

**IDAHO DEPARTMENT OF LANDS**  
**DIRECTOR'S OFFICE**  
300 N 6th Street Suite 103  
PO Box 83720  
Boise ID 83720-0050  
Phone (208) 334-0200  
Fax (208) 334-5342



MICK THOMAS, DIVISION ADMINISTRATOR  
SECRETARY TO THE COMMISSION

**IDAHO OIL AND GAS**  
**CONSERVATION COMMISSION**  
*Betty Coppersmith, Chairman*  
*Marc Shigeta, Vice-Chairman*  
*Jim Classen*  
*Renee Love, Ph.D*  
*Dustin T. Miller*

February 11, 2020

Snake River Oil & Gas, LLC  
Attn: Mr. Chris Weiser  
117 East Calhoun  
Magnolia, AR 71753-3528

SUBJECT: Conditional Transfer of Well Permits, Well Operations

Dear Mr. Weiser,

This correspondence is notification that the Idaho Department of Lands recognizes the transfer of the well permits listed below from AM Idaho, LLC to Snake River Oil & Gas, LLC. The designation of Snake River Oil & Gas, LLC as the designated operator of the wells only applies to the wells designated below and does not apply to leases administered by Idaho Department of Lands, current applications, or Orders issued by Idaho Department of Lands or the Idaho Oil & Gas Conservation Commission to Alta Mesa Services, LP, or AM Idaho LLC.

The Department of Lands received and accepted your Power of Attorney and Acknowledgment of Surety from RLI Insurance Company in the amount of \$100,000 for the following wells:

<b>No.</b>	<b>API Number</b>	<b>Well Name</b>
1.	11-075-20-020	DJS Properties #1-15
2.	11-075-20-022	ML Investments #2-10
3.	11-075-20-023	DJS Properties #2-14
4.	11-075-20-024	Kauffman #1-34
5.	11-075-20-025	ML Investments #1-11
6.	11-075-20-026	ML Investments #1-3
7.	11-075-20-027	Kauffman #1-9
8.	11-075-20-029	ML Investments #2-3
9.	11-075-20-031	ML Investments #3-10
10.	11-075-20-033	Barlow #1-14
11.	11-075-20-032	Fallon #1-10

The Idaho Department of Lands does not recognize the transfer of operator for the Tracy Trust #3-2 well (USWN 11-075-20011) because it has not received a bond for the required amount of \$100,000 per IDAPA 20.07.02.220.03 and IDAPA 20.07.02.220.04.

By assuming operatorship of the wells listed above, Snake River agrees to assume full responsibility for the operation and eventual abandonment in conformity with the laws, rules, regulations and orders issued by the Commission.

If you have any questions, please don't hesitate to contact me at your earliest convenience.

Sincerely,

A handwritten signature in blue ink that reads "Mick Thomas". The signature is written in a cursive style with a large initial "M".

Mick Thomas  
Division Administrator, Oil & Gas  
Secretary to the Oil & Gas Commission  
(208) 334-0298 Office  
Website: <https://ogcc.idaho.gov>  
[News](#) | [Facebook](#) | [Twitter](#) | [Web](#)  
[Sign up to receive news from IDL](#)

ecc: Chad Rader, Richard Brown, Nathan Caldwell, James Thum

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**IDAHO OIL AND GAS  
CONSERVATION COMMISSION**  
*James Classen  
Ken Smith  
Margaret Chipman  
Chris Beck  
Sid Cellan*

August 19, 2013

Ronda Louderman  
Alta Mesa Services, LP  
15021 Katy Freeway, Suite 400  
Houston, TX 77094

Re: Permit to Drill LU600120 (API#11-075-20-023), DJS Properties 2-14

Ms. Louderman:

The Idaho Department of Lands has completed our review of this permit to drill for oil and gas. Enclosed is a copy of the approved permit. This permit was approved with the following stipulations:

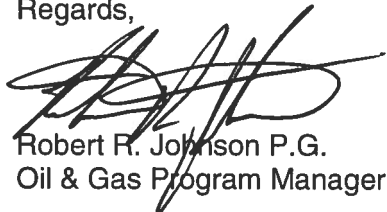
1. The permittee shall be required to submit an affidavit covering the initial BOP pressure test after installation signed by the operator or contractor attesting to the satisfactory pressure test.
2. The permittee shall ensure tanks are adequately sized, designed and constructed for the reception and confinement of mud and cuttings and to prevent contamination of streams and potable water.
3. Drilled holes cannot be used for any other purposes unless they are constructed according to the applicable well construction standards administered by the Idaho Department of Water Resources.
4. Applicant will obtain any needed water rights from Idaho Department of Water Resources if nearby wells will be used to supply water for the drilling operations.
5. All well log information required by IDAPA 20.07.02.091 will be submitted to IDL within 30 days of the logs being run.
6. Idaho Department of Lands inspectors shall have 24 hour, unencumbered access for compliance and regulatory purposes.

Please ensure that all operations are conducted in accordance with the requirements of IDAPA 20.07.02 (Rules Governing Conservation Of Crude Oil And Natural Gas In The State Of Idaho).

Ms. Ronda Louderman  
August 19, 2013  
Page 2

This permit will be administered by Nancy Welbaum in our Southwest Supervisory Area. She will be inspecting the drilling operation. Please contact her at 208-334-3488 if you have any questions.

Regards,



Robert R. Johnson P.G.  
Oil & Gas Program Manager

cc: Nancy Welbaum  
Chad Hersley, IDWR, PO Box 83720, Boise, Idaho 83720-0098  
Patti Nitz, Payette County Planning and Zoning



**IDAHO OIL AND GAS CONSERVATION COMMISSION**  
**Application For Permit to Drill, Deepen or Plug Back**

APPLICATION TO: Drill (\$2,000)  Deepen (\$500)  Plug Back (\$500)

NAME OF COMPANY OR OPERATOR: Alta Mesa Services, LP Date: 7-17-2013  
 Address: 15021 Katy Frwy., Suite 400  
 City: Houston State: TX Zip Code: 77094 Telephone: 281-530-0991  
 Contact Name: Ronda Louderman Email Address: rlouderman@gmail.com

**DESCRIPTION OF WELL AND LEASE**

Name of Lease: DJS Properties Well Number: 2-14 Elevation (ground) 2479.81  
 Well Location: Section: 14 Township: 8N Range: 4W (or block and survey)  
 (give footage from Section lines): 95' from North Section Line, 2315' from West Section Line  
 Field and Reservoir (if wildcat, so state): Willow County: Payette  
 Distance, in miles, and direction from nearest town or post office: 5 miles to the North/Northeast  
 Nearest distance from proposed location to property or lease line: 4,626' as shown on attached lease map  
 Distance from proposed location to nearest drilling, completed or applied for on the same lease: 2,745' feet  
 Proposed depth: 5,500' Rotary or cable tools: Rotary  
 Planned logging tools: See page 19 - Wireline  
 Approx date work will start: August 1, 2013 Number of acres in lease(s): 640 acre unit, 6,979.72 acre lease  
 Number of wells on lease, including this well, completed in or drilling to this reservoir: 1

If lease purchased with one or more wells drilled, complete the following information:

Purchased from (name) Bridge Energy LLC  
 Address of above 1580 Lincoln St., Suite 110, Denver, CO 80203  
 Status of bond responsibility transferred to Alta Mesa Services, LP coverage under blanket bond

Remarks: (If this is an application to deepen or plug back, briefly describe work to be done, giving present producing zone and expected new producing zone) N/A

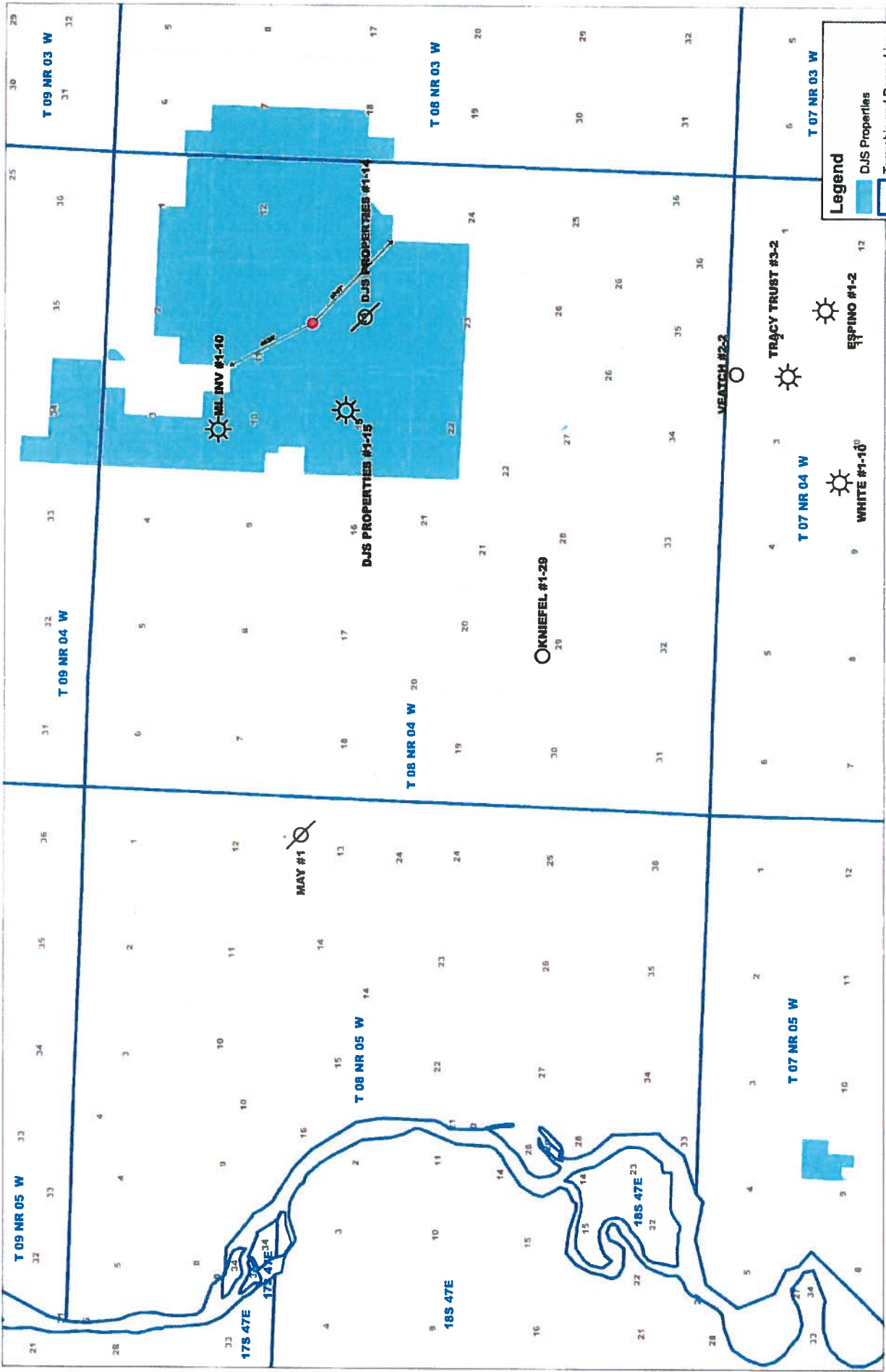
**CERTIFICATE:** I, the undersigned, state that I am the Regulatory Coordinator  
 of Alta Mesa Services, LP (company) and that I am authorized by said company to make this application and that this application was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

Date: 7-17-2013 Signature: Ronda Louderman

Permit Number: LU600120 Approval Date: 8/19/13 Approved by: Thomas M. Self  
 API Number: 11-075-20023

**NOTICE:** Before sending in this form, be sure that you have given all information requested. See instructions on back.

