

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0136  
Expires July 31, 2010

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		CONFIDENTIAL		5. Lease Serial No. NDBLM023512
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone				6. If Indian, Allottee or Tribe Name
2. Name of Operator SM ENERGY COMPANY		Contact: JOY TORGERSON E-Mail: jtorgerson@sm-energy.com		7. If Unit or CA Agreement, Name and No. NDM 101263
3a. Address BILLINGS, MT 59103-7168		3b. Phone No. (include area code) Ph: 406-869-8644 Fx: 406-245-9106		8. Lease Name and Well No. JORGENSEN FEDERAL (*MWP*) 14-19H
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface SWSE 350FSL 2290FEL 47.704028 N Lat. 102.886889 W Lon At proposed prod. zone: NWNE 223 FNL 2290 FEL, Section 30				9. API Well No. 33-053-04518-00-X1
14. Distance in miles and direction from nearest town or post office** 24.5 MILES FROM WATFORD CITY, ND				10. Field and Pool, or Exploratory BEAR DEN
15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 350'		16. No. of Acres in Lease 200.00		11. Sec., T., R., M., or Blk. and Survey or Area Sec 19 T149N R95W Mer 5PM SME: FEE
18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft. 1104'		19. Proposed Depth 21255 MD 10938 TVD		12. County or Parish MCKENZIE
21. Elevations (Show whether DF, KB, RT, GL, etc.) 2368 GL		22. Approximate date work will start 11/01/2012		13. State ND
				17. Spacing Unit dedicated to this well 1280.00 by NDIC Order No. 15320
				20. BLM/BIA Bond No. on file MT1022
				23. Estimated duration 60 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1. Well plat certified by a registered surveyor.</li> <li>2. A Drilling Plan.</li> <li>3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).</li> </ul> | <ul style="list-style-type: none"> <li>4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).</li> <li>5. Operator certification</li> <li>6. Such other site specific information and/or plans as may be required by the authorized officer.</li> </ul> |
|--|--|

25. Signature (Electronic Submission)	Name (Printed/Typed) RANDY CARLSON Ph: 406-869-8716	Date 05/31/2012
Title DRILLING MANAGER		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) (BLM Approver Not Specified)	Date 12/12/2012
Title Office Dickinson		

Application approval does not warrant or certify the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Electronic Submission #139402 verified by the BLM Well Information System  
For SM ENERGY COMPANY, sent to the Dickinson  
Committed to AFMSS for processing by LISA WYCKOFF on 06/12/2012 (12LLW0024AE)

BHL: SWSE 215 FSL 2290 FEL, Section 31 T. 149N R95W

# SM ENERGY COMPANY

## APPLICATION FOR PERMIT TO DRILL

Jorgenson Federal 14-19H

Surface Location  
350' FSL & 2290' FEL  
Township 149 North, Range 95 West, Section 19: SW SE  
McKenzie County, North Dakota

### TABLE OF CONTENTS

Form 3160-3

#### Drilling Plan

- Horizontal Drilling Program
- Horizontal Directional Plan
- Blowout Preventer / Choke Manifold Schematics
- H2S Drilling Operations and Contingency Plan

#### Surface Use Plan

- Well Location Plat
- Section Breakdown Plats
- Pad Layout
- Typical Cross Sections
- Access Road Layout
- Typical Road Access
- Rig Layout
- Production Layout
- Final Reclamation Layout
- Directions
- County Access Map
- Quad Access Map
- Topographic Map/One Mile Radius
- Operator Certification

Request for Suspension of Operations

PAYMENT AUTHORIZATION -- Please charge the APD Fee to our credit card on file

# WELL LOCATION PLAT

SM ENERGY COMPANY

550 NORTH 31st STREET BILLINGS, MT 59101

## JORGENSEN FEDERAL 14-19H

350 feet from the south line and 2290 feet from the east line (surface hole location Section 19)

215 feet from the south line and 2290 feet from the east line (bottom hole location Section 31)

Section 19, T149N, R95W - 5th Principal Meridian

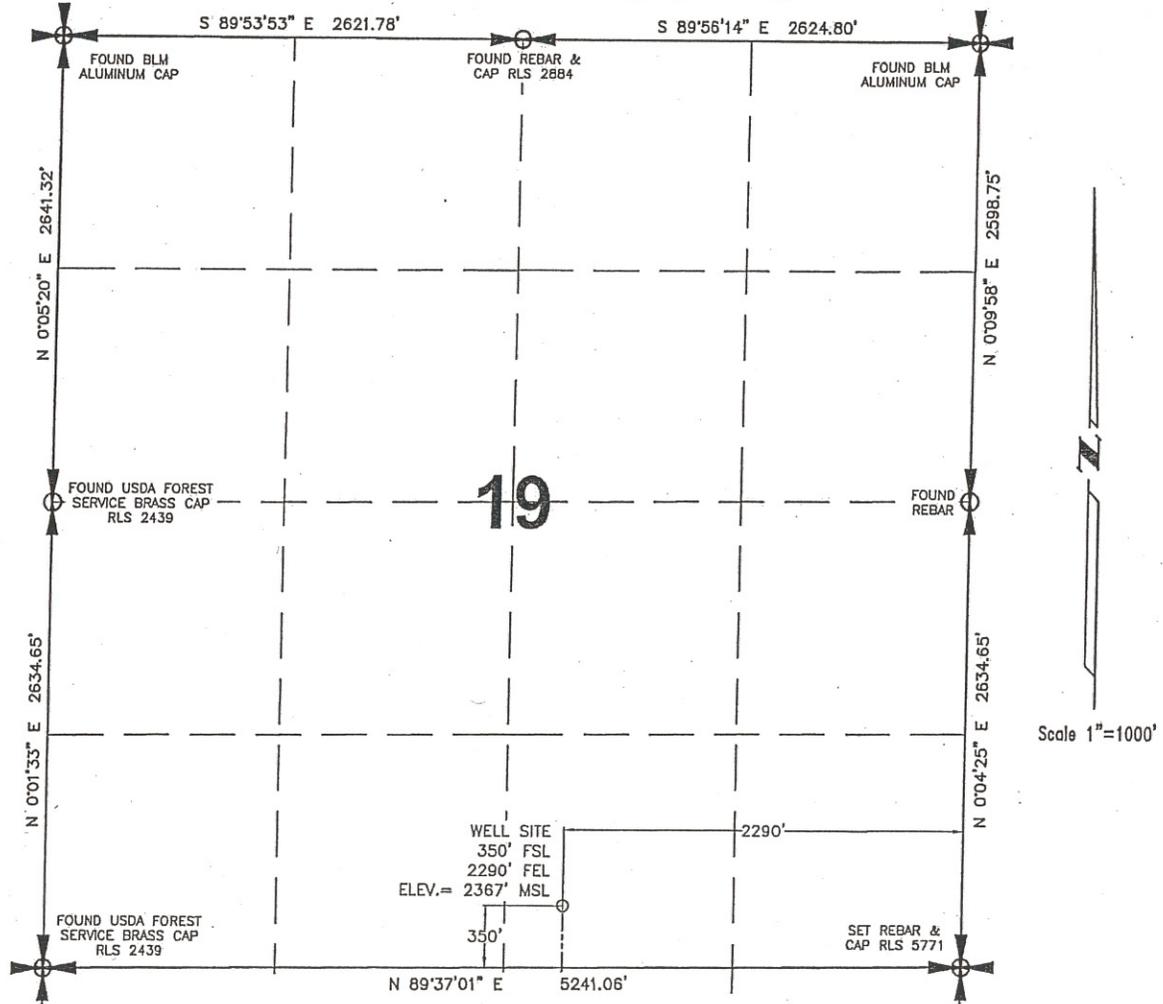
McKenzie County, North Dakota

Surface Owner at well site - William Jorgenson

Latitude 47°42'14.50" North - Longitude 102°53'12.80" West (surface hole location Section 19)

Latitude 47°40'29.35" North - Longitude 102°53'13.17" West (bottom hole location Section 31)

[derived from N.G.S. O.P.U.S. Solution REF FRAME: NAD\_83 (CORS96)(EPOCH:2002.0000)]



NOTE: All land corners are assumed unless otherwise noted. Location shown hereon is a preliminary staked location and is not an as-built.

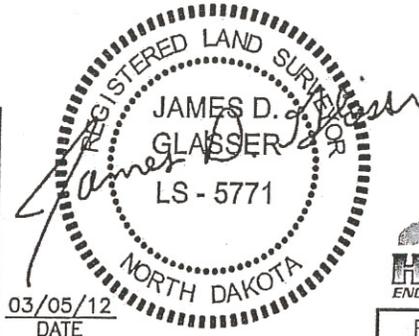
I, James D. Glasser, Registered Land Surveyor, N.D. No. 5771, do hereby certify that the well plat shown hereon was made by me, or under my direction, and is true and correct to the best of my knowledge and belief.

JAMES D. GLASSER 5/18/10

Surveyed by N.D.R.L.S. #5771 Date

Vertical Control Datum Used  
Sea-Level Datum of NAVD 88  
Based on elevation derived from OPUS Solution on GPS Base Station (Base) in the NE $\frac{1}{4}$ SE $\frac{1}{4}$  of Section 25, T149N, R96W, 5th P.M. located N26°47'38"W a distance of 2794.25' from the southeast corner of said Section 25 being at 2524.19' Elevation MSL.

HIGHLANDS  
ENGINEERING &  
SURVEYING, PLLC  
253 24th Street East  
Dickinson, ND 58601  
701.483.2444 office  
701.483.2610 fax  
www.highlandseng.com



PROJECT NO. 101535

# HORIZONTAL SECTION PLAT

SM ENERGY COMPANY

550 NORTH 31st STREET BILLINGS, MT 59101

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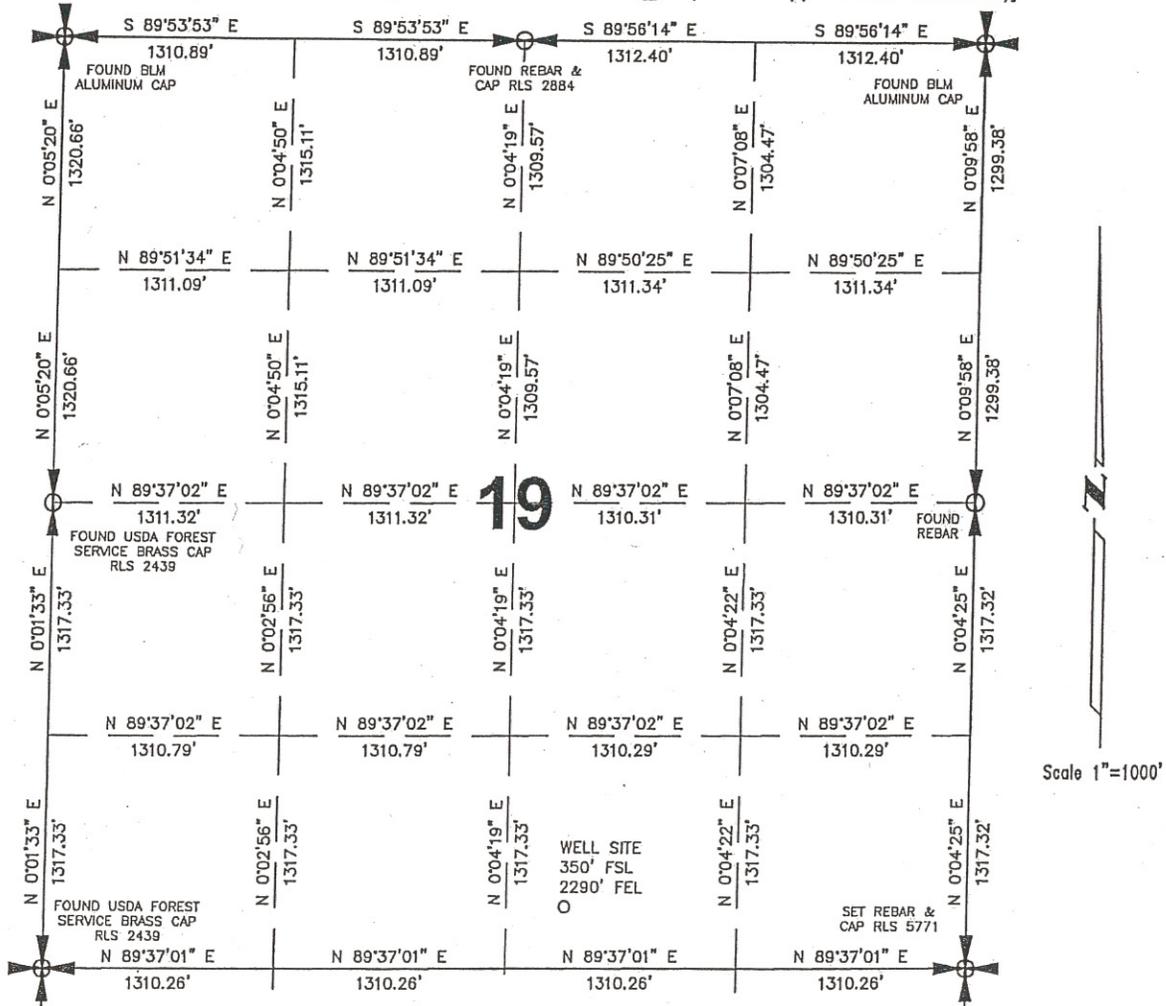
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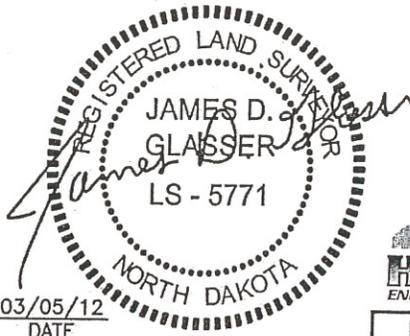
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All corners shown on this plat were found in the field during SM Energy Company Jorgenson Federal 14-19H oil well survey on March 16 & May 18, 2010. Distances to all others are calculated.

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03/05/12  
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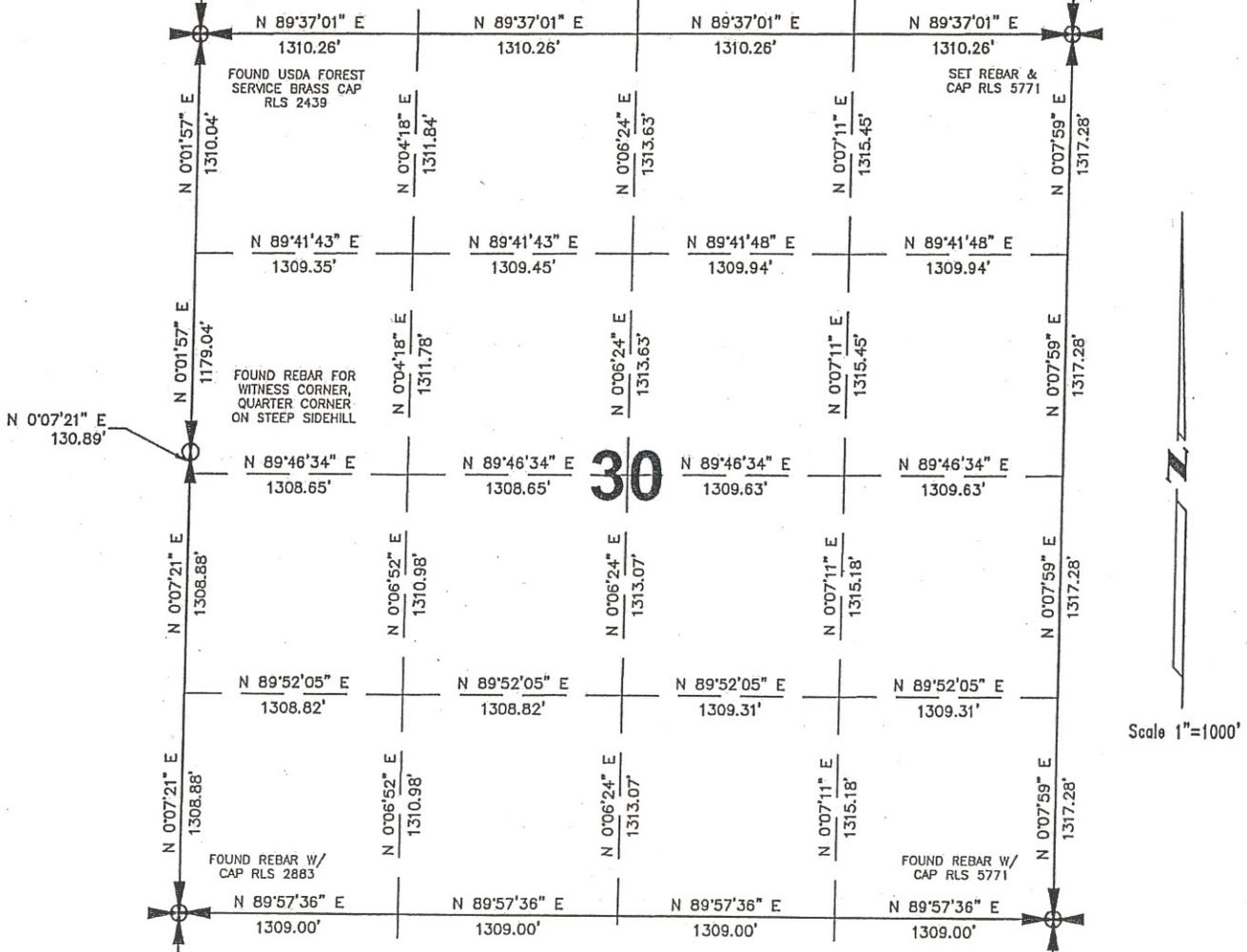
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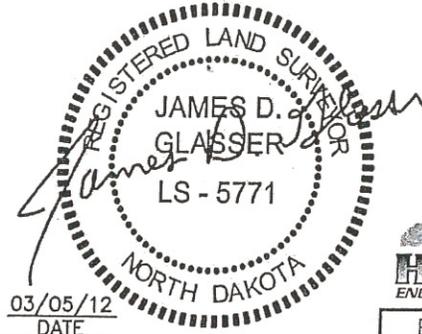


