

CHECK SHEET

Date: 7/24/2020 API Number: 083-23398

Company: Kraken Operating, LLC

Well Name: Rowin 17-5 #3H

County: Richland

Field: Wildcat Richland

Surf. Location: 325 FNL 2303 FWL NE NW Lot: Sec: 20 Twp: 26 N Rng: 59 E

Permit Number: 32537 Drilling Fee:

Intention to Drill: 7/23/2020 Expiration Date: 1/23/2021

Mineral Ownership: Private State Federal Indian

Well Type: Horizontal Multiple Laterals

Proposed Depth/Formation: MD: 24850 TVD: 10323 Bakken

Drilling Unit Acres Description:

Samples Required: Received:

COMPLETION INFORMATION

Completion Date: TD: PBSD:

Completed As: IP / Formation:

Geological Well Report: 10-9-20 Mud Log: 10-13-20

Sundry Notices: Intent - Notice of approval.
completion 11-2-2020

Subsequent Report of Abandonment: Received: Approved:

Electric Logs: CBL; Multi Finger Caliper Log 1-11-21

Miscellaneous:



FORM NO. 22 R 10/09 SUBMIT IN QUADRUPPLICATE TO: ARM 36.22.307
ARM 36.22.601

MONTANA BOARD OF OIL AND GAS CONSERVATION
2535 ST. JOHNS AVENUE, BILLINGS, MONTANA 59102

Lease Name: Rowin 17-5

Lease Type (Private/State/Federal): Private

Application for Permit To:

Drill Deepen Re-enter
Oil Gas Other

Well Number: #3H

Operator: Kraken Operating LLC
Address: 9805 Katy Freeway Suite 300
City: Houston State: TX Zip: 77024
Telephone Number: 713-360-7705

Field Name or Wildcat: Wildcat

Unit Name (if applicable): N/A

Surface Location of Well (quarter-quarter and footage measurements):
NENW Sec 20 T26N R59E, 325' FNL 2303' FWL

Objective Formation(s): Bakken

Township, Range, and Section: Sec 20 T26N R59E

County: Richland County, MT

Elevation (indicate GL or KB): 2029' GL

Proposed Total Depth and Bottom-hole Location(s) if directional or horizontal well:
24,850'
TD 26,269' MD, 10,323' TVD
Tract 105 Sec 5 T26N R59E, 1428' FNL, 1891' FWL

Size and description of drilling/spacing unit and applicable order, if any: 1920 acres (Sections 5, 8, & 17 T26N-R59E), Docket 17-2020

Formation at total depth: Bakken

Anticipated Spud Date: 1/1/2021

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Hole Size	Casing Size	Weight / Foot	Grade (API)	Depth	Sacks of Cement	Type of Cement
13 1/2	9 5/8	36#	J-55	2055	523	See Attached
8 3/4	7	32#	P-110	10621	679	See Attached
6	4 1/2	13.5#	P-110	24850	776	See Attached

Describe Proposed Operations:
Describe or attach labeled diagram of blowout preventer equipment. Indicate if air drilled or describe mud program.
See attachments for details

Kraken Operating, LLC requests variance to not run open hole logs on the subject well. Offset logs can be found for the Meldahl 1 (API #: 25-083-21667), located S2 NENE Sec. 29 T26N R59E.

BOARD USE ONLY

Approved (date) JUL 23 2020 Permit Fee \$150.00

By [Signature] Check Number 35655

Title Petroleum Engineer Permit Expires JAN 23 2021

Permit Number 32537

API Number: 25 - 083 - 23398

The undersigned hereby certifies that the information contained on this application is true and correct:

Signed (Agent) [Signature]

Title Sr. Drilling Engineer

Date 7/15/2020

Telephone Number 713-360-7705 EXT. 121

Samples Required: NONE ALL _____ FROM _____ feet to _____ feet

Core chips to address below, full cores to USGS, Core Laboratory, Arvada, CO. Required samples must be washed, dried and delivered prepaid to:

Montana Board of Oil and Gas Conservation
2535 St. Johns Avenue
Billings, MT 59102

... 1/2 ...
... 1/2 ...
... 1/2 ...

... 1/2 ...

... 1/2 ...

... 1/2 ...

SUPPLEMENTAL INFORMATION

Note: Additional information or attachments may be required by Rule or by special request.

1. Attach a survey plat certified by a registered surveyor. The survey plat must show the location of the well with reference to the nearest lines of an established public survey.
2. Attach an 8 1/2 x 11" photocopy of that portion of a topographic map showing the well location, the access route from county or other established roads, residences, and water wells within a 1/2 mile radius of the well.
3. Attach a sketch of the well site showing the dimensions and orientation of the site, the size and location of pits, topsoil stockpile, and the estimated cut/fill at the corners and centerstake. (Note: the diagram need not be done by an engineer or surveyor). Attach a sketch of a top view and two side views of the reserve pit(s), if utilized. The reserve pit sketch must show the length, width, depth, cut and fill, amount of freeboard, area of topsoil stockpile, and the height and width of berms.
4. Describe the type and amount of material or liner, if any, to be used to seal the reserve pit. If a synthetic liner is used, indicate the liner thickness (mils), bursting strength, tensile strength, tear strength, puncture resistance, hydrostatic resistance, or attach the manufacturer's specifications.
5. Describe the proposed plan for the treatment and/or the disposal of reserve pit fluids and solids after the well is drilled. If the operator intends to dispose of or treat the reserve pit contents off-site, specify the location and the method of waste treatment and disposal. (Note: The operator must comply with all applicable federal, state, county, and local laws and regulations with regard to the handling, transportation, treatment, and disposal of solid wastes.)
6. Does construction of the access road or location, or some other aspect of the drilling operation require additional federal, state, or local permits or authorizations? If yes, indicate the type of permit or authorization required:
 - No additional permits needed
 - Stream crossing permit (apply through county conservation district)
 - Air quality permit (apply through Montana Department of Environmental Quality)
 - Water discharge permit (apply through Montana Department of Environmental Quality)
 - Water use permit (apply through Montana Department of Natural Resources and Conservation)
 - Solid waste disposal permit (apply through Montana Department of Environmental Quality)
 - State lands drilling authorization (apply through Montana Department of Natural Resources and Conservation)
 - Federal drilling permit (specify agency)
 - Other federal, state, county, or local permit or authorization: (specify type) _____

NOTICES:

1. Date and time of spudding must be reported to the Board verbally or in writing within 72 hours after the commencement of drilling operations.
2. The operator must give notice of drilling operations to the surface owner as required by Section 82-10-503, MCA, before the commencement of any surface activity.

BOARD USE ONLY

CONDITIONS OF APPROVAL

The operator must comply with the following condition(s) of approval:

WARNING: Failure to comply with conditions of approval may void this permit.

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P-0023348

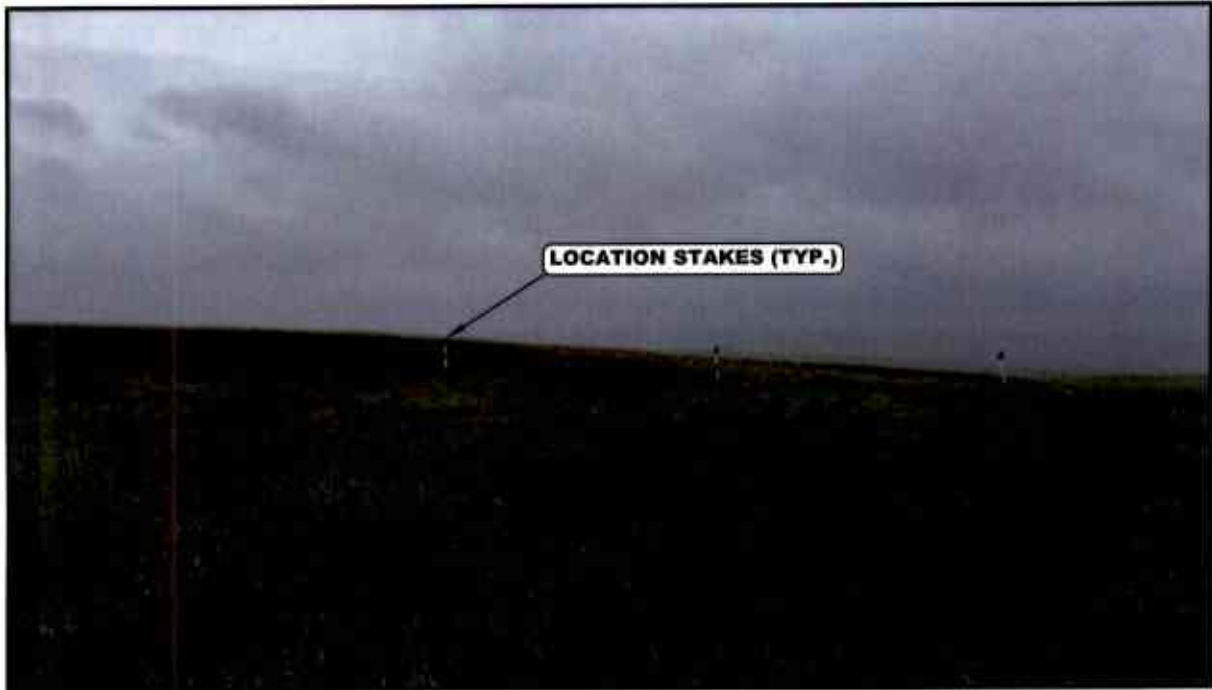


PHOTO: VIEW FROM CORNER #1 TO LOCATION STAKE

CAMERA ANGLE: NORTHERLY



PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS

CAMERA ANGLE: NORTHWESTERLY

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REV: 2 12-19-18 Z.L. (REMOVE WELL)

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KRAKEN OPERATING, LLC

MONTANA BOARD OF OIL &
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ROWIN PAD
NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
RICHLAND COUNTY, MONTANA

UELS, LLC

Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

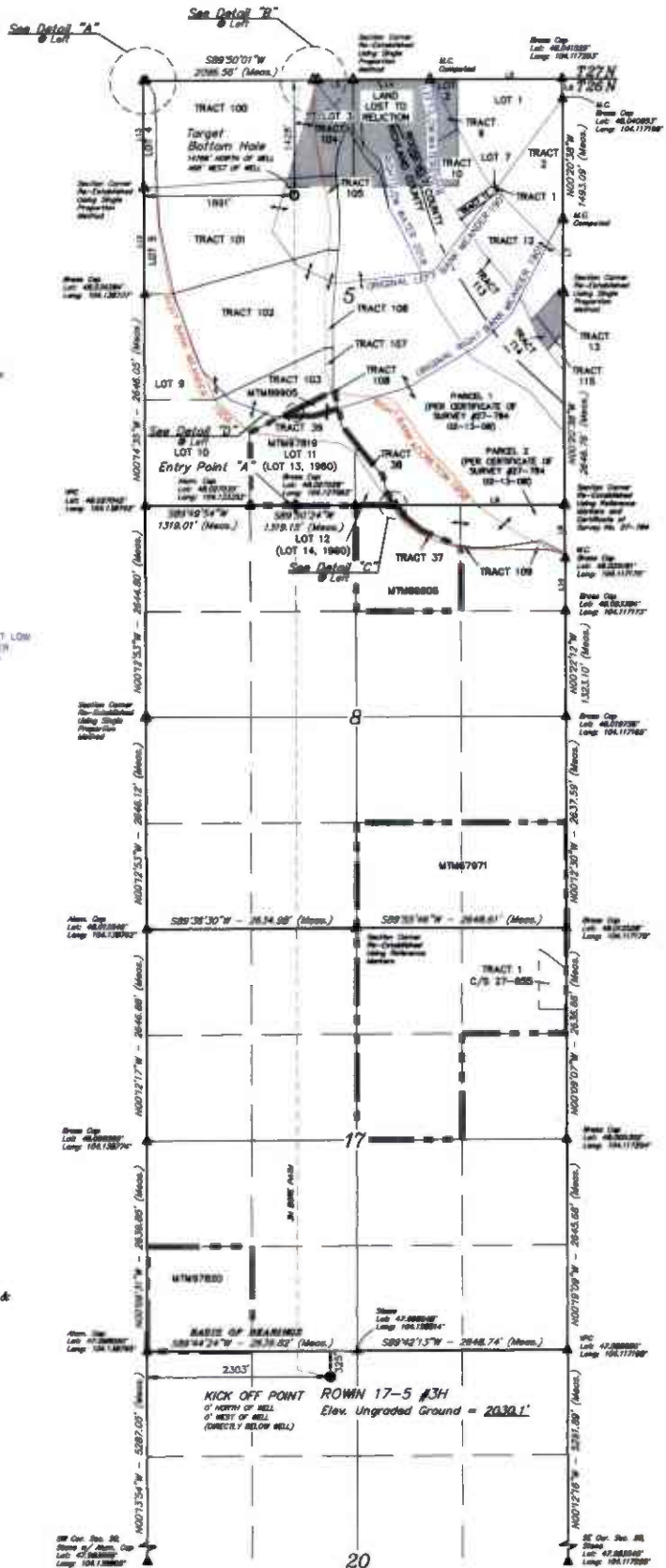
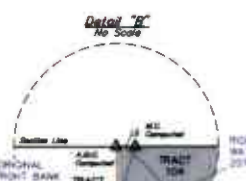
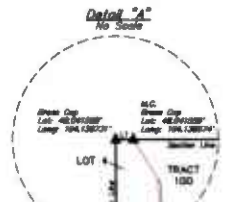
TAKEN BY	J.J.	08-28-18	
DRAWN BY	W.G.	09-26-18	

LOCATION PHOTOS

PHOTO



- LEGEND:**
- PROPOSED WELLHEAD
 - TARGET BOTTOM HOLE
 - FEDERAL MINERALS ENTRY POINT
 - FEDERAL MINERALS EXIT POINT
 - FEDERAL MINERALS
 - SECTION CORNER LOCATION
 - SECTION CORNER (Not Set on Ground)
 - UNLACED FEDERAL MINERALS (Original Grant Lot 2 & 3 per 1891 Old Plat and Tract 13 and Tract 104 are shown)
- NOTE:**
Distances referenced on plat to section lines are perpendicular.



LINE	DIRECTION	LENGTH
L1	S89°01'01"W	38.47'
L2	S89°01'01"W	58.72'
L3	S89°01'01"W	438.72'
L4	S89°01'32"W	374.47'
L5	S89°01'32"W	1394.77'
L6	S89°01'32"W	248.89'
L7	S89°01'32"W	819.07'
L8	S89°01'01"W	881.26'
L9	S89°01'01"W	2133.09'
L10	S89°01'01"W	65.67'
L11	S89°01'37"W	444.63'
L12	S89°01'08"W	1388.40'
L13	S89°01'08"W	1387.74'
L14	S89°01'01"W	686.69'

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CERTIFICATE
THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE: 06-18-20

Scott C. Kraker
REGISTERED LAND SURVEYOR
REGISTRATION NO. 18881S
STATE OF MONTANA

NAD 83 (2011) UTM ZONE 18Q UTM COORDINATES	NAD 83 (2011) UTM ZONE 18Q UTM COORDINATES	NAD 83 (2011) UTM ZONE 18Q UTM COORDINATES	NAD 83 (2011) UTM ZONE 18Q UTM COORDINATES	NAD 83 (2011) UTM ZONE 18Q UTM COORDINATES	NAD 83 (2011) UTM ZONE 18Q UTM COORDINATES
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UJTAH UELS, LLC
Corporate Office • 85 South 300 East
Vernal, UT 84078 • (435) 796-1897

WELL LOCATION PLAT
SURVEYED BY: UJTAH, EL
DATE: 06-18-20
SCALE: 1" = 1000'

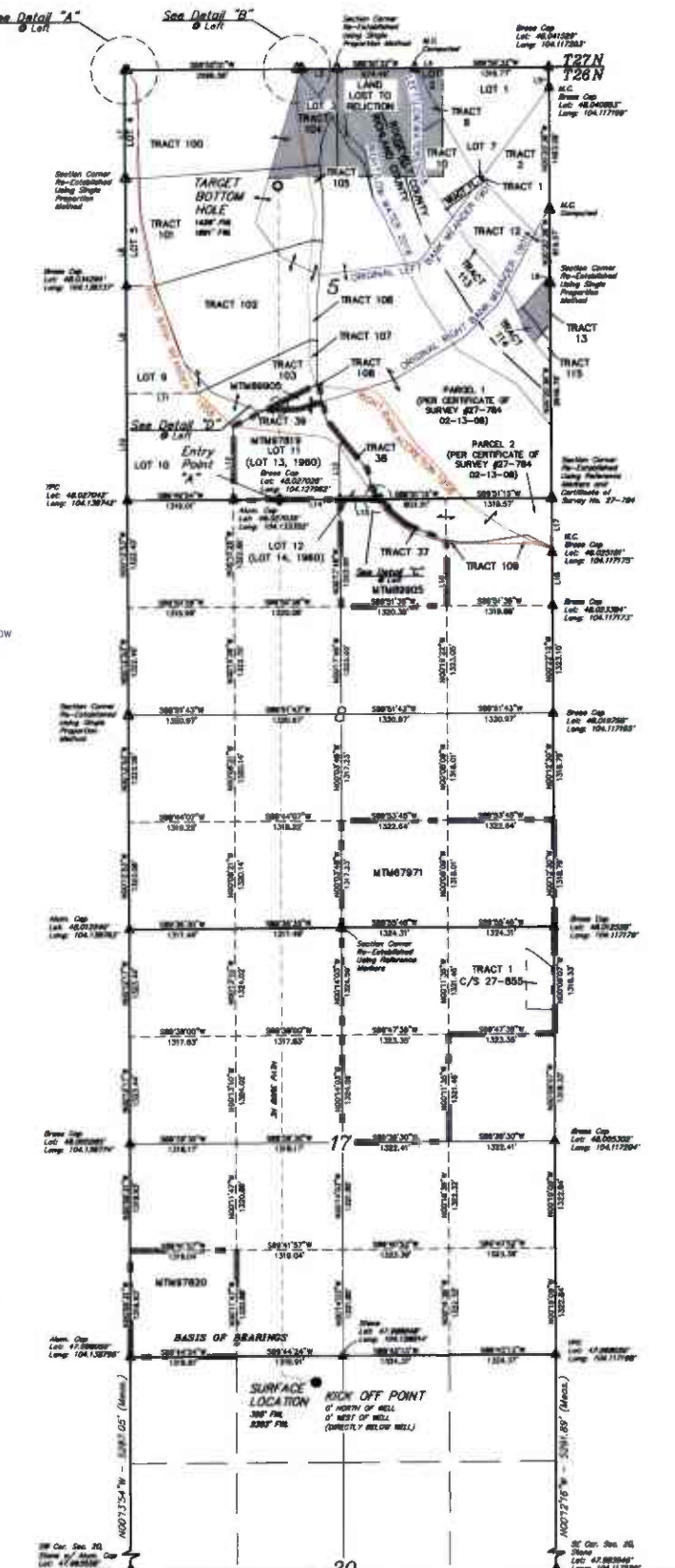
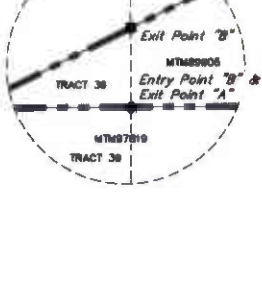
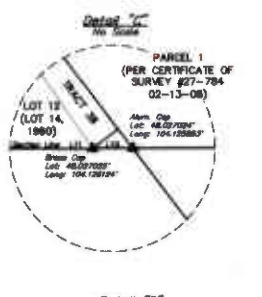
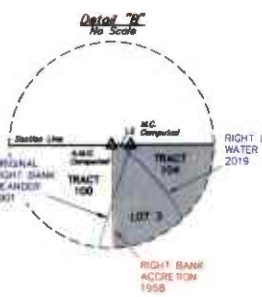
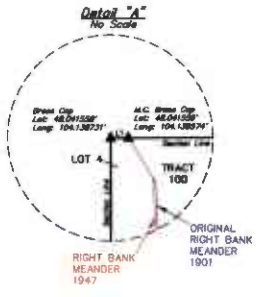
REVISIONS: REV 5 06-16-20 B.C. (ADD FEDERAL MINERALS, NEW ENTRY & EXIT POINTS)

OWNER: KRAGEN OPERATING, LLC
WELL: ROWIN 17-5 #3H
SECTION: NE 1/4 NW 1/4 SECTION 20, T26N, R59E, P.M.M.
COUNTY: RICHLAND COUNTY, MONTANA

T26N, R59E, P.M.M.