**RECEIVED**  
 JUL 29 2013  
 Idaho Dept. of Lands Rev 05/31/12  
 SWI



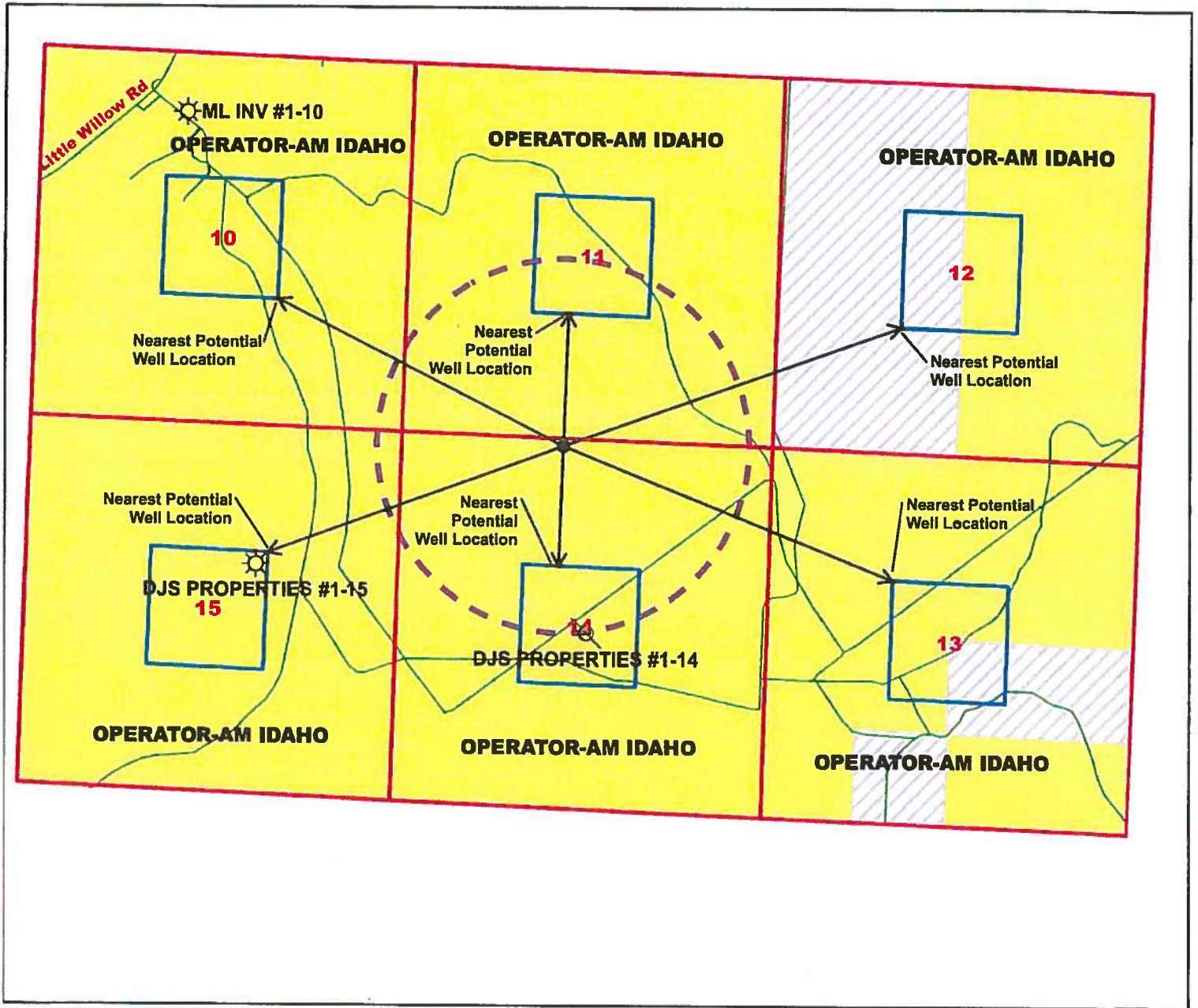
**Legend**

- DJS Properties
- Township and Range Lines
- Section Lines
- Proposed Well Location

**DJS PROPERTIES**  
07/22/13

1 inch equals 2,000 feet





## DJS Properties 2-14

07/19/13

### Legend

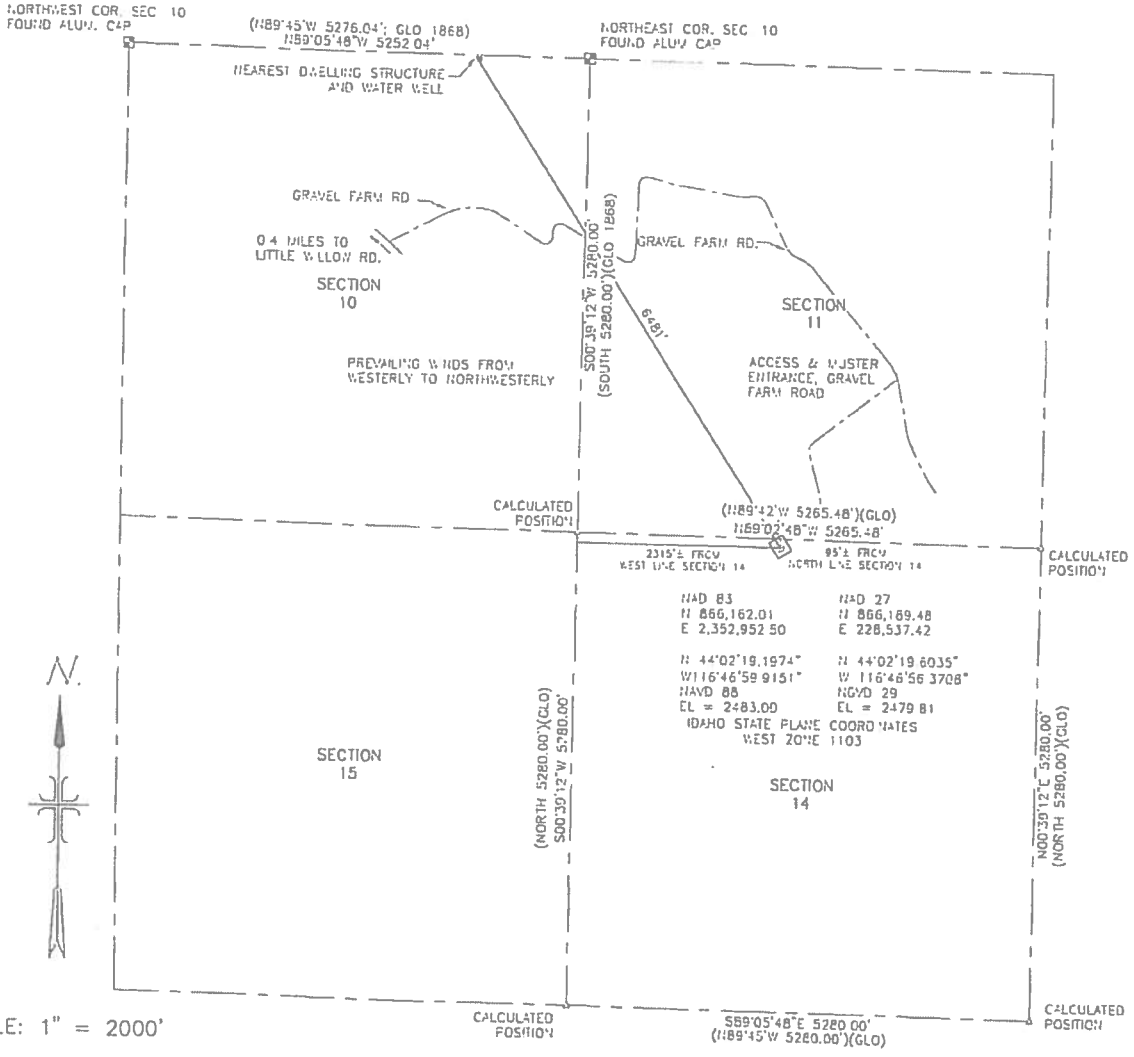
- Legal Location
- - - Anticipated Well Drainage Zone (1 Mile Diameter Circle)
- Section Lines
- Roadways
- Property Boundary
- AM Idaho
- BLM owns mineral rights only
- Proposed Well Location



1 inch equals 2,000 feet

# EXHIBIT MAP OF DJS PROPERTIES 2-14

Lying in a Portion of the N1/2 of Section 14 and a portion of  
the S1/2 of Section 11, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



SCALE: 1" = 2000'

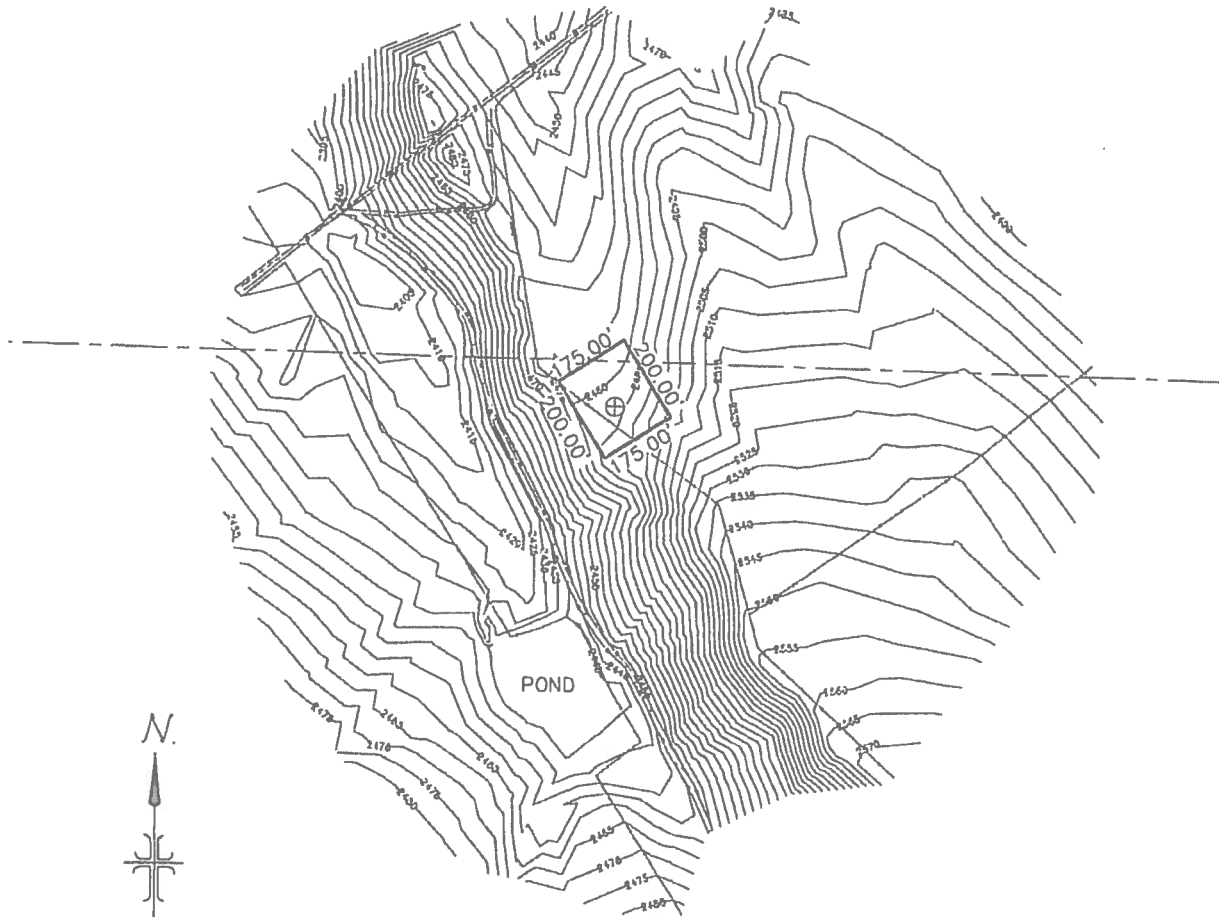


DATE: July 16, 2013	FILE: 0165-05 DJS PROPERTIES 2-14.dwg
	<p style="text-align: center;"><i>Surveyors • Planners</i></p> <p style="text-align: center;">1103 West Main Street Middleton, Idaho 208-585-5858</p>

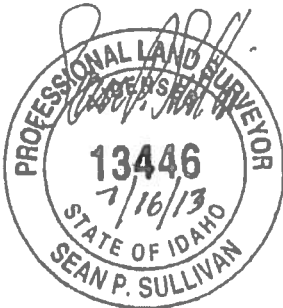


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Lying in a Portion of the N1/2 of Section 14 and a portion of  
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Boise Meridian, Payette County, Idaho  
2013



SCALE: 1" = 400'



## LEGEND

- ER Existing Edge of Dirt Road
- Existing Fence
- 2520 Existing Major Contour Line, Interval=5'

DATE: July 16, 2013

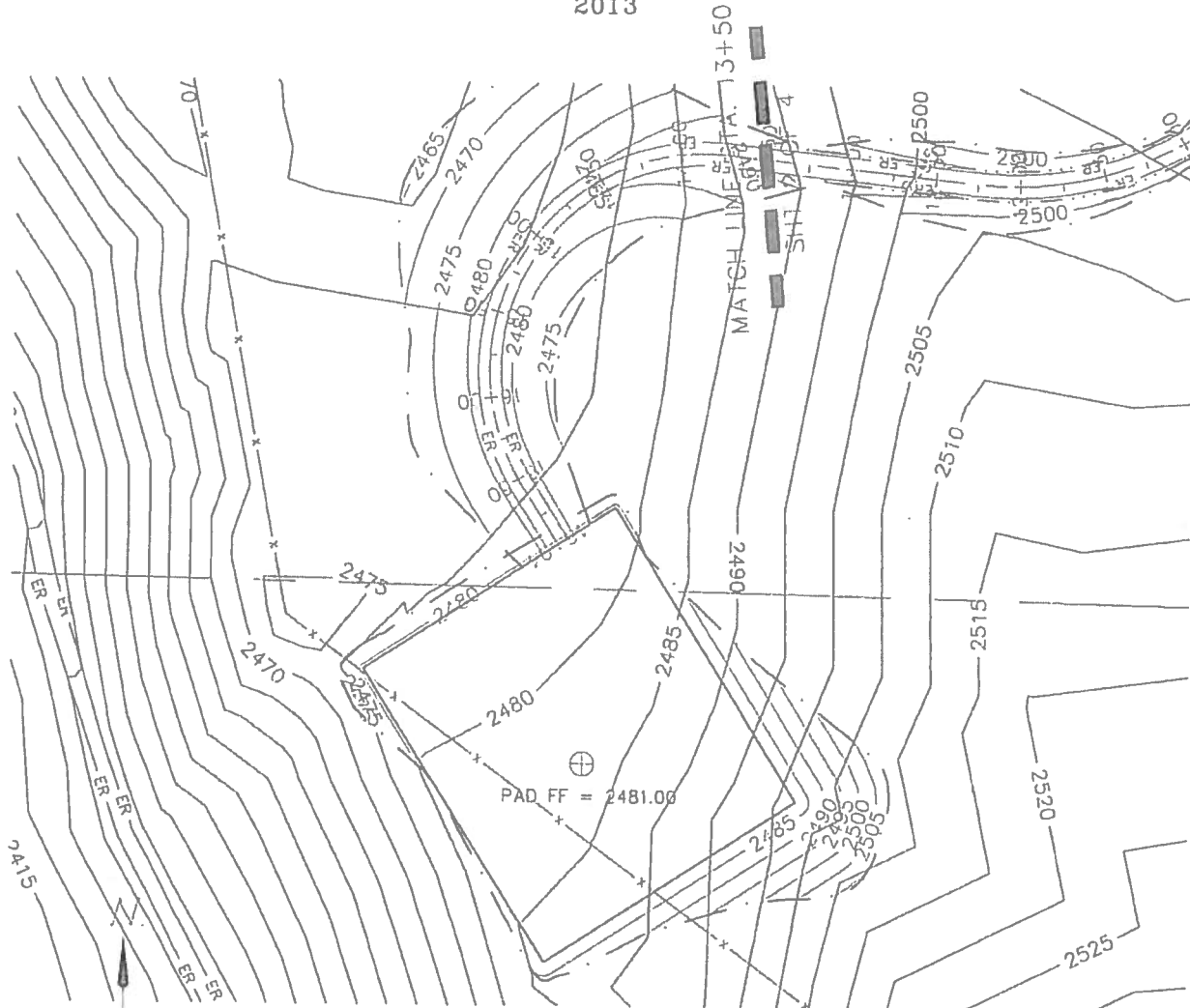
FILE: 0165-05 2-14 PAD.dwg



*Surveyors • Planners*  
1103 West Main Street  
Middleton, Idaho  
208-585-5858

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Lying in a Portion of the N1/2 of Section 14 and a portion of  
the S1/2 of Section 11, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



