MIN F
SURF P

Form 3160-3
(March 2012)

Carlsbad Field Office
OCD Hobbs
HOBBS OCD
MAY 07 2018
RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM0001747

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
LEA / NMNM070976X

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. (302802)
LEA UNIT 41H

2. Name of Operator
LEGACY RESERVES OPERATING LP (240974)

9. API Well No.
30-025-44733

3a. Address
303 West Wall St., Ste 1800 Midland TX 7970

3b. Phone No. *(include area code)*
(432)689-5287

10. Field and Pool, or Exploratory (37570)
LEA / BONE SPRING

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface NESW / 2270 FSL / 1580 FWL / LAT 32.557598 / LONG -103.5171983

At proposed prod. zone NENW / 330 FNL / 2210 FWL / LAT 32.5794555 / LONG -103.5151538

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 24 / T20S / R34E / NMP

14. Distance in miles and direction from nearest town or post office*
26 miles

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
260 feet	360	240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
50 feet	9800 feet / 17531 feet	FED: NMB001015

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3676 feet	01/01/2018	45 days

24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Brian Wood / Ph: (505)466-8120	12/15/2017

Title
President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	04/16/2018

Title	Office
Supervisor Multiple Resources	CARLSBAD

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

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

(Continued on page 2)

*(Instructions on page 2)

GCP Rec 05/07/18

APPROVED WITH CONDITIONS

Approval Date: 04/16/2018

KZ 05/09/18

X

X Double sided

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Approval Date: 04/16/2018

Additional Operator Remarks

Location of Well

1. SHL: NESW / 2270 FSL / 1580 FWL / TWSP: 20S / RANGE: 34E / SECTION: 24 / LAT: 32.557598 / LONG: -103.5171983 (TVD: 0 feet, MD: 0 feet)
   PPP: NESW / 1320 FSL / 1929 FWL / TWSP: 20S / RANGE: 34E / SECTION: 13 / LAT: 32.569492 / LONG: -103.516087 (TVD: 9800 feet, MD: 13902 feet)
   PPP: SESW / 2640 FSL / 2022 FWL / TWSP: 20S / RANGE: 34E / SECTION: 13 / LAT: 32.573151 / LONG: -103.515741 (TVD: 9800 feet, MD: 15251 feet)
   PPP: SESW / 0 FSL / 1827 FWL / TWSP: 20S / RANGE: 34E / SECTION: 13 / LAT: 32.565852 / LONG: -103.516417 (TVD: 9800 feet, MD: 12590 feet)
   PPP: NESW / 2270 FSL / 1580 FWL / TWSP: 20S / RANGE: 34E / SECTION: 24 / LAT: 32.557598 / LONG: -103.5171983 (TVD: 0 feet, MD: 0 feet)
   PPP: SENW / 2640 FSL / 1614 FWL / TWSP: 20S / RANGE: 34E / SECTION: 24 / LAT: 32.5586 / LONG: -103.517101 (TVD: 9800 feet, MD: 9954 feet)
   BHL: NENW / 330 FNL / 2210 FWL / TWSP: 20S / RANGE: 34E / SECTION: 13 / LAT: 32.5794555 / LONG: -103.5151538 (TVD: 9800 feet, MD: 17531 feet)

BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

Approval Date: 04/16/2018

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

04/23/2018

APD ID: 10400025420 **Submission Date:** 12/15/2017

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400025420 **Tie to previous NOS?** **Submission Date:** 12/15/2017

BLM Office: CARLSBAD **User:** Brian Wood **Title:** President

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM0001747 **Lease Acres:** 360

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? YES **Federal or Indian agreement:** FEDERAL

Agreement number: NMNM070976X

Agreement name: LEA

Keep application confidential? NO

Permitting Agent? YES **APD Operator:** LEGACY RESERVES OPERATING LP

Operator letter of designation:

Operator Info

Operator Organization Name: LEGACY RESERVES OPERATING LP

Operator Address: 303 West Wall St., Ste 1800

Zip: 79701

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)689-5287

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? EXISTING **Mater Development Plan name:** Lea Unit Master Dev Plan

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: LEA UNIT **Well Number:** 41H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** LEA **Pool Name:** BONE SPRING

Is the proposed well in an area containing other mineral resources? USEABLE WATER,POTASH

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** YES **New surface disturbance?** N

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** LEA UNIT **Number:** 36H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 26 Miles **Distance to nearest well:** 50 FT **Distance to lease line:** 260 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: lea_41h_plat_20171215151417.pdf

Well work start Date: 01/01/2018 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 23263

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	2270	FSL	1580	FWL	20S	34E	24	Aliquot NESW	32.557598	-103.5171983	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 020979	3676	0	0
KOP Leg #1	2270	FSL	1580	FWL	20S	34E	24	Aliquot NESW	32.557598	-103.5171983	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 020979	-5551	9227	9227
PPP Leg #1	2640	FSL	1614	FWL	20S	34E	24	Aliquot SENW	32.5586	-103.517101	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0001747	-6124	9954	9800

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Testing Procedure: The BOPs will be tested by an independent service company to 250 psi low and 5000 psi high.

Choke Diagram Attachment:

lea_41h_choke_20171215160847.pdf

BOP Diagram Attachment:

lea_41h_bop_20171215161233.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1800	0	1800	-6137	-7937	1800	J-55	54.5	STC	1.42	3.86	DRY	2.59	DRY	2.59
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3901	0	3900			3901	J-55	40	LTC	1.25	2.56	DRY	1.6	DRY	1.6
3	INTERMEDIATE	12.25	9.625	NEW	API	N	3900	5600	3900	5600			1700	HCK-55	40	LTC	1.45	2.54	DRY	4.23	DRY	4.23
4	PRODUCTION	8.75	5.5	NEW	API	N	0	17532	0	9800			17532	P-110	20	OTHER - BTC	4.98	1.26	DRY	1.63	DRY	1.63

