

POWERTECH (USA) INC.

**Dewey-Burdock Project
Application for NRC
Uranium Recovery License
Fall River and Custer Counties,
South Dakota
Technical Report**

**Plates
Volume I
Plates 1.5-1 – 2.6-8**

December 2013

Prepared for
**U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852**

Prepared by
**Powertech (USA) Inc.
5575 DTC Parkway, Suite #140
Greenwood Village, CO 80111
Phone: 303-790-7528
Facsimile: 303-790-3885**

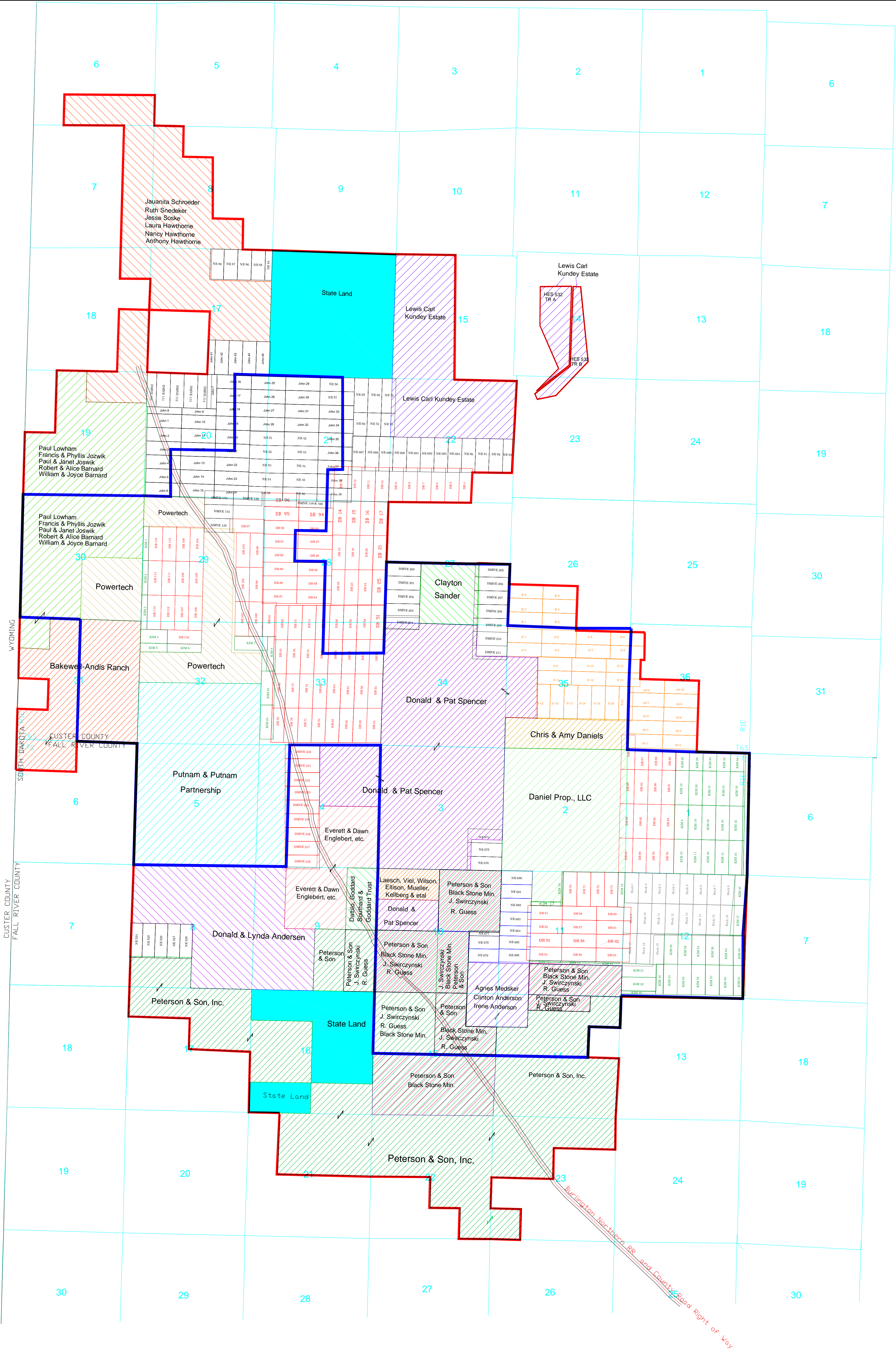
United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of: POWERTECH USA, INC. (Dewey-Burdock In Situ Uranium Recovery Facility)	
ASLBP #: 10-898-02-MLA-BD01	Identified: 8/19/2014
Docket #: 04009075	Withdrawn:
Exhibit #: APP-015-D-00-BD01	Stricken:
Admitted: 8/19/2014	
Rejected:	
Other:	



**Dewey-Burdock Project
Application for NRC
Uranium Recovery License
Fall River and Custer Counties
South Dakota
Technical Report**

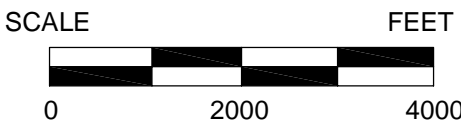
LIST OF PLATES - VOLUME I


1.5-1	Mineral Ownership
1.5-2	Surface Use Agreements
2.5-1	Environmental Sampling Locations
2.6-1	Structure Map, Top of the Unkpapa
2.6-2	Structure on Top of Morrison
2.6-2a	Structure to the Top of Morrison, Burdock Area
2.6-3	Structure Map - Top of the Chilson Member of the Lakota Formation
2.6-3a	Structure Map - Top of the Chilson Member of the Lakota Formation, Dewey Well Field 1
2.6-3b	Structure Map - Top of the Chilson Member of the Lakota Formation, Burdock Well Field 1
2.6-4	Structure Map - Top of the Fuson Shale
2.6-4a	Top of Fuson, Structure Contour Map, Dewey Well Field 1
2.6-5	Structure Map - Top of the Fall River Formation
2.6-6	Isopach Map of the Morrison Formation
2.6-7	Isopach of the Chilson Member of the Lakota Formation
2.6-7a	Isopach of the Chilson Member of the Lakota Formation, Burdock Well Field 1
2.6-8	Isopach of the Fuson Shale



LEGEND

- Powertech Mineral Holdings
- Proposed Permit Boundary





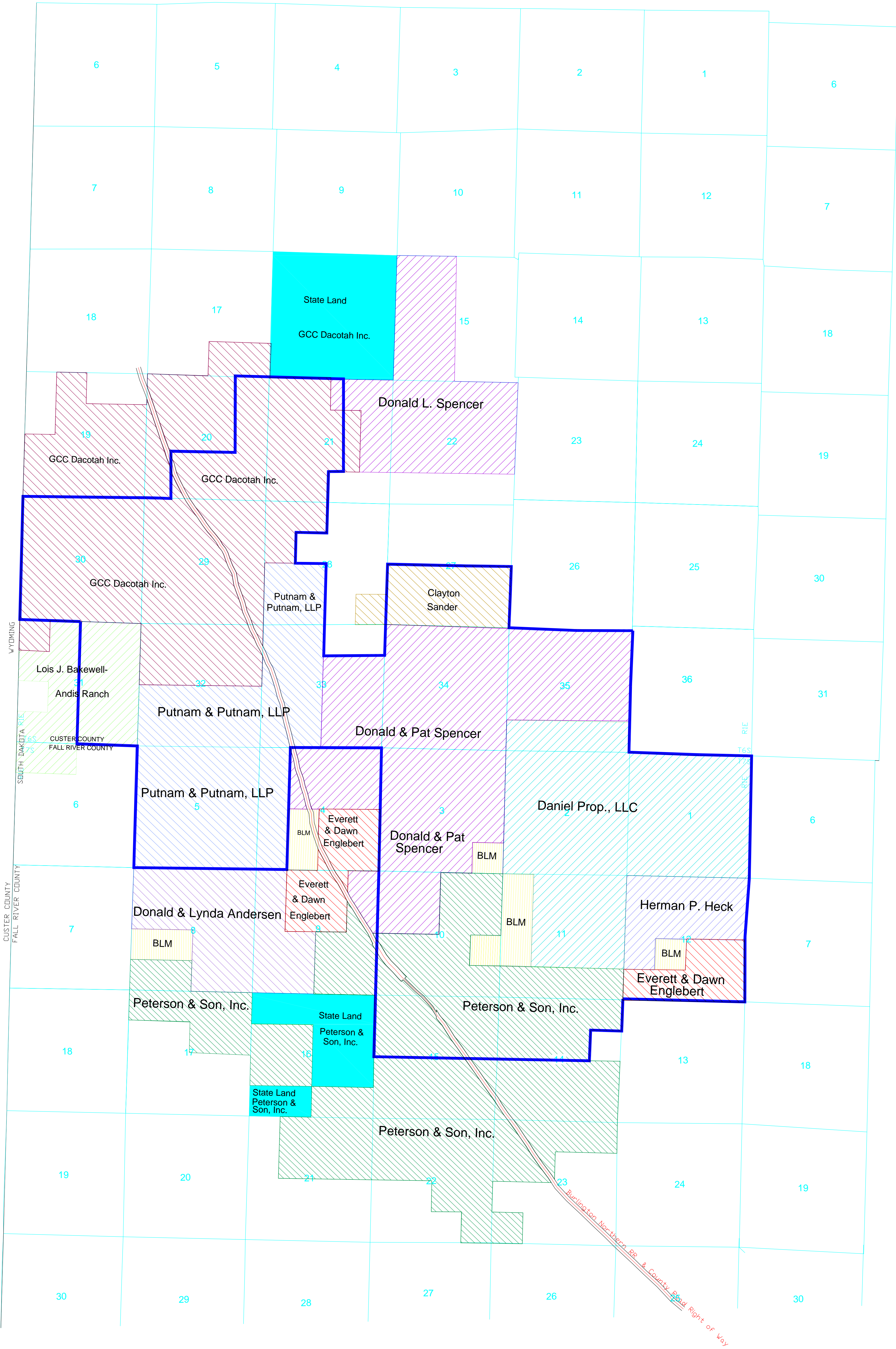
POWERTECH (USA) INC.

