

**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, flowing style.

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

**DIVISION OF LAND AND  
WATERWAYS**  
300 N. 6<sup>th</sup> St. Ste 103  
PO Box 83720  
Boise ID 83720-0050  
Phone (208) 334-0200  
Fax (208) 334-3698



**TOM SCHULTZ, DIRECTOR**  
EQUAL OPPORTUNITY EMPLOYER

**IDAHO OIL AND GAS CONSERVATION COMMISSION**  
*C. L. "Butch" Otter, Governor*  
*Ben Ysursa, Secretary of State*  
*Lawrence G. Wasden, Attorney General*  
*Brandon Woolf, State Controller*  
*Tom Luna, Sup't of Public Instruction*

June 27, 2013

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

**SUBJECT: Permit to Drill LU600117 (API#11-075-20-022), ML Investments #2-10)**

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.

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).

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.

Sincerely,

A handwritten signature in black ink, appearing to read 'Eric Wilson', written in a cursive style.

Eric Wilson  
Minerals 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) [x] Deepen (\$500) [ ] Plug Back (\$500) [ ]

NAME OF COMPANY OR OPERATOR: Alta Mesa Services LP Date: 5-31-2013
Address: 15021 Katy Frwy, Suite 400
City: Houston State: TX Zip Code: 77094 Telephone: 281-530-0991
Contact Name: Ronda Louderman Email Address: rlouderman@altamesa.net

DESCRIPTION OF WELL AND LEASE

Name of Lease: ML Investments Well Number: 2-10 Elevation (ground) GL 2302.75'
Well Location: Section: 10 Township: 8N Range: 4W (or block and survey)
(give footage from Section lines): 1201.6'
Field and Reservoir (if wildcat, so state): Willow County: Payette
Distance, in miles, and direction from nearest town or post office: 5.42 miles
Nearest distance from proposed location to property or lease line: 1493.5 feet
Distance from proposed location to nearest drilling, completed or applied for on the same lease: 1834.33 feet
Proposed depth: 6,500' Rotary or cable tools: Rotary
Planned logging tools:
Approx date work will start: June 15, 2013 Number of acres in lease(s): 640
Number of wells on lease, including this well, completed in or drilling to this reservoir: 2
If lease purchased with one or more wells drilled, complete the following information:
Purchased from (name) Bridge Energy LLC
Address of above 1580 Lincoln Street, Suite 110, Denver, CO 80203
Status of 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

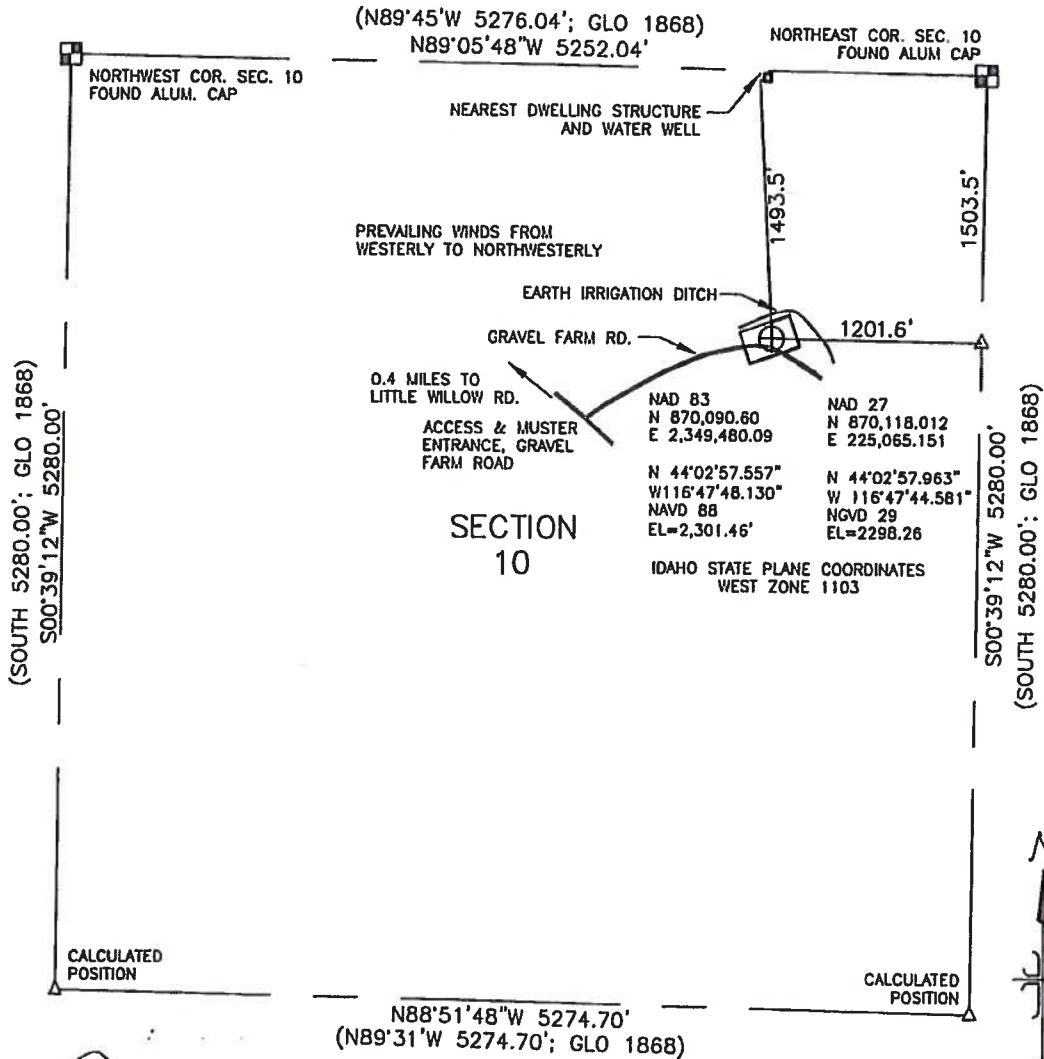
CERTIFICATE: I, the undersigned, state that I am the Regulatory Coordinator of Alta Mesa Services LP (company) and that I am authorized by said company to make this application and that this application was prepared under my supervision and direction and that the facts stated herein are true, correct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

Date: 5-31-2013 Signature: Ronda Louderman
Permit Number: LU600117 Approval Date: 6/27/13 Approved by: Thomas M. Schuff
API Number: 11-075-20022

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

# EXHIBIT MAP OF ML INVESTMENTS 2-10

Lying in a Portion of the NE 1/4  
Section 10, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



SCALE: 1" = 1000'



DATE: May 23, 2013

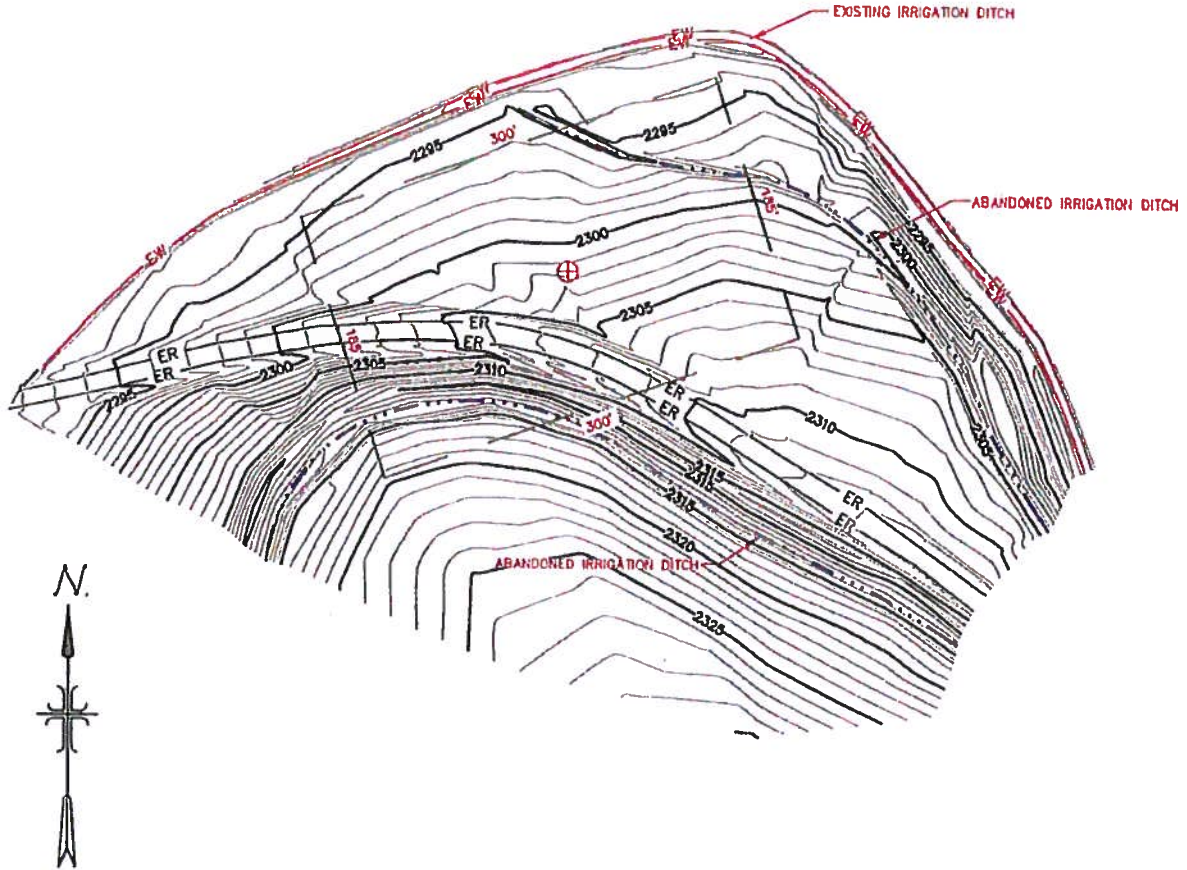
FILE: 0165-04 2-10.dwg



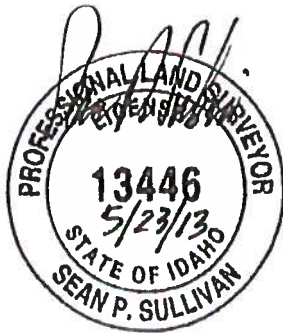
*Surveyors • Planners*  
1103 West Main Street  
Middleton, Idaho  
208-585-5858