## LEGEND

- ER — Existing Edge of Dirt Road
- x - Existing Fence
- ER - Proposed Access Road
- 2520 — Existing Major Contour Line, Interval=5'
- Proposed Pad Site
- - - Limits of Pad Earthwork - 2:1 C/F Slopes
- Proposed Major Contour Line, Interval=5'

SCALE: 1" = 100'

**PAD**  
TOTAL CUT = 7,488 CY  
TOTAL FILL = 1,304 CY

**ROAD**  
TOTAL CUT = 2,682 CY  
TOTAL FILL = 6,800 CY

SHEET 1 OF 4

DATE: July 15, 2013

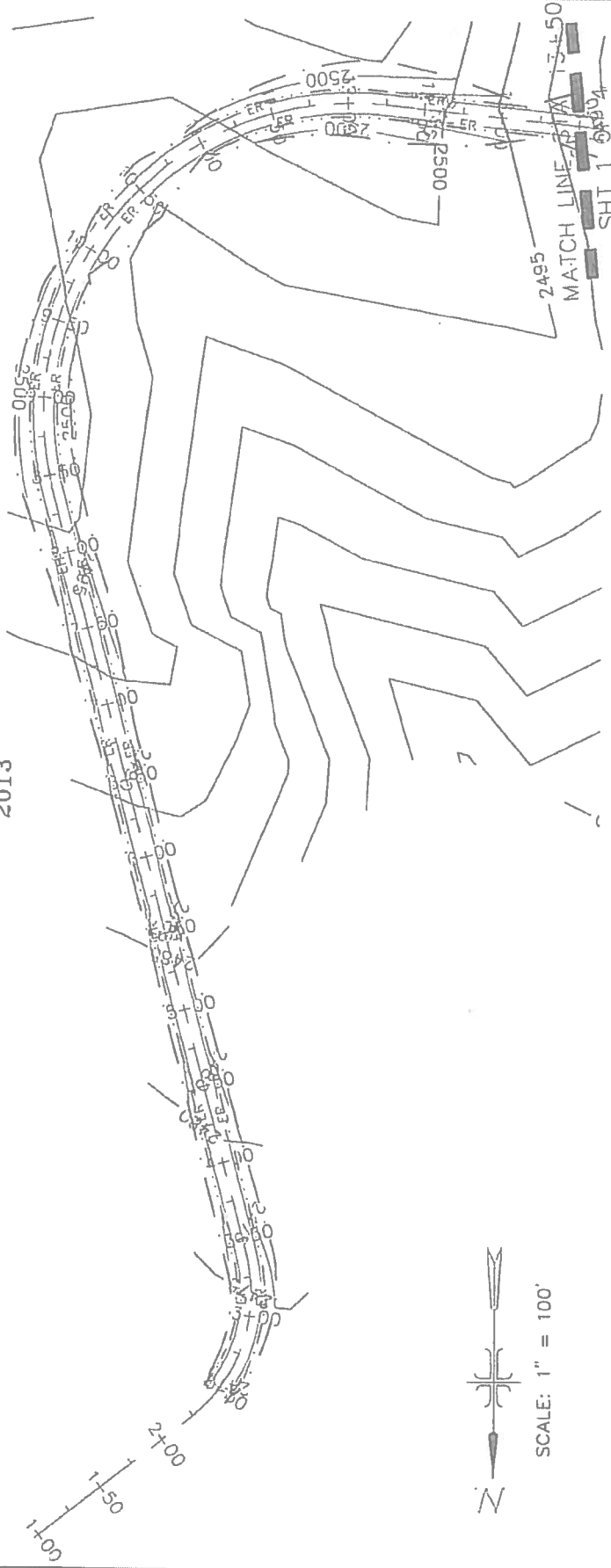
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2013



SCALE: 1" = 100'

DATE: July 15, 2013	FILE: 0165-05 2-14 PAD QUANTITIES.dwg
	Surveyors • Planners 1103 West Main Street Middleton, Idaho 208-585-5858

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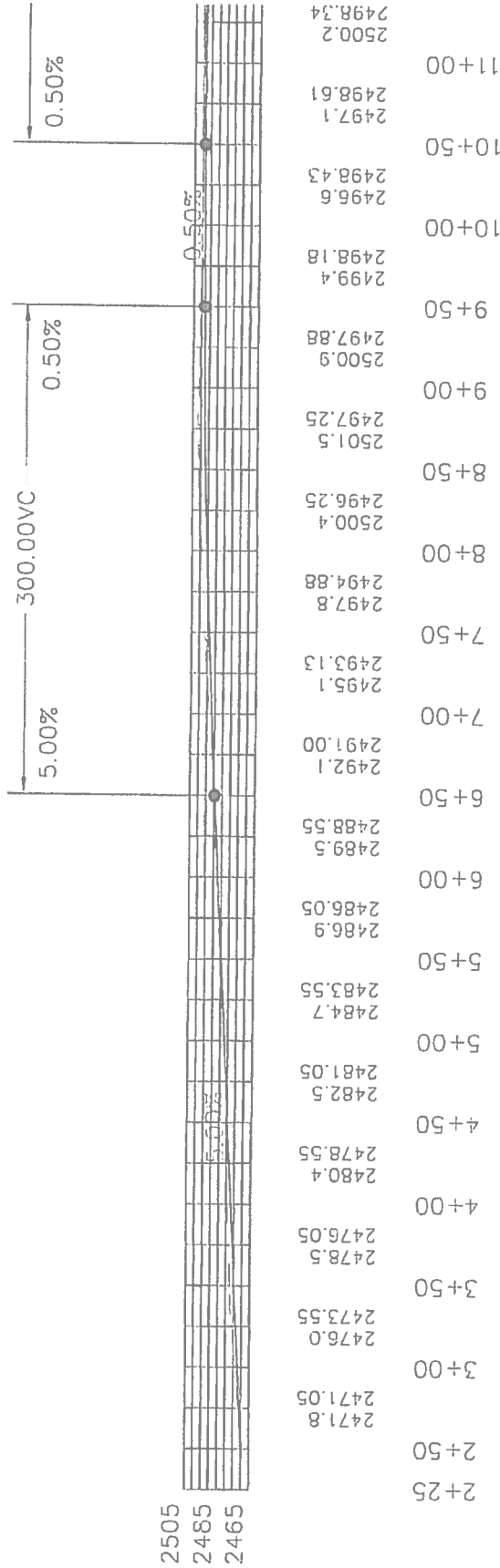
Lying in a Portion of the N1/2 of Section 14 and a portion of  
the S1/2 of Section 11, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013

PVC STA. 6+50.00  
ELEV. 2489.80

PM STA. 8+00.00  
ELEV. 2497.30

PVT STA. 9+50.00  
ELEV. 2498.05

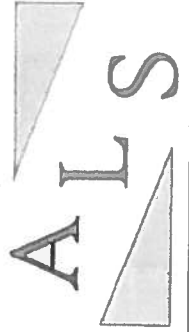
PVC STA. 10+50.00  
ELEV. 2498.55



SCALE: 1" = 100'

DATE: July 15, 2013

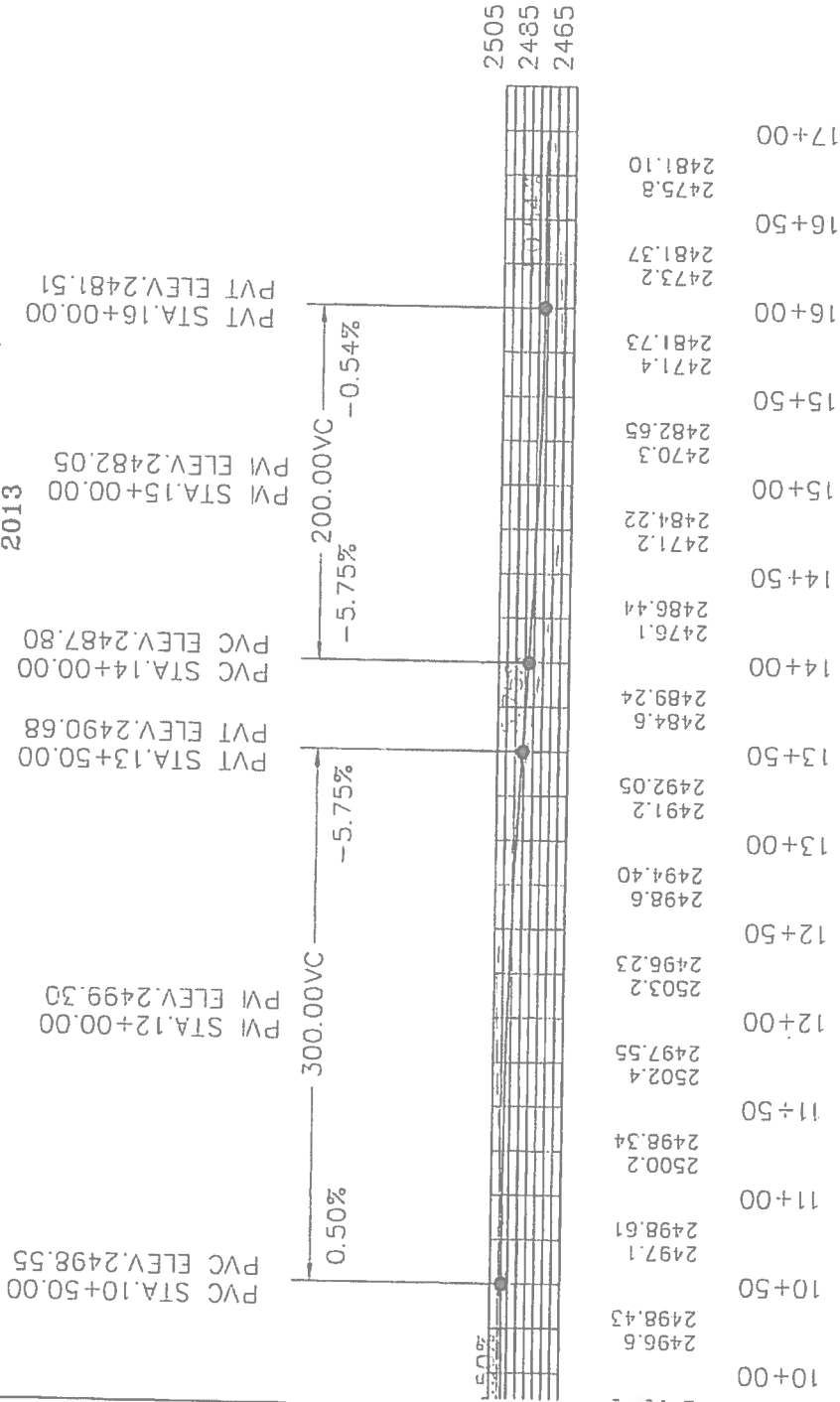
FILE: 0165-05 2-14 PAD QUANTITIES.dwg



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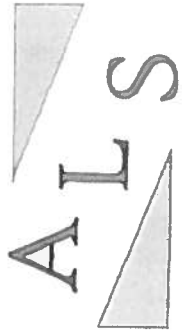
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2013



SCALE: 1" = 100'

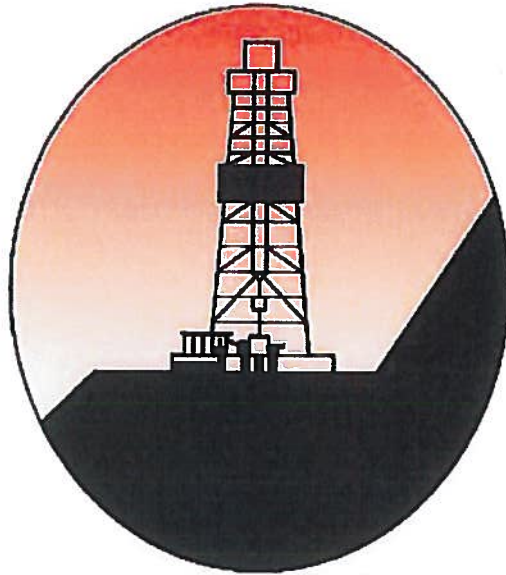
DATE: July 15, 2013

FILE: 0165-05 2-14 PAD QUANTITIES.dwg



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1103 West Main Street  
Middleton, Idaho  
208-585-5858