Plate 1.5-1

Mineral Ownership

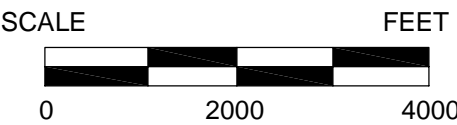
Fall River & Custer counties


PROJECT	Derey-Burdock Project
COORDS	NAD 27 South Dakota State Plane South
FILENAME	Dewey-Burdock_Mineral_map_2-11-2009.dwg



LEGEND

Proposed Permit Boundary





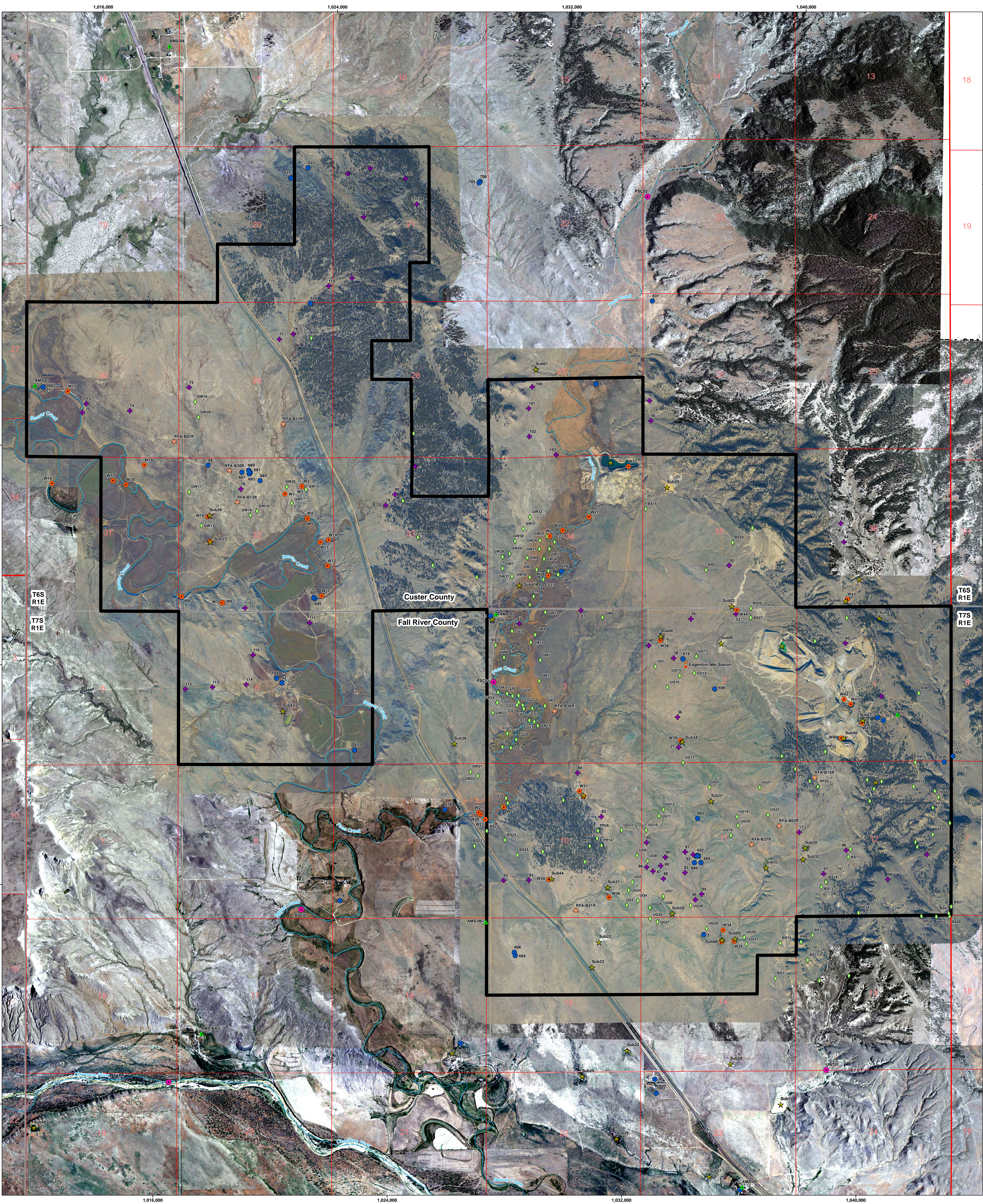
POWERTECH (USA) INC.

Plate 1.5-2

Surface Use Agreements

Fall River & Custer counties

PROJECT	Derey-Burdock Project
COORDS	NAD 27 South Dakota State Plane South
FILENAME	Dewey-Burdock_Surface_Use_Agreements_2-11-2009.dwg



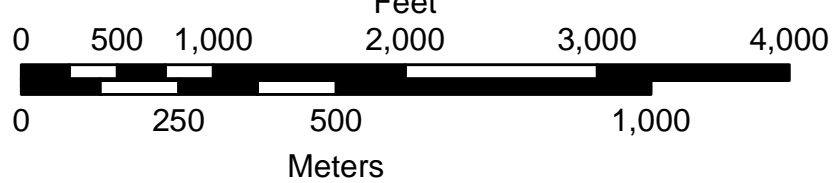
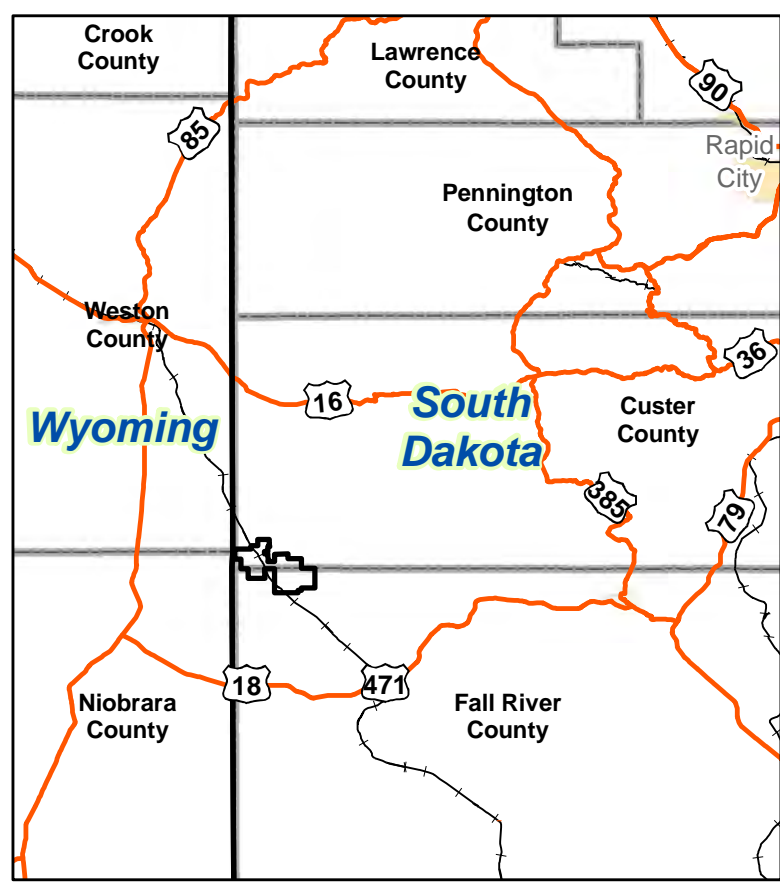
Legend


Project Boundary

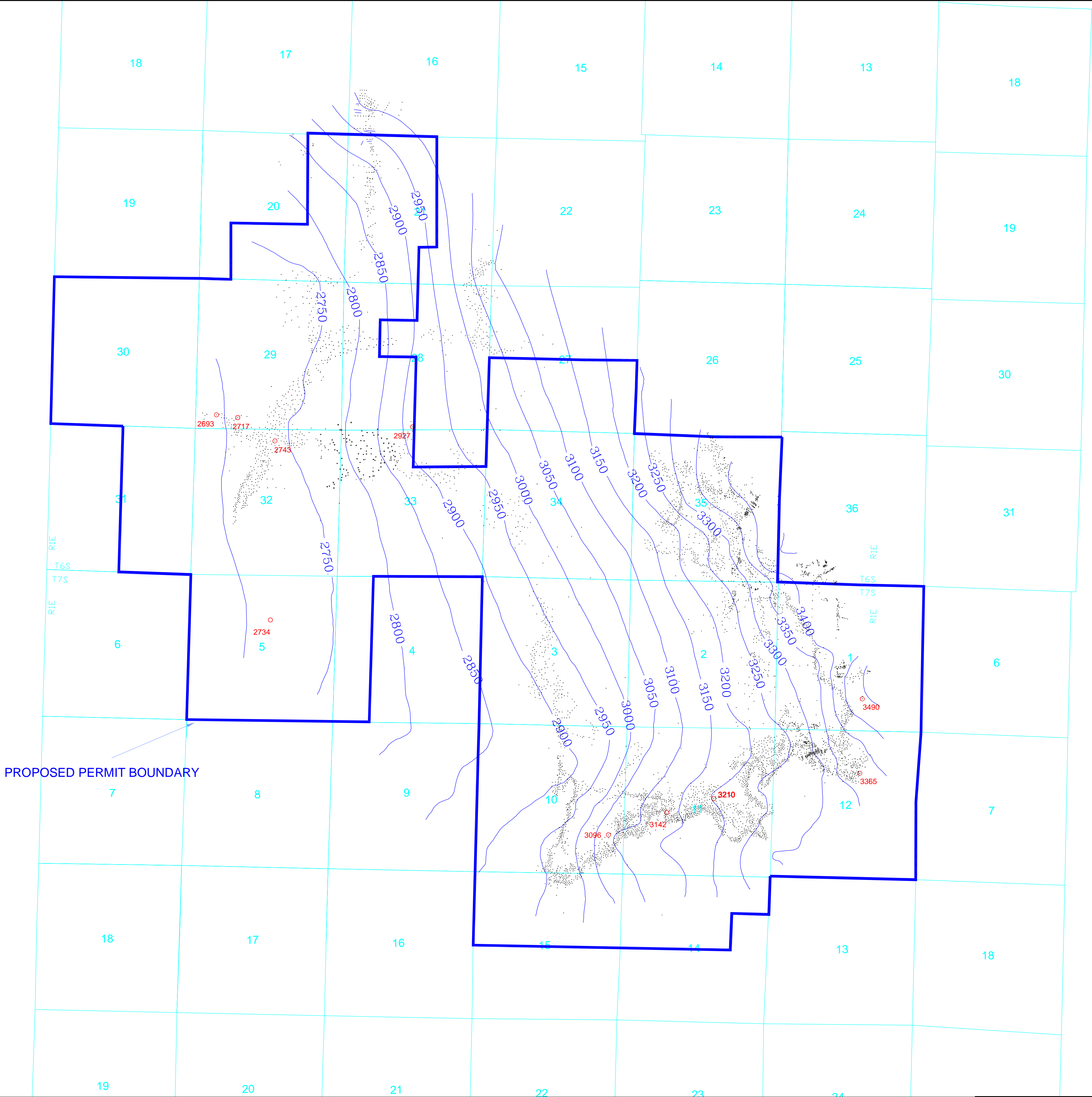
- Project Boundary

Sampling Location Type

- Particulates, Radon 222, Soil, TLD (Env. Radiation)
- Meteorological Station
- Stream
- Surface Subimpoundment
- Ground Water
- Soil
- Vegetation
- Wetlands
- Radon Flux

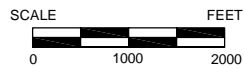


CONSULTANT				<div> POWERTECH (USA) INC. Plate 2.5-1</div>	
		REVISIONS			
#	DRAWN	CHECKED	APPROVED	DATE	
		</			



PROPOSED PERMIT BOUNDARY

This map is based on very few holes.
Most holes were not drilled this deep.