# EXHIBIT MAP OF ML INVESTMENTS 2-10

Lying in a Portion of the NE 1/4  
Section 10, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



SCALE: 1" = 120'



- ..... Centerline of Abandoned Irrigation Ditch
- ER — Edge of Dirt Road
- EW — Edge of Water of Existing Earth Irrigation Ditch
- 2320 — Major Contour Line, Interval=5'
- ~~~~~ Intermediate Contour Line, Interval=1'

DATE: May 23, 2013

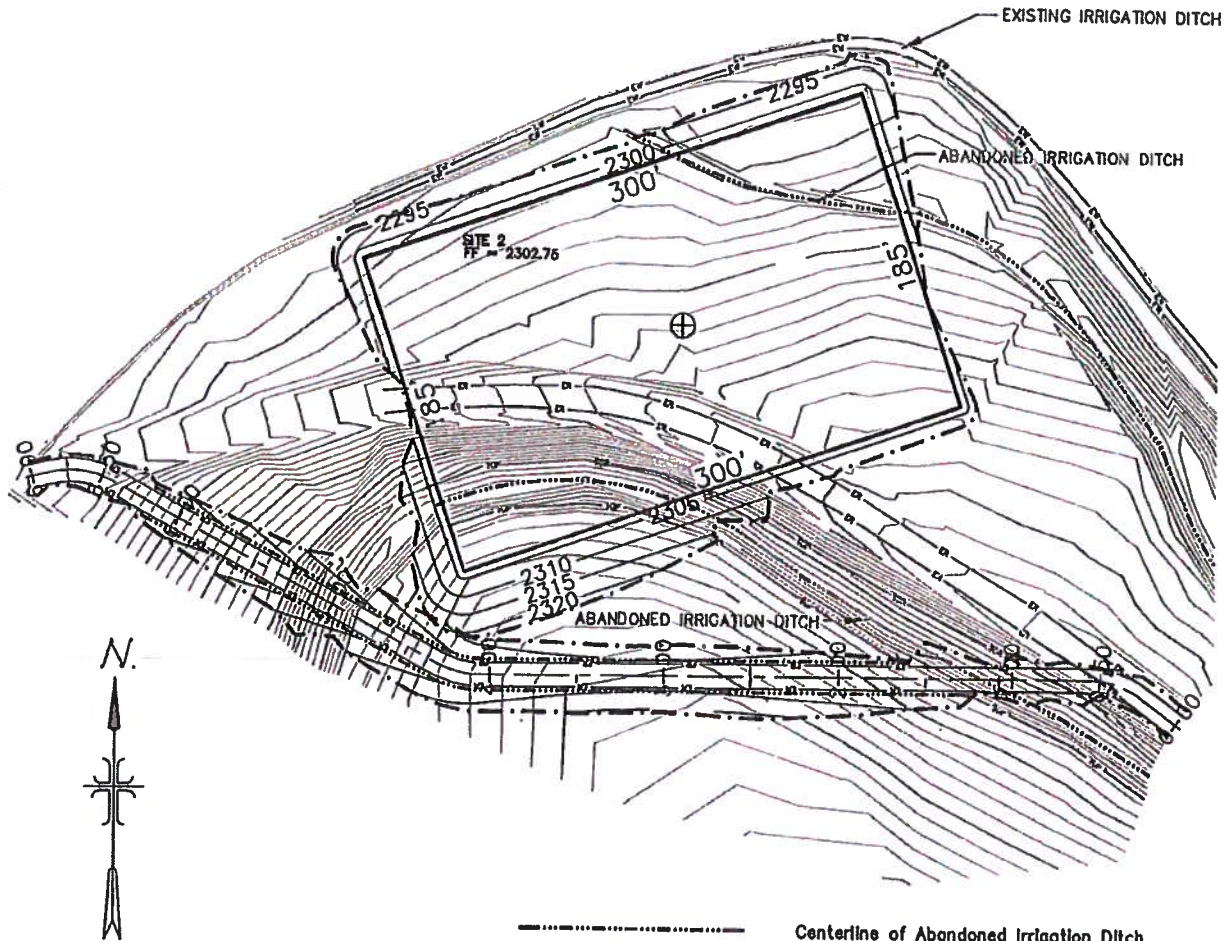
FILE: 0165-04 2-10 TOPO.dwg



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

# EXHIBIT MAP OF ML INVESTMENTS 2-10

Lying in a Portion of the NE 1/4  
Section 10, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013











SCALE: 1" = 100'

**SITE 1**  
TOTAL CUT = 16,855 CY  
TOTAL FILL = 347 CY

(NOTE - PAD ELEVATION IS CONTROLLED  
BY IRRIGATION DITCH TO THE NORTH)

**SITE 2**  
TOTAL CUT = 7,396 CY  
TOTAL FILL = 5,867 CY

**ROAD**  
TOTAL CUT = 2,089 CY  
TOTAL FILL = 110 CY

-  Centerline of Abandoned Irrigation Ditch
-  Edge of Dirt Road
-  Edge of Water of Existing Earth Irrigation Ditch
-  Existing Major Contour Line, Interval=5'
-  Existing Intermediate Contour Line, Interval=1'
-  Proposed Pad Site
-  Limits of Pad Earthwork - 2:1 C/F Slopes
-  Proposed Major Contour Line, Interval=5'

DATE: May 23, 2013

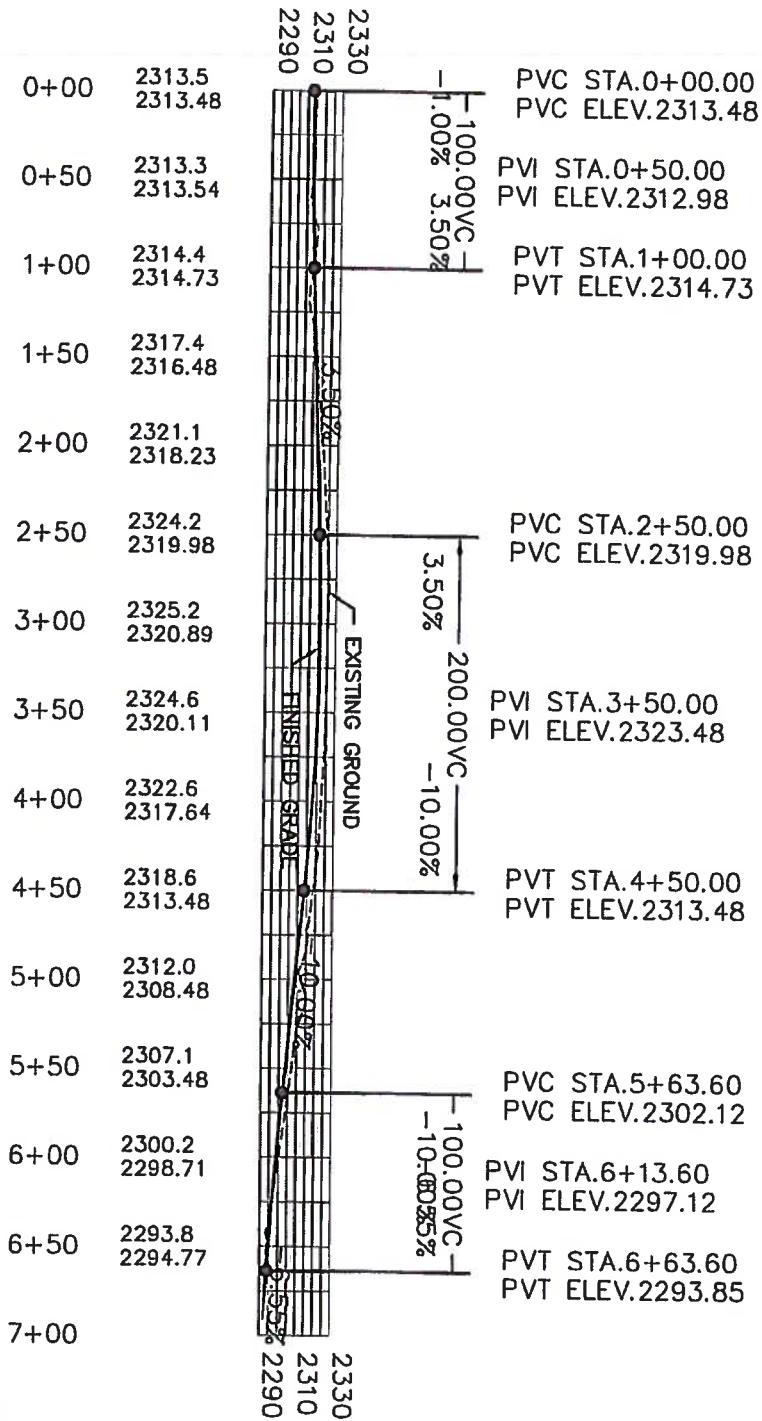
FILE: 0165-04 2-10 TOPO.dwg



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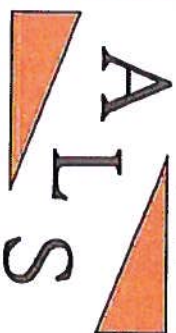
**EXHIBIT MAP OF  
ML INVESTMENTS 2-10**  
Lying in a Portion of the NE 1/4  
Section 10, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



SCALE: 1" = 100'

DATE: May 23, 2013

FILE: 0165-04 2-10 TOPO.dwg



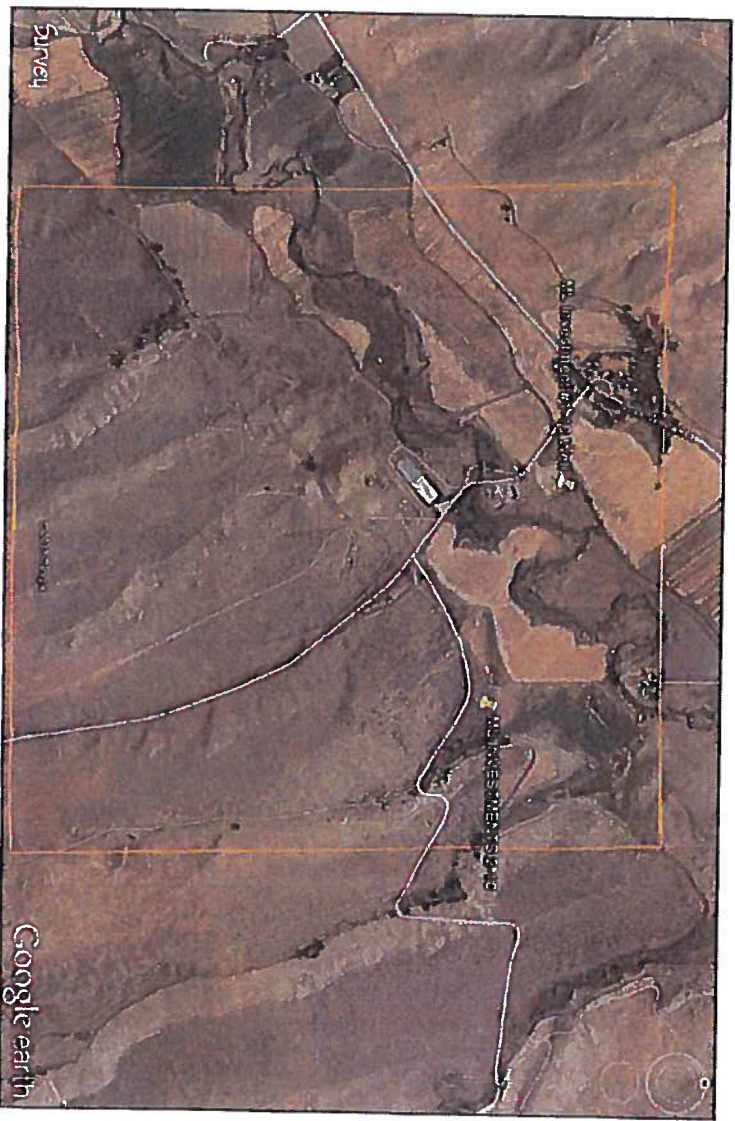
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**EXHIBIT MAP OF  
MUSTER & ACCESS LOCATION  
ML INVESTMENTS 2-10**

Lying in a Portion of the NE 1/4  
Section 10, Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



NOT TO SCALE

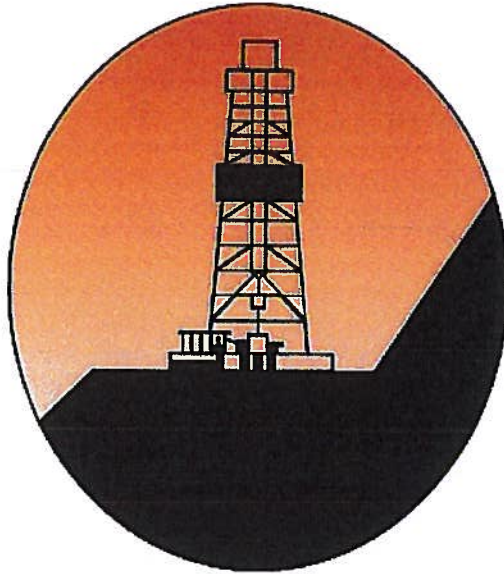


DATE: May 23, 2013

FILE: 0165-04 2-10.dwg



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Middleton, Idaho  
208-585-5858



# **ALTA MESA**

**ALTA MESA SERVICES, LP**

**IDL Permit Supplement**

**ML Investments 2-10**

**Willow**

**Payette County, ID**

**May 22, 2013**

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## 1 Background Information

**Objective:** The objective of this operation is to drill a directional well to develop the "1-15 Sand".

<b>AFE #:</b>		<b>County:</b>	Payette
<b>Well Type:</b>	Vertical	<b>State:</b>	Idaho
<b>Well Name:</b>	ML Investments 2-10	<b>Section:</b>	10
<b>Field:</b>	Willow	<b>Township:</b>	8N
		<b>Range:</b>	4W

### Mapping Reference:

<b>System:</b>	NAD83 / NAD27	<b>Mag Dec:</b>	-2.367° (15-Aug-2012)
<b>Zone:</b>	UTM11	<b>Grid Conv:</b>	0.167°
<b>SPCS:</b>	Idaho West Zone 1103	<b>Total Corr:</b>	-2.534°

### Coordinates:

#### Surface Location:

##### NAD83

**Lat:** N 44° 02' 57.557" (44.04932°)  
**Long:** W 116° 47' 48.130" (116.79670°)  
**SPCS:** 2349480.09ft E  
870090.60 ft N

##### NAD27

**SPCS:** 225065.15 ft E  
870118.01 ft N

#### Bottom Hole Location:

##### NAD83

**Lat:** N 44° 02' 57.557" (44.01887°)  
**Long:** W 116° 47' 48.130" (116.79670°)  
**SPCS:** 2349480.09ft E  
870090.60 ft N