- LEGEND:**
- - PROPOSED WELL HEAD
 - - TARGET BOTTOM HOLE
 - ◊ - FEDERAL MINERALS ENTRY POINT
 - ◻ - FEDERAL MINERALS EXIT POINT
 - - FEDERAL MINERALS
 - ▲ - SECTION CORNERS LOCATED
 - △ - SECTION CORNERS NOT ESTABLISHED (Not Set on Ground)
 - - UNLEASED FEDERAL MINERALS (Original Cont. Let. 2 & 3 per 1901 O.L.D. Plat and Tract 13 and Tract 114 as shown)

NOTE:
Distances referenced on plat to section lines are perpendicular.



LINE	DIRECTION	LENGTH
L1	S89°00'00"W	36.46'
L2	S89°00'00"W	56.77'
L3	S89°00'00"W	436.72'
L4	S89°00'00"W	348.38'
L5	S89°00'00"W	348.38'
L6	N89°00'00"W	91.58'
L7	N89°00'00"W	1327.40'
L8	N89°00'00"W	1328.40'
L9	N89°00'00"W	1328.00'
L10	N89°00'00"W	1328.00'
L11	S89°00'00"W	366.72'
L12	S89°00'00"W	91.58'
L13	N89°00'00"W	901.79'
L14	S89°00'00"W	1328.10'
L15	S89°00'00"W	494.81'
L16	N89°00'00"W	1328.89'
L17	N89°00'00"W	991.80'
L18	S89°00'00"W	661.00'

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CERTIFICATE
THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE NAME, AREA, AND ADDRESS REFERRED TO THEREIN IS TRUE.



NAD 83 ENTRY POINT 'A'	NAD 83 ENTRY POINT 'B'	NAD 83 ENTRY POINT 'C'	NAD 83 ENTRY POINT 'D'	NAD 83 ENTRY POINT 'E'	NAD 83 ENTRY POINT 'F'
Easting: 475949.30 Northing: 475949.30	Easting: 475949.30 Northing: 475949.30	Easting: 475949.30 Northing: 475949.30	Easting: 475949.30 Northing: 475949.30	Easting: 475949.30 Northing: 475949.30	Easting: 475949.30 Northing: 475949.30

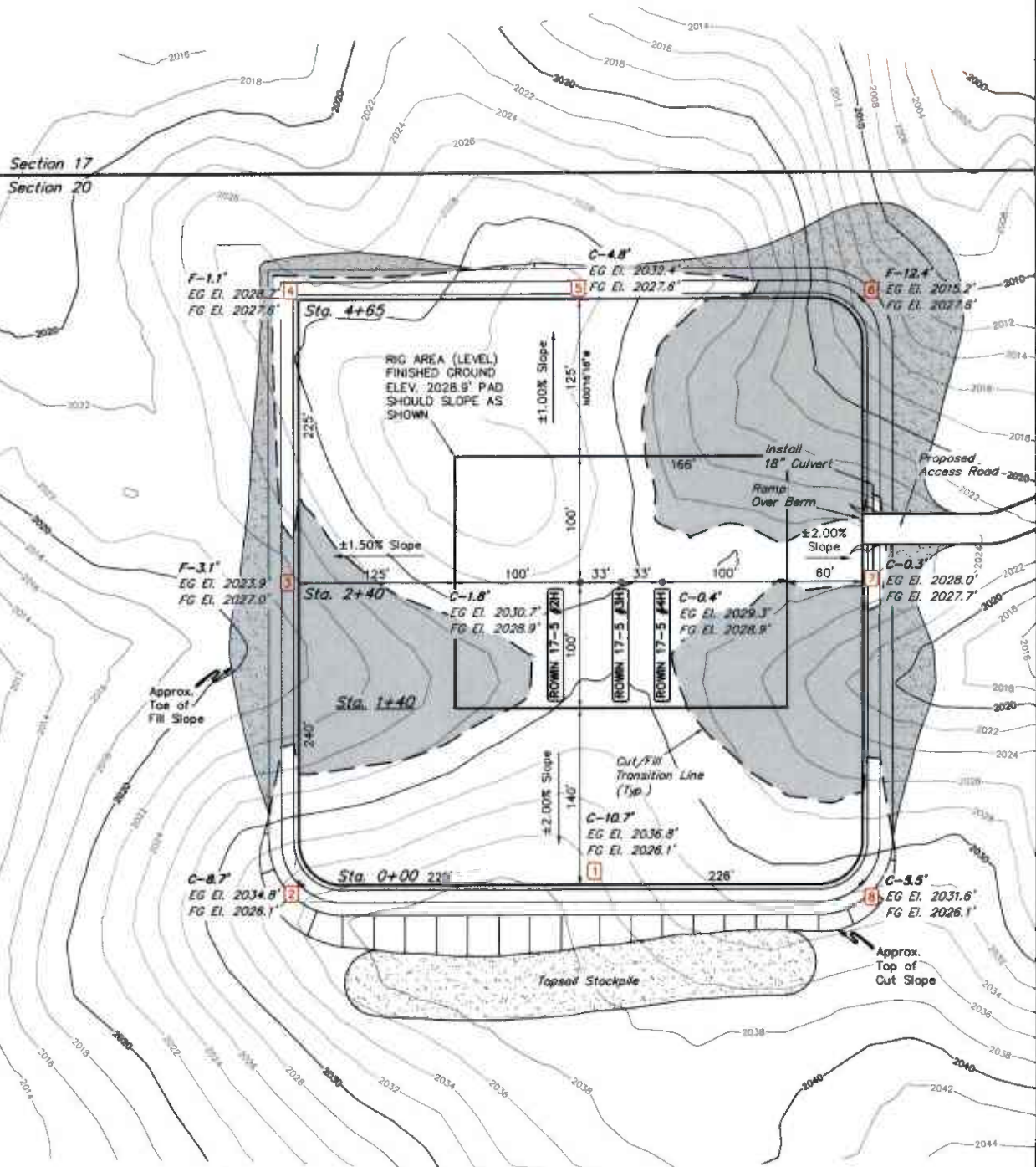
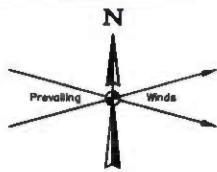
BASIS OF BEARINGS
BASIS OF BEARINGS IS A G.P.S. OBSERVATION

UJTAH
CORPORATE OFFICE: 45 SOUTH 280 EAST
VERMILION, UT 84078 • (435) 788-1017

REV: 3 06-16-20 E.C. (ADD FEDERAL MINERALS, ADD ENTRY & EXIT POINTS)

KRAKEN OPERATING, LLC
ROWEN 17-5 83H
NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
RICHLAND COUNTY, MONTANA

SURVEYED BY: J.J. 06-28-18 SCALE: 1" = 1000'
DRAWN BY: S.C. 09-15-18



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FINISHED GRADE ELEVATION - 2028.9'

REV: 3 01-17-20 S.C.S. (WELL NAME CHANGES AND ROAD CHANGE)

NOTES:
 • Contours shown at 2' intervals.

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KRAKEN OPERATING, LLC

ROWIN PAD
 NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
 RICHLAND COUNTY, MONTANA



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 Corporate Office • 85 South 200 East
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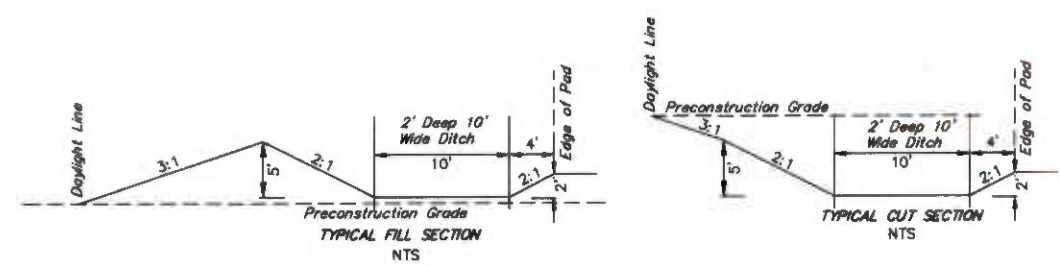
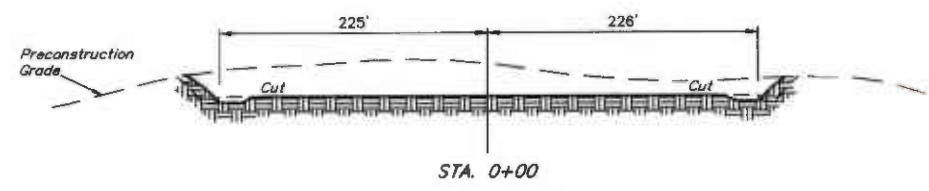
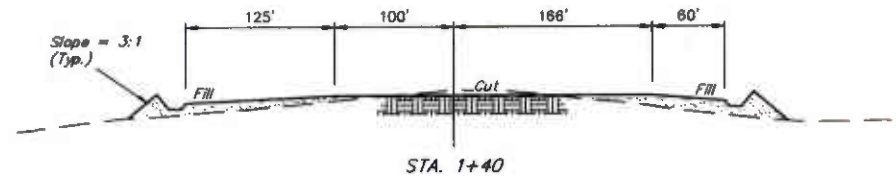
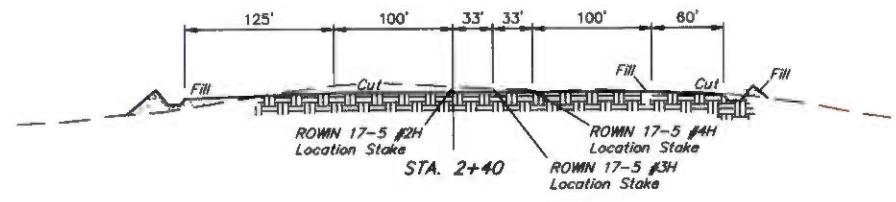
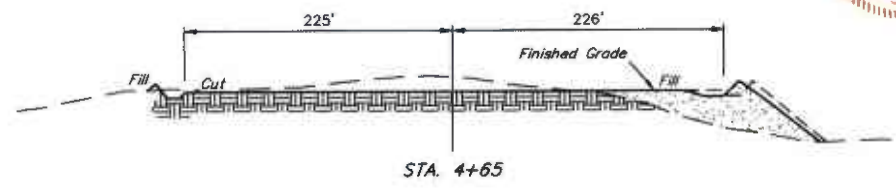
SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	S.K.	09-11-18	1" = 50'

PAD LAYOUT

FIGURE #1



X-Section Scale
1" = 40'
1" = 100'



APPROXIMATE EARTHWORK QUANTITIES	
(6") TOPSOIL STRIPPING	5,460 Cu. Yds.
REMAINING LOCATION	22,280 Cu. Yds.
TOTAL CUT	27,740 Cu. Yds.
FILL	22,280 Cu. Yds.
EXCESS MATERIAL	5,460 Cu. Yds.
TOPSOIL	5,460 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	0 Cu. Yds.

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
WELL SITE DISTURBANCE	NA	±7.241
50' WIDE ACCESS ROAD R-O-W DISTURBANCE	±3123'	±3,585
TOTAL SURFACE USE AREA		±10.826

- NOTES:**
- Fill quantity includes 30% for compaction.
 - Calculations based on 6" of topsoil stripping.
 - Cut/Fill slopes 3:1 (Typ. except where noted).

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REV: 3 03-17-20 S.C.S. (WELL NAME CHANGES)

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ROWIN PAD
NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
RICHLAND COUNTY, MONTANA

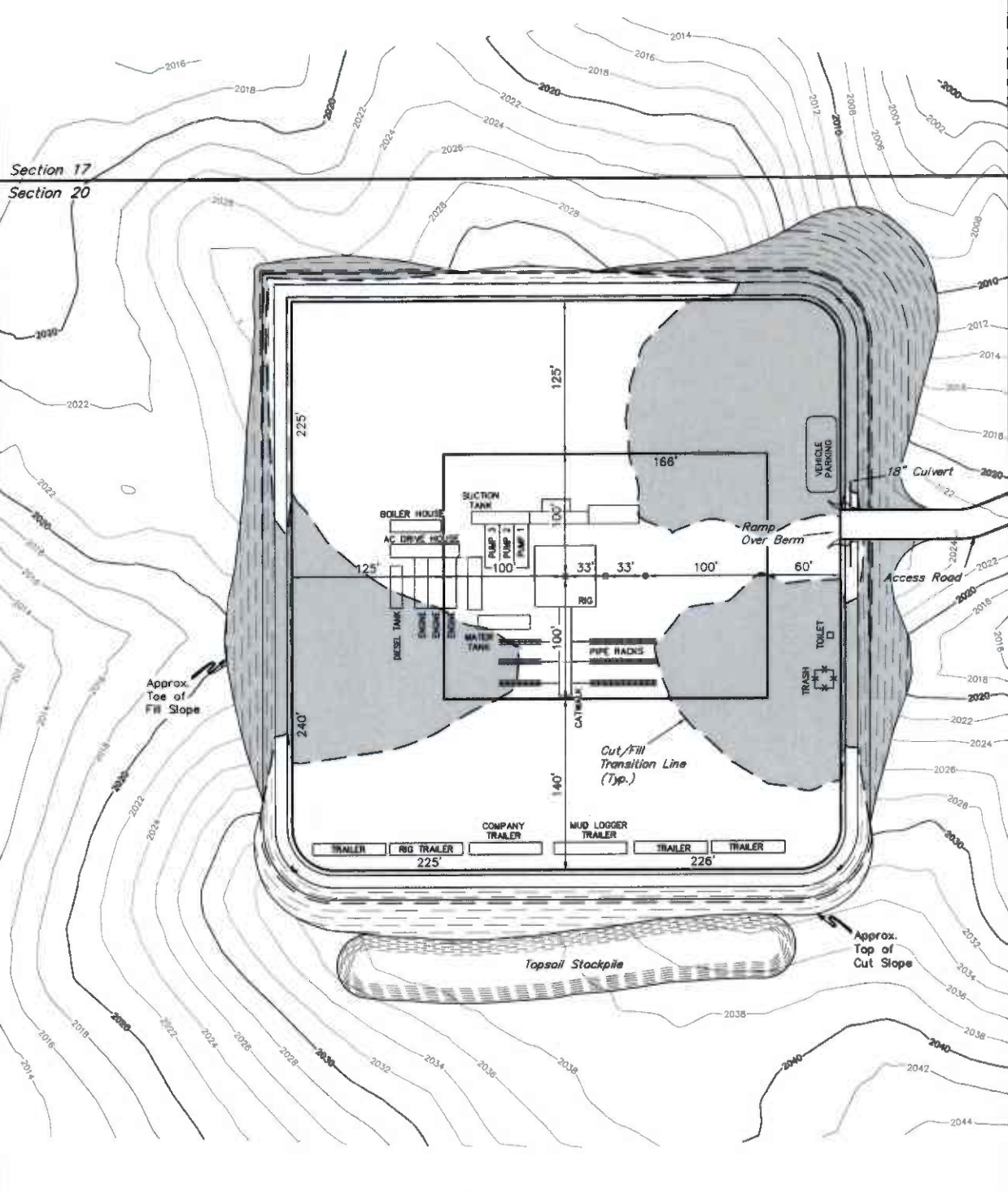
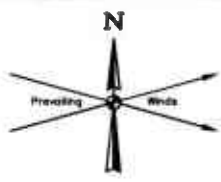
SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	S.K.	09-11-18	AS SHOWN

TYPICAL CROSS SECTIONS FIGURE #2



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- NOTES:**
- Flare pit is to be located a min. of 100' from the wellhead.
 - Contours shown at 2' intervals.