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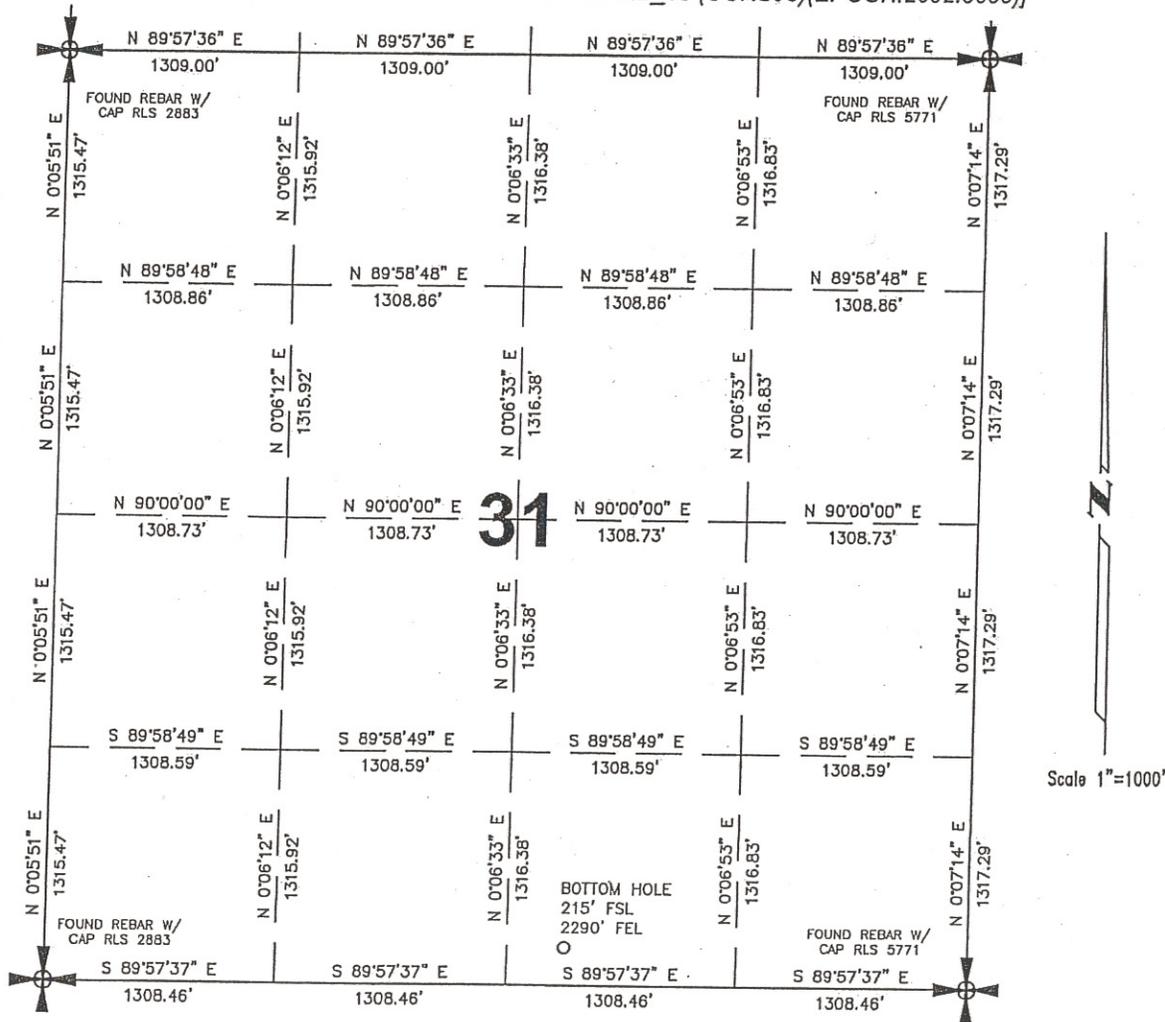
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REGISTERED LAND SURVEYOR  
JAMES D. GLASSER  
LS - 5771  
NORTH DAKOTA  
03/05/12  
DATE

HIGHLANDS  
ENGINEERING & SURVEYING, PLLC

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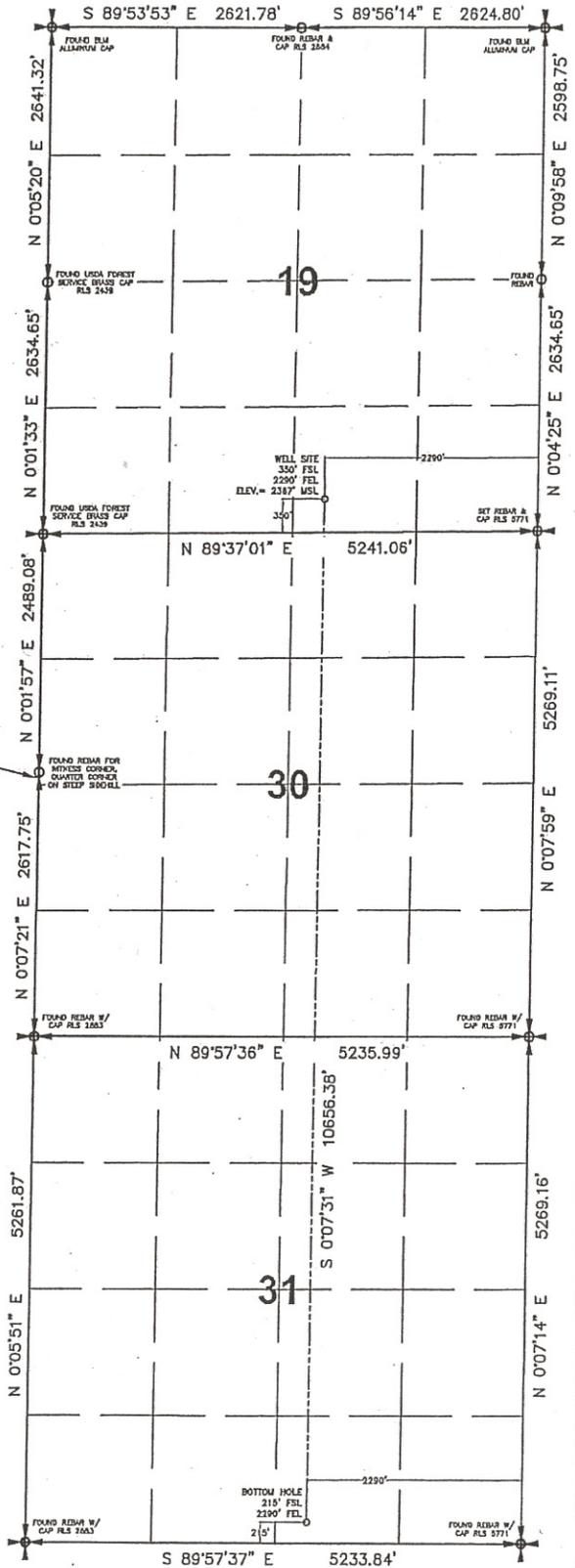
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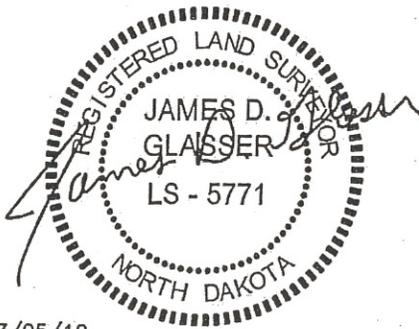
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N 0°07'21" E  
130.89'

Scale 1"=1800'



03/05/12  
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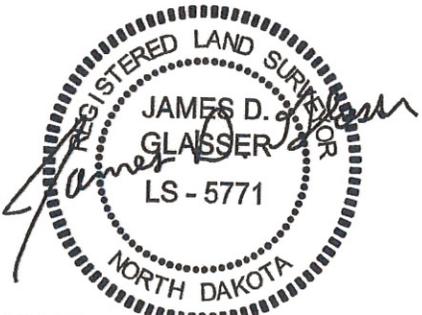
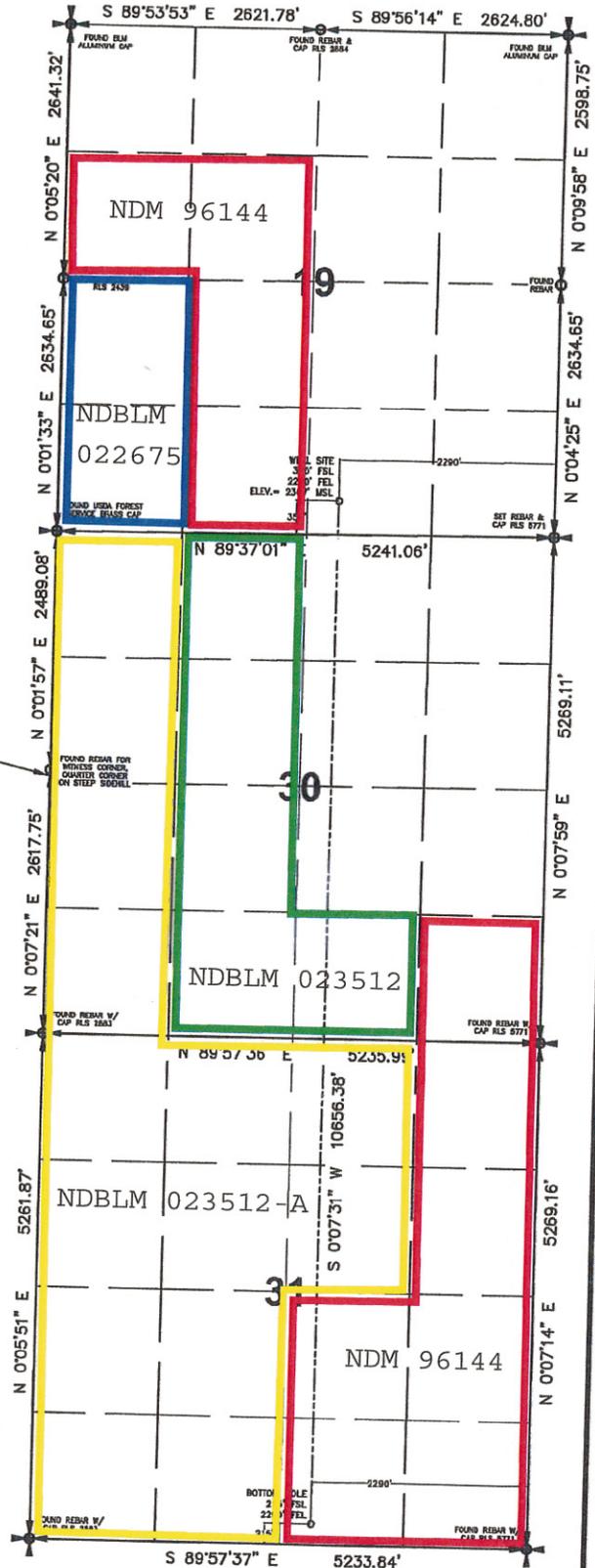
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PROJECT NO. 101535

SM ENERGY COMPANY  
**JORGENSEN FEDERAL 14-19H**  
**350' FSL & 2290' FEL**

*SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
 McKenzie County, North Dakota*

EXISTING SITE ELEVATION	2,366.6' MSL
PROPOSED PAD ELEVATION	2,367.6' MSL

EXCAVATION (INCLUDES 6" TOPSOIL STRIPPING)	24,373 CY
PLUS PIT	3,555 CY
	27,928 CY

EMBANKMENT	15,822 CY
PLUS SHRINKAGE (30%)	4,747 CY
	20,569 CY

STOCKPILE PIT	3,555 CY
STOCKPILE TOP SOIL (6")	3,350 CY

ROAD EMBANKMENT OR STOCKPILE FROM PAD	454 CY
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DISTURBED AREA FROM PAD AND STOCKPILE	4.77 ACRES
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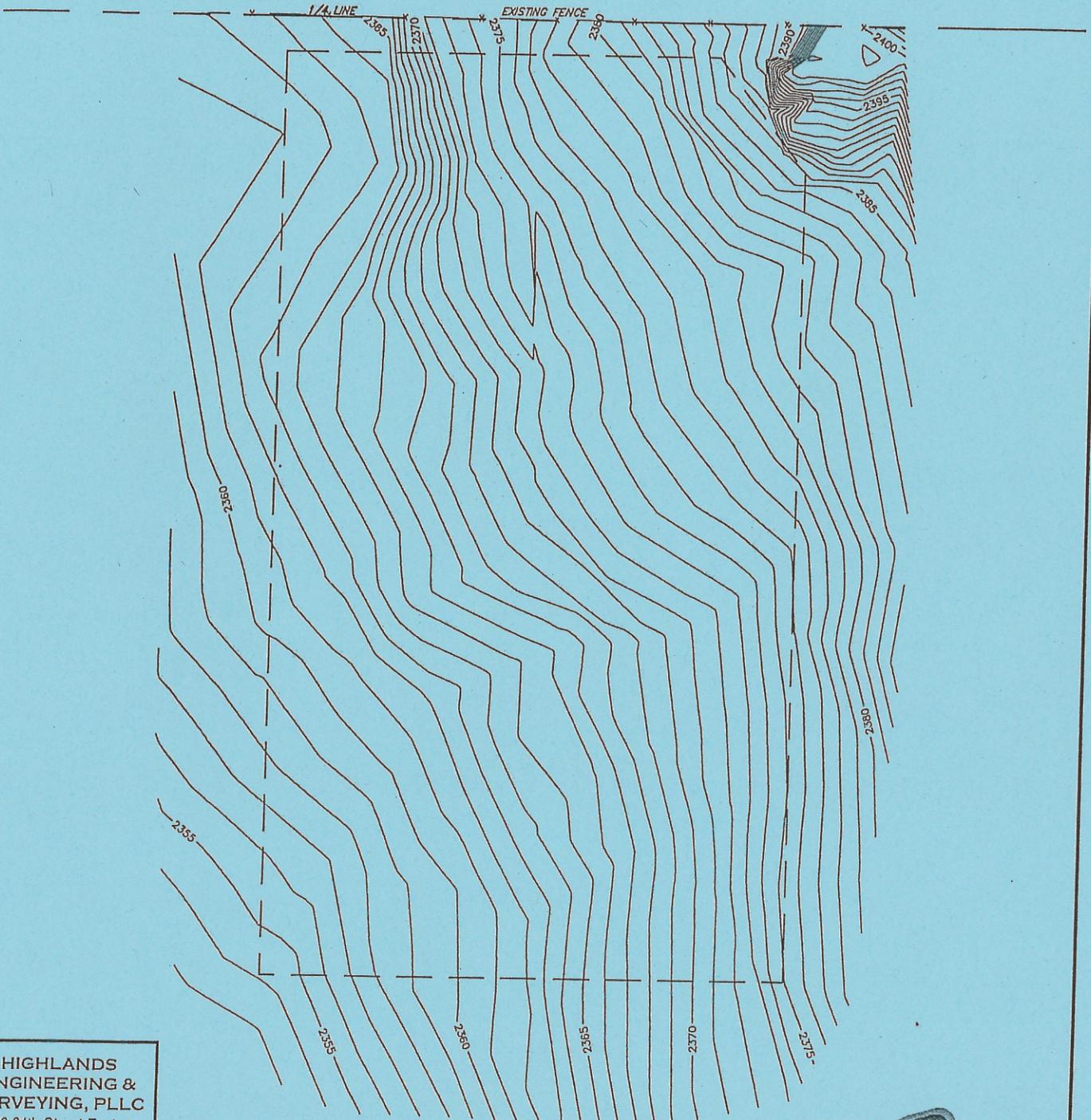
**NOTE:** REQUIRED EMBANKMENT IS CALCULATED AFTER 6" TOPSOIL IS STRIPPED FROM THE LOCATION.

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[www.highlandseng.com](http://www.highlandseng.com)

SHEET NAME: QUANTITIES	DATE: 03/05/12	SCALE: NONE	PROJ. NO. 101535	SHEET NO. 1
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SM ENERGY COMPANY  
JORGENSEN FEDERAL 14-19H  
350' FSL & 2290' FEL

SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
McKenzie County, North Dakota



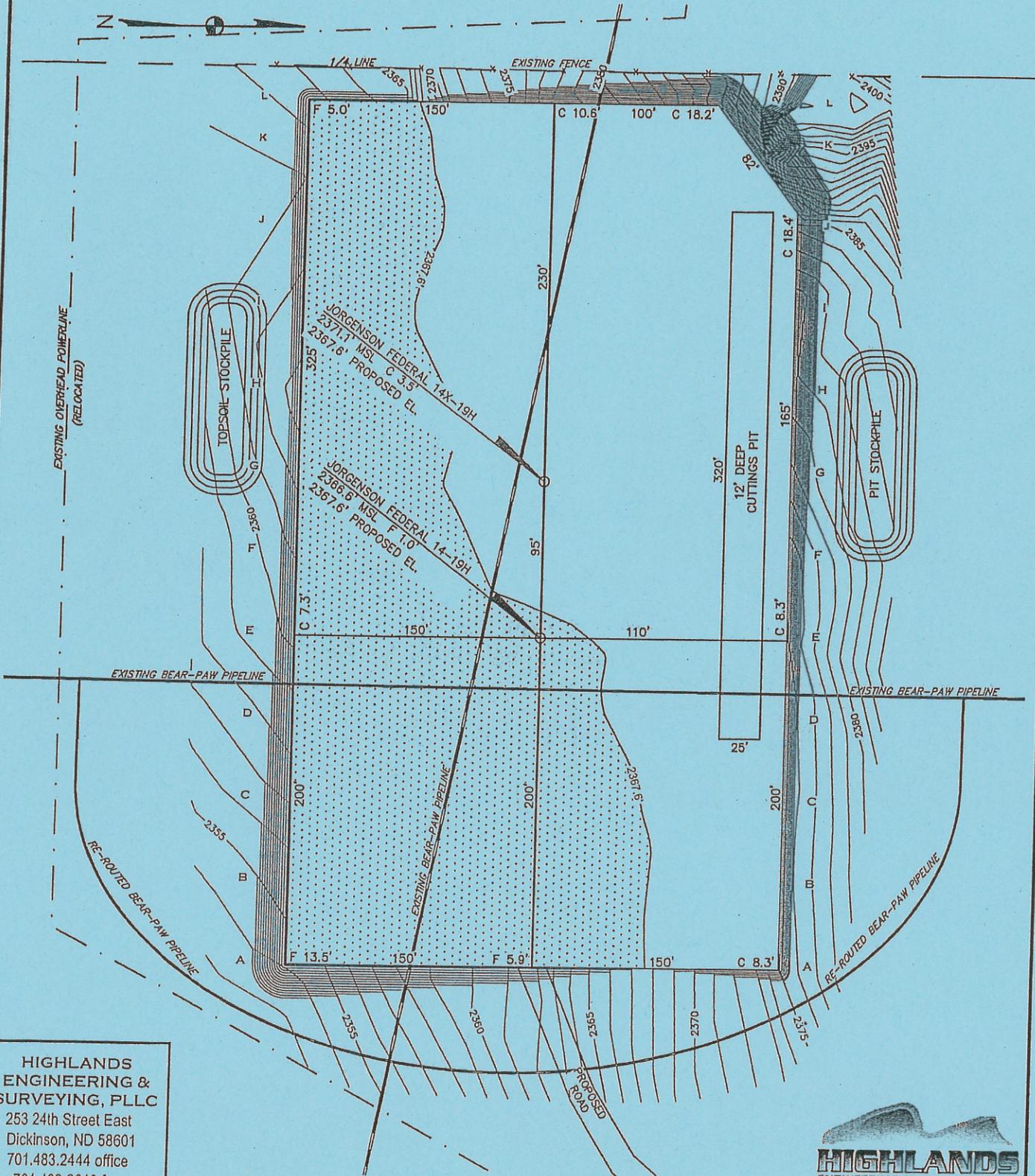
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SHEET NAME: ORIGINAL CONTOURS	DATE: 03/05/12	SCALE: 1"=80'	PROJ. NO. 101535	SHEET NO. 2
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SM ENERGY COMPANY  
 JORGENSEN FEDERAL 14-19H  
 350' FSL & 2290' FEL

SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
 McKenzie County, North Dakota



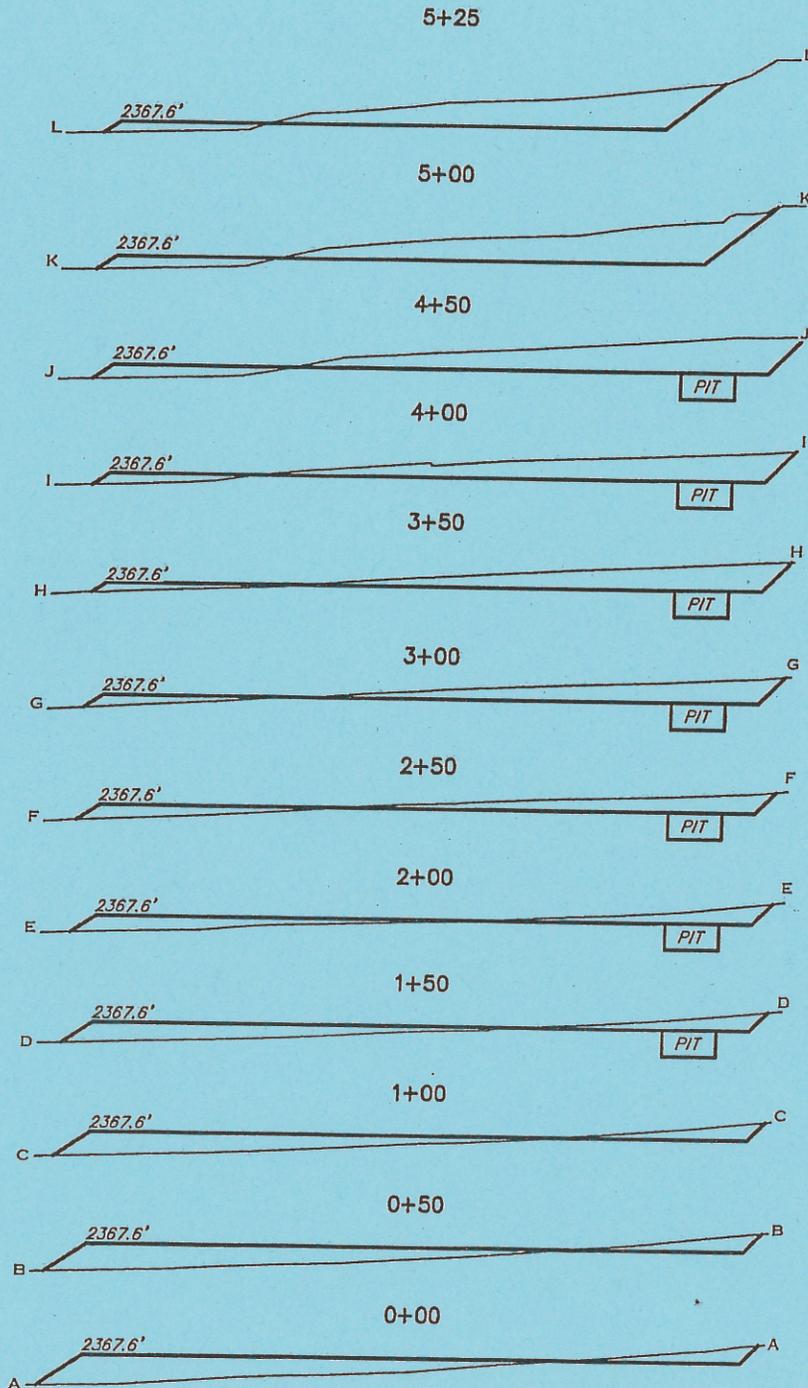
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SHEET NAME: PAD LAYOUT	DATE: 03/05/12	SCALE: 1"=80'	PROJ. NO. 101535	SHEET NO. 3
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**SM ENERGY COMPANY  
JORGENSEN FEDERAL 14-19H  
350' FSL & 2290' FEL**

SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
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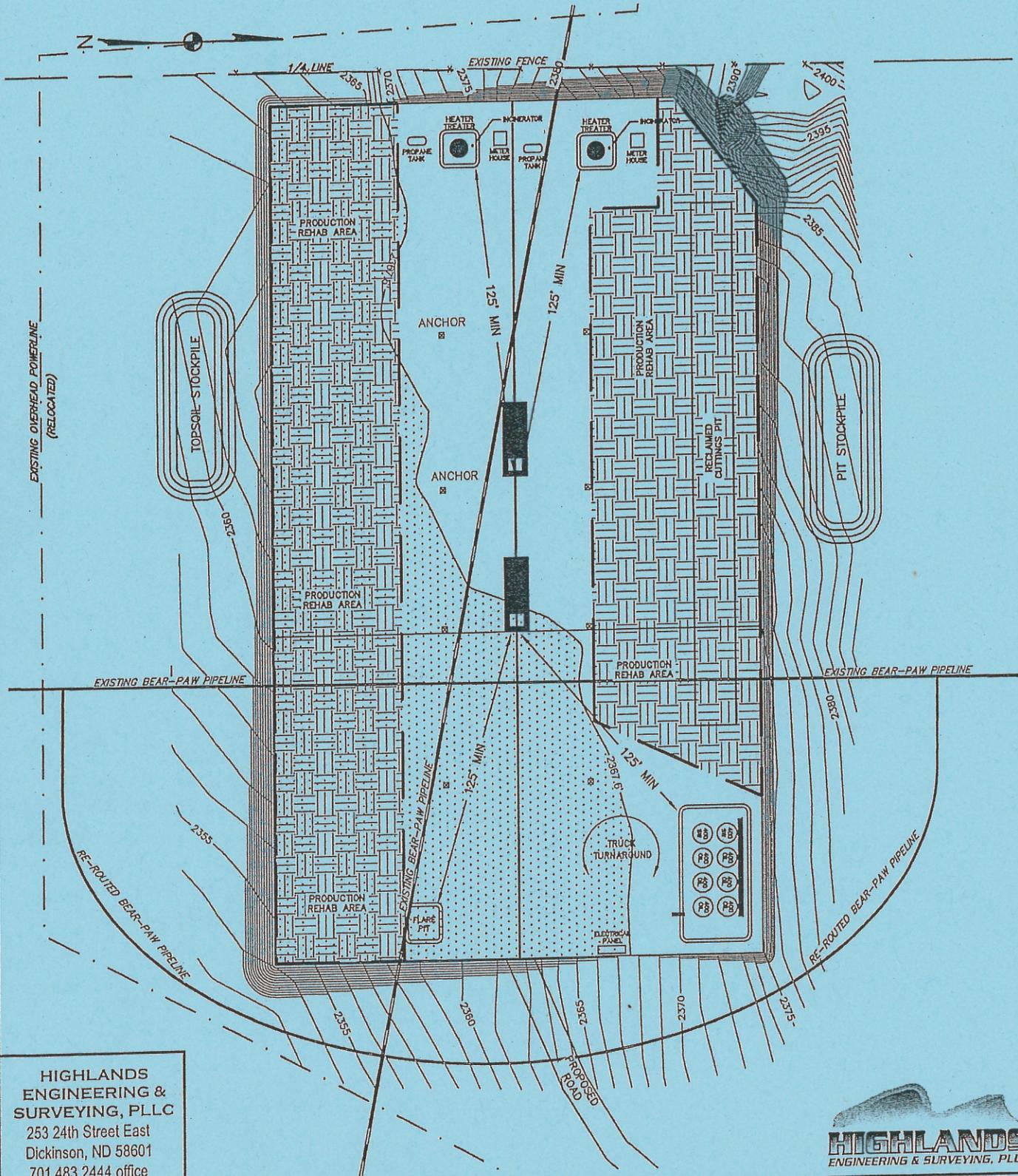


SHEET NAME: X-SECTION	DATE: 03/05/12	SCALE: 1"=80'	PROJ. NO. 101535	SHEET NO. 4
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 JORGENSEN FEDERAL 14-19H  
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SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
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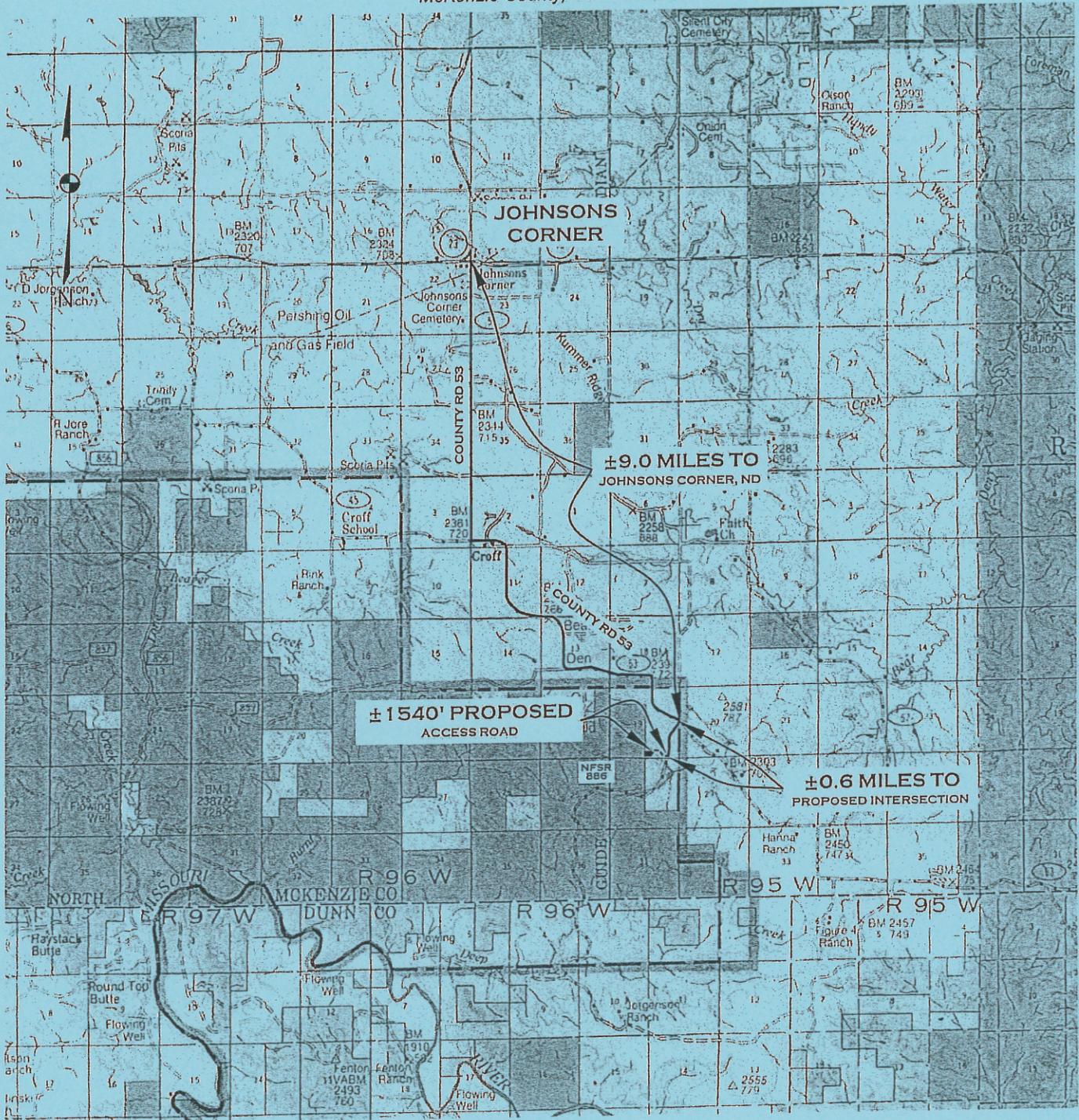
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SHEET NAME: PRODUCTION LAYOUT	DATE: REV. 5/23/12	SCALE: 1"=80'	PROJ. NO. 101535	SHEET NO. 6
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**SM ENERGY COMPANY  
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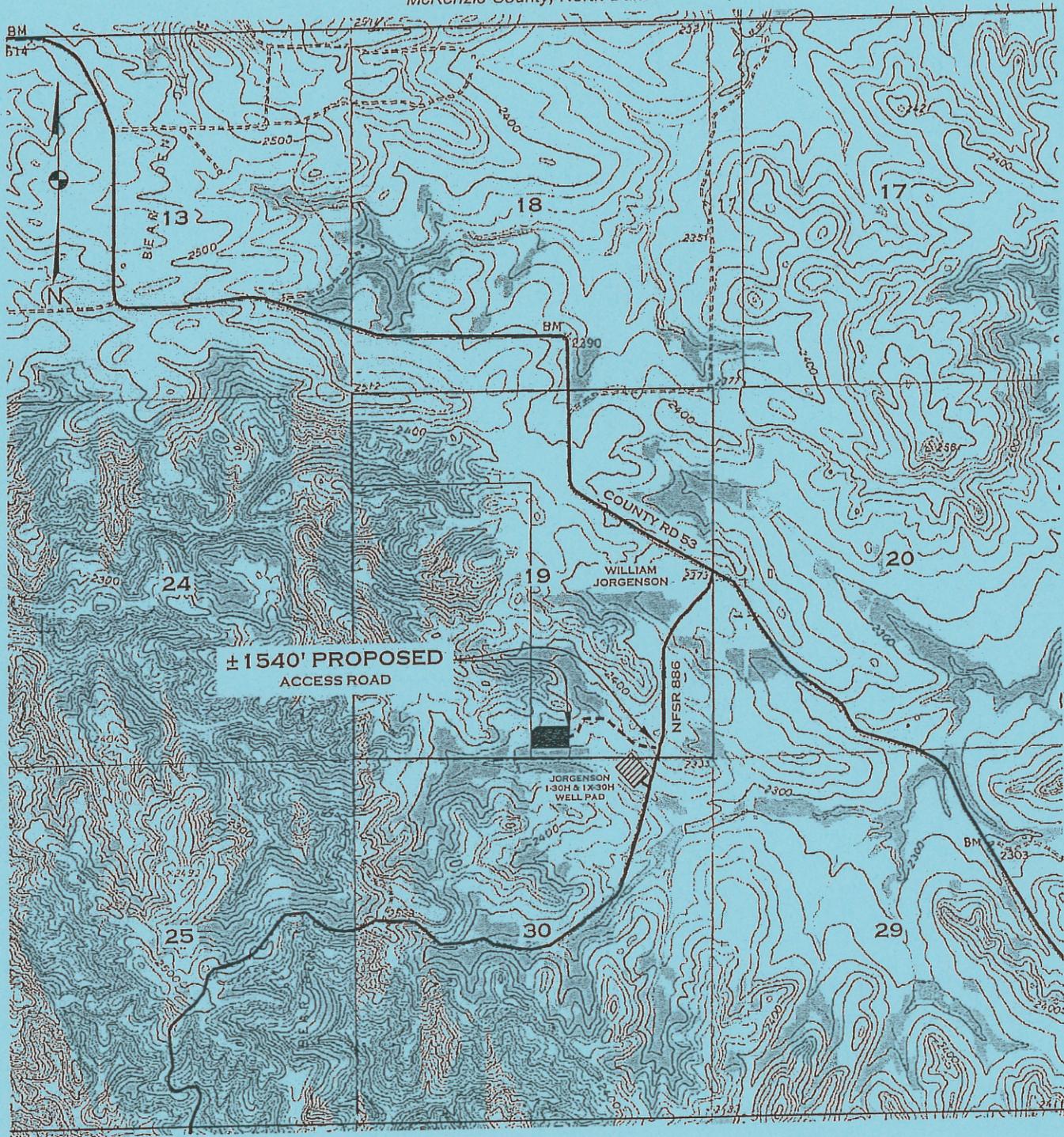
**LEGEND**  
 PROPOSED ROAD - - - - -  
 EXISTING ROAD —————



SHEET NAME: COUNTY ACCESS	DATE: 03/05/12	SCALE: 1/2"=MILE	PROJ. NO. 101535	SHEET NO. 7
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SM ENERGY COMPANY  
 JORGENSEN FEDERAL 14-19H  
 350' FSL & 2290' FEL

SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
 McKenzie County, North Dakota