##### NAD27

**SPCS:** 225065.15 ft E  
870118.01 ft N

### Elevation:

**GL:** 2302.75 ft  
**RKB:** 2322.75 ft

### Planned TD:

**MD:** 6500.0 ft  
**TVD:** 6500.0 ft

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

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

**Contractor:**

**Rig:**

**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 6.8 miles and turn right onto Wright Lane. Go 0.1 miles and take the 1<sup>st</sup> left onto Fort Wilson Drive. Go 0.5 miles and continue on Little Willow Road. Go 2.1 miles and turn right onto farm road. Go 0.4 miles and turn left on farm road. Go 0.2 miles and enter location.



## 2 Geologic Prognosis

### 2.1 Prospect

The ML 2-10 is designed to test an [REDACTED] that displays a [REDACTED] response and [REDACTED] on seismic. The structure is a [REDACTED] to [REDACTED] trending faults.

The sand to be tested is equivalent to the Willow sand, which is found in the Bridge ML Investments 1-10 Well at 4088' TVD. It is estimated that the target sand will be encountered at +/- 4050' TVD in the Prospect and be an estimated +/-175' in thickness. It is expected that formation will produce both gas and condensate.

### 2.2 PROPOSED WELL:

The well is to be vertically drilled to a depth of 6500' MD/TVD. The Surface location being in Section 10-8N-4W.

### 2.3 POTENTIAL DRILLING HAZARDS:

- **Shallow Gas**

There is the potential to encounter shallow gas in this well at multiple depths. The Hamilton sand (+/-1115' MD) and the OSS Sand (+/-1450' MD) have had gas shows throughout the basin.

Well Name	Offset Distance	Depth Gas Found	Comparable Depth/Formations in ML 2-10
Virgil Johnson #1	3.5 miles S/SW	1410'-1610' TVD	1210'-1550 TVD / Hamilton / OSS Sand
Tracy Trust 3-2	5.3 miles S/SE	1590' TVD, 1722'-1800' TVD, 2000' – 2200' TVD	1015' TVD / Espino /1210'-1550' TVD Hamilton / OSS Sand
Interstate Finance #1	4.2 Miles W/SW	1265' MD	1210' Hamilton Sand

- **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, approximately .5 miles W/NW of the prospect, 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 +/- 3350' – 3750'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
		ML 2-10	ML 2-10	ML 2-10	DJS 1-15	ML- 1-10	DJS 1-14
Formation Tops	Comments	Est. MD	Est. TVD	Est. SS	MD	MD	MD
Hamilton Sand		1210'	1210'	1113'	1410'	993'	1522'
OSS Sand		1550'	1550'	770'	1870'	1400'	2038'
Lacustrine Shale Top		1850'	1850'	470'	2248'	1,760	2138'
Marker 3		2100'	2100'	220'	2490'	2036'	2630'
Blue Fault (A)		3850'	3850'	-1,550			
Willow Sand Sand		4050'	4050'	-1,760	3750'	3700'	4040'
Top Basalt		6200'	6200'	-3,880	4694'	6040'	4550'



### 3 Site Preparation

#### 3.1 Access Roads

The proposed surface location is adjacent to an existing farm road that supports heavy truck traffic. That road includes a bridge that will support the majority of truck traffic supporting well operations. At the well location the other traffic will be diverted to reconstructed route for safety reasons, particularly to minimize non-operational traffic on the active work site and later near the producing wellhead.



