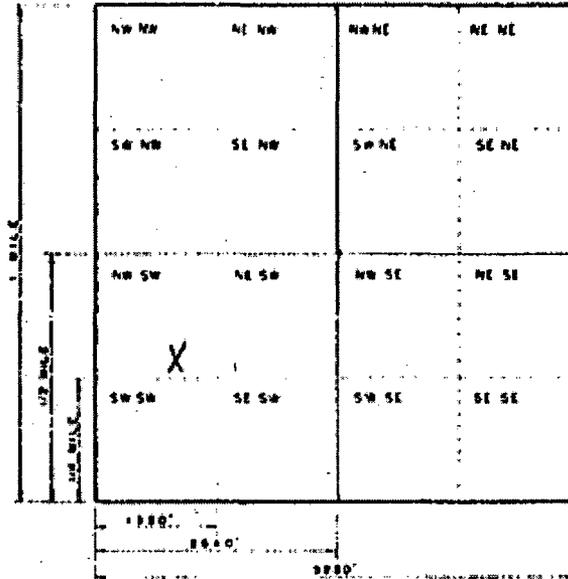
G. The well was completed on or about Unknown, 19____ Prior to 1968

MORE ON BACK

MORE ON BACK

Water Well 858 (G68633) Water Well Registration

(With an "X" mark the location of the well)



This drawing represents one square mile (a section).
Each small subdivision is a 40-acre tract.

I certify that I am familiar with the information contained on this registration, and that to the best of my knowledge and belief such information is true, concise and accurate.

Tomahawk Ranch & Cattle Co.
Well Owner's Signature
Bruce J. J. J. 18 Feb. 1983
Date

Both a Well Registration and Driller's Certificate must be completed in triplicate and in full. An incomplete or defective form will be returned. A non-refundable \$7.50 fee (payable to the Director of Water Resources) must accompany your submittal. No fee is required to register: (1) a permitted well within a Ground Water Control Area; (2) a well constructed to replace a previously registered well; or (3) a well connected in a series with another well previously registered. Forward to:

State of Nebraska
Department of Water Resources

Appendix E-2

Water Well Completion Reports

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4259 ft.
Drilling Contractor: Landrill Exploration
Mud Products: 6 Bags Super Gel 2 Quart Polymer
Bit Size: 8 Inch
Drilling Begun: 8/24/2010
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 279 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20, 40, 100, 160, 220 Ft

Project: Crow Butte
Well No. BOW-2010-1
Wellhead Elevation: 4260 ft.
Driller: J. Lemmon
2 Bags Lost Circulation Material
Drilling Completed On: 8/26/2010
Depth Drilled: 420 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 275 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 285 ft. - 365 ft.
ft. - ft.
Completed Formation Upper Boundary: 270 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 10.8 bbls.
Cement Density: 12.4 lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: 0 bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 1.2 ft. at 342.2 degrees
Remarks: Tremmied 4 bbls to surface

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 400 ft.
Operator: Klein
Actual Cement Volume Used: 16.2 bbls.
Water Volume Used: 11.6 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: 9 lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Well Type: Production/Injection Monitor

Ground Elevation: 4322 ft.

Drilling Contractor: Landrill Exploration

Mud Products: 7 Bags Super Gel 2 Quart Polymer

Bit Size: 8 Inch

Drilling Begun: 8/25/2010

Completed Formation: Brule

Casing Diameter: 4.95 inch O.D.

Casing Depth: 339 ft.

Packer Type: Johnson K-packer

Centralizer Depths: 20, 40, 100, 160, 220, 280 Ft

Screen Size: 3 inch by .020 inch

Screened Interval(s): 338 ft. - 398 ft.
ft. - ft.

Completed Formation Upper Boundary: 330 ft.

Cement Contractor: Crow Butte Resources

Estimated Cement Volume: 13.1 bbls.

Cement Density: 12.3 lbs/gal

Cement Type/Class: I/II API

Cement Circulated to Surface: 0 bbls.

Logging Contractor: Century Geophysical Corp.

Unit No.: 0001

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 2.7 ft. at 300.1 degrees

Remarks: Tremmied 3 bbls to surface

Project: Crow Butte

Well No. BOW-2010-2

Wellhead Elevation: 4323 ft.

Driller: J. Lemmon

1 Bags Lost Circulation Material

Drilling Completed On: 8/27/2010

Depth Drilled: 420 ft.

Casing Type: White Certalok

Basket Depth: N/A ft.

Packer Depth: 328 ft.

Gravel Size:

ft. - ft.
ft. - ft.

Lower Boundary: 410 ft.

Operator: Klein

Actual Cement Volume Used: 19.6 bbls.

Water Volume Used: 14.1 bbls.

Additives: 500 lbs. Salt 500 lbs. Bentonite

Density At Surface: 9.4 lbs/gal

Operator: Dunn

Probe No.: 9055C

This report was filled out-by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins

Title: Senior Geologist

Date: May 27, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4350 ft.
Drilling Contractor: Landrill Exploration
Mud Products: 6 Bags Super Gel 1 Quart Polymer
Bit Size: 8 Inch
Drilling Begun: 8/20/2010
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 339 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20, 40, 100, 160, 220, 280 Ft

Project: Crow Butte
Well No. BOW-2010-3
Wellhead Elevation: 4350 ft.
Driller: L. Corbin
2 Bags Lost Circulation Material
Drilling Completed On: 8/24/2010
Depth Drilled: 450 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 336 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 346 ft. - 416 ft.
ft. - ft.
Completed Formation Upper Boundary: 330 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 13.1 bbls.
Cement Density: 12.2 lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: 4 bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 3.6 ft. at 320.7 degrees
Remarks:

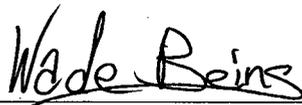
Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 440 ft.
Operator: Klein
Actual Cement Volume Used: 19.6 bbls.
Water Volume Used: 14.1 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: 12.2 lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection Monitor X
Ground Elevation: 4162 ft.
Drilling Contractor: Landrill Exploration
Mud Products: 6 Bags Super Gel
Bit Size: 8 Inch
Drilling Begun: 9/10/2010
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 249 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20, 40, 100, 160, 220 Ft

Project: Crow Butte
Well No. BOW-2010-4
Wellhead Elevation: 4163 ft.
Driller: J. Lemmon
1 Bags Lost Circulation Material
Drilling Completed On: 9/13/2010
Depth Drilled: 310 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 240 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 250 ft. - 310 ft.
Completed Formation Upper Boundary: 240 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 9.6 bbls.
Cement Density: 12.3 lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: 3 bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 18 ft. at 68 degrees

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 300 ft.
Operator: Klein
Actual Cement Volume Used: 14.4 bbls.
Water Volume Used: 10.4 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: 11.6 lbs/gal
Operator: Dunn
Probe No.: 9055C

Remarks:

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins Title: Senior Geologist
Date: May 27, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4162 ft.
Drilling Contractor: Landrill Exploration
Mud Products: 5 Bags Super Gel 1 Quart Polymer
Bit Size: 8 Inch
Drilling Begun: 3/15/2011
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 249 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20, 40, 100, 160, 220 Ft

Project: Crow Butte
Well No. BOW-2010-4A
Wellhead Elevation: 4163 ft.
Driller: S. Osmotherly
1 Bags Lost Circulation Material
Drilling Completed On: 3/17/2011
Depth Drilled: 400 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 241 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 261 ft. - 311 ft.
ft. - ft.
Completed Formation Upper Boundary: 240 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 9.6 bbls.
Cement Density: 12.1 lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: 1/2 bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 9.8 ft. at 244.2 degrees
Remarks: Tremmed 5 bbls to surface

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 390 ft.
Operator: Klein
Actual Cement Volume Used: 14.4 bbls.
Water Volume Used: 10.4 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: 10 lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins Wade Beins Title: Senior Geologist
Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Project: Crow Butte

Well Type: Production/Injection _____ Monitor X

Well No. BOW-2010-5

Ground Elevation: 4125 ft.

Wellhead Elevation: 4126 ft.

Drilling Contractor: Landrill Exploration

Driller: G. Krotz

Mud Products: 22 Bags Super Gel

8 Bags Lost Circulation Material

Bit Size: 8 Inch

Drilling Begun: 9/28/2010

Drilling Completed On: 9/30/2010

Completed Formation: Brule

Depth Drilled: 340 ft.

Casing Diameter: 4.95 inch O.D.

Casing Type: White Certalok

Casing Depth: 169 ft.

Basket Depth: N/A ft.

Packer Type: Johnson K-packer

Packer Depth: 157 ft.

Centralizer Depths: 20, 40, 100 Ft

Screen Size: 3 inch by .020 inch

Gravel Size:

Screened Interval(s): 177 ft. - 237 ft.
ft. - ft.ft. - ft.
ft. - ft.

Completed Formation Upper Boundary: 160 ft.

Lower Boundary: 330 ft.

Cement Contractor: Crow Butte Resources

Operator: Klein

Estimated Cement Volume: 6.6 bbls.

Actual Cement Volume Used: 9.8 bbls.

Cement Density: 12.3 lbs/gal

Water Volume Used: 7.1 bbls.

Cement Type/Class: I/II API

Additives: 500 lbs. Salt 500 lbs. Bentonite

Cement Circulated to Surface: 3 bbls.

Density At Surface: 11.7 lbs/gal

Logging Contractor: Century Geophysical Corp.

Operator: Dunn

Unit No.: 0001

Probe No.: 9055C

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 5.3 ft. at 87 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

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By: Wade Beins

Title: Senior Geologist



Date: May 27, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4099 ft.
Drilling Contractor: Landrill Exploration
Mud Products: 7 Bags Super Gel 2 Quart Polymer
Bit Size: 8 Inch
Drilling Begun: 9/24/2010
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 159 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20, 40, 100 Ft

Project: Crow Butte
Well No. BOW-2010-6
Wellhead Elevation: 4101 ft.
Driller: G. Krotz
2 Bags Lost Circulation Material
Drilling Completed On: 9/28/2010
Depth Drilled: 300 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 150 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 160 ft. - 220 ft.
ft. - ft.
Completed Formation Upper Boundary: 150 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 6.2 bbls.
Cement Density: 12 lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: 0 bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 4.3 ft. at 158.1 degrees
Remarks: Tremmed 8 bbls to surface

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 300 ft.
Operator: Klein
Actual Cement Volume Used: 9.3 bbls.
Water Volume Used: 6.7 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: 8.9 lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins

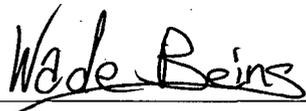
Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Well Type: Production/Injection _____ Monitor X

Ground Elevation: 4248 ft.

Drilling Contractor: Landrill Exploration

Mud Products: 13 Bags Super Gel

Bit Size: 8 Inch

Drilling Begun: 3/21/2011

Completed Formation: Brule

Casing Diameter: 4.95 inch O.D.

Casing Depth: 259 ft.

Packer Type: Johnson K-packer

Centralizer Depths: 20, 40, 100, 160, 220 Ft

Project: Crow Butte

Well No. BOW-2010-7

Wellhead Elevation: 4248 ft.

Driller: L. Corbin

1 Bags Lost Circulation Material

Drilling Completed On: 3/23/2011

Depth Drilled: 380 ft.

Casing Type: White Certalok

Basket Depth: N/A ft.

Packer Depth: 247 ft.

Screen Size: 3 inch by .020 inch

Screened Interval(s): 267 ft. - 347 ft.
ft. - ft.

Completed Formation Upper Boundary: 260 ft.

Cement Contractor: Crow Butte Resources

Estimated Cement Volume: 10.0 bbls.

Cement Density: 13.6 lbs/gal

Cement Type/Class: I/II API

Cement Circulated to Surface: 3 bbls.

Logging Contractor: Century Geophysical Corp.

Unit No.: 0001

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 5.7 ft. at 111.8 degrees

Remarks:

Gravel Size:

ft. - ft.
ft. - ft.

Lower Boundary: 370 ft.

Operator: Klein

Actual Cement Volume Used: 15.0 bbls.

Water Volume Used: 10.8 bbls.

Additives: 500 lbs. Salt 500 lbs. Bentonite

Density At Surface: 13.1 lbs/gal

Operator: Dunn

Probe No.: 9055C

This report was filled out by: Wade Beins

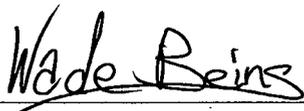
Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: May 27, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4366 ft.
Drilling Contractor: Landrill Exploration
Mud Products: 5 Bags Super Gel 1 Quart Polymer
Bit Size: 8 Inch
Drilling Begun: 3/22/2011
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 349 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20, 40, 100, 160, 220, 280 Ft

Project: Crow Butte
Well No. BOW-2010-8
Wellhead Elevation: 4367 ft.
Driller: L. Corbin
1 Bags Lost Circulation Material
Drilling Completed On: 3/24/2011
Depth Drilled: 420 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 336 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 356 ft. - 416 ft.
ft. - ft.
Completed Formation Upper Boundary: 410 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 13.5 bbls.
Cement Density: 12.3 lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: 5 bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 10.1 ft. at 352.9 degrees
Remarks:

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 410 ft.
Operator: Klein
Actual Cement Volume Used: 20.2 bbls.
Water Volume Used: 14.5 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: 12 lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Project: Crow Butte

Well Type: Production/Injection Monitor

Well No.: Walters 2-720

Ground Elevation: 4205 ft.

Wellhead Elevation: 4205 ft.

Drilling Contractor: Landrill Exploration

Driller: S. Osmotherly

Mud Products:

Bit Size: 8 Inch

Drilling Begun: 6/29/2007

Drilling Completed On: 7/1/2007

Completed Formation: Brule/Arikare

Depth Drilled: 240 ft.

Casing Diameter: 4.95 inch O.D.

Casing Type: White Certalok

Casing Depth: 79 ft.

Basket Depth: N/A ft.

Packer Type: Johnson K-packer

Packer Depth: 75 ft.

Centralizer Depths: 20,40,60

Screen Size: 3 inch by .020 inch

Gravel Size:

Screened Interval(s): 85 ft. - 225 ft.
ft. - ft.ft. - ft.
ft. - ft.

Completed Formation Upper Boundary: 80 ft.

Lower Boundary: 224 ft.

Cement Contractor: Crow Butte Resources

Operator: Klein

Estimated Cement Volume: 3.1 bbls.

Actual Cement Volume Used: 4.7 bbls.

Cement Density: Not Avail lbs/gal

Water Volume Used: 3.4 bbls.

Cement Type/Class: I/II API

Additives: 500 lbs. Salt 500 lbs. Bentonite

Cement Circulated to Surface: Not Avail bbls.

Density At Surface: Not Avail lbs/gal

Logging Contractor: Century Geophysical Corp.

Operator: Dunn

Unit No.: 0001

Probe No.: 9055C

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 0.01 ft. at 0 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins

Title: Senior Geologist

Date: September 28, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4245 ft.
Drilling Contractor: Landrill Exploration
Mud Products:
Bit Size: 8 Inch
Drilling Begun: 7/4/2006
Completed Formation: Brule
Casing Diameter: 4.95 inch O.D.
Casing Depth: 79 ft.
Packer Type: Johnson K-packer
Centralizer Depths: 20,40,60

Project: Crow Butte
Well No. Walters 1-721
Wellhead Elevation: 4246 ft.
Driller: S. Osmotherly
Drilling Completed On: 7/6/2006
Depth Drilled: 360 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 75 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 85 ft. - 225 ft.
ft. - ft.
Completed Formation Upper Boundary: 80 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 3.1 bbls.
Cement Density: Not Avail lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: Not Avail bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 0.01 ft. at 0 degrees
Remarks:

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 228 ft.
Operator: Klein
Actual Cement Volume Used: 4.7 bbls.
Water Volume Used: 3.4 bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: Not Avail lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: September 28, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Project: Crow Butte

Well Type: Production/Injection _____ Monitor X

Well No. CPW-2010-1

Ground Elevation: 4260 ft.

Wellhead Elevation: 4262 ft.

Drilling Contractor: Landrill Exploration

Driller: L. Corbin

Mud Products: 11 Bags Super Gel 4 Quart Polymer

2 Bags Lost Circulation Material

Bit Size: 8 Inch

Drilling Begun: 8/31/2010

Drilling Completed On: 9/2/2010

Completed Formation: Chadron

Depth Drilled: 1070 ft.

Casing Diameter: 4.95 inch O.D.

Casing Type: White Certalok

Casing Depth: 1009 ft.

Basket Depth: N/A ft.

Packer Type: Johnson K-packer

Packer Depth: 995 ft.

Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940 Ft

Screen Size: 3 inch by .020 inch

Gravel Size:

Screened Interval(s): 1015 ft. - 1048 ft.
ft. - ft.ft. - ft.
ft. - ft.

Completed Formation Upper Boundary: 1016 ft.

Lower Boundary: 1046 ft.

Cement Contractor: Crow Butte Resources

Operator: Klein

Estimated Cement Volume: 38.8 bbls.

Actual Cement Volume Used: 58.2 bbls.

Cement Density: 12.4 lbs/gal

Water Volume Used: 41.7 bbls.

Cement Type/Class: I/II API

Additives: 500 lbs. Salt 500 lbs. Bentonite

Cement Circulated to Surface: 5 bbls.

Density At Surface: 11.6 lbs/gal

Logging Contractor: Century Geophysical Corp.

Operator: Dunn

Unit No.: 0001

Probe No.: 9055C

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 4.1 ft. at 203.5 degrees

Remarks:

This report was filed out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

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By: Wade Beins

Title: Senior Geologist



Date: May 27, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc. Project: Crow Butte
Well Type: Production/Injection _____ Monitor X Well No. CPW-2010-1A
Ground Elevation: 4261 ft. Wellhead Elevation: 4263 ft.
Drilling Contractor: Landrill Exploration Driller: S. Osmotherly
Mud Products: 7 Bags Super Gel 2 Quart Polymer 3 Bags Lost Circulation Material
Bit Size: 8 Inch
Drilling Begun: 3/14/2011 Drilling Completed On: 3/16/2011
Completed Formation: Chadron Depth Drilled: 1080 ft.
Casing Diameter: 4.95 inch O.D. Casing Type: White Certalok
Casing Depth: 1019 ft. Basket Depth: N/A ft.
Packer Type: Johnson K-packer Packer Depth: 1005 ft.
Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940 Ft

Screen Size: 3 inch by .020 inch Gravel Size:
Screened Interval(s): 1025 ft. - 1055 ft. ft. - ft.
ft. - ft. ft. - ft.
Completed Formation Upper Boundary: 1024 ft. Lower Boundary: 1050 ft.
Cement Contractor: Crow Butte Resources Operator: Klein
Estimated Cement Volume: 39.2 bbls. Actual Cement Volume Used: 58.8 bbls.
Cement Density: 12.3 lbs/gal Water Volume Used: 42.1 bbls.
Cement Type/Class: I/II API Additives: 500 lbs. Salt 500 lbs. Bentonite
Cement Circulated to Surface: 4 bbls. Density At Surface: 11 lbs/gal
Logging Contractor: Century Geophysical Corp. Operator: Dunn
Unit No.: 0001 Probe No.: 9055C
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 24.9 ft. at 153.3 degrees
Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

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By: Wade Beins

Title: Senior Geologist


Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Project: Crow Butte

Well Type: Production/Injection _____ Monitor X

Well No. Monitor 1

Ground Elevation: 4101 ft.

Wellhead Elevation: 4102 ft.

Drilling Contractor: Landrill Exploration

Driller: G. Land

Mud Products:

Bit Size: 8 Inch

Drilling Begun: 4/3/1989

Drilling Completed On: 4/5/1989

Completed Formation: Chadron

Depth Drilled: 968 ft.

Casing Diameter: 4.95 inch O.D.

Casing Type: White Certalok

Casing Depth: 905 ft.

Basket Depth: N/A ft.

Packer Type: Johnson K-packer

Packer Depth: 900 ft.

Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940 Ft

Screen Size: 3 inch by .020 inch

Gravel Size:

Screened Interval(s): 905 ft. - 940 ft.
ft. - ft.ft. - ft.
ft. - ft.

Completed Formation Upper Boundary: 900 ft.

Lower Boundary: 936 ft.

Cement Contractor: Crow Butte Resources

Operator: Klein

Estimated Cement Volume: 34.8 bbls.

Actual Cement Volume Used: 52.2 bbls.

Cement Density: Not Avail lbs/gal

Water Volume Used: 37.4 bbls.

Cement Type/Class: I/II API

Additives: 500 lbs. Salt 500 lbs. Bentonite

Cement Circulated to Surface: Not Avail bbls.