**ALTA MESA**

**ALTA MESA SERVICES, LP**

**IDL Permit Supplement**

**DJS Properties 2-14**

**Willow**

**Payette County, ID**

**July 24, 2013**

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## 1 Background Information

**Objective:** The objective of this operation is to drill a vertical well to develop the "Willow Sand".

<b>AFE #:</b>	TBD	<b>County:</b>	Payette
<b>Well Type:</b>	Vertical	<b>State:</b>	Idaho
<b>Well Name:</b>	DJS Properties 2-14	<b>Section:</b>	14
<b>Field:</b>	Willow	<b>Township:</b>	8N
		<b>Range:</b>	4W

### Mapping Reference:

<b>System:</b>	NAD83 / NAD27	<b>Mag Dec:</b>	14.15° (01-Jul-2013)
<b>Zone:</b>	UTM11	<b>Grid Conv:</b>	-0.75113 °
<b>SPCS:</b>	Idaho West Zone 1103	<b>Total Corr:</b>	14.90113°

### Coordinates:

#### Surface Location:

##### NAD83

**Lat:** N 44° 02' 19.1974" (44.03867°)  
**Long:** W 116° 46' 59.9151" (116.78330°)  
**SPCS:** 2352952.50 ft E  
866162.01 ft N

##### NAD27

**SPCS:** 228537.42 ft E  
866189.48 ft N

#### Bottom Hole Location:

##### NAD83

**Lat:** N 44° 02' 19.1974" (44.03867°)  
**Long:** W 116° 46' 59.9151" (116.78330°)  
**SPCS:** 2352952.50 ft E  
866162.01 ft N

##### NAD27

**SPCS:** 228537.42 ft E  
866189.48 ft N

### Elevation:

**GL:** 2479.81 ft  
**RKB:** 2495.81 ft

### Planned TD:

**MD:** 5500.0 ft  
**TVD:** 5500.0 ft

**Operator #:** NA  
**Field #:** Willow  
**District:**

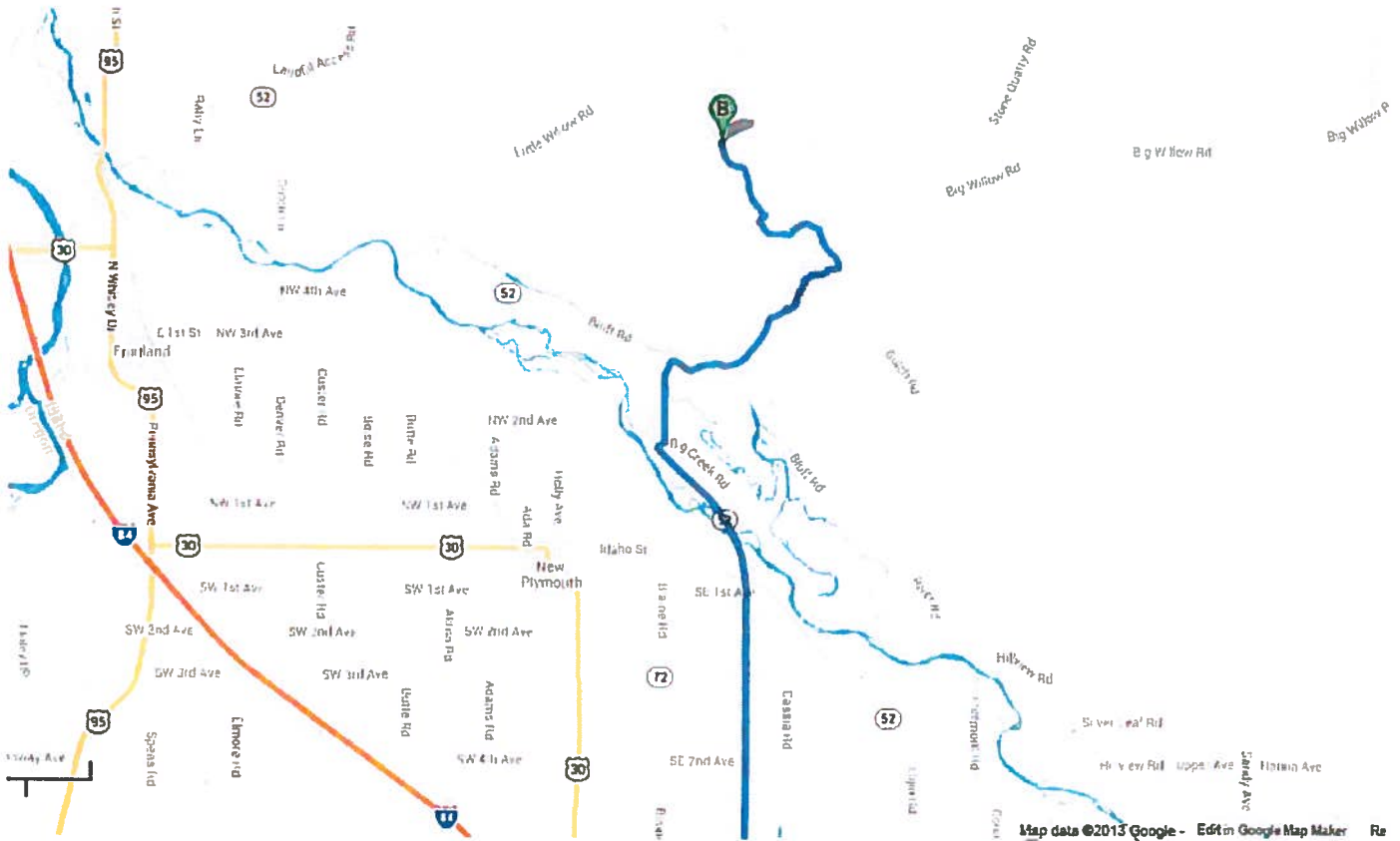
**Issue Date:**  
**API #:**  
**Permit #:**

**Contractor:** TD Well Services

**Rig:** 101

**Directions:**

From Boise, take Interstate 84 West. Go 36.6 miles and take Exit 13 toward Black Canyon Junction. Go 0.2 miles and turn right onto Black Canyon Exit. Go 0.4 miles and turn left onto Sand Hollow Road. Go 5.8 miles and continue straight onto State Highway 52 West. Go 3.1 miles and turn right onto Big Willow Road. Go 3.7 miles and turn left on the farm road. Go 1.4 miles and turn right. Go 0.1 miles and turn left onto farm road. Go 1.1 miles and turn left to enter pad access road.



## 2 Geologic Prognosis

### 2.1 Prospect

The sand to be tested is a Wildcat Sand, time equivalent to the Willow Sand. It is estimated that the target sand will be encountered at +/- 4450' TVD in the Prospect.

### 2.2 PROPOSED WELL:

The well is to be vertically drilled to a measured depth of 5500' (5500 TVD). The Surface location being in Section 14-8N-4W (Payette County, Idaho).

### 2.3 POTENTIAL DRILLING HAZARDS:

- **Shallow Gas**

There is the potential to encounter shallow gas in this well at multiple depths. The Hamilton sand (1830' MD) and the OSS Sand (2065' MD) have had gas shows throughout the basin.

Well Name	Offset Distance	Depth Gas Found	Comparable Depth/Formations in SR 1-21	Comments
Virgil Johnson #1	2.75 miles S/SW	1410'-1610' MD	1325'-1865' MD / Hamilton / OSS Sand	Caused Blowout – Tools, Sand, and Shale ejected from well.
Tracy Trust 3-2	4.5 miles S/SW	1590' MD, 1722'-1800' MD, 2000' – 2200' MD	1160'-1865' MD / Espino / Hamilton / OSS Sand	Small Gas Shows in each of sands.
Interstate Finance #1	4.8 Miles W	1267' MD	1865' Hamilton Sand	Loose Sand – Well Flowed for 3 hours before being controlled and killed.

- **Ash beds**

Mud logs of several wells in the Willow field area describe zones of shales that contain bentonite. Bentonite is a clay, generally formed by the weathering of volcanic ash, and it tends to expand a great deal as it absorbs fluid. The Bridge ML 1-10 experienced a zone of shale that included bentonite approximately 400' thick at depths of +/- 3250' – 3650' MD. The drilling report states that they experienced a noticeable drop in ROP and upon pulling the bit out of the hole they found the bit to be balled solid with sticky, mushy clay. Correlation between the wells estimates that the Bentonitic shale may also be found at depths of +/- 3600' – 4000' MD in the prospect well.



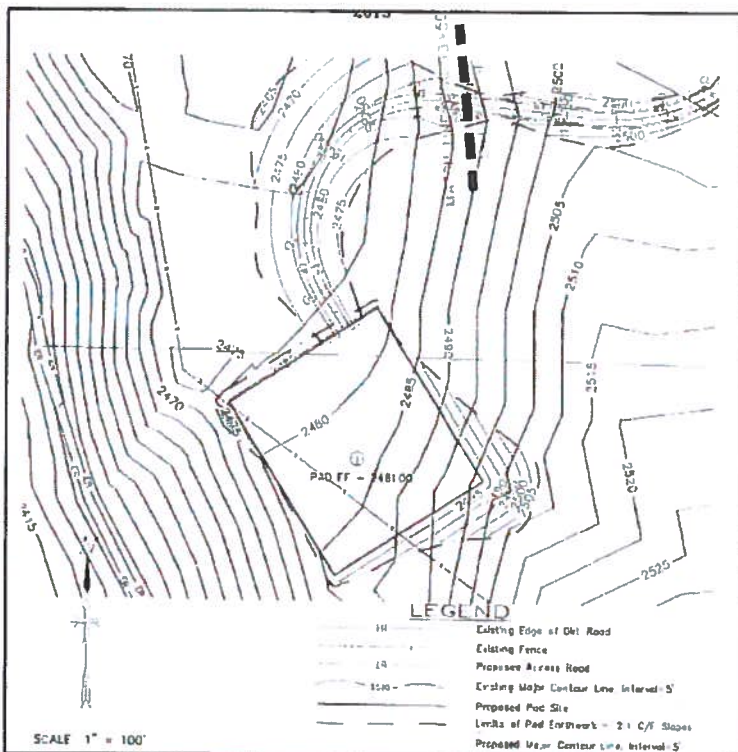
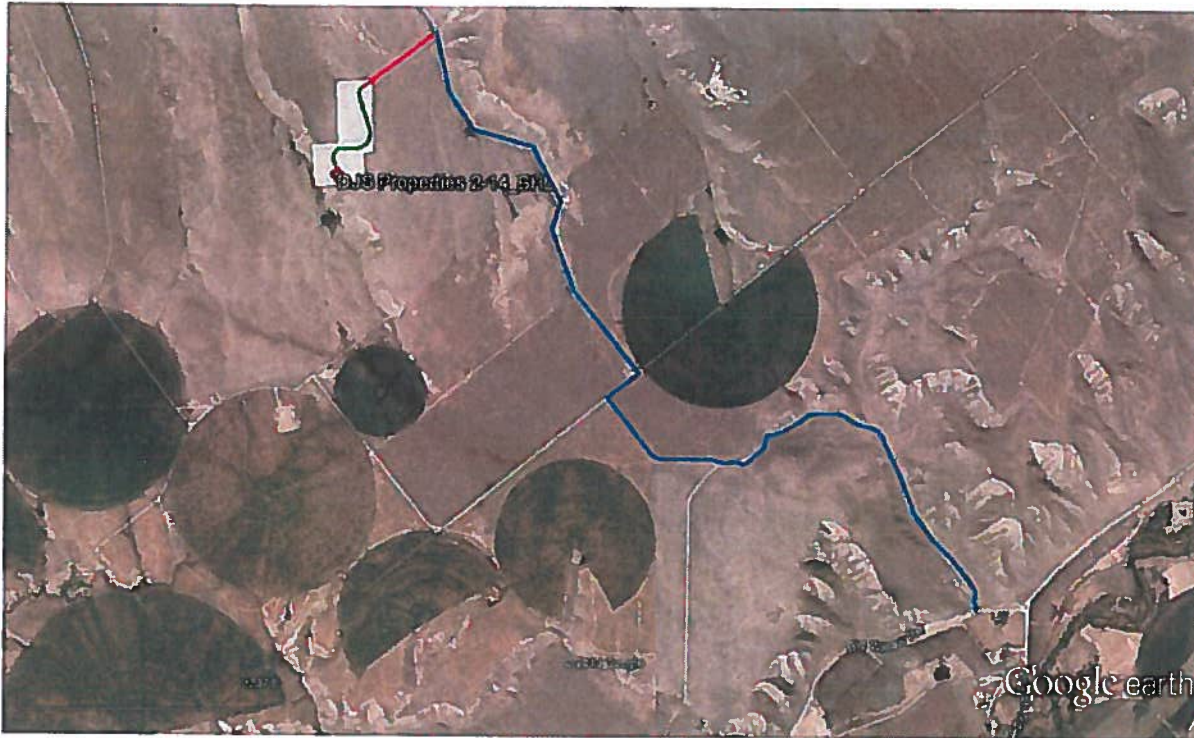
## 2.4 Estimated Geological Formation Tops

		Est. Tops are +/- 300'			Correlation Wells		
		Alta Mesa	Alta Mesa	Alta Mesa	Bridge	Bridge	Bridge
		DJS Prop. 2-14	DJS Prop. 2-14	DJS Prop. 2-14	DJS 1-15	ML- 1-10	DJS 1-14
Formation Tops	Comments	Est. MD	Est. TVD	Est. SS	MD	MD	MD
Hamilton Sand		1325'	1325'	1165'	1410'	993'	1522'
OSS Sand		1865'	1865'	625'	1870'	1400'	2038'
Lacustrine Shale Top		2020'	2020'	300'	2248'	1760'	2138'
Marker 3		2450'	2450'	31'	2490'	2036'	2630'
Green Fault		2475'	2475'	15'			
Wildcat Sand		4450'	4450'	-1960'			
Top Basalt		4530'	4530'	-2040'	4694'	6040'	4550'

### 3 Site Preparation

#### 3.1 Access Roads

The proposed surface location is to be accessed by an existing farm road that supports heavy truck traffic, approximately 1260' of improved road over an existing farm path, and 1450' of new roadway.