Alternative egress is required for overweight loads that cannot be supported by the small bridge. Access for such loads will be via farm roads that connect to Big Willow Road southeast of the well site.



### 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 2:1 grade to minimize runoff erosion and ensure mechanical stability. See attached engineering drawings.

### 3.3 Cellars

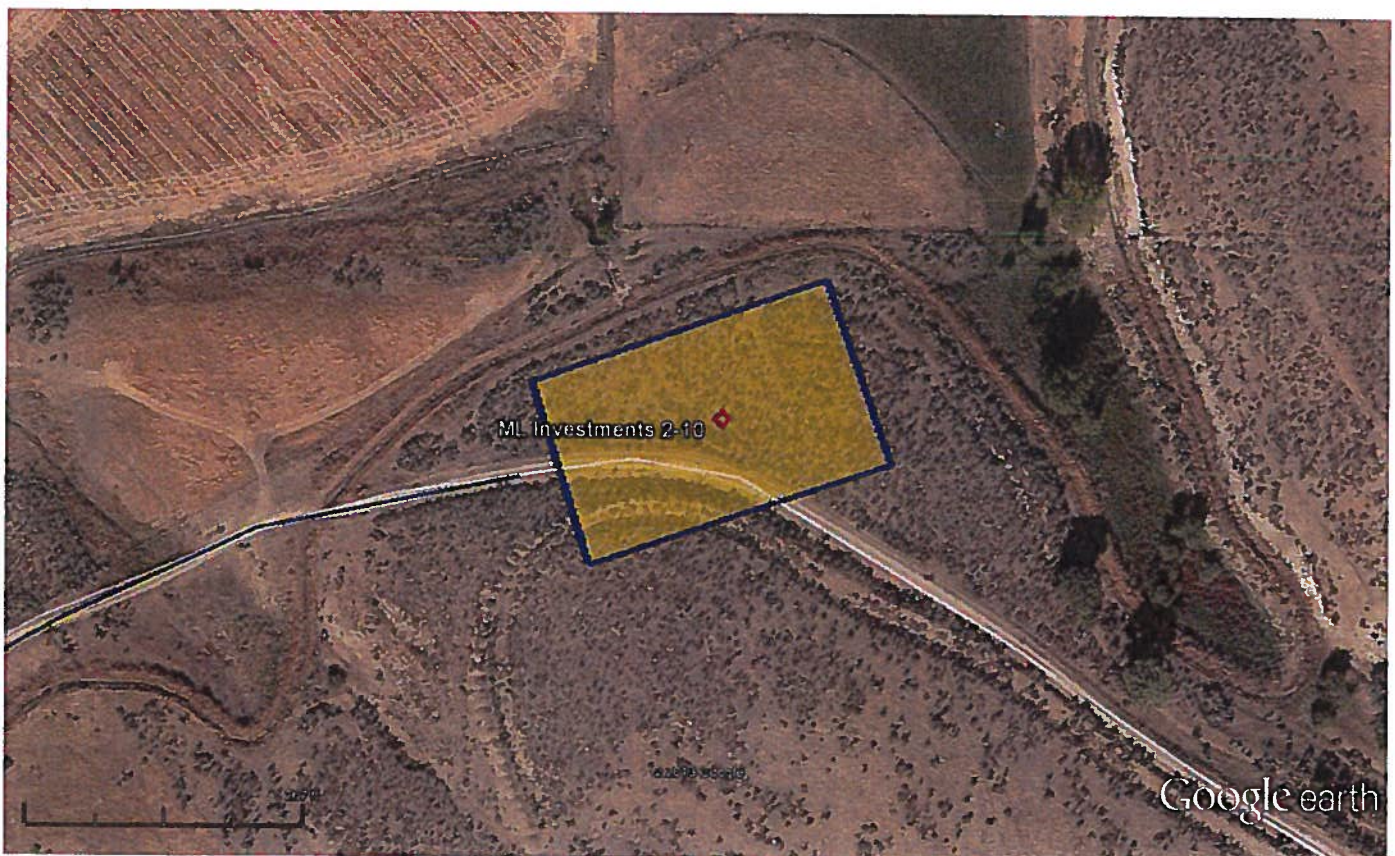
An 8' deep round cellar box will be installed after the conductor is installed per the relevant section below.

### 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.

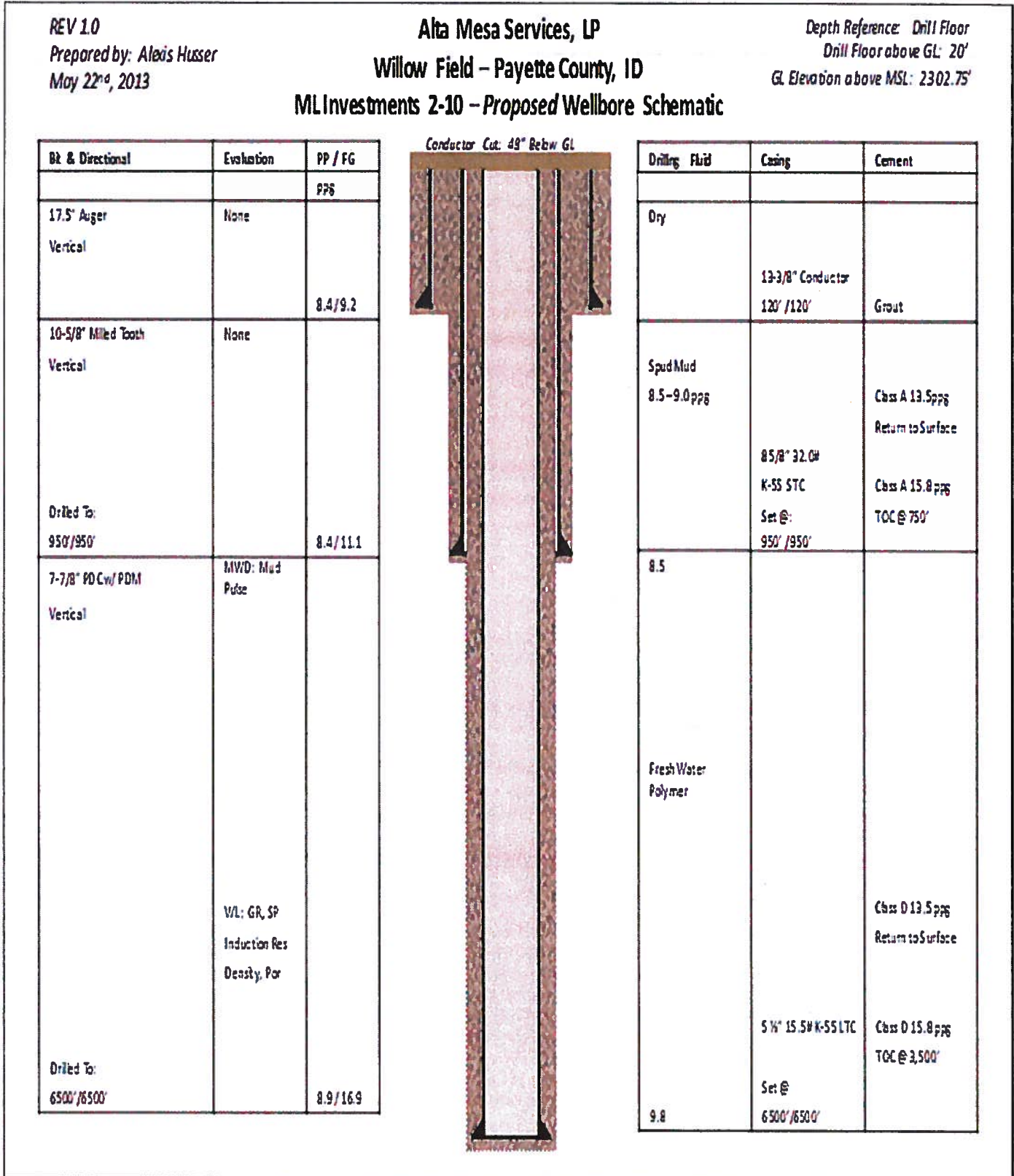
### 3.5 Sump

The location will have a 2' deep trench on all 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

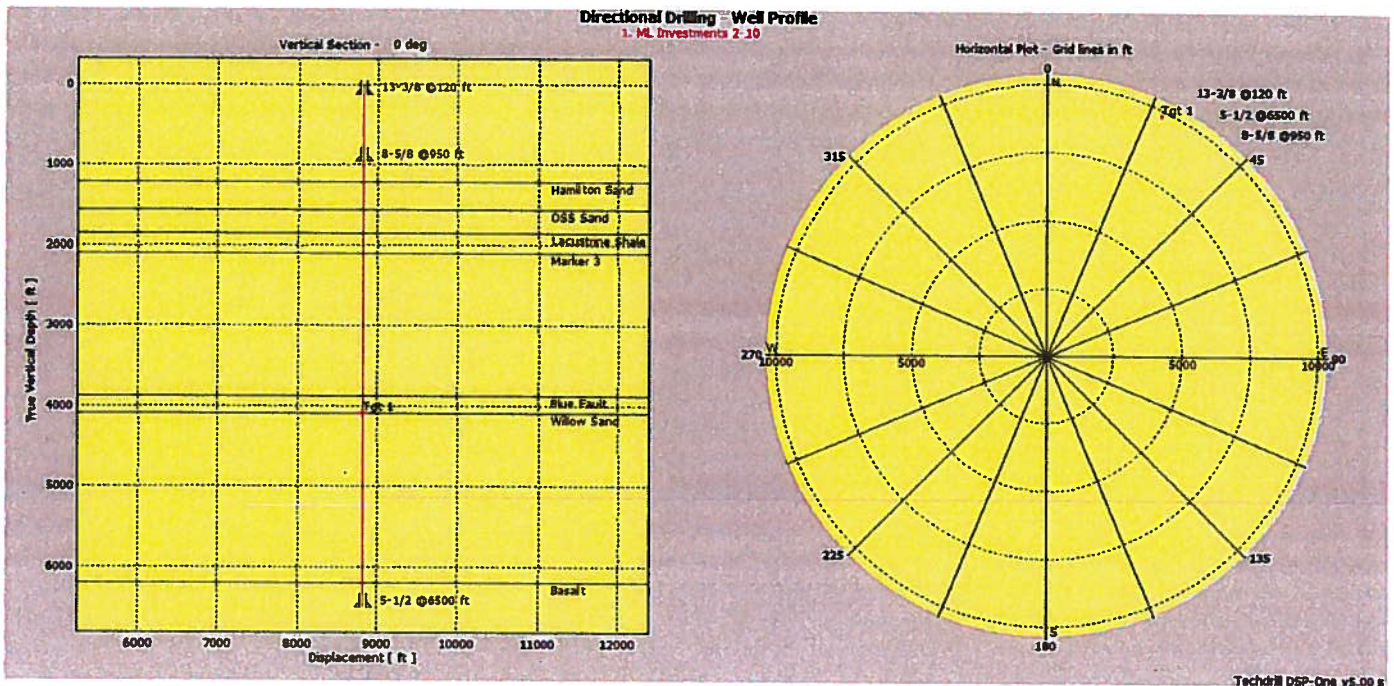


## 4.2 Directional Plan

### 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.

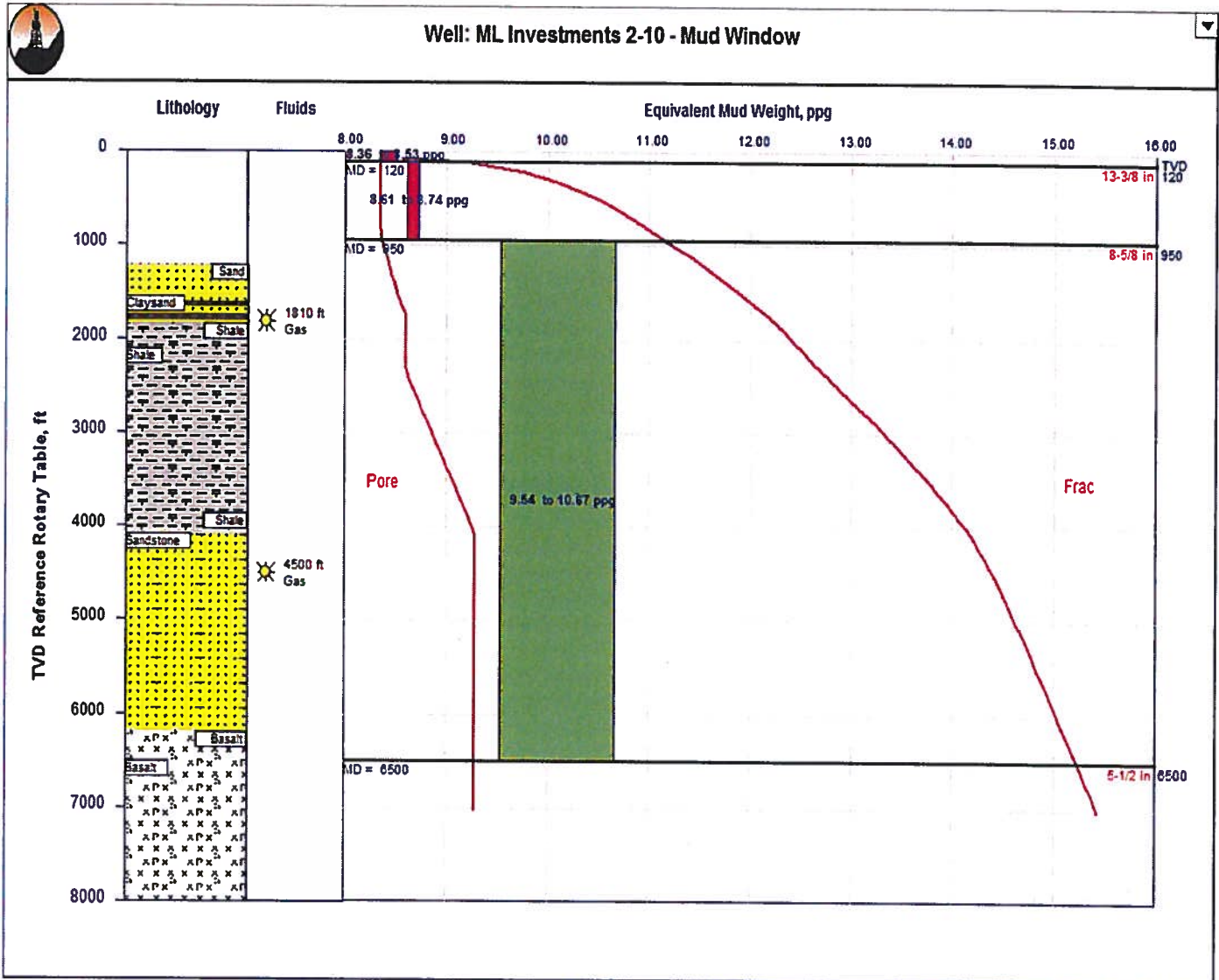
### 4.2.2 Vertical Section & Plan View



### 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.



## 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 5,00psi (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" D.P.16.60# - G105 - Class II	TOP Box 4-1/2 XH * BTM Pin 4-1/2 XH	4.368	3.825
180.0 ft	416.0 ft	4-1/2" HWDP 42.00# - Range 3	TOP Box 4 F * BTM Pin 4 F	5.000	3.000	50.00	2.44
4.0 ft	236.0 ft	Xover - OD 6.50"	TOP Box 4 F * BTM Pin 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 Pin 5-1/2 REG	7.000	2.813	109.68	1.50
4.0 ft	172.0 ft	Xover - OD 8.00"	TOP Box 5-1/2 REG * BTM Pin 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 Pin 6-5/8 REG	8.000	2.813	149.64	1.10
6.0 ft	108.0 ft	8-1/4" Stab - Blade 12.125"	TOP Box 6-5/8 REG * BTM Pin 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 Pin 6-5/8 REG	8.000	2.813	149.64	1.10
6.0 ft	72.0 ft	8-1/4" Stab - Blade 12.125"	TOP Box 6-5/8 REG * BTM Pin 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 Pin 6-5/8 REG	8.000	3.000	147.02	1.00
5.0 ft	6.0 ft	Bit 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 Pin 6-5/8 REG				
				Well: SmokeRanchLLLP 1-21 String: No Name			



#### 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 %
110 - 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

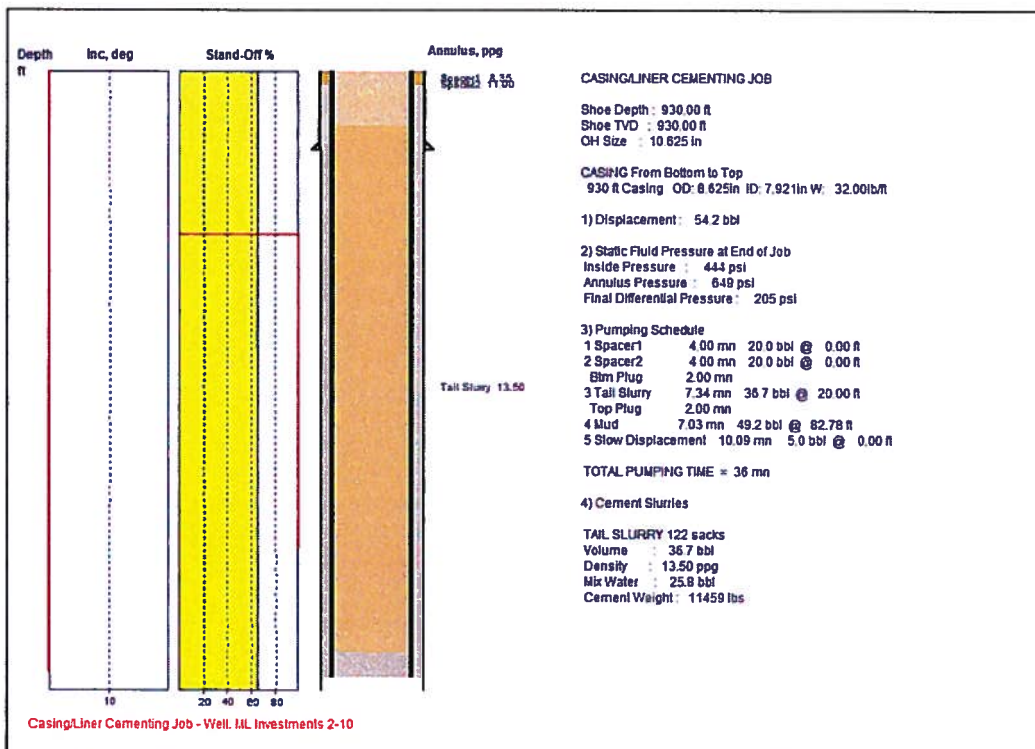
**Cement Slurries**

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 ~6500'.

#### 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°	6500'	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.

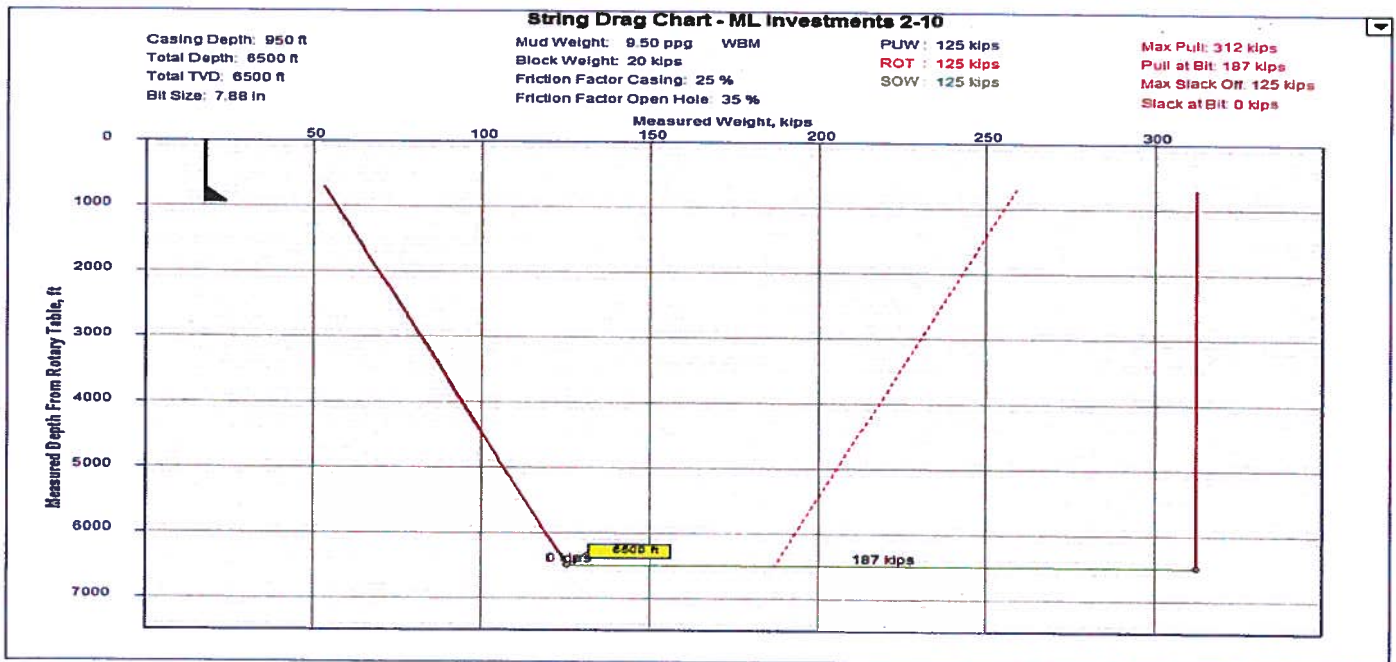
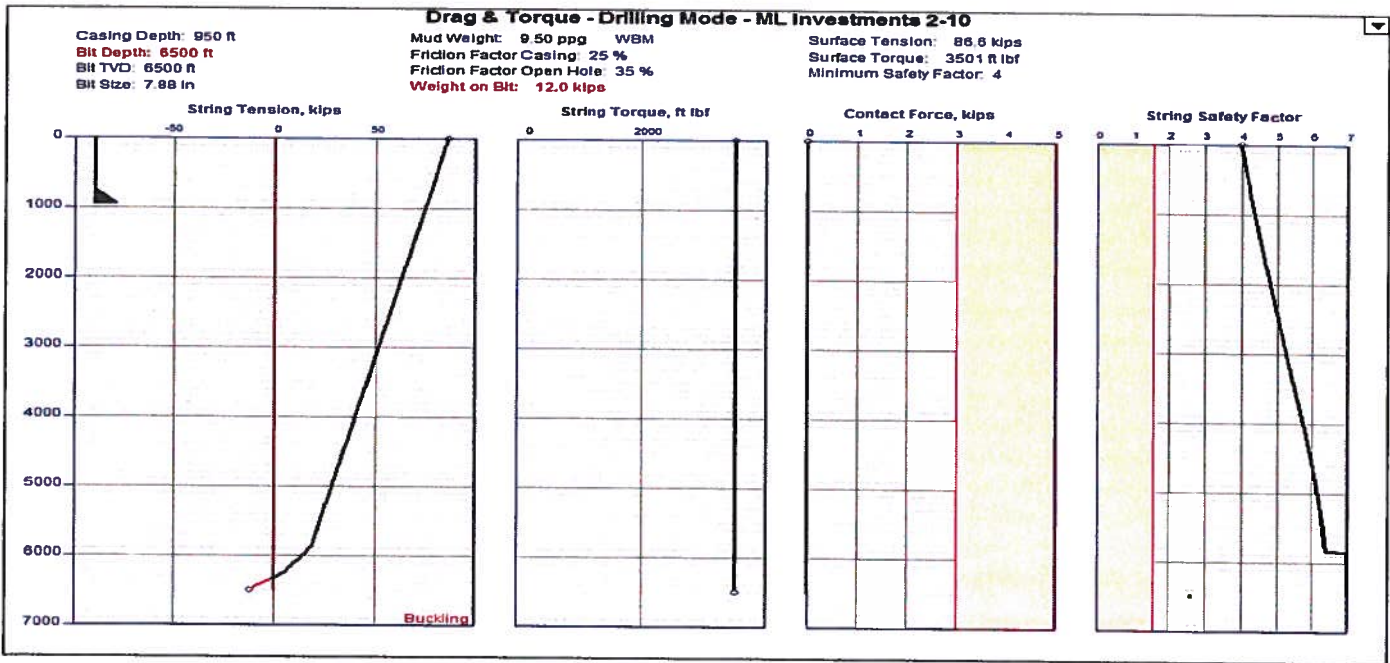
Length to surface	Cumul		Connection	OD in	ID in	Ib/ft	S.R.	
					4.366	3.825	16.80	2.29
186.0 ft	644.4 ft				4.500	2.750	42.00	2.70
18.8 ft	456.4 ft				6.000	2.250	98.00	2.70
186.0 ft	439.6 ft				4.500	2.750	42.00	3.38
5.0 ft	253.6 ft				6.500	2.813	91.65	1.00
155.0 ft	248.6 ft				6.500	2.813	91.65	1.10
30.0 ft	93.6 ft				6.250	2.250	90.51	1.13
4.0 ft	63.6 ft				6.000	2.250	62.50	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	89.15	1.28
21.0 ft	21.9 ft				6.750	4.694	80.00	
0.9 ft								
		PDC I/KF58 7.875 in	TOP Pin 4-1/2 REG	Well: SmokeRanch.LLP 1-21 String: No Name				

##### 4.7.2.3 Mud System

See mud program for specific recommendations.

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
6,500'	20'	5 ½"	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	23.41 mn	93.7 bbl	@	3500.00 ft