± 1540' PROPOSED  
 ACCESS ROAD

COUNTY RD 53

WILLIAM JORGENSEN

NFR 886

JORGENSEN  
 130H & 1X30H  
 WELL PAD

**LEGEND**

PROPOSED ROAD - - - - -  
 EXISTING ROAD —————

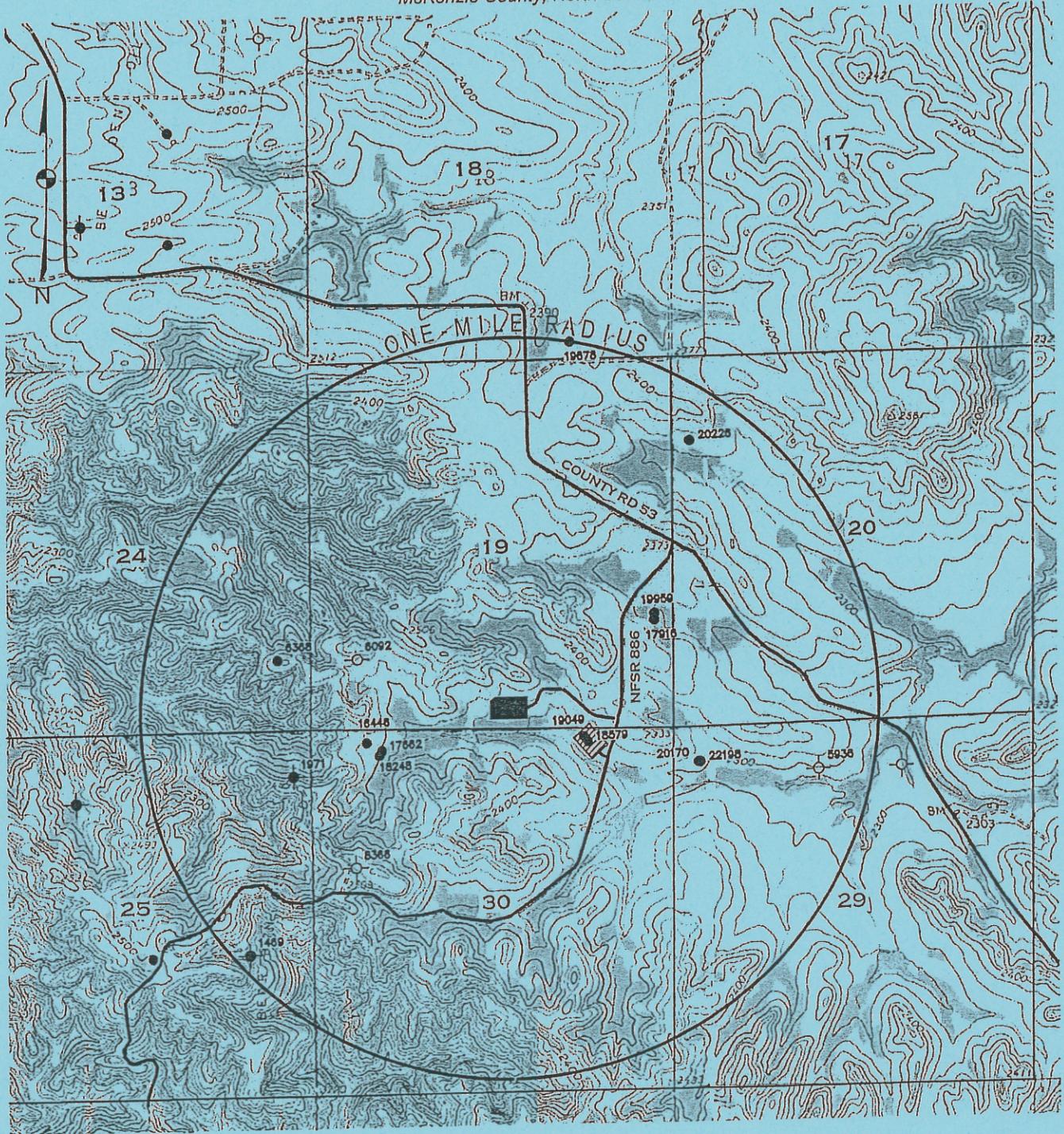
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SHEET NAME: QUAD ACCESS	DATE: 03/05/12	SCALE: 1"=2000'	PROJ. NO. 101535	SHEET NO. 8
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SHEET NAME: ONE-MILE RADIUS	DATE: 03/05/12	SCALE: 1"=2000'	PROJ. NO. 101535	SHEET NO. 9
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SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
 McKenzie County, North Dakota

**WELLS WITHIN ONE-MILE RADIUS**

File	Operator	Well Name	Section	Township	Range	Feet NS	FNSL	Feet EW	FEWL	Status
22198	NEWFIELD PRODUCTION CO.	MOBERG FED. 149-95-29-32-3H	29	149	95	502	N	372	W	Confidential
18248	SM ENERGY COMPANY	BEAR DEN FEDERAL 4Z-30H	30	149	95	368	N	970	W	A
18579	SM ENERGY COMPANY	JORGENSEN 1-30H	30	149	95	185	N	1225	E	A
6092	ADOBE RESOURCES CORP.	FEDERAL 1-24	19	149	95	1000	S	660	W	PNC
17916	XTO ENERGY INC.	VAN DYKE 43X-19	19	149	95	1535	S	270	E	A
19959	XTO ENERGY INC.	WALTON 43X-19	19	149	95	1625	S	268	E	Confidential
19678	HELIS OIL & GAS CO.	MOBERG 15-18H	18	149	95	250	S	1450	E	Confidential
17662	SM ENERGY COMPANY	BEAR DEN FEDERAL 4Y-30H	30	149	95	309	N	1016	W	A
5936	ASHLAND OIL, INC.	NELSEN 1-29	29	149	95	660	N	2055	E	DRY
6368	JETTISON, INC.	C.C.O.C. FEDERAL 1-24	24	149	96	1002	S	475	E	A
1469	FLYING J OIL & GAS, INC.	BEAR DEN UNIT 1	25	149	96	2080	S	910	E	PA
20170	NEWFIELD PRODUCTION CO.	MOBERG FED. 149-95-29-32-2H	29	149	95	500	N	340	W	Confidential
19049	SM ENERGY COMPANY	JORGENSEN 1X-30H	30	149	95	113	N	1288	E	A
1971	SM ENERGY COMPANY	BEAR DEN 2	25	149	96	660	N	259	E	PA
8366	FLYING J OIL & GAS, INC.	FEDERAL 1-30	30	149	95	1965	N	610	W	DRY
20226	HELIS OIL & GAS CO.	MOBERG 4-20/21H	20	149	95	1200	N	250	W	A

**HIGHLANDS**  
**ENGINEERING &**  
**SURVEYING, PLLC**  
 253 24th Street East  
 Dickinson, ND 58601  
 701.483.2444 office  
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## Legend

### wells

#### STATUS, WELL\_TYPE

* A, AGD	○ DRL, AI	○ LOC, GASD
⊗ A, AI	○ DRL, GASC	○ LOC, OG
⊗ A, CBM	○ DRL, GASD	○ LOC, SWD
⊗ A, DF	○ DRL, OG	○ LOC, WI
⊗ A, DFP	○ DRL, SWD	⊕ PA, DF
* A, GASC	○ DRL, WI	⊕ PA, GASC
* A, GASD	⊕ DRY, GASC	⊕ PA, GASD
* A, GASN	⊕ DRY, GASD	⊕ PA, GS
● A, OG	⊕ DRY, OG	⊕ PA, OG
△ A, SWD	⊕ DRY, ST	⊕ PA, SWD
⊗ A, WI	* EXP, GASD	⊕ PA, WI
⊗ A, WS	● EXP, OG	⊕ PA, WS
⊗ A, AI	△ EXP, SWD	○ PNC, GASD
⊗ AB, AI	⊗ EXP, WS	○ PNC, OG
⊗ AB, DF	⊗ IA, AI	○ PNC, SWD
⊗ AB, DFP	⊗ IA, CBM	⊗ TA, AI
* AB, GASC	⊗ IA, DF	⊗ TA, GASC
* AB, GASD	⊗ IA, DFP	⊗ TA, GASD
⊗ AB, GI	* IA, GASC	⊗ TA, OG
● AB, OG	* IA, GASD	⊗ TA, SWD
△ AB, SWD	● IA, OG	⊗ TA, WI
⊗ AB, WI	△ IA, SWD	⊗ TA, WS
⊗ AB, WS	⊗ IA, WI	⊗ TAO, GI
○ Confidential, Confidential	⊗ IA, WS	⊗ TAO, OG
	⊗ IA, AI	⊗ TAO, WI
	○ LOC, GASC	

A - Active, AB - Abandoned, DRI - Drilling, Dry - Dry, EXP - Expired, IA - Inactive, LOC - Location, PA - Producer Abandoned, PNC - Permit Now Cancelled  
TA - Temporarily Abandoned, TAO - Temporarily Abandoned Observation.

AGD - Acid Gas Disposal, AI - Air Injection, DF - Dump Flood, DFP - Dump Flood Producing, GASN - Nitrogen Gas Well, GASC - Gas Condensate, GASD - Gas Dry,  
GI - Gas Injection, GS - Gas Storage, OG - Oil or Gas Well, SWD - Salt Water Disposal, WI - Water Injection, WS - Water Supply, ST - Strat Test

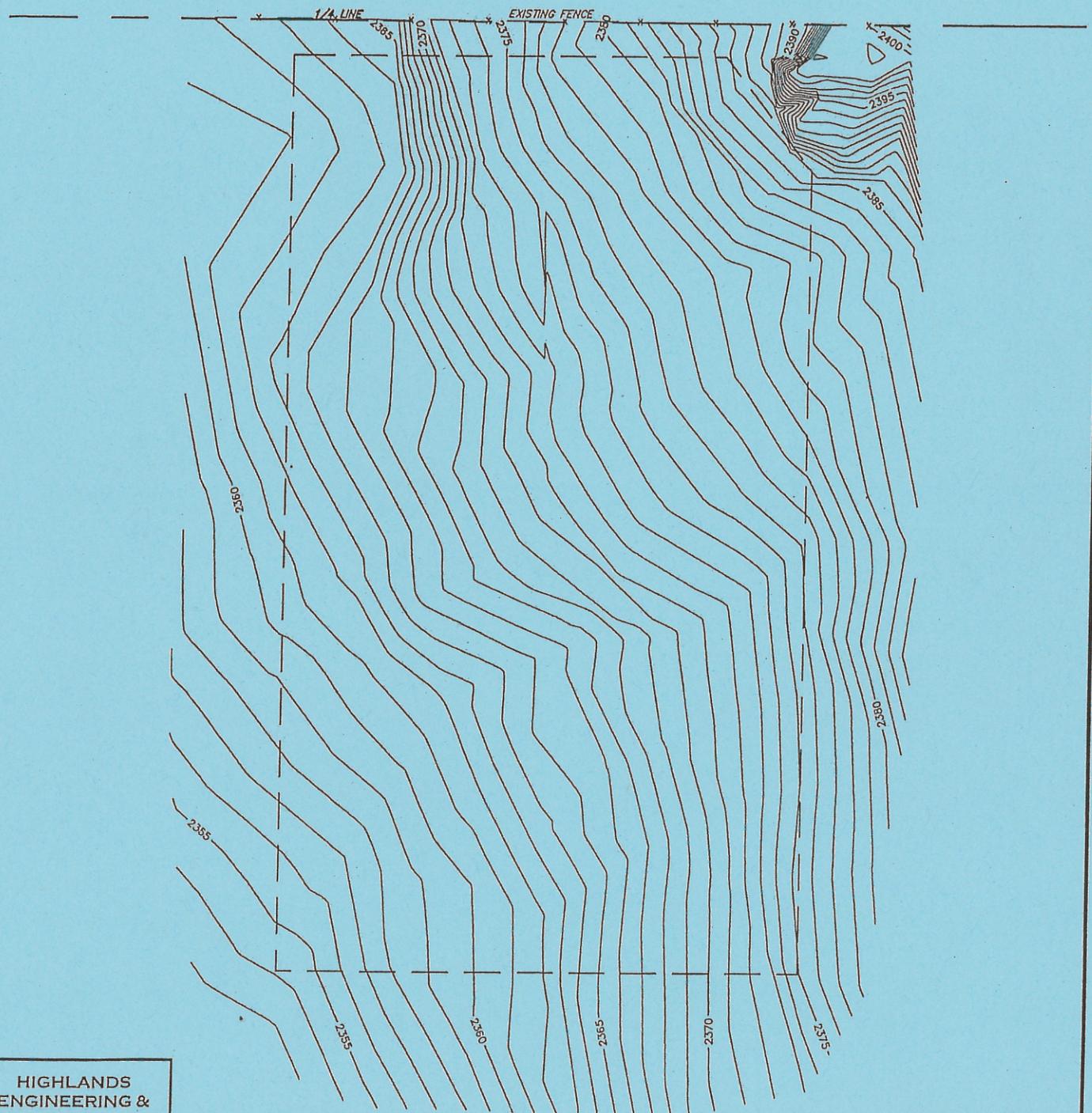
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SHEET NAME: GIS SYMBOLS	DATE: 03/05/12	SCALE: NONE	PROJ. NO. 101535	SHEET NO. 11
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SM ENERGY COMPANY  
 JORGENSEN FEDERAL 14-19H  
 350' FSL & 2290' FEL

SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
 McKenzie County, North Dakota



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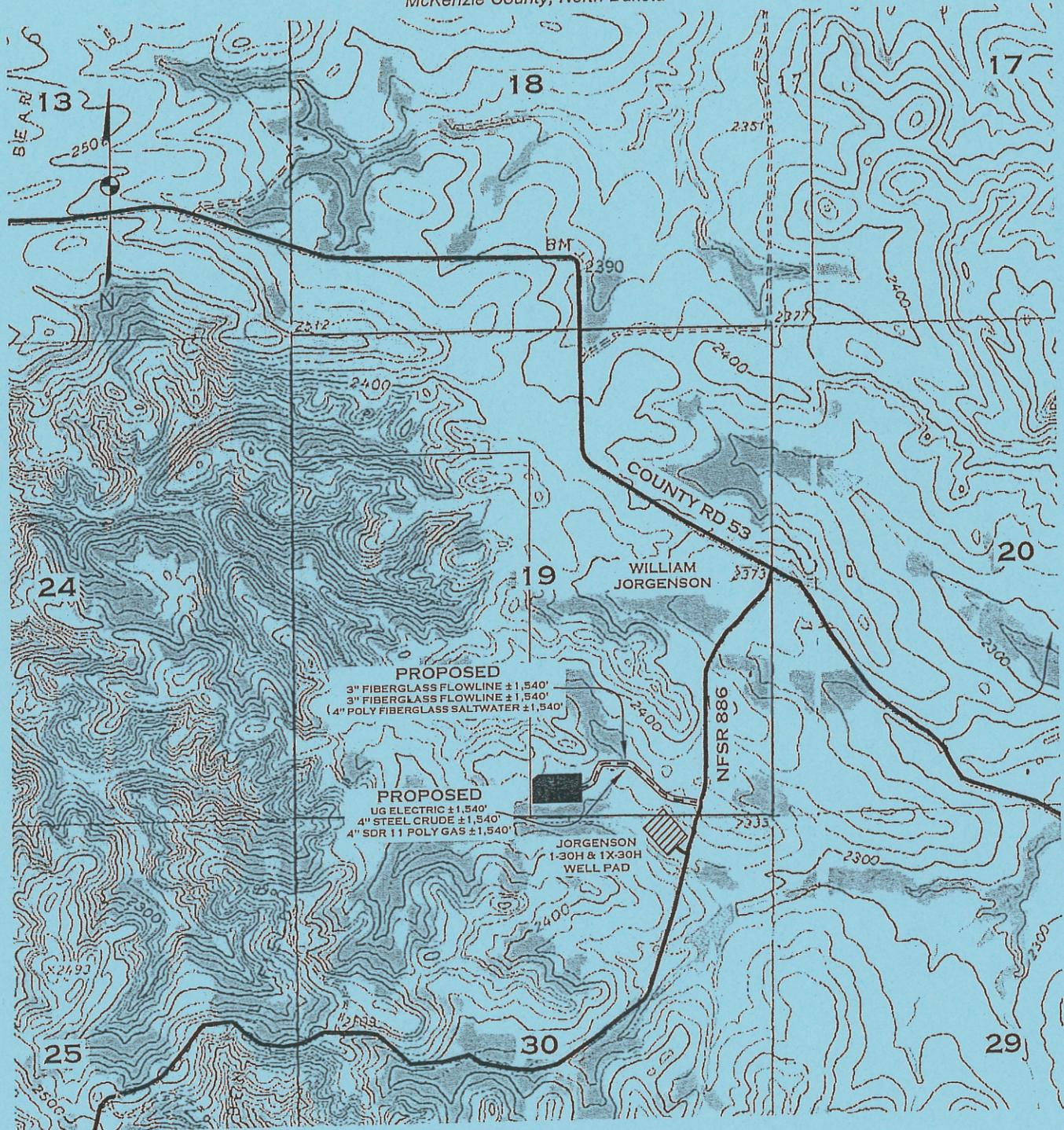


SHEET NAME: FINAL RECLAMATION	DATE: 03/05/12	SCALE: 1"=80'	PROJ. NO. 101535	SHEET NO. 12
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SM ENERGY COMPANY  
 JORGENSEN FEDERAL 14-19H  
 350' FSL & 2290' FEL

SE 1/4 Section 19, T149N, R95W - 5th Principal Meridian  
 McKenzie County, North Dakota



**PROPOSED**  
 3" FIBERGLASS FLOWLINE ±1,540'  
 3" FIBERGLASS FLOWLINE ±1,540'  
 4" POLY FIBERGLASS SALTWATER ±1,540'

**PROPOSED**  
 UG ELECTRIC ±1,540'  
 4" STEEL CRUDE ±1,540'  
 4" SDR 11 POLY GAS ±1,540'

JORGENSEN  
 1-30H & 1X-30H  
 WELL PAD

**LEGEND**

PROPOSED ROAD -----  
 EXISTING ROAD \_\_\_\_\_

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SHEET NAME: UTILITY MAP	DATE: 03/05/12	SCALE: 1"=1500'	PROJ. NO. 101535	SHEET NO. 14
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ONSHORE OIL & GAS ORDER NO. 1  
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LEASE NO. NDM-023512 & ND-023512A  
SWSE SEC. 19, T149N-R95W  
McKENZIE CO., NORTH DAKOTA

**EXHIBIT B**

**DRILLING PROGRAM**

**JORGENSEN FEDERAL 14-19H WELL  
SWSE SEC. 19, T149N-R95W  
McKENZIE CO., NORTH DAKOTA**

**1. Estimated Tops of Important Geologic Markers**

<b><u>Formation</u></b>	<b><u>Depth*</u></b>	<b><u>Sea Level Datum</u></b>
Dakota Sand	5335	-2951
Dunham Salt	6572	-4188
Spearfish	6736	-4352
Pine Salt	6932	-4548
Minnekahta	7135	-4751
Kibbey	8514	-6130
Charles	8654	-6270
Base Last Salt	9301	-6917
Ratcliffe	9433	-7049
Mission Canyon	9505	-7121
Lodgepole	10046	-7662
Carrington Shale	10896	-8512
Upper Bakken Shale	10911	-8527
Middle Bakken	10931	-8547
<b>Target</b>	10938	-8554
Lower Bakken Shale	10967	-8583

**Note: \* 17' KB. Estimated KB elev= 2384'**

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2. **Estimated Depths (Tops & Bottoms) of Anticipated Water, Oil, Gas, or Minerals; Operator's Plans for Protection**

<b><u>Formation</u></b>	<b><u>Top</u></b>	<b><u>Bottom</u></b>	<b><u>Contents</u></b>
Dakota Sand	5335	6216	Water
Ratliffe	9433	9505	Oil & Water
Mission Canyon	9505	10046	Oil & Water
Middle Bakken	10931	10967	Oil & Gas

Surface casing will be set at 2000' and cemented back to surface to protect any shallow fresh water sands. Intermediate (7") casing will be set at 11,194' MD (10,938' TVD) and cemented back to a depth of 4800' (top of the Dakota Sand is 5335').

3. **BOP Equipment**

SM Energy's minimum specifications for pressure control equipment on this well are as follows:

Ram Type: Hydraulic double, 5000 psi w.p. w/ 1 set pipe rams and 1 set blind rams.