### 3.2 Erosion Control

Appropriate grading, mechanical stabilization (rip-rap or hay bales), chemical stabilization (soil cement), and silt fencing will be used to prevent soil erosion. All cut and fill slopes are designed with a minimum 2:1 grade to minimize runoff erosion and ensure mechanical stability. See attached engineering drawings.

### 3.3 Cellars

An 8' deep round cellar box will be installed after the conductor is installed per the relevant section below.

### 3.4 Pit System

A closed-loop circulating system will be used for this well from spud. Zero discharge practices will be implemented, and all cuttings and waste fluid will be solidified and disposed of at an approved facility.

### 3.5 Sump

The location will have a 2' deep trench on downhill sides where the spoil from that trench will be used to construct an earthen berm around the location. The trench will act as a sump to collect rain and wash water for controlled release or appropriate disposal as required.





## 4 Well Construction

### 4.1 Wellbore Schematic

REV 1.0

Prepared by: Alexis Husser

July 17<sup>th</sup>, 2013

**Alta Mesa Services, LP**  
**Willow Field – Payette County, ID**  
**DJS Properties 2-14 – Proposed Wellbore Schematic**

Depth Reference: Drill Floor  
 Drill Floor above GL: 16'  
 GL Elevation above MSL: 2481'

Bt & Directional	Evaluation	PP / FG
		FPB
17.5' Auger Vertical	None	8.4/9.2
10-5/8" Milled Tooth Vertical	None	
Dried To: 950' / 950'		8.4 / 11.1
7-7/8" PDCw/PDM Vertical	MWD: Mud Pulse  VI: GR, SP Induction Res Density, Por	
Dried To: 5500' / 5500'		8.9 / 16.9



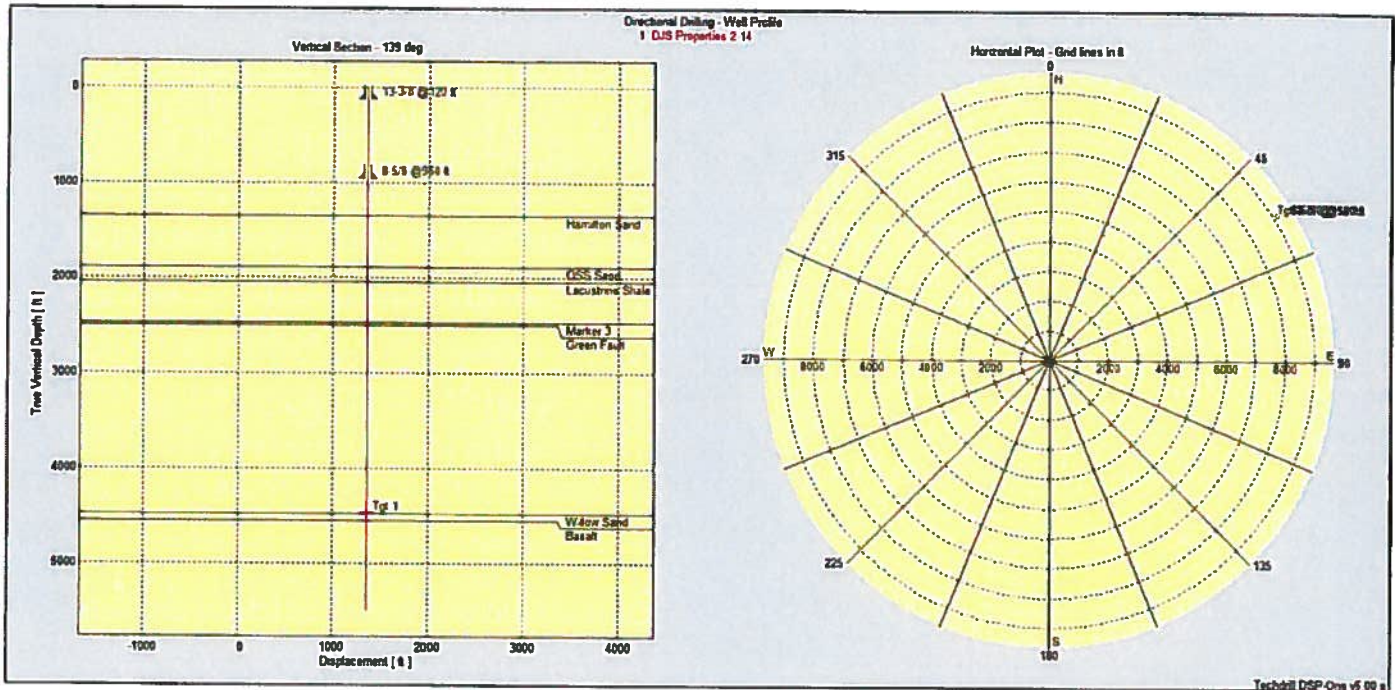
Drilling Fluid	Casing	Cement
Dry	13-3/8" Conductor 120' / 120'	Grout
Spud Mud 8.5-9.0 ppg	8 5/8" 32.0H K-55 STC Set @: 950' / 950'	Class A 13.5 ppg Return to Surface  Class A 15.8 ppg TOC @ 750'
8.5  Fresh Water Polymer		Class D 13.5 ppg Return to Surface  Class D 15.8 ppg TOC @ 2,500'
9.8	5 1/2" 15.5# K-55 LTC  Set @: 5500' / 5500'	

## 4.2 Directional Plan

### 4.2.1 Justification

The geological target for this prospect can be intersected with a vertical well as there are no domestic conflicts and the topography provides for a safe location that can be constructed with limited ecological impact.

### 4.2.2 Vertical Section & Plan View

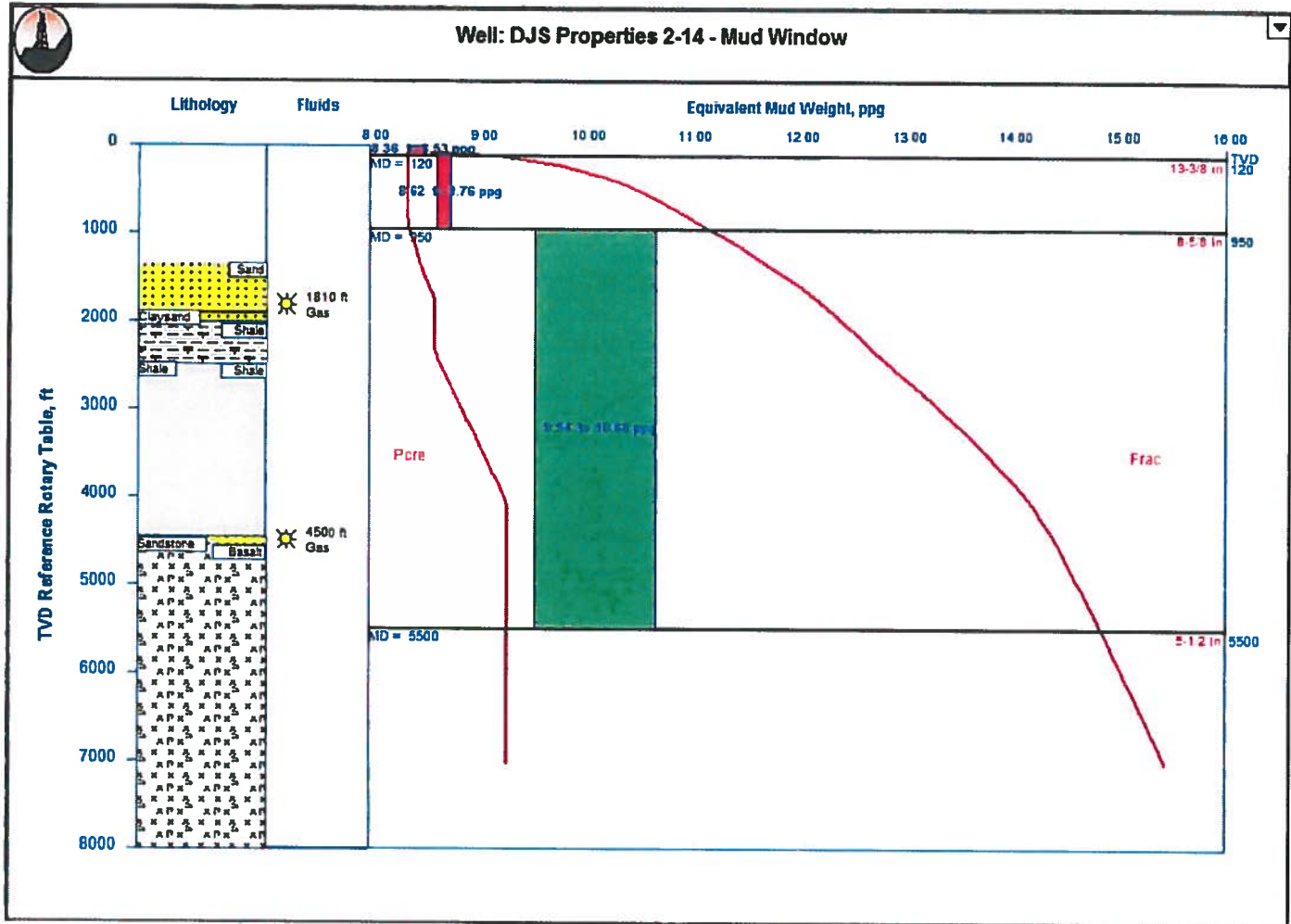




### 4.3 Pore Pressure and Formation Integrity

Normal pressures are anticipated through the surface hole, with a slight pressure ramp through the production hole to 9.29 PPG equivalent in the Willow Sand.

The fracture gradient is calculated using Eaton & Eaton (1998) modeled for Gulf Coast formations. This model is used because the rapid deposition and immature clays are similar to those found on the Continental Shelf at similar depths, which is rather inconsistent with most of the regional models for the Rocky Mountains.



## 4.4 Blow-Out Preventers

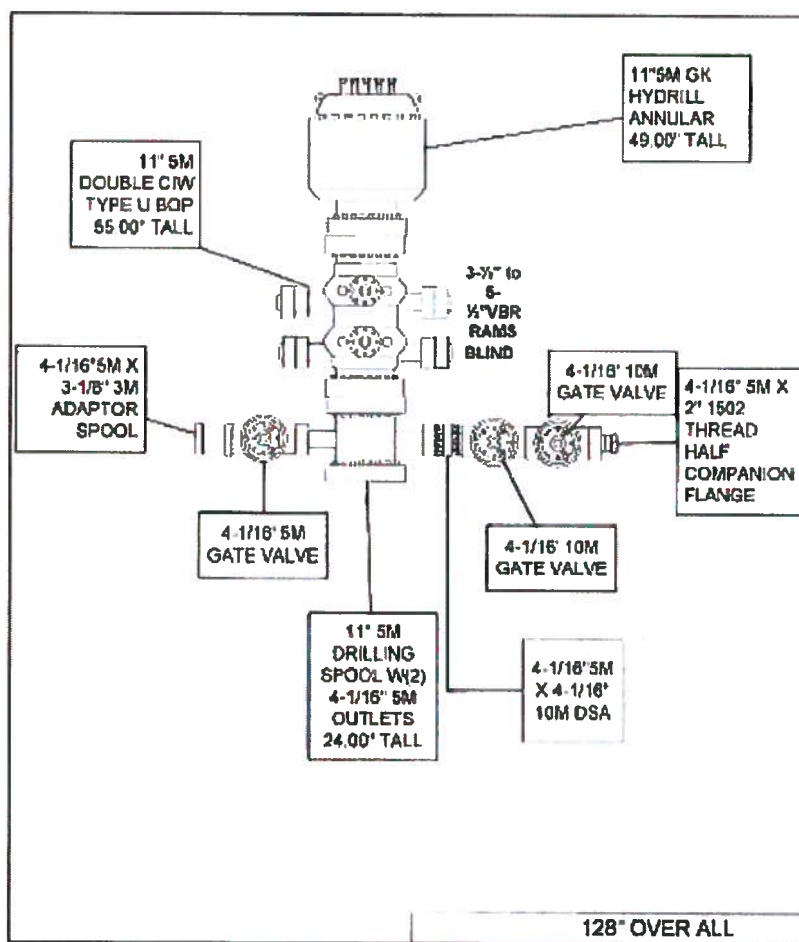
### 4.4.1 BOP Hardware Configuration

BOP Stack configuration includes an annular preventer and double ram preventers. The top most ram preventer will be fitted with variable ram blocks, the lower ram preventer will be fitted with blind ram blocks. A full-opening safety valve, inside BOP, and functioning wrench – *specific to the pipe in use and only those specific to the pipe in use* – are to be kept on the rig floor with easy access at all times.

### 4.4.2 BOP Testing

Test annular, rams, choke manifold, FOSV, and IBOP when BOP is first nipped up on casing head. Low-pressure test to 250psi and high-pressure test to 5,000psi (100% of 5M wellhead), except for annular. Test annular preventer to 3,500psi (70% of 5,000psi rating). Test the kelly hose and standpipe back to pump isolation valves to 200 psi above pop off setting or minimum of 5,000 psi. All tests must hold for five minutes. Retest specific component each time a seal is broken. Work BOP's and flush choke lines each trip. Tighten BOP and wellhead bolts every 3 days. Non-ported float valves to be used in BHA after surface casing set.