Density At Surface: Not Avail lbs/gal

Logging Contractor: Century Geophysical Corp.

Operator: Dunn

Unit No.: 0001

Probe No.: 9055C

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 16.4 ft. at 116 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

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By: Wade Beins

Title: Senior Geologist

Date: September 28, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection _____ Monitor X
Ground Elevation: 4197 ft.
Drilling Contractor: Landrill Exploration
Mud Products:
Bit Size: 8 Inch
Drilling Begun: 4/7/1989
Completed Formation: Chadron
Casing Diameter: 4.95 inch O.D.
Casing Depth: 974 ft.
Packer Type: Johnson K-packer
Centralizer Depths: ###

Project: Crow Butte
Well No. Monitor 2
Wellhead Elevation: 4198 ft.
Driller: G. Land
Drilling Completed On: 4/9/1989
Depth Drilled: 1030 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 974 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 980 ft. - 1015 ft.
ft. - ft.
Completed Formation Upper Boundary: 974 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 37.5 bbls.
Cement Density: Not Avail lbs/gal
Cement Type/Class: III API
Cement Circulated to Surface: Not Avail bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 14.6 ft. at 128 degrees
Remarks:

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 1015 ft.
Operator: Klein
Actual Cement Volume Used: 56.2 bbls.
Water Volume Used: bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: Not Avail lbs/gal
Operator: Dunn
Probe No.: 9055C

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

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By: Wade Beins Wade Beins Title: Senior Geologist
Date: May 27, 2011

Nebraska Department of Environmental Quality

Permit No. NE0122611

Well Completion Report

Company: Crow Butte Resources, Inc.
Well Type: Production/Injection Monitor X
Ground Elevation: 4260 ft.
Drilling Contractor: Landrill Exploration
Mud Products:
Bit Size: 8 Inch
Drilling Begun: 4/14/1989
Completed Formation: Chadron
Casing Diameter: 4.95 inch O.D.
Casing Depth: 1008 ft.
Packer Type: Johnson K-packer
Centralizer Depths: ###

Project: Crow Butte
Well No. Monitor 3
Wellhead Elevation: 4261 ft.
Driller: G. Land

Drilling Completed On: 4/18/1989
Depth Drilled: 1070 ft.
Casing Type: White Certalok
Basket Depth: N/A ft.
Packer Depth: 1008 ft.

Screen Size: 3 inch by .020 inch
Screened Interval(s): 1015 ft. - 1050 ft.
Completed Formation Upper Boundary: 1014 ft.
Cement Contractor: Crow Butte Resources
Estimated Cement Volume: 38.8 bbls.
Cement Density: Not Avail lbs/gal
Cement Type/Class: I/II API
Cement Circulated to Surface: Not Avail bbls.
Logging Contractor: Century Geophysical Corp.
Unit No.: 0001
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 13.8 ft. at 72 degrees

Gravel Size:
ft. - ft.
ft. - ft.
Lower Boundary: 1046 ft.
Operator: Klein
Actual Cement Volume Used: 58.1 bbls.
Water Volume Used: bbls.
Additives: 500 lbs. Salt 500 lbs. Bentonite
Density At Surface: Not Avail lbs/gal
Operator: Dunn
Probe No.: 9055C

Remarks:

This report was filled out by: Wade Beins
Representing: Crow Butte Resources, Inc.
On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins Title: Senior Geologist
Date: May 27, 2011

Nebraska Department of Environmental Quality
Well Completion Report

Permit No. NE0122611

Company: Crow Butte Resources, Inc. Project: Crow Butte
Well Type: Production/Injection _____ Monitor X Well No. Monitor 4A
Ground Elevation: 4326 ft. Wellhead Elevation: 4328 ft.
Drilling Contractor: Landrill Exploration Driller: L. Corbin
Mud Products: 6 Bags Super Gel 3 Quart Polymer
Bit Size: 8 Inch
Drilling Begun: 11/3/2010 Drilling Completed On: 11/5/2010
Completed Formation: Chadron Depth Drilled: 1140 ft.
Casing Diameter: 4.95 inch O.D. Casing Type: White Certalok
Casing Depth: 1079 ft. Basket Depth: N/A ft.
Packer Type: Johnson K-packer Packer Depth: 1060 ft.
Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940, 1000 Ft

Screen Size: 3 inch by .020 inch Gravel Size:
Screened Interval(s): 1080 ft. - 1110 ft. ft. - ft.
ft. - ft. ft. - ft.
Completed Formation Upper Boundary: 1081 ft. Lower Boundary: 1109 ft.
Cement Contractor: Crow Butte Resources Operator: Klein
Estimated Cement Volume: 41.5 bbls. Actual Cement Volume Used: 62.2 bbls.
Cement Density: 12.5 lbs/gal Water Volume Used: 44.6 bbls.
Cement Type/Class: I/II API Additives: 500 lbs. Salt 500 lbs. Bentonite
Cement Circulated to Surface: 8 bbls. Density At Surface: 11.9 lbs/gal
Logging Contractor: Century Geophysical Corp. Operator: Dunn
Unit No.: 0001 Probe No.: 9055C
Log Type: Gamma, SP, Resistance, Deviation
Well Deviation: 11.3 ft. at 53.7 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins



Title: Senior Geologist

Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc. Project: Crow Butte
 Well Type: Production/Injection _____ Monitor X Well No. Monitor 5
 Ground Elevation: 4337 ft. Wellhead Elevation: 4340 ft.
 Drilling Contractor: Landrill Exploration Driller: J. Lemmon
 Mud Products: 8 Bags Super Gel 7 Quart Polymer 3 Bags Lost Circulation Material
 Bit Size: 8 Inch
 Drilling Begun: 8/30/2010 Drilling Completed On: 9/1/2010
 Completed Formation: Chadron Depth Drilled: 1140 ft.
 Casing Diameter: 4.95 inch O.D. Casing Type: White Certalok
 Casing Depth: 1069 ft. Basket Depth: N/A ft.
 Packer Type: Johnson K-packer Packer Depth: 1060 ft.
 Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940, 1000 Ft

Screen Size: 3 inch by .020 inch Gravel Size:
 Screened Interval(s): 1070 ft. - 1120 ft. ft. - ft.
 ft. - ft. ft. - ft.
 Completed Formation Upper Boundary: 1066 ft. Lower Boundary: 1116 ft.
 Cement Contractor: Crow Butte Resources Operator: Klein
 Estimated Cement Volume: 41.1 bbls. Actual Cement Volume Used: 61.7 bbls.
 Cement Density: 12.2 lbs/gal Water Volume Used: 44.2 bbls.
 Cement Type/Class: I/II API Additives: 500 lbs. Salt 500 lbs. Bentonite
 Cement Circulated to Surface: 3 bbls. Density At Surface: 11.5 lbs/gal
 Logging Contractor: Century Geophysical Corp. Operator: Dunn
 Unit No.: 0001 Probe No.: 9055C
 Log Type: Gamma, SP, Resistance, Deviation
 Well Deviation: 27 ft. at 142.1 degrees
 Remarks:

This report was filled out by: Wade Beins
 Representing: Crow Butte Resources, Inc.
 On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins Title: Senior Geologist
Wade Beins Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc. Project: Crow Butte
 Well Type: Production/Injection _____ Monitor X Well No. Monitor 6
 Ground Elevation: 4214 ft. Wellhead Elevation: 4215 ft.
 Drilling Contractor: Landrill Exploration Driller: L. Corbin
 Mud Products: 13 Bags Super Gel 8 Quart Polymer 4 Bags Lost Circulation Material
 Bit Size: 8 Inch
 Drilling Begun: 8/16/2010 Drilling Completed On: 8/18/2010
 Completed Formation: Chadron Depth Drilled: 1050 ft.
 Casing Diameter: 4.95 inch O.D. Casing Type: White Certalok
 Casing Depth: 989 ft. Basket Depth: N/A ft.
 Packer Type: Johnson K-packer Packer Depth: 982 ft.
 Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940 Ft

Screen Size: 3 inch by .020 inch Gravel Size:
 Screened Interval(s): 992 ft. - 1025 ft. ft. - ft.
 ft. - ft. ft. - ft.
 Completed Formation Upper Boundary: 982 ft. Lower Boundary: 1023 ft.
 Cement Contractor: Crow Butte Resources Operator: Klein
 Estimated Cement Volume: 38.1 bbls. Actual Cement Volume Used: 57.1 bbls.
 Cement Density: 12 lbs/gal Water Volume Used: 40.9 bbls.
 Cement Type/Class: I/II API Additives: 500 lbs. Salt 500 lbs. Bentonite
 Cement Circulated to Surface: 3 bbls. Density At Surface: 10 lbs/gal
 Logging Contractor: Century Geophysical Corp. Operator: Dunn
 Unit No.: 0001 Probe No.: 9055C
 Log Type: Gamma, SP, Resistance, Deviation
 Well Deviation: 17.1 ft. at 37.3 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins

Wade Beins

Title: Senior Geologist

Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Project: Crow Butte

Well Type: Production/Injection _____ Monitor X

Well No. Monitor 7

Ground Elevation: 4243 ft.

Wellhead Elevation: 4244 ft.

Drilling Contractor: Landrill Exploration

Driller: L. Corbin

Mud Products: 6 Bags Super Gel 6 Quart Polymer

3 Bags Lost Circulation Material

Bit Size: 8 Inch

Drilling Begun: 8/20/2010

Drilling Completed On: 8/23/2010

Completed Formation: Chadron

Depth Drilled: 1080 ft.

Casing Diameter: 4.95 inch O.D.

Casing Type: White Certalok

Casing Depth: 999 ft.

Basket Depth: N/A ft.

Packer Type: Johnson K-packer

Packer Depth: 993 ft.

Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940 Ft

Screen Size: 3 inch by .020 inch

Gravel Size:

Screened Interval(s): 1003 ft. - 1046 ft.
ft. - ft.ft. - ft.
ft. - ft.

Completed Formation Upper Boundary: 1007 ft.

Lower Boundary: 1044 ft.

Cement Contractor: Crow Butte Resources

Operator: Klein

Estimated Cement Volume: 38.4 bbls.

Actual Cement Volume Used: 57.6 bbls.

Cement Density: 11.7 lbs/gal

Water Volume Used: 41.3 bbls.

Cement Type/Class: I/II API

Additives: 500 lbs. Salt 500 lbs. Bentonite

Cement Circulated to Surface: 2 bbls.

Density At Surface: 10.2 lbs/gal

Logging Contractor: Century Geophysical Corp.

Operator: Dunn

Unit No.: 0001

Probe No.: 9055C

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 32.2 ft. at 159.9 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins

Title: Senior Geologist

Date: May 27, 2011



Well Completion Report

Company: Crow Butte Resources, Inc. Project: Crow Butte
 Well Type: Production/Injection _____ Monitor X Well No. Monitor 8
 Ground Elevation: 4352 ft. Wellhead Elevation: 4354 ft.
 Drilling Contractor: Landrill Exploration Driller: L. Corbin
 Mud Products: 10 Bags Super Gel 4 Quart Polymer 4 Bags Lost Circulation Material
 Bit Size: 8 Inch
 Drilling Begun: 8/27/2010 Drilling Completed On: 8/30/2010
 Completed Formation: Chadron Depth Drilled: 1150 ft.
 Casing Diameter: 4.95 inch O.D. Casing Type: White Certalok
 Casing Depth: 1079 ft. Basket Depth: N/A ft.
 Packer Type: Johnson K-packer Packer Depth: 1067 ft.
 Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940, 1000 Ft

Screen Size: 3 inch by .020 inch Gravel Size:
 Screened Interval(s): 1087 ft. - 1127 ft. ft. - ft.
 ft. - ft. ft. - ft.
 Completed Formation Upper Boundary: 1085 ft. Lower Boundary: 1123 ft.
 Cement Contractor: Crow Butte Resources Operator: Klein
 Estimated Cement Volume: 41.5 bbls. Actual Cement Volume Used: 62.2 bbls.
 Cement Density: 12.8 lbs/gal Water Volume Used: 44.6 bbls.
 Cement Type/Class: I/II API Additives: 500 lbs. Salt 500 lbs. Bentonite
 Cement Circulated to Surface: 5 bbls. Density At Surface: 11.5 lbs/gal
 Logging Contractor: Century Geophysical Corp. Operator: Dunn
 Unit No.: 0001 Probe No.: 9055C
 Log Type: Gamma, SP, Resistance, Deviation
 Well Deviation: 38.5 ft. at 173.6 degrees
 Remarks:

This report was filled out by: Wade Beins
 Representing: Crow Butte Resources, Inc.
 On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins Wade Beins Title: Senior Geologist
 Date: May 27, 2011

Well Completion Report

Company: Crow Butte Resources, Inc.

Project: Crow Butte

Well Type: Production/Injection _____ Monitor X

Well No. Monitor 9

Ground Elevation: 4365 ft.

Wellhead Elevation: 4366 ft.

Drilling Contractor: Landrill Exploration

Driller: S. Osmotherly

Mud Products: 5 Bags Super Gel 2 Quart Polymer

2 Bags Lost Circulation Material

Bit Size: 8 Inch

Drilling Begun: 10/20/2010

Drilling Completed On: 10/22/2010

Completed Formation: Chadron

Depth Drilled: 1170 ft.

Casing Diameter: 4.95 inch O.D.

Casing Type: White Certalok

Casing Depth: 1099 ft.

Basket Depth: N/A ft.

Packer Type: Johnson K-packer

Packer Depth: 1080 ft.

Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880, 940, 1000, 1060 Ft

Screen Size: 3 inch by .020 inch

Gravel Size:

Screened Interval(s): 1110 ft. - 1140 ft.
ft. - ft.

ft. - ft.
ft. - ft.

Completed Formation Upper Boundary: 1116 ft.

Lower Boundary: 1137 ft.

Cement Contractor: Crow Butte Resources

Operator: Klein

Estimated Cement Volume: 42.3 bbls.

Actual Cement Volume Used: 63.4 bbls.

Cement Density: 11.8 lbs/gal

Water Volume Used: 45.4 bbls.

Cement Type/Class: I/II API

Additives: 500 lbs. Salt 500 lbs. Bentonite

Cement Circulated to Surface: 1 bbls.

Density At Surface: 10 lbs/gal

Logging Contractor: Century Geophysical Corp.

Operator: Dunn

Unit No.: 0001

Probe No.: 9055C

Log Type: Gamma, SP, Resistance, Deviation

Well Deviation: 20.8 ft. at 124.6 degrees

Remarks:

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins

Title: Senior Geologist

Wade Beins

Date: May 27, 2011

Well Completion Report

Company:	Crow Butte Resources, Inc.	Project:	Crow Butte
Well Type:	Production/Injection _____ Monitor <u>X</u>	Well No.:	Monitor 10
Ground Elevation:	4160 ft.	Wellhead Elevation:	4161 ft.
Drilling Contractor:	Landrill Exploration	Driller:	J. Lemmon
Mud Products:	4 Bags Super Gel 6 Quart Polymer		1 Bags Lost Circulation Material
Bit Size:	8 Inch		
Drilling Begun:	9/10/2010	Drilling Completed On:	9/13/2010
Completed Formation:	Chadron	Depth Drilled:	1000 ft.
Casing Diameter:	4.95 inch O.D.	Casing Type:	White Certalok
Casing Depth:	929 ft.	Basket Depth:	N/A ft.
Packer Type:	Johnson K-packer	Packer Depth:	915 ft.
Centralizer Depths:	20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820, 880 Ft		
Screen Size:	3 inch by .020 inch	Gravel Size:	
Screened Interval(s):	935 ft. - 970 ft. ft. - ft.		ft. - ft. ft. - ft.
Completed Formation Upper Boundary:	931 ft.	Lower Boundary:	979 ft.
Cement Contractor:	Crow Butte Resources	Operator:	Klein
Estimated Cement Volume:	35.7 bbls.	Actual Cement Volume Used:	53.6 bbls.
Cement Density:	11.7 lbs/gal	Water Volume Used:	38.4 bbls.
Cement Type/Class:	III API	Additives:	500 lbs. Salt 500 lbs. Bentonite
Cement Circulated to Surface:	0 bbls.	Density At Surface:	9.8 lbs/gal
Logging Contractor:	Century Geophysical Corp.	Operator:	Dunn
Unit No.:	0001	Probe No.:	9055C
Log Type:	Gamma, SP, Resistance, Deviation		
Well Deviation:	11.2 ft. at 252.6 degrees		
Remarks:	Tremmied 5 bbls to surface		

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

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By: Wade Beins

Title: Senior Geologist

Date: May 27, 2011



Well Completion Report

Company: Crow Butte Resources, Inc.	Project: Crow Butte
Well Type: Production/Injection _____ Monitor <u>X</u>	Well No. Monitor 11
Ground Elevation: 4124 ft.	Wellhead Elevation: 4126 ft.
Drilling Contractor: Landrill Exploration	Driller: G. Krotz
Mud Products: 10 Bags Super Gel 5 Quart Polymer	6 Bags Lost Circulation Material
Bit Size: 8 Inch	
Drilling Begun: 10/4/2010	Drilling Completed On: 10/6/2010
Completed Formation: Chadron	Depth Drilled: 980 ft.
Casing Diameter: 4.95 inch O.D.	Casing Type: White Certalok
Casing Depth: 899 ft.	Basket Depth: N/A ft.
Packer Type: Johnson K-packer	Packer Depth: 892 ft.
Centralizer Depths: 20, 40, 100, 160, 220, 280, 340, 400, 460, 520, 580, 640, 700, 760, 820 Ft	
Screen Size: 3 inch by .020 inch	Gravel Size:
Screened Interval(s): 902 ft. - 947 ft.	ft. - ft.
ft. - ft.	ft. - ft.
Completed Formation Upper Boundary: 901 ft.	Lower Boundary: 948 ft.
Cement Contractor: Crow Butte Resources	Operator: Klein
Estimated Cement Volume: 34.6 bbls.	Actual Cement Volume Used: 51.9 bbls.
Cement Density: 12.1 lbs/gal	Water Volume Used: 37.2 bbls.
Cement Type/Class: I/II API	Additives: 500 lbs. Salt 500 lbs. Bentonite
Cement Circulated to Surface: 3 bbls.	Density At Surface: 10.5 lbs/gal
Logging Contractor: Century Geophysical Corp.	Operator: Dunn
Unit No.: 0001	Probe No.: 9055C
Log Type: Gamma, SP, Resistance, Deviation	
Well Deviation: 21.9 ft. at 155.2 degrees	
Remarks:	

This report was filled out by: Wade Beins

Representing: Crow Butte Resources, Inc.

On:

Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all its attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

By: Wade Beins

Title: Senior Geologist

Date: May 27, 2011



Appendix F

Pumping Test #8 Report

AQUI-VER, INC.



Marsland Hydrologic Testing Report - Test # 8

Marsland Expansion Area, Dawes County, NE

FINAL REPORT

July 8, 2011

Prepared By:

AQUI-VER, INC.

4800 Wadsworth Boulevard

Suite 400

Wheat Ridge, CO 80033 USA

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1. EXECUTIVE SUMMARY

As part of Cameco Resources U.S. Nuclear Regulatory Commission License Amendment Application to conduct In-Situ Recovery operations in the Marsland Expansion Area, a regional groundwater pumping test was completed to:

1. Demonstrate hydraulic communication between the production zone pumping well and the surrounding production zone observation wells;
2. Assess the hydrologic characteristics of the production zone aquifer within the test area;
3. Evaluate the presence or absence of hydrologic boundaries in the production zone; and
4. Demonstrate sufficient confinement between the production zone and the overlying aquifer for the purpose of ISR mining.

The pumping test at the Marsland Expansion Area utilized one pumping well (CPW-1A) and nine observation wells (CPW-1 and Monitor-2 through Monitor-8) completed in the Basal Chadron Sandstone, as well as three overlying observations wells (BOW-1 through BOW-3) completed in the Brule Formation. The total length of the test was 4.29 days. The average discharge rate was 27.08 gallons per minute (gpm).

During the test, drawdown of greater than 0.8 feet was observed in all Basal Chadron Sandstone observation wells included in the formal observation well network. Based on the drawdown response observed at the most distant observation well locations (Monitor-2 and Monitor-8), the radius of influence of the test is slightly more than 8,800 feet. The drawdown response measured in all Basal Chadron Sandstone observation wells demonstrates hydraulic communication between the production zone pumping well and the surrounding observation wells across the entire test area.

No drawdown was observed in overlying Brule Formation observation wells during the test period. This observation supports the conclusion that adequate confinement exists between the overlying Brule Formation and the Basal Chadron production zone.