REV: 03-17-20 % C.S. (ROAD CHANGE)

KRAKEN OPERATING, LLC

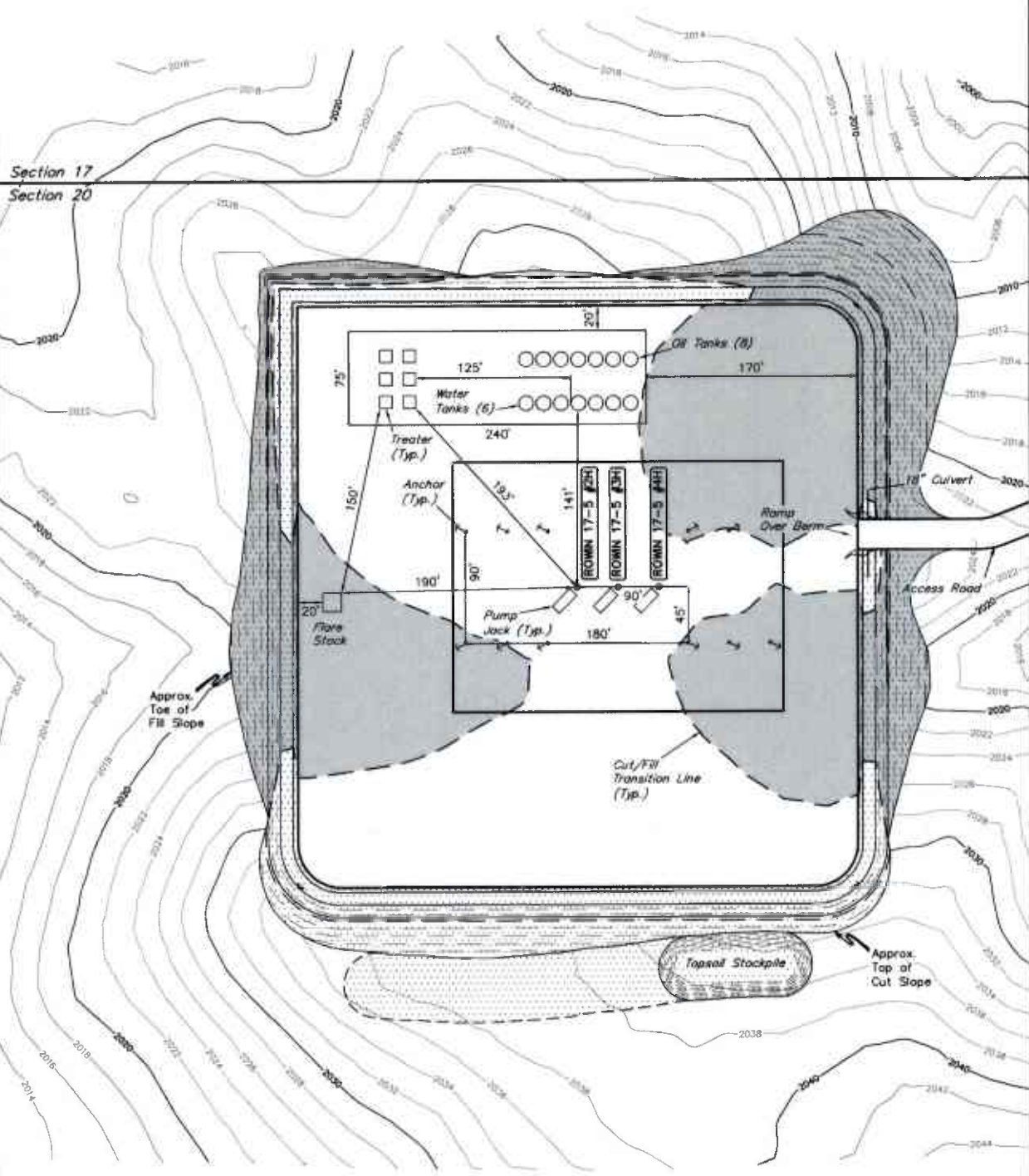
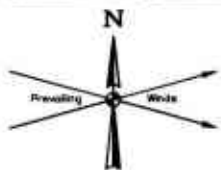
ROWIN PAD
 NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
 RICHLAND COUNTY, MONTANA



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 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1000

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SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	S.K.	06-11-18	1" = 10'
TYPICAL RIG LAYOUT			FIGURE #3



LEGEND:
 Reclaimed Area

APPROXIMATE PRODUCTION PAD ACREAGE = ±4.796 ACRES
 APPROXIMATE RECLAIMED AREA ACREAGE = ±2.445 ACRES
 TOTAL ACREAGE = ±7.241 ACRES

NOTES:
 • Contours shown at 2' intervals.

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REV: 3 03-17-20 S.C.S. (WELL NAME CHANGES AND ROAD CHANGE)

KRAKEN OPERATING, LLC

JUL 21 2020

ROWIN PAD
 NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
 RICHLAND COUNTY, MONTANA



UELS, LLC
 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017

MONTANA BOARD OF OIL & GAS CONSERVATION • BILLINGS

SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	S.K.	09-11-18	1" = 80'
INTERIM RECLAMATION PLAN			FIGURE #4

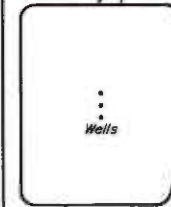
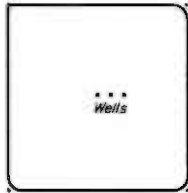


TOTAL ACCESS
3123 FEET (189.27 RODS) 3.585 ACRES

Section Line
N 1/4 Cor. Sec. 20,
Stone

NE Cor. Sec. 20,
SPC

Existing County Road 351



NE 1/4 NW 1/4
SECTION 20, T26N, R59E, P.M.M.
LAND OWNER: SHERRY L WEIMER
146 FEET (8.85 RODS) 0.168 ACRES

NW 1/4 NE 1/4
SECTION 20, T26N, R59E, P.M.M.
LAND OWNER: KITTLESON FAMILY
PARTNERSHIP LP
1362 FEET (82.54 RODS) 1.563 ACRES

NE 1/4 NE 1/4
SECTION 20, T26N, R59E, P.M.M.
LAND OWNER: RANDY A. & TONYA V. SKOV
1325 FEET (80.30 RODS) 1.521 ACRES

Existing
Rowin 17-8 #1H,
Dagney 21-28 #1H,
Kal 16-9 #1H Pad

NW 1/4 NW 1/4
SECTION 21, T26N, R59E, P.M.M.
LAND OWNER: BONNIE C. BERRY
290 FEET (17.58 RODS) 0.333 ACRES

NW 1/4

Sec. 20

1/16 Section Line

NE 1/4

NW 1/4

1/4 Section Line

1/16 Section Line

Section Line

Sec. 21

REV: 3 03-17-20 S.C.S. (ROAD CHANGE)

KRAKEN OPERATING, LLC

ROWIN PAD
NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
RICHLAND COUNTY, MONTANA

SURVEYED BY	JJ	08-28-18	SCALE
DRAWN BY	S.K.	09-11-18	1" = 300'

ACCESS ROAD LAYOUT FIGURE #5

MONTANA BOARD OF OIL & GAS CONSERVATION • BILLINGS

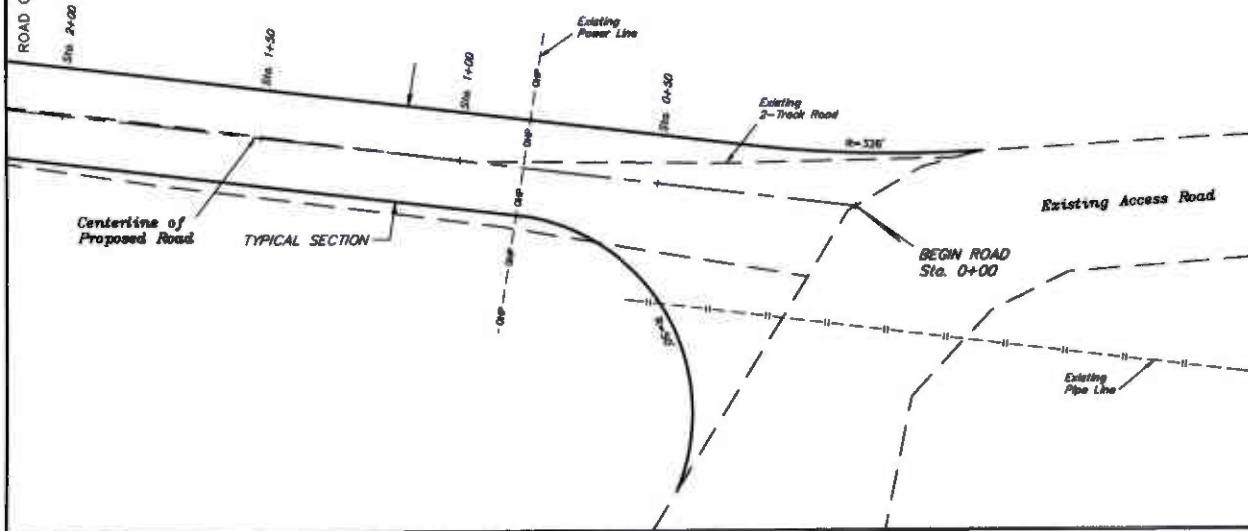
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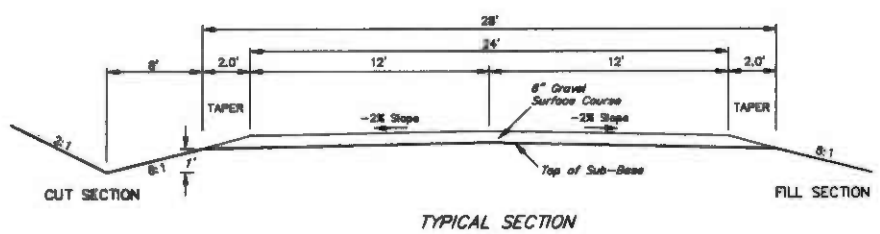


UELS, LLC
Corporate Office • 85 South 200 East
Vernal, UT 84078 • (435) 789-1017

ROAD CONTINUES TO WELL PAD



Existing
Rowin 17-8 #1H,
Dagnay 21-28 #1H,
Kai 16-9 #1H Well Pad



REV: 3 03-17-20 S.C.S. (ROAD CHANGE)

NOTES:
 • Assume existing profile must slope away from road with a maximum of 3% for 25', also, maximum grade of 8% is required beyond 25' of road.
 • Cattle guard, if required, must be 3' wider than travel surface on each side.

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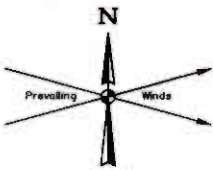
ROWIN PAD
 NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
 RICHLAND COUNTY, MONTANA

SURVEYED BY	JJ	08-24-18	SCALE
DRAWN BY	S.K.	09-11-18	NONE
TYPICAL ROAD ACCESS		FIGURE #6	

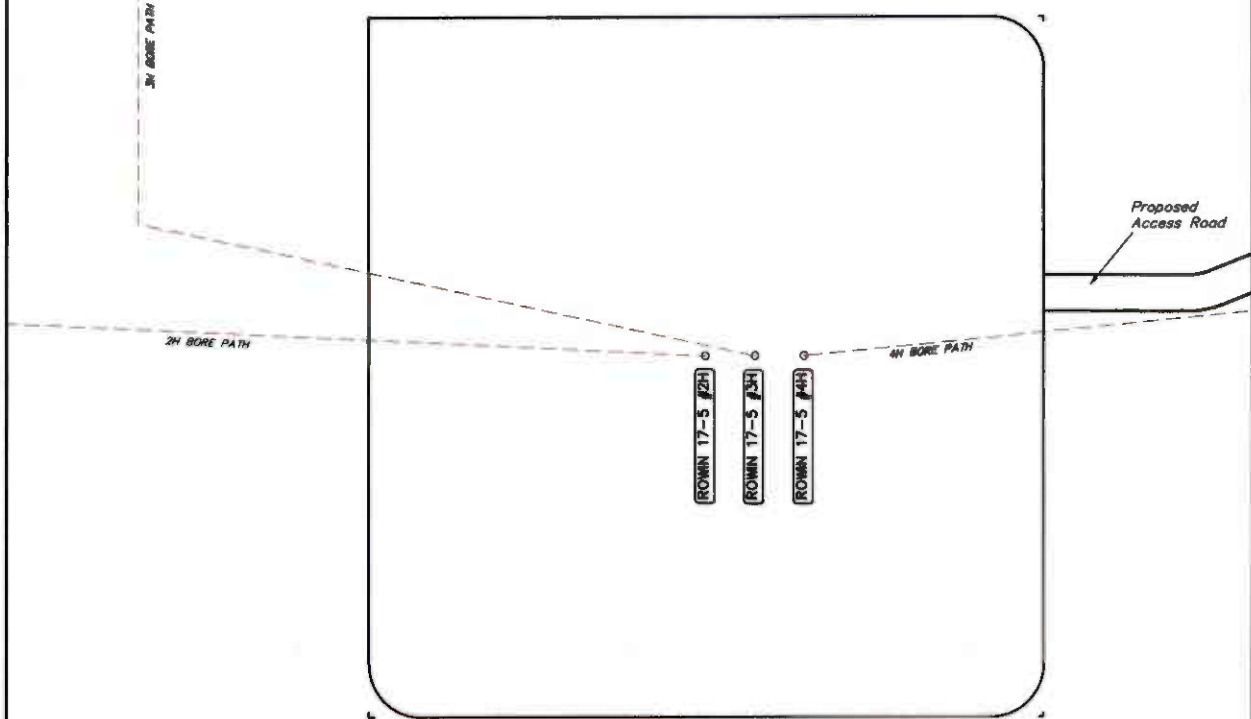


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SECTION 17
SECTION 20



REV: 5 06-16-20 E.C. (UPDATE BORE PATH)

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SURVEYED BY	JJ	08-28-18	SCALE
DRAWN BY	S.K.	09-11-18	1" = 30'
MULTI-WELL PLAN		FIGURE #7	



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PROCEED IN A NORTHERLY, THEN NORTHEASTERLY, THEN EASTERLY DIRECTION FROM FAIRVIEW, MONTANA ALONG HIGHWAY 200 APPROXIMATELY 0.9 MILES TO THE JUNCTION OF THIS ROAD AND HIGHWAY 58 TO THE NORTH; TURN LEFT AND PROCEED IN A NORTHERLY DIRECTION APPROXIMATELY 6.9 MILES TO THE JUNCTION OF THIS ROAD AND COUNTY ROAD 147 TO THE NORTHWEST; TURN LEFT AND PROCEED IN A NORTHWESTERLY DIRECTION APPROXIMATELY 4.7 MILES TO THE JUNCTION OF THIS ROAD AND COUNTY ROAD 351 TO THE SOUTHWEST; TURN LEFT AND PROCEED IN A SOUTHWESTERLY DIRECTION APPROXIMATELY 0.5 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE WEST; TURN RIGHT AND PROCEED IN A WESTERLY DIRECTION APPROXIMATELY 0.1 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD TO THE WEST; FOLLOW ROAD FLAGS IN A WESTERLY DIRECTION APPROXIMATELY 3,123' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM FAIRVIEW, MONTANA TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 13.7 MILES.

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REV: 2 03-17-20 S.C.S. (ACCESS ROAD RE-ROUTE)

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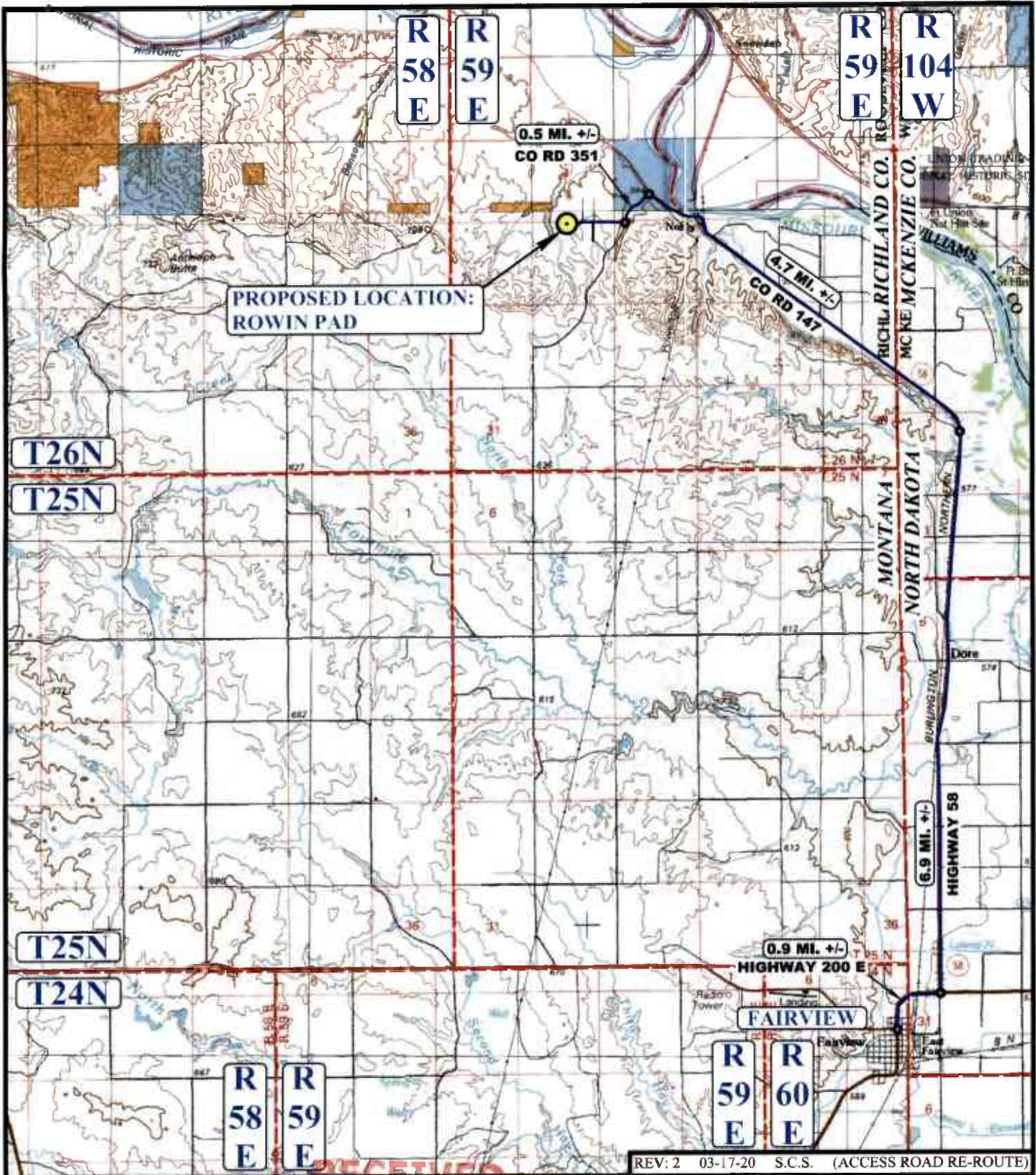
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SURVEYED BY	J.J.	08-28-18	
DRAWN BY	W.G.	09-26-18	

ROAD DESCRIPTION





REV: 2 03-17-20 S.C.S. (ACCESS ROAD RE-ROUTE)

LEGEND:

● PROPOSED LOCATION

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ROWIN PAD
 NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
 RICHLAND COUNTY, MONTANA

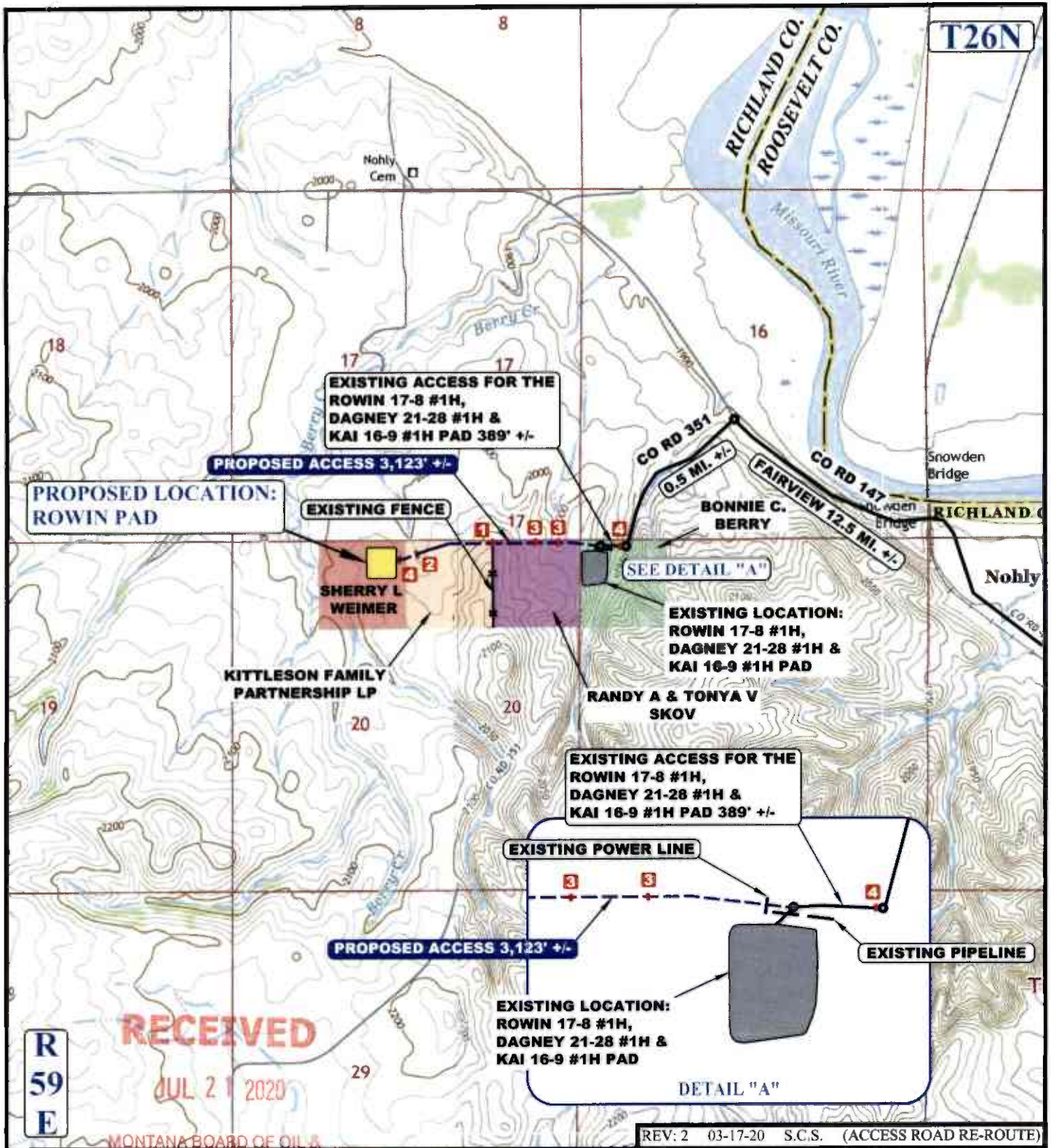
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 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	W.G.	09-26-18	1 : 100,000

ACCESS ROAD MAP

TOPO A





NOTE: PARCEL DATA SHOWN HAS BEEN OBTAINED FROM VARIOUS SOURCES AND SHOULD BE USED FOR MAPPING, GRAPHIC AND PLANNING PURPOSES ONLY. NO WARRANTY IS MADE BY UINTAH ENGINEERING AND LAND SURVEYING (UELS) FOR ACCURACY OF THE PARCEL DATA.