CONSULTANT

REFR994

CHECK SCALES
If this bar does not measure 1 inch this map is not at its original scale
Arch D24" x 36"

REVISIONS				
#	DRAWN	CHECKED	APPROVED	DATE

PLOT DATE	14-Dec-2013	DATE	14-Dec-2013	PROJECT	Dewey-Burdock Project
DRAWN	RC	CHECKED		CORRDS	State Plane- NAD27
SCALE	as noted	FILENAME	s:\powertech\11185\acad\dwgs_final\119284_unsp\structure100.dwg		


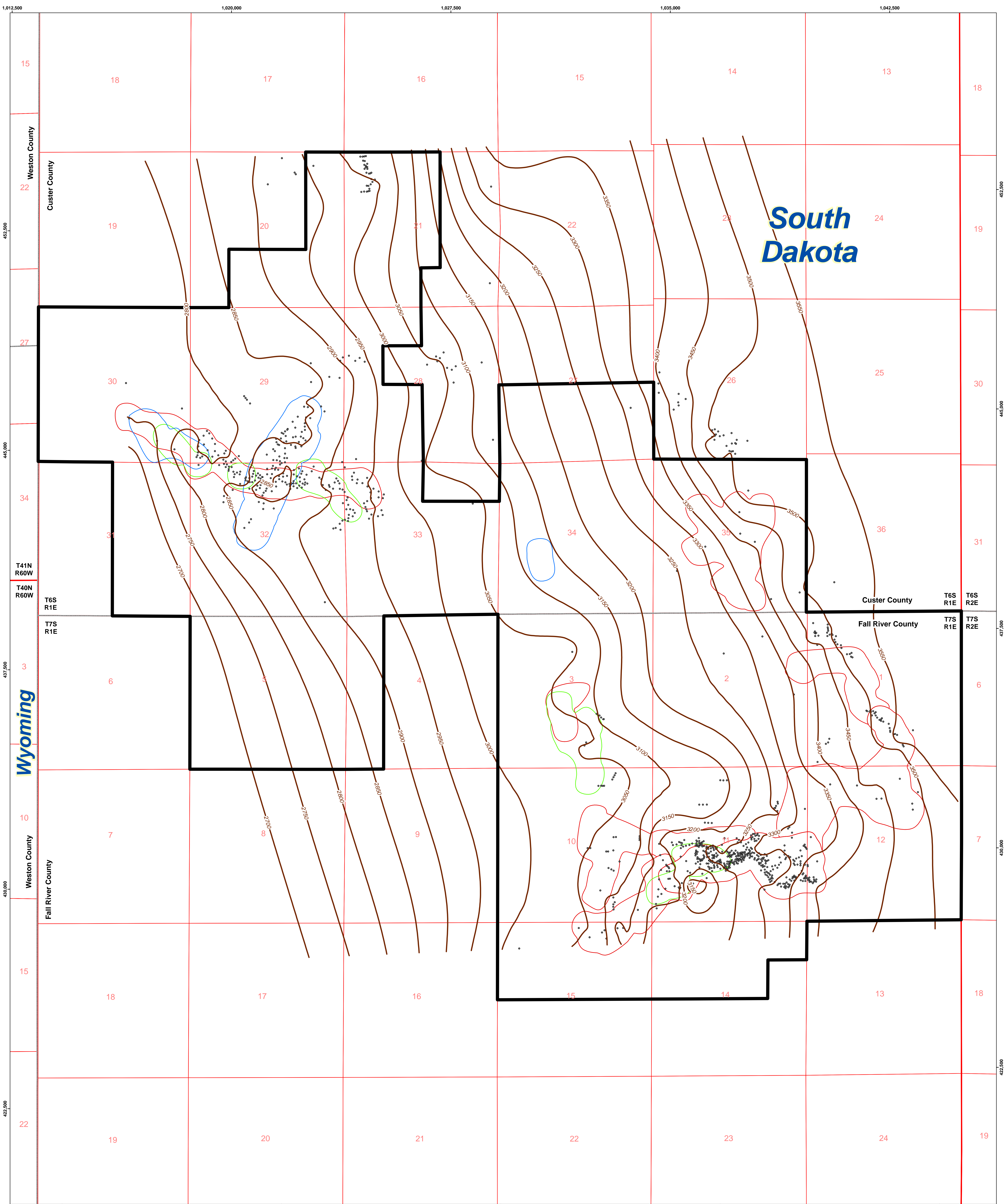

POWERTECH (USA) INC.

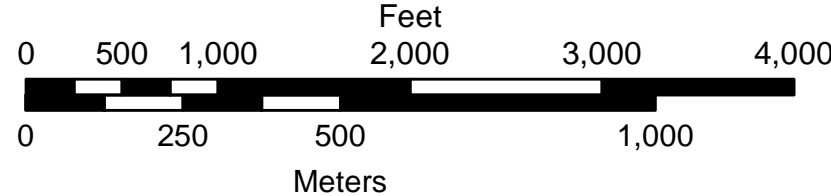
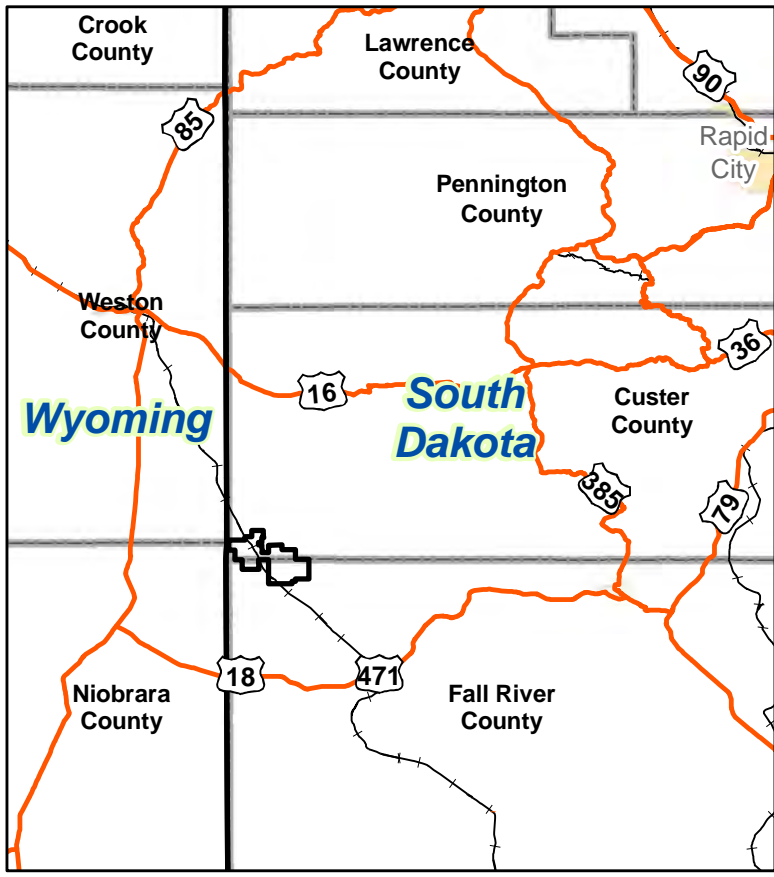
Plate 2.6-1
Structure Map
Top of the Unkpapa

1 OF 1



Legend

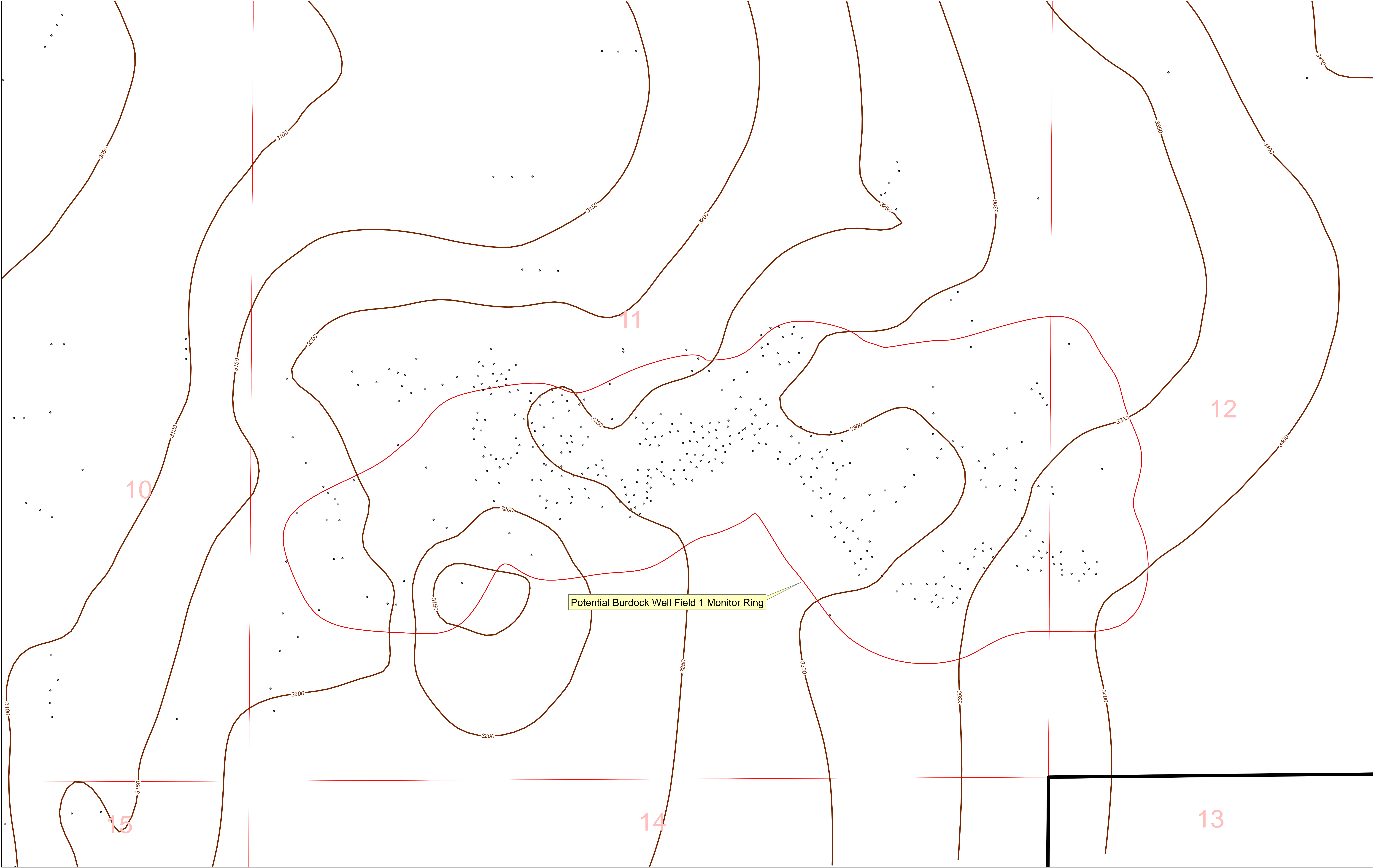
- Project Boundary
- Structure Contour Line (feet above sea level)
- Drill Hole Data Point Locations
- Potential Well Fields**
- Fall River
- Upper Chilson
- Middle/Lower Chilson