Drawdown and recovery data collected from the monitor wells were graphically analyzed to determine the aquifer properties including transmissivity and storativity. The methods of analysis included the Theis (1935) drawdown and recovery methods, and the Jacob Straight-Line Distance-Drawdown method (Cooper and Jacob, 1946).

Transmissivities for the Basal Chadron Sandstone calculated from the drawdown and recovery data ranged from 230 ft²/day to 2,469 ft²/day, respectively. A value of 1,012 ft²/day is believed representative of the average transmissivity over the radius of influence. Based on an average net sand thickness of 40 feet, the average hydraulic conductivity of the Basal Chadron Sandstone is 25 ft/day. Hydraulic conductivities of the aquifer materials in the vicinity of the pumped well (including wells CPW-1A, CPW-1, and Monitor-3) were approximately 3 to 9 times less than those calculated for other wells in the pumping test area based on both the drawdown and recovery analyses, as indicated by an apparent higher conductivity boundary condition effect (flattening of drawdown and recovery curves) in these wells. The storativity calculated from the drawdown data ranged from 1.7E-03 to 8.32E-05, with an average value of 2.56E-04 for the entire test area.

AQUI-VER, INC.



The transmissivity of the Basal Chadron Sandstone within the Marsland Expansion Area investigated herein is higher on average than the existing Class III Permit Area and the Three Crow and North Trend Expansion Areas.

2. INTRODUCTION

Cameco Resources intends to submit an U.S. Nuclear Regulatory Commission (NRC) License Amendment Application to conduct in-situ recovery (ISR) operations in the Marsland Expansion Area, which is located approximately seven miles southeast of the current Class III Underground Injection Control (UIC) permit area and about four miles northeast of Marsland, Nebraska (**Figure 1**). As part of the amendment application, and in accordance with Nebraska Department of Environmental Quality (NDEQ) regulations, a regional groundwater pumping test was completed in the Marsland Expansion Area as described herein.

2.1 Purpose and Objectives

As part of the NRC License Amendment Application to conduct ISR operations in the Marsland Expansion Area, a regional groundwater pumping test was completed to:

1. Demonstrate hydraulic communication between the production zone pumping well and the surrounding production zone observation wells;
2. Assess the hydrologic characteristics of the production zone aquifer within the test area;
3. Evaluate the presence or absence of hydrologic boundaries in the production zone; and
4. Demonstrate sufficient confinement between the production zone and the overlying aquifer for the purpose of ISR mining.

The pumping test described herein was performed in accordance with the NDEQ approved Regional Pumping Test Plan dated September 27, 2010 and subsequent approved changes to the Regional Pumping Test Plan dated March 16, 2011. In accordance with state regulations and Cameco Resources existing Class III UIC permit, the following information is included as part of the Hydrologic Test Report requirements:

- A description and maps of the proposed permit area;
- Construction details for pumping and observation wells;
- Description of site stratigraphy and hydrogeology;
- Geologic cross-sections;
- Description of pumping test configuration and equipment;
- Discussion of pumping test performance and methods used for data analysis;
- Presentation of the results of the pumping test, including best estimates of transmissivity, hydraulic conductivity, and storativity for all observation wells and the pumped well;
- Type-curve match for each monitoring well used to develop best estimates of aquifer parameters;
- Assessment demonstrating confinement of the ore-bearing aquifer;
- Contour map showing drawdown observed at the end of the pumping period;
- Calculation of radius of influence; and

- Compilation of water level (drawdown) and barometric pressure data for all wells, including pre-test, pumping test, and recovery data

Upon approval of the Hydrologic Test Report and other related permit documentation, NDEQ will provide Cameco Resources the authority to commence mining operations within the radius of influence (ROI) defined by the results of this hydrologic test report. Additional pumping tests will be necessary if ISR occurs outside of the demonstrated ROI. Additional approval must be granted from the NRC. This report addresses only the hydrologic testing activities and results. Baseline water quality data and subsequent discussion will be submitted under a separate cover.

2.2 Report Organization

This report includes nine sections. Subsurface geology and site stratigraphy are discussed in **Section 3**. **Section 4** presents historical pumping test results. Information related to the monitor well locations and completions is included in **Section 5**. Data Collection and Field Procedures are presented in **Section 6**. Test results and analytical procedures are presented in **Section 7**. Conclusions and references are included in **Sections 8 and 9**, respectively.

3. GENERAL SITE STRATIGRAPHY

The subsurface stratigraphy of the Marsland Expansion Area is based on preliminary test hole drilling conducted at the Marsland property and correlation of regional geologic formations observed at the current Class III permit area and proposed expansion areas. A generalized stratigraphic section and well completion intervals for the Marsland Expansion Area is provided in **Table 1**. A cross-section location map is provided in **Figure 2**. Geologic cross-sections are included in **Figures 3** through **8**. Structure contour maps of the top of the Basal Chadron Sandstone and underlying Pierre Shale are included in **Figures 9** and **10**, respectively. Isopach maps depicting the thickness of the Basal Chadron Sandstone and overlying Upper/Middle Chadron confining unit are included in **Figures 11** and **12**, respectively.

Ore-grade uranium deposits underlying the Marsland Expansion Area are located in the Basal Chadron Sandstone, which averages 50 feet in thickness (typically 40 feet net sand) and occurs at depths ranging from 900 to more than 1,100 feet below ground surface. Ore-grade deposits are generally located along a northwest-southeast trend in the Basal Chadron Sandstone. The width of the mineralized zone is generally less than 1,500 feet along this trend. Ore-grade deposits are located primarily in the lower portion of the Sandstone, although ore-grade deposits may occur locally throughout the section. Based on drilling to date, the highest concentration of mineralization is located in the north, northcentral, and southern portion of the expansion area.

The Basal Chadron Sandstone does not contain distinct clay layers that can be correlated over significant distances, and therefore represents a single sand "package" with some interbedded clay lenses. The Upper/Middle Chadron Formation (confining unit), consisting primarily of clay, claystone and siltstone, and separates the Basal Chadron Sandstone from the overlying Brule Formation. The Upper/Middle Chadron confining unit is approximately 700 feet thick in the Marsland Expansion Area. The overlying Brule Formation consists primarily of interbedded siltstone and clayey sandstone and is approximately 150 feet thick in the Marsland Expansion Area. The Brule Formation is overlain locally by the Arikaree Formation, a calcareous sandstone with interbedded siltstone and claystone generally less than 150 feet thick in the Marsland Expansion Area.

No significant sands have been identified within the Upper/Middle Chadron Formation that can be correlated over any significant distance. Hence, wells installed in the overlying Brule Formation were monitored as overlying aquifers during the pumping test.

4. SUMMARY OF HISTORICAL TESTING RESULTS

During the initial permitting and development of the Crow Butte mine, four pumping tests (referred to as Tests #1 through #4) were performed in the current UIC Permit (NE0122611) area. The tests were performed to: 1) confirm confinement of the ore-bearing aquifer, and 2) assess the hydraulic characteristics of the Basal Chadron Sandstone. Three additional pumping tests (#5 through #7) were performed to characterize the Basal Chadron Sandstone in the North Trend and Three Crow expansion areas. **Table 2** summarizes historical testing results.

Results of previous testing indicate the Basal Chadron Sandstone is relatively homogeneous and isotropic within the current Class III UIC permit area (e.g. the hydraulic conductivity is reasonably uniform with respect to location and direction), although higher values of hydraulic conductivity (permeability) are observed in the southern portion of the Class III UIC permit area (Test #4).

In the Three Crow area, values of hydraulic conductivity, transmissivity, and storage are similar to the permitted Class III UIC area, although the Basal Chadron Sandstone at Three Crow is divided locally into Upper and Lower Basal Sand units. The stratigraphy of the Basal Chadron Sandstone in the North Trend area is more complex and anisotropic than observed at other test locations.

In addition to the aforementioned historical pumping tests, a failed pumping test was undertaken in the Marsland Expansion Area on November 18, 2010. The pumping test was terminated after only 19 hours of operation due to pump failure. Although data collected as part of the failed pumping test was not formally analyzed, information gained from the failed test was used to modify the Pumping Test Plan for the subsequent successful test described herein.

5. MONITORING WELL LOCATIONS, INSTALLATION AND COMPLETION

As part of the Marsland Pumping Test #8, Cameco Resources installed seven new wells in the Basal Chadron Sandstone (CPW-1, CPW-1A, Monitor-4A, Monitor-5 through Monitor-8) and redeveloped two existing wells (Monitor-2 and Monitor-3). Of these wells, only the pumped well (CPW-1A) and Monitor-3 through Monitor-7 were included in the formal Basal Chadron Sandstone observation well network. Cameco also installed three new wells in the overlying Brule Formation (BOW-1 through BOW-3). The pumping and observation wells are located in Sections 1, 2, and 12 of Township 29 North, Range 51 West, and Section 18 of Township 29 North, Range 50 West (**Figure 1**).

Because the underlying Pierre Shale is over 1,500 feet thick, no underlying monitoring wells were warranted. The depth to water in the Basal Chadron Sandstone is approximately 450 feet bgs.

Table 3 summarizes well construction details for all test wells and **Figure 13** illustrates the locations of these wells. **Appendix A** includes the NDEQ well completion reports. The nature and thickness of the subsurface formations encountered during the installation of monitoring wells is representative of the stratigraphic section presented in **Table 1**. Monitoring wells were located at various distances and directions from the pumping well (CPW-1A) such that sufficient drawdown would be observed to allow hydraulic properties of the Basal Chadron Sandstone to be determined over the entire test area.

6. FIELD PROCEDURES AND DATA COLLECTION

The following tasks were accomplished as part of the pumping test field data collection program:

- Installation of In-Situ brand Level TROLL[®] data loggers (vented) into the observation wells and pumping well to record changes in water levels during the test;
- Measurement of baseline (pre-test) water levels and barometric pressure for a period of at least one week prior to the test;
- Periodic measurement of the pumping rate from the pumping well, and
- Collection of water level and barometric pressure data throughout the background, pumping, and recovery periods.

6.1 Pumping Test Equipment

Marsland Pumping Test #8 was performed using a 4-inch diameter 10 horsepower electrical submersible pump powered by a portable generator. The pump was set in well CPW-1A at an approximate depth of 600 feet, or 150 feet below the static water level. Flow from the pump was controlled with a manual valve and surface flow measured with two flow/totalizer meters. Per NDEQ direction, discharge water was collected in FRAC tanks and trucked to the Crow Butte facility for disposal.

Water levels in the observation wells and the pumping well were measured and recorded with dedicated In-Situ brand Level TROLL[®] 500 and Level Troll[®] 700-series pressure transducers/data loggers equipped with vented cables (for barometric pressure compensation). The data loggers were programmed to automatically calibrate prior to the test, record an initial reference water level elevation (head), and measure and record water levels according to programmed linear time schedules. The pressure rating for the transducers ranged from 30 pounds per square inch (PSI) in the observation wells to 100 pounds PSI in the pumping well. A separate barometric pressure transducer/data logger was deployed near the pumping well in the center of the test area. **Table 4** summarizes the PSI range and model for each transducer deployed at the Site.

6.2 Data Collection

To assess pre-test baseline water level fluctuations, water level data and barometric pressure data were recorded prior to the pumping period (pre-test period). Pre-test baseline monitoring was initiated on May 6, 2011 and ran for a period of 7 days before initiating the pumping test.

All pressure transducers were programmed to record water levels every 4 minutes during the pre-test, pumping, and recovery periods with the exception of observation well CPW-1 and pumping well CPW-1A. These wells were programmed using an event schedule. The transducers checked the water level in these wells every 30 seconds and if the water level in CPW-1 changed by 0.1 feet a reading was recorded and if the water level in CPW-1A changed by 0.5 feet a reading was recorded otherwise readings were recorded every 4 minutes. **Table 4** summarizes the logging interval for each transducer deployed at the Site.

The pumping test was started at 05:00 hours on May 16, 2011 and was terminated at 12:00 hours on May 20, 2011. The total length of the test was 4.29 days. As shown in **Table 5** the average discharge rate was 27.08 gallons per minute (gpm).

6.3 Water Management

Pumped water was collected in on-site FRAC tanks and transported to the Crow Butte facility evaporation ponds for disposal. Approximately 167,300 gallons of groundwater was collected and disposed over the 4.29 day pumping period.

7. TEST RESULTS

7.1 Potentiometric Surface

Figure 14 presents the potentiometric surface for the Basal Chadron Sandstone aquifer based on the monitoring wells installed within the Marsland Expansion Area. Water levels were measured and recorded on November 12, 2010 and are summarized in **Table 6**. The pumping well for the test (CPW-1A) was installed after these measurements were recorded and is therefore not included in the data set presented in **Figure 14** and **Table 6**. The data are considered representative of static conditions within this aquifer. Based on these data, groundwater in the Basal Chadron Sandstone flows predominantly to the northwest toward the White River drainage at a lateral hydraulic gradient of 0.0004 ft/ft (slope of the potentiometric surface).

Figure 15 presents the potentiometric surface for the overlying Brule Formation aquifer based on monitoring wells installed within the Marsland Expansion Area. Water levels were measured and recorded on November 12, 2010 and are summarized in **Table 6**. All wells measured were utilized as observation wells during the test. The data are considered representative of static conditions within this aquifer. Based on these data, groundwater in this aquifer flows predominantly to the southeast toward the Niobrara River drainage at a lateral hydraulic gradient of 0.011 ft/ft.

7.2 Pre-Test Baseline Trends

As discussed in **Section 6.2**, water level data were collected for a period of approximately 7 days prior to the start of the pumping test. Graphs of the pre-test, pumping and recovery water level data and barometric pressure data vs. time are included in **Appendix B (Graphs B1 through B12)**. Water levels were variable and did respond slightly to barometric fluctuations but were generally stable (+/- 0.9 feet) prior to the test in both the Basal Chadron Sandstone and Brule Formation aquifers.

7.3 Brule Formation Response (Overlying Unit)

During the test (pumping and recovery periods), no discernable drawdown or recovery response was observed in Brule observation wells. Observation wells BOW-1, BOW-2, and BOW-3 did exhibit small fluctuations in water levels during the test period; however, these fluctuations are directly related to atmospheric pressure variations and not due to drawdown from pumping, as illustrated by **Graphs B1 through B3** in **Appendix B**.

7.4 Basal Chadron Sandstone Response (Production Zone)

Table 7 summarizes the corrected and uncorrected observed drawdown in the Basal Chadron Sandstone immediately prior to shutting off the pump. During the pumping portion of the test there was a low pressure event (cold front) that caused the observed drawdown to fluctuate by approximately 0.1 foot. **Figure 16** illustrates the drawdown immediately prior to shutting off the pump using the corrected drawdown values. With the exception of distal wells Monitor-2 and Monitor-8 (which are not part of the formal observation well network) drawdown of greater than 0.8 feet was observed in all of the observation wells, with a maximum drawdown of 23.40 feet observed in CPW-1A (pumping well).

7.5 Data Analysis

7.5.1 Analytical Methods

Drawdown data vs. time were plotted for each observation well, and based on the character of the curves it was determined that confined aquifer analytical methods were appropriate for the analysis of water level data. These methods are consistent with that proposed in the Pumping Test Workplan.

Drawdown and recovery data collected from the observation wells were graphically analyzed to determine aquifer properties including transmissivity and storativity. The methods of analysis included Theis drawdown and recovery methods (1935), and the Cooper-Jacob Distance-Drawdown method (Cooper and Jacob, 1946). The software used to graphically analyze the data was Aquifer^{Win32} version 3 developed by Environmental Simulations, Inc.

The major assumptions inherent in the application of these analytical methods include:

- The aquifer is confined and has apparent infinite extent;
- The aquifer is homogeneous and isotropic, and of uniform effective thickness over the area influenced by pumping;
- The piezometric surface is horizontal prior to pumping;
- The well is pumped at a constant rate;
- Water removed from storage is discharged instantaneously with a decline in head;
- The pumping well is fully penetrating; and
- Well diameter is small, so well storage is negligible.

These assumptions are reasonably satisfied over the test area. Locally, the Basal Chadron Sandstone is not homogenous and isotropic; however, over the scale of the pumping test, it can be treated as such for analytical purposes.

As discussed previously, no background trend corrections were warranted; however, all of the water levels measured in the observation wells, with the exception of CPW-1 and CPW-1A, were corrected for atmospheric pressure fluctuations.

7.5.2 Barometric Pressure Correlations and Corrections

As discussed previously, all of the Level TROLL[®] data loggers used in the test were vented (gauged). The vent eliminates the impact of barometric pressure on the sensor; however, a change in water levels due to barometric changes will occur whether a vented sensor is used or not. Hence, use of vented equipment eliminates the barometric impact on the sensor, but does not correct the water level measurements for barometric effects on the aquifer. As such, the vented data loggers are barometrically compensated, but not corrected.

7.5.2.1. Barometric Corrections

To evaluate if corrections due to barometric fluctuations were necessary, graphs of barometric pressure and groundwater levels vs. time were prepared for all of the wells monitored during the test. These graphs include data from the pre-test, drawdown, and recovery periods and are presented in **Appendix B (Graphs B1 through B12)**. In addition the barometric efficiency of the Basal Chadron Sandstone aquifer was estimated to better understand the relationship between a change in barometric pressure and a measurable change in groundwater levels.

The barometric efficiency is the water level change caused by a barometric pressure change divided by that barometric pressure change (Clark, 1967). In a confined aquifer like the Basal Chadron Sandstone, an increase in barometric pressure usually will cause a decrease in water level in an open well by an amount governed by the barometric efficiency (Todd, 1959; Ferris and others, 1962; Freeze and Cherry, 1979; Kruseman and de Ridder, 1991; Landmeyer, 1996; Rasmussen and Crawford, 1997; and Batu, 1998). There are several methods to estimate the barometric efficiency. For this analysis the slope method on water level and barometric pressure change was used (Ferris and others, 1962). Measurements of change in water level are plotted on the y-axis and measurements of change in barometric pressure are plotted on the x-axis. A line is fitted to the plotted points and the slope of the line is the estimate of barometric efficiency.

The barometric efficiency of the aquifer was estimated using the pre-test water level data from Monitor-3 and the Baro TROLL[®] as the barometric sensor was located near the Basal Chadron Sandstone observation well Monitor-3. **Figure 17** illustrates the change in barometric pressure vs. change in water level for the pre-test period. Based on the slope of the data a barometric efficiency of 0.33 or 33 percent was estimated.

During the drawdown and recovery phases of the test the atmospheric pressures were variable with both increasing and decreasing pressure events as shown by the graphs in **Appendix B**. All of the Basal Chadron Sandstone observation wells appear to demonstrate a small but discernable barometric water level response during the test (up to 0.3 feet of barometric water level variation over the entire test period). As a conservative measure, barometric water level corrections were made for all Basal Chadron Sandstone wells except the pumped well (CPW-1A) and the closest observation well (CPW-1), which experienced large drawdowns (greater than 6 feet) relative to much smaller barometric fluctuations (making corrections unnecessary in these wells). As shown in the graphs in **Appendix B**, barometric corrections did not significantly affect the data but did smooth water level trends during low and high pressure events. These transducers were set to log based on an event schedule as discussed in **Section 6.2**.

7.6 Analytical Test Results

Appendix C includes the type curve matches for the drawdown and recovery data. Water level data for all wells monitored, including the pre-test, pumping, and recovery phases of the test, are included in **Appendix D** on a CD ROM.

7.6.1 Distance Drawdown Analysis

A distance drawdown graph of the data was prepared as a preliminary estimate of transmissivity and storativity and is shown on **Figure 18**. Based on this simple analysis the average transmissivity over the area of influence is approximately 737 square feet per day (ft²/day) and the storativity is approximately 4.9E-

05. Based on an average net sand thickness of 40 feet, the average hydraulic conductivity over the area of influence is approximately 18.4 feet per day (ft/day)

7.6.2 Theis Drawdown Analysis

Transmissivity was calculated for all wells except for the pumping well using the Theis (1935) method for drawdown analysis in a confined aquifer. Type curve matches for the drawdown data are included in **Appendix C, Graphs C-1 through C-8**. Type curve matching generally focused on late-time drawdown data since this data normally considered the most reliable indicator of overall aquifer response. Type curve matching for wells CPW-1A, CPW-1, and Monitor-3 focused on middle-time data for the drawdown phase of test due to the presence of a higher permeability boundary condition apparent in the late-time data for these wells. Log-log plots of drawdown data for wells CPW-1A, CPW-1, Monitor-3, and Monitor 5 are shown in **Figure 19**. The drawdown data for wells CPW-1A, CPW-1, and Monitor-3 show a late-time flattening of the curve (indicative of higher permeability boundary condition), whereas the drawdown data for Monitor-5 (and all other distant observation wells) exhibited a more typical confined aquifer drawdown response. Aquifer storativity ranged from 1.7E-03 to 8.32E-05, with an average value of 2.56E-04 for the entire test area (geometric mean of all values).