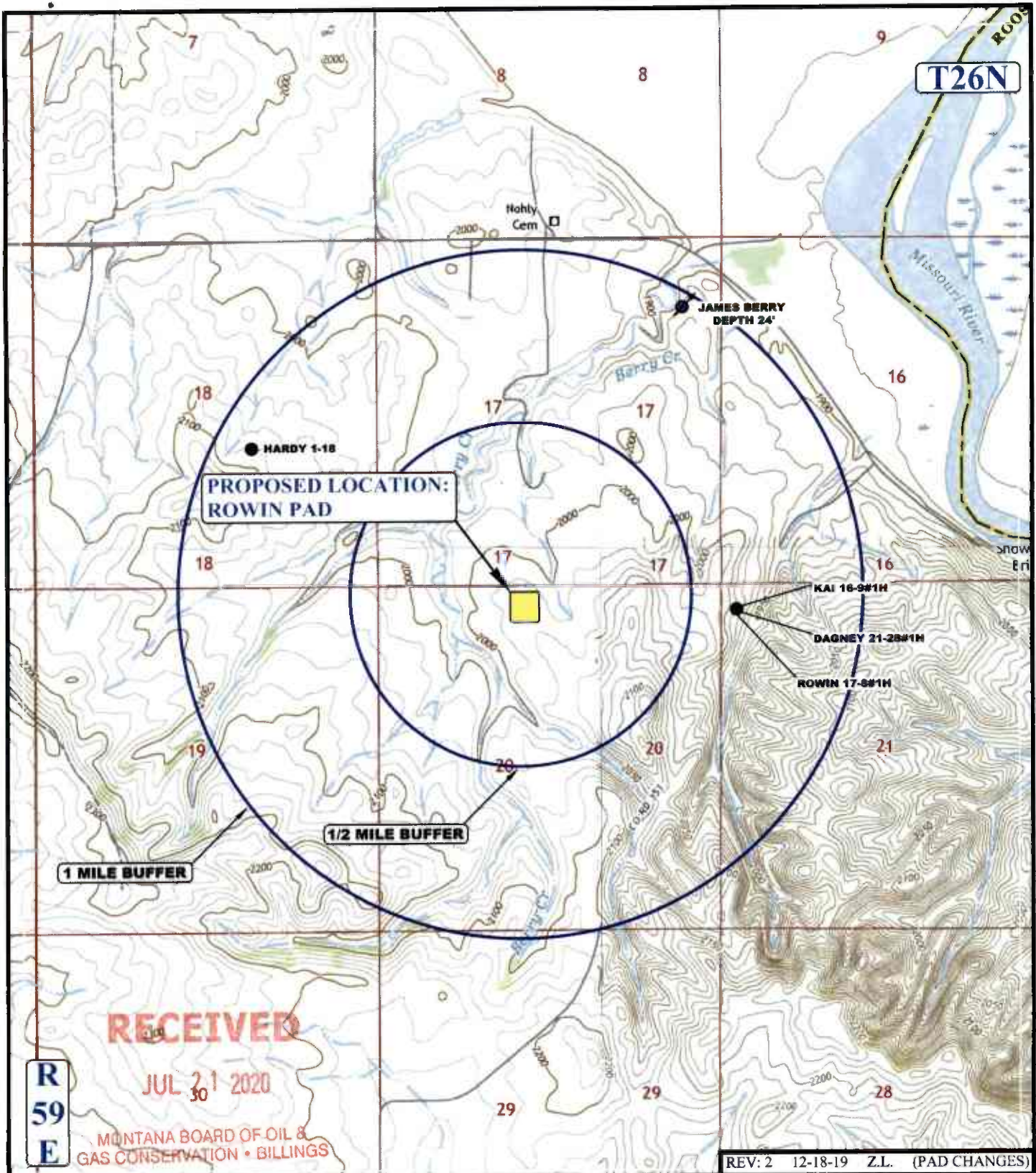
- LEGEND:**
- EXISTING ROAD
 - - - PROPOSED ROAD
 - - - EXISTING FENCE
 - EXISTING 2-TRACK
 - - - EXISTING PIPELINE
 - - - EXISTING POWER LINE
 - 1 INSTALL CATTLE GUARD
 - 2 INSTALL (2) 30" CULVERTS
 - 3 INSTALL 24" CULVERT
 - 4 INSTALL 18" CULVERT

KRAKEN OPERATING, LLC

ROWIN PAD
 NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
 RICHLAND COUNTY, MONTANA

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SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	W.G.	09-26-18	1 : 24,000
ACCESS ROAD MAP			TOPO B



R
59
E

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REV: 2 12-18-19 Z.L. (PAD CHANGES)

LEGEND:

- ⊗ DISPOSAL WELLS
- PRODUCING WELLS
- SHUT IN WELLS
- ⊗ WATER WELLS
- ◆ ABANDONED WELLS
- TEMPORARILY ABANDONED
- ⊗ CONFIDENTIAL



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ROWIN PAD
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RICHLAND COUNTY, MONTANA

SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	W.G.	09-26-18	1 : 24,000

WELL PROXIMITY MAP

TOPO C

T26N

PROPOSED LOCATION:
ROWIN PAD



R
59
E

1/2 MILE BUFFER

NO EXISTING DWELLINGS
WITHIN 1/2 MILE BUFFER

REV: 1 12-18-19 Z.L. (PAD CHANGES)

LEGEND:

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KRAKEN OPERATING, LLC

ROWIN PAD
NE 1/4 NW 1/4, SECTION 20, T26N, R59E, P.M.M.
RICHLAND COUNTY, MONTANA

SURVEYED BY	J.J.	08-28-18	SCALE
DRAWN BY	W.G.	09-26-18	1 : 12,000

AERIAL MAP

TOPO 1



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Kraken Operating, LLC

Rowin 17-5 #3H
NENW Sec 20 T26N R59E
325 FNL 2303 FWL
Richland County, MT

Drilling Program

- 1** Build and construct location.
- 2** Drill 20" OH and set 16" conductor pipe and rathole/mousehole
- 3** MIRU Drilling Rig.
- 4** Drill 13 1/2" surface hole from 80' to 2055'.
- 5** Run and cement 9 5/8" 36# J-55 LT&C surface casing.
- 6** Make up 11" 5000 psi wellhead. NU BOP stack. Pressure test to 5000 psi high, 250 low.
- 7** Drill out with 8 3/4" PDC bit using invert mud. Drill to KOP at approx. 9927'.
- 8** Drill curve with 8 3/4" PDC while holding 13°/100 ft to 10621' ensuring casing shoe is past set back hard line in producing section.
- 9** Run and cement 7" 32# 7" P-110 BTC casing.
- 10** Set casing slips, change out BOP rams to 4", pressure test BOP.
- 11** Drill out with 6" PDC to approximately 24850' MD using brine.
- 12** Run 4 1/2" production liner and cement in place, test packoff, test 7" casing.
- 13** Release rig, RDMO drilling rig.

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Kraken Operating, LLC

Rowin 17-5 #3H
NENW Sec 20 T26N R59E
325 FNL 2303 FWL
Richland County, MT

Cementing Program

SURFACE CASING: 13 1/2" OH, 9 5/8" 36# J-55, LTC

Lead Cement: Halliburton Varicem, w/ 0.25 lb/sk Poly-E-Flake, 14.58 gal/sk fresh water
1555' - Surface = 1555'
345 sks

Tail Cement: Halliburton Varicem, w/ 0.25 lb/sk Poly-E-Flake, 7.39 gal/sk fresh water
2055' - 1555' = 500'
178 sks

PRODUCTION CASING: 8 3/4" OH, 7" 32# HCP-110, BTC

Tail Cement: Halliburton Extendacem, 9.64 gal/sk fresh water
10621' - 2055' = 8566'
679 sks

LINER: 6" OH, 4 1/2" 11.6# & 13.5# P-110, BTC

Lead Cement: Halliburton Extendacem, w/ 0.12% H-25, 0.65% HR-601, 7.10 gal/sk fresh water
24850' - 9852' = 14998'
776 sks

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Kraken Operating, LLC

Rowin 17-5 #3H
 NENW Sec 20 T26N R59E
 325 FNL 2303 FWL
 Richland County, MT

Geologic Prognosis

Lease Name:	Rowin 17-5
Well Number:	#3H
Lease Type:	Private
Field Name:	Wildcat
Objective Formation:	Middle Bakken
Proposed TVD:	10375'
Proposed TMD:	24850'
Lateral Length:	14229'

County/State:	Richland Co., Montana
Township, Range, and Section:	T26N-R59E, Sec. 5, 8, & 17
Surface Location:	NENW Sec. 20 - 325' FNL & 2303' FWL
Bottom Hole Location:	Tract 105 Sec. 5 - 1428' FNL & 1891' FWL
Latitude:	47°59'49.76" N
Longitude:	104°07'45.8" W
Original Elevation:	2030
Final Pad Elevation:	2029

Geology

Estimated Tops	Subsea	TVD	Estimated Tops	Subsea	TVD
Greenhorn	-2470	4525	Base Last Charles Salt	-6796	8851
Mowry (Top Dakota)	-2874	4929	Mission Canyon	-7057	9112
Newcastle	-3054	5109	Lodgepole	-7510	9565
Inyan Kara	-3293	5348	Upper Bakken Shale	-8276	10331
Swift	-3815	5870	Top Middle Bakken	-8288	10343
Spearfish	-4862	6917	Middle Bakken Target	-8301	10356
Amsden	x	x	Base Middle Bakken	-8314	10369
Tyler	-5550	7605	Top Middle Bakken @ LP	-8287	10342
Kibbey Lime	-6066	8121	Middle Bakken Target @ LP	-8300	10355
Madison (Charles)	-6221	8276	Top Middle Bakken @ TD	-8255	10310
Ratcliffe	-6747	8802	Middle Bakken Target @ TD	-8265	10323

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Kraken Operating, LLC

Rowin 17-5 #3H
NENW Sec 20 T26N R59E
325 FNL 2303 FWL
Richland County, MT

Mud Program

INTERVAL (feet)	MUD WEIGHT (lbs/gal)	VISCOSITY (sec/qt)	FLUID LOSS (ml/30 min)	MUD TYPE
0' - 2055'	8.3 - 9.0	28 - 34	No Control	Fresh Water
Set 9-5/8" Surface Casing				
2055' - 10621'	9.5 - 10.2	40 - 55	HTHP 10-15	75/25 to 80/20 Invert
Set 7" Intermediate Casing				
10621' - 24850'	9.4 - 9.8	28 - 30	No Control	Sodium Chloride Brine

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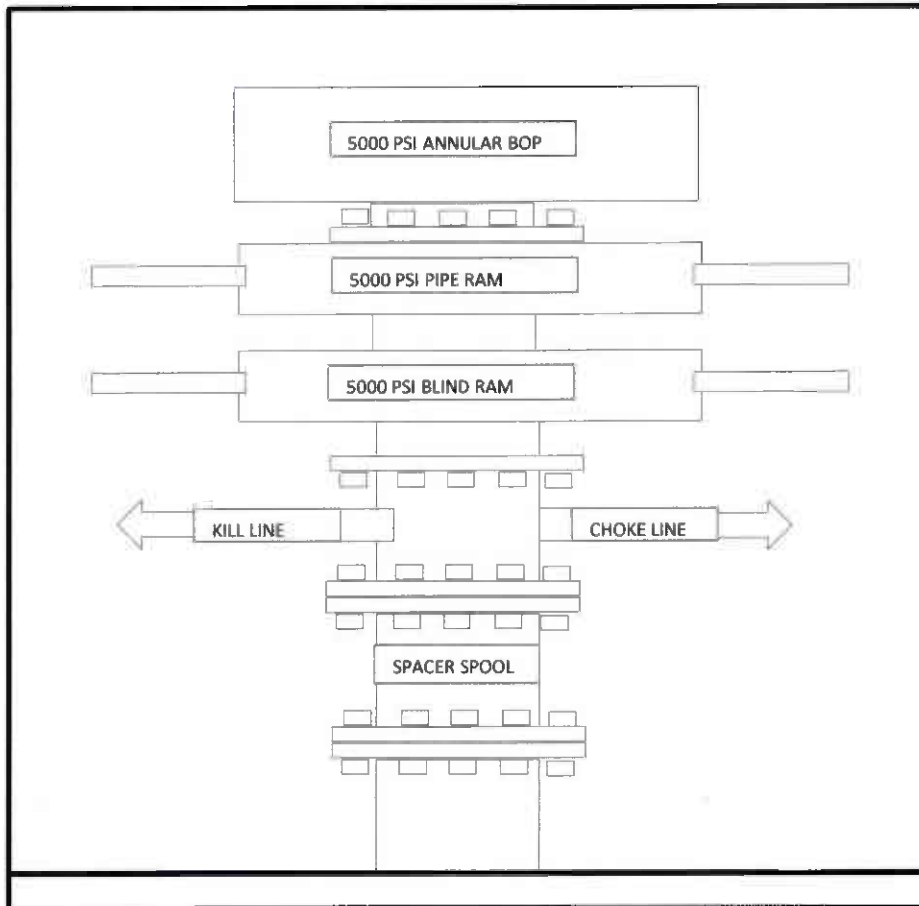
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Rowin 17-5 #3H
NENW Sec 20 T26N R59E
325 FNL 2303 FWL
Richland County, MT

BOP Schematic



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**Typical Completion Procedure
Bakken or Three Forks**

After Drilling Rig Moves Off Location

1. MIRU wire line, RIH with gauge ring to at least 100 ft beyond liner top, POOH.
2. RIH and set retrievable plug in liner hanger or in completion liner, POOH with wireline. Run CBL-CCL-GR and casing inspection tool from liner top to surface.
3. Pressure test 7" (intermediate) casing and frac valve. Retrieve plug in liner top.
4. MI and fill frac tanks with fresh water to ensure there will be enough water for the designed frac job.
5. MIRU flowback company. Rig flowback iron from wellhead to 4 phase separator to open top tank.
6. MIRU all frac company equipment, wire line, and all ancillary equipment necessary to frac well.
7. Pump frac job as designed. RDMO frac equipment and wire line.
8. MIRU coiled tubing to mill out frac plugs.
9. Begin flowback of well. Once well has cleaned up, direct full well stream to production battery.
10. RDMO flowback equipment and crew.
11. Turn well over to production department.

Note:

If casing inspection log indicates excessive wear in 7" casing or other conditions require a frac string to be run, the CBL-GR-CCL and casing inspection tool will be run and the 7" casing pressure tested to a lower rating. After the frac string is run, a retrievable plug will be set and the frac string tested prior to the frac.