Annular Type: 5000 psi w.p. bag type

Ram type preventers and associated equipment will be tested to approved stack working pressure if isolated by test plug or to 70 percent of internal yield pressure of casing if not isolated by a test plug. Pressure will be maintained for at least 10 minutes or until requirements of test are met, whichever is longer. If a test plug is utilized, no bleed-off pressure is acceptable. For a test not utilizing a test plug, if a decline in pressure of more than 10 percent in 30 minutes occurs, the test shall be considered to have failed. Valve on casing head below test plug will be open during testing of BOP stack.

**A remote controlled choke will be rigged up and tested before drilling out the surface casing.**

Annular type preventers will be tested to 50 percent of rated working pressure. Pressure will be maintained at least 10 minutes or until provisions of test are met, whichever is longer.

As a minimum, the above test shall be performed:

- a. when initially installed
- b. whenever any seal subject to test pressure is broken
- c. following related repairs and
- d. at 30-day intervals

Valves shall be tested from working pressure side during BOPE tests with all down stream valves open.

When testing the kill line valve(s) the check valve shall be held open or the ball removed.

Annular preventers shall be functionally operated at least weekly.

Pipe and blind rams shall be activated each trip, however, this function will not be performed more than once a day.

Pressure tests shall apply to all related well control equipment.

All of the above described tests and/or drills shall be recorded in the drilling log.

The choke manifold, BOP extension rods and handwheels will be located outside the substructure. The casing head on this well will be a **5000 psi** w.p. flanged head. The BOP will be flanged 5000 psi w.p. Kill line will be a minimum 2" with burst pressure rating of at least 5000 psi. These items will be pressure tested concurrently with BOP's. BOP and choke manifold sizes will be in accordance with API-RP-53. See attached schematic of BOPE.

- a) The size and rating of the BOP stack is shown on the attached diagram.
- b) A choke line and a kill line are to be properly installed. The kill line is not be used as a fill-up line.
- c) The accumulator system shall have a pressure capacity to provide for repeated operation of hydraulic preventers.
- d) Drill string safety valve(s) for all connections in use in the hole are to be maintained on the rig floor while drilling operations are in progress.

#### **4. Casing and Cementing Program**

- a) The proposed casing and cementing program shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. Determination of casing setting depth shall be based on all relevant factors, including; presence/absence of hydrocarbons; fracture gradients; usable water zones; formation pressures; lost circulation zones; other minerals; or other unusual characteristics. All indications of usable water shall be reported.
- b) Casing design shall assume formation pressure gradients of 0.44 to 0.50 psi per foot for exploratory wells (lacking better data).
- c) Casing design shall assume fracture gradients from 0.70 to 1.00 psi per foot for exploratory wells (lacking better data).
- d) Casing collars shall have a minimum clearance of 0.422 inches of all sides in the hole/casing annulus, with recognition that variances can be granted for justified exceptions.
- e) All waiting on cement times shall be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.
- f) All casing except the conductor casing, shall be new or reconditioned/ tested used casing that meets or exceeds API standards for new casing.
- g) The surface casing shall be cemented back to surface either during the primary cement job or by remedial cementing.
- h) All indications of usable water shall be reported to the authorized officer prior to running the next string of casing or before plugging orders are requested, whichever occurs first.
- i) Three centralizers will be run on the bottom three joints of surface casing with two additional centralizers run above the initial three joints.
- j) The intermediate casing will be centralized as follows: One spiral centralizer every other joint through the build section starting above the topmost shale up to the KOP. One hinge type, bow spring centralizer on every other joint across

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all salt sections. Confirm salt section depths with Geology prior to running casing.

- k) Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a suitable preflush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.
- l) All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.
- m) The casing setting depths are as follows:

<u>Purpose</u>	<u>Depth</u>	<u>Hole Size</u>	<u>O.D.</u>	<u>Weight</u>	<u>Type</u>	<u>New / Used</u>
Surface	0-2000'	13-1/2"	9-5/8"	36#	J-55 LT&C	New
Intermediate	0-11,194'	8-3/4"	7"	29 & 32#	HCL-80 LT&C	New
Liner	10,491' - 21,235'	6"	4-1/2"	13.5#	HCP-110 BTC	New

- n) The casing minimum design criteria is as follows:

**Surface Casing Design**

<u>Size</u>	<u>Interval</u>	<u>Weight</u>	<u>Grade</u>	<u>Coupling</u>	<u>I.D.</u>	<u>Drift</u>	<u>Make-up Torque (ft-lbs)</u>		
							<u>Minimum</u>	<u>Optimum</u>	<u>Max</u>
9-5/8"	0' to 2000'	36	J-55	LTC	8.921"	8.765"	3670	4890	6110

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9.0 ppg fluid on backside.  
 b) Burst pressure based on 9.0 ppg fluid with no fluid on backside.  
 c) Based on string weight in 8.5 ppg fluid at 2000' TVD, equals 62,647 lbs.

<u>Interval</u>	<u>Description</u>	<u>Collapse</u>	<u>Burst</u>	<u>Tension</u>
		(psi) a	(psi) b	(1000 lbs) c
0' to 2000'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.08	3520 / 3.62	453 / 7.23

**Intermediate Casing Design**

<u>Size</u>	<u>Interval</u>	<u>Weight</u>	<u>Grade</u>	<u>Coupling</u>	<u>I.D.</u>	<u>Drift</u>	<u>Make-up Torque (ft-lbs)</u>		
							<u>Minimum</u>	<u>Optimum</u>	<u>Max</u>

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7"	0-6452'	29	HCL-80	LTC	6.184"	6.059"	4480	5970	7460
7"	6452'-9421'	32	HCL-80	LTC	6.094"	5.969"	5080	6770	8460
7"	9421'-11194'	29	HCL-80	LTC	6.184"	6.059"	4480	5970	7460

**API Rating & Safety Factor**

- a) Assume full casing evacuation with 10 ppg fluid on backside. Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 4000 psig max press for cementing plus 10 ppg fluid in casing and 10 ppg fluid on backside.
- c) Based on string weight in 9.9 ppg fluid at 10,938' TVD, equals 283,069 lbs.

Interval	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
0-6452'	7" 29# HCL-80 LT&C	9200/1.61	7240/1.81	570/2.01
6452'-9421'	7" 32# HCL-80 LT&C	10,400/1.72	8160/2.04	655/2.31
9421'-11194'	7" 29# HCL-80 LT&C	9200/1.61	7240/1.81	570/2.01

- o) The proposed cement program is as follows:

**Surface**

0-2000'

**Type and Amount**

Cement back to surface w/ 366 sx Class "C" lead Cement and 300 sx Class "G" tail cement.

**Intermediate**

4800' – 11,194'

**Type and Amount**

Lead Cement: 198 Sacks Lite CRETE w/ 10% salt, 0.7% dispersant, 0.25% Fluid Loss, 0.4% Retarder 0.2% Anti-foam and 1/4#/sk Cellophane Flakes. Yield: 1.85 cf/sk, Wt: 11.5 ppg. Tail Cement: 698 Sacks Class G w/ 35% Silica Flour, 3% KCL, 0.2% Fluid Loss, 0.5% Dispersant, 0.8% Retarder, 1/4#/sk Cellophane Flakes. Yield: 1.59 cf/sk, Wt: 15.6 ppg.

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**Liner**

**Type and Amount**

10,491' – 21,235'

Not cemented

- p) After cementing but before commencing any test, the casing string shall stand cemented until the cement has reached a compressive strength of at least 500 psi at the shoe. WOC time shall be recorded in the driller's log.
- q) The following reports shall be filed with the District Manager within 30 days after the work is completed.
  - i) Progress reports, Form 3160-5 (formerly 9-331) "Sundry Notice and Reports on Wells", must include complete information concerning:
    - a. Setting of each string of casing, showing the size, grade, weight of casing set, hole size, settling depth, amounts and type of cement used, whether cement circulated or the top of the cement behind the casing, depth of cementing tools used, casing test method and results, and the date work was done. Show the spud date on the first reports submitted.
    - b. Temperature or bond logs must be submitted for each well where the casing cement was not circulated to the surface.
- r) Auxiliary equipment to be used is as follows:
  - 1. Kelly cock
  - 2. Stabbing valve

**5. Mud Program**

- a) The proposed circulating mediums to be employed while drilling are as follows:

<u>Interval</u>	<u>Mud Type</u>	<u>Mud Weight</u>	<u>Vis</u>	<u>Fluid Loss</u>
0 - 2000'	Fresh Water Gel	8.9 – 9.0	30 - 45	N/C
2000' -	Oilbase Invert	9.9 – 10.3	36 - 48	25

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11,194'				
11,194' –	Salt Brine	10.0 – 10.3	27 - 30	NC
21,255'				

There will be sufficient mud on location to control a blowout should one occur.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, static filtration loss, and Ph.

- b) Mud monitoring equipment used will be as follows:
  - i) Periodic checks of the mud system will be made each tour. The mud level will be checked visually and monitored with a PVT system.
- c) The concentration of hazardous substances in the reserve pit at the time of pit backfilling must not exceed the standards set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).
- d) All oil and gas drilling related CERCLA hazardous wastes/substances removed from a location and not reused at another drilling location must be disposed of at an EPA approved hazardous waste facility.

## 6. Evaluation Program

The type and amount of testing, coring and logging is as follows:

- a) No DST's will be run
- b) Open Hole Logs – None
- c) Cores - None
- d) The completion program is as follows:
  - i) Fracture stimulate the middle Bakken.
  - ii) Place on production.

7. **Abnormal Pressures and Hydrogen Sulfide Gas**

- a) Hydrogen sulfide gas may be encountered in the Madison formation. H<sub>2</sub>S safety equipment will be installed either 3 days or 500' above the top of the Madison formation.
- b) Any unconfined gas, which exceeds 20 ppm H<sub>2</sub>S gas, produced during testing or swabbing must be separated and flared.
- c) Warning signs must be placed at appropriate facilities for H<sub>2</sub>S.
- d) Proper breathing apparatus must be available and used when working in an H<sub>2</sub>S environment exceeding 20 ppm.
- e) A wind sock must be placed on the location as to be visible from everywhere on the location.
- f) All safety equipment will be installed and working prior to entering hydrogen sulfide zones.
- g) All flare systems shall be designed to gather and burn all gas. The flare line(s) discharge shall be located not less than 100 feet from the wellhead, having straight lines unless turns are targeted with running tees, and shall be positioned downwind of the prevailing wind direction and shall be anchored. The flare systems shall have an effective method for ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and to maintain a continuous flare.
- h) Anticipated Bottom Hole Temperature is estimated at 280 degrees F.

8. **Other Information and Notification Requirements**

- a) Drilling will commence on approximately July 1, 2012.

- b) It is anticipated that the drilling of this well will take approximately 30 days.
- c) Bottom hole pressure is  $\pm$  5800 psi.
- d) The following will be entered in the driller's log:
  - i) Blowout preventer pressure tests, including test pressures and results;
  - ii) Blowout preventer tests for proper functioning.
  - iii) Blowout prevention drills conducted;
  - iv) Casing run, including size, grade, weight, and depth set;
  - v) How the pipe was cemented, including amount of cement, type, whether cement circulated, location of the cementing tools, etc.
  - vi) Waiting on cement time for each casing string.
  - vii) Casing pressure tests after cementing, including test pressures and results.
- e) Section 102 (b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provision of the operation regulations at Title 43 CFR 3162.4-1( c ), requires that "not later than the 5<sup>th</sup> business day after any well begins production on which royalty is due anywhere on the lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5 or orally to be followed by a letter of sundry notice, of the date on which such production has begun or resumed."

The date on which production is commenced or resumed will be construed for oil wells as the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever first occurs; and, for gas sells as the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test

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tank, and for which a run ticket is required to be generated or, the date on which gas is first measured through permanent metering facilities, whichever first occurs.

If the operator fails to comply with these requirements in the manner and time allowed, the operator shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109 (c) (3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3163.4-1(b)(5) (ii).

- a) Notifications Requirements:
  - i) The BLM in Dickinson, ND (Phone 701-227-7700) will be notified verbally not more than 48 hours after the well is spudded, or on the next regular work day.
  - ii) The BLM will be notified verbally at least 48 hours prior to running/ cementing surface casing.
  - iii) For verbal plugging orders on drilling locations, the BLM will be notified 24 hours prior to plugging.

The following standards apply to the abandonment of newly drilled dry or non-productive wells in accordance with 43 CFR 3162.3-4. Approval shall be obtained prior to the commencement of abandonment. All formations bearing usable-quality water, oil, gas, or geothermal resources and/or a prospectively valuable deposit of minerals shall be protected. Approval may be given orally by the authorized officer before abandonment operations are initiated. This oral request and approval shall be followed by a written notice of intent to abandon filed not later than the fifth business day following oral approval. Failure to obtain approval prior to commencement of abandonment operations shall result in immediate assessment under 43 CFR 3153.1 (b) (3). The hole shall be in static condition at the time any plugs are placed (this does not pertain to plugging lost circulation zones). Within 30 days of completion of abandonment, a subsequent report of abandonment shall be filed.

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SWSE SEC 19-T149N-R95W  
McKENZIE COUNTY, ND**

**HORIZONTAL DIRECTIONAL PLAN**

SM Energy Company		
<b>Jorgenson Federal 14-19H</b>		
Location: SWSE Sec 19 - T149N - R95W	Pad Elev	2,367
Footage: 2290 F&E & 350 F&L	Rig KB	17
Elev: Graded Pad 2367, KB 2384	KB Elev	2,384
McKenzie County, ND		
Spacing Unit: Sec 30 & 31 - T149N-R95W		

Log Tops			
Base Fox Hills (top of Pierre Shale)	500	1,884	2,000 Surface pipe setting depth
Dakota	-2,951	5,335	4,800 Top of lead cmt (500' above Dakota)
Dunham Salt	-4,188	6,572	Top of 32# 120' above Dunham
Spearfish	-4,352	6,736	6,300 Top of Tail cmt (200' above Dunham)
Pine Salt	-4,548	6,932	
Opeche Salt	0	2,384	
Charles	-6,270	8,654	
Base Last Salt	-6,917	9,301	Bottom of 32# 120' Below BLS
U Bakken Shale	-8,527	10,911	
Lateral Target	-8,554	10,938	1,637 BLS - Target
L Bakken Shale	-8,583	10,967	

APPROX TOP OF 7" 32#	6,452		
APPROX BTM OF 7" 32#	9,421	72 JTS	

AVERAGE JT LENGTH ASSUMPTION 41

GREENHORN	4,530	805	-2,146
DAKOTA	5,335	881	-2,951
RIERDON	6,216	89	-3,832
PIPER	6,305	267	-3,921
DUNHAM SALT	6,572	164	-4,188
SPEARFISH	6,736	196	-4,352
PINE SALT	6,932	203	-4,548
MINNEKAHTA	7,135	1,379	-4,751
KIBBEY LIME	8,514	140	-6,130
CHARLES	8,654	647	-6,270
BASE LAST SALT	9,301	132	-6,917
RATCLIFFE	9,433	72	-7,049
MISSION CANYON	9,505	541	-7,121
LODGEPOLE	10,046	850	-7,662
CARRINGTON SHALE	10,896	4	-8,512
SCALLION	10,900	11	-8,516
UPPER BAKKEN SHALE	10,911	20	-8,527
MIDDLE BAKKEN	10,931	12	-8,547
TARGET	10,938		-8,554

# SM Energy Company

# WELL CONSTRUCTION DIAGRAM

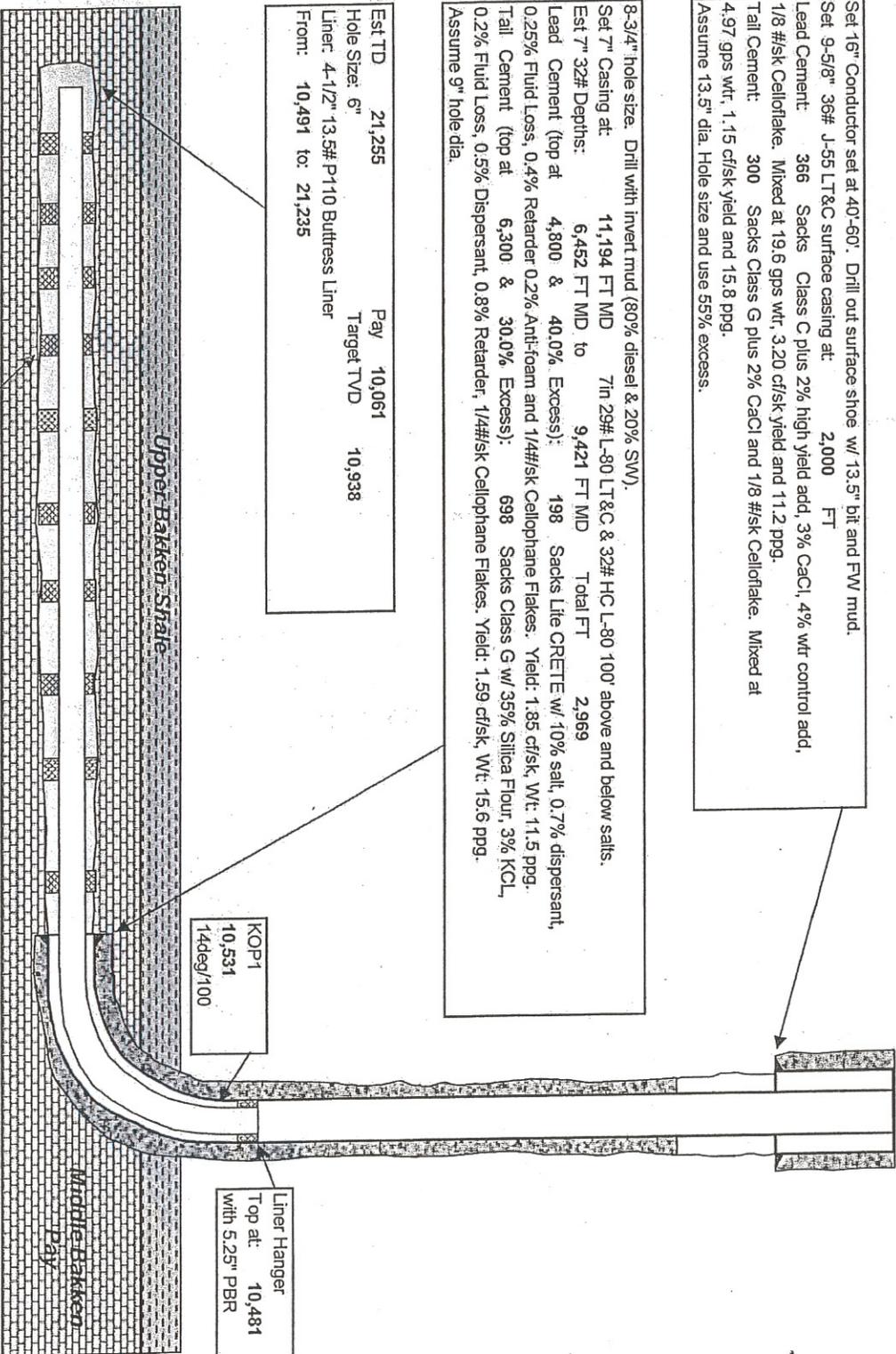


**Jorgenson Federal 14-19H**  
**Location:** SWSE Sec 19 - T149N - R95W  
**Footage:** 2290 FEL & 350 FSL  
**Elev:** Graded Pad 2367, KB 2384  
**McKenzie County, ND**

Set 16" Conductor set at 40'-60'. Drill out surface shoe w/ 13.5" bit and FW mud.  
 Set 9-5/8" 36# J-55 LT&C surface casing at 2,000 FT  
 Lead Cement: 366 Sacks Class C plus 2% high yield add, 3% CaCl, 4% wtr control add,  
 1/8 #/sk Celloflake. Mixed at 19.6 gps wtr, 3.20 cf/sk yield and 11.2 ppg.  
 Tail Cement: 300 Sacks Class G plus 2% CaCl and 1/8 #/sk Celloflake. Mixed at  
 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.  
 Assume 13.5" dia. Hole size and use 55% excess.