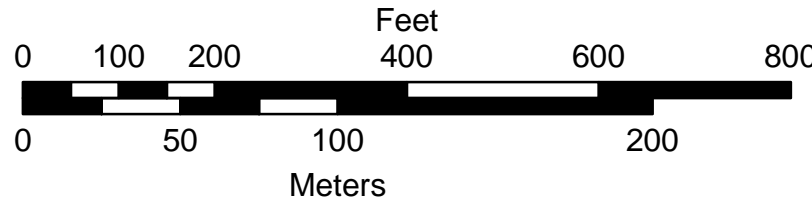
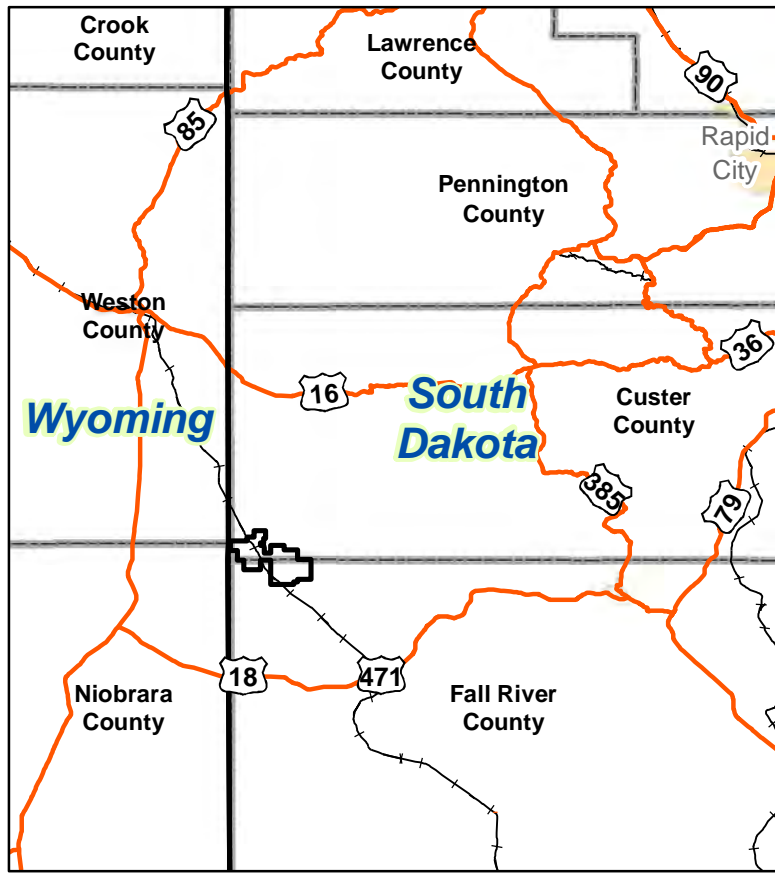
CONSULTANT	REVISIONS				
	#	DRAWN	CHECKED	APPROVED DATE	
REF	990				
CHECK SCALES	NOT DATE	16-Dec-2013	DATE	16-Dec-2013	
	IF THIS BAR DOES NOT MEASURE 1 INCH THE SCALE IS NOT AS SHOWN				
DRAWN	R. Lichnowsky	DATE	16-Dec-2013	FILE	R890_MorrisonStructures50.pdf
	F. Lichnowsky	DATE	16-Dec-2013	FILE	P:\Dewey-Burdock\Submittals\WNC TR RAI June 2011\Exhibit 2.6-1.mxd
CHECKED					

Powertech (USA) Inc.
Plate 2.6-2
Structure on Top of Morrison Custer & Fall River Counties
Dewey-Burdock Project


Source: NAD 27, South Dakota State Plane South (feet)



- Legend**
- Project Boundary
 - Structure Contour Line
 - Drill Hole Data Point Locations
 - Potential Burdock Well Field 1 Monitor Ring



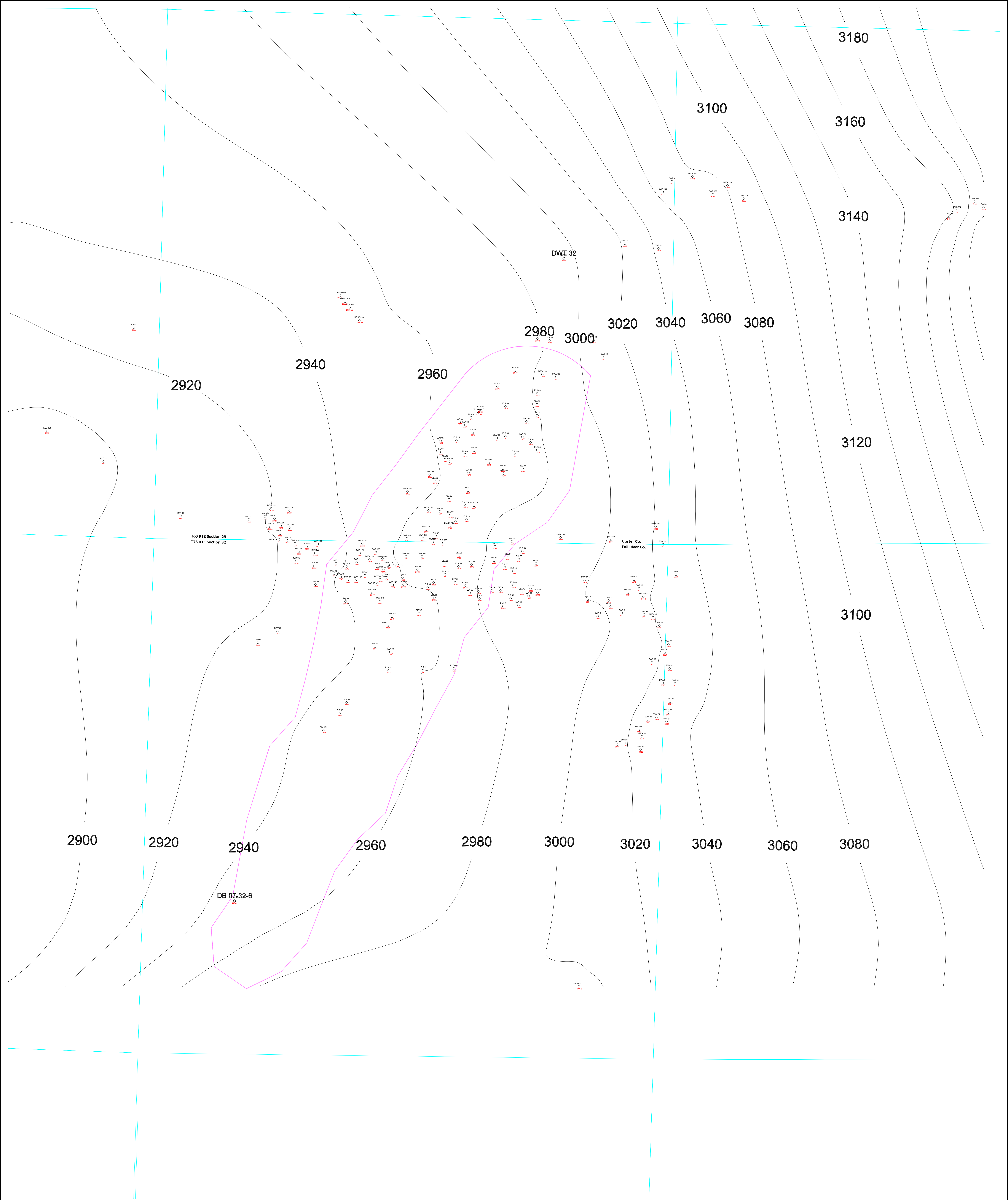
CONSULTANT					
		REVISIONS			
#	DRAWN	CHECKED	APPROVED	DATE	
REF	999				
CHECK SCALES		PROJECT DATE	14-Dec-2013	DATE	14-Dec-2013
This bar does not represent 1 inch to the map or not in original scale		DRAWN	S. Heitrich	PROJECT	03999_MorrisonStructureBurdock.pdf
		CHECKED	F. Lichnovsky	PROJECT	P:\Dewey-Burdock\Submittals\WVC NRC TR RAI June 2011\Plate 2.6-2a_MorrisonStructure.mxd



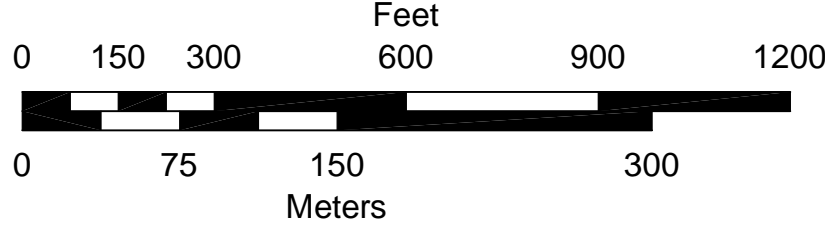
POWERTECH (USA) INC.