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Kraken Operating, LLC Proposed Well Stimulation

Total Clean Fluid – 235,000 bbls

Maximum Anticipated Treating Pressure – 9,800 psi

Hydraulic Fracturing Fluid Components Information Disclosure:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Mass per Component (LBS)	Maximum Ingredient Concentration in HF Fluid (% by mass)**
Water	Operator	Carrier	Carrier	7732-18-5	100.00%	82,315,800.00	84.06572%
Surf-Flo 430	Innospec	Flowback Additive	MSDS and Non-MSDS Ingredients Listed Below			7,435.80	0.00759%
FRP-1S	Liberty Oilfield Services	Friction reduction	MSDS and Non-MSDS Ingredients Listed Below			252,853.79	0.25823%
DVA-75	Liberty Oilfield Services	Diverting Agent	MSDS and Non-MSDS Ingredients Listed Below			469.00	0.00048%
Bioclear 5000	Lubrizol	Biocide	MSDS and Non-MSDS Ingredients Listed Below			8,387.32	0.00857%
ScaleCease 7103	Innospec	Scale Inhibitor	MSDS and Non-MSDS Ingredients Listed Below			15,850.17	0.01619%
HCL-15	Liberty Oilfield Services	Solvent	MSDS and Non-MSDS Ingredients Listed Below			17,295.26	0.01766%
ACI-300	WST	Corrosion Inhibitor	MSDS and Non-MSDS Ingredients Listed Below			67.43	0.00007%
WA-100	WST	Wetting Agent	MSDS and Non-MSDS Ingredients Listed Below			34.79	0.00004%
IC-50S	WST	Iron Control	MSDS and Non-MSDS Ingredients Listed Below			125.74	0.00013%
Liberty Clean Out	Liberty Oilfield Services	Cleanup Solution	MSDS and Non-MSDS Ingredients Listed Below			74.86	0.00008%
Crystalline Silica	Liberty Oilfield Services	Sand	MSDS and Non-MSDS Ingredients Listed Below			15,300,000.00	15.62526%
The trade name(s) of the additive(s) used, supplier(s), and the purpose(s) of the additive(s) are listed above. The ingredient(s) for the above additive(s) are listed below.							
	Liberty Oilfield Services	Sand	Crystalline Silica (quartz)	14808-60-7	99.90%	15,284,700.00	15.60963%
	Liberty Oilfield Services	Sand	Aluminum Oxide	1344-28-1	1.00%	153,000.00	0.15625%
	Liberty Oilfield Services	Friction reduction	Petroleum distillates, hydrotreated light	64742-47-8	45.00%	113,784.20	0.11620%
	Liberty Oilfield Services	Sand	Iron Oxide	1309-37-1	0.10%	15,300.00	0.01563%
	Liberty Oilfield Services	Sand	Titanium Oxide	13463-67-7	0.10%	15,300.00	0.01563%
	Innospec	Scale Inhibitor	Water	7732-18-5	95.00%	15,057.66	0.01538%
	Liberty Oilfield Services	Solvent	Water	7732-18-5	85.00%	14,700.97	0.01501%
	Liberty Oilfield Services	Friction reduction	Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched	69011-36-5	3.00%	7,585.61	0.00775%
	Innospec	Flowback Additive	Water	7732-18-5	95.00%	7,064.01	0.00721%
	Liberty Oilfield Services	Solvent	Hydrochloric Acid	7647-01-0	15.00%	2,594.29	0.00265%
	Lubrizol	Biocide	2,2-dibromo-3-nitropropionamide	10222-01-2	10.00%	838.73	0.00086%
	Innospec	Scale Inhibitor	BHMT Phosphonate	Proprietary	5.00%	792.51	0.00081%
	Innospec	Scale Inhibitor	Proprietary Ingredient	Proprietary	5.00%	792.51	0.00081%
	Innospec	Flowback Additive	Benzenesulfonic Acid, dodecyl-compd, with 2-aminoethanol	26836-07-7	10.00%	743.58	0.00076%
	Innospec	Flowback Additive	Dodecylbenzene sulfonate, triethanolamine salt	27323-41-7	10.00%	743.58	0.00076%
	Liberty Oilfield Services	Diverting Agent	Poly(lactide Resin	9051-89-2	100.00%	469.00	0.00048%
	Innospec	Flowback Additive	Sodium Alpha Olefin Sulfonate	68439-57-6	5.00%	371.79	0.00038%
	WST	Iron Control	2-hydroxypropane-1,2,3-tricarboxylic acid	77-92-9	60.00%	75.45	0.00008%
	Liberty Oilfield Services	Cleanup Solution	Oxygenate and paraffinic stream	876065-86-0	99.00%	74.11	0.00008%
	WST	Wetting Agent	Ethoxylated Decyl Alcohol	78330-20-8	40.00%	13.92	0.00001%
	WST	Corrosion Inhibitor	2-Propyn-1-ol compound with methyloxirane	38172-91-7	15.00%	10.11	0.00001%
	Liberty Oilfield Services	Cleanup Solution	C.I. Solvent Yellow 33	8003-22-3	1.00%	0.75	0.00000%
	Innospec	Flowback Additive	Triethanolamine	103-71-6	0.01%	0.67	0.00000%
	Innospec	Flowback Additive	Ethanolamine	141-43-5	0.01%	0.67	0.00000%

MONTANA BOARD OF OIL & GAS REGULATORY SERVICES

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Company: Kraken Oil & Gas
 Well: Rowin 17-5 #3H
 County: Richland County, Montana (NAD 83)
 Rig: Nabors B17
 Wellbore: Wellbore #1
 Design: Design #1
 Created By: MEB
 Date: 10:36, June 01 2020

SHL: 325' FNL & 2303' FWL Sec 20 - T28N - R59E

LP: 205' FSL & 1890' FWL Sec 17 - T28N - R59E

PBHL: 1427' FNL & 1890' FWL Sec 5 - T26N - R59E



CASING DETAILS

TVD	MD	Name	Size
10355.00	10620.66	7"	7"

WELL DETAILS: Rowin 17-5 #3H

+N-S	+E-W	GL @ 2028.90 Northing	WELL @ 2054.90usft (Nabors B17) Easting	Longitude
0.00	0.00	1411117.10	3281842.97	47° 59' 49.765 N 104° 7' 45.804 W

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
LP - Rowin 17-5 #3H	10355.00	530.14	-411.17	1411617.83	3281396.45	47° 59' 54.959 N	104° 7' 51.852 W
PBHL - Rowin 17-5 #3H	10323.00	14759.57	-395.02	1425814.93	3280437.64	48° 2' 15.486 N	104° 7' 51.619 W

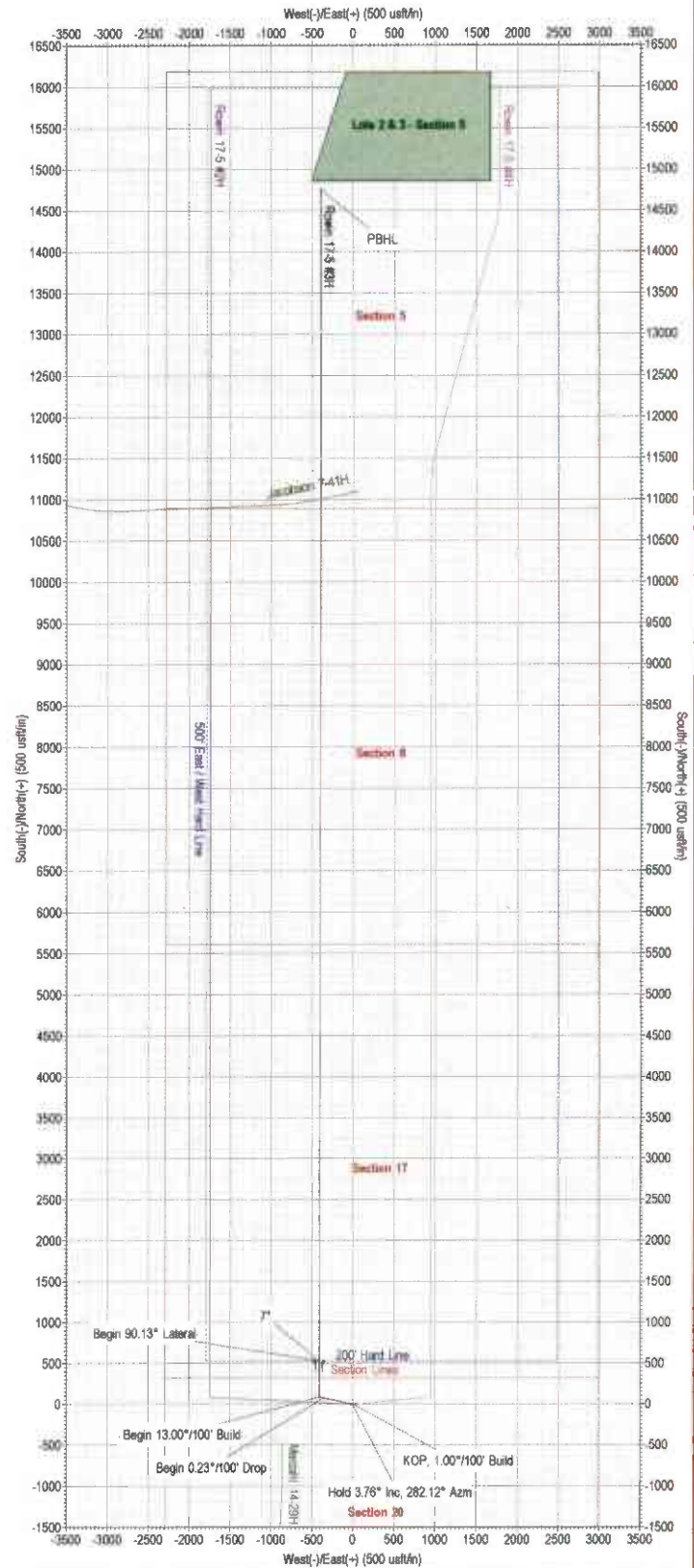
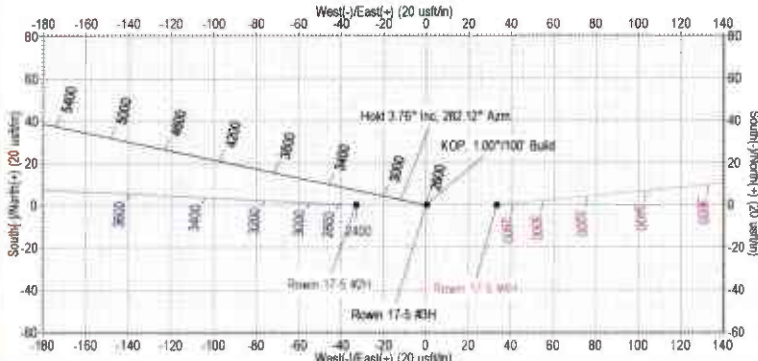
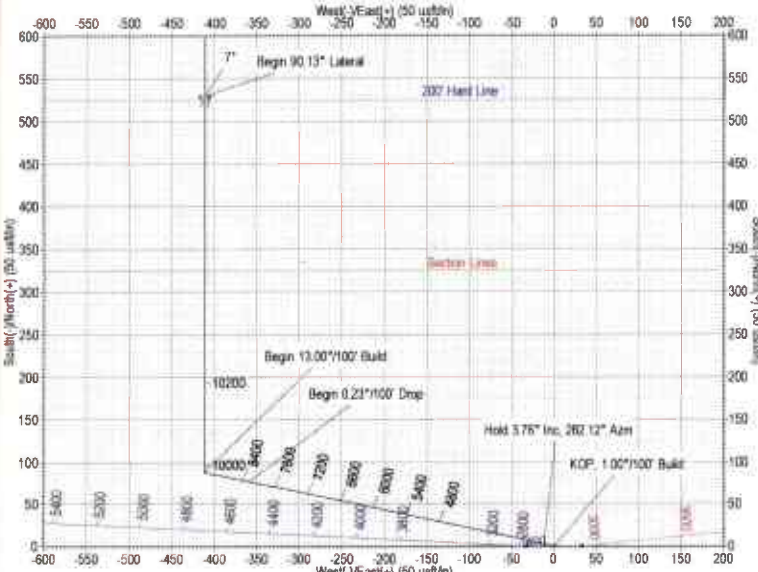
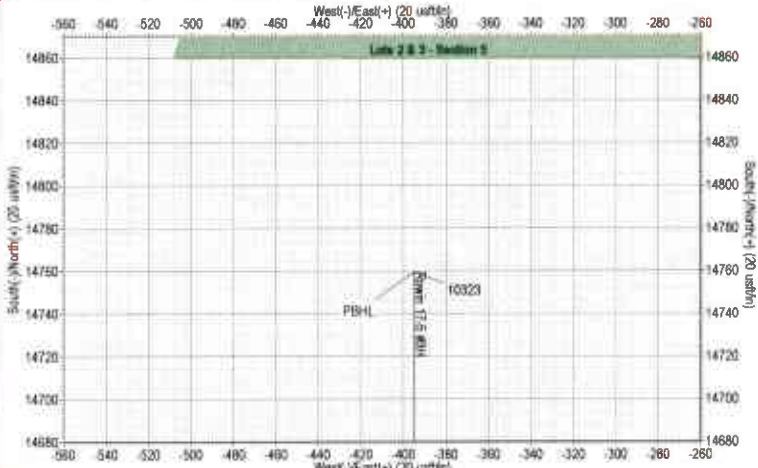
SECTION DETAILS

MD	Inq	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSecl	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.000	0.00	KOP, 1.00°/100' Build
2876.27	3.76	282.12	2876.00	2.59	-12.07	1.00	282.121	2.91	Hold 3.76° Inc, 282.12° Azm
8287.92	3.76	282.12	8276.00	77.12	-369.06	0.00	0.000	86.70	Begin 0.23°/100' Drop
9927.36	0.00	0.00	9914.26	68.41	-411.67	0.23	180.000	99.39	Begin 13.00°/100' Build
10620.66	90.13	0.07	10355.00	530.14	-411.17	13.00	0.065	540.95	Begin 90.13° Lateral
24850.14	90.13	0.07	10323.00	14759.57	-395.02	0.00	0.000	14764.86	PBHL

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Kraken Oil & Gas

Richland County, Montana (NAD 83)

Rowin Pad

Rowin 17-5 #3H

Wellbore #1

Plan: Design #1

Standard Planning Report

29 May, 2020



JUL 21 2020

MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS



MS Directional
Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Richland County, Montana (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Montana		

Site	Rowin Pad				
Site Position:		Northing:	1,411,114.84 usft	Latitude:	47° 59' 49.765 N
From:	Lat/Long	Easting:	3,281,810.01 usft	Longitude:	104° 7' 46.290 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	3.929°

Well	Rowin 17-5 #3H					
Well Position	+N/-S	0.00 usft	Northing:	1,411,117.10 usft	Latitude:	47° 59' 49.765 N
	+E/-W	33.04 usft	Easting:	3,281,842.97 usft	Longitude:	104° 7' 45.804 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	2,028.90 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	5/28/2020	8.283	72.533	55,555.40

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	358.47

Plan Survey Tool Program	Date	5/29/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	24,850.14	Design #1 (Wellbore #1)	MWD+HRGM OWSG MWD + HRGM

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,876.27	3.76	282.12	2,876.00	2.59	-12.07	1.00	1.00	0.00	282.121	
8,287.92	3.76	282.12	8,276.00	77.12	-359.08	0.00	0.00	0.00	0.000	
9,927.36	0.00	0.00	9,914.26	88.41	-411.67	0.23	-0.23	0.00	180.000	
10,620.88	90.13	0.07	10,355.00	530.14	-411.17	13.00	13.00	0.00	0.065	LP - Rowin 17-5 #3
24,850.14	90.13	0.07	10,323.00	14,759.57	-395.02	0.00	0.00	0.00	0.000	PBHL - Rowin 17-5

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MS Directional
Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 1.00°/100' Build									
2,600.00	1.00	282.12	2,599.99	0.18	-0.85	0.21	1.00	1.00	0.00
2,700.00	2.00	282.12	2,699.96	0.73	-3.41	0.82	1.00	1.00	0.00
2,800.00	3.00	282.12	2,799.86	1.65	-7.67	1.85	1.00	1.00	0.00
2,876.27	3.76	282.12	2,876.00	2.59	-12.07	2.91	1.00	1.00	0.00
Hold 3.76° Inc, 282.12° Azm									
2,900.00	3.76	282.12	2,899.68	2.92	-13.59	3.28	0.00	0.00	0.00
3,000.00	3.76	282.12	2,999.46	4.30	-20.00	4.83	0.00	0.00	0.00
3,100.00	3.76	282.12	3,099.25	5.67	-26.41	6.38	0.00	0.00	0.00
3,200.00	3.76	282.12	3,199.03	7.05	-32.83	7.93	0.00	0.00	0.00
3,300.00	3.76	282.12	3,298.82	8.43	-39.24	9.47	0.00	0.00	0.00
3,400.00	3.76	282.12	3,398.60	9.80	-45.65	11.02	0.00	0.00	0.00
3,500.00	3.76	282.12	3,498.39	11.18	-52.06	12.57	0.00	0.00	0.00
3,600.00	3.76	282.12	3,598.17	12.56	-58.48	14.12	0.00	0.00	0.00
3,700.00	3.76	282.12	3,697.96	13.94	-64.89	15.67	0.00	0.00	0.00
3,800.00	3.76	282.12	3,797.74	15.31	-71.30	17.22	0.00	0.00	0.00
3,900.00	3.76	282.12	3,897.53	16.69	-77.71	18.76	0.00	0.00	0.00
4,000.00	3.76	282.12	3,997.31	18.07	-84.13	20.31	0.00	0.00	0.00
4,100.00	3.76	282.12	4,097.10	19.44	-90.54	21.86	0.00	0.00	0.00
4,200.00	3.76	282.12	4,196.88	20.82	-96.95	23.41	0.00	0.00	0.00
4,300.00	3.76	282.12	4,296.66	22.20	-103.36	24.96	0.00	0.00	0.00
4,400.00	3.76	282.12	4,396.45	23.58	-109.78	26.50	0.00	0.00	0.00
4,500.00	3.76	282.12	4,496.23	24.95	-116.19	28.05	0.00	0.00	0.00
4,528.83	3.76	282.12	4,525.00	25.35	-118.04	28.50	0.00	0.00	0.00
Greenhorn									
4,600.00	3.76	282.12	4,596.02	26.33	-122.60	29.60	0.00	0.00	0.00
4,700.00	3.76	282.12	4,695.80	27.71	-129.01	31.15	0.00	0.00	0.00

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MS Directional
Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	3.76	282.12	4,795.59	29.08	-135.43	32.70	0.00	0.00	0.00
4,900.00	3.76	282.12	4,895.37	30.46	-141.84	34.25	0.00	0.00	0.00
4,933.70	3.76	282.12	4,929.00	30.93	-144.00	34.77	0.00	0.00	0.00
Mowry (Top Dakota)									
5,000.00	3.76	282.12	4,995.16	31.84	-148.25	35.79	0.00	0.00	0.00
5,100.00	3.76	282.12	5,094.94	33.22	-154.66	37.34	0.00	0.00	0.00
5,114.09	3.76	282.12	5,109.00	33.41	-155.57	37.56	0.00	0.00	0.00
Newcastle									
5,200.00	3.76	282.12	5,194.73	34.59	-161.07	38.89	0.00	0.00	0.00
5,300.00	3.76	282.12	5,294.51	35.97	-167.49	40.44	0.00	0.00	0.00
5,353.60	3.76	282.12	5,348.00	36.71	-170.92	41.27	0.00	0.00	0.00
Inyan Kara									
5,400.00	3.76	282.12	5,394.30	37.35	-173.90	41.99	0.00	0.00	0.00
5,500.00	3.76	282.12	5,494.08	38.72	-180.31	43.54	0.00	0.00	0.00
5,600.00	3.76	282.12	5,593.87	40.10	-186.72	45.08	0.00	0.00	0.00
5,700.00	3.76	282.12	5,693.65	41.48	-193.14	46.63	0.00	0.00	0.00
5,800.00	3.76	282.12	5,793.44	42.86	-199.55	48.18	0.00	0.00	0.00
5,876.73	3.76	282.12	5,870.00	43.91	-204.47	49.37	0.00	0.00	0.00
Swift									
5,900.00	3.76	282.12	5,893.22	44.23	-205.96	49.73	0.00	0.00	0.00
6,000.00	3.76	282.12	5,993.00	45.61	-212.37	51.28	0.00	0.00	0.00
6,100.00	3.76	282.12	6,092.79	46.99	-218.79	52.82	0.00	0.00	0.00
6,200.00	3.76	282.12	6,192.57	48.36	-225.20	54.37	0.00	0.00	0.00
6,300.00	3.76	282.12	6,292.36	49.74	-231.61	55.92	0.00	0.00	0.00
6,400.00	3.76	282.12	6,392.14	51.12	-238.02	57.47	0.00	0.00	0.00
6,500.00	3.76	282.12	6,491.93	52.50	-244.44	59.02	0.00	0.00	0.00
6,600.00	3.76	282.12	6,591.71	53.87	-250.85	60.57	0.00	0.00	0.00
6,700.00	3.76	282.12	6,691.50	55.25	-257.26	62.11	0.00	0.00	0.00
6,800.00	3.76	282.12	6,791.28	56.63	-263.67	63.66	0.00	0.00	0.00
6,900.00	3.76	282.12	6,891.07	58.01	-270.09	65.21	0.00	0.00	0.00
6,925.99	3.76	282.12	6,917.00	58.36	-271.75	65.61	0.00	0.00	0.00
Spearfish									
7,000.00	3.76	282.12	6,990.85	59.38	-276.50	66.76	0.00	0.00	0.00
7,100.00	3.76	282.12	7,090.64	60.76	-282.91	68.31	0.00	0.00	0.00
7,200.00	3.76	282.12	7,190.42	62.14	-289.32	69.85	0.00	0.00	0.00
7,300.00	3.76	282.12	7,290.21	63.51	-295.74	71.40	0.00	0.00	0.00
7,400.00	3.76	282.12	7,389.99	64.89	-302.15	72.95	0.00	0.00	0.00
7,419.05	3.76	282.12	7,409.00	65.15	-303.37	73.25	0.00	0.00	0.00
Amsden									
7,500.00	3.76	282.12	7,489.77	66.27	-308.56	74.50	0.00	0.00	0.00
7,600.00	3.76	282.12	7,589.56	67.65	-314.97	76.05	0.00	0.00	0.00
7,615.47	3.76	282.12	7,605.00	67.86	-315.96	76.29	0.00	0.00	0.00
Tyler									
7,700.00	3.76	282.12	7,689.34	69.02	-321.38	77.60	0.00	0.00	0.00
7,800.00	3.76	282.12	7,789.13	70.40	-327.80	79.14	0.00	0.00	0.00
7,900.00	3.76	282.12	7,888.91	71.78	-334.21	80.69	0.00	0.00	0.00
8,000.00	3.76	282.12	7,988.70	73.15	-340.62	82.24	0.00	0.00	0.00
8,100.00	3.76	282.12	8,088.48	74.53	-347.03	83.79	0.00	0.00	0.00
8,132.59	3.76	282.12	8,121.00	74.98	-349.12	84.29	0.00	0.00	0.00
Kibbey Lime									
8,200.00	3.76	282.12	8,188.27	75.91	-353.45	85.34	0.00	0.00	0.00
8,287.92	3.76	282.12	8,276.00	77.12	-359.08	86.70	0.00	0.00	0.00
Begin 0.23°/100' Drop - Madison (Charles)									