8-3/4" hole size. Drill with invert mud (80% diesel & 20% SW).  
 Set 7" Casing at 11,194 FT MD 7in 29# L-80 LT&C & 32# HC L-80 100' above and below salts.  
 Est 7" 32# Depths: 6,452 FT MD to 9,421 FT MD Total FT 2,969  
 Lead Cement (top at 4,800 & 40.0% Excess): 198 Sacks Lite CRETE w/ 10% salt, 0.7% dispersant,  
 0.25% Fluid Loss, 0.4% Retarder 0.2% Anti-foam and 1/4#/sk Cellophane Flakes. Yield: 1.85 cf/sk, Wt: 11.5 ppg.  
 Tail Cement (top at 6,300 & 30.0% Excess): 698 Sacks Class G w/ 35% Silica Flour, 3% KCL,  
 0.2% Fluid Loss, 0.5% Dispersant, 0.8% Retarder, 1/4#/sk Cellophane Flakes. Yield: 1.59 cf/sk, Wt: 15.6 ppg.  
 Assume 9" hole dia.

Est TD	21,255	Pay	10,061
Hole Size:	6"	Target TVD	10,938
Liner:	4-1/2" 13.5# P110 Buttress Liner		
From:	10,491 to: 21,235		



KOP1  
10,531  
14deg/100

Liner Hanger  
Top at: 10,481  
with 5.25" PBR

5-5/8" OD Water Swell Packers  
Intervals to be determined from drilling shows.



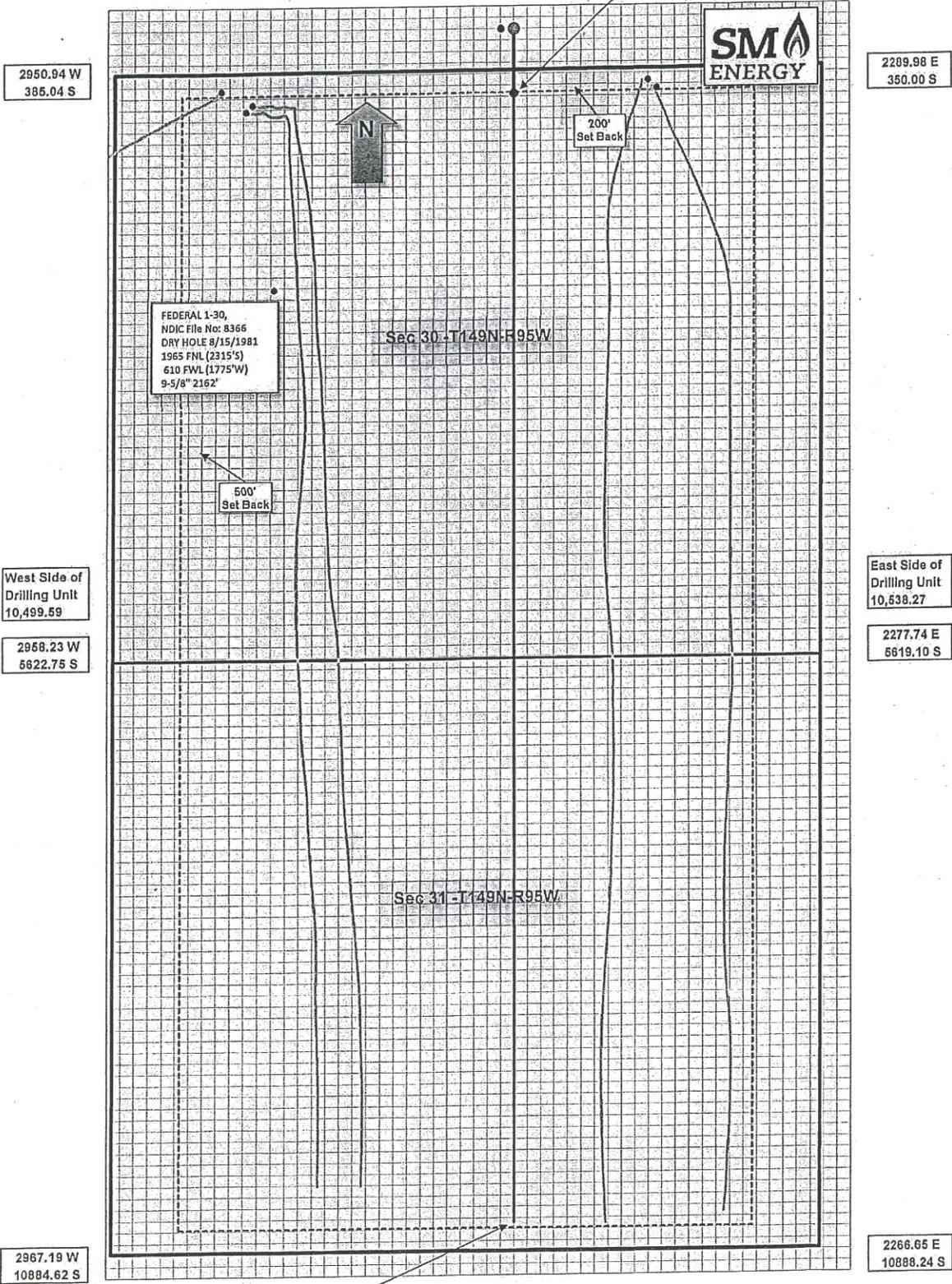
**SM Energy Company**

**DIRECTIONAL DRILLING PLOT - TOP VIEW**

Jorgenson Federal 14-19H  
 Location: SWSE Sec 19 - T149N - R95W  
 Footage: 2290 FEL & 350 FSL  
 Elev: Graded Pad 2367, KB 2384  
 McKenzie County, ND

North End of  
 Drilling Unit  
 5,241.06

7" Casing: 11,194 FT MD  
 Csg Shoe Coord: 0 E 573 S  
 BHL: 2290 FEL & 223 FNL  
 AZ to Shoe: 180.00



FEDERAL 1-30,  
 NDIC File No: 8366  
 DRY HOLE 8/15/1981  
 1965 FNL (2315'S)  
 610 FWL (1775'W)  
 9-5/8" 2162'

Sec 30 - T149N-R95W

Sec 31 - T149N-R95W



2950.94 W  
 385.04 S

2289.98 E  
 350.00 S

West Side of  
 Drilling Unit  
 10,499.59

East Side of  
 Drilling Unit  
 10,538.27

2958.23 W  
 5622.75 S

2277.74 E  
 5619.10 S

2967.19 W  
 10884.62 S

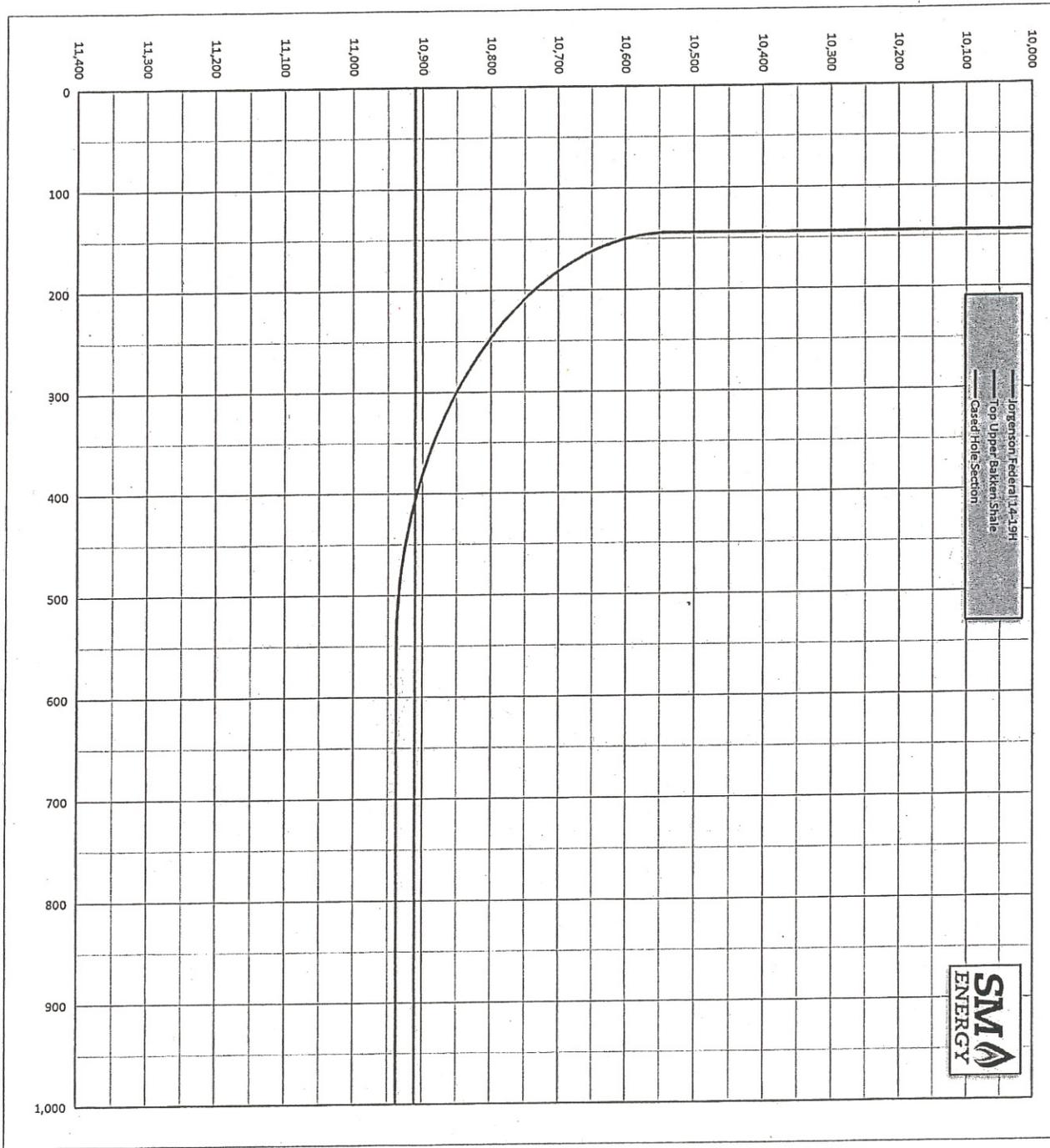
2266.65 E  
 10888.24 S

Est. TD: 21,255 FT MD  
 FT of Pay 10,081 FT  
 BH Target Coord: 0 E 10634 S  
 BH Target: 2290 FEL & 215 FSL

South End of  
 Drilling Unit  
 5,233.84

DIRECTIONAL PLOT - SIDE VIEW  
Jorgenson Federal 14-19H

Vertical Section at: 180.00 Azimuth vs. TVD



SM Energy Company

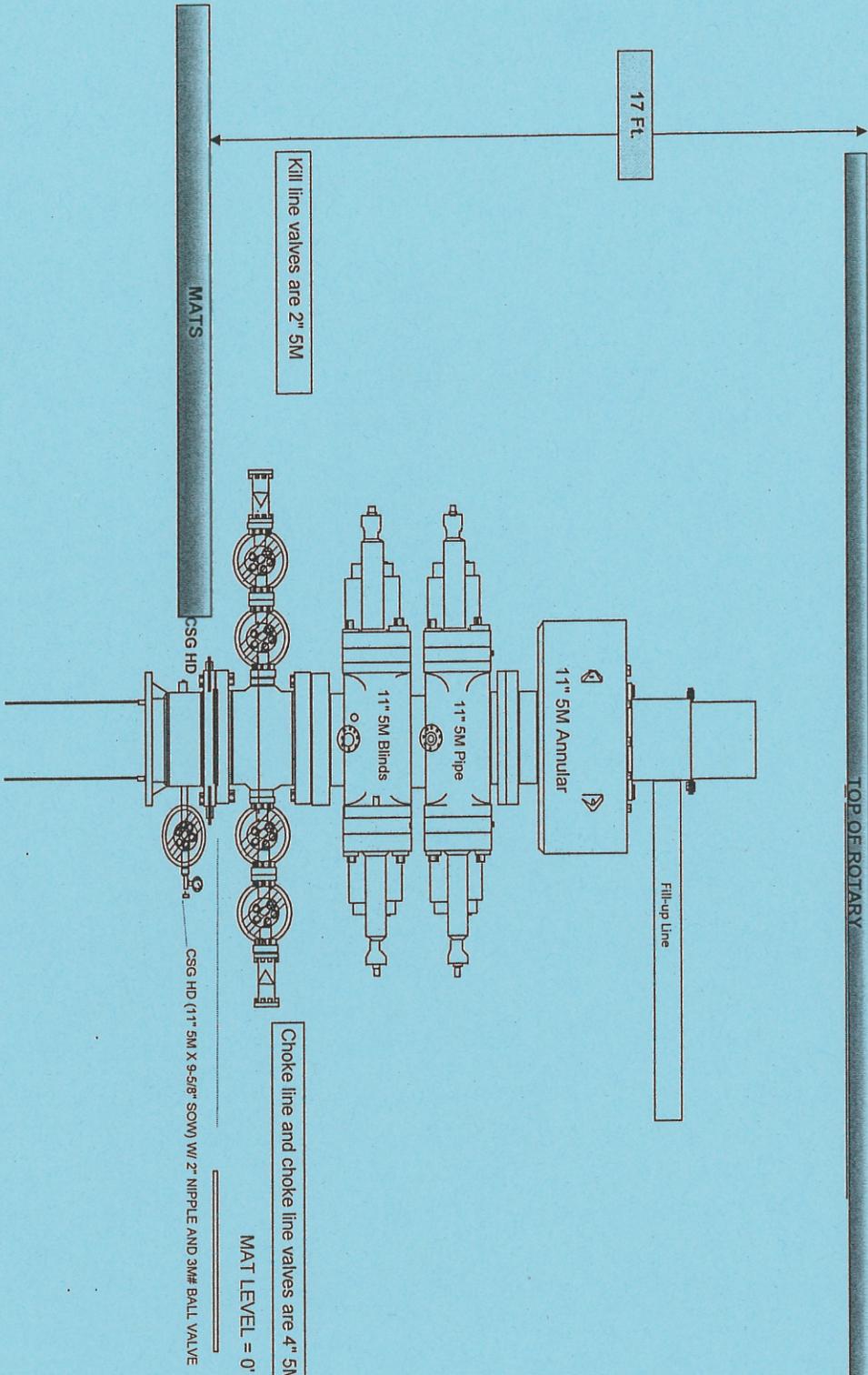
# DRILLING PHASE

## BOP Stack Diagram

DATE: 08/01/11

Rig: Xtreme 18

NOTE: All lengths are in feet from MATTING BOARDS.



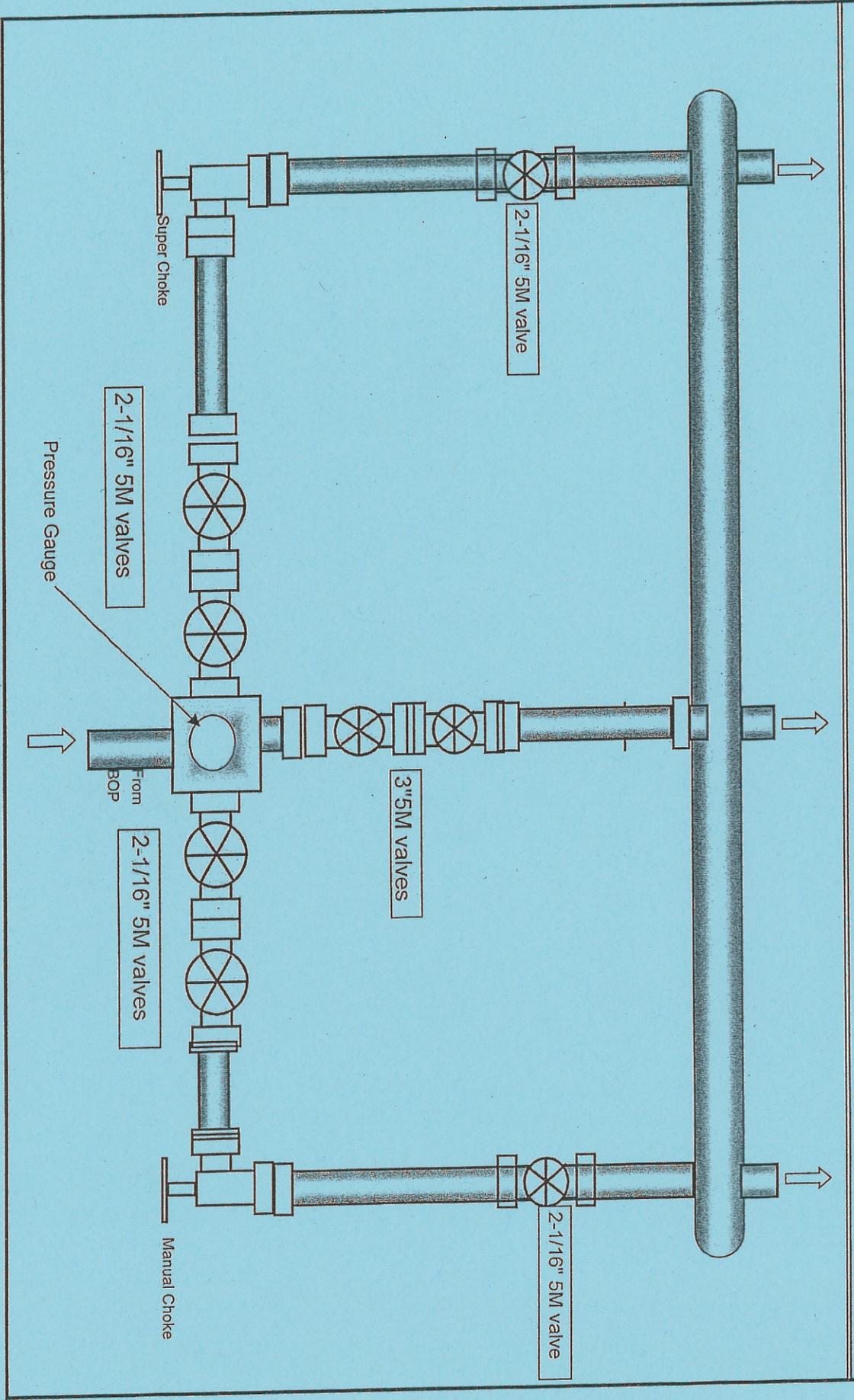
SM ENERGY COMPANY

Manifold Diagram

WELL:

RIG: Xtreme 18

AREA/FIELD: N/A



## Exhibit C

### Surface Use Plan

#### 1. Existing Roads

- a) Proposed well site and access route to location:

The existing access roads are County Road #53 and County Road 53A. A proposed lease road will extend approximately 1,540' from County Road 53A to access the proposed well site. See attached Sheet #7 County Access and Sheet #8 Quad Access.