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

lea_41h_casing_surf_20171215161452.pdf

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

lea_41h_casing_interm_20171215161705.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

lea_41h_casing_interm_20171215161721.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

lea_41h_casing_prod_20171215161832.pdf

Section 4 - Cement

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1800	1100	1.93	13.5	2123		Class C cement	4% bwoc bentonite II + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.005% bwoc Static Free + 0.005 gps FP-6L
SURFACE	Tail				200	1.34	14.8	268		C cement	1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L
INTERMEDIATE	Lead		0	3901	400	2.13	12.5	852		Paz (fly ash) Class C	4% bwoc bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL- 52 + 5 lbs/sack LCM-1 +0.125 lbs/sk cello flake + 0.005 lbs/sk defoamer + 0.005 gpsFP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride
INTERMEDIATE	Tail				200	1.33	14.8	266		Class C cement	none
INTERMEDIATE	Lead		3901	5600	1100	2.13	12.5	2343		Poz (fly ash) Class C cement	4% bwoc bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL- 52 + 5 lbs/sack LCM-1 +0.125 lbs/sk cello flake+ 0.005 lbs/sk defoamer + 0.005 gpsFP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride
INTERMEDIATE	Tail				200	1.33	14.8	266		Class C cement	none
PRODUCTION	Lead		0	17532	1600	2.38	11.9	3808		Poz (fly ash) Class H cement	10% bwoc bentonite II + 5% bwow sodium chloride + 5 pps LCM-1 + 0.005 lbs/sk Static Free + 0.005 gps FP-6L
PRODUCTION	Tail				1700	1.62	13.2	2754		Class H	CSE-2 + 4% bwow sodium chloride + 3 pps LCM- 1 + 0.6% bwoc FL-25 + 0.005 gps FP-6L + 0.005% bwoc Static Free

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. Mud logging program: 2 man unit from approximately after setting intermediate casing. No open hole logs, DSTs, or cores are planned.
Describe the mud monitoring system utilized: A Pason PVT system will be rigged up prior to spudding this well. A volume monitoring system that measures, calculates, and displays readings from the mud system on the rig to alert the rig crew of impending gas kicks and lost circulation. In order to effectively run casing, the mud viscosity and fluid loss properties may be adjusted.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
5600	9800	OTHER : Fresh water/brine	8.4	8.6							
1800	5600	OTHER : Brine water	9.8	10							
0	1800	SPUD MUD	8.4	8.9							
9800	17532	OTHER : Fresh water/brine	8.9	9.1							

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Mud logging, H2S plan, BOP and choke plans all in place for testing, equipment, safety

List of open and cased hole logs run in the well:

MUDLOG

Coring operation description for the well:

No coring planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4312 **Anticipated Surface Pressure:** 2156

Anticipated Bottom Hole Temperature(F): 162

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

lea_41h_h2s_plan_20171215162936.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

lea_41h_horiz_drill_plan_20171215162635.pdf

Other proposed operations facets description:

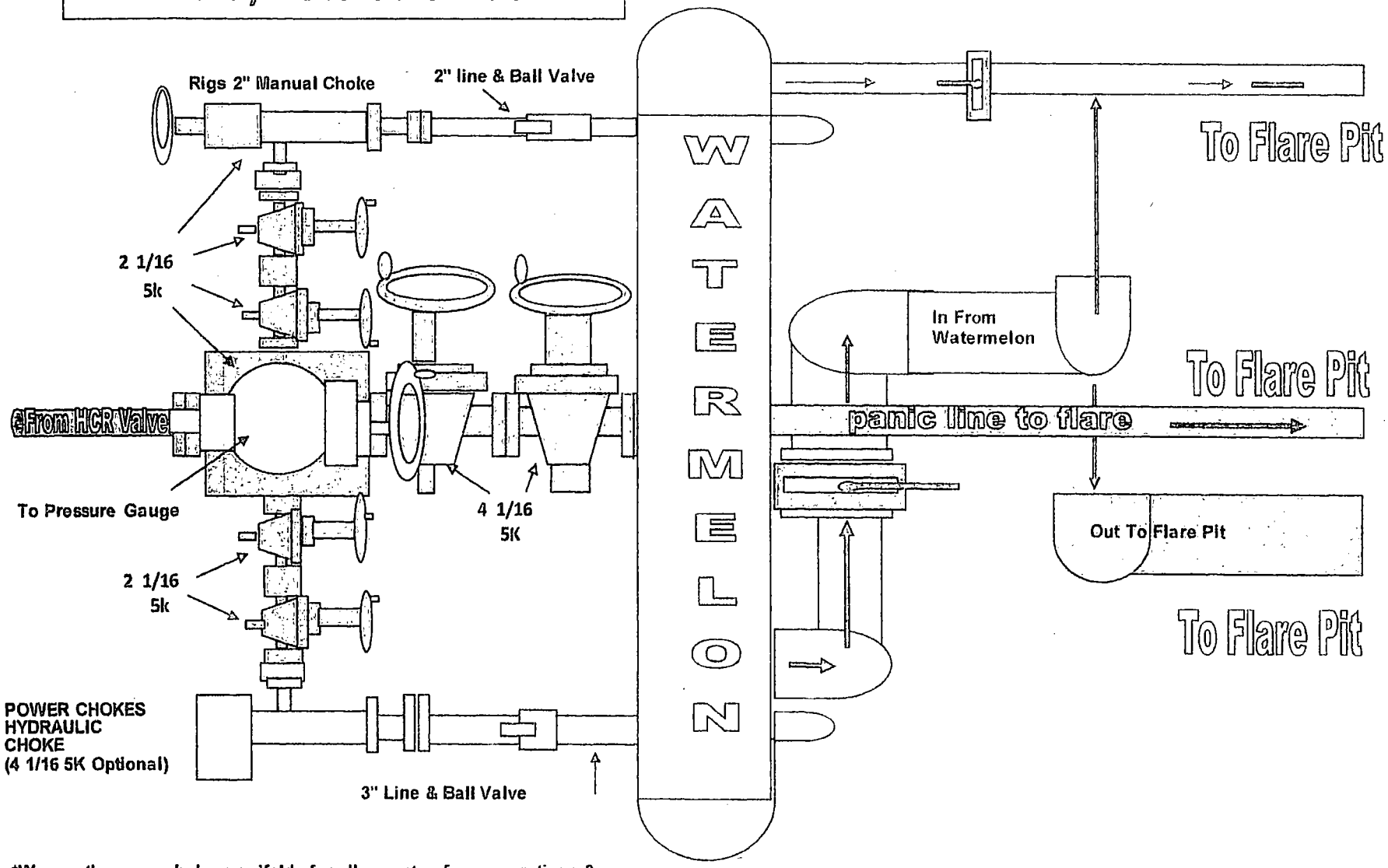
Have filled out cementing program assuming use of one (1) DV tool; see general drill plan for contingency plans, using no DV tools or two (2) DV tools