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MS Directional
Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,300.00	3.73	282.12	8,288.05	77.28	-359.86	86.88	0.23	-0.23	0.00
8,400.00	3.50	282.12	8,387.85	78.61	-366.03	88.37	0.23	-0.23	0.00
8,500.00	3.27	282.12	8,487.68	79.85	-371.81	89.77	0.23	-0.23	0.00
8,600.00	3.04	282.12	8,587.53	81.01	-377.19	91.07	0.23	-0.23	0.00
8,700.00	2.82	282.12	8,687.40	82.08	-382.19	92.28	0.23	-0.23	0.00
8,800.00	2.59	282.12	8,787.28	83.07	-386.80	93.39	0.23	-0.23	0.00
8,814.73	2.55	282.12	8,802.00	83.21	-387.44	93.55	0.23	-0.23	0.00
Ratcliffe									
8,863.78	2.44	282.12	8,851.00	83.66	-389.53	94.05	0.23	-0.23	0.00
Base of Last Salt									
8,900.00	2.36	282.12	8,887.19	83.98	-391.01	94.41	0.23	-0.23	0.00
9,000.00	2.13	282.12	8,987.11	84.80	-394.84	95.33	0.23	-0.23	0.00
9,100.00	1.90	282.12	9,087.05	85.53	-398.27	96.16	0.23	-0.23	0.00
9,124.96	1.84	282.12	9,112.00	85.71	-399.07	96.35	0.23	-0.23	0.00
Mission Canyon									
9,200.00	1.67	282.12	9,187.00	86.19	-401.31	96.89	0.23	-0.23	0.00
9,300.00	1.44	282.12	9,286.97	86.76	-403.96	97.53	0.23	-0.23	0.00
9,400.00	1.21	282.12	9,386.94	87.24	-406.22	98.08	0.23	-0.23	0.00
9,500.00	0.98	282.12	9,486.92	87.64	-408.09	98.53	0.23	-0.23	0.00
9,578.09	0.80	282.12	9,565.00	87.90	-409.28	98.82	0.23	-0.23	0.00
Lodgepole									
9,600.00	0.75	282.12	9,586.91	87.96	-409.57	98.89	0.23	-0.23	0.00
9,700.00	0.52	282.12	9,686.90	88.19	-410.66	99.15	0.23	-0.23	0.00
9,800.00	0.29	282.12	9,786.90	88.34	-411.35	99.32	0.23	-0.23	0.00
9,900.00	0.06	282.12	9,886.90	88.41	-411.65	99.39	0.23	-0.23	0.00
9,927.36	0.00	0.00	9,914.26	88.41	-411.67	99.39	0.23	-0.23	0.00
Begin 13.00°/100' Build									
9,950.00	2.94	0.07	9,936.89	88.99	-411.67	99.98	13.00	13.00	0.00
9,975.00	6.19	0.07	9,961.81	90.98	-411.66	101.96	13.00	13.00	0.00
10,000.00	9.44	0.07	9,986.57	94.38	-411.66	105.36	13.00	13.00	0.00
10,025.00	12.69	0.07	10,011.10	99.18	-411.65	110.16	13.00	13.00	0.00
10,050.00	15.94	0.07	10,035.33	105.36	-411.65	116.34	13.00	13.00	0.00
10,075.00	19.19	0.07	10,059.16	112.91	-411.64	123.88	13.00	13.00	0.00
10,100.00	22.44	0.07	10,082.52	121.79	-411.63	132.76	13.00	13.00	0.00
10,125.00	25.69	0.07	10,105.34	131.99	-411.62	142.95	13.00	13.00	0.00
10,150.00	28.94	0.07	10,127.55	143.46	-411.60	154.42	13.00	13.00	0.00
10,175.00	32.19	0.07	10,149.08	156.17	-411.59	167.13	13.00	13.00	0.00
10,200.00	35.44	0.07	10,169.84	170.08	-411.57	181.03	13.00	13.00	0.00
10,225.00	38.69	0.07	10,189.79	185.15	-411.56	196.09	13.00	13.00	0.00
10,250.00	41.94	0.07	10,208.85	201.32	-411.54	212.26	13.00	13.00	0.00
10,275.00	45.19	0.07	10,226.96	218.55	-411.52	229.48	13.00	13.00	0.00
10,300.00	48.44	0.07	10,244.07	236.78	-411.50	247.70	13.00	13.00	0.00
10,325.00	51.69	0.07	10,260.11	255.95	-411.48	266.86	13.00	13.00	0.00
10,350.00	54.94	0.07	10,275.04	275.99	-411.45	286.90	13.00	13.00	0.00
10,375.00	58.19	0.07	10,288.81	296.85	-411.43	307.75	13.00	13.00	0.00
10,400.00	61.44	0.07	10,301.38	318.46	-411.41	329.35	13.00	13.00	0.00
10,425.00	64.69	0.07	10,312.70	340.75	-411.38	351.63	13.00	13.00	0.00
10,450.00	67.94	0.07	10,322.74	363.64	-411.35	374.51	13.00	13.00	0.00
10,473.55	71.00	0.07	10,331.00	385.69	-411.33	396.56	13.00	13.00	0.00
Upper Bakken Shale									
10,475.00	71.19	0.07	10,331.47	387.06	-411.33	397.93	13.00	13.00	0.00
10,500.00	74.44	0.07	10,338.85	410.94	-411.30	421.80	13.00	13.00	0.00
10,516.58	76.60	0.07	10,343.00	427.00	-411.28	437.85	13.00	13.00	0.00



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MS Directional Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Top Middle Bakken									
10,525.00	77.69	0.07	10,344.87	435.20	-411.27	446.05	13.00	13.00	0.00
10,550.00	80.94	0.07	10,349.51	459.77	-411.25	470.61	13.00	13.00	0.00
10,575.00	84.19	0.07	10,352.74	484.55	-411.22	495.38	13.00	13.00	0.00
10,600.00	87.44	0.07	10,354.56	509.48	-411.19	520.30	13.00	13.00	0.00
10,620.66	90.13	0.07	10,355.00	530.14	-411.17	540.95	13.00	13.00	0.00
Begin 90.13° Lateral - 7"									
10,700.00	90.13	0.07	10,354.82	609.48	-411.08	620.26	0.00	0.00	0.00
10,800.00	90.13	0.07	10,354.60	709.48	-410.96	720.22	0.00	0.00	0.00
10,900.00	90.13	0.07	10,354.37	809.48	-410.85	820.18	0.00	0.00	0.00
11,000.00	90.13	0.07	10,354.15	909.48	-410.74	920.14	0.00	0.00	0.00
11,100.00	90.13	0.07	10,353.92	1,009.48	-410.62	1,020.10	0.00	0.00	0.00
11,200.00	90.13	0.07	10,353.70	1,109.48	-410.51	1,120.06	0.00	0.00	0.00
11,300.00	90.13	0.07	10,353.47	1,209.48	-410.40	1,220.02	0.00	0.00	0.00
11,400.00	90.13	0.07	10,353.25	1,309.48	-410.28	1,319.98	0.00	0.00	0.00
11,500.00	90.13	0.07	10,353.02	1,409.47	-410.17	1,419.94	0.00	0.00	0.00
11,600.00	90.13	0.07	10,352.80	1,509.47	-410.05	1,519.90	0.00	0.00	0.00
11,700.00	90.13	0.07	10,352.57	1,609.47	-409.94	1,619.87	0.00	0.00	0.00
11,800.00	90.13	0.07	10,352.35	1,709.47	-409.83	1,719.83	0.00	0.00	0.00
11,900.00	90.13	0.07	10,352.12	1,809.47	-409.71	1,819.79	0.00	0.00	0.00
12,000.00	90.13	0.07	10,351.90	1,909.47	-409.60	1,919.75	0.00	0.00	0.00
12,100.00	90.13	0.07	10,351.67	2,009.47	-409.49	2,019.71	0.00	0.00	0.00
12,200.00	90.13	0.07	10,351.45	2,109.47	-409.37	2,119.67	0.00	0.00	0.00
12,300.00	90.13	0.07	10,351.22	2,209.47	-409.26	2,219.63	0.00	0.00	0.00
12,400.00	90.13	0.07	10,351.00	2,309.47	-409.15	2,319.59	0.00	0.00	0.00
12,500.00	90.13	0.07	10,350.77	2,409.47	-409.03	2,419.55	0.00	0.00	0.00
12,600.00	90.13	0.07	10,350.55	2,509.47	-408.92	2,519.51	0.00	0.00	0.00
12,700.00	90.13	0.07	10,350.32	2,609.47	-408.81	2,619.47	0.00	0.00	0.00
12,800.00	90.13	0.07	10,350.10	2,709.47	-408.69	2,719.44	0.00	0.00	0.00
12,900.00	90.13	0.07	10,349.87	2,809.47	-408.58	2,819.40	0.00	0.00	0.00
13,000.00	90.13	0.07	10,349.65	2,909.47	-408.47	2,919.36	0.00	0.00	0.00
13,100.00	90.13	0.07	10,349.42	3,009.47	-408.35	3,019.32	0.00	0.00	0.00
13,200.00	90.13	0.07	10,349.20	3,109.47	-408.24	3,119.28	0.00	0.00	0.00
13,300.00	90.13	0.07	10,348.97	3,209.47	-408.13	3,219.24	0.00	0.00	0.00
13,400.00	90.13	0.07	10,348.75	3,309.47	-408.01	3,319.20	0.00	0.00	0.00
13,500.00	90.13	0.07	10,348.53	3,409.47	-407.90	3,419.16	0.00	0.00	0.00
13,600.00	90.13	0.07	10,348.30	3,509.47	-407.79	3,519.12	0.00	0.00	0.00
13,700.00	90.13	0.07	10,348.08	3,609.47	-407.67	3,619.08	0.00	0.00	0.00
13,800.00	90.13	0.07	10,347.85	3,709.47	-407.56	3,719.04	0.00	0.00	0.00
13,900.00	90.13	0.07	10,347.63	3,809.47	-407.45	3,819.00	0.00	0.00	0.00
14,000.00	90.13	0.07	10,347.40	3,909.47	-407.33	3,918.97	0.00	0.00	0.00
14,100.00	90.13	0.07	10,347.18	4,009.47	-407.22	4,018.93	0.00	0.00	0.00
14,200.00	90.13	0.07	10,346.95	4,109.47	-407.11	4,118.89	0.00	0.00	0.00
14,300.00	90.13	0.07	10,346.73	4,209.47	-406.99	4,218.85	0.00	0.00	0.00
14,400.00	90.13	0.07	10,346.50	4,309.47	-406.88	4,318.81	0.00	0.00	0.00
14,500.00	90.13	0.07	10,346.28	4,409.47	-406.76	4,418.77	0.00	0.00	0.00
14,600.00	90.13	0.07	10,346.05	4,509.47	-406.65	4,518.73	0.00	0.00	0.00
14,700.00	90.13	0.07	10,345.83	4,609.46	-406.54	4,618.69	0.00	0.00	0.00
14,800.00	90.13	0.07	10,345.60	4,709.46	-406.42	4,718.65	0.00	0.00	0.00
14,900.00	90.13	0.07	10,345.38	4,809.46	-406.31	4,818.61	0.00	0.00	0.00
15,000.00	90.13	0.07	10,345.15	4,909.46	-406.20	4,918.57	0.00	0.00	0.00
15,100.00	90.13	0.07	10,344.93	5,009.46	-406.08	5,018.53	0.00	0.00	0.00
15,200.00	90.13	0.07	10,344.70	5,109.46	-405.97	5,118.50	0.00	0.00	0.00
15,300.00	90.13	0.07	10,344.48	5,209.46	-405.86	5,218.46	0.00	0.00	0.00

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MS Directional Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
15,400.00	90.13	0.07	10,344.25	5,309.46	-405.74	5,318.42	0.00	0.00	0.00	
15,500.00	90.13	0.07	10,344.03	5,409.46	-405.63	5,418.38	0.00	0.00	0.00	
15,600.00	90.13	0.07	10,343.80	5,509.46	-405.52	5,518.34	0.00	0.00	0.00	
15,700.00	90.13	0.07	10,343.58	5,609.46	-405.40	5,618.30	0.00	0.00	0.00	
15,800.00	90.13	0.07	10,343.35	5,709.46	-405.29	5,718.26	0.00	0.00	0.00	
15,900.00	90.13	0.07	10,343.13	5,809.46	-405.18	5,818.22	0.00	0.00	0.00	
16,000.00	90.13	0.07	10,342.90	5,909.46	-405.06	5,918.18	0.00	0.00	0.00	
16,100.00	90.13	0.07	10,342.68	6,009.46	-404.95	6,018.14	0.00	0.00	0.00	
16,200.00	90.13	0.07	10,342.45	6,109.46	-404.84	6,118.10	0.00	0.00	0.00	
16,300.00	90.13	0.07	10,342.23	6,209.46	-404.72	6,218.07	0.00	0.00	0.00	
16,400.00	90.13	0.07	10,342.00	6,309.46	-404.61	6,318.03	0.00	0.00	0.00	
16,500.00	90.13	0.07	10,341.78	6,409.46	-404.50	6,417.99	0.00	0.00	0.00	
16,600.00	90.13	0.07	10,341.55	6,509.46	-404.38	6,517.95	0.00	0.00	0.00	
16,700.00	90.13	0.07	10,341.33	6,609.46	-404.27	6,617.91	0.00	0.00	0.00	
16,800.00	90.13	0.07	10,341.10	6,709.46	-404.16	6,717.87	0.00	0.00	0.00	
16,900.00	90.13	0.07	10,340.88	6,809.46	-404.04	6,817.83	0.00	0.00	0.00	
17,000.00	90.13	0.07	10,340.65	6,909.46	-403.93	6,917.79	0.00	0.00	0.00	
17,100.00	90.13	0.07	10,340.43	7,009.46	-403.82	7,017.75	0.00	0.00	0.00	
17,200.00	90.13	0.07	10,340.20	7,109.46	-403.70	7,117.71	0.00	0.00	0.00	
17,300.00	90.13	0.07	10,339.98	7,209.46	-403.59	7,217.67	0.00	0.00	0.00	
17,400.00	90.13	0.07	10,339.75	7,309.46	-403.47	7,317.63	0.00	0.00	0.00	
17,500.00	90.13	0.07	10,339.53	7,409.46	-403.36	7,417.60	0.00	0.00	0.00	
17,600.00	90.13	0.07	10,339.30	7,509.46	-403.25	7,517.56	0.00	0.00	0.00	
17,700.00	90.13	0.07	10,339.08	7,609.46	-403.13	7,617.52	0.00	0.00	0.00	
17,800.00	90.13	0.07	10,338.85	7,709.45	-403.02	7,717.48	0.00	0.00	0.00	
17,900.00	90.13	0.07	10,338.63	7,809.45	-402.91	7,817.44	0.00	0.00	0.00	
18,000.00	90.13	0.07	10,338.41	7,909.45	-402.79	7,917.40	0.00	0.00	0.00	
18,100.00	90.13	0.07	10,338.18	8,009.45	-402.68	8,017.36	0.00	0.00	0.00	
18,200.00	90.13	0.07	10,337.96	8,109.45	-402.57	8,117.32	0.00	0.00	0.00	
18,300.00	90.13	0.07	10,337.73	8,209.45	-402.45	8,217.28	0.00	0.00	0.00	
18,400.00	90.13	0.07	10,337.51	8,309.45	-402.34	8,317.24	0.00	0.00	0.00	
18,500.00	90.13	0.07	10,337.28	8,409.45	-402.23	8,417.20	0.00	0.00	0.00	
18,600.00	90.13	0.07	10,337.06	8,509.45	-402.11	8,517.16	0.00	0.00	0.00	
18,700.00	90.13	0.07	10,336.83	8,609.45	-402.00	8,617.13	0.00	0.00	0.00	
18,800.00	90.13	0.07	10,336.61	8,709.45	-401.89	8,717.09	0.00	0.00	0.00	
18,900.00	90.13	0.07	10,336.38	8,809.45	-401.77	8,817.05	0.00	0.00	0.00	
19,000.00	90.13	0.07	10,336.16	8,909.45	-401.66	8,917.01	0.00	0.00	0.00	
19,100.00	90.13	0.07	10,335.93	9,009.45	-401.55	9,016.97	0.00	0.00	0.00	
19,200.00	90.13	0.07	10,335.71	9,109.45	-401.43	9,116.93	0.00	0.00	0.00	
19,300.00	90.13	0.07	10,335.48	9,209.45	-401.32	9,216.89	0.00	0.00	0.00	
19,400.00	90.13	0.07	10,335.26	9,309.45	-401.21	9,316.85	0.00	0.00	0.00	
19,500.00	90.13	0.07	10,335.03	9,409.45	-401.09	9,416.81	0.00	0.00	0.00	
19,600.00	90.13	0.07	10,334.81	9,509.45	-400.98	9,516.77	0.00	0.00	0.00	
19,700.00	90.13	0.07	10,334.58	9,609.45	-400.87	9,616.73	0.00	0.00	0.00	
19,800.00	90.13	0.07	10,334.36	9,709.45	-400.75	9,716.69	0.00	0.00	0.00	
19,900.00	90.13	0.07	10,334.13	9,809.45	-400.64	9,816.66	0.00	0.00	0.00	
20,000.00	90.13	0.07	10,333.91	9,909.45	-400.53	9,916.62	0.00	0.00	0.00	
20,100.00	90.13	0.07	10,333.68	10,009.45	-400.41	10,016.58	0.00	0.00	0.00	
20,200.00	90.13	0.07	10,333.46	10,109.45	-400.30	10,116.54	0.00	0.00	0.00	
20,300.00	90.13	0.07	10,333.23	10,209.45	-400.18	10,216.50	0.00	0.00	0.00	
20,400.00	90.13	0.07	10,333.01	10,309.45	-400.07	10,316.46	0.00	0.00	0.00	
20,500.00	90.13	0.07	10,332.78	10,409.45	-399.96	10,416.42	0.00	0.00	0.00	
20,600.00	90.13	0.07	10,332.56	10,509.45	-399.84	10,516.38	0.00	0.00	0.00	
20,700.00	90.13	0.07	10,332.33	10,609.45	-399.73	10,616.34	0.00	0.00	0.00	