- b) Route or distance from nearest town or locatable reference point to where the route leaves the main road:

From the intersection of State Highway #1806 and State Highway #23 located two miles East of the town of Watford City, North Dakota, travel East on State Highway 23 for 13 miles to the intersection of State Highway #23 and County Rd #53 (Johnsons Corner). Turn Right (South) onto County Rd #53 and travel South for approximately 4 miles to a T in the road. Turn Left and continue on County Rd #53 through a series of curves for approximately 3 miles to a Y in the road. Merge Left and continue for approximately 1 1/4 miles to a sharp curve in the road. Continue Southerly through the curve and continue to travel approximately 3/4 mile to the intersection of County Rd #53. Turn Right (Southwest) onto County Road 53A and continue approximately 6/10 mile to the intersection of 53A and the well site access road. Turn right onto the access road approximately 1,540' to the well site.

- c) Existing roads providing access to the well site are shown and labeled on attached Sheet #7 County Access and Sheet #8 Quad Access.

Improvement to existing roads will not be necessary. Existing roads will be maintained and kept in the same or better condition as they are currently. All existing roads will be maintained as per County, State specifications and standards as applicable.

#### 2. Access Roads to be Constructed and/or Reconstructed

- a) Approximately 1,540' of new road will be constructed from the existing road to the proposed well site as shown in Sheet #7 Access Road and Sheet #8 Quad Access. The access road will have a running width of 24', widening to 50' at the approach to the existing road.

- b) All travel will be confined to access road rights-of-way. Access roads and surface disturbing activities will conform to standards outlined in the BLM and Forest Service publication: Surface Operating Standards for Oil and Gas Exploration and Development, (1989).
- c) 1. Road width will consist of a 26 foot sub grade with a 24 foot running.  
2. Surface. One 18 inch culvert will be required to ensure proper drainage.  
3. Topsoil will be replaced in road ditches and seeded with proper seed mix to reduce erosion.  
4. Straw waddles will be placed at appropriate intervals in the ditches where erosion may occur.  
5. One cattle guard will be required at the location.

Topsoil will be removed from all areas to be disturbed and from areas where subsoil materials will be stored. The access road will be designed and constructed to meet the standards of the anticipated traffic flow and all-weather requirements. The access road will not be constructed using frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur. Vegetative debris will not be placed in or under fill embankments.

Fences, gates, and brace panels on public lands will be reconstructed to appropriate BLM fencing specifications if necessary. All road segments will be winterized by providing a well-drained travel way to minimize erosion and other damage to the roadway or the surrounding public land. The access road will be maintained in the same or better condition as existed prior to the commencement of operations. A regular maintenance program will include, but is not limited to blading, ditching, culvert installation, and surfacing.

The maps labeled "Pad Layout" Sheet 3, "Production Layout" Sheet #6, "Road Typical" Sheet #13, and "Rig Layout" Sheet #5 are drilling location layouts showing where the access road enters the location.

### 3. Location of Existing Wells Within a 1-Mile Radius of the Proposed Location

The location of existing wells identified within a 1 mile radius of the proposed well site are shown on "One-Mile Radius" Sheet #9, topographic map and "Well Names" Sheet #10 showing and identifying the following existing wells. Sheet #11 "GIS Symbols" provides a detailed description of the GIS Well Symbols used on the topographic map.

- a) Water Wells - None
- b) Injection or Disposal Wells - None
- c) Producing Wells - Seven (7)
- d) Drilling Wells - None
- e) Other Wells - A search of Dwights Energy Data indicated there are two (2) abandoned wells, two (2) dry holes, four (4) in confidential status, and one (1) cancelled permit within the 1 mile radius of the proposed well.

4. **Location of Existing and/or Proposed Facilities if the Well is Productive**

- a) See Sheet #6, "Production Layout", showing proposed production facilities to accommodate the Jorgenson Federal 14-19H. Actual production may require more/less facilities, which we will finalize during the preparation of the Production Facilities and Reclamation Plan.

(1) Tank Batteries: We propose to construct one tank battery and associated facilities as shown consisting of three steel 400-bbl oil tanks and one fiberglass 400-bbl salt water tanks, all 20' tall and 12' in diameter. For any facilities planned to be placed on fill material, the well pad will be constructed using a sheep's foot, compacting the soil in fill areas in one-foot lifts.

2) Production Facilities: We propose to construct one vertical heater/treater, one flare pit approximately 10' by 10' with igniter, one main pumping unit, and one recycle pump. All site security guidelines will be adhered to.

(3) Oil Gathering Lines: No oil gathering lines are planned for this well.

(4) Gas Gathering Lines: Approximately 200' of new 4" SDR 11 Poly natural gas line will be constructed from the existing gas line to the heater/treater at the proposed well site. A valve and riser will need to be installed at this point. See "Utility Map" Sheet #14.

Oneok has been notified of our need and will contact you for the proper permits and field reviews. Gas contractor will be:

Oneok  
16001 Bennie Pier Road  
Sidney, MT 59270-2296  
Phone: 701-565-2296

- (5) Injection Lines: No injection lines are planned for this well.
- (6) Disposal Lines: Approximately 1,540' of new 4" Poly Fiberglass salt water disposal line will be constructed from the existing salt water disposal line to the heater/treater at the proposed well site. See "Utility Map" Sheet #14.
- (7) Electric Lines: Approximately 250' of new 7.2 Kv underground electric line will be installed on the right of way to the well pad and will connect the well to the existing underground electric line. A power box will need to be constructed on the well pad. Any new underground line not being laid along the proposed road right of way will be laid by plowing in to minimize surface disturbance. See Sheet #6 "Production Layout". McKenzie Rural Electric has been notified of our need and will contact you for the proper permits and field reviews. Electrical contractor will be:

McKenzie Rural Electric  
908 4<sup>th</sup> Ave NE  
Watford City, ND. 58854

Phone: 701-444-9288

5. Location and Type of Water Supply

- a) Fresh water for all of the drilling and daily operations for this well will be obtained from the Watford City public water system. Contractor supplying fresh water will be:

Power Fuels Transport  
P.O. Box 757  
Watford City, ND. 58854

701-842-3618

Salt water for drilling hole below surface will be obtained from SM Energy Company producing the Anderson #1SWD, located in the NWSW of Section 32, T153N, R95W. Contractor transporting the salt water will also be Power Fuels Transport.

- b) Method of Transport: All water will be hauled by trucks contracted from:

Power Fuels Transport  
P.O. Box 757  
Watford City, ND. 58854

- c) No drilling of a new water well is planned for this well.  
Roads to be used for hauling water are identified in Sheet #8 "Quad Access".

6. **Construction Materials**

- a) All construction materials shall originate from existing materials located within the designed road and pad area. These materials will be used as specified within the road construction designs and pad plats. Scoria will be used as road surfacing and will originate as specified in Point 6b.
- b) All scoria road surfacing will be acquired from a commercial source located in the NW ¼ of Sec. 21, T150N, R96W.

7. **Handling of Waste Materials and Disposal**

- a) Drilling fluids will be removed from the pits and hauled by truck to a State approved disposal facility located in the SW/SW of Sec. 4, T153N, R101W, McKenzie Co., ND. The facility is:

Lindvig 1-4 SWD Well  
Indian Hill Field  
SWSW Sec. 4, T 153N, R 101W  
McKenzie Co., ND  
Facility ID No.: 33-053-00527  
NDIC # 3680

- b) The pits will be solidified after drilling and completion of the well.

8. **Ancillary Facilities**

- a) No air strip, camp, or other facilities will be built during drilling of this well.

9. **Well Site Layout**

- a) Cross sections of the drill pad with cuts and fills and relation to topography:  
See Sheet #3, "Pad Layout" diagram showing the original contours of the well pad area.  
See Sheet #3, "Pad Layout" diagram showing all Cuts and Fills of the well pad.  
See Sheet #4, "X-Section" diagram showing the well pad cross sections and pits.

- b) Location of mud tanks, pits, trash baskets, pipe racks, living facilities and material stockpiles:  
See Sheet #5 "Rig Layout" diagram.
- c) Rig orientation, parking areas and access roads:  
See Sheet #5 "Rig Layout" diagram.
- d) Lining of Pits:  
The pits (See Sheet #5 "Rig Layout") will be constructed and lined to minimize potential for leakage and structural failure.
- e) Photographs of well site area:  
No photos of well site area are included.

#### 10. Plans for Surface Reclamation

Configuration of reshaped topography, drainage system, backfilling, leveling, contouring, segregation of spoil materials and surface manipulations:

Pad Layout will be constructed and lined to minimize potential for leakage and structural failure.

- a. The pits will be fenced on 3 non-working sides during drilling, and once drilling is completed the fourth side of the pits will be fenced until the pits are reclaimed.
- b. Weed control will be administered and maintained by the operator.

#### **Final Reclamation:**

- a. The access road templates will be obliterated and reclaimed back to near natural conditions, recontouring all cut and fill slopes and reestablishing all natural drainage. During final reclamation all facilities at the wellsite facility will be removed, the road and pad surfacing will be removed and relocated to another site and all topsoil will be segregated and protected. The entire pad, access road templates and production facility will be obliterated and reclaimed back to near natural conditions, recontouring all cut and fill slopes and reestablishing all natural drainage.
- b. Revegetation methods and techniques:  
The wellsite will be recontoured and the topsoil redistributed prior to seeding. The location will be revegetated with surface owners seed mix or a seed mix provided by the BLM.

- c. Special soil treatments:  
Any area impacted by spills and/or other undesirable events will be promptly treated and tested.
- d. Other practices necessary to reclaim disturbed areas, including access roads and portions of pad no longer needed:  
No other practices have been identified at this time.
- e. The entire disturbed area at the well site will be fenced until the location is released.
- f. Estimated Timetable for Commencement and completion of Reclamation Operations:  
Should the well become nonproductive, all reclamation work will be completed within six (6) months of plugging.

11. Surface Ownership

- a) The well pad and access road are both located on private lands in the SWSE of Section 19, T149N, R95W. See Sheet #8 "Quad Access", and Well Location Plat. The well site and access roadway surface owner is:

William E. Jorgenson  
11010 16<sup>th</sup> Street NW  
Watford City, ND 58854  
Phone: (701) 759-3460

12. Other Information

- a) An archeological survey has been contracted with the following company and they will send the survey directly to the BLM upon completion.

Beaver Creek Archaeology  
301 1<sup>st</sup> Street NE, Suite 201  
Mandan, ND 58554  
Phone: 701-663-5521

- b) Other surface use activities and surface ownership of all involved lands:  
Water supply and disposal as outlined in Points 5a and 7b.  
Scoria from private lands as outlined in Point 6b.

ONSHORE OIL & GAS ORDER NO. 1  
JORGENSEN FEDERAL 14-19H  
SW/SE SEC. 19, T149N-R95W  
McKENZIE CO., NORTH DAKOTA

LEASE NO. NDBLM-023512

- c) Proximity of water, occupied dwelling, archeological, historical or cultural sites:  
Beaver Creek Archaeology has performed a cultural resource inventory of the proposed well site and access road. The cultural resource inventory will be submitted for review upon completion of the report.
- d) Photograph(s) of Proposed Site: None.

**SELF-CERTIFICATION STATEMENT  
FROM LESSEE/OPERATOR**

**SURFACE OWNER IDENTIFICATION**

Federal or Indian Lease No. N/A  
Well(s) Number and Location: Jorgenson Federal 14-19H and Jorgenson Federal 14X-19H  
T149N, R95W, Section 19, SW/SE - 5<sup>th</sup> PM

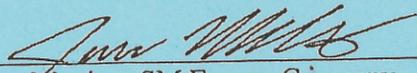
I hereby certify to the Authorized Officer of the Bureau of Land Management that I have reached one of the following agreements with the Surface Owner; or after failure of my good-faith effort to come to an agreement of any kind with the Surface Owner, I will provide a bond or comply with State requirements:

- 1)   X   I have a signed access agreement to enter the leased lands;
- 2)        I have a signed waiver from the surface owner;
- 3)        I have entered into an agreement regarding compensation to the surface owner for damages for loss of crops and tangible improvements.
- 4)        Because I have been unable to reach either 1), 2), or 3) with the surface owner, I will obtain a bond to cover loss of crops and damages to tangible improvements.
- 5)        Because this well is located on privately owned surface overlying privately owned minerals, and I have been unable to reach either 1), 2), or 3) with the surface owner, I will comply with the state of North Dakota's Oil and Gas Production Damage Compensation requirements (NDCC 38-11.1).

Surface owner information: (if available after diligent effort)

Surface Owner Name: William E. Jorgenson  
Surface Owner Address: 11010 16<sup>th</sup> Street NW, Watford City, ND 58854  
Surface Owner Phone Number: 701-759-3460

Signed this   24   - day of   May  , 2012.

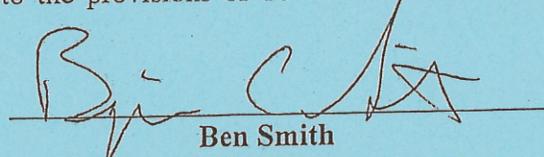
  
\_\_\_\_\_  
Jesse Martin - SM Energy Company

**SM Energy Company**  
**P. O. Box 7168**  
**Billings, MT 59103-7168**  
**Phone (406) 245-6248**

**Operator Certification**

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by SM Energy and its contractors and subcontractors in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 25<sup>th</sup> day of May, 2012.

  
Ben Smith  
Sr. Drilling Engineer

**Signatory Address**

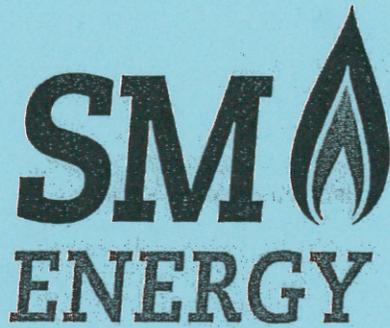
**Ben Smith**  
**SM Energy Company**  
**P. O. Box 7168**  
**Billings, MT 59103-7168**  
**Phone (406) 245-6248**

**Lessee's or Operator's Field Representative**

**Ben Smith**  
**SM Energy Company**  
**P.O. Box 7168**  
**Billings, MT 59103-7168**  
**Phone (406) 245-6248**

**SM Energy Co. Drilling Site Rep.**

**Craig Selvig & Randy Selvig - Drilling Sup**  
**SM Energy Company**  
**P.O. Box 1740**  
**Williston, ND 58802**  
**Phone (406) 480-2485**



**H<sub>2</sub>S CONTINGENCY PLAN  
SM ENERGY COMPANY**

**Jorgenson Federal 14-19H**

**Location: SW SE Sec 19-T149N-R95W**

**Footage: 350' FSL & 2385' FEL**

**LAT: 47°42'14.50" N**

**LON: 102°53'12.80" W**

**MCKENZIE COUNTY  
NORTH DAKOTA**

# H<sub>2</sub>S DRILLING OPERATIONS PLAN INDEX

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  - B. Directions to Well Site
  - C. Purpose of Plan
  
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  - B. General & Specific Area Maps
  
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  - C. Maximum Number of People on Location at any one time
  
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  - C. Crew Training and Protection
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- C. Well Control Specialists
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- E. Radio and Television Stations

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- A. Radius of Exposure Map with Residences Shown
- B. Residents Within Radius of Exposure and Telephone Numbers

# I. INTRODUCTION

## A. OPERATOR ADDRESS AND PHONE

SM ENERGY COMPANY  
PO BOX 7168 or 550 NORTH 31<sup>st</sup> STREET  
BILLINGS, MT 59103-7168  
406-245-6248

## B. DIRECTIONS TO WELL SITE

From the intersection of State Highway #1806 and State Highway #23 located two miles East of the town of Watford City, North Dakota, travel East on State Highway 23 for 13 miles to the intersection of State Highway #23 and County Rd #53 (Johnsons Corner). Turn Right (South) onto County Rd #53 and travel South for approximately 4 miles to a T in the road. Turn Left and continue on County Rd #53 through a series of curves for approximately 3 miles to a Y in the road. Merge Left and continue for approximately 1 ¼ miles to a sharp curve in the road. Continue Southerly through the curve and continue to travel approximately ¾ mile to the intersection of County Rd #53. Turn Right (Southwest) onto County Road 53A and continue approximately 6/10 mile to the intersection of 53A and the well site access road. Turn right onto the access road approximately 1,540' to the well site.

## C. PURPOSE OF PLAN

The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations which may contain Hydrogen Sulfide Gas, H<sub>2</sub>S.

As a precautionary measure, this Drilling Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Oil Company Representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.



### III. SAFETY EQUIPMENT

All H<sub>2</sub>S related Safety Equipment must be installed, tested and Operational at a depth of 500 feet above, or 3 days prior to penetrating the first zone expected to contain H<sub>2</sub>S (whichever comes first).