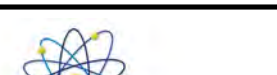
Plate 2.6-2a
Structure to the Top of Morrison
Burdock Area
Township 7S, Range 1E
Dewey-Burdock Project

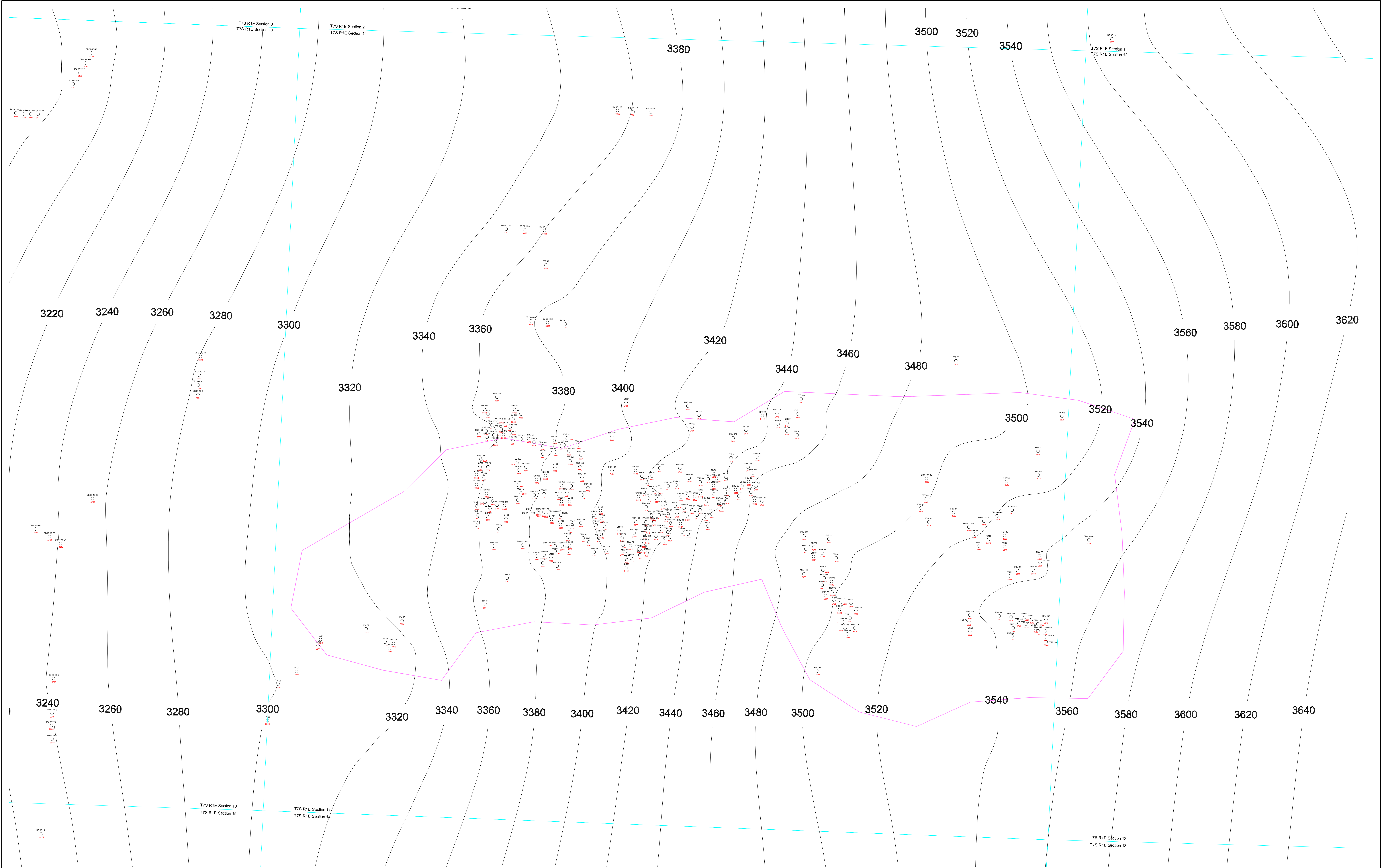
CRS: NAD 27, South Dakota State Plane South (feet)



- Legend**
- Dewey Well Field Monitor Ring (Approx.)
 - Contour Intervals, Feet Above Mean Sea Level
 - Borehole Locations, Countour Intervals in Red

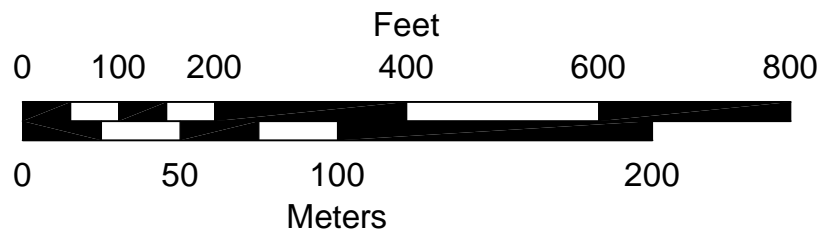



CONSULTANT						 PowerTECH (USA) Inc. Plate 2.6-3a	
		REVISIONS					
		#	DRAWN	CHECKED	APPROVED		
							Structure Map - P of the Chilson Member of the Lakota Formation Dewey Well Field 1
JOB # 348							
CHECK SCALES		PROJECT DATE		DATE		PROJECT	
1" = 300'		14-Dec-2013		13-Dec-2013		Dewey-Burstock Project	
1" = 300'		F. Lichipovsky		CHECKED		W. Mays	
SCALE		1" = 300'		13-Dec-2013		NAD 27, South Dakota State Plane South (feet)	
ASST. - J. G. ...		FILE NAME		k:\powertech\11185\acad\dwgs_final_tridewey_lakota_structure_7-21-08_(3).dwg		or	