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MS Directional
Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,800.00	90.13	0.07	10,332.11	10,709.45	-399.62	10,716.30	0.00	0.00	0.00
20,900.00	90.13	0.07	10,331.88	10,809.45	-399.50	10,816.26	0.00	0.00	0.00
21,000.00	90.13	0.07	10,331.66	10,909.44	-399.39	10,916.23	0.00	0.00	0.00
21,100.00	90.13	0.07	10,331.43	11,009.44	-399.28	11,016.19	0.00	0.00	0.00
21,200.00	90.13	0.07	10,331.21	11,109.44	-399.16	11,116.15	0.00	0.00	0.00
21,300.00	90.13	0.07	10,330.98	11,209.44	-399.05	11,216.11	0.00	0.00	0.00
21,400.00	90.13	0.07	10,330.76	11,309.44	-398.94	11,316.07	0.00	0.00	0.00
21,500.00	90.13	0.07	10,330.53	11,409.44	-398.82	11,416.03	0.00	0.00	0.00
21,600.00	90.13	0.07	10,330.31	11,509.44	-398.71	11,515.99	0.00	0.00	0.00
21,700.00	90.13	0.07	10,330.08	11,609.44	-398.60	11,615.95	0.00	0.00	0.00
21,800.00	90.13	0.07	10,329.86	11,709.44	-398.48	11,715.91	0.00	0.00	0.00
21,900.00	90.13	0.07	10,329.63	11,809.44	-398.37	11,815.87	0.00	0.00	0.00
22,000.00	90.13	0.07	10,329.41	11,909.44	-398.26	11,915.83	0.00	0.00	0.00
22,100.00	90.13	0.07	10,329.18	12,009.44	-398.14	12,015.79	0.00	0.00	0.00
22,200.00	90.13	0.07	10,328.96	12,109.44	-398.03	12,115.76	0.00	0.00	0.00
22,300.00	90.13	0.07	10,328.74	12,209.44	-397.92	12,215.72	0.00	0.00	0.00
22,400.00	90.13	0.07	10,328.51	12,309.44	-397.80	12,315.68	0.00	0.00	0.00
22,500.00	90.13	0.07	10,328.29	12,409.44	-397.69	12,415.64	0.00	0.00	0.00
22,600.00	90.13	0.07	10,328.06	12,509.44	-397.58	12,515.60	0.00	0.00	0.00
22,700.00	90.13	0.07	10,327.84	12,609.44	-397.46	12,615.56	0.00	0.00	0.00
22,800.00	90.13	0.07	10,327.61	12,709.44	-397.35	12,715.52	0.00	0.00	0.00
22,900.00	90.13	0.07	10,327.39	12,809.44	-397.24	12,815.48	0.00	0.00	0.00
23,000.00	90.13	0.07	10,327.16	12,909.44	-397.12	12,915.44	0.00	0.00	0.00
23,100.00	90.13	0.07	10,326.94	13,009.44	-397.01	13,015.40	0.00	0.00	0.00
23,200.00	90.13	0.07	10,326.71	13,109.44	-396.89	13,115.36	0.00	0.00	0.00
23,300.00	90.13	0.07	10,326.49	13,209.44	-396.78	13,215.32	0.00	0.00	0.00
23,400.00	90.13	0.07	10,326.26	13,309.44	-396.67	13,315.29	0.00	0.00	0.00
23,500.00	90.13	0.07	10,326.04	13,409.44	-396.55	13,415.25	0.00	0.00	0.00
23,600.00	90.13	0.07	10,325.81	13,509.44	-396.44	13,515.21	0.00	0.00	0.00
23,700.00	90.13	0.07	10,325.59	13,609.44	-396.33	13,615.17	0.00	0.00	0.00
23,800.00	90.13	0.07	10,325.36	13,709.44	-396.21	13,715.13	0.00	0.00	0.00
23,900.00	90.13	0.07	10,325.14	13,809.44	-396.10	13,815.09	0.00	0.00	0.00
24,000.00	90.13	0.07	10,324.91	13,909.44	-395.99	13,915.05	0.00	0.00	0.00
24,100.00	90.13	0.07	10,324.69	14,009.44	-395.87	14,015.01	0.00	0.00	0.00
24,200.00	90.13	0.07	10,324.46	14,109.43	-395.76	14,114.97	0.00	0.00	0.00
24,300.00	90.13	0.07	10,324.24	14,209.43	-395.65	14,214.93	0.00	0.00	0.00
24,400.00	90.13	0.07	10,324.01	14,309.43	-395.53	14,314.89	0.00	0.00	0.00
24,500.00	90.13	0.07	10,323.79	14,409.43	-395.42	14,414.86	0.00	0.00	0.00
24,600.00	90.13	0.07	10,323.56	14,509.43	-395.31	14,514.82	0.00	0.00	0.00
24,700.00	90.13	0.07	10,323.34	14,609.43	-395.19	14,614.78	0.00	0.00	0.00
24,800.00	90.13	0.07	10,323.11	14,709.43	-395.08	14,714.74	0.00	0.00	0.00
24,850.14	90.13	0.07	10,323.00	14,759.57	-395.02	14,764.86	0.00	0.00	0.00
PDHL									

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MS Directional
Planning Report



Database:	EDM 5000.14 Conroe Db	Local Co-ordinate Reference:	Well Rowin 17-5 #3H
Company:	Kraken Oil & Gas	TVD Reference:	WELL @ 2054.90usft (Nabors B17)
Project:	Richland County, Montana (NAD 83)	MD Reference:	WELL @ 2054.90usft (Nabors B17)
Site:	Rowin Pad	North Reference:	True
Well:	Rowin 17-5 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Rowin 17-5 #3H - plan hits target center - Point	0.00	0.00	10,323.00	14,759.57	-395.02	1,425,814.93	3,280,437.64	48° 2' 15.486 N	104° 7' 51.619 W
LP - Rowin 17-5 #3H - plan hits target center - Point	0.00	0.00	10,355.00	530.14	-411.17	1,411,617.83	3,281,396.45	47° 59' 54.999 N	104° 7' 51.852 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
10,620.66	10,355.00	7"	7	8-3/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,528.83	4,525.00	Greenhorn			
4,933.70	4,929.00	Mowry (Top Dakota)			
5,114.09	5,109.00	Newcastle			
5,353.80	5,348.00	Inyan Kara			
5,876.73	5,870.00	Swift			
6,925.99	6,917.00	Spearfish			
7,419.05	7,409.00	Amsden			
7,615.47	7,605.00	Tyler			
8,132.59	8,121.00	Kibbey Lime			
8,287.92	8,276.00	Madison (Charles)			
8,814.73	8,802.00	Ratcliffe			
8,863.78	8,851.00	Base of Last Salt			
9,124.96	9,112.00	Mission Canyon			
9,578.09	9,565.00	Lodgepole			
10,473.55	10,331.00	Upper Bakken Shale			
10,516.58	10,343.00	Top Middle Bakken			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,500.00	2,500.00	0.00	0.00	KOP, 1.00°/100' Build
2,876.27	2,876.00	2.59	-12.07	Hold 3.76° Inc, 282.12° Azm
8,287.92	8,276.00	77.12	-359.08	Begin 0.23°/100' Drop
9,927.36	9,914.26	88.41	-411.67	Begin 13.00°/100' Build
10,620.66	10,355.00	530.14	-411.17	Begin 90.13° Lateral
24,850.14	10,323.00	14,759.57	-395.02	PBHL

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MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS

MONTANA BOARD OF OIL AND GAS ATTACHMENT TO APD "CONDITIONS OF APPROVAL"

A. If gravel, sand or coal is encountered while constructing the cuttings pit the following must be done:

1. Contact BOGC field inspector for recommendations.
2. If rathole and mousehole encounter gravel. Rathole and mousehole must have a steel liner cemented in, notify field inspector.

B. Surface casing must be set at least 50' into the Pierre Shale.

C. 36.22.703 HORIZONTAL WELLS

(5) Within 30 days after completion of a horizontal well, the operator must file with the board a complete and accurate directional survey showing the location, direction, and length of each horizontal drainhole and demonstrating that all drainholes are at locations permitted by this rule or by a board location exception order.

D. 36.22.1005 DRILLING WASTE DISPOSAL AND SURFACE RESTORATION

(1) The operator of a drilling well must contain and dispose of all solid waste and produced fluids that accumulate during drilling operations so as not to degrade surface water, groundwater, or cause harm to soils. Said waste and fluids must be disposed of in accordance with all applicable local, state and federal laws and regulations.

(2) When a salt-based or oil-based drilling fluid is used to drill a well located within a floodplain, as defined by ARM 36.15.101, or in irrigated cropland, drilling waste and produced fluids that accumulate during drilling operations must be disposed of off-site in a manner allowed by local, state, and federal laws and regulations unless an alternative on-site disposal method is approved in writing by the board administrator.

(3) The operator of a drilling well must construct, close, and restore any reserve pits in a manner that will prevent harm to the soil and will not degrade surface waters or groundwater. When a salt-based or oil-based drilling fluid is used, the reserve pit must be lined with a synthetic liner approved by the board administrator.

(4) Within 10 days after the cessation of drilling or completion operations, all hydrocarbons must be removed from earthen pits used in association with drilling or completion operations or such pits must be fenced, screened, and netted. Such pits that contain water with more than 15,000 parts per million total dissolved solids or salt-based drilling fluids must be fenced within 90 days after the cessation of drilling and completion operations.

(5) Earthen pits used in association with drilling and completion operations must not be used for the disposal of any additional fluids or materials after the cessation of drilling and completion operations.

(6) All earthen pits used in association with drilling and completion operations must be closed and the surface restored according to board specifications within one year after the cessation of drilling operations. Upon written application by the operator, an exception to the one-year pit closure requirement may be granted in writing by the board administrator upon a showing that:

(a) no dumping or disposal of waste or fluids in the pit will occur; and

(b) delayed closure of the pit will not present a risk of contamination to soils or water or a hazard to animals or persons.

History: Sec. 82-11-111, MCA; IMP, Sec. 82-11-123 and Sec. 82-11-124, MCA; Eff. 12/31/72; AMD, Eff. 7/5/75; AMD, 1992 MAR p. 654, Eff. 4/1/92

AFFIDAVIT OF PUBLICATION

Kelly Miller, being first duly sworn, deposes and says that she is the Publisher of the Sidney Herald newspaper printed and published two days a week in the City of Sidney, County of Richland, State of Montana. That the notice, a copy of which is hereto attached and submitted by:

KRAKEN OPERATING LLC (CORP)
ATTN: RAY NOAH
9805 KATY FREEWAY SUITE 300
HOUSTON TX 77024

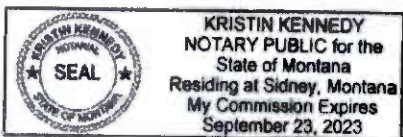
was printed and published in the regular and entire issue of said Sidney Herald, 310 2nd Ave NE, Sidney, MT 59270, 406-443-2403, for 1 issues, that said publication was made on the following dates to with:

06/17/2020

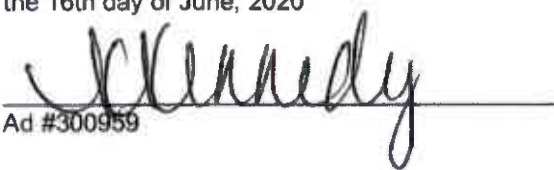


Kelly Miller

State of Montana)
) SS
County of Richland)



Subscribed and sworn before me
the 16th day of June, 2020


Ad #300959

BEFORE THE BOARD OF OIL AND GAS CONSERVATION OF THE STATE OF MONTANA

In the Matter of the application of **Kraken Operating LLC** for a Permit to Drill an oil and gas well.

NOTICE OF INTENTION TO APPLY FOR PERMIT TO DRILL OIL AND GAS WELL

1. Name and address of Applicant:
Kraken Operating LLC
9805 Katy Freeway, Suite 300
Houston, TX 77024

2. Legal Description including County and Approximate Footages of Surface Location of Proposed Oil and Gas Well: (and projected bottom-hole location, if a directional or horizontal well)
Surface Loc: NE NW Section 20, T26N, R59E, Richland County, MT. Footages: 325' FNL, 2303' FWL. EI: 2,030'

Bottom Hole Location: SE NW Section 5, T26N, R59E, Richland County, MT. Footages: 1427' FNL, 1890' FWL

3. Total Depth Proposed to be Drilled:
24,850' Measured Depth,
10,323' TVD

Notice is hereby given that an application for permit to drill an oil and gas well at the surface location set forth above to the depth as stated will be filed with the Montana Board of Oil and Gas Conservation. Pursuant to Rules 36.22.601 and 36.22.604, Administrative Rules of Montana, an interested party may demand an opportunity to be heard by the Montana Board of Oil and Gas Conservation concerning the application. **SUCH DEMAND FOR HEARING MUST BE RECEIVED BY THE MONTANA BOARD OF OIL AND GAS CONSERVATION AT THE ADDRESS SET FORTH BELOW NO LATER THAN TEN (10) DAYS AFTER THE DATE OF PUBLICATION OF THIS NOTICE, OR THE APPLICATION WILL BE ACTED UPON BY THE BOARD'S PETROLEUM ENGINEER WITHOUT HEARING. A DEMAND MUST: (1) SET FORTH THE NAME, ADDRESS AND TELEPHONE NUMBER OF EACH INTERESTED PARTY, THEIR OWNERSHIP INTEREST IN THE LANDS SURROUNDING THE PROPOSED WELL, AND THE REASONS WHY A HEARING IS SOUGHT; (2) BE SERVED UPON THE APPLICANT BY COPY MAILED OR FAX TRANSMITTED TO THE ADDRESS SET FORTH ABOVE.**

Montana Board of Oil and Gas Conservation

2535 St. Johns Avenue
Billings MT 59102
Office: (406) 856-0040
Fax: (406) 856-6015
MNAXLP - Publish June 17, 2020
300959

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JUL 21 2020

MONTANA BOARD OF OIL & GAS CONSERVATION • BILLINGS

Order Number : 20473465
 PO Number :
 Customer : 60034583 Kraken Operating, LLC
 Contact : Matt Bauerschlag
 Address1 : 9821 Katy Freeway
 Address2 : Suite 460
 City St Zip : Houston TX 77024
 Phone :
 Fax :
 Printed By : Crystal Gray
 Entered By : Crystal Gray
 Keywords : BEFORE THE BOARD OF OIL AND GAS CONSERVATION OF TH
 Notes :
 Zones :

Ad Number : 11039259
 Ad Key :
 Salesperson : Legal - Legals - Helena
 Publication : Independent Record On-Line
 Section : Class Section
 Sub Section : Legal
 Category : 9999 Legals
 Dates Run : 06/17/2020-06/17/2020
 Days : 1
 Size : 2 x 5.33, 48 lines
 Words : 336
 Ad Rate : Legal Line
 Ad Price : 182.44
 Amount Paid : 0.00
 Amount Due : 182.44

June 17, 2020

MNAXLP

AFFIDAVIT OF PUBLICATION

**STATE OF MONTANA,
 County of Lewis & Clark**

Crystal Gray

Being duly sworn, deposes and says;

That she is the principal clerk of the Independent Record, a newspaper of general circulation published daily in the City of Helena, in the County of Lewis & Clark, State of Montana, and has charge of the advertisement thereof:
 That the Notice for Permit to Drill

a true copy of which is hereto annexed, was published in said newspaper on the following dates: viz.:

June 17, 2020

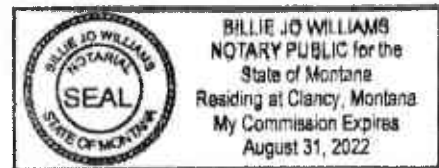
making in all 1 publication(s)

Subscribed and sworn to me this 17 day of June, 2020.

Notary Public for the State of Montana

Printed Name: Billie Jo Williams
 Residing at Clancy, Montana 59634
 My commission expires August 31, 2022

(Notary Seal)



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**MONTANA BOARD OF OIL &
 GAS CONSERVATION • BILLINGS**

Page : 1 of 2 06/12/2020 15:40:07
 Order Number : 20473465
 PO Number :
 Customer : 60034583 Kraken Operating, LLC
 Contact : Matt Bauerschlag
 Address1 : 9821 Katy Freeway
 Address2 : Suite 460
 City St Zip : Houston TX 77024
 Phone : (713) 360-7705
 Fax :
 Printed By : Crystal Gray
 Entered By : Crystal Gray
 Keywords : BEFORE THE BOARD OF OIL AND GAS CONSERVATION OF TH
 Notes :
 Zones :

Ad Number : 11039259
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 Salesperson : Legal - Legals - Helena
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 OF THE STATE OF MONTANA
 NOTICE OF INTENTION TO APPLY
 FOR PERMIT TO DRILL
 OIL AND GAS WELL

In the Matter of the application of
Kraken Operating LLC
 for a Permit to Drill an oil and gas well.