Top Plug	2.00 mn			
Mud	24.55 mn	147.3 bbl	@	0.00 ft

Slow Displacement 9.91 mn 5.0 bbl @ 0.00 ft  
 TOTAL PUMPING TIME 100 mn

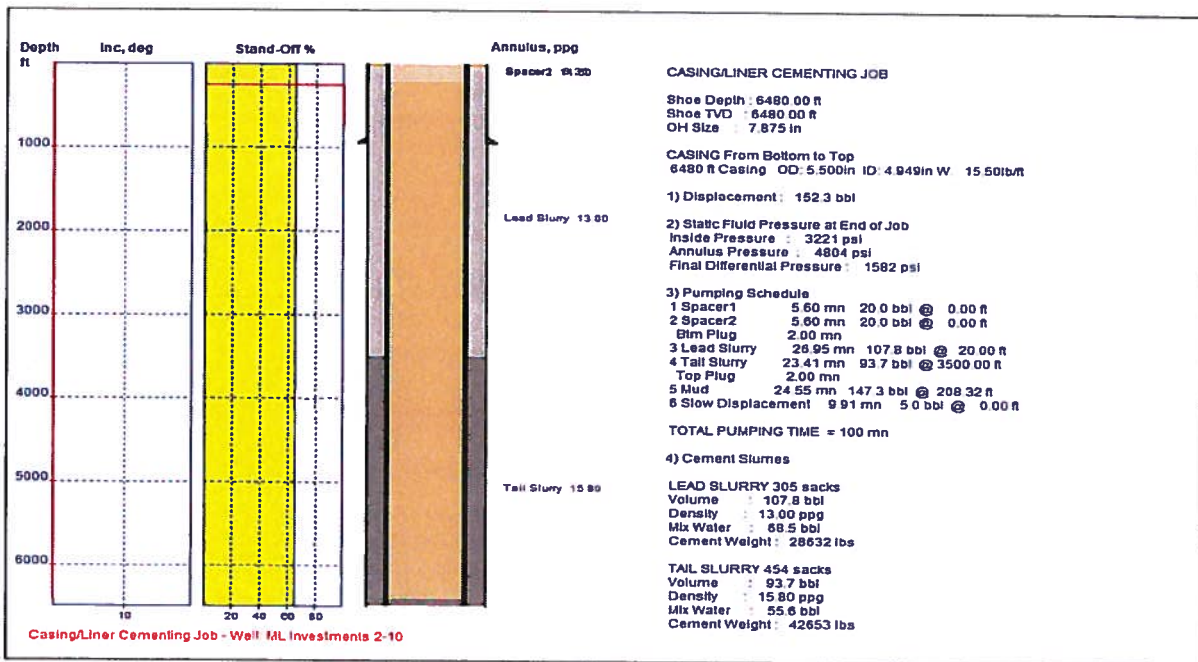
**Cement Slurries**

LEAD SLURRY: 305 sacks  
 Volume : 107.8 bbl  
 Density : 13.00 ppg  
 Mix Water : 68.5 bbl  
 Cement Weight : 28632 lbs  
 TAIL SLURRY: 454sacks  
 Volume : 93.7 bbl  
 Density : 15.80 ppg  
 Mix Water : 55.6 bbl  
 Cement Weight : 42653 lbs

**Free Fall Analysis**

Maximum Pumping Rate : 6.0 bbl  
 Maximum Return Rate : 6.5 bbl  
 Max Injection Pressure : 1958 psi

Depth of Interest : 6479.90 ft  
 TVD of Interest : 6479.90 ft  
 Maximum Pressure : 4966 psi  
 Maximum EMW : 14.77 ppg  
 Minimum Pressure : 3227 psi  
 Minimum EMW : 9.59 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 – Design Criteria

At this time wellhead proposals are pending, but those proposals are being developed according to the following design criteria.

- Working Conditions:
  - 0ppm H<sub>2</sub>S
  - 0% CO<sub>2</sub>
  - 5,000#
  - PSL1
  - AA
  - Temperature Class U (0-250 F)
  - Base Plate on A-Section
- Casing Program:
  - 13 3/8" Conductor
  - 8 5/8" Surface Pipe
  - 5 1/2" Production String
- Contingency:
  - In the area there have been instances of unconsolidated sands causing problems in the surface hole, where the most effective solution is opening up to 12 1/4" and setting a short string of 10 3/4" Surface Pipe, followed by the 8 5/8" and 5 1/2" strings at the planned depths. Need proposal for base case and contingency.
- BOP:
  - 11"x5M Cameron Type U
- Consideration:
  - Would like to minimize improve NU speed an minimize need for cutting and welding. A speed head would be desirable.



## **7 Reclamation**

Reclamation of the site will be addressed according to the Surface use Agreement signed with the landowner per IDAPA 20.07.02 Section 325.08



Attorneys and Counselors

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Street Address  
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Little Rock, Arkansas 72202

May 31, 2013

Mr. Eric Wilson  
Idaho Department of Lands  
Idaho Oil and Gas Conservation Commission  
300 N. 6<sup>th</sup> Street  
Suite 103  
Boise, ID 83702

RE: Exceptional Location Letter Application  
Section 10, Township 8 North, Range 4 West  
Willow Field, Payette County, Idaho

Mr. Wilson,

Please allow this letter to serve as Alta Mesa Services, LP's application for an exceptional location for its well proposed in Section 10, Township 8 North, Range 4 West in the Willow Field located in Payette County, Idaho. The well permit application will be filed concurrently with this request for your consideration and Alta Mesa Services, LP ("Applicant") requests that this letter application be attached to the well permit as an additional submittal. As you will see, the Applicant requests a waiver of the well spacing requirements pursuant to IDAPA 20.07.02.330.04 to accommodate a second wellbore within Section 10, Township 8 North, Range 4 West which is required due to the unique geologic and reservoir conditions more fully described in the expert testimony submitted with this letter application.