The flattening of the drawdown curve in wells located in the immediate vicinity of the pumping well (including wells CPW-1A, CPW-1, and Monitor-3) is believed to be related to a transmissivity contrast between lower permeability aquifer materials near the pumped well location, and higher permeability aquifer materials elsewhere within the radius of influence of the test. As illustrated by the structure contour and isopach maps of the Basal Chadron Sandstone (**Figures 10 and 11**), the pumping test area is located within a northwest trending ancient river channel system (paleochannel) incised into the underlying Pierre Shale. Coarse-grained sands and some gravel are present in drill cuttings and core in exploration boreholes installed west of the test area, as well as more localized areas north and south of the pumped well location (e.g. area between Monitor-2 and Monitor-6) (Mike Brost, Cameco Geologist, personal communication). This permeability contrast is believed to be responsible for the majority of the observed higher transmissivity boundary condition. In addition to the observed permeability contrast, the thickness of the Basal Chadron Sandstone increases to the west of the pumped well location (**Figure 11**), likely resulting in an incremental increase in transmissivity. As shown in **Table 8**, these observations are supported by higher transmissivity and hydraulic conductivity in more distant observation well locations.

Transmissivities calculated from the drawdown data ranged from 230 ft²/day at Monitor-3 to 1780 ft²/day in Monitor-2, with an average transmissivity of 892 ft²/day for the entire test area. Based on an average net sand thickness of 40 feet throughout the pumping test area, hydraulic conductivities ranged from 6 to 45 ft/day, with an average hydraulic conductivity of 22 ft/day for the entire test area. Transmissivity and hydraulic conductivity in the vicinity of the pumped well (including wells CPW-1A, CPW-1, and Monitor 3) were approximately 3 to 8 times lower than transmissivity measured elsewhere within the test area.

7.6.3 Theis Recovery Analysis

Transmissivity was calculated using the Theis (1935) Recovery method for all wells monitored during the test. Type curve matching of the recovery data generally focused on late-time data. However, type curve matching for wells CPW-1A, CPW-1, and Monitor-3 focused on middle-time data as a higher permeability

boundary condition was apparent in the late-time data. The flattening of the recovery curve was also observed in the drawdown data, as discussed in the preceding section (**Section 7.6.2**). Type curve matches for the recovery data are included in **Appendix C, Graphs C9 through C17**.

Transmissivities calculated from the recovery data ranged from 299 ft²/day at Monitor 3 to 2,470 ft²/day in Monitor 2, with an average transmissivity of 1,132 ft²/day for entire test area. Based on an average net sand thickness of 40 feet throughout the pumping test area, hydraulic conductivities ranged from 7 to 62 ft/day, with an average hydraulic conductivity of 28 ft/day for the entire test area. Transmissivity and hydraulic conductivity in the vicinity of the pumped well (including wells CPW-1A, CPW-1, and Monitor 3) were approximately 3 to 9 times lower than transmissivity measured elsewhere within the test area.

7.6.4 Summary of Analytical Results

Transmissivities calculated from the drawdown and recovery data using the Theis (1935) and Theis (1935) Recovery methods ranged from 230 ft²/day to 2,469 ft²/day with an representative average value of 1,012 ft²/day over the test area. The transmissivities for the recovery data were slightly higher than the drawdown data and are considered more representative of the aquifer properties because of the slight variability in the discharge rate during drawdown phase of the test. Based on average net sand thickness of 40 feet, the representative average hydraulic conductivity of the Basal Chadron Sandstone is 25 ft/day. Hydraulic conductivities and transmissivity of the aquifer in the vicinity of wells CPW-1A, CPW-1, and Monitor-3 were approximately 3 to 9 times less than those calculated elsewhere in the test area. The storativity calculated from the drawdown data ranged from 1.7E-03 to 8.32E-05 with an average value of 2.56E-04 for the entire test area.

7.7 Transmissivity Distribution

An isopach of the Basal Chadron Sandstone thickness and spatial distribution of transmissivity is shown on **Figure 20**. Transmissivity values calculated from the recovery data were plotted on the map. In general, higher transmissivities are in areas of thicker sand. However, as discussed previously, lower transmissivities and corresponding lower hydraulic conductivities are present in the vicinity of the pumping well, CPW-1 and Monitor 3. The circular nature of the drawdown cone (**Figure 16**) suggests no significant anisotropic qualities (e.g. directional transmissivity) to the aquifer on a regional scale.

7.8 Radius of Influence (ROI)

Based on the drawdown response of 0.86 feet in distant observation well Monitor-7 (located approximately 6,200 feet south of the pumping well), the ROI of the test was in excess of 6,200 feet. Although not included in the formal test monitoring network, data collected from the most distant observation wells (Monitor-2 and Monitor 8) clearly identify drawdown in excess of 0.4 feet due to pumping, and these data are of sufficient quality to reliably determine aquifer parameters at these locations. Therefore, based on the data collected from Monitor-2 and Monitor-8, the ROI for the test is slightly greater than 8,800 feet.

8. SUMMARY AND CONCLUSIONS

The following are significant results and conclusions of this work:

- The pumping well and all Basal Chadron observation wells exhibited significant and predictable drawdown during the test, demonstrating that the production zone has hydraulic continuity throughout the test area.
- The average transmissivity of the Basal Chadron Sandstone within the Marsland Expansion Area investigated herein is significantly higher than the existing Class III UIC Permit Area and the Three Crow and North Trend Expansion Areas.
- A zone of lower permeability (although not abnormally low by regional standards) is apparent in the vicinity of the pumping well (CPW-1A) and observation wells CPW-1 and Monitor-3, with significantly higher transmissivity noted elsewhere within the radius of influence of the test.
- Adequate confinement exists between the overlying Brule Formation and the Basal Chadron production zone as evidenced by no discernable drawdown in Brule Formation observation wells.
- The hydrologic properties of the Basal Chadron Sandstone have been adequately characterized to proceed with Class III UIC permitting and a NRC License Amendment Application for the Marsland Expansion Area.

9. REFERENCES

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Tables

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Marsland Regional Hydrologic Testing Report - Test # 8 **Crow Butte Project, Marsland Expansion Area**

TABLE 1
GENERALIZED STRATIGRAPHIC SECTION, MARSLAND EXPANSION AREA

Depth (feet bgs)	Geologic Description
0 - 25	Topsoil and alluvial deposits
25 - 150	Arikaree Formation - calcareous sandstone, siltstone and claystone (no wells)
150 - 300	Brule Formation - interbedded siltstone and clayey sandstone (BOW wells)
300 - 1,000	Upper/Middle Chadron Formation - siltstone and claystone confining unit (no wells)
1,000 - 1,050	Basal Chadron Sandstone - CPW and Monitor wells
1,050+	Pierre Shale (no wells)

Note:

1.bgs = below ground surface

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TABLE 2
PREVIOUS TESTING RESULTS, BASAL CHADRON SANDSTONE

Parameter	Class III Permit Area Tests #1 - #3 (mean)	Class III Permit Area Test #4 (south) (mean)	North Trend Tests #5 and #6 (mean)	Three Crow Test # 7 (mean)
Transmissivity (ft ² /day)	363	826	60	480
Hydraulic Conductivity (ft/day)	9.3	20.6	2.3	7.5
Storativity	9.7×10^{-5}	6.2×10^{-5}	5.3×10^{-5}	8.8×10^{-5}

Note:

1. ft²/day = square feet per day
2. ft/day = feet per day

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TABLE 3
MARSLAND PUMING TEST #8 WELL COMPLETION DETAILS

Well ID	Northing (ft)	Easting (ft)	Section	Twp/Rng	TOC Elevation (feet amsl)	Total Depth (feet bgs)	Well Diameter (OD) (Inches)	Screen Slot Size (inches)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screen Intervals (feet bgs)	Screen Length (feet)
Basal Chadron Sandstone Pumping Well												
CPW-1A	446202	1121450	1	T29N/R51W	4262.7	1,055	4.95	0.015	1022	1052	1022-1052	30
Basal Chadron Sandstone Observation Wells												
CPW-1	446225	1121528	1	T29N/R51W	4261.85	1,070	4.95	0.020	1015	1048	1015-1048	33
Monitor-2*	439439	1126362	18	T29N/R50W	4198.40	1,027	4.95	0.020	970	1010	970-1010	40
Monitor-3	446288	1121519	1	T29N/R51W	4261.30	1,069	4.95	0.020	1016	1043	1016-1043	27
Monitor-4A	450084	1121344	1	T29N/R51W	4332.10	1,134	4.95	0.020	1088	1110	1088-1110	22
Monitor-5	447734	1119236	1	T29N/R51W	4339.50	1,120	4.95	0.020	1070	1120	1070-1120	50
Monitor-6	442856	1124385	12	T29N/R51W	4215.00	1,050	4.95	0.020	990	1023	990-1023	33
Monitor-7	440358	1120757	12	T29N/R51W	4244.38	1,050	4.95	0.020	1000	1043	1000-1013, 1023-1043	33
Monitor-8*	450974	1117005	2	T29N/R51W	4353.70	1,180	4.95	0.020	1085	1125	1085-1125	40
Brule Formation Observation Wells												
BOW-1	446250	1121572	1	T29N/R51W	4260.10	370	4.95	0.020	285	365	285-305, 325-365	60
BOW-2	450154	1121367	1	T29N/R51W	4323.40	400	4.95	0.020	339	399	339-369, 389-399	40
BOW-3	450974	1117056	2	T29N/R51W	4350.30	415	4.95	0.020	345	415	345-365, 385-415	50

Note:

1. * Wells Monitor-2 and Monitor-8 were monitored and analyzed as described in the original Plan, but are not part of the formal monitoring network
2. Twp = Township
3. Rng = Range
4. amsl = above mean sea level
5. OD = outer diameter
6. bgs = below ground surface

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Marsland Regional Hydrologic Testing Report - Test # 8 Crow Butte Project, Marsland Expansion Area

**TABLE 4
MONITORING EQUIPMENT LAYOUT**

Well ID	Completion Sand	Monitoring Equipment	Logging Interval
CPW-1A	Basal Chadron Sandstone	Level Troll 700 (100 PSI)	Linear Event (30 sec if water level changes by >0.5 ft , 4 min if <0.5 ft of change)
CPW-1	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear Event (30 sec if water level changes by >0.1 ft , 4 min if <0.1 ft of change)
Monitor-2	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
Monitor-3	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
Monitor-4A	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
Monitor-5	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
Monitor-6	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
Monitor-7	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
Monitor-8	Basal Chadron Sandstone	Level Troll 500 (30 PSI)	Linear (4 min)
BOW-1	Brule Formation	Level Troll 500 (30 PSI)	Linear (4 min)
BOW-2	Brule Formation	Level Troll 500 (30 PSI)	Linear (4 min)
BOW-3	Brule Formation	Level Troll 500 (30 PSI)	Linear (4 min)
BAR-1	Atmosphere	Baro Troll	Linear (4 min)

Notes:

1. min = minute
2. ft = feet
3. PSI = pounds per square inch

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Marsland Regional Hydrologic Testing Report - Test # 8 Crow Butte Project, Marsland Expansion Area

TABLE 5
PUMPING FLOW RATE VS. TIME

Date	TIME	METER 1	METER 2	PSI	AMPS	Total Gallons (meter 1/meter 2)
		GPM	GPM			
5/16/2011	5:00	27.90	28.4	50	12	0/0
5/16/2011	6:00	27.10	27.9	49	12	1579/1601
5/16/2011	7:00	26.90	27.1	49	12	3138/3170
5/16/2011	8:00	26.70	27.1	45	12	4824/4880
5/16/2011	9:00	26.70	27.1	45	12	6545/6621
5/16/2011	10:00	26.90	27.1	46	12	8163/8258
5/16/2011	11:00	26.50	26.8	45	12	9720/9831
5/16/2011	12:00	26.40	26.8	46	12	11341/11481
5/16/2011	13:00	26.50	26.8	46	12	12869/13039
5/16/2011	14:00	26.40	26.9	46	12	14518/14713
5/16/2011	15:00	26.40	26.9	46	12	16255/16484
5/16/2011	16:00	26.40	26.9	46	12	17560/18000
5/16/2011	17:00	26.70	27	46	12	19337/19614
5/16/2011	18:00	26.70	27.2	46	12	20933/21240
5/16/2011	19:00	26.60	27.1	46	12	22588/22922
5/16/2011	20:00	26.70	27.3	46	12	24257/24622
5/16/2011	21:00	26.70	27.2	46	12	25814/26206
5/16/2011	22:00	26.70	27.1	46	12	27384/27806
5/16/2011	23:00	26.50	27.2	46	12	29094/29498
5/17/2011	0:00	26.90	27.3	46	12	30660/31136
5/17/2011	1:00	26.80	27.3	46	12	32286/32795
5/17/2011	2:00	26.40	27.2	46	12	33895/34431
5/17/2011	3:00	26.60	27.2	46	12	35533/36107
5/17/2011	4:00	26.70	27.1	46	12	37236/37843
5/17/2011	5:00	26.60	27.3	46	12	38781/39420
5/17/2011	6:00	26.70	27.4	46	12	40434/40997
5/17/2011	7:00	26.80	27.3	46	12	41829/42530
5/17/2011	8:00	26.79	27.25	46	13	43637/44373
5/17/2011	9:00	26.73	27.19	46	13	45229/46012
5/17/2011	10:00	26.73	27.19	46	13	46904/47733
5/17/2011	11:00	26.59	27.12	46	13	48480/49328
5/17/2011	12:00	26.66	27.06	46	13	50184/51061
5/17/2011	13:00	26.66	27.06	46	13	51735/52632
5/17/2011	14:00	26.59	27.19	46	13	53334/54270
5/17/2011	15:00	26.59	27.19	46	13	54968/55945
5/17/2011	16:00	26.53	27.12	46	13	56615/57612
5/17/2011	17:00	26.79	27.25	46	13	58180/59210
5/17/2011	18:00	26.92	27.39	46	13	59728/60788
5/17/2011	19:00	26.99	27.52	46	13	61422/62516
5/17/2011	20:00	26.92	27.58	46	13	63218/64388

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Marsland Regional Hydrologic Testing Report - Test # 8 Crow Butte Project, Marsland Expansion Area

**TABLE 5
PUMPING FLOW RATE VS. TIME**

Date	TIME	METER 1	METER 2	PSI	AMPS	Total Gallons (meter 1/meter 2)
		GPM	GPM			
5/17/2011	21:00	26.99	27.43	46	13	64670/65839
5/17/2011	22:00	26.92	27.65	46	13	66283/67481
5/17/2011	23:00	26.94	27.45	46	13	67907/69143
5/18/2011	0:00	26.92	27.45	46	13	69508/70780
5/18/2011	1:00	27.06	27.46	46	13	71181/72490
5/18/2011	2:00	26.86	27.45	46	13	72804/74152
5/18/2011	3:00	26.79	27.39	46	13	74443/75824
5/18/2011	4:00	26.79	27.39	46	13	76053/77474
5/18/2011	5:00	26.66	27.32	46	13	77684/79137
5/18/2011	6:00	26.59	27.45	46	13	79283/80777
5/18/2011	7:00	26.46	27.32	46	13	80908/82445
5/18/2011	8:00	26.46	27.32	46	12	82532/84112
5/18/2011	9:00	27.98	27.43	46	12	84302/85927
5/18/2011	10:00	26.59	27.32	46	12	85838/87502
5/18/2011	11:00	26.66	27.32	46	12	87397/89104
5/18/2011	12:00	26.79	27.39	46	12	89019/90769
5/18/2011	13:00	26.53	27.32	46	12	90664/92458
5/18/2011	14:00	26.73	27.19	46	12	92385/94212
5/18/2011	15:00	26.59	27.32	46	12	93845/95706
5/18/2011	16:00	26.92	27.32	46	12	95537/97438
5/18/2011	17:00	26.86	27.52	46	12	97124/99061
5/18/2011	18:00	26.79	27.39	46	12	98727/100302
5/18/2011	19:00	26.79	27.52	46	12	100350/102361
5/18/2011	20:00	26.99	27.65	46	12	101944/104000
5/18/2011	21:00	26.92	27.52	46	12	103574/105667
5/18/2011	22:00	26.86	27.52	46	12	105215/107355
5/18/2011	23:00	26.99	27.58	46	12	106857/108542
5/19/2011	0:00	26.99	27.65	46	12	108521/110734
5/19/2011	1:00	26.99	27.72	46	12	110161/112415
5/19/2011	2:00	26.99	27.65	46	12	111965/114270
5/19/2011	3:00	26.94	27.72	46	12	113333/115667
5/19/2011	4:00	26.94	27.65	46	12	114978/117308
5/19/2011	5:00	26.94	27.58	46	12	116623/118951
5/19/2011	6:00	26.92	27.65	46	12	118246/120689
5/19/2011	7:00	27.06	27.72	46	12	119860/122351
5/19/2011	8:00	27.00	27.65	48	12	121626/124162
5/19/2011	9:00	27.06	27.52	48	12	123245/125826
5/19/2011	10:00	26.86	27.52	48	12	124871/127490
5/19/2011	11:00	26.92	27.58	48	12	126491/129137
5/19/2011	12:00	26.79	27.52	48	12	128125/130828
5/19/2011	13:00	26.59	27.58	48	12	129745/132498
5/19/2011	14:00	26.94	27.65	48	12	131369/134145
5/19/2011	15:00	26.92	27.45	48	12	132973/135792

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TABLE 5
PUMPING FLOW RATE VS. TIME

Date	TIME	METER 1	METER 2	PSI	AMPS	Total Gallons (meter 1/meter 2)
		GPM	GPM			
5/19/2011	16:00	27.45	27.58	48	12	134606/137470
5/19/2011	17:00	26.86	27.52	48	12	136270/139168
5/19/2011	18:00	26.86	27.65	48	12	137893/140832
5/19/2011	19:00	26.79	27.58	48	12	139550/142528
5/19/2011	20:00	26.86	27.58	48	12	141176/144192
5/19/2011	21:00	26.79	27.45	48	12	142803/145861
5/19/2011	22:00	26.86	27.45	48	12	144375/147470
5/19/2011	23:00	26.46	27.58	48	12	146010/149145
5/20/2011	0:00	26.92	27.39	48	12	147643/150817
5/20/2011	1:00	26.73	27.45	48	12	149285/152499
5/20/2011	2:00	26.99	27.58	48	12	150921/154172
5/20/2011	3:00	26.92	27.52	48	12	152550/155837
5/20/2011	4:00	27.06	27.58	48	12	154176/157504
5/20/2011	5:00	26.99	27.39	48	12	155820/159188
5/20/2011	6:00	26.92	27.45	48	12	157422/160827
5/20/2011	7:00	26.79	27.52	48	12	159048/162492
5/20/2011	8:00	26.73	27.32	47	12	160710/164208
5/20/2011	9:00	26.79	27.32	46	12	162426/165960
5/20/2011	10:00	26.59	27.19	46	12	163966/167537
5/20/2011	11:00	26.46	27.12	46	12	165526/169126
5/20/2011	12:00	26.46	27.06	46	12	167215/170855
Average Flow (GPM)		26.80	27.37			
Combined Average Flow (GPM)		27.08				

Notes:

1. GPM = gallons per minute
2. Pumping started at 5:03 am on 5/16/2011 and ended at 12:00 pm on 5/20/11
3. PSI = pounds per square inch

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TABLE 6
GROUNDWATER LEVELS, NOVEMBER 12, 2010

Well ID	Measurement Date	Northing (feet)	Easting (feet)	TOC Elevation (feet amsl)	Depth to Water (feet btoc)	Groundwater Elevation (feet amsl)
Basal Chadron Pumping Well						
CPW-1A	NM	446202	1121450	4262.70	NM	NM
Basal Chadron Observation Wells						
CPW-1	11/12/2010	446225	1121528	4261.85	551.11	3710.75
Monitor-2	11/12/2010	439439	1126362	4198.40	484.57	3713.83
Monitor-3	11/12/2010	446288	1121519	4261.30	551.03	3710.27
Monitor-4A	11/12/2010	450084	1121344	4327.49	617.80	3709.69
Monitor-5	11/12/2010	447734	1119236	4339.50	628.45	3711.05
Monitor-6	11/12/2010	442856	1124385	4215.00	502.18	3712.83
Monitor-7	11/12/2010	440358	1120757	4244.38	530.99	3713.39
Monitor-8	11/12/2010	450974	1117005	4353.70	644.47	3709.23
Brule Observation Wells						
BOW-1	11/12/2010	446250	1121572	4260.10	126.13	4133.97
BOW-2	11/12/2010	450154	1121367	4323.40	150.37	4173.04
BOW-3	11/12/2010	450974	1117056	4350.30	137.49	4212.81