During drilling and completion operations, the ram-type blow-out preventer shall be function tested by closing on the drill pipe once every seven (7) days. Independently powered accumulators or accumulators and pumps shall maintain a pressure capacity reserve at all times to provide for repeated operation of hydraulic preventers. All tests may be conducted using a test plug. Tests shall be recorded by charts, if required by the Supervisor.



## 4.5 13-3/8" Conductor

### 4.5.1 Specific HSE Considerations

None

### 4.5.2 Drilling

The conductor will be installed via auger and grout unless surface conditions dictate driving.

#### 4.5.2.1 Directional Objective

It is imperative that the conductor be placed with as much verticality as reasonably possible to minimize any directional corrections in the surface hole. Driving and/or drilling forces should be managed to maintain verticality.

Hole Size	Action	From		Build /100'	Turn /100'	DLS /100'	To	
		MD/TVD	INC/AZ				MD/TVD	INC/AZ
17 1/2"	Hold	22'	0°/0°	0°	0°	0°	120'	0°/0°

### 4.5.3 Casing

Set Depth	Top (RTE)	Size	Weight	Grade	Burst	Collapse	Centralizers
120'	20'	13 3/8"	61#	J-55	3090 psi	1540 psi	NO

## 4.6 10-5/8" Surface Hole

### 4.6.1 Specific HSE Considerations

This hole interval will penetrate all usable water zones. Based on regional activity, there is a minimal risk of shallow formation instability in the surface hole. In the event that such instability occurs, and cannot be managed within 12 hrs, the surface hole will be enlarged to 12 1/4" and a 10 3/4" contingency string will be set. This contingency MUST be reviewed and approved by Alta Mesa Engineering and the IDL supervisor.

### 4.6.2 Drilling


#### 4.6.2.1 Directional Objective

The surface hole will be drilled to 950' MD/TVD with no inclination. Drilling WOB will be managed to maintain verticality throughout the section and to optimize ROP without inducing shock & vibration. Surveys will be obtained using gyro Multi-shot.

Hole Size	Action	From		Build /100'	Turn /100'	DLS /100'	To	
		MD/TVD	INC/AZ				MD/TVD	INC/AZ
10-5/8"	Hold	120'	0°/0°	0°	0°	0.0°	950'	0°/0°

#### 4.6.2.2 Bottom Hole Assembly

The surface hole will be drilled with a 10-5/8" milled tooth bit and the bottom hole assembly as specified below.

Length	Cumul			Connection	OD in	ID in	lb/ft	S.R.
to surface			4-1/2" DP 16 50# - G105 - Class 1	TOP Box 4-1/2 JOH * BTM Pn 4-1/2 JOH	4.366	3.825	16.60	3.18
180 0 ft	416 0 ft		4-1/2" HWDP 42 00# - Range 3	TOP Box 4 F * BTM Pn 4 F	5.000	3.000	50.00	2.44
4 0 ft	238 0 ft		Xover - OD 6 50"	TOP Box 4 F * BTM Pn 5-1/2 REG	6.500	2.813	91.65	1.28
60 0 ft	232 0 ft		7" D C	TOP Box 5-1/2 REG * BTM Pn 5-1/2 REG	7.000	2.813	109.66	1.50
4 0 ft	172 0 ft		Xover - OD 8 00"	TOP Box 5-1/2 REG * BTM Pn 6-5/8 REG	8.000	3.000	147.02	1.00
60 0 ft	168 0 ft		8" D C	TOP Box 6-5/8 REG * BTM Pn 6-5/8 REG	8.000	2.813	149.64	1.10
6 0 ft	108 0 ft		8-1/4" Stab	TOP Box 6-5/8 REG * BTM Pn 6-5/8 REG	8.250	2.813	161.00	1.10
30 0 ft	102 0 ft		8" D C	TOP Box 6-5/8 REG * BTM Pn 6-5/8 REG	8.000	2.813	149.64	1.10
6 0 ft	72 0 ft		8-1/4" Stab -	TOP Box 6-5/8 REG * BTM Pn 6-5/8 REG	8.250	2.813	161.00	1.10
60 0 ft	66 0 ft		8" D C	TOP Box 6-5/8 REG * BTM Pn 6-5/8 REG	8.000	3.000	147.02	1.00
5 0 ft	6 0 ft		Bt Sub - OD 8 00"	TOP Box 6-5/8 REG * BTM Box 6-5/8 REG	8.000	3.000	147.00	
1 0 ft			Milled Tooth GTX-1 10 625 in	TOP Pn 6-5/8 REG				



#### 4.6.2.3 Mud System

The surface hole will be drilled using spud mud. Additives will be included for inhibition and also to build high-vis sweeps as necessary.

Measured Depth, ft	Mud Density, ppg	Funnel Viscosity, cP	Yield Point, lb/100ft <sup>2</sup>	API Fluid Loss, ml	pH	LGS %
120 - 950'	8.6	25-36	8-12	N/C	7.0-8.0	4 - 7

#### 4.6.2.4 Torque & Drag

Vertical through this interval. Monitor PU & SO weight to ensure good hole cleaning.

#### 4.6.3 Open Hole Evaluation

No open-hole evaluation will be conducted in this interval

#### 4.6.4 Casing

The surface casing is to be set at a depth that isolates problematic formations and usable water strata. Special drift is required.

Set Depth	Top (RTE)	Size	Weight	Grade	Conn	Drift	Burst	Collapse	Tension
950'	20'	8 5/8"	32.0#	K-55	LTC	7.875"	3930 psi	2530 psi	503 kips

#### 4.6.4.1 Shoe Track

1. Washdown guide shoe – thread locked
2. Single Casing joint – thread locked
3. Float Collar – thread locked
4. Joints to surface

#### 4.6.4.2 Centralizers

- Type: Bow Spring
- Placement: One each, first four joints. One every third joint to surface.

#### 4.6.5 Cementing Operations

##### Displacement

Volume from Surface to Landing Collar: 54.2 bbl

##### Static Fluid Pressure at End of Job

Inside Pressure: 444 psi

Annulus Pressure: 649 psi

Final Differential Pressure: 205 psi

##### Pumping Schedule

Spacer1	4.00 mn	20.0 bbl	@	0.00 ft
Spacer2	4.00 mn	20.0 bbl	@	0.00 ft
Btm Plug	2.00 mn			
Tail Slurry	7.34 mn	36.7 bbl	@	20.00 ft
Top Plug	2.00 mn			
Mud	7.03 mn	49.2 bbl	@	0.00 ft



Slow Displacement 10.09 mn 5.0 bbl @ 0.00 ft

TOTAL PUMPING TIME: 36 mn

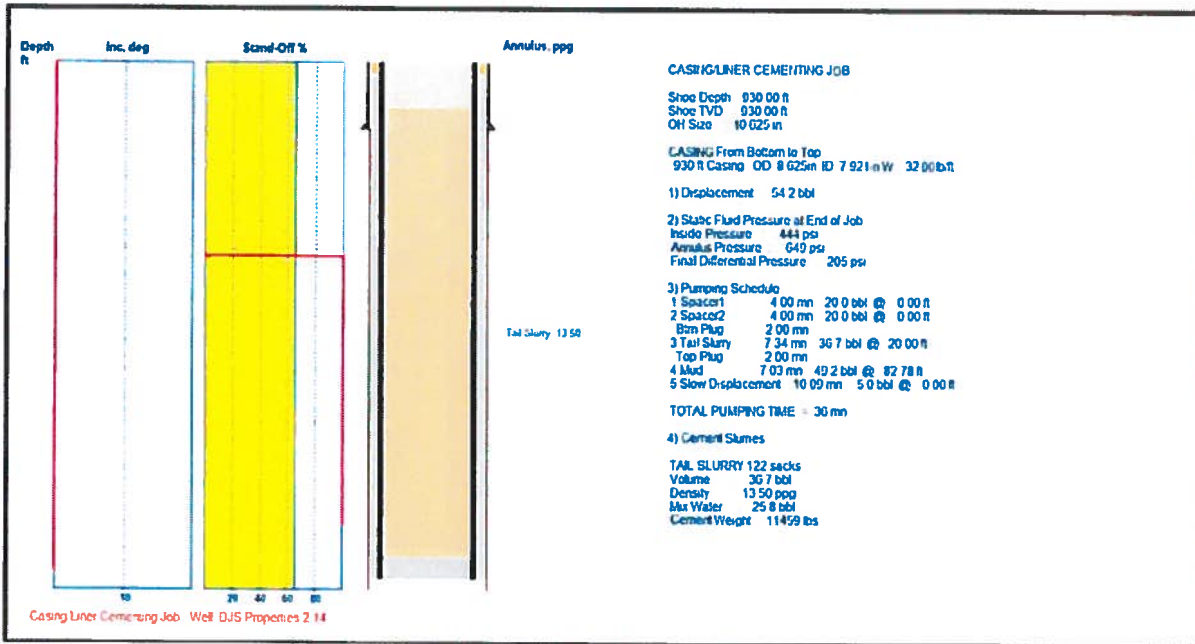
**Cement Slurries**

TAIL SLURRY: 122 sacks  
 Volume: 36.7 bbl  
 Density: 13.50 ppg  
 Mix Water: 25.8 bbl  
 Cement Weight: 11459 lbs

**Free Fall Analysis**

Maximum Pumping Rate: 7.0 bbl  
 Maximum Return Rate: 9.4 bbl  
 Max Injection Pressure: 275 psi

Depth of Interest: 929.90 ft  
 TVD of Interest: 929.90 ft  
 Maximum Pressure: 666 psi  
 Maximum EMW: 13.80 ppg  
 Minimum Pressure: 439 psi  
 Minimum EMW: 9.09 ppg



### 4.7 7-7/8" Production Hole

Upon drilling out of the 8 5/8" casing, the 7-7/8" hole will be drilled vertically to ~5500'.

#### 4.7.1 Specific HSE Considerations

This hole section will be drilled through hydrocarbon bearing formations. Any fluid containing oily cuttings and the contaminated cuttings are to be managed appropriately to maintain a safe working area and prevent environmental damage.

#### 4.7.2 Drilling


##### 4.7.2.1 Directional Objective

Drilling WOB will be managed to maintain verticality throughout the section and to optimize ROP without inducing shock & vibration. Surveys will be obtained using gyro single-shot.

Hole Size	Action	From		Build /100'	Turn /100'	DLS /100'	To	
		MD/TVD	INC/AZ				MD/TVD	INC/AZ
7-7/8"	Hold	950'	0°/0°	0°	0°	0°	5500'	0°/0°

##### 4.7.2.2 Bottom Hole Assembly

The BHA will be managed over the production interval to address significant formation changes and formation evaluation requirements. The BHA is representative, where the bit and specific collar arrangement may vary.

Length	Cumul		Connection	OD in	ID in	lb/ft	S.R.
to surface					4.366	3.825	16.60
186 0 ft	844.4 ft			4.500	2.750	42.00	2.70
18 8 ft	458.4 ft			6.000	2.250	96.00	2.70
166 0 ft	439.6 ft			4.500	2.750	42.00	3.38
5 0 ft	253.6 ft			6.500	2.813	91.65	1.00
155 0 ft	248.8 ft			6.500	2.813	91.65	1.10
30 0 ft	93.6 ft			6.250	2.250	80.51	1.13
4 0 ft	63.6 ft			6.000	2.250	82.50	1.25
3 0 ft	59.6 ft			6.500	2.813	91.65	1.12
27 0 ft	56.6 ft			6.750	3.000	37.04	1.33
4 7 ft	29.6 ft			6.750	4.900	85.10	1.28
3 0 ft	24.9 ft			6.750	3.500	83.15	1.28
21 0 ft	21.9 ft			6.750	4.894	80.00	
0 8 ft							