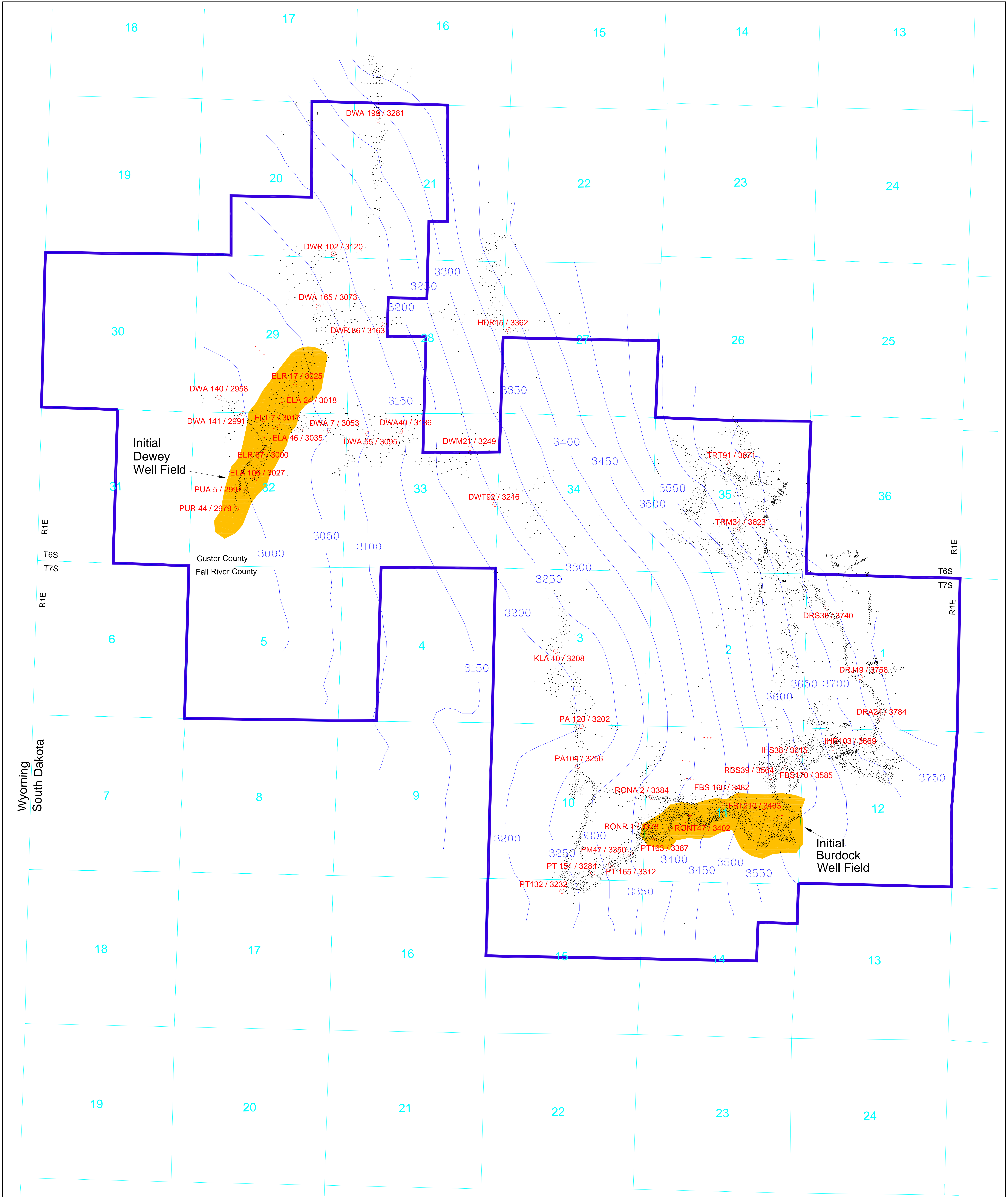


Legend

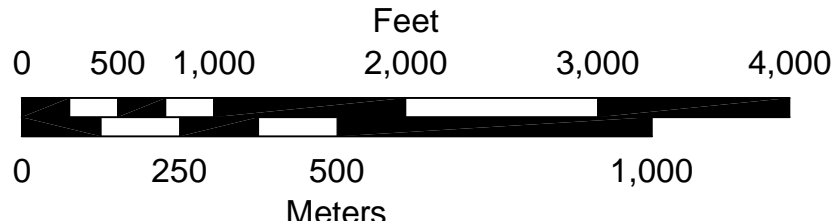
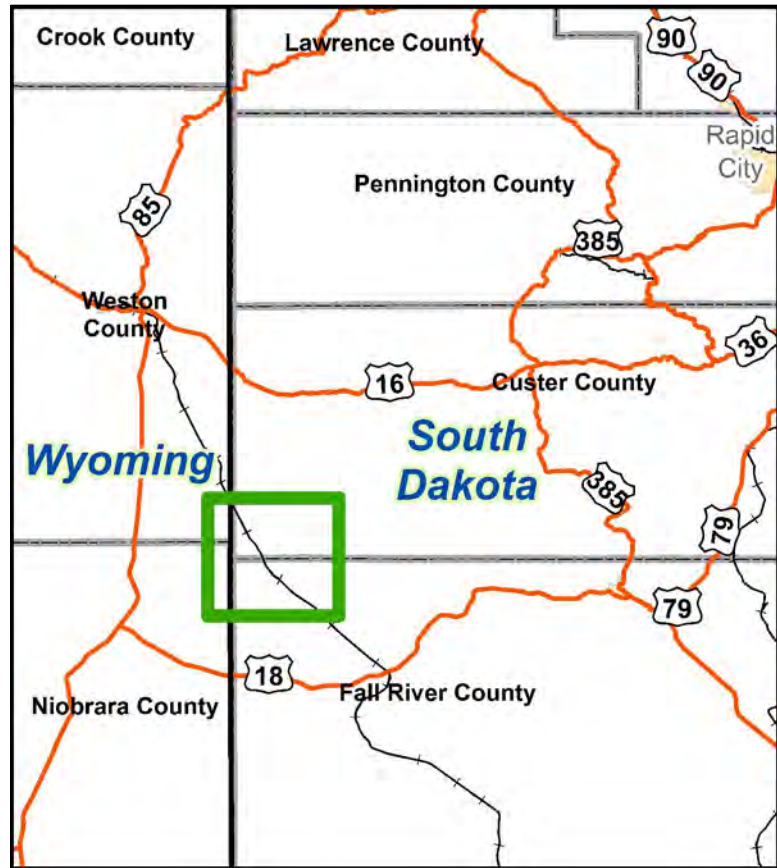
- Burdock Well Field Monitor Ring (Approx.)
- 2900 — Contour Intervals, Feet Above Mean Sea Level
- Borehole Locations, Countour Intervals in Red




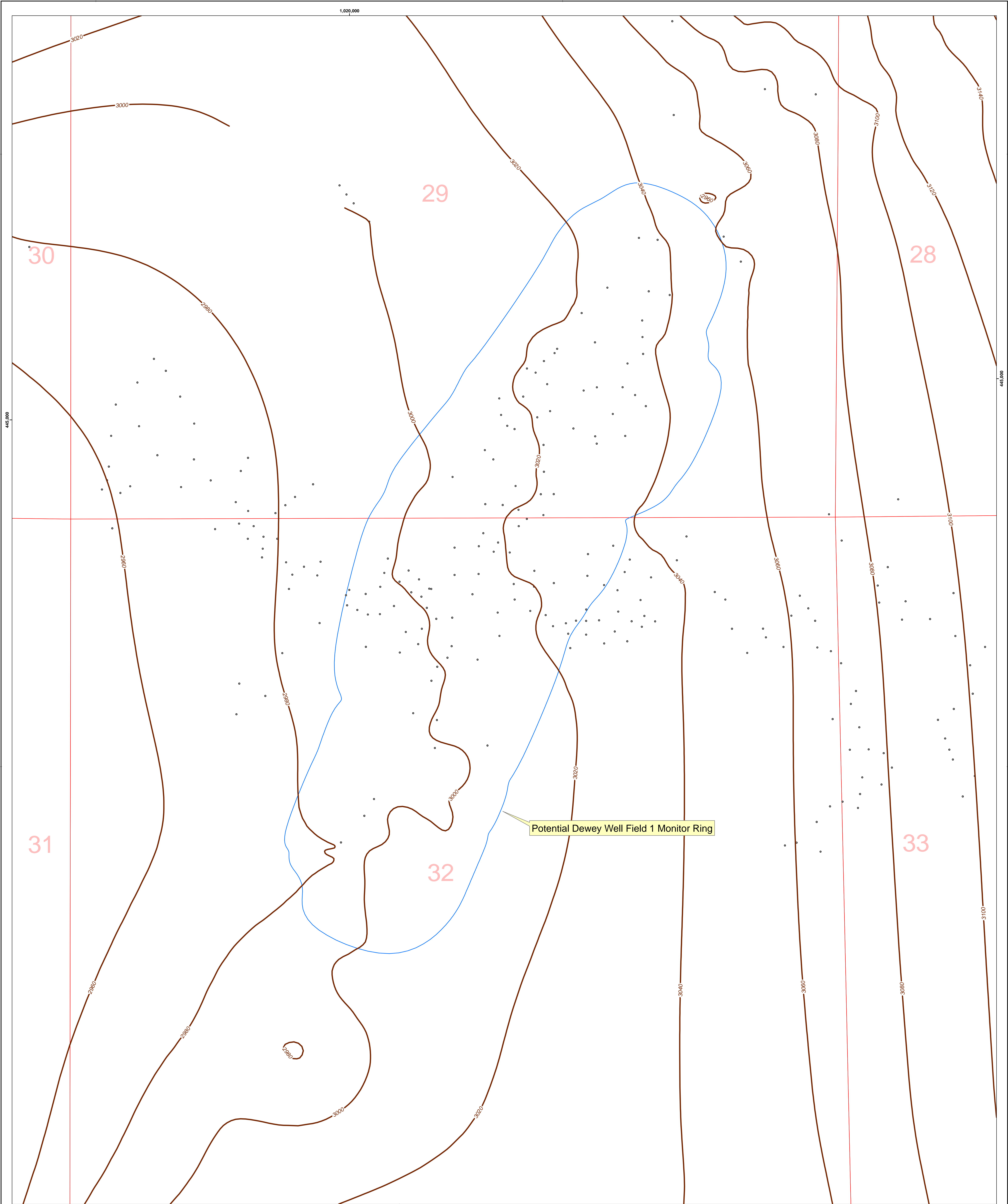
CONSULTANT						 POWERTECH (USA) INC. Plate 2.6-3b		
REV	345	REVISIONS						
		#	DRAWN	CHECKED	APPROVED	DATE		
CHECK SCALES		PLOT DATE		DATE		PROJECT		
If this bar does not appear in the plot, the scale is as indicated.		14-Dec-2013		13-Dec-2013		Dewey-Burdock Project		
SCALE		DRAWN		CHECKED		COORDINATOR		
1" = 200'		R. Lichnovsky		W. Mays		NAD 27, South Dakota State Plane South (feet)		
FILENAME		K:\powertech\11185\acaddwgs_final_1\burdock_lakota structure_7-26-2009.dwg						GP



- Legend**
- Initial Well Fields
 - Permit Boundary
 - Contour Intervals, Feet Above Mean Sea Level
 - Borehole Locations
 - Measured Thickness at Borehole (Hole / Thickness)



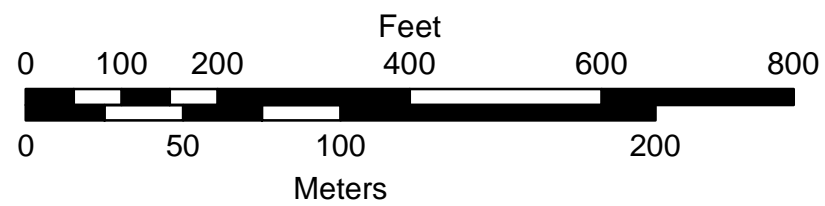
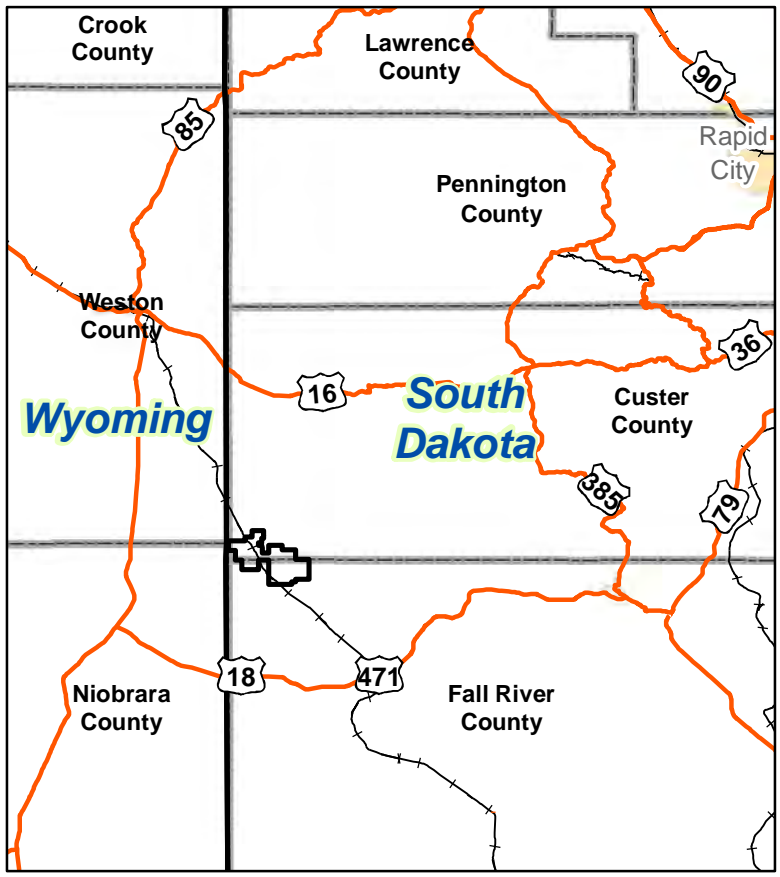
CONSULTANT								
		REVISIONS		PowerTech (USA) Inc.				
		#	DRAWN	CHECKED	APPROVED	DATE	Plate 2.6-4	
</								