Notes:

1. TOC = top of casing
2. btoc = below top of casing
3. amsl = above mean sea level
4. NM = not measured

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TABLE 7
DISTANCES TO PUMPING WELL AND OBSERVED DRAWDOWN

Completion Type	Well ID	Distance to Pumping Well (feet)	Completion Sand	Respond to Pumping (Y/N)	Observed Drawdown at End of Pumping (5/20/2011)	Corrected Drawdown at End of Pumping (5/20/2011)
Pumping Well	CPW-1A	0	Basal Chadron Sandstone	Y	23.40	23.50
Production Zone Observation Wells	CPW-1	67	Basal Chadron Sandstone	Y	6.22	6.32
	Monitor-3	100	Basal Chadron Sandstone	Y	4.79	4.89
	Monitor-5	2,800	Basal Chadron Sandstone	Y	1.29	1.39
	Monitor-4A	4,067	Basal Chadron Sandstone	Y	1.00	1.10
	Monitor-6	4,667	Basal Chadron Sandstone	Y	1.05	1.15
	Monitor-7	6,200	Basal Chadron Sandstone	Y	0.76	0.86
	Monitor-8*	6,800	Basal Chadron Sandstone	Y	0.66	0.76
Overlying Observation Wells	Monitor-2*	8,800	Basal Chadron Sandstone	Y	0.32	0.42
	BOW-1	133	Brule Formation	N	-	-
	BOW-2	4,167	Brule Formation	N	-	-
	BOW-3	6,867	Brule Formation	N	-	-

Note:

- * Wells Monitor-2 and Monitor-8 were monitored and analyzed as described in the original Plan, but are not part of the formal monitoring network used to establish radius of influence.
- Pumping started at 5:03 am on 5/16/2011 and ended at 12:00 pm on 5/20/11

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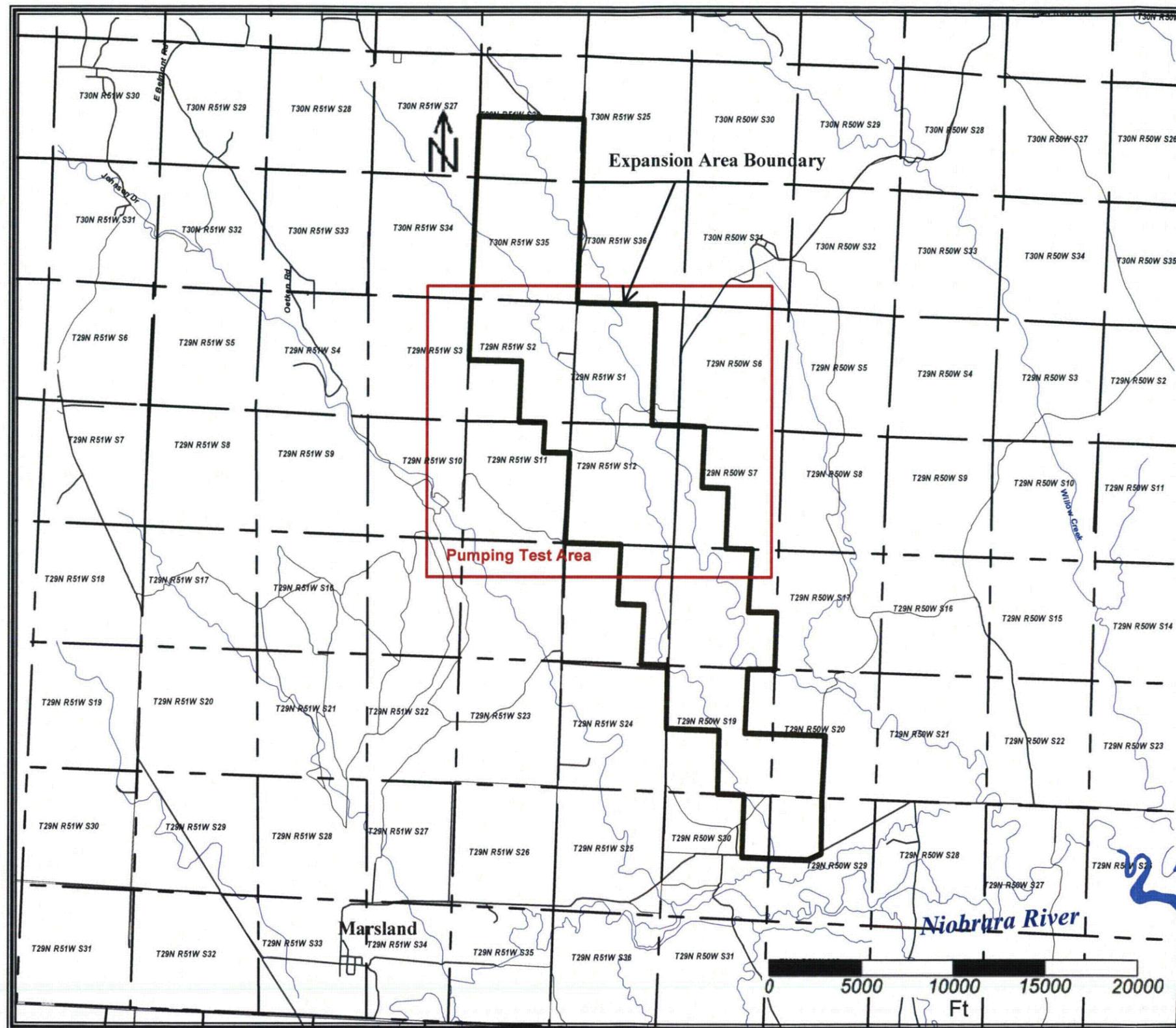
**TABLE 8
SUMMARY OF TEST RESULTS**

Well ID	Distance to Pumping Well (feet)	Theis Drawdown			Theis Recovery		
		Transmissivity (ft ² /day)	Hydraulic Conductivity (ft/day)	Storativity	Transmissivity (ft ² /day)	Hydraulic Conductivity (ft/day)	Storativity
CPW-1A**	0	--	--	--	573	14	--
CPW-1**	67	430	11	8.32E-05	523	13	--
Monitor-3	100	230	6	1.70E-03	299	7	--
Monitor-5	2,800	915	23	5.50E-05	971	24	--
Monitor-4A	4,067	903	23	5.41E-05	1,377	34	--
Monitor-6	4,667	901	23	3.44E-05	1,063	27	--
Monitor-7	6,200	983	25	3.57E-05	1,315	33	--
Monitor-8*	6,800	989	25	3.95E-05	1,596	40	--
Monitor-2*	8,800	1,781	45	4.72E-05	2,469	62	--
Averages		892	22	7.46E-05	1,132	28	--
Average Transmissivity (ft²/day)		1,012					
Average Hydraulic Conductivity (ft/day)		25					
Average Storativity		7.46E-05					

Note:

- * = Monitor-2 and Monitor-8 were monitored and analyzed as described in the original Plan, but are not part of the formal monitoring network
- ** = Water level data for CPW-1A and CPW-1 were not corrected for barometric variations due to the large drawdowns (greater than 6 feet) relative to much smaller barometric fluctuations
- Pumping started at 5:03 am on 5/16/2011 and ended at 12:00 pm on 5/20/11
- Hydraulic conductivity calculated based on a typical net sand thickness of 40 feet
- ft²/day = square feet per day
- ft/day = feet per day
- = not applicable

Figures



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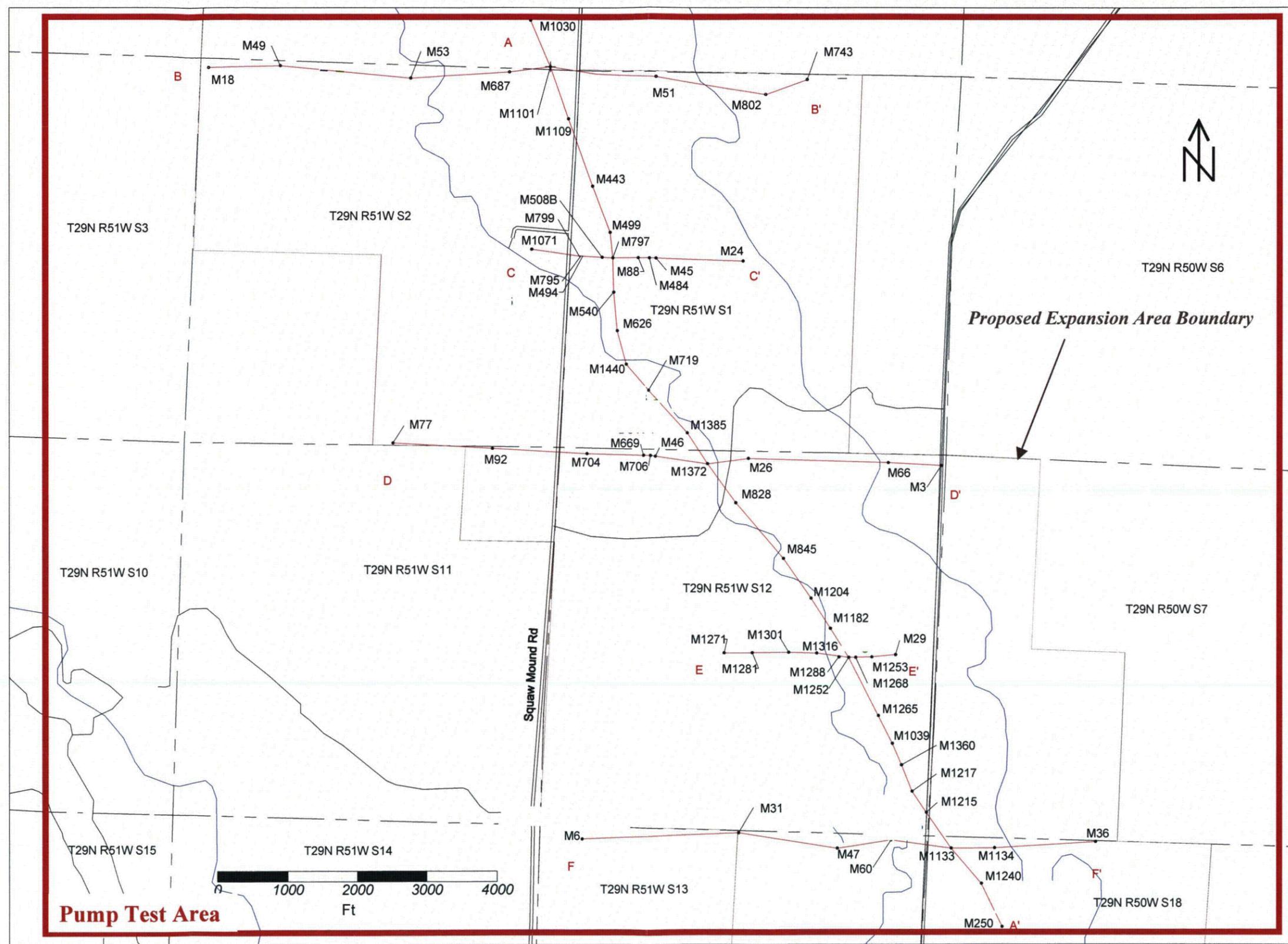
Marsland Expansion Area and Vicinity

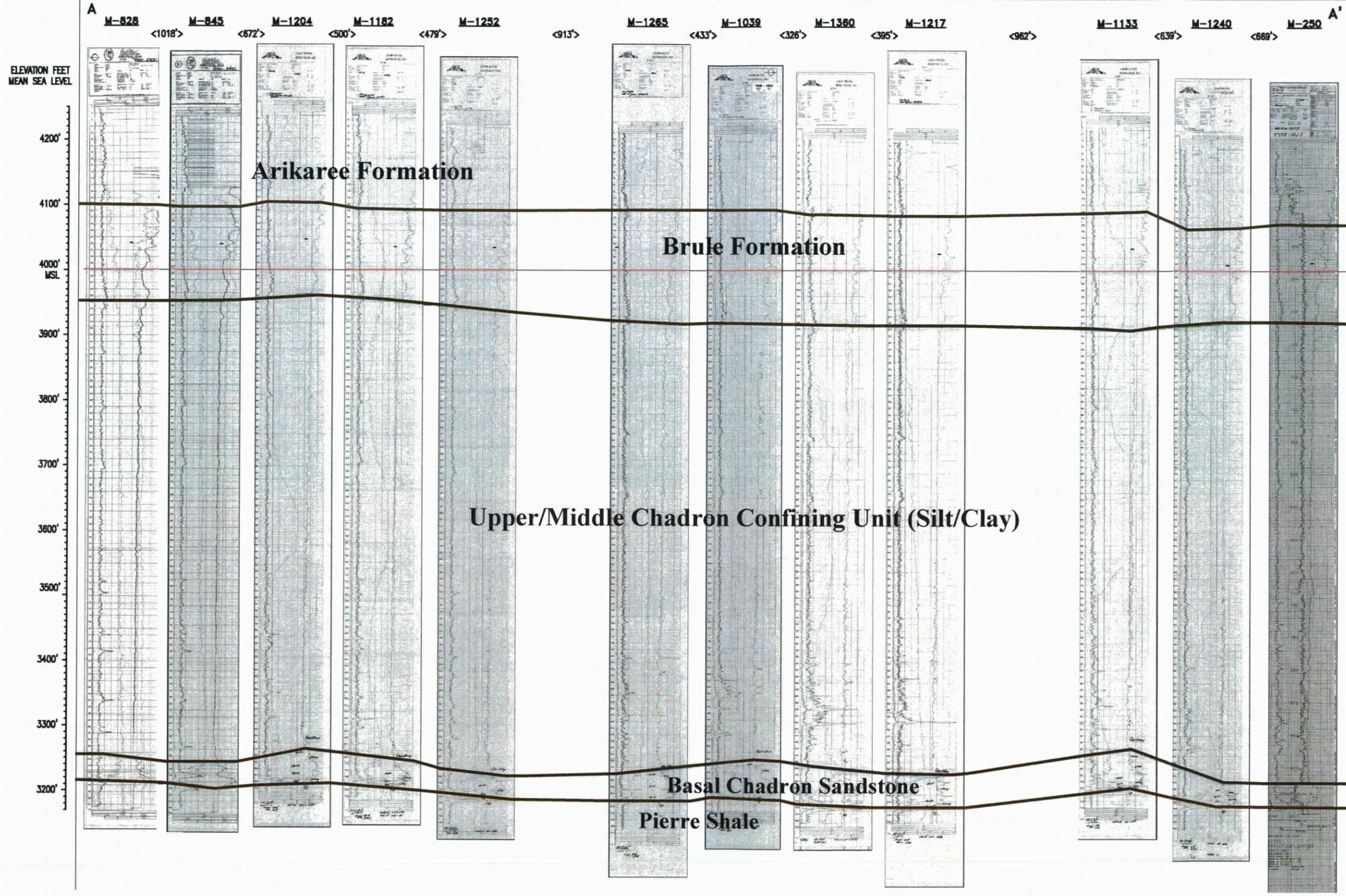
Marsland Regional Hydrologic Testing Report – Test # 8
 Crow Butte Project, Marsland Expansion Area,
 Dawes County, NE

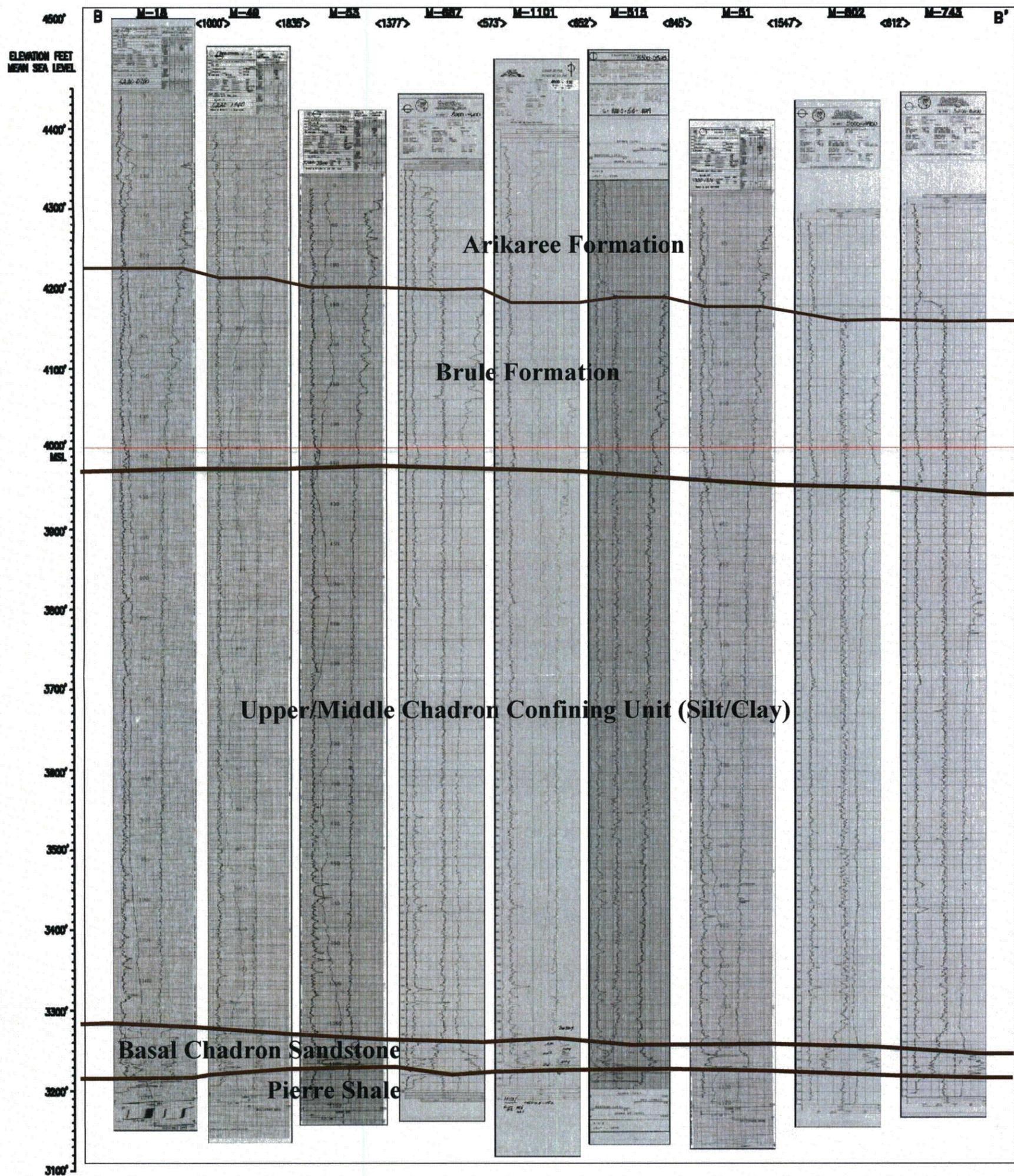


FIGURE:

1



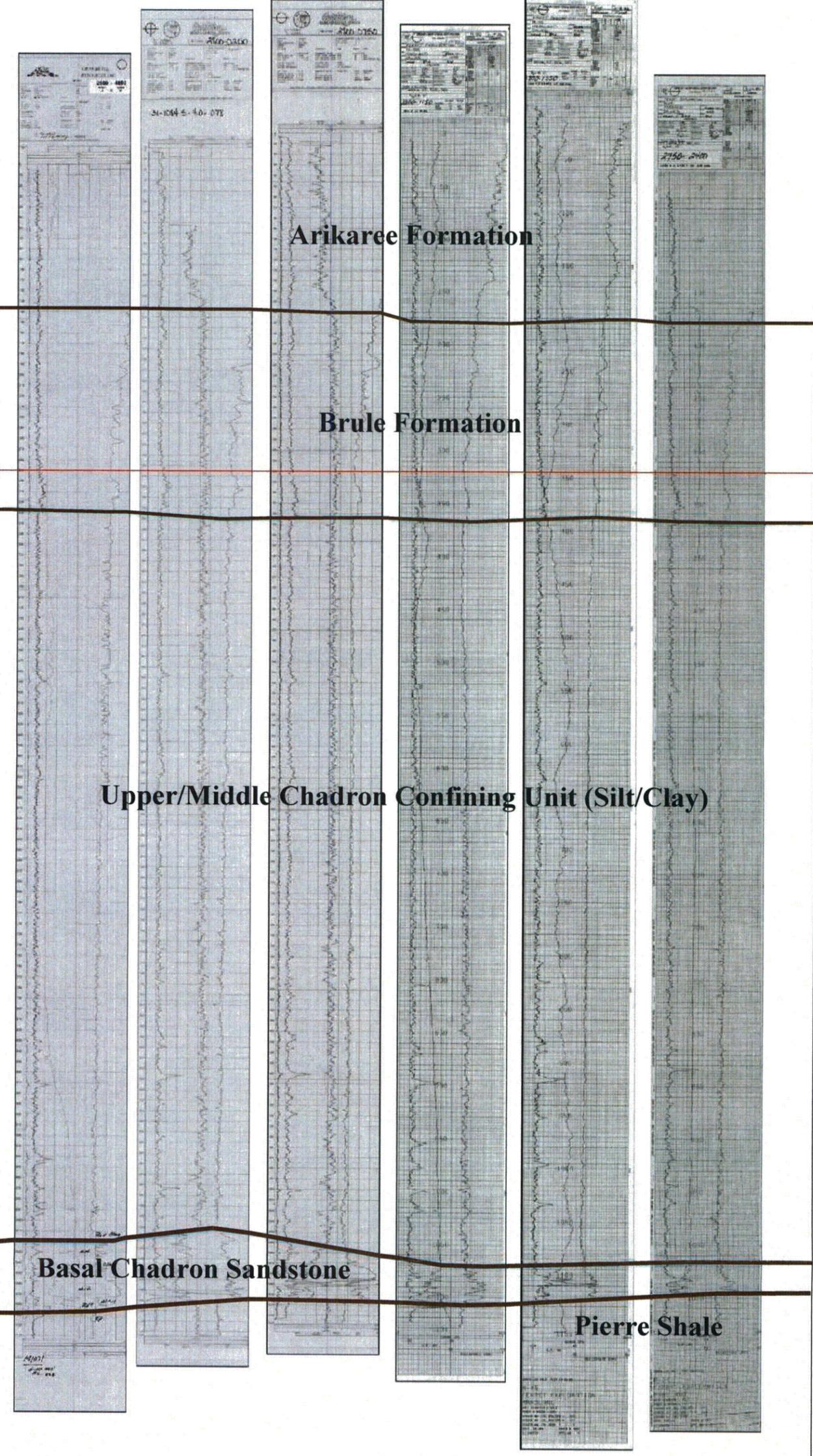




ELEVATION FEET
MEAN SEA LEVEL

4300'
4200'
4100'
4000'
MSL
3900'
3800'
3700'
3600'
3500'
3400'
3300'
3200'
3100'

M-1071 <670'> M-799 <474'> M-797 <380'> M-88 <253'> M-45 <1213'> M-24



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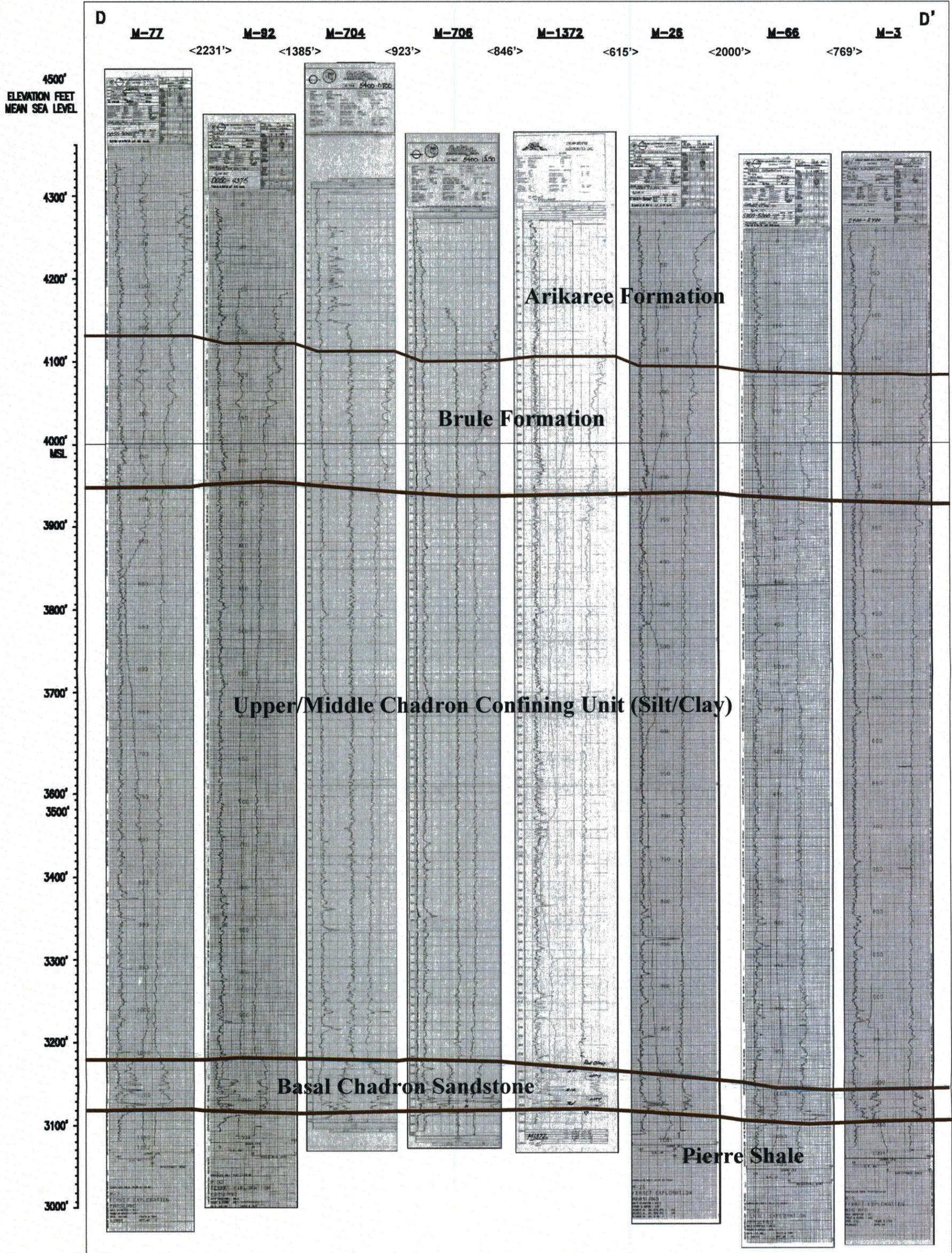
Geologic Cross Section C-C'

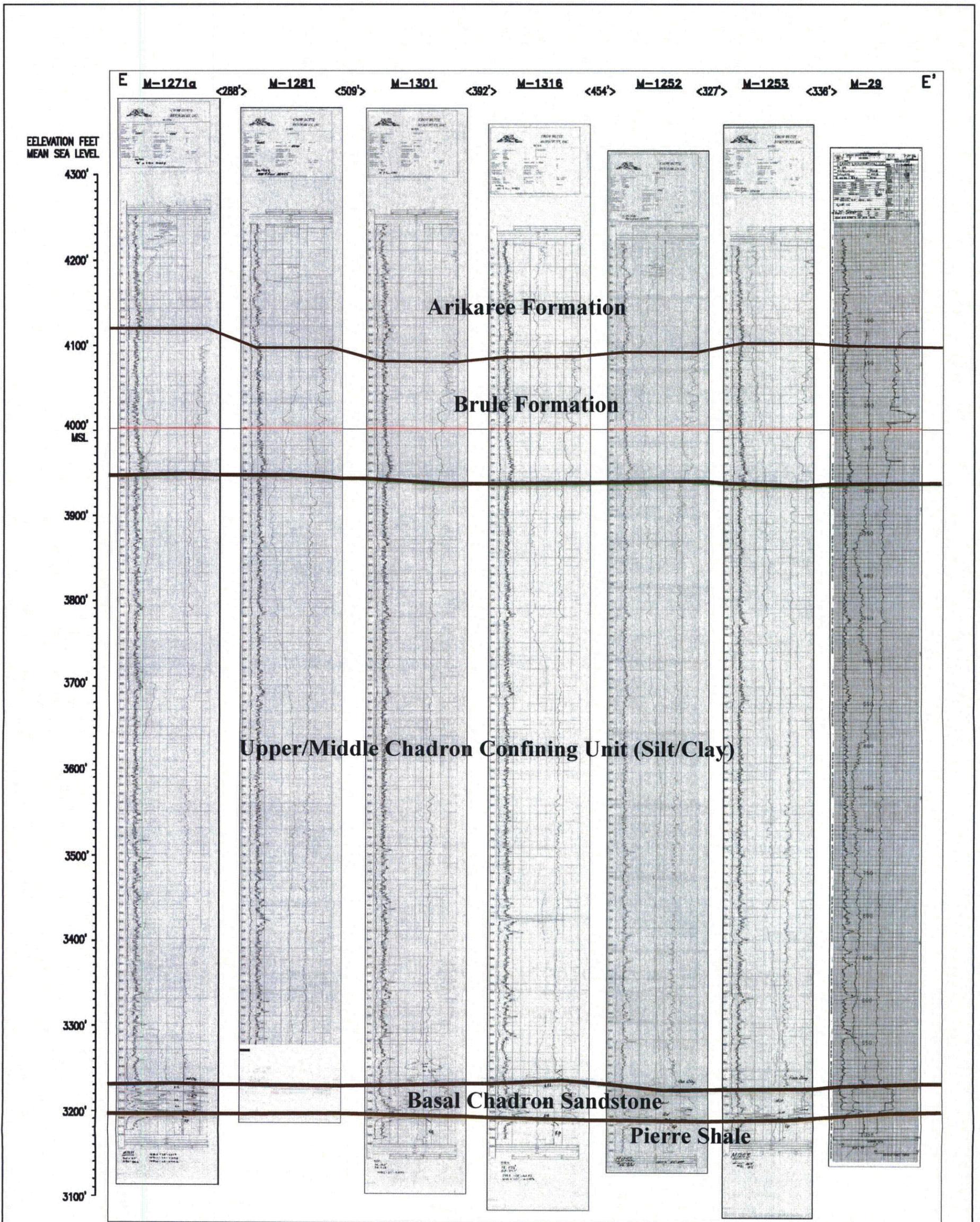
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Crow Butte Project, Marsland Expansion Area,
Dawes County, NE

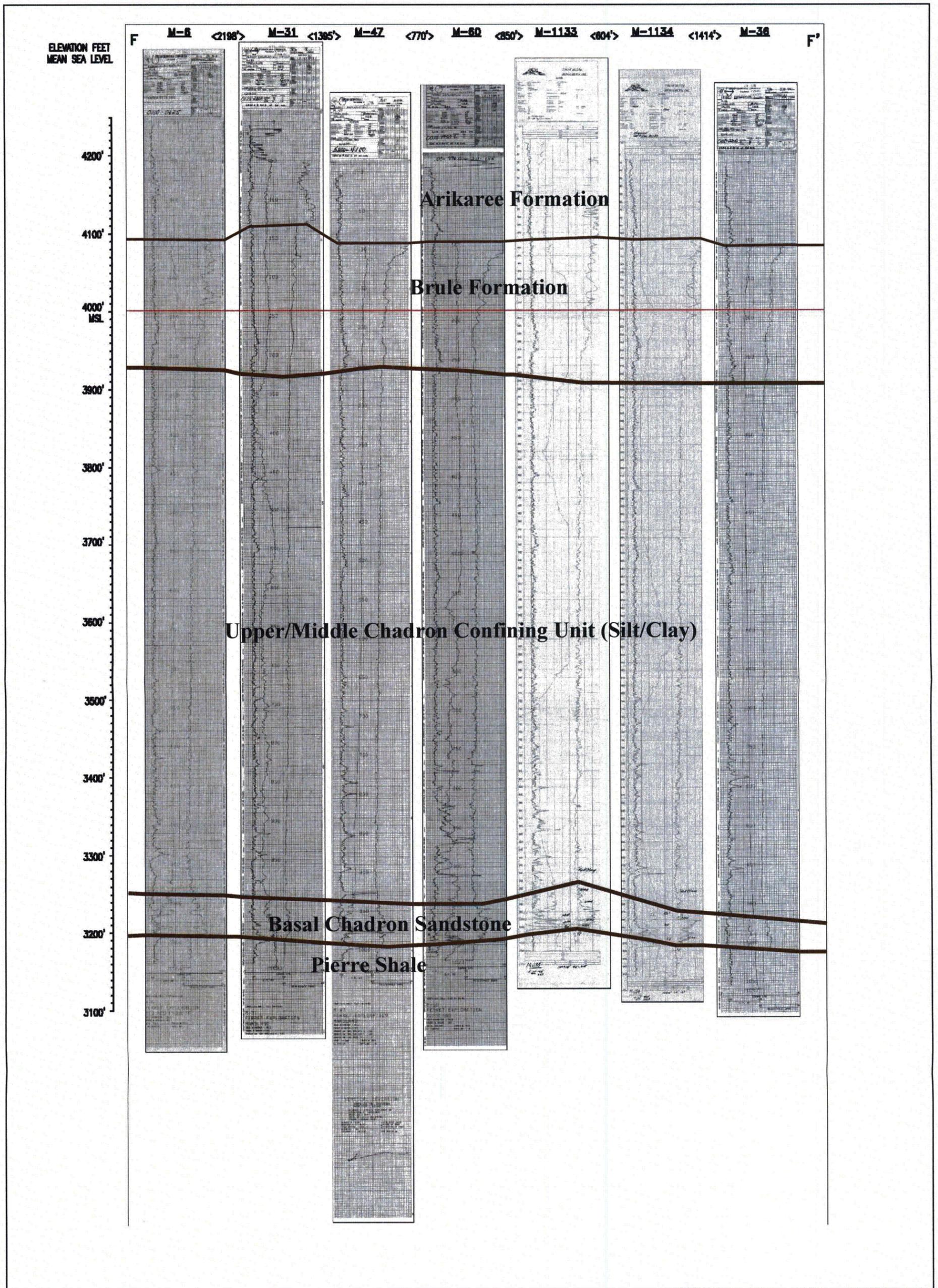


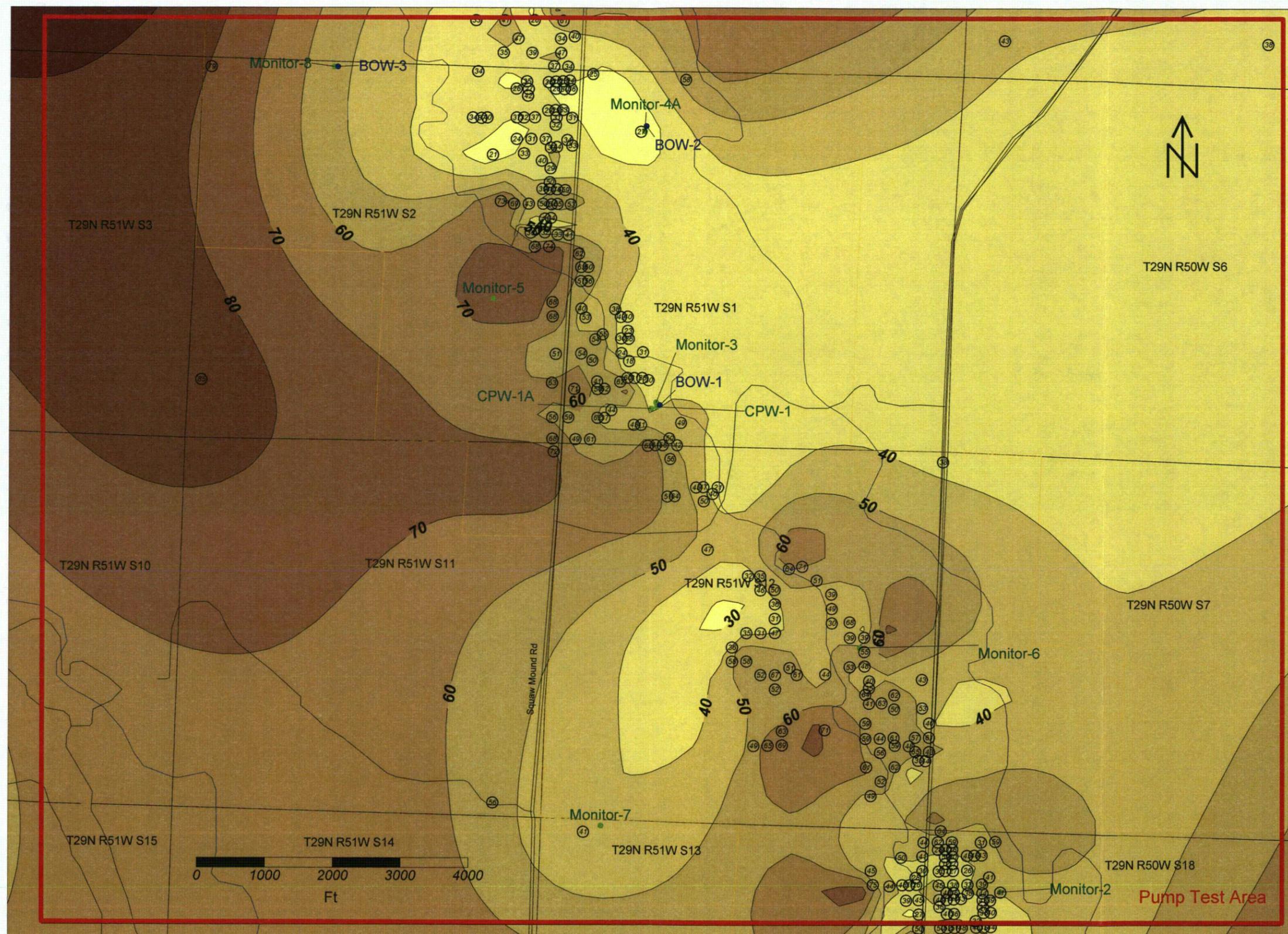
FIGURE:

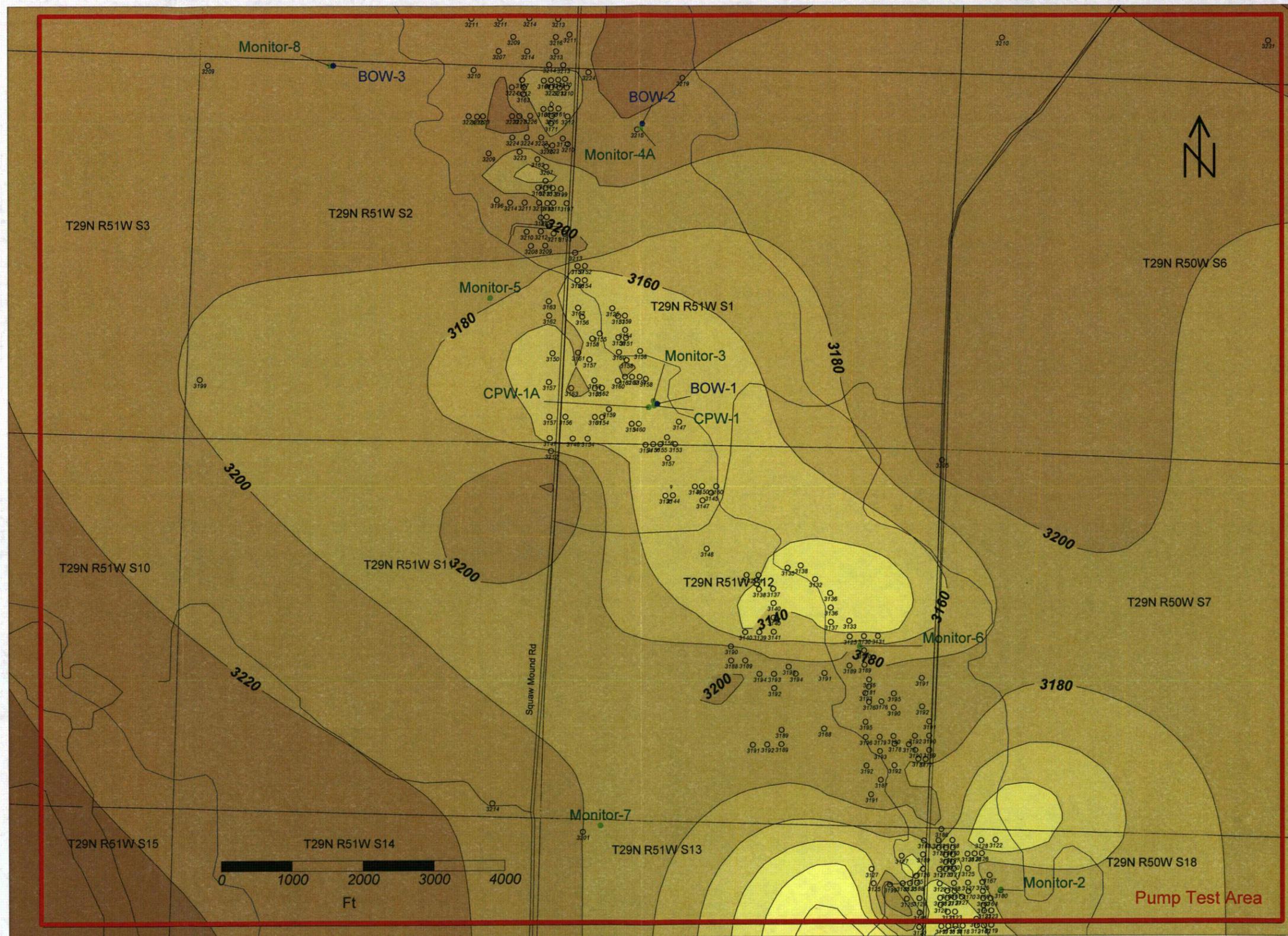
5











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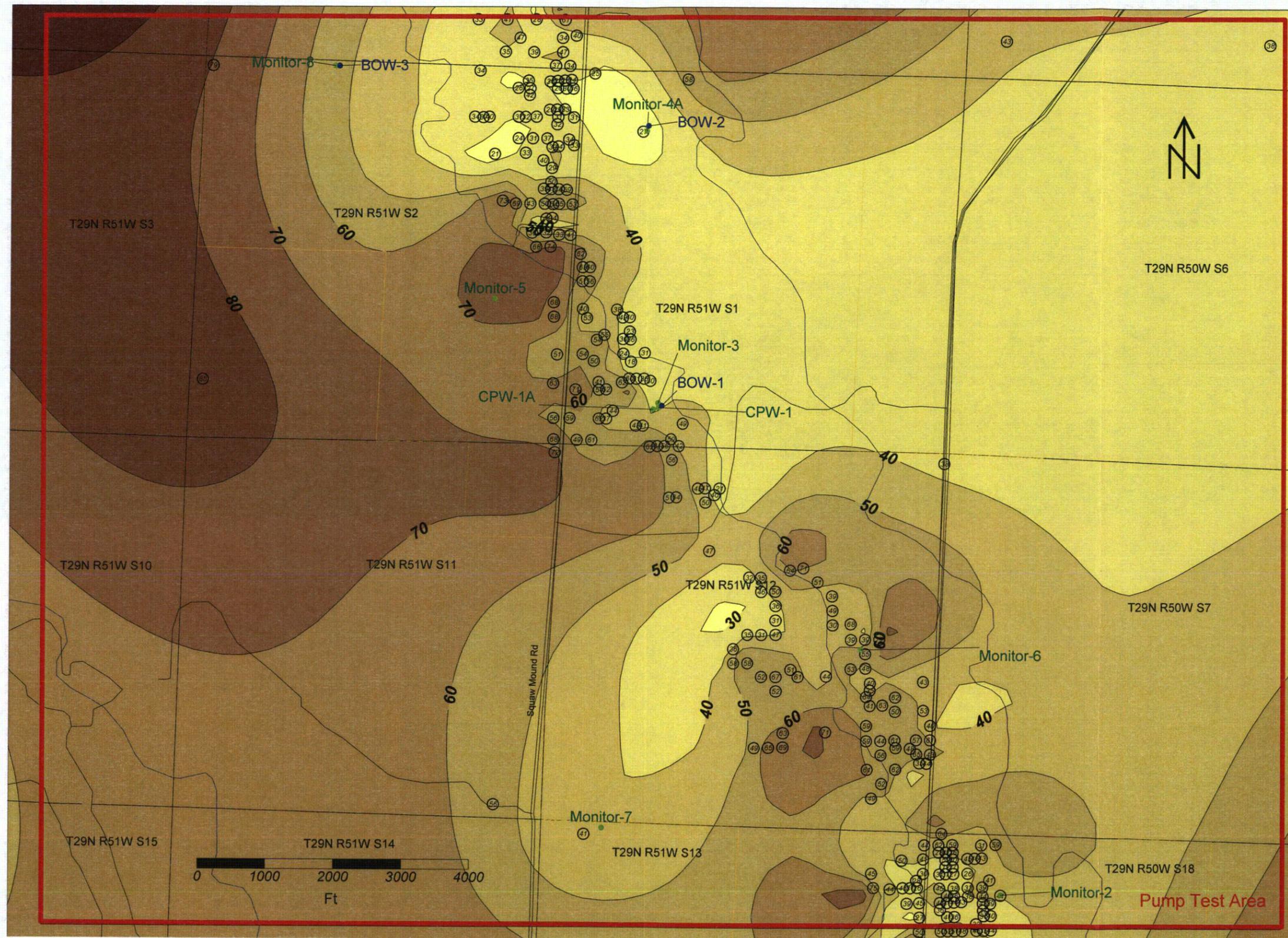
**Structure Contour Map
Top of the Pierre Shale (ft-MSL)**

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Crow Butte Project, Marsland Expansion Area,
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FIGURE:

10



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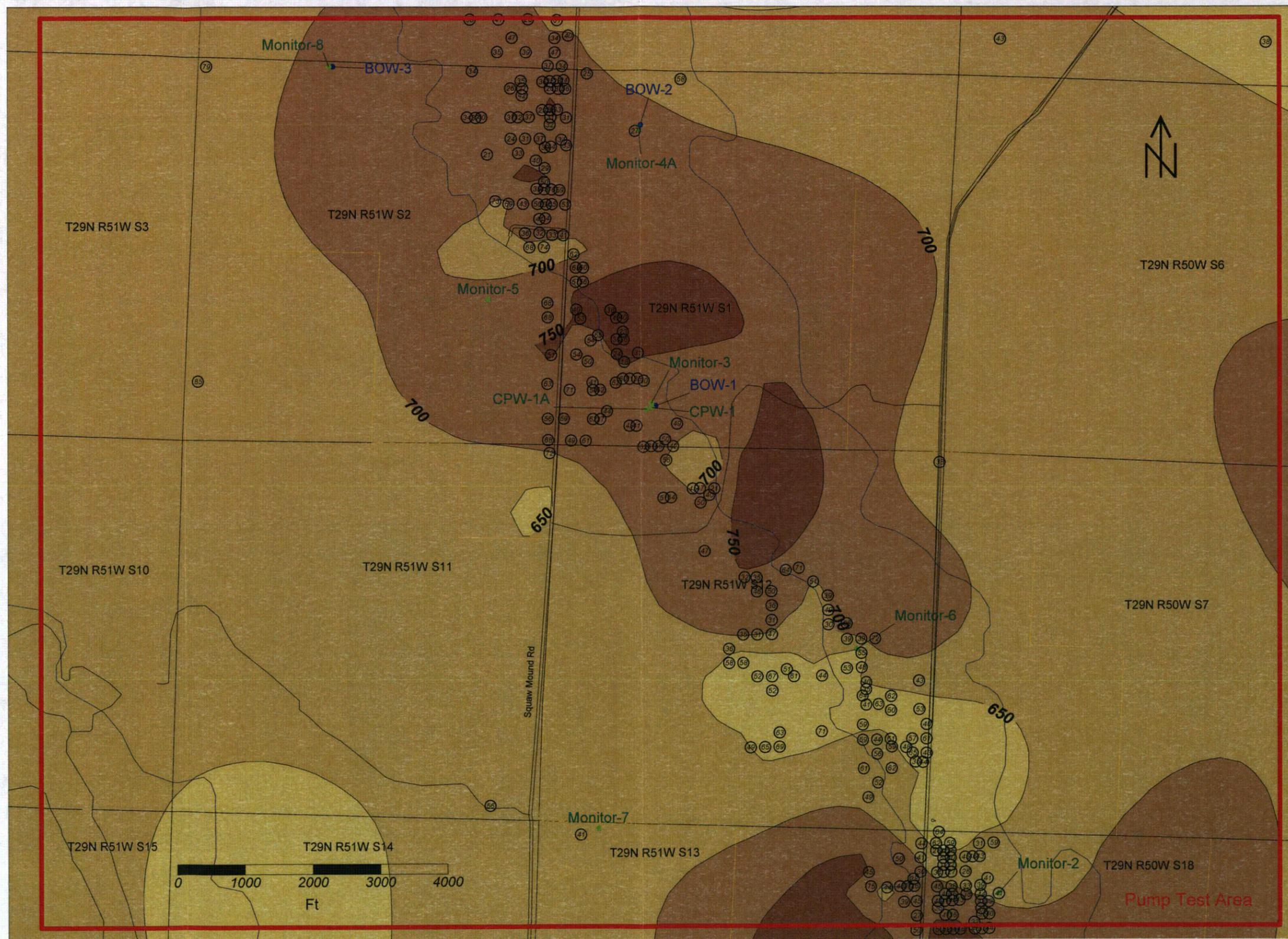
**Isopach (Thickness) Map
Basal Chadron Sandstone (ft-MSL)**

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Crow Butte Project, Marsland Expansion Area,
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FIGURE:

11



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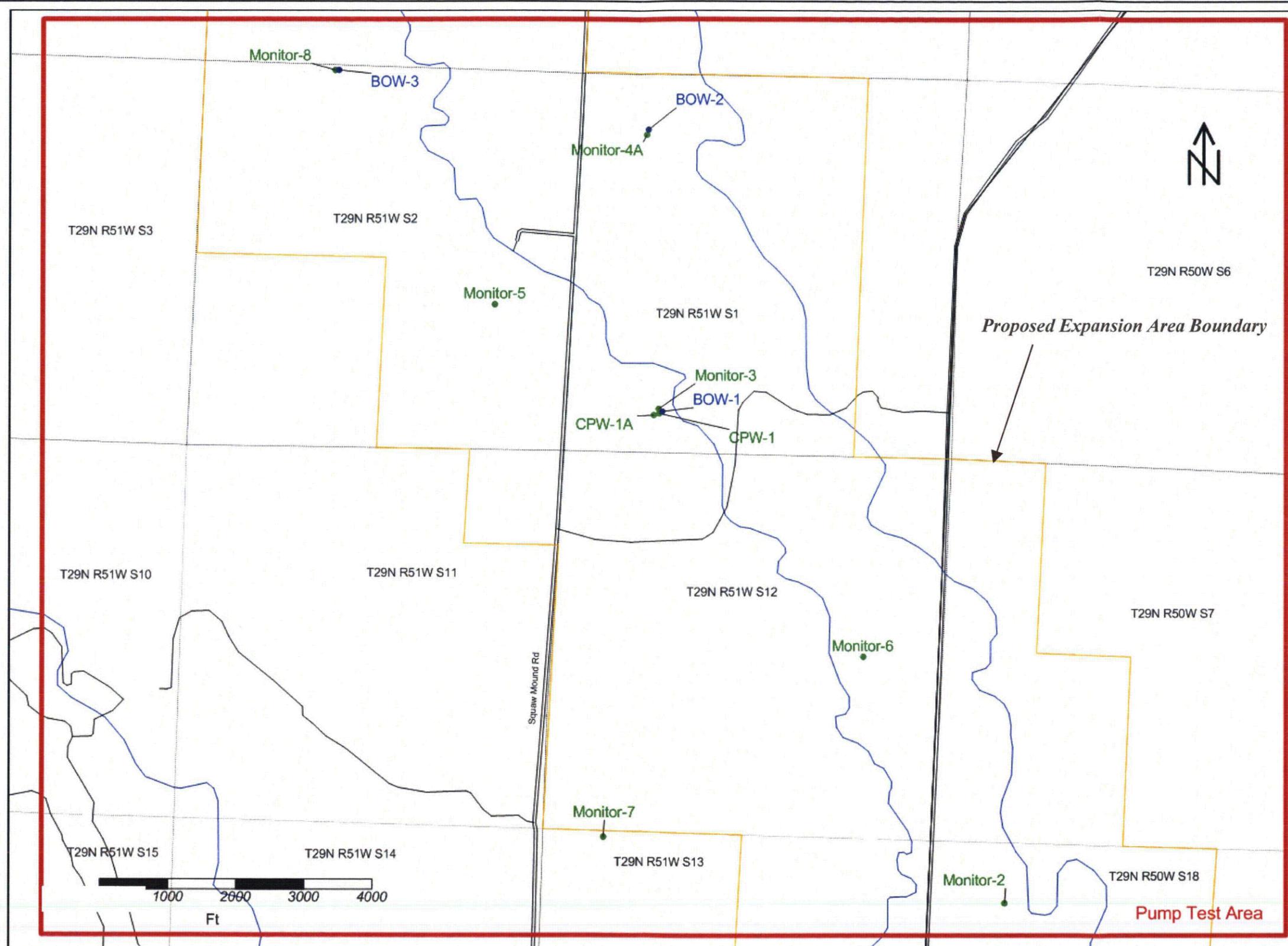
**Isopach (Thickness) Map
Upper/Middle Chadron Confining Unit (ft-MSL)**

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Crow Butte Project, Marsland Expansion Area,
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FIGURE:

12



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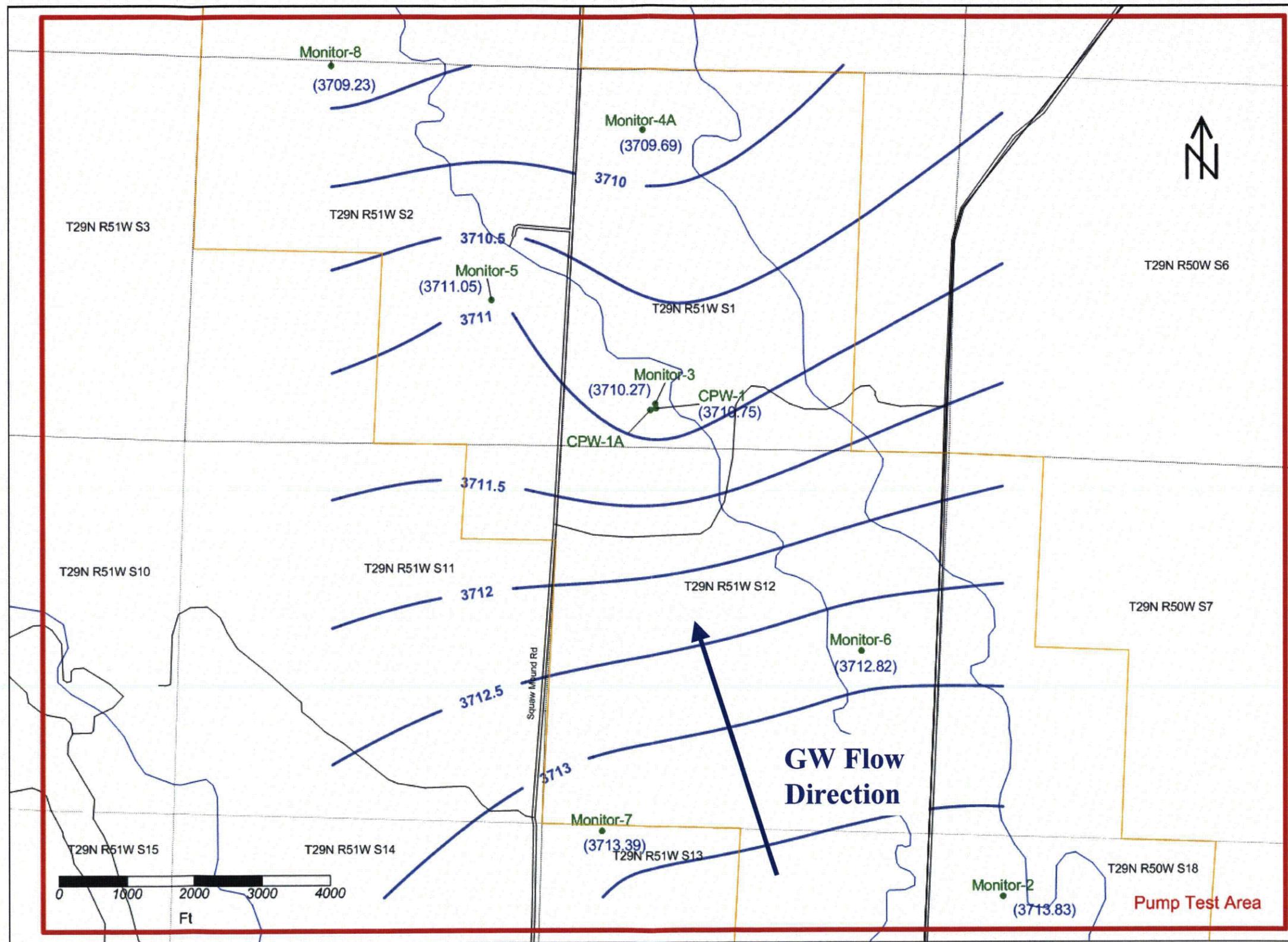
Marsland Pumping Test #8 Well Locations

Marsland Regional Hydrologic Testing Report – Test # 8
 Crow Butte Project, Marsland Expansion Area,
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FIGURE:

13



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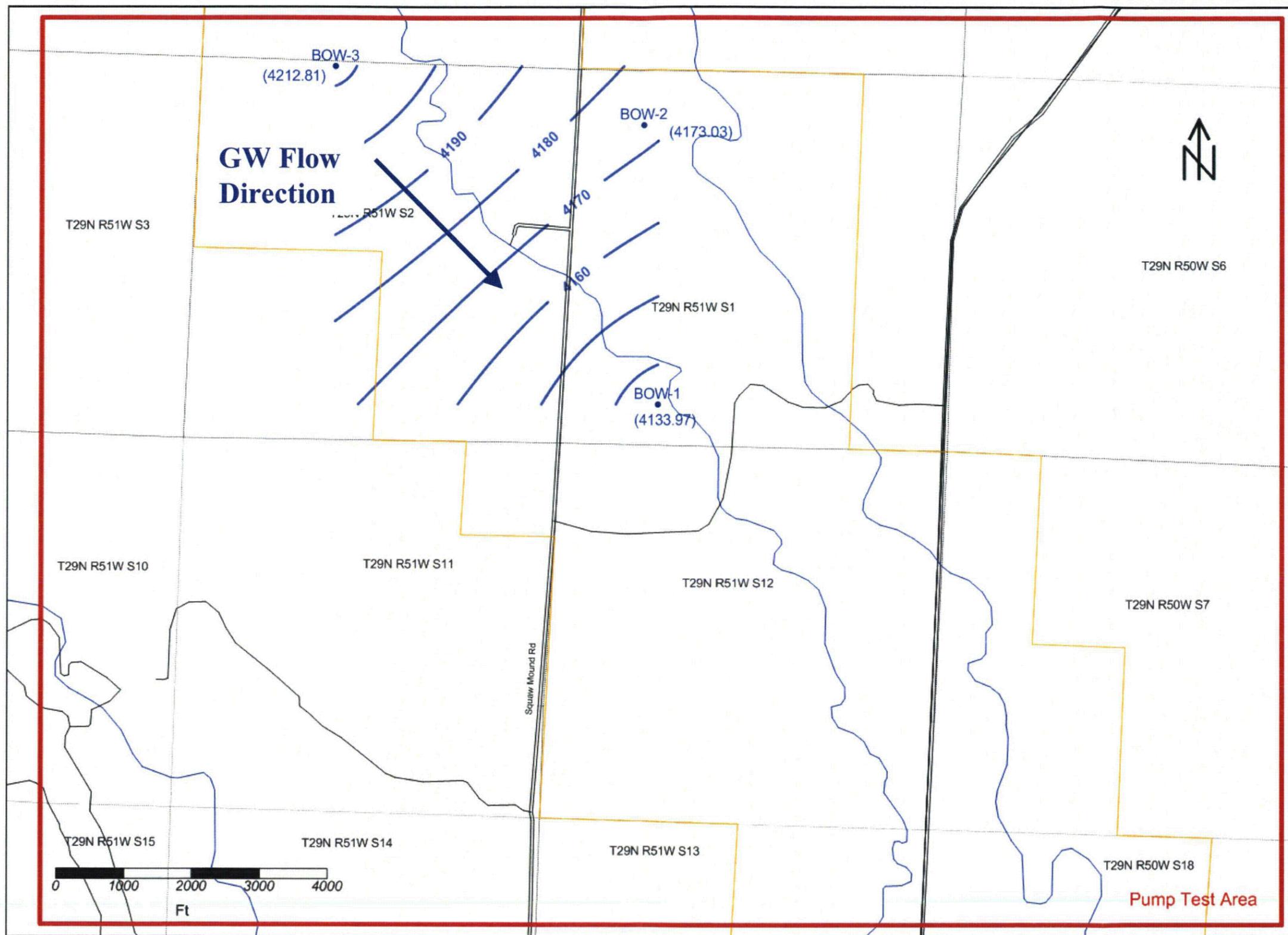
Potentiometric Surface Map – Basal Chadron Sandstone (Production Zone), November 12, 2010