In accordance with IDAPA 20.07.02.330.04, the Applicant submits with this application a plat which provides the following information:

- a. The location at which an oil or gas well could be drilled in compliance with Subsections 330.01 or 330.02 or the applicable order; (*Not applicable because, as indicated, the ML Investments 1-10 already exists in a previously authorized exceptional location*)
- b. The location at which the applicant requests permission to drill; and (*demonstrated by the Proposed Well Location*)
- c. The location at which oil or gas wells have been drilled or could be drilled, in agreement with Subsection 330.01 or 330.02 or the applicable order, directly or diagonally offsetting the proposed

**PERKINS & TROTTER, PLLC**

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Willow Field, Payette County, Idaho  
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*exception. (No wells exist at this time in any of the offsetting sections. Potential locations are demonstrated by the 1,660 foot legal location boxes shown within each section.)*

It should be noted that Alta Mesa Services, LP is the only working interest owner in the offset sections and thus would be operator in each of those sections.

Alta Mesa Services, LP, requests the approval of an exceptional location due to reservoir characteristics related to the target formation. As described in the attached expert testimony of David M. Smith, Section 10 is faulted in such a way that the ML Investments 1-10 well and the proposed ML Investments 2-10 are located and would produce from completely separate reservoirs. The reservoir which would be produced by the proposed ML Investments 2-10 would not be produced by the ML Investments 1-10 and failure to drill and complete the proposed well would result in stranding of resources and waste of those same resources. The correlative rights of the interested parties are not protected unless both independent reservoirs are produced.

As indicated on the attached Structure Map, a fault generally trending from the [REDACTED] of the ML Investments 1-10 and the proposed ML Investments 2-10. A second fault trending [REDACTED] separates the ML Investments 1-10 from the proposed ML Investments 2-10 location. The second fault has a throw of approximately [REDACTED] feet, and prevents effective production from a single well. It serves as a [REDACTED] and seals the ML Investments 1-10 reservoir from the reservoir in which the Applicant proposes the ML Investments 2-10. The observed [REDACTED] is believed to have been created by deformation after the deposition of the reservoir sands probably due to continued basinal subsidence in the region.

The target formation presents the optimal drilling target at the location selected by the Applicant. Specifically, three dimensional seismic survey data identified the target as the top of the correlative sand previously found to be productive in the ML Investments 1-10 well. The reservoir appears to be generally [REDACTED] in shape along the boundary created by the previously mentioned [REDACTED] trending fault just [REDACTED] of the two well locations. The reservoir is limited to the [REDACTED] as the formation dips away from the proposed well