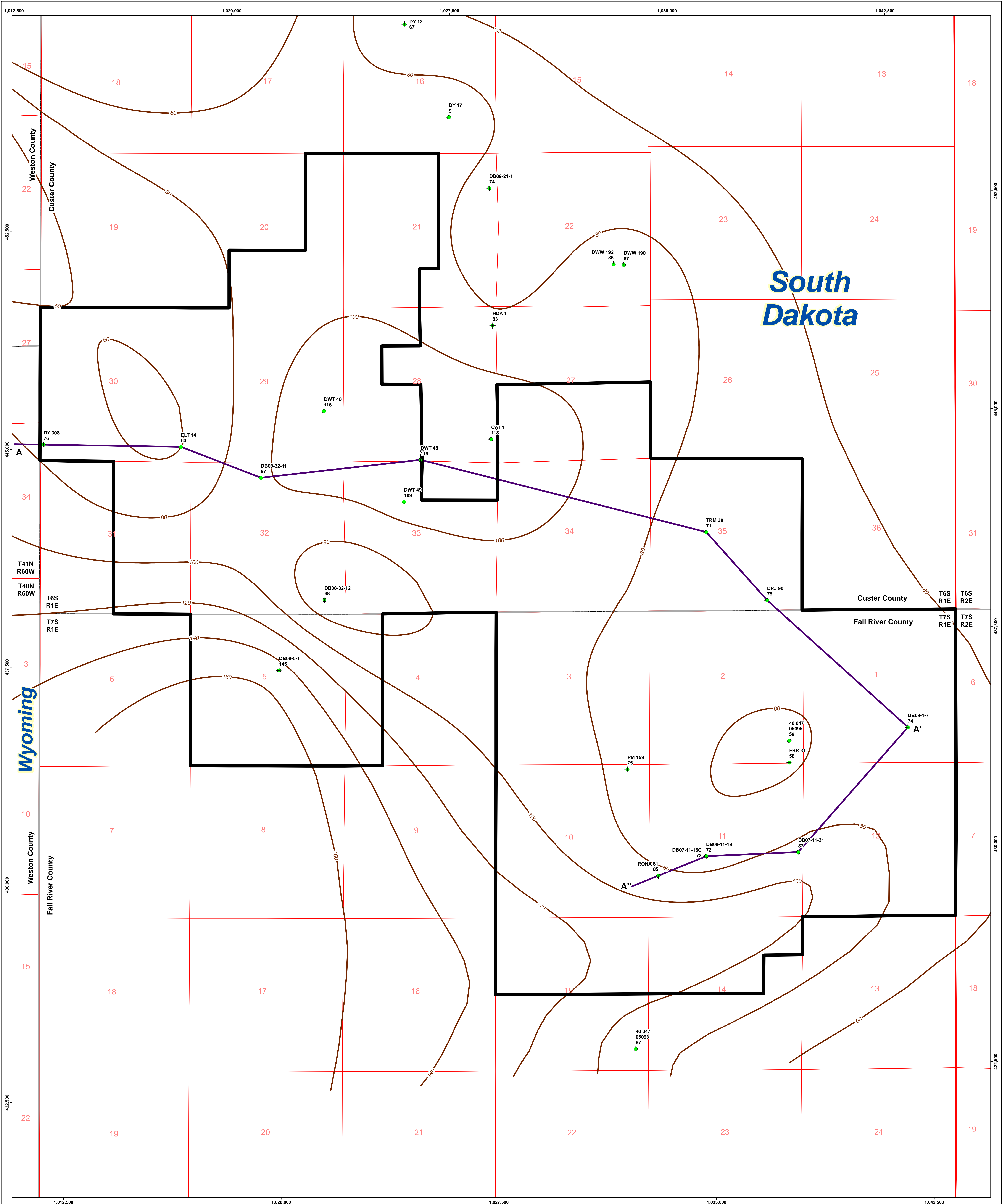
Potential Dewey Well Field 1 Monitor Ring

Legend

- Project Boundary
- Structure Contour Line
- Drill Hole Data Point Locations
- Potential Dewey Well Field 1 Monitor Ring

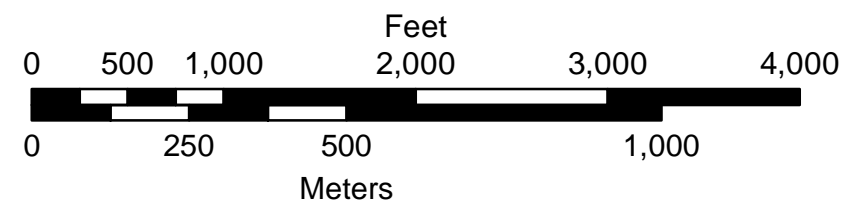
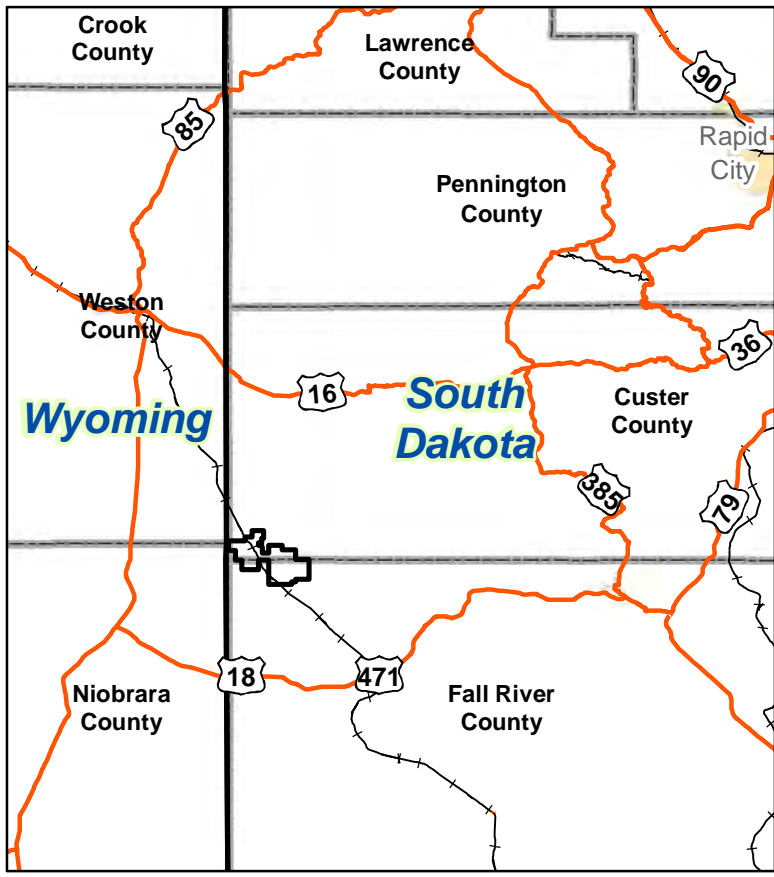



CONSULTANT						 POWERTECH (USA) INC. Plate 2.6-4a Top of Fuson, Structure Contour Map Dewey Well Field 1 Township 6S, Range 1E Dewey-Burdock Project TOWNSHIP 6S, Range 1E, South Dakota State Plane South (feet) P:\Dewey-Burdock\Submittals\WWC NRC TR RAI June 2011\Plate 2.6-4a FusonStructure.mxd	
		REVISIONS					
#	DRAWN	CHECKED	APPROVED	DATE			
REF	001						
CHECK SCALES		DATE		DATE			
If this bar does not measure 1 inch the scale is not as its original size		14-Dec-2013		14-Dec-2013			
DATE		CHECKED		DATE			
S. Hestrick		R001_FusonStructureDewey.pdf					
F. Lichnovsky		P:\Dewey-Burdock\Submittals\WWC NRC TR RAI June 2011\Plate 2.6-4a FusonStructure.mxd					

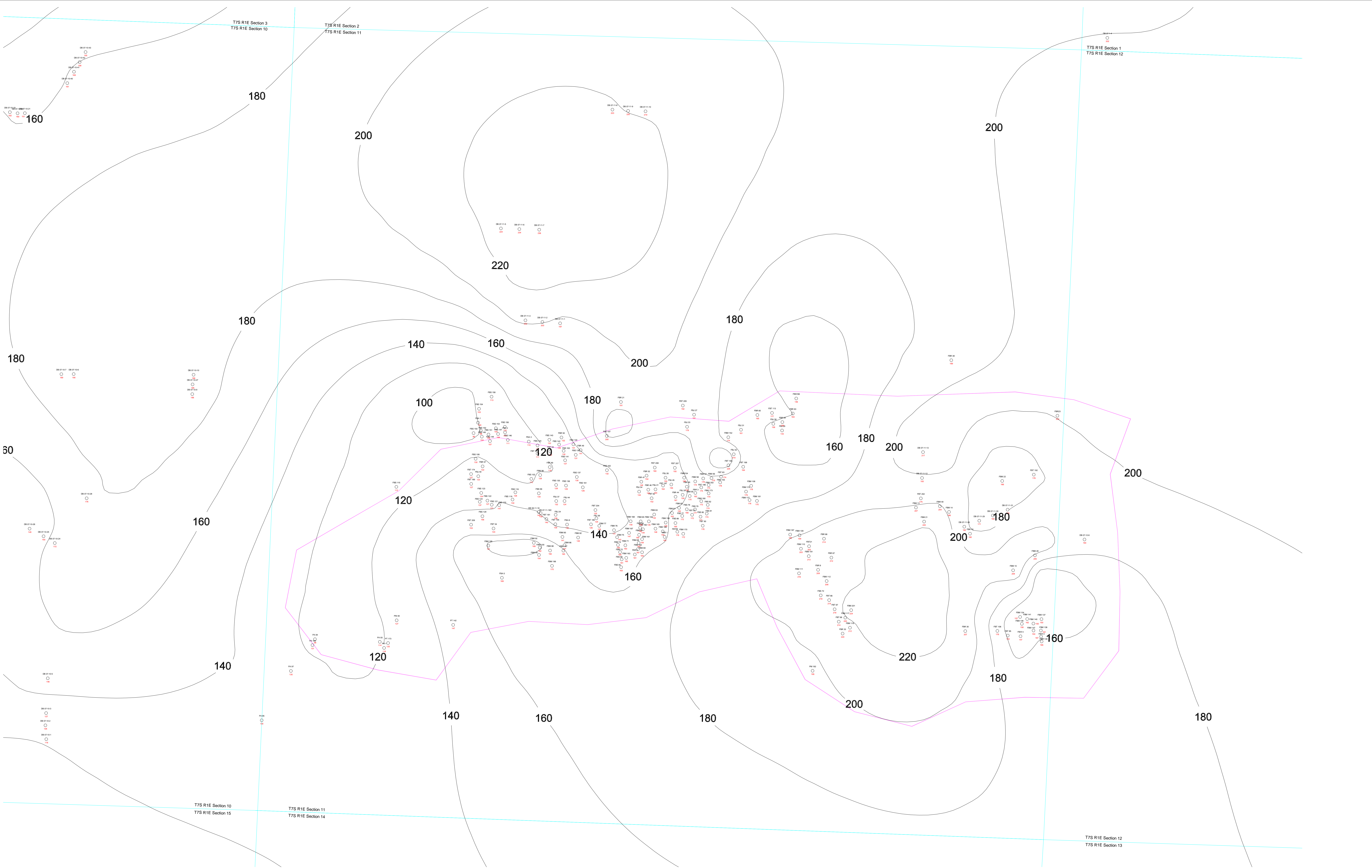


Legend

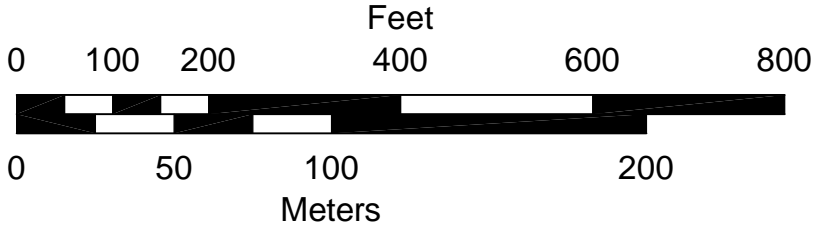
- Project Boundary
- Isopach Contour Line (feet)
- Cross Section Index Line
- Drill Hole Location Showing Thickness (feet)