Other proposed operations facets attachment:

lea_41h_general_drill_plan_20171215162347.pdf

Other Variance attachment:

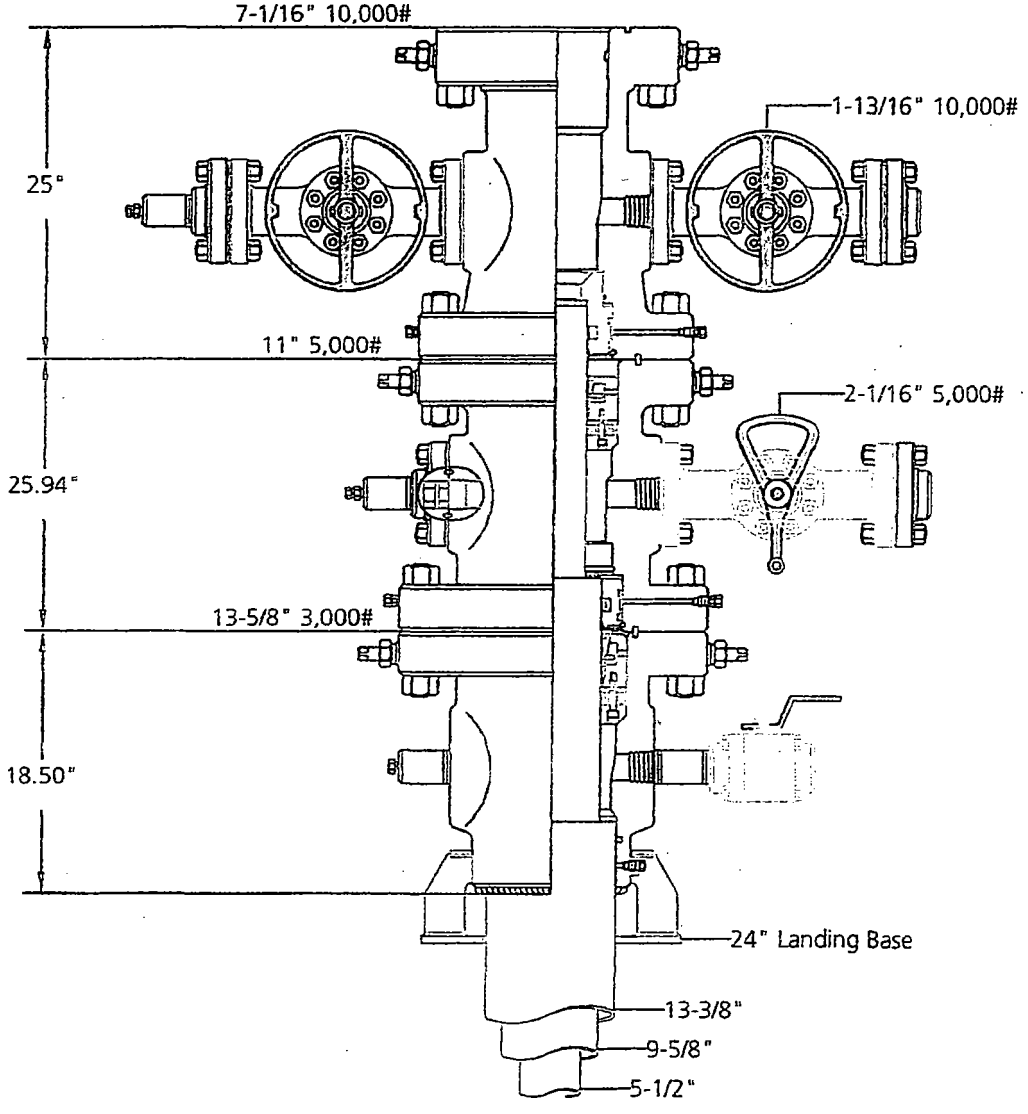
McVay 4 Choke Manifold



*We use the same choke manifolds for all aspects of our operations & all are rated to 10K;

* All connections downstream from BOP thru chokes Are Flanged, All connections downstream from chokes are Flanged .

Note: Dimensional information reflected on this drawing are estimated measurements only.