#### A. SAFETY EQUIPMENT PROVIDED BY LOCAL CONTRACT SAFETY COMPANY

1. Safety trailer w/ 10-380 C.F. cylinder air supply system
2. Sufficient low-pressure airline hose with quick connects
3. Six-airline mask w/emergency escape cylinders
4. Seven 30 minute self contained breathing apparatus
5. Airline manifolds and air pack stands to accompany air packs
6. Three windsocks, frames and poles
7. Oxygen powered resuscitator
8. One set of signs
9. One 36 unit first aid kit
10. One 30# fire extinguisher
11. One stretcher
12. Flare gun w/shells (supplied upon request)
13. Gastec pump type gas detector w/full range of H<sub>2</sub>S detector tubes
14. One air cylinder w/regulator and filler hose for briefing area #2
15. H<sub>2</sub>S and briefing area signs
16. Well condition signs and flags
17. Explosion-proof bug blower (provided upon request)
18. 3 channel electronic monitor w/explosion proof warning system
19. One SO<sub>2</sub> (Sulfur Dioxide) Portable Detector (supplied if or when H<sub>2</sub>S is being flared)
20. Additional Equipment-added as needed.

## B. TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six Scott airline masks on location. Five will be located on the rig floor with access to the shale shaker. One will be located in the derrick. Each mask will have an easily accessible air line hose.
2. There will be seven 30-minute self-contained breathing apparatus on location. They will be positioned as follows: one at Company Representative's trailer, one at Tool Pusher's trailer, one at Briefing Area #1 one at Briefing Area #2, one at rig dog house stairway, one at mud logger's trailer and one at hopper area.
3. A Gastec, pump type, gas detector with low and high range detector tubes will be located in the doghouse
4. Two cleared Briefing Areas will be designated at opposite ends of the location as Safety Briefing Area #1 and #2. The Briefing Area most upwind is designated as the Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.
5. The H<sub>2</sub>S Safety trailer will contain a cascade system of 10-380 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. It will also contain one resuscitator, one 30 minute air pack and one stretcher, one 36 unit first aid kit, one 30# dry chemical fire extinguisher, and will have a windsock or streamer to indicate wind direction.
6. Two other windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions.

9. A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Oil Company's trailer and in the "safety" trailer.

10. A barricade will be available to block the entrance to location should an emergency occur. In most cases the use of a vehicle is used to block the entrance.

11. A three-channel H<sub>2</sub>S monitor will be located in the doghouse. The three sensors will be installed: one on the shale shaker, one in the cellar and one near the bell nipple.

12. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

13. If H<sub>2</sub>S concentration reaches 10 ppm an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H<sub>2</sub>S.

14. Any time it is necessary to flare gas containing H<sub>2</sub>S, a Sulfur Dioxide monitor will be used to determine SO<sub>2</sub> concentrations

### **C. MAXIMUM NUMBER OF PEOPLE ON LOCATION AT ANY ONE TIME**

1. There will be a maximum of 13 persons on location at any one time, unless additional respirators are provided during special operations where more than 13 persons will be on location.

## **IV. OPERATING PROCEDURES**

### **A. BLOWOUT PREVENTION MEASURES DURING DRILLING**

1. Blowout Prevention Requirements: All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H<sub>2</sub>S service and tested accordingly (or to BLM specifications).
2. Drilling String Requirements: All drill string components are to be of material that meets the American Petroleum Institute's specifications for H<sub>2</sub>S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

### **B. GAS MONITORING EQUIPMENT**

1. A continuous H<sub>2</sub>S detection system, consisting of three H<sub>2</sub>S detectors and an audible/visual warning system will be in operation during all phases of this H<sub>2</sub>S Drilling Operations Plan. The detection system will be adjusted and calibrated such that an H<sub>2</sub>S exposure of 10 ppm or higher (at any sensor) will trigger the visual portion (blinking or rotating light), and an H<sub>2</sub>S exposure of 15 ppm or higher (at any sensor) will trigger the audible portion (wailing or yelping siren) of the warning system (i.e. H<sub>2</sub>S continually present at or above threshold levels). A trained operator or H<sub>2</sub>S supervisor will monitor the H<sub>2</sub>S detection system.
2. When approaching or completing H<sub>2</sub>S formations, crewmembers may attach 8-hour electronic H<sub>2</sub>S personnel monitors to their person.
3. Hand held H<sub>2</sub>S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

## C. CREW TRAINING AND PROTECTION

1. All personnel working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H<sub>2</sub>S. The training will cover, but will not be limited to, the following:
  - a. General information of H<sub>2</sub>S AND SO<sub>2</sub> gas
  - b. Hazards of these gases
  - c. Safety equipment on location
  - d. Proper use and care of personal protective equipment
  - e. Operational procedures in dealing with H<sub>2</sub>S gas
  - f. Evacuation procedures
  - g. First aid, reviving an H<sub>2</sub>S victim, toxicity, etc.
  - h. Designated Safe Briefing Areas
  - i. Buddy System
  - j. Regulations
  - k. Review of Drilling Operations Plan
2. Initial training shall be completed when drilling reaches a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H<sub>2</sub>S.
3. Weekly H<sub>2</sub>S and well control drills for all personnel on each working crew shall be conducted.
4. Safety Equipment: As outlined in the Safety Equipment index, H<sub>2</sub>S safety protection equipment will be available to/or assigned each person on location.

## D. METALLURGICAL CONSIDERATIONS

1. Steel drill pipe used in H<sub>2</sub>S environments should have yield strength of 95,000 psi or less because of potential embrittlement problems. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string. Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.
2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.
3. Blowout preventors should meet or exceed the recommendations for H<sub>2</sub>S service as set forth in the latest edition of API RI 53.

## **E. MUD PROGRAM AND TREATING**

1. It is of utmost importance that the mud be closely monitored for detection of H<sub>2</sub>S and reliability of the H<sub>2</sub>S treating chemicals.
2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operators prescribed procedures.
3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H<sub>2</sub>S control prior to drilling into the H<sub>2</sub>S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H<sub>2</sub>S be encounter while tripping string following drill stem testing

## **F. WELL CONTROL EQUIPMENT**

1. Flare System
  - a. A flare system shall be designed and installed to safely gather and burn H<sub>2</sub>S bearing gas.
  - b. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
  - c. The flare line mouth shall be located not less then 150' from wellbore.
  - d. Flare lines shall be straight unless targeted with running tees.
2. Remote Controlled Choke: A remote controlled choke shall be installed for all H<sub>2</sub>S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.
3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

## V. OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200' but no more than 500' from the well site which allows vehicles to turn around at a safe distance prior to reaching the site.

### A. DEFINITION OF WARNING FLAGS

1. Condition Green: Normal operations. Any operation where the possibility of encountering H<sub>2</sub>S exists but no H<sub>2</sub>S has been detected.

2. Condition Yellow: Potential Danger. Any operation where the possibility of encountering H<sub>2</sub>S exists and in all situations where concentrations of H<sub>2</sub>S are detected in the air below the threshold level (10ppm).

a. Cause of condition:

- \*Circulating up drill breaks
- \*Trip gas after trip
- \*Circulating out gas on choke
- \*Poisonous gas present, but below threshold concentrations
- \*Drill stem test

b. Safety Action:

- \*Check safety equipment and keep it with you
- \*Be alert for a change in condition
- \*Follow instructions

3. Condition Red: Extreme Danger. Presence of H<sub>2</sub>S at or greater than 100ppm. Breathing apparatus must be worn.

a. Safety action:

\*MASK UP. All personnel will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential personnel (those necessary to maintain control of the well) shall wear breathing apparatus to perform operations related to well control.

b. Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

c. The decision to ignite the well is the responsibility of the operator's on-site representative and should be made only as a last resort, when it is clear that:

- \*human life is endangered
- \*there is no hope of controlling the well under prevailing conditions

## B. CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H<sub>2</sub>S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed (below):

- a. Increase density of mud in pits to 'kill' weight mud.
- b. Open choke and bring pump to initial circulating pressure by holding casing pressure at original valve until pump is up to predetermined speed.
- c. When initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.
- d. Reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph
- e. When 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.
- f. When the well has been put on the choke and circulation has been established, the following safety procedure must be established.
  - \*determine when gas is anticipated to reach surface.
  - \*all non-essential personnel must be moved to safe briefing area
  - \*all remaining personnel will check out and keep with them their protective breathing apparatus.
  - \*mud men will see that the proper amount of H<sub>2</sub>S scavenging chemical is in the mud and record times checked
  - \*make sure ignition flare is burning and valves are open to designated flare stacks

## C. CORING OPERATIONS IN H<sub>2</sub>S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked to the presence of H<sub>2</sub>S.
  - a. Yellow Caution Flag will be flown at the well condition sign.
  - b. The "NO SMOKING" rule will be enforced

## D. DRILL STEM TESTING OF H<sub>2</sub>S ZONES

1. The DST subsurface equipment will be suitable for H<sub>2</sub>S service as recommended by the API.
2. Drill stem testing of H<sub>2</sub>S zone will be conducted in daylight hours.
3. All non-essential personnel will be moved to an established safe area or off location.
4. The "NO SMOKING" rule will be enforced.
5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.
6. A yellow or red flag will be flown at entrance to location depending on present gas condition.
7. If warranted, use Aqua Ammonia for neutralizing the toxicity of H<sub>2</sub>S from drill string. Aqua Ammonia should be on location even if not used for DST.
8. On completion of DST, if H<sub>2</sub>S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask on" condition until such time that readings in work area do not exceed 15ppm for H<sub>2</sub>S gas.

## **VI. EMERGENCY PROCEDURES**

### **A. SOUNDING ALARM**

1. The fact is to be instilled in the minds of all rig personnel that the sounding of the alarm means only one thing - H<sub>2</sub>S IS PRESENT and everyone is to proceed to his assigned station and the contingency plan is put into effect.

### **B. DRILLING CREW ACTIONS**

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.
2. The Buddy system will be implemented. All personnel will act upon directions from the operator's on-site representative.
3. If there are non-essential personnel on location, they will move off location.
4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

### **C. RESPONSIBILITIES OF PERSONNEL**

1. In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsible person will be as follows:
  - a. The operator's on-site representative (consultant) or his assistant.
  - b. Contract Tool Pusher.

## D. STEPS TO BE TAKEN

1. Contact by the quickest means of communications the main offices of Oil Company & or Contractors as listed in this plan below:
2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.
3. The operator's on-site representative will remain on location and attempt to regain control of the well.
4. The drilling company's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephoning, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and safety equipment contractor's personnel will aid in further evacuation.

## E. COMPANY & CONTACT PERSONNEL

- |                              |           |              |
|------------------------------|-----------|--------------|
| 1. Sr Drilling Engineer      | Office    | 406-869-8749 |
| Ben Smith                    | Cell      | 406-208-5623 |
| 2. Regional Drilling Manager | Office    | 406-869-8716 |
| Randy Carlson                | Cell      | 701-697-1072 |
| 3. Regional Compliance Spec  | Office    | 406-869-8706 |
| Luke Studer                  | Cell      | 406-208-3563 |
| 4. Nabors Drilling #686      | Rig Phone | 701-580-9014 |
| Rig Supervisor Craig Selvig  |           |              |
| Randy Selvig                 |           |              |

## F. LEAK IGNITION

Leak Ignition procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the operator's on-site representative and the contractor's rig superintendent or safety equipment provider's representative, wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H<sub>2</sub>S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.
2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area. If the leak isn't ignited on the first attempt, move in 30 to 40 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 to 90 feet to each side of the area where you have been firing. If still no ignition is accomplished, ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continue until the emergency is secure.
3. The following equipment and man-power will be required to support the ignition team:
  - a. One flare gun.
  - b. Four pressure demand air packs.
  - c. Two nylon ropes tied to the ignition team.
  - d. Two men in a clear area equipped with air packs.
  - e. Portable butane bottle with copper line.
4. The person with the final authority will then ignite the well.

## G. GENERAL EQUIPMENT

1. Two areas on the location will be designated as Briefing Areas. The one that is upwind from the well will be designated as the "Safe Briefing Area" or "Briefing Area #1".
2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.
3. The H<sub>2</sub>S trailer provided by contractor will contain 10 air cylinders, a resuscitator, one 30 minute air pack and will have a windsock.
4. Two other windsocks will be installed.
5. A condition warning sign will be displayed at the location entrance.
6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Oil Company's trailer.
7. Two barricades will be available to block the entrance to location.
8. An undulating high and low pitch siren will be installed.
9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

## VII. APPENDIX

### A. EMERGENCY & MEDICAL FACILITIES:

NORTH DAKOTA EMERGENCY ASSISTANCE: 800-472-2121

#### AMBULANCE SERVICE:

BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-488-2100
WILLISTON, ND	911
WATFORD CITY, ND	701-444-3516

#### HOSPITALS:

SIDNEY HEALTH CENTER - SIDNEY, MT	406-488-2100
MERCY MEDICAL CENTER - WILLISTON, ND	701-774-7400
McKENZIE COUNTY MEMORIAL HOSPITAL - WATFORD CITY	701-842-3000
ST. JOSEPH'S HOSPITAL - DICKINSON, ND	701-225-7200

### B. LAW ENFORCEMENT AND FIRE FIGHTING AGENCIES

#### POLICE:

SIDNEY, MT	911	OR	406-433-2809
WATFORD CITY, ND	911	OR	701-842-2400
BELFIELD, ND	911		
DICKINSON, ND	911		
MCKENZIE COUNTY	701-444-3654		

#### FIRE:

ALEXANDER, ND	911
ARNEGARD, ND	701-586-3500
BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-433-1122
WATFORD CITY, ND	701-842-3516
WILLITSON, ND	911

### C. WELL CONTROL SPECIALISTS:

BOOTS AND COOTS	281-931-8884
WILD WELL CONTROL	281-784-4700

## **D: GOVERNMENTAL AGENCIES:**

STATE WATER COMMISSION 701-224-4940

NDIC:  
CHIEF ENFORCEMENT OFFICER 701-224-2969  
STATE GEOLOGIST 701-777-2231

NORTH DAKOTA STATE DEPARTMENT OF HEALTH:  
DIVISION OF ENVIRONMENTAL ENGINEERING 701-224-2348

DIVISION OF WATER & POLLUTION CONTROL:  
BISMARCK, ND 701-224-2375

DISTRICT FOREST SERVICE RANGER:  
DICKINSON, ND 701-225-5151  
MEDORA, ND 701-623-4466  
WATFORD CITY, ND 701-842-2393

BUREAU OF LAND MANAGEMENT:  
DICKINSON, ND 701-227-7700

U.S. CORPS OF ENGINEERS:  
RIVERDALE, ND 701-654-7411

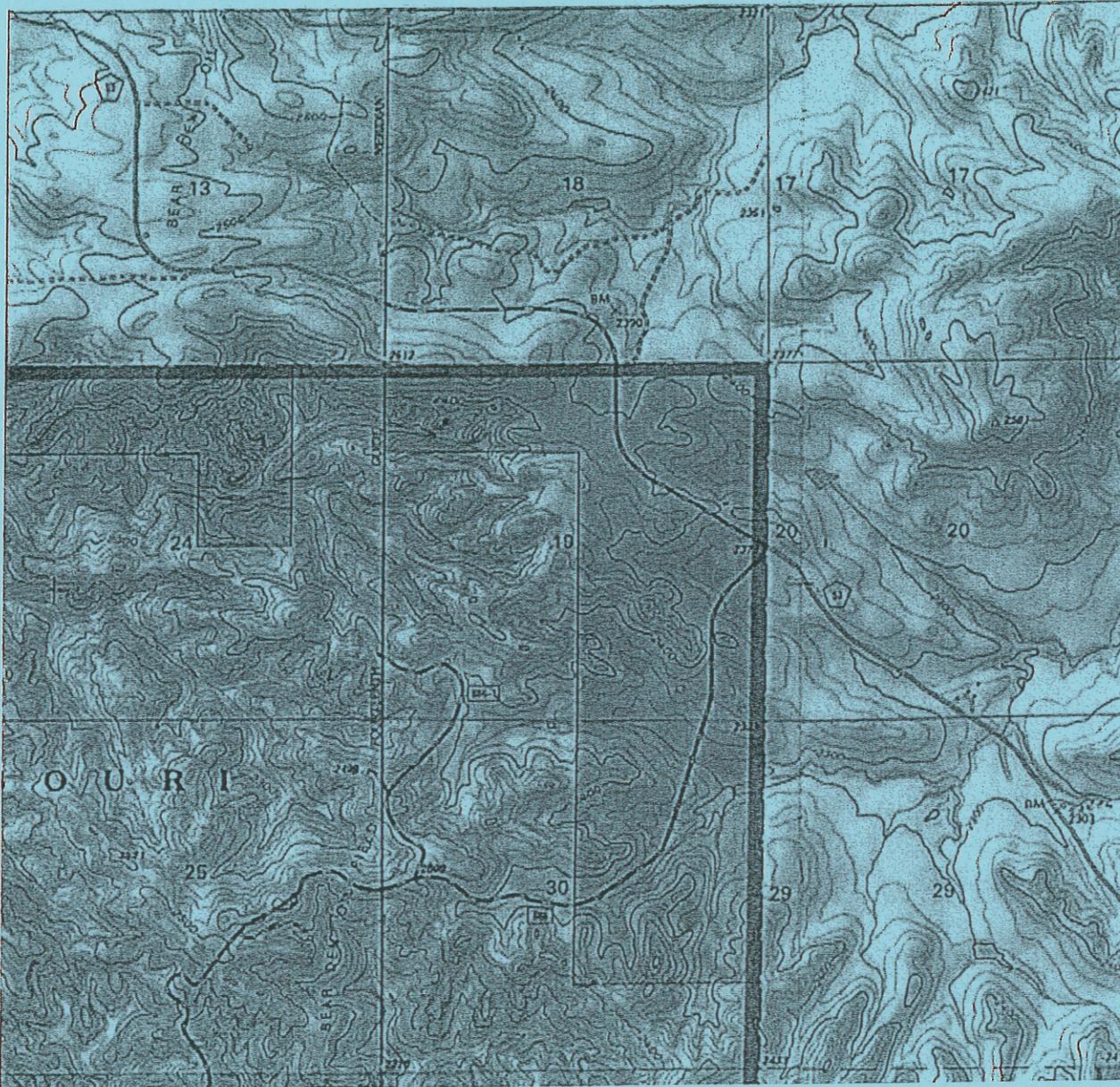
OIL SPILLS DISASTER REPORTING: 800-424-8802

## **E. RADIO & TELEVISION STATIONS:**

KEYZ AM 660 701-572-5371  
KYYZ FM 96.1 701-572-5371  
KDIX 701-225-5133  
KZRX 92.1 FM 701-227-1876  
KUMV TV 701-572-4676  
KXMD TV 701-572-2345  
KQCD TV 701-483-7777

## VIII. RESIDENTS AND LANDOWNERS

### A. 1 MILE RADIUS EXPOSURE MAP



### B. RESIDENTS WITHIN 1 MILE AND PHONE NUMBERS

1. John Frost  
2043 108th Ave NW  
Watford City, ND 58854  
Phone (406) 481-3665 (Cell)  
Or Call Bill Jorgenson at (710) 260-3460 (Cell) or (701) 759-3460 (Home)