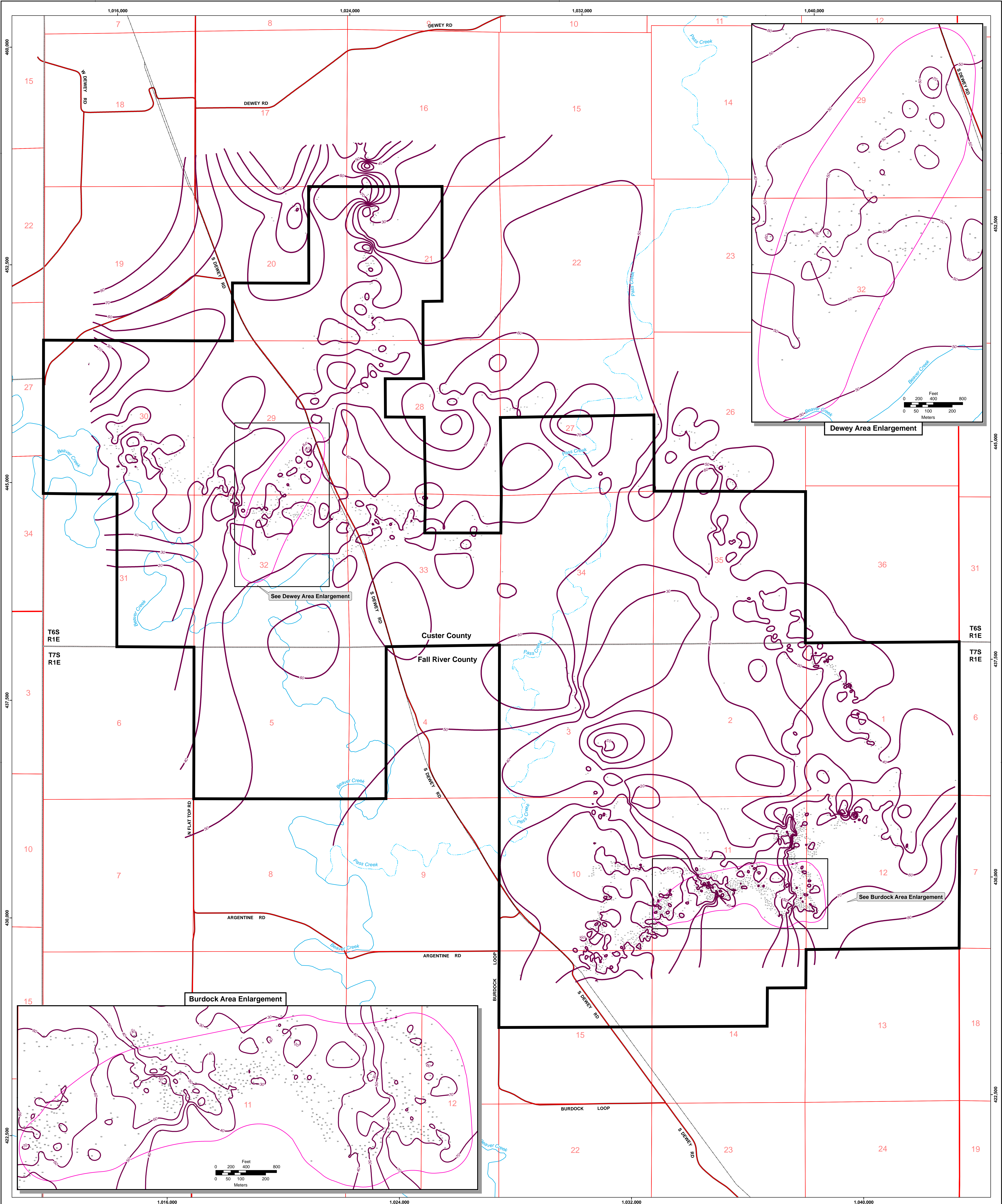
CONSULTANT						 POWERTECH (USA) INC. Plate 2.6-6	
		REVISIONS					
		#	DRAWN	CHECKED	APPROVED	DATE	



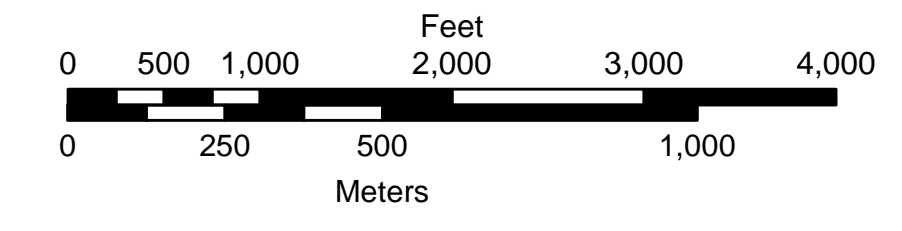
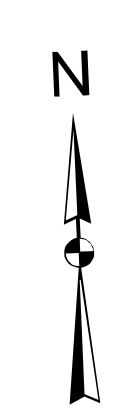
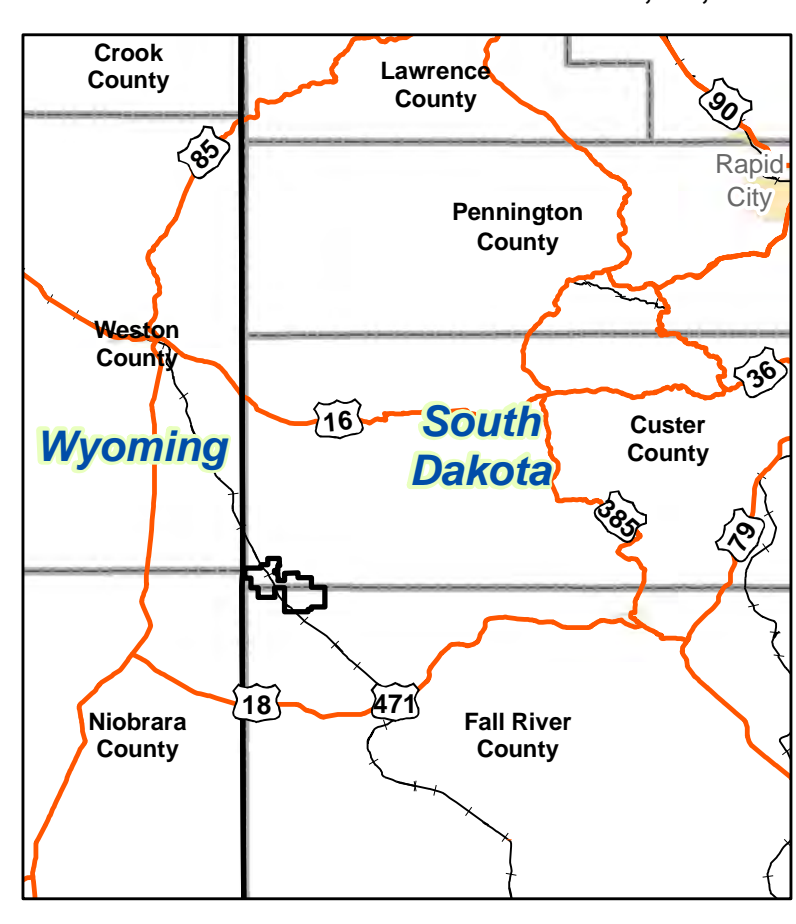
- Legend**
- Burdock Well Field Monitor Ring
 - Thickness
 - Borehole Locations, Thickness in Red




CONSULTANT						 PowerTech USA Inc. Plate 2.6-7a		
		REVISIONS				Isopach of the Chilson Member of the Lakota Formation Burdock Well Field 1		
		#	DRAWN	CHECKED	APPROVED			DATE
REV	004							
CHECK SCALES								
If this bar does not measure 1 inch the map is not at its original scale		DATE		PLOT DATE		PROJECT		
		14-Dec-2013		26-Jul-2009		Dewey-Burdock Project		
SCALE		DRAWN		CHECKED		COORDINATOR		
1" = 200'		R. Lichnovsky		W. Mays		NAD 27, South Dakota State Plane South (feet)		
		FILENAME		k:\powertech\11185\acad\dwg\final_1rburdock lakota isopach 7-26-2009.dwg		or		



- Legend**
- Project Boundary
 - BNSF Railroad
 - County Roads
 - Ephemeral Streams
 - Perennial Streams
 - Fuson Thickness (feet)
 - Initial Well Field Areas
 - Measured Thickness of Fuson Shale (drill hole location is the center of text label)



CONSULTANT						 POWERTECH (USA) INC. Plate 2.6-8 Isopach of the Fuson Shale	
#	REVISIONS						
	DRAWN	CHECKED	APPROVED	DATE			
REF	984						
CHECK SCALES							
* If this form does not measure 1 inch this may not be the original drawing							
DATE	26-Jun-2013	DATE	26-Jun-2013				
DRAWN	Hettich, Lichnovsky	PDF FILE	R864_FusonIsopach.pdf				
CHECKED	F. L. Lichnovsky	PDF FILE	P:\Dewey-Burdock\Submittals\Technical Report (TR)\June 2013 Revisions\FusonIsopach.mxd				