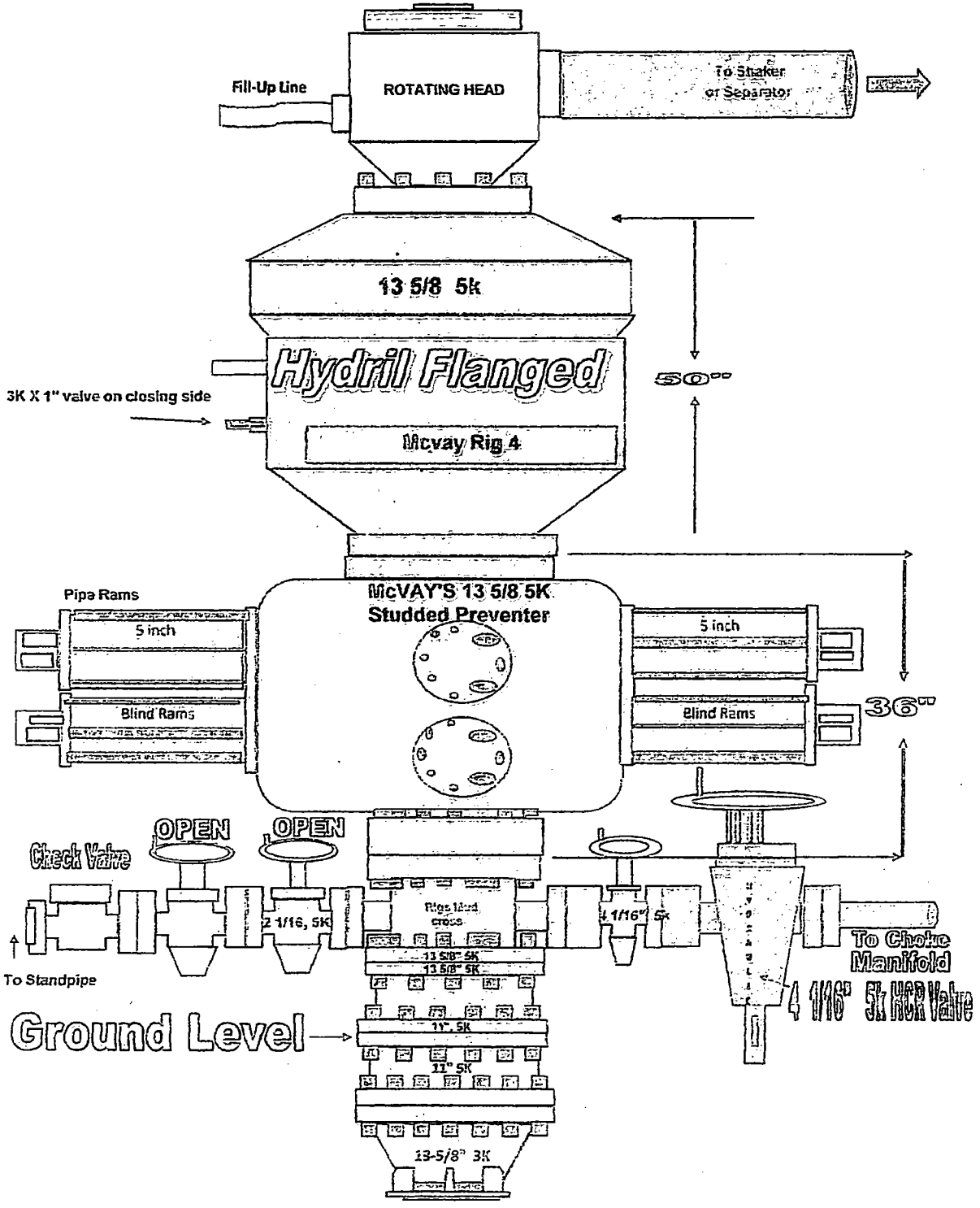


Legacy Reserves
Conventional 3- String

CAMERON

Name: Jeanette	Date: 7-15-15	Working Pressure:	#	1274616

McVay Rig 4


Fill-Up Line
ROTATING HEAD
To Shaker or Separator
13 5/8 5k
Hydril Flanged
Mcvay Rig 4
3K X 1" valve on closing side
50"
Pipe Rams
5 inch
Blind Rams
McVAY'S 13 5/8 5K
Studded Preventer
5 inch
Blind Rams
36"
OPEN
OPEN
Check Valve
2 1/16, 5K
4 1/16" 5K
To Choke Manifold
4 1/16" 5K HCR Valve
To Standpipe
Ground Level
13-5/8" 3K

Midwest Hose & Specialty, Inc

Internal Hydrostatic Test Graph

February 17, 2017

Customer: Robb

Pick Ticket #: 848

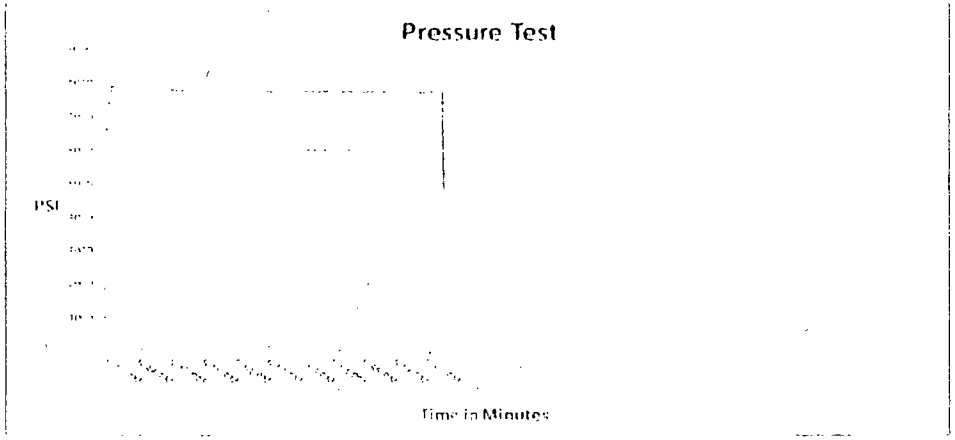
Hose Specifications

Hose Type	Length
I.D.	O.D.
Working Pressure	Burst Pressure

Verification

Type of Fitting	Coupling Method
wage	
Die Size	Final O.D.
Hose Serial #	Hose Assembly Serial #

Pressure Test



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure

Comments:

Tested By:

Approved By:

Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	HOBBS	*Hose Assembly Type*	Rotary/Vibrator
MWH Sales Representative	CHARLES ASH	*Certification*	API 7K/FSL LEVEL2
Date Assembled	2/19/2017	*Hose Grade*	D
Location Assembled	OKC	*Hose Working Pressure*	5000
Sales Order #	318810	*Hose Lot # and Date Code*	10958-08/13
Customer Purchase Order #	356945	*Hose I.D. (Inches)*	3.5"
Assembly Serial # (Pick Ticket #)	384842	*Hose O.D. (Inches)*	5.45"
Hose Assembly Length	20FT	*Armor (yes/no)*	NO

Fittings			
End A		End B	
Stem (Part and Revision #)	R3.5X64WB	*Stem (Part and Revision #)*	R3.5X64WB
Stem (Heat #)	13105653	*Stem (Heat #)*	13105653
Ferrule (Part and Revision #)	RF3.5X5330	*Ferrule (Part and Revision #)*	RF3.5X5330
Ferrule (Heat #)	34038185	*Ferrule (Heat #)*	3403818
Connection - Flange Hammer Union Part	4-1/16 5K	*Connection (Part #)*	4-1/16 5K
Connection (Heat #)		*Connection (Heat #)*	
Nut (Part #)		*Nut (Part #)*	
Nut (Heat #)		*Nut (Heat #)*	
Dies Used	5.62"	*Dies Used*	5.53"

Hydrostatic Test Requirements		
Test Pressure (psi)	7,500	*Hose assembly was tested with ambient water temperature.*
Test Pressure Hold Time (minutes)	10 1/2	

Date Tested	*Tested By*	*Approved By*
2/19/2017		

Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: **HOBBS**	*Customer P.O.#* **356945**
Sales Order # **318810**	*Date Assembled:* **2/19/2017**