location. Geologically, the selected target is believed to be the best potential location within the second reservoir present within Section 10 with the greatest chance that the target will be prospective for oil and/or gas. Selection of this location will enhance the drainage potential of the proposed well which will prevent economic waste; prevent drilling of additional otherwise unnecessary wells which causes additional surface impacts; and avoid creating areas within the reservoir that are incapable of being drained.

**PERKINS & TROTTER, PLLC**

Exceptional Location Letter Application  
Section 10, Township 8 North, Range 4 West  
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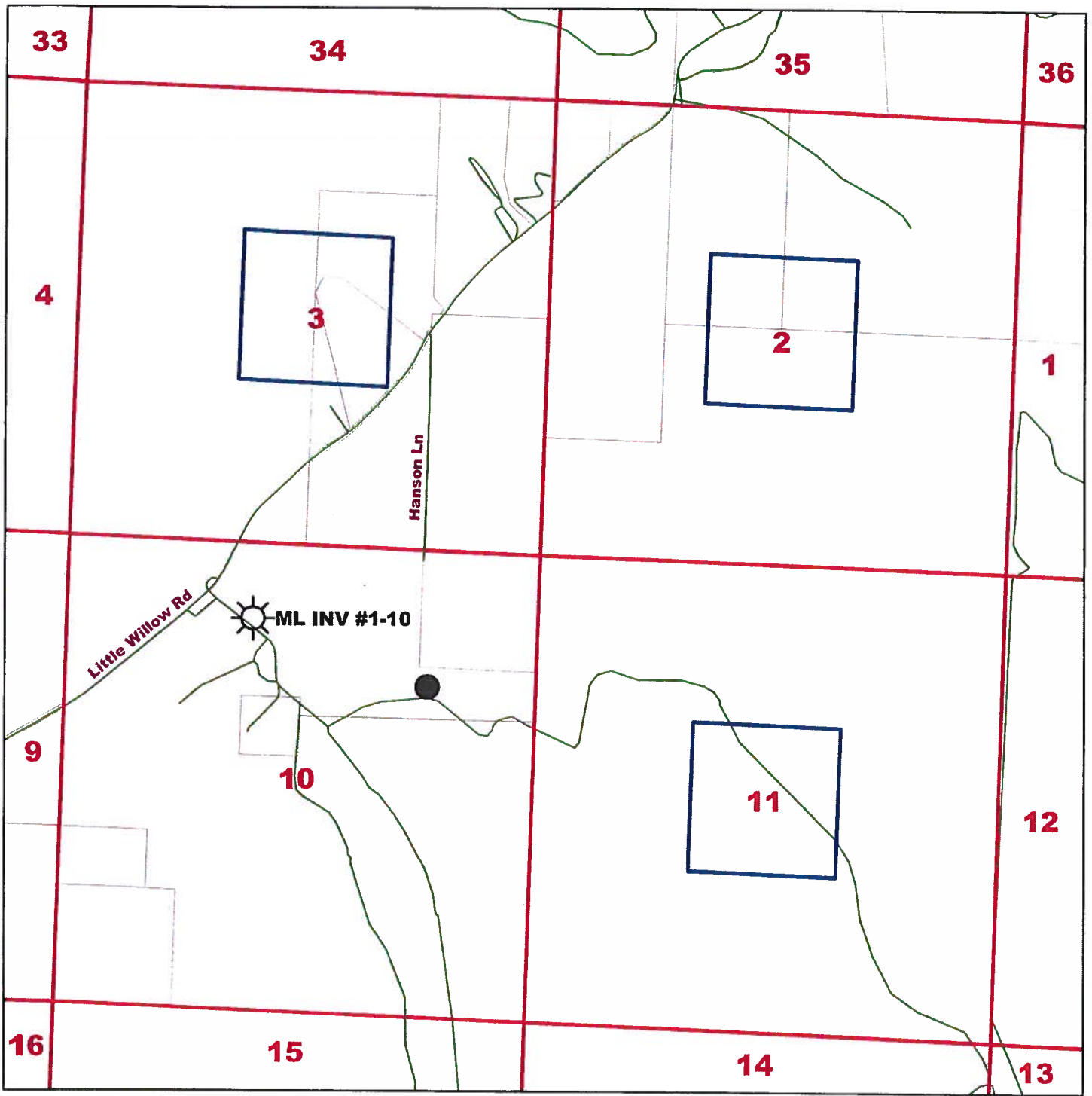
For the reasons stated above, Alta Mesa Services, LP respectfully requests the approval of this exceptional location. If you have further questions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'JLR', with a stylized flourish at the end.

John F. Peiserich

Attachments:      1)    IDAPA 20.07.02.330.04 Plat  
                          2)    Affidavit of David M. Smith  
                          3)    Structure Map



# ML Investments 2-10

## Section 10 T8N R4W

05/30/13

### Legend

- Legal Location
- Section Lines
- Roadways
- Property Boundaries
- Proposed Well Location



1 inch equals 1,500 feet

**AFFIDAVIT OF DAVID M. SMITH, A PETROLEUM GEOLOGIST**

**STATE OF TEXAS        )**  
                                  )  
                                  )  
**COUNTY OF HARRIS     )**

---

David M. Smith, having been first duly sworn, makes the following affidavit:

- 1) My name is David M. Smith. I am over the age of eighteen and competent to give this sworn statement. I understand that I am submitting this Affidavit, under oath, as testimony in the Application of Alta Mesa Holdings for a spacing exception in Section 10, Township 8 North, Range 4 West which would authorize a second well location within that section. This written testimony is given in lieu of oral testimony which would be materially the same.
- 2) I am Vice President of Exploration for Alta Mesa Holdings, LP ("Alta Mesa"). I am responsible for Alta Mesa's exploration activities in the Western Idaho Basin.
- 3) I have worked as a petroleum geologist for 30 years. I received a Bachelor of Science degree in Geology from Virginia Tech in 1983. I have appeared before regulatory bodies in various states and provided expert testimony as a petroleum geologist.
- 4) Alta Mesa requests a waiver of the well spacing requirements pursuant to IDAPA 20.07.02.330.04 to accommodate a second wellbore within Section 10, Township 8 North, Range 4 West which is required due to the unique geologic and reservoir conditions.
- 5) The ML Investments 2-10 well has been developed as a prospect based upon the underlying data acquired as part of the drilling and evaluation of the ML Investments 1-10.

6) The ML Investments 1-10 was completed to a depth of 6,804 feet TD on March 17, 2010. Subsequently Bridge Energy Resources ("Bridge") hired Halliburton to evaluate the well by running a suite of logs that included a Quad Combo, Dipmeter, XMRI and Sonic log along with sidewall cores and petrographic analysis. Bridge also tested the penetrated formation in two separate zones.