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Crow Butte Project, Marsland Expansion Area,
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FIGURE:

14



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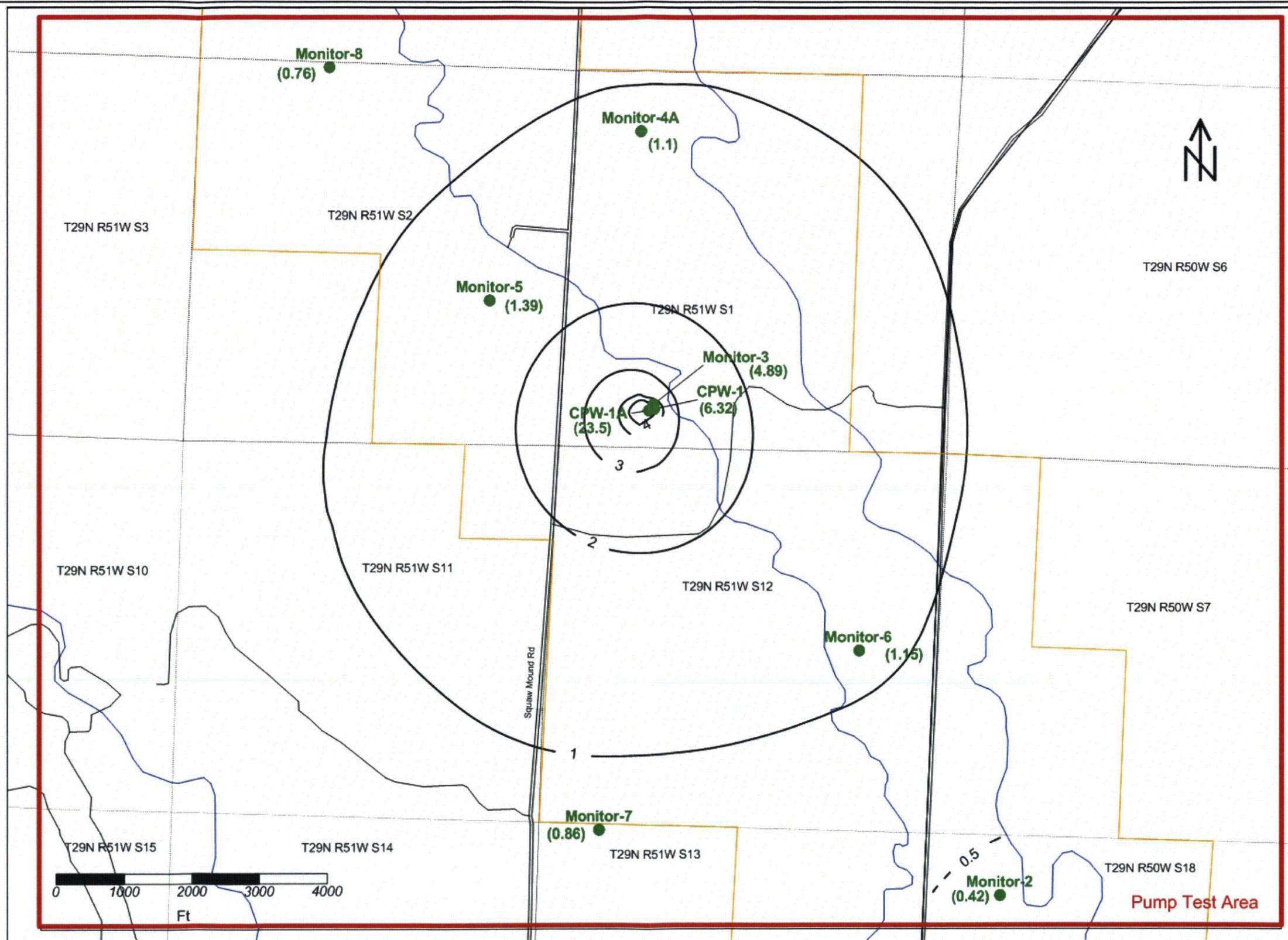
**Potentiometric Surface Map – Brule Formation,
November 12, 2010**

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Crow Butte Project, Marsland Expansion Area,
Dawes County, NE



FIGURE:

15



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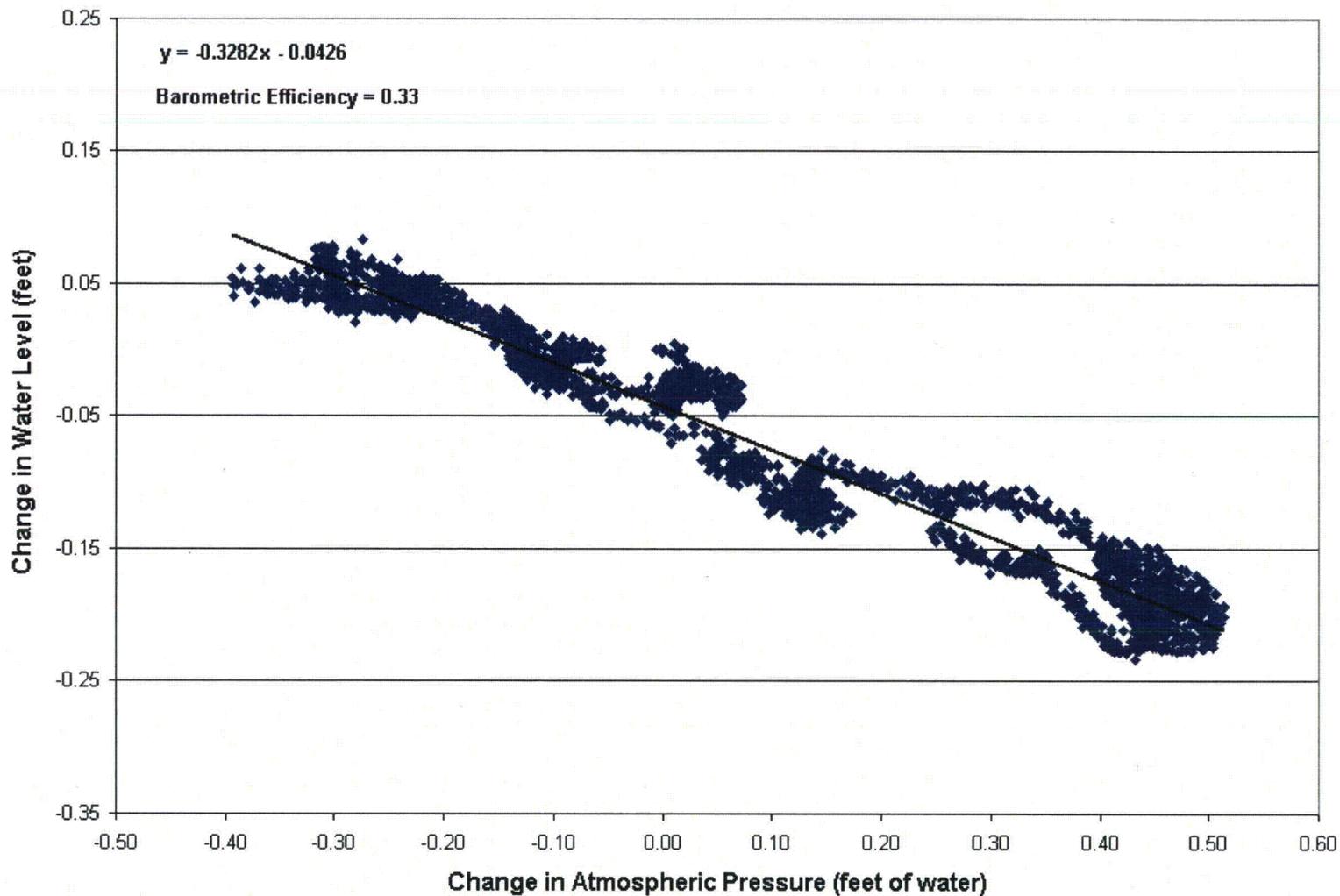
Drawdown in the Basal Chadron Sandstone at the End of the Test

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Crow Butte Project, Marsland Expansion Area,
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FIGURE:

16



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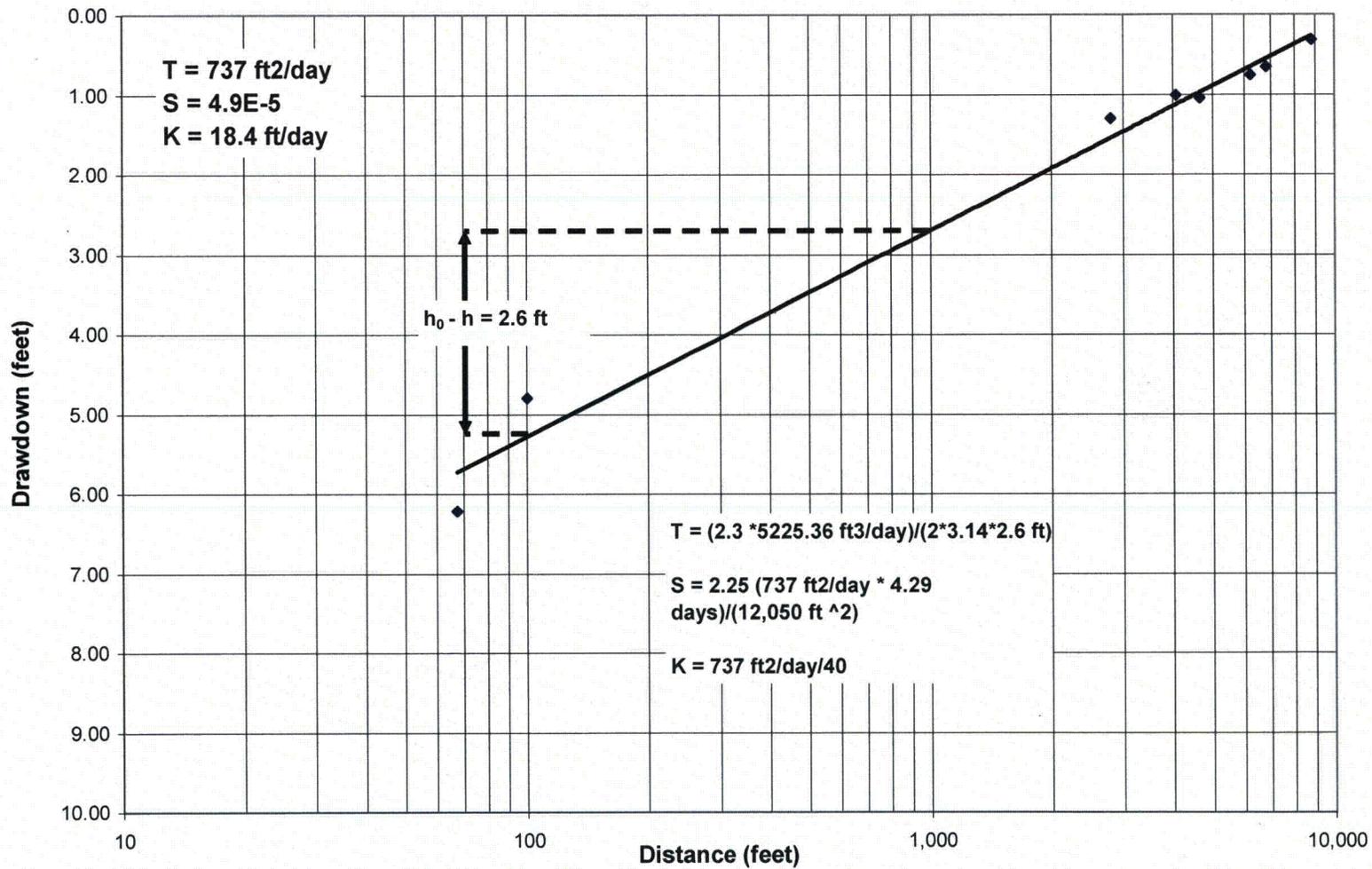
Change in Barometric Pressure vs. Change in Water Level

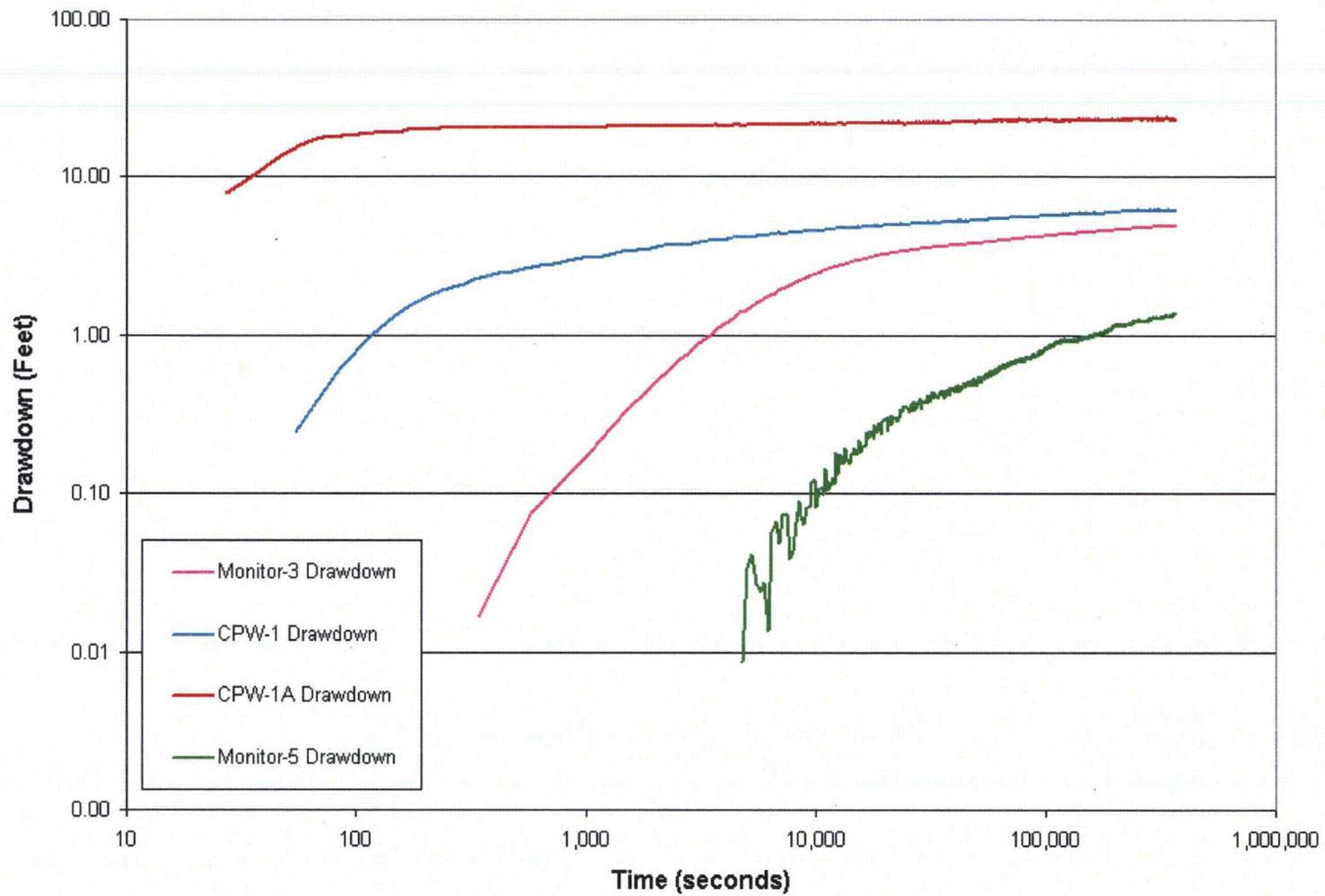
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 Crow Butte Project, Marsland Expansion Area,
 Dawes County, NE

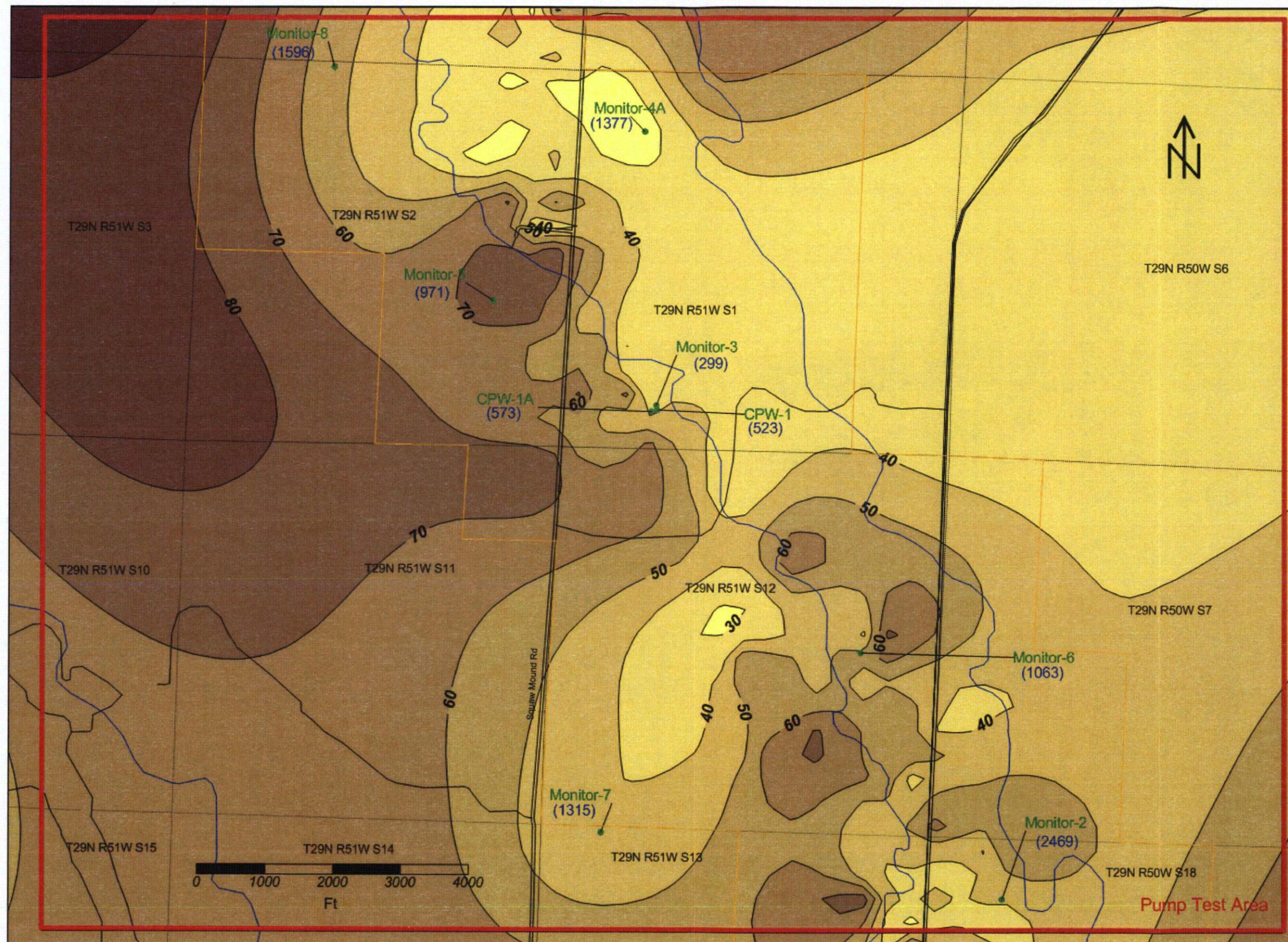


FIGURE:

17







Legend

Basal Chadron Sandstone Thickness (ft)

70

CPW-1A Transmissivity (573) (ft²/day)

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Basal Chadron Sandstone Isopach Showing Transmissivity Distribution

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FIGURE:
20