Specifications

Hose Assembly Type:	**Rotary/Vibrator**	*Rig #*	
Assembly Serial #	**384842**	*Hose Lot # and Date Code*	**10958-08/13**
Hose Working Pressure (psi)	**5000**	*Test Pressure (psi)*	**7500**
Hose Assembly Description:	**TRH56D-645KH-645KH-20.00' FT**		

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

Approved By	*Date*
	2/20/2017

Surface Casing

Size	Grade	#/ft	Collapse	Burst (Internal Yield)	Tensile	Coupling	Length	Dry Weight	Mud Weight
13.375"	*J-55*	*54.5*	*1130 psi*	*2730 psi*	*514 kips*	*STC*	*1800'*	*98,100 lbs*	*8.5 ppg*

Collapse: $DF_C = 1.25$

Base Assumptions

- Complete internal evacuation of the casing, utilizing a collapse force equivalent to the mud gradient (0.44 psi/ft) in which the casing will be ran.
- Cementing operations in which, utilizes a collapse force equivalent to the gradient of the planned cement slurry (0.77 psi/ft) and an internal force equivalent to the fresh water displacement fluid (0.433 psi/ft).

Collapse Calculations: Collapse Rating / Collapse Force

Complete Evacuation:
1,130psi / [(0.44psi/ft)(1,800')] = **1.42**

Cementing Operations:
1,130psi / [(0.77psi/ft – 0.433psi/ft)(1800')] = **1.86**

Burst: $DF_B = 1.25$

Base Assumption

- Casing pressure test as per Onshore Oil and Gas Order No. 2 (0.22 psi/ft or 1500 psi), utilizing an external force equivalent to the mud gradient (0.44 psi/ft) in which the casing will be ran.

Burst Calculations: Internal Yield Rating / Internal Force

Casing Pressure Test:
2,730psi / [(1500psi)-(0.44 psi/ft)(1,800')] = **3.86**

Tensile: $DF_T = 1.6$

Base Assumption

- A downward force of 100,000 lb. overpull is applied at the base of the casing along with the weight and not considering the effects of buoyancy.

Tensile Calculations: Joint Strength / Axial Load

Overpull:
514 kips / (100,000 lbs. + 98,100 lbs.) = **2.59**

Intermediate Casing

Size	Grade	#/ft	Collapse	Burst (Internal Yield)	Tensile	Coupling	Length	Dry Weight	Mud Weight
9.625"	*J-55*	*40*	*2570 psi*	*3950 psi*	*520 kips*	*LTC*	*4000'*	*160,000 lb*	*10.0 ppg*
9.625"	*HCK-55*	*40*	*4230 psi*	*3950 psi*	*694 kips*	*LTC*	*1600'*	*64,000 lb*	*10.0 ppg*

Collapse: $DF_C = 1.25$

Base Assumptions

- Complete internal evacuation of the casing, utilizing a collapse force equivalent to the mud gradient (0.52 psi/ft) in which the casing will be ran.
- Cementing operations in which, utilizes a collapse force equivalent to the gradient of the planned cement slurry (0.77 psi/ft) and an internal back-up force equivalent to the fresh water displacement fluid (0.433 psi/ft).

Collapse Calculations: Collapse Rating / Collapse Force

Complete Evacuation:
J-55: 2570psi / [(0.52psi/ft)(4,000')] = **1.25**
HCK-55: 4230psi / [(0.52psi/ft)(5,600')] = **1.45**

Cementing Operations:
J-55: 2570psi / [(0.77psi/ft – 0.433psi/ft)(4000')] = **1.91**
HCK-55: 4230psi / [(0.77psi/ft – 0.433psi/ft)(5600')] = **2.24**

Burst: $DF_B = 1.25$

Base Assumption

- Casing pressure test as per Onshore Oil and Gas Order No. 2 (0.22 psi/ft or 1500 psi), utilizing an internal force equivalent to the displacement fluid of 8.6 ppg and external force equivalent to 8.4 ppg.
- Gas kick at the casing shoe, in which a 0.7 psi/ft shoe test is assumed, and 0.2 psi/ft gas gradient is assumed.

Burst Calculations: Internal Yield Rating / Burst Force

Casing Pressure Test:
J-55: 3950psi / [(1500psi +1789 psi) - (1747psi)] = **2.56**
HCK-55: 3950psi / [(1500psi +2504 psi) - (2446psi)] = **2.54**

Gas Kick:
J-55: 3950psi / [(0.7psi/ft)(5600')-(0.2psi/ft)(5600')] = **1.41**
HCK-55: 3950psi / [(0.7psi/ft)(5600')-(0.2psi/ft)(4000')] = **1.27**

Tensile: $DF_T = 1.6$

Base Assumption

- A downward force of 100,000 lb. overpull is applied at the base of the casing along with the weight of the string and not considering the effects of buoyancy.

Tensile Calculations: Joint Strength / Axial Load

Overpull:
J-55: 520 kips / (100,000 lbs. + 224,00 lbs.) = **1.6**
HCK-55: 694 kips / (100,000 lbs. + 64,100 lbs.) = **4.23**

Intermediate Casing

Size	Grade	#/ft	Collapse	Burst (Internal Yield)	Tensile	Coupling	Length	Dry Weight	Mud Weight
9.625"	*J-55*	*40*	*2570 psi*	*3950 psi*	*520 kips*	*LTC*	*4000'*	*160,000 lb*	*10.0 ppg*
9.625"	*HCK-55*	*40*	*4230 psi*	*3950 psi*	*694 kips*	*LTC*	*1600'*	*64,000 lb*	*10.0 ppg*

Collapse: $DF_C = 1.25$

Base Assumptions

- Complete internal evacuation of the casing, utilizing a collapse force equivalent to the mud gradient (0.52 psi/ft) in which the casing will be ran.
- Cementing operations in which, utilizes a collapse force equivalent to the gradient of the planned cement slurry (0.77 psi/ft) and an internal back-up force equivalent to the fresh water displacement fluid (0.433 psi/ft).