7) Alta Mesa acquired Bridge's Idaho assets in May 2012. As part of Alta Mesa's development efforts, a 49.1 square mile 3-D seismic survey was completed in the Willow and Hamilton field areas in late 2012.

8) The ML Investments 2-10 prospect was identified from the 3-D seismic survey. The prospect displays both [REDACTED] and [REDACTED] [REDACTED] characteristics which are consistent with the presence of gas saturated sandstones at the 2-10 location.

9) Further analysis of the data collected by Bridge in the ML Investments 1-10 wellbore indicates good correlation between the zones identified by the 3-D seismic survey targeted in the 2-10 well prospect and those existing in the ML Investments 1-10. In particular, the XMRI log, which includes the dipmeter log, indicates the ML Investments 1-10 is [REDACTED] at depths of [REDACTED] feet and [REDACTED] feet which confirms the presence of the [REDACTED] trending fault which was identified in the 3-D seismic survey.

10) Specifically, and as shown on the attached Structure Map, [REDACTED] [REDACTED] to create the traps and isolate the ML Investments 1-10 reservoir from the postulated target reservoir at the ML 2-10 location. The primary fault generally trending from the [REDACTED] [REDACTED] of the ML Investments 1-10 and the proposed ML Investments 2-10, and exhibits approximately [REDACTED] feet of throw. A second [REDACTED] fault which trends [REDACTED] separates the ML Investments 1-10 from the proposed ML Investments 2-10 location. This second fault has a throw of approximately [REDACTED] feet. The two

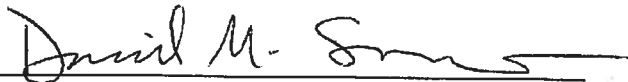
reservoirs are thus fault separated to the extent that it is not possible to recover hydrocarbons from both reservoirs from a single wellbore.

11) Geologically, the selected target is believed to be the best potential location within the second reservoir present within Section 10 with the greatest chance that the target will be prospective for oil and/or gas.

Selection of this location will enhance the drainage potential which will prevent economic waste; prevent drilling of additional otherwise unnecessary wells which causes additional surface impacts; and avoid creating areas within the reservoir that are incapable of being drained.

Executed this 31<sup>st</sup> day of May, 2013.

**FURTHER AFFIANT SAYETH NOT.**

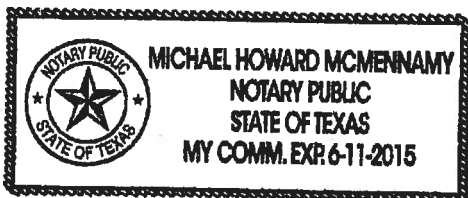
  
\_\_\_\_\_  
David M. Smith

**ACKNOWLEDGEMENT**

**STATE OF TEXAS**     )  
                                  )  
                                  )  
**COUNTY OF HARRIS**    )

On this the 31<sup>st</sup> day of May, 2013, before me, the undersigned Notary Public in and for said County and State, personally appeared David M. Smith, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged that he is the Vice President of Exploration for Alta Mesa Holdings, LP, a Texas Limited Partnership, and that he executed the same as his free and voluntary act and deed in his said capacity for the purpose and consideration therein mentioned and set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.



  
\_\_\_\_\_  
NOTARY PUBLIC



Structure Map – Depth – ML 2-10