POC MKFS 7 875 in      TOP Pn 4-1/2 REG

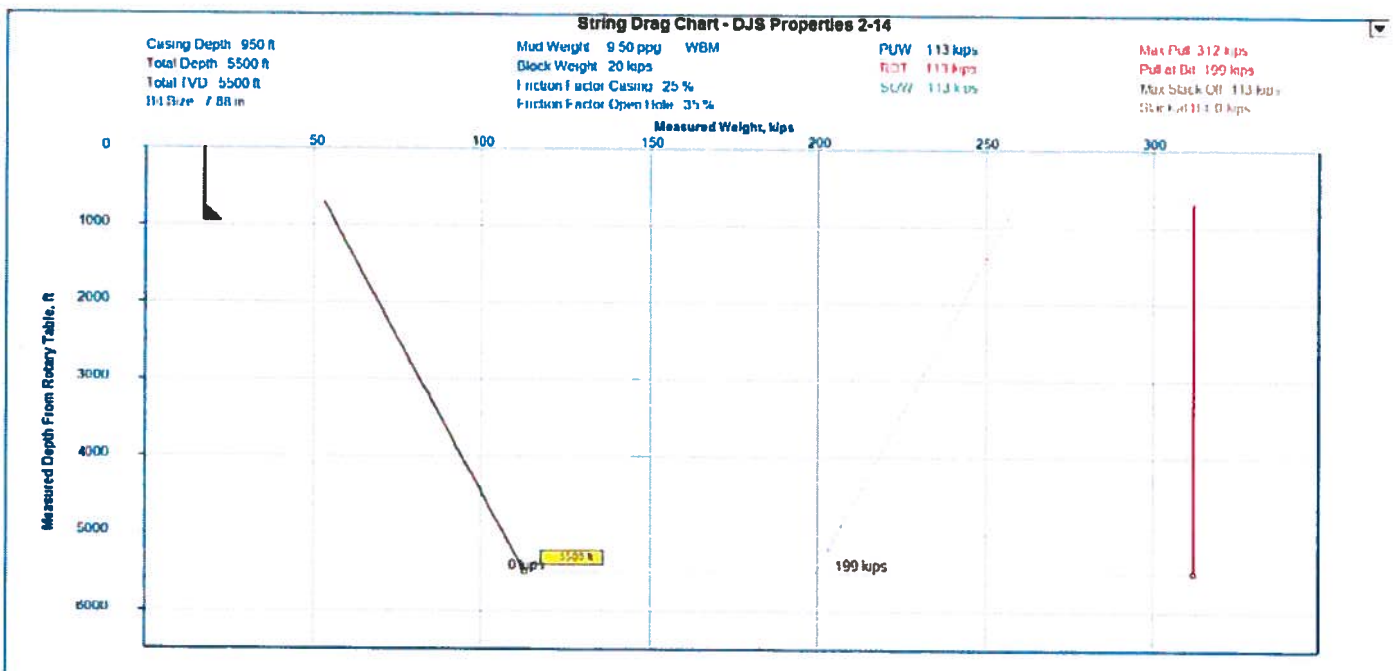
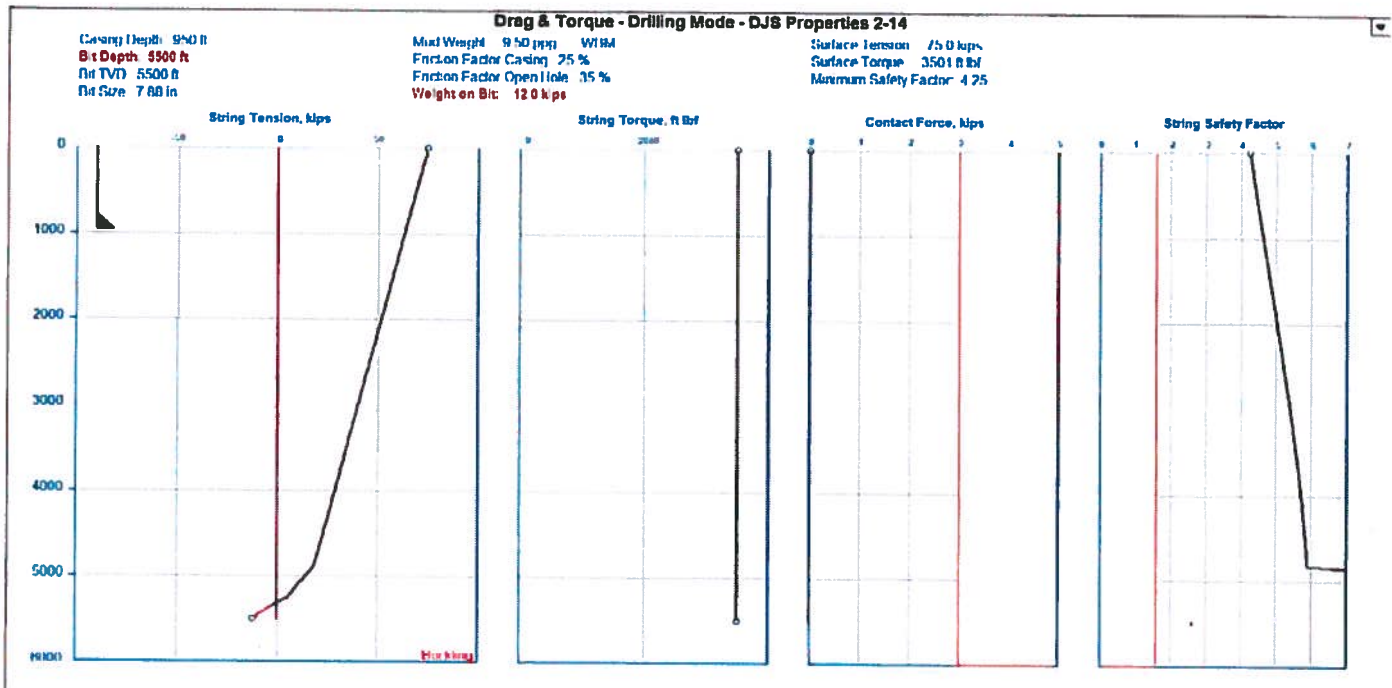
4.7.2.3 Mud System

Fresh Water DMA polymer mud system.

Measured Depth, ft	Mud Density, ppg	Funnel Viscosity, cP	Yield Point, lb/100ft <sup>2</sup>	API Fluid Loss, ml	pH	LGS %
950 - 5,500'	9.0	15	10	<4.0	6.5-7.0	4-7

4.7.2.4 Torque & Drag

Below are the T&D charts for Rotary Drilling at total depth and Tripping.



### 4.7.3 Logging Program

While Drilling: Mud logging only

Coring: None

Wireline: After reaching TD, and conditioning the hole, wireline evaluation will be conducted as follows:

- Spontaneous Potential
- Gamma Ray
- Propagation Resistivity
- Density
- Neutron Porosity
- Electron Capture Spectroscopy

### 4.7.4 Production Casing

The production casing string is designed with varying grades to accommodate H2S production and salt creep. Below is the primary casing design and the contingency design with HCP-110 for salt intervals.

Set Depth	Top (RTE)	Size	Weight	Grade	Conn	Drift	Burst	Collapse	Tension
5,500'	20'	5 1/2"	15.5#	K-55	LTC	4.825"	4810 psi	4040 psi	248 kips

#### 4.7.4.1 Shoe Track

5. Washdown float shoe – thread locked
6. Double Casing joint – thread locked
7. Float Collar – thread locked
8. Joints to surface

#### 4.7.4.2 Centralizers

- Type: Bow Spring
- Placement: One each, first four joints. One every third joint to TOC

### 4.7.5 Cementing Operations

#### Displacement

Volume from Surface to Landing Collar: 137.4 bbl

#### Static Fluid Pressure at End of Job

Inside Pressure: 2874 psi

Annulus Pressure: 4128 psi

Final Differential Pressure: 1254 psi

#### Pumping Schedule

Spacer1	5.60 mn	20.0 bbl	@	0.00 ft
Spacer2	5.60 mn	20.0 bbl	@	0.00 ft
Btm Plug	2.00 mn			
Lead Slurry	26.95 mn	107.8 bbl	@	20.00 ft

Tail Slurry	15.87 mn	63.5 bbl	@	20.00 ft
Top Plug	2.00 mn			
Mud	20.65 mn	123.9 bbl	@	211.93 ft
Slow Displacement	10.08 mn	5.0 bbl	@	0.00 ft

TOTAL PUMPING TIME: 89 mn

**Cement Slurries**

LEAD SLURRY: 305 sacks

Volume: 107.8 bbl

Density: 13.00 ppg

Mix Water: 68.5 bbl

Cement Weight: 28632 lbs

TAIL SLURRY: 308 sacks

Volume: 63.5 bbl

Density: 15.8 ppg

Mix Water: 37.7 bbl

Cement Weight: 28911 lbs

**Free Fall Analysis**

Maximum Pumping Rate: 6.0 bbl

Maximum Return Rate: 6.5 bbl

Max Injection Pressure: 1582 psi

Depth of Interest: 5499.9 ft

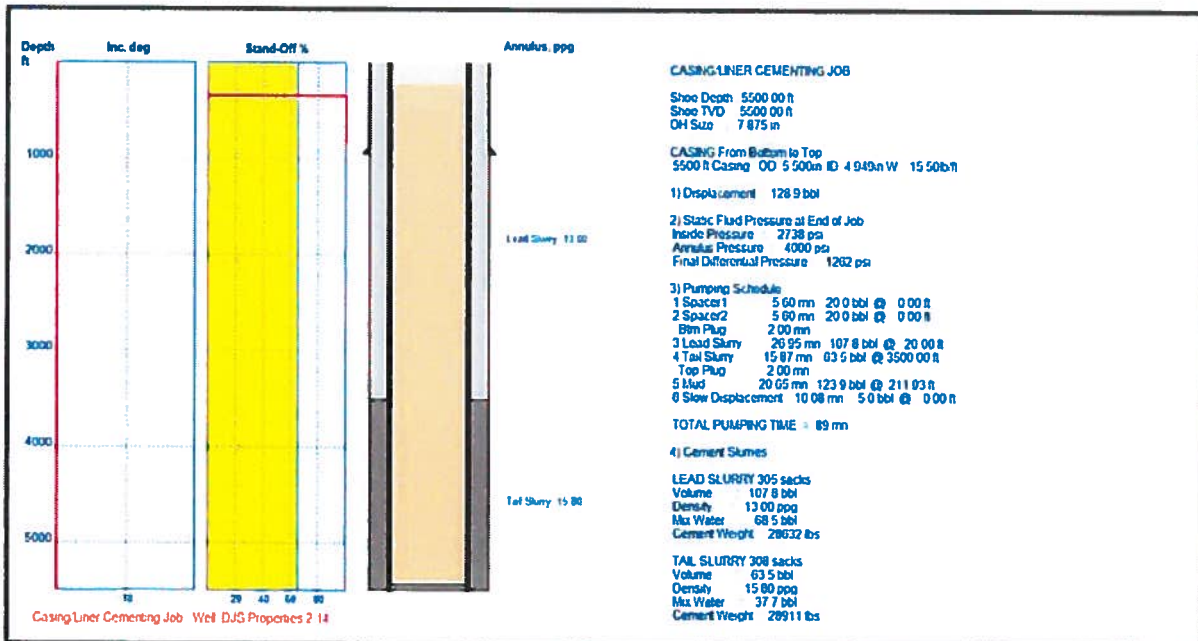
TVD of Interest: 5499.9 ft

Maximum Pressure: 4085 psi

Maximum EMW: 14.31 ppg

Minimum Pressure: 2742 psi

Minimum EMW: 9.60 ppg



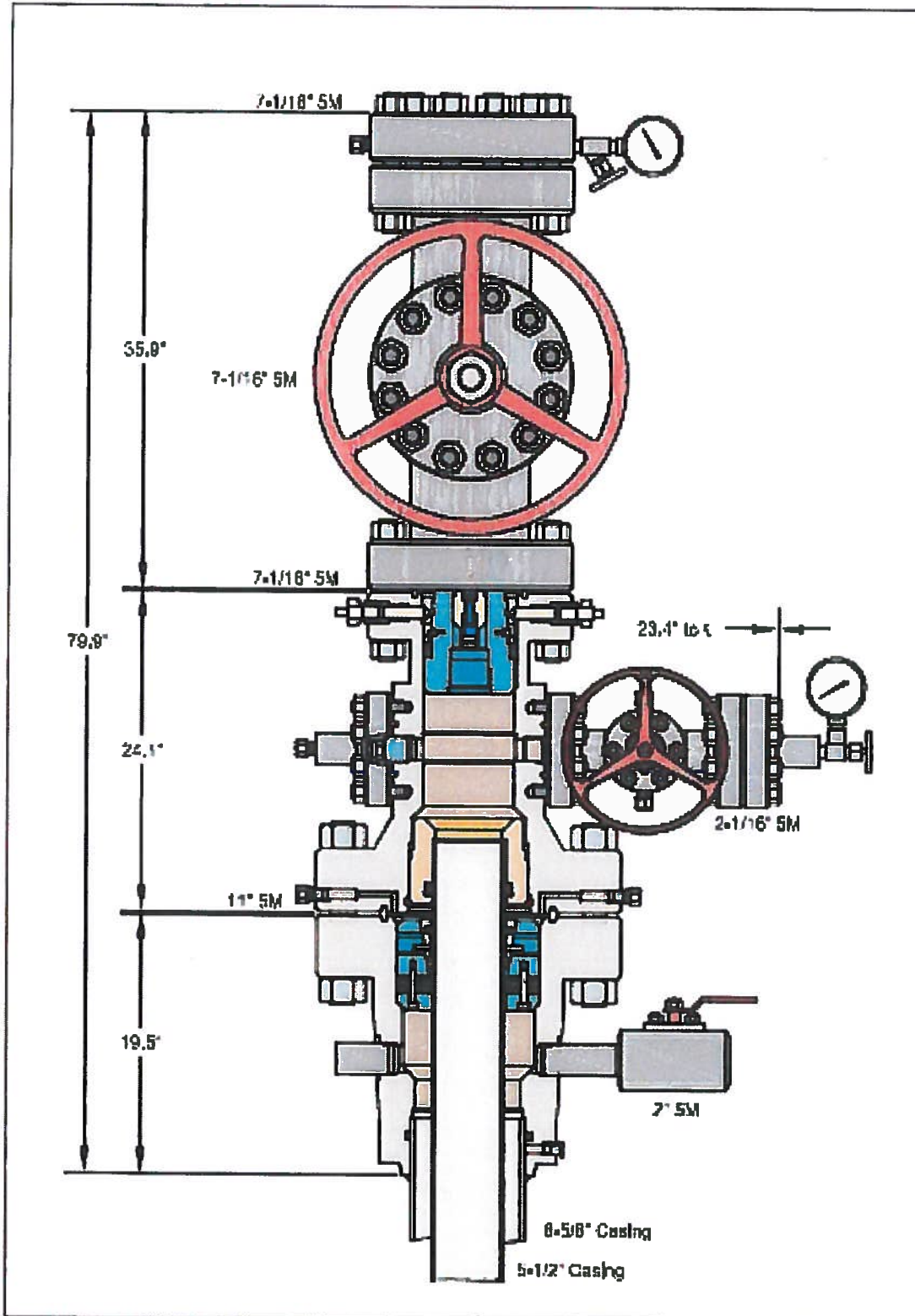
## **5 Completion**

Method of completion will be determined subsequent to review of open-hole log data and cased hole cement bond logs (CBL).