Collapse Calculations: Collapse Rating / Collapse Force

Complete Evacuation:
J-55: 2570psi / [(0.52psi/ft)(4,000')] = **1.25**
HCK-55: 4230psi / [(0.52psi/ft)(5,600')] = **1.45**

Cementing Operations:
J-55: 2570psi / [(0.77psi/ft – 0.433psi/ft)(4000')] = **1.91**
HCK-55: 4230psi / [(0.77psi/ft – 0.433psi/ft)(5600')] = **2.24**

Burst: $DF_B = 1.25$

Base Assumption

- Casing pressure test as per Onshore Oil and Gas Order No. 2 (0.22 psi/ft or 1500 psi), utilizing an internal force equivalent to the displacement fluid of 8.6 ppg and external force equivalent to 8.4 ppg.
- Gas kick at the casing shoe, in which a 0.7 psi/ft shoe test is assumed, and 0.2 psi/ft gas gradient is assumed.

Burst Calculations: Internal Yield Rating / Burst Force

Casing Pressure Test:
J-55: 3950psi / [(1500psi +1789 psi) - (1747psi)] = **2.56**
HCK-55: 3950psi / [(1500psi +2504 psi) - (2446psi)] = **2.54**

Gas Kick:
J-55: 3950psi / [(0.7psi/ft)(5600')-(0.2psi/ft)(5600')] = **1.41**
HCK-55: 3950psi / [(0.7psi/ft)(5600')-(0.2psi/ft)(4000')] = **1.27**

Tensile: $DF_T = 1.6$

Base Assumption

- A downward force of 100,000 lb. overpull is applied at the base of the casing along with the weight of the string and not considering the effects of buoyancy.

Tensile Calculations: Joint Strength / Axial Load

Overpull:

J-55: 520 kips / (100,000 lbs. + 224,00 lbs.) = **1.6**

HCK-55: 694 kips / (100,000 lbs. + 64,100 lbs.) = **4.23**

Production Casing

Size	Grade	#/ft	Collapse	Burst (Internal Yield)	Tensile	Coupling	Length	Dry Weight	Mud Weight
5.5"	*P-110*	*20*	*11080 psi*	*12360 psi*	*641 kips*	*BTC*	*17,500'*	*350,000 lb*	*9.1 ppg*

Collapse: $DF_C = 1.25$

Base Assumptions

- Cementing operations in which utilizes a collapse force equivalent to the gradient of the planned cement slurry (0.77 psi/ft) and an internal back-up force equivalent to the fresh water displacement fluid (0.433 psi/ft).
- Production operations in which the pipe is completely evacuated with an external force equivalent to the pore pressure gradient (0.52 psi/ft).

Collapse Calculations: Collapse Rating / Collapse Force

Cementing Operations:
11,080psi / [(0.66psi/ft-0.433 psi/ft)(9,800'TVD)] = **4.98**

Production Operations:
11080psi / (9,800' TVD)(0.52psi/ft) = **2.17**

Burst: $DF_B = 1.25$

Base Assumption

- Frac pressure utilizing an internal force of 9500 psi along with a frac fluid gradient equivalent to 0.468 psi/ft and an external force equal to the minimum fluid gradient (0.433 psi/ft) in which the casing will be ran.
- Production operations in which the casing is completely filled with a gas equivalent gradient of 0.2 psi/ft and an external force equivalent to pore pressure of 0.5 psi/ft.

Burst Calculations: Internal Yield Rating / Burst Force

Frac Pressure:
12,360psi / [(9500 psi)+ (0.468 – 0.433psi/ft)(9,800'TVD)] = **1.26**

Production Operations:
12,360psi / [(0.5 psi/ft – 0.2 psi/ft)(9,800'TVD)] = **4.2**

Tensile: $DF_T = 1.6$

Base Assumption

- A downward force of 100,000 lb. overpull is applied at the base of the casing along with the weight of the string and considering the effects of buoyancy (factor =0.86).

Tensile Calculations: Joint Strength / Axial Load

Overpull:
641,000 lbs /[(100,000 lbs.) + (350,000 lbs.)(0.86)] = **1.66**

Depth	Mud Wt.	Vise	Fluid Loss	Type Mud
0' to 1800'	8.4-8.9	30-32	NC	Fresh water gel spud mud
1800' to 5600'	9.8-10	28-29	NC	Brine water
5600' to 9,800'	8.4-8.6	28-29	NC	Fresh water/brine, use hi-vis sweeps to clean hole
9,800' to 17,532'	8.9-9.1	28-29	18-20	Fresh water/brine

9. Proposed Drilling Plan:

Set surface and intermediate casing and cement to surface. Drill 8-3/4" to ~9,800', Kick off and drill 8-3/4" hole to TD of ~17,532'. Set 5-1/2" casing from surface to TD (~ 17,532'). Cement 5-1/2" production casing back to surface.

10. Casing Information:

String	Hole size	Deoth	Casing OD	Colla	Weight	Grade
Surface	17-1/2"	1800' MD	New 13-3/8"	STC	54.5#	J-55
Intermediate	12-1/4"	3901' MD	New 9-5/8"	LTC	40#	J-55
Intermediate	12-1/4"	5600' MD	New 9-5/8"	LTC	40#	HCK-55
Production	8-3/4"	17,532' MD	New 5-1/2"	BTC	20#	P-110

See Casings assumptions attachment for further informaiton

11. Cementing Information:

Surface Casing (75% excess on lead & 75% excess on tail to design for cement top at surface):
Lead: 1100 sxs class C cement + 4% bwoc bentonite II + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake +
0.005% bwoc Static Free + 0.005 gps FP-6L (13.50 ppg, 1.93 cfps, 9.71 gps wtr).
Tail: 200 sxs class C cement + 1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L
(14.80 ppg, 1.34 cfps, 6.35 gps wtr).

Intermediate Casing
In the event that circulation is lost (> 50%) while drilling the 12-1/4" intermediate hole in the Capitan Reef at +/-4000', we will plan to install a DV tool and external casing packer within 200 of the top depth where lost circulation occurred and will pump a two-stage cement job with the potential to add an additional DV tool for a three-stage cement job. If there is no lost circulation a single stage cementing procedure will be followed. Legacy plans to cement to surface regardless of whether a single stage, 2-stage or 3-stage procedure is implemented.

No DV tool (80% excess on lead & 80% excess on tail to design for cement top at surface)

Lead: 1400 sx (35:65) poz (fly ash) class C cement+ 4% bwoc bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL- 52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk cello flake+ 0.005 lbs/sk defoamer + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81

gps wtr)
Tail: 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)
With (1) DV Tool (100% excess on lead & 100% excess on tail to design for cement top at surface)

Assuming DV tool set at 3950' but if the setting depth changes, cement volumes will be adjusted proportionately.