## 6 Well Head

### 6.1 Dry-Hole Schematic

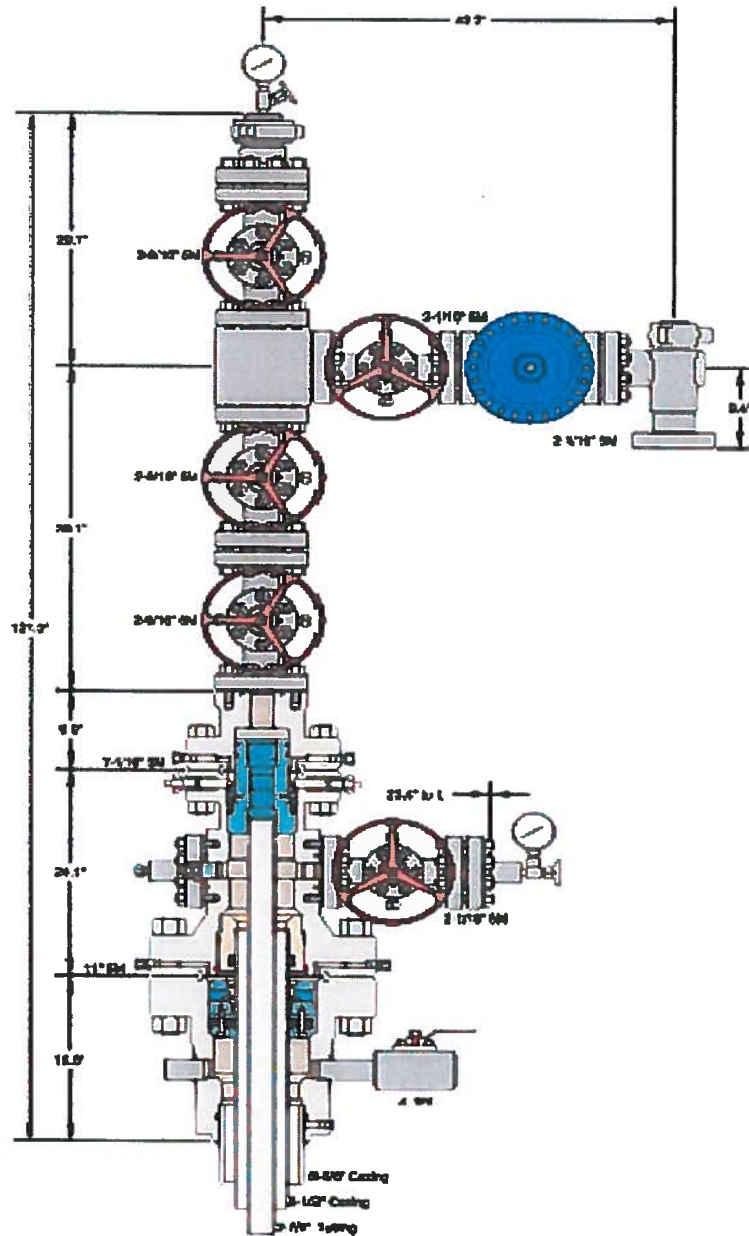




6.2 Completed Schematic



GE Oil & Gas



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ALTA MESA HOLDINGS, LP.  
 IDAHO

8-5/8" x 5-1/2" x 2-7/8" 5M, Conventional Wellhead Assembly  
 With T-EBS Tubing Head, T-EN Tubing Hanger,  
 and A5PEN Adapter Flange

DRAWN	CDG	24JUN13
APPRV	CR	24JUN13
FOR REFERENCE ONLY		
DRAWING NO.	AE24278	

### 6.3 Completed Parts List

#### CASING HEAD ASSEMBLY

1. 346261 CSGHD,WG,W2,11 5M X 8-5/8 SOW,W/2 2 LP ORING,1040 60K,6A-PX-AA-1-2
2. NI6 NIPPLE,2 LP X 6 LG,XXH,W/1.50 BORE
3. BV2-5 VLV,BALL,KF,CXH,2 RP 5M THD 2 IN LP CARBON STEEL TRIM W/DELTRIN/BUNA-N SEALS PN 5052-11911
4. BPS-API BULL PLUG,2 LP X SOLID X 4.02 LG,API 6A-DD-NL
5. RENTAL WBUSH,WG,SL,T/22/22L/29,11 X 7-7/8 BIT (8.00 ID),13.5 LG,W/SILT BARRIER
6. RENTAL TEST PLUG/RET TOOL,WG,SL 2/9/SH2/SH3,11,4-1/2 IFTJ BOX BTM and TOP, W/1-1/4 LP,BYPASS and SPRING LOADED LIFT PINS NOT FOR USE OVER 7 IN

#### TUBING HEAD ASSEMBLY

1. 362613 TBGHD,WG,T-EBS,9,11 5M X 7-1/16 5M,W/2 2-1/16 5M FP,F/17.50 AND 17.63 FRAC SLV,1040 TUBE,6A-U-AA-1-2
2. 344789 SECSEAL,WG,EBS,9 X 5-1/2,F/3-1/2 CUTOFF
3. PEROXIDEDCURED NITRILE
4. 344967 VLV,WG,1000,2-1/16 3/5M FE BB/EE-0,5 (6A PU BB/EE-0,5 PSL1 PR2)
5. 329570 VR PLUG,1-1/2 SHARP VEE,W/1-1/4 HEX,API 6A-DD
6. 317865 FLG,COMP,2-1/16 5M X 2 LP,6A-U-EE-NL-1,1040 60K
7. BPT-API BULL PLUG,2 LP X 1/2 LP,4 LG,API 6A-DD-NL
8. A025-001 FTG,GRS/VENT,1/2" NPT 10M SVC,1215
9. NVA NEEDLE VALVE,MFA,1/2 NPT,10,000 PSI
10. PG5 PRESSURE GAUGE,0-5M PSI,DUAL GAGE,75 PCT LIQUID FILLED,4 MIN. OD FACE,1/2 NPT,SS CASE,POLY CARBONITE FACE,CRIMPED BEZEL,TEMP -40 TO 220F
11. R24 RING GASKET,API R-24,OVAL,CARBON STEEL,PLATED,API MONOGRAM REQUIRED
12. 331062 STUD,ALL-THD,W/2 NUTS,BLK,7/8 X 6.50 STUD A193-GR B7 NUT A194-GR 2H
13. 341986 CSGHGR,WG,W2,11 X 5-1/2,6A-L-AA-3-2
14. R54 RING GASKET,API R-54,OVAL,CARBON STEEL,PLATED,API MONOGRAM REQUIRED
15. 350298 STUD,ALL-THD,W/2 NUTS,BLK,1-7/8 X 14.25 STUD A193-GR B7,NUT A194-GR 2H

#### PRODUCTION TREE ASSEMBLY

1. 312738 ADPT,TBGHD,WG,A5PEN,5-1/2,7-1/16 5M X 2-9/16 5M,410SS,6A-U-FF-NL-1-2
2. 344985 VLV,WG,1000,2-9/16 3/5M FE CC/FF-0,5 (6A PU CC/FF-0,5 PSL1 PR2)
3. 344971 VLV,WG,1000,2-9/16 3/5M FE BB/EE-0,5 (6A PU BB/EE-0,5 PSL1 PR2)
4. 316612 TEE,STD,2-9/16 5M X 2-1/16 5M,6A-PU-EE-NL-1
5. 344971 VLV,WG,1000,2-9/16 3/5M FE BB/EE-0,5 (6A PU BB/EE-0,5 PSL1 PR2)
6. 307840 TREECAP,WG,15A,2-9/16 5M X 2-7/8 EU ILT, 6A-PU-EE-NL-1-2 6A-PU-EE-NL-1-2
7. R27-SS RING GASKET,API R-27,OVAL,316SS,API MONOGRAM REQUIRED
8. R27 RING GASKET,API R-27,OVAL,CARBON STEEL,PLATED,API MONOGRAM REQUIRED
9. 320127 STUD,ALL-THD,W/2 NUTS,BLK,1 X 7.00, STUD A193-GR B7,NUT A194-GR 2H
10. 344967 VLV,WG,1000,2-1/16 3/5M FE BB/EE-0,5 (6A PU BB/EE-0,5 PSL1 PR2)

11. 356635 VLV/ACT,WG,1000,2-1/16 3/5M FE BB/EE-0,5 (6AV U BB/EE-0,5 PSL1 PR2),D1202  
DIAPHRAGM ACTR W/MANUAL OVERRIDE
12. H288010-128 CHOKE,POS,MCDONALD,JWA,2-1/16 5M FE X FE,4130 ALLOY,W 1/2 TAP  
BLANKING PLUG ASSY
13. R24 RING GASKET,API R-24,OVAL,CARBON STEEL,PLATED,API MONOGRAM REQUIRED
14. 331062 STUD,ALL-THD,W/2 NUTS,BLK,7/8 X 6.50, STUD A193-GR B7 NUT A194-GR 2H
15. NVS NEEDLE VALVE,MFS,1/2 NPT,10,000 PSI,CS
16. PG5 PRESSURE GAUGE,0-5M PSI,DUAL GAGE,75 PCT LIQUID FILLED,4 MIN. OD FACE,1/2  
NPT,SS CASE,POLY CARBONITE FACE,CRIMPED BEZEL,TEMP -40 TO 220F
17. 360261 TBGHGR,WG,T-EN,5-1/2,7-1/16 X 2-7/8 ABC MOD EU BTM X 2-7/8 EU TOP,W/2-1/2  
HBPV THD,17-4PH,6A-PU-FF-0,5-1-2
18. R46-SS RING GASKET,API R-46,OVAL,316SS,API MONOGRAM REQUIRED
19. 331061 STUD,ALL-THD,W/2 NUTS,BLK,1-3/8 X 11.00, STUD A193-GR B7 NUT A194-GR 2H

## 7 Reclamation

Reclamation will be conducted in accordance with IDAPA 20.07.02.325. To achieve those requirements, Alta Mesa Services, L.P. proposes to address reclamation through a multistep process which is outlined below. As provided for in IDAPA 20.07.02.325.08, Alta Mesa Services, L.P. may enter into a Surface Use Agreement with the landowner the terms of which will ensure that the site is left in a stable, non-eroding condition as required.

1. Re-establish slope stability, surface stability, and desired topographic diversity.
  - a. Reconstruct the landscape to the approximate original contour unless otherwise provided for in the Surface Use Agreement
  - b. Maximize geomorphic stability and topographic diversity of the reclaimed topography.
  - c. Eliminate highwalls, cut slopes, and/or topographic depressions on site, unless otherwise approved.
  - d. Minimize sheet and rill erosion on the reclaimed area. Eliminate mass wasting, head cutting, large rills or gullies, down cutting in drainages, or overall slope instability on the reclaimed area.
2. Maintain the integrity of the topsoil and subsoil (where appropriate and not otherwise dictated by the Surface Use Agreement)
  - a. Identify salvaged topsoil and subsoil.
  - b. Segregation of salvaged soils to protect those materials from erosion, degradation, and contamination.
  - c. Incorporate stored soil material into the disturbed landscape to the extent practicable.
  - d. Stockpiled soils to be stored beyond one growing season shall be stabilized with appropriate vegetation
  - e. Record location and approximate volumes of stockpiles.
3. Prepare site for revegetation upon completion of well activities – plugging/abandonment.
  - a. Redistribute soil materials in a manner similar to the original vertical profile.
  - b. Reduce compaction to an appropriate depth (generally below the root zone) prior to redistribution of topsoil, to accommodate appropriate site-specific plant species.
  - c. Provide suitable conditions to support the long term establishment and viability of the desired plant community.
  - d. Protect seed and seedling establishment (e.g. erosion control matting, mulching, hydro-seeding, surface roughening, fencing, etc. to be determined based upon site specific conditions
4. Establish a desired self-perpetuating native plant community based upon region specific guidance available from NRCS
  - a. Establish species composition, diversity, structure, and total ground cover appropriate for the desired plant community
  - b. Select genetically appropriate and locally adapted native plant materials based on the site characteristics and setting.
    - i. Seed mixtures shall be selected based on soil type, site conditions and intended final use
    - ii. Seed shall not be used later than one year after the test date that appears on the label.
    - iii. The bags of seed shall be clearly labeled indicating test date, weed percentage or % Pure Live Seed (PLS), viability or germination percentage, and inert material

- c. Select non-native plants only as a short term and non-persistent alternative to native plant materials. Ensure the non-natives are designed to aid in the re-establishment of native plant communities. Revegetate in accordance with best practices described below:
    - i. Re-spread topsoil to a minimum depth of 4 inches.
    - ii. Prepare a friable but firm and weed free seedbed that is not compacted by prior construction work.
    - iii. Appropriate firmness can be estimated when a person leaves about a ¼ inch deep footprint.
    - iv. Remove rocks, twigs, concrete, foreign material and clods over 2 inches that can't be broken down.
    - v. Soil moisture content shall be at least 30% soil capacity (estimated). Do not seed into undesirable moisture conditions (e.g. "dust" or "mud").
  - d. Plant communities shall be evaluated annually for two years to ensure revegetation success as determined by IDAPA 20.07.02.325
    - i. Repair and reseed areas that have erosion damage as necessary.
    - ii. If a stand has less than 70% ground cover after two years, re-evaluate the choice of plant materials, methods and available light and moisture. Re-establish the stand with modifications based on the evaluation
5. Reestablish initial visual composition
- a. Ensure the reclaimed landscape features conform to the prior conditions of the site.