Stage 1

Lead: 400 sx (35:65) paz (fly ash) class C cement+ 4% bwoc Bentonite II+ 5% bwoc MPA-5 + 0,25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk cello flake+ 0.005 lbs/sk defoamer + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

Tail: 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

Stage 2

Lead: 1100 sx (35:65) paz (fly ash) class C cement+ 4% bwoc bentonite II + 5% bwoc MPA-5 + 0,25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk Cello Flake+ 0.005 lbs/sk Static Free+ 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

Tail: 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

With (2) DV Tools (100% excess on lead & 100% excess on tail to design for cement top at surface)

Assuming one DV tool set at 3950' and one DV tool set at 1800' but if the setting depths change, cement volumes will be adjusted proportionately.

Stage 1

Lead: 400 sx (35:65) paz (fly ash) class C cement+ 4% bwoc Bentonite II+ 5% bwoc MPA-5 + 0,25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk cello flake+ 0.005 lbs/sk defoamer + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

Tail: 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

Stage 2

Lead: 600 sx (35:65) paz (fly ash) class C cement+ 4% bwoc bentonite II + 5% bwoc MPA-5 + 0,25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk Cello Flake+ 0.005 lbs/sk Static Free+ 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

Tail: 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

Stage 3

Lead: 600 sx (35:65) paz (fly ash) class C cement+ 4% bwoc bentonite II + 5% bwoc MPA-5 + 0,25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk Cello Flake+ 0.005 lbs/sk Static Free+ 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

Tail: 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

Production Casing (80% excess on lead & 20% excess on tail to design for cement top at surface):
Lead: 1600 sxs (50:50) poz (fly ash) class H cement + 10% bwoc bentonite II + 5% bwow sodium chloride + 5
pps LCM-1 + 0.005 lbs/sk Static Free + 0.005 gps FP-6L (11.90 ppg, 2.38 cf/sx, 13.22 gps wtr).
Tail: 1700 sxs Class H (15:61:11) poz (fly ash): class H cement: CSE-2 + 4% bwow sodium chloride + 3 pps LCM-
1 + 0.6% bwoc FL-25 + 0.005 gps FP-6L + 0.005% bwoc Static Free (13.20 ppg, 1.62 cf/sx, 9.45 gps wtr).

12. Pressure Control Eqpt/BOP:

Legacy Reserves plans to use a 13-5/8" 5000-psi working pressure BOP system consisting of a double ram BOP with one ram being pipe and one ram being blind, a 5000-psi annular type preventer, a 5000-psi choke manifold and 80 gallon accumulator with floor, five remote operating stations and an auxiliary power system. A rotating head will be utilized as needed. A drill string safety valve in the open position will be available on the rig floor. A mud gas separator will be available for use if needed.
A 3M BOP will be used to drill from the surface casing shoe (~1800') to the intermediate casing shoe (~5600'). The BOP will be a 5M system, however the "A" section wellhead will be a 3M wellhead (see attached BOP Diagram).
The BOP unit will be hydraulically operated. The BOP will be operated at least once per day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling.
The BOPs will be tested by an independent service company to 250 psi low and 5000 psi high.

13. Testing, Logging, and Coring Program:

A. Mud logging program: 2 man unit from approximately after setting intermediate casing.
B. No open hole logs, DST's or cores are planned.

14. Potential Hazards

No abnormal pressures or temperatures are expected during the drilling of this well. If H2S is encountered the operator will comply with provisions of Onshore Order 6. Since there will be an H2S Safety package on location, attached is an "H2S Drilling Operations Plan". Adequate flare lines will be installed on the mud/gas separator so gas may be flared safely. All personnel will be familiar with all aspects of safe operations of equipment being used. Lost circulation may occur and a cement contingency plan is included in this plan along with mud materials to be kept on location at all times in order to combat lost circulation or unexpected kicks. Estimated BHP: 4312 psi, estimated BHT: 162°F.

15. Road and Location

Road and location construction will begin after BLM approval of the APD. Drilling is expected to take 30-35 days and an additional 10 days for the completion.

16. Additional Requirements of Project:

Completion: The targeted Bone Spring pay zone will be perforated and stimulated in multiple stages using acid and hydraulic fracturing treatments. Fresh water used in the drilling and completion of this well will be transferred from off-site via temporary flowlines and stored in frac tanks on the location.

APD ID: 10400025420 **Submission Date:** 12/15/2017

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

lea_41h_road_map_20171215163403.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

lea_41h_well_map_20171215163810.pdf

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: In the event the well is found productive, a 4" surface poly flowline (125 psi with oil/gas/water) will be laid along the existing roadway, for 3680.9' to the satellite battery located in the SW/4NE/4 of section 24, T. 20S, R. 34E. All permanent (six months or longer) aboveground structures constructed or intalled on location and not subject to safety requirements will be painted to BLM specifications.
Production Facilities map:

lea_41h_prod_facilities_20171215164227.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING

Water source type: GW WELL

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: WATER WELL

Source land ownership: PRIVATE

Water source transport method: TRUCKING

Source transportation land ownership: FEDERAL

Water source volume (barrels): 20000

Source volume (acre-feet): 2.577862

Source volume (gal): 840000

Water source and transportation map:

lea_41h_water_source_map_20171215165334.PDF

Water source comments:

New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: CONSTRUCTION MATERIALS: CALICHE WILL BE USED TO CONSTRUCT THISWELL PAD Any construction material that may be required for surfacing of the drill pad will be from a contractor having a permitted source of materials within the general area. No construction materials will be removed from Federal lands without prior approval from the appropriate surface management agency. See attached for source information.
Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluids (flowback, water, cuttings)

Amount of waste: 20000 barrels

Waste disposal frequency : Daily

Safe containment description: Drilling fluids will be contained in steel mud tanks.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE
Disposal type description:

Disposal location description: NMOCD approved disposal site in Halfway, NM.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site in Halfway, NM.

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

lea_41h_well_site_layout_20171215170438.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: No New Surface Disturbance **Multiple Well Pad Name:** LEA UNIT

Multiple Well Pad Number: 36H

Recontouring attachment:

lea_41h_recontour_plat_20171215170736.pdf

Drainage/Erosion control construction: Access road and well pad already exist - no construction needed. Any maintenance or improvement necessary will be according to BLM standards.

Drainage/Erosion control reclamation: • The original landform will be restored for all disturbed areas including well pads, production facilities, roads, pipelines, and utility corridors. • A self-sustaining, vigorous, diverse, native (or otherwise approved) plant community will be established on the site, with a density sufficient to control erosion and invasion by non-

native plants and to re-establish wildlife habitat or forage production. At a minimum, the established plant community will consist of species included in the seed mix and/or desirable species occurring in the surrounding natural vegetation. • Erosion features are equal to or less than surrounding area and erosion control is sufficient so that water naturally infiltrates into the soil and gullying, headcutting, slumping, and deep or excessive rills (greater than 3 inches) are not observed. • The site will be free of State- or county-listed noxious weeds, oil field debris and equipment, and contaminated soil. Invasive and non-native weeds are controlled.

Well pad proposed disturbance (acres): 0
Road proposed disturbance (acres): 0
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0
Other proposed disturbance (acres): 0
Total proposed disturbance: 0

Well pad interim reclamation (acres):
Road interim reclamation (acres):
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres):
Other interim reclamation (acres):
Total interim reclamation:

Well pad long term disturbance (acres):
Road long term disturbance (acres):
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres):
Other long term disturbance (acres):
Total long term disturbance:

Reconstruction method: Final reclamation to achieve restoration of the original landform and a natural vegetative community. The original landform will be restored for all disturbed areas including well pads, production facilities, roads, pipelines, and utility corridors.
Topsoil redistribution: Evenly

Soil treatment: Erosion features are equal to or less than surrounding area and erosion control is sufficient so that water naturally infiltrates into the soil and gullying, headcutting, slumping, and deep or excessive rills (greater than 3 inches) are not observed. The site will be free of state- or county-listed noxious weeds, oil field debris and equipment, and contaminated soil. Invasive and non-native weeds are controlled.
Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used?

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project?

Seedling transplant description attachment:

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Will seed be harvested for use in site reclamation?

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: **Seed source:**

Seed name:

Source name: **Source address:**

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre: **Proposed seeding season:**

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: Noxious weeds will be controlled

Weed treatment plan attachment:

Monitoring plan description: On pumper visits

Monitoring plan attachment:

Success standards: To BLM standards

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Pit closure description: N/A (closed loop)

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information:

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Use a previously conducted onsite? YES

Previous Onsite information: ON-SITE PERFORMED ON 6/16/15 RESULTED IN PROPOSED LOCATION BEING OK WHERE STAKED. IT WAS AGREED TO TURN THE LOCATION TO A V-DOOR EAST. IT WAS ALSO AGREED TO MOVE AND PLACE THE TOP SOIL TO THE NORTH, AND THE INTERIM RECLAMATION WILL BE THE NORTH, EAST, SOUTH, AND WEST PORTION OF THIS PAD (ALL CONSTRUCTION PREVIOUSLY COMPLETED FOR LEA UNIT 36H WELL) PRESENT AT ON-SITE: CRAIG SPARKMAN-LEGACY RESERVES OPERATING, L.P. TRISH BADBEAR-BLM CASSANDRA BROOKS-BLM CHRISTOPHER FREEMAN-CEHMM DOUG BURGER-LEGACY LAND & ENVIRONMENTAL SOLUTIONS KELLY POINDEXTER-WEST COMPANY OF MIDLAND-SURVEYORS

Other SUPO Attachment

lea_41h_general_supo_20171215171736.pdf

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

04/23/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001015

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	2270	FSL	1580	FWL	20S	34E	24	Aliquot NESW	32.557598	-103.5171983	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 020979	3676	0	0
PPP Leg #1	0	FSL	1827	FWL	20S	34E	13	Aliquot SESW	32.565852	-103.516417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0053434	-6124	12590	9800
PPP Leg #1	2640	FSL	2022	FWL	20S	34E	13	Aliquot SESW	32.573151	-103.515741	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0053434	-6124	15251	9800
PPP Leg #1	1320	FSL	1929	FWL	20S	34E	13	Aliquot NESW	32.569492	-103.516087	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0003085	-6124	13902	9800
EXIT Leg #1	330	FNL	2210	FWL	20S	34E	13	Aliquot NENW	32.579455	-103.5151538	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0053434	-6124	17531	9800
BHL Leg #1	330	FNL	2210	FWL	20S	34E	13	Aliquot NENW	32.579455	-103.5151538	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0053434	-6124	17531	9800

APD ID: 10400025420 **Submission Date:** 12/15/2017

Operator Name: LEGACY RESERVES OPERATING LP

Well Name: LEA UNIT **Well Number:** 41H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3676	0	0		USEABLE WATER	No
2	RUSTLER	-1680	1680	1680	OTHER	USEABLE WATER	No
3	TOP SALT	-1720	1720	1720		NONE	No
4	BOTTOM SALT	-3150	3150	3150		NONE	No
5	CAPITAN REEF	-3150	3150	3150	OTHER : TOP	NONE	No
6	CAPITAN REEF	-4710	4710	4710	OTHER : BOTTOM	NONE	No
7	SAN ANDRES	-4710	4710	4710		NONE	No
8	DELAWARE	-5666	5666	5666		OIL	No
9	BONE SPRING LIME	-8205	8205	8205		NONE	No
10	AVALON SAND	-8760	8760	8760		OIL	No
11	BONE SPRING 1ST	-9501	9501	9511		NATURAL GAS,CO2,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 11000

Equipment: Legacy Reserves plans to use a 13-5/8" 5000-psi working pressure BOP system consisting of a double ram BOP with one ram being pipe and one ram being blind, a 5000-psi annular type preventer, a 5000-psi choke manifold and 80 gallon accumulator with floor, five remote operating stations and an auxiliary power system. A rotating head will be utilized as needed. A drill string safety valve in the open position will be available on the rig floor. A mud gas separator will be available for use if needed. A 3M BOP will be used to drill from the surface casing shoe (~1800') to the intermediate casing shoe (~5600'). The BOP will be a 5M system, however the "A" section wellhead will be a 3M wellhead (see attached BOP Diagram). The BOP unit will be hydraulically operated. The BOP will be operated at least once per day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling.
Requesting Variance? YES

Variance request: Co-flex hose, diagrams and certifications included in the BOP attachment