1. Name and address of Applicant:

Kraken Operating LLC
9805 Katy Freeway, Suite 300
Houston, TX 77024

2. Legal Description including County and Approximate Footages
 of Surface Location of Proposed Oil and Gas Well:
 (and projected bottom-hole location, if a directional or horizontal
 well)

Surface Loc: NE NW Section 20, T26N, R59E, Richland
County, MT. Footages: 325' FNL, 2303' FWL. EI: 2,030'

Bottom Hole Location: SE NW Section 5, T26N, R59E,
Richland County, MT. Footages: 1427' FNL, 1890' FWL

3. Total Depth Proposed to be Drilled:

24,850' Measured Depth, 10,323' TVD

Notice is hereby given that an application for permit to drill an oil
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 to the depth as stated will be filed with the Montana Board of Oil
 and Gas Conservation. Pursuant to Rules 36.22.601
 and 36.22.604, Administrative Rules of Montana, an interested
 party may demand an opportunity to be heard by the Montana
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 SUCH DEMAND FOR HEARING MUST BE RECEIVED BY THE
 MONTANA BOARD OF OIL AND GAS CONSERVATION AT
 THE ADDRESS SET FORTH BELOW NO LATER THAN TEN
 (10) DAYS AFTER THE DATE OF PUBLICATION OF THIS NO-
 TICE, OR THE APPLICATION WILL BE ACTED UPON BY THE
 BOARD'S PETROLEUM ENGINEER WITHOUT HEARING. A
 DEMAND MUST: (1) SET FORTH THE NAME, ADDRESS AND
 TELEPHONE NUMBER OF EACH INTERESTED PARTY,
 THEIR OWNERSHIP INTEREST IN THE LANDS SURROUND-
 ING THE PROPOSED WELL, AND THE REASONS WHY A
 HEARING IS SOUGHT; (2) BE SERVED UPON THE APPLI-
 CANT BY COPY MAILED OR FAX TRANSMITTED TO THE
 ADDRESS SET FORTH ABOVE.

Montana Board of Oil and Gas Conservation

2535 St. Johns Avenue
 Billings MT 59102
 Office: (406) 656-0040
 Fax: (406) 655-6015

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MONTANA BOARD OF OIL &
 GAS CONSERVATION • BILLINGS

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NOV 02 2020

Submit In Quadruplicate To:

**MONTANA BOARD OF OIL AND GAS CONSERVATION
2535 ST. JOHNS AVENUE
BILLINGS, MONTANA 59102**

**MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS**

SUNDRY NOTICES AND REPORT OF WELLS

Operator Kraken Operating, LLC		Lease Name: Rowin 17-5
Address 9805 Katy Freeway, Ste. 300		Type (Private/State/Federal/Tribal/Allotted): Private
City Houston	State TX	Well Number: #3H
Zip Code 77024	Telephone (713) 360-7705	Unit Agreement Name: Rowin
Location of well (1/4-1/4 section and footage measurements): NENW Sec. 20, 325 FNL 2303 FWL		Field Name or Wildcat: Wildcat
API Number: 25 083 23398		Township, Range, and Section: 20 26N-59E Secs. 3, 8 & 17
State 25	County 083	County: Richland
Well 23398	Well Type (oil, gas, injection, other): Oil	

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans	<input type="checkbox"/>	Subsequent Report of Mechanical Integrity Test	<input type="checkbox"/>
Notice of Intention to Run Mechanical Integrity Test	<input type="checkbox"/>	Subsequent Report of Stimulation or Treatment	<input type="checkbox"/>
Notice of Intention to Stimulate or to Chemically Treat	<input checked="" type="checkbox"/>	Subsequent Report of Perforation or Cementing	<input type="checkbox"/>
Notice of Intention to Perforate or to Cement	<input type="checkbox"/>	Subsequent Report of Well Abandonment	<input type="checkbox"/>
Notice of Intention to Abandon Well	<input type="checkbox"/>	Subsequent Report of Pulled or Altered Casing	<input type="checkbox"/>
Notice of Intention to Pull or Alter Casing	<input type="checkbox"/>	Subsequent Report of Drilling Waste Disposal	<input type="checkbox"/>
Notice of Intention to Change Well Status	<input type="checkbox"/>	Subsequent Report of Production Waste Disposal	<input type="checkbox"/>
Supplemental Well History	<input type="checkbox"/>	Subsequent Report of Change in Well Status	<input type="checkbox"/>
Other (specify) _____	<input type="checkbox"/>	Subsequent Report of Gas Analysis (ARM 36.22.1222)	<input type="checkbox"/>

Describe Proposed or Completed Operations:

Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

The Rowin 17-5 #3H well completion operations are anticipated to begin on November 10th, 2020 with flowback anticipated to begin on December 17th, 2020.

BOARD USE ONLY	
Approved NOV 04 2020	Date
	Name
	Title

The undersigned hereby certifies that the information contained on this application is true and correct:

10-29-20 Date

 Signed Agent)

Ray Noah - Regulatory Team Lead
Print Name and Title

Telephone: **830-446-9055**

SUPPLEMENTAL INFORMATION

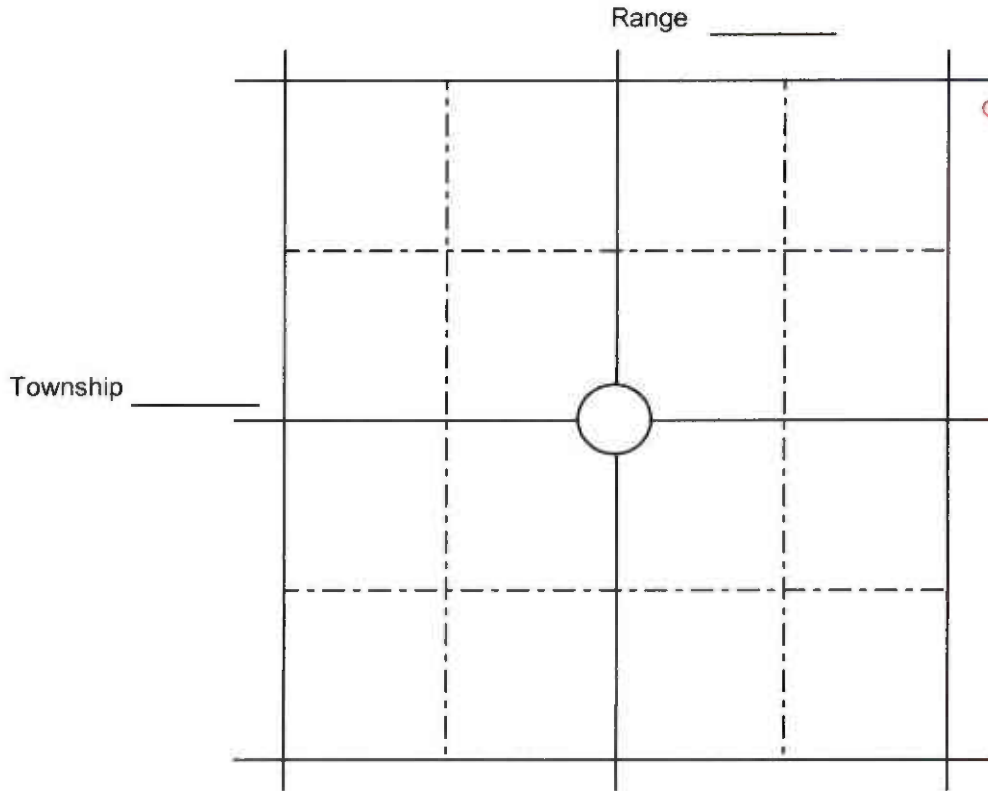
NOTE: Additional information or attachments may be required by Rule or by special request.

Plot the location of the well or site that is the subject of this notice or report.

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NOV 02 2020

**MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS**



BOARD USE ONLY

CONDITIONS OF APPROVAL

The operator must comply with the following condition(s) of approval:

Failure to comply with the conditions of approval may void this permit.

08323398 P-0023386



Company: Kraken Oil & Gas
 Well: Rowin 17-5 #3H
 County: Richland County, Montana (NAD 83)
 Rig: Nabors B22
 Wellbore: Wellbore #1
 Design: Design #1
 Date: 14:16, October 05 2020

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Montana
 System Datum: Mean Sea Level



Azimuths to True North
 Magnetic North 8.27°

Magnetic Field
 Strength 55522.3nT
 Dip Angle 72.52°
 Date 9/28/2020
 Model HICM0000

To convert a Magnetic Direction to a Grid Direction, Add 4.338°
 To convert a Magnetic Direction to a True Direction, Add 8.267° East
 To convert a True Direction to a Grid Direction, Subtract 3.929°

SHL: 325' FSL & 2303' FWL Sec 20 - T26N - R59E

LP: 205' FSL & 1890' FWL Sec 17 - T26N - R59E

PBHL: 1427' FNL & 1890' FWL Sec 5 - T26N - R59E

CASING DETAILS

TVD	MD	Name	Size
10355.00	10620.66	7"	7"



Actual BHL: 1466.74' FNL & 1904.09' FWL Sec 5 - T26N - R59E

WELL DETAILS: Rowin 17-5 #3H

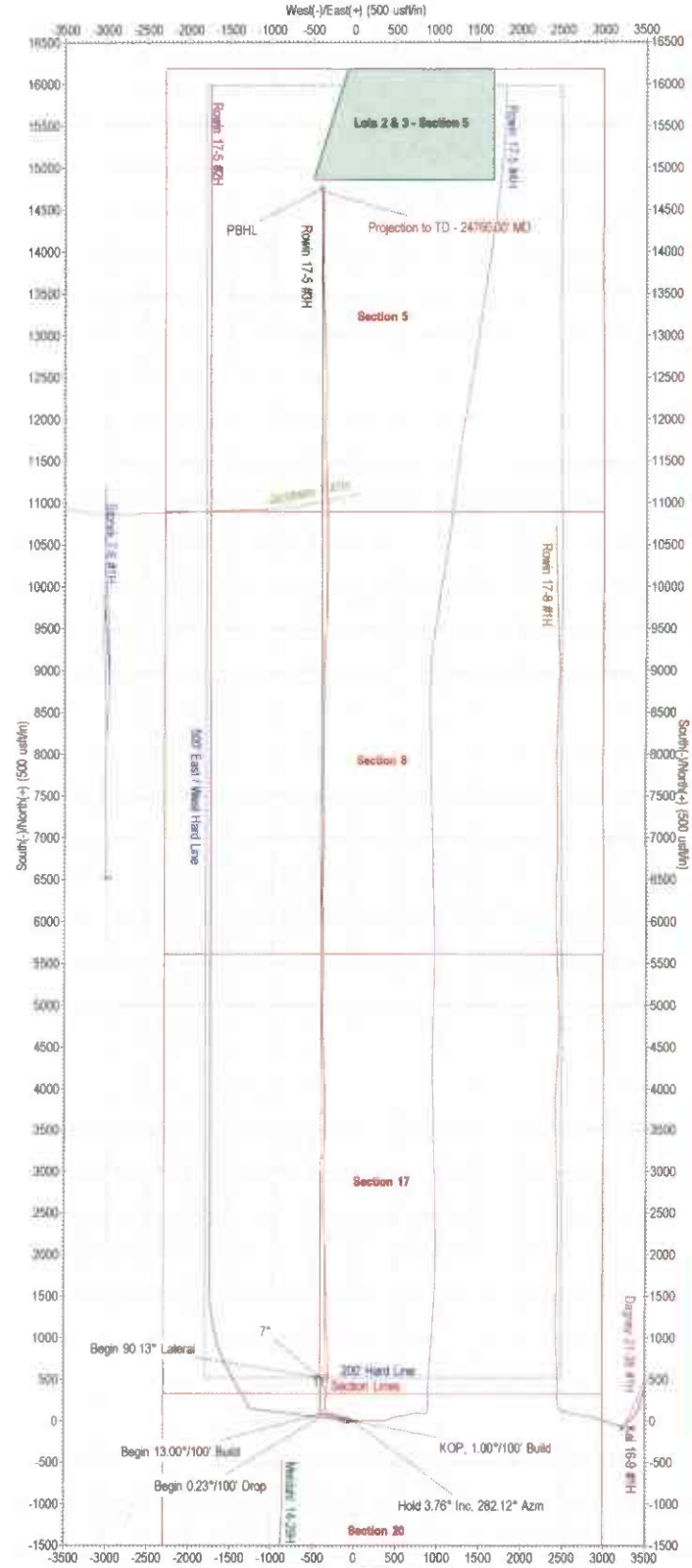
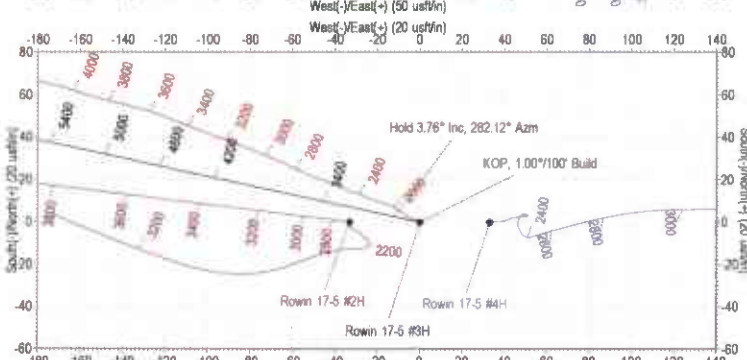
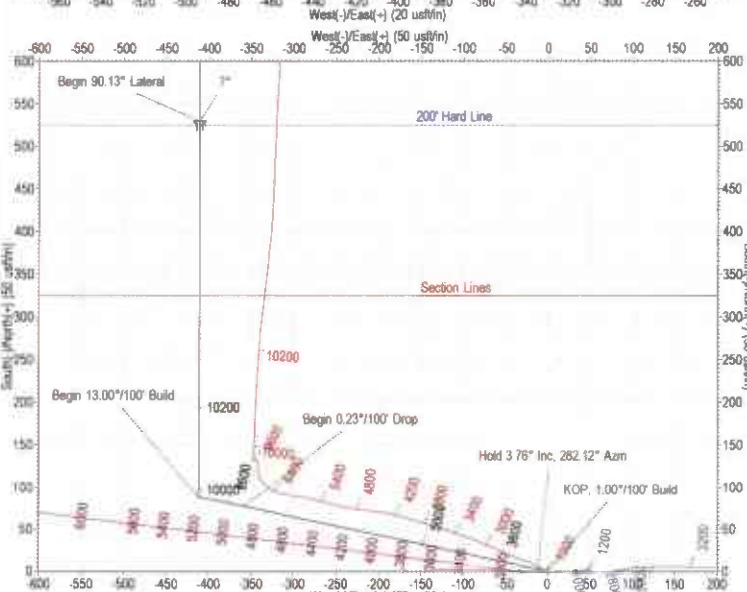
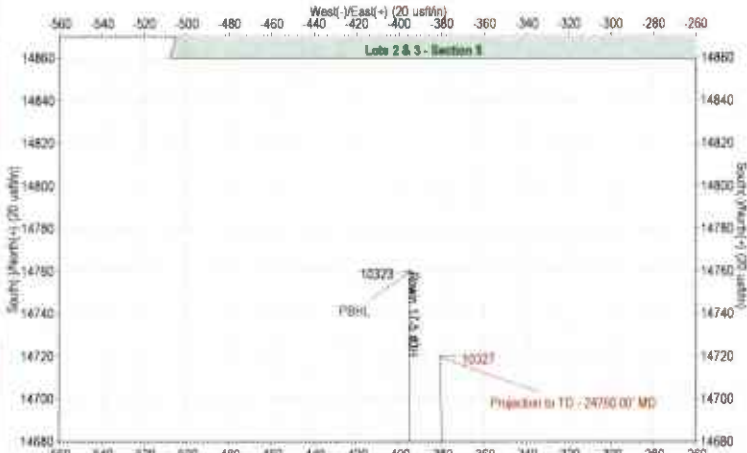
+N-S	-E-W	GL @ 2026.90	WELL @ 2054.30 (Nabors B22)	Longitude
0.00	0.00	1411117.10	1411117.83	104° 7' 51.852 W
Northing	Easting	Latitude	Longitude	
1411117.10	3281842.97	47° 59' 49.765 N	104° 7' 51.852 W	

DESIGN TARGET DETAILS

Name	TVD	+N-S	-E-W	Northing	Easting	Latitude	Longitude
LP - Rowin 17-5 #3H	10355.00	530.14	-411.17	1411617.83	3281396.45	47° 59' 54.999 N	104° 7' 51.852 W
PBHL - Rowin 17-5 #3H	10323.00	14759.58	-385.02	1425814.93	3280437.64	48° 2' 15.486 N	104° 7' 51.619 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	-E-W	Diag	TFace	VFace	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	0.00	KOP, 1.00°/100' Build
2876.27	3.76	282.12	2876.00	2.59	-12.07	1.00	282.121	2.91	Hold 3.76° Inc, 282.12° Azm
8287.92	3.76	282.12	8276.00	77.12	-358.08	0.00	0.000	86.70	Begin 0.23°/100' Drop
9927.36	0.00	0.00	9914.26	88.41	-411.67	0.23	180.000	99.40	Begin 13.00°/100' Build
10620.66	90.13	0.07	10355.00	530.14	-411.17	13.00	0.065	540.95	Begin 90.13° Lateral
24850.14	90.13	0.07	10323.00	14759.58	-395.02	0.00	0.000	14764.66	PBHL



Any decisions made or wells drilled utilizing this or any other information supplied by MS Directional are at the sole risk and responsibility of the customer. MS Directional is not responsible for the accuracy of the schematic or the information contained herein. The customer should only rely on this document after independently verifying all calls, targets, coordinates, lease and hard lines represented.

CHECKLIST ENVIRONMENTAL ASSESSMENT

Proposed Action: Approve Drilling Permit (Form 22)

Project/Well Name: Rowin 17-5 #3H

Operator: Kraken Operating LLC

Location: NE NW Section 20 T26N R59E

County: Richland MT; **Field (or Wildcat):** Wildcat

Proposed Project Date: 1/01/2021

I. DESCRIPTION OF ACTION

Triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 24,850' MD/10,323'TVD.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED

Montana Bureau of Mines and Geology, GWIC website (Richland County Wells).

US Fish and Wildlife, Region 6 website
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Richland County

Montana Natural Heritage Program Website (FWP)
Heritage State Rank= S1, S2, S3, T26N R59E

Montana Cadastral Website
Surface Ownership and surface use Section 20 T26N R59E

Montana Department of Natural Resources MEPA Submittal

2. ALTERNATIVES CONSIDERED

No Action Alternative: The proposed well would not be drilled.

Action Alternative: Kraken Operating LLC would have permission to drill the well.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

3. AIR QUALITY

Long drilling time: No, 10-15 days.
Unusually deep drilling (high horsepower rig): No

Possible H₂S gas production: Potentially in Mississippian formations.
In/near Class I air quality area: No.
Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211. AQB review.

Comments: No special concerns – Using triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 24,850' MD/10,323' TVD. If there are no gas gathering systems nearby, associated gas can be flared under Board Rule 36.22.1220.

4. WATER QUALITY

Salt/oil based mud: Will drill with oil based invert drilling fluids for the intermediate casing hole. Horizontal hole will be drilled with saltwater. Surface casing hole will be drilled with freshwater and freshwater mud system, Rule 36.22.100.1

High water table: No.

Surface drainage leads to live water: Potentially, Berry Creek is located about 1/5 of a mile to the west.

Water well contamination: None, all wells are ½ of a mile or farther from this location. This proposed oil well will be drilled with freshwater and freshwater mud to 2,055' and steel surface casing will be run and cemented to surface to protect groundwater.

Porous/permeable soils: No, sandy silty clay soils.

Class I stream drainage: Closest Class I stream drainage is the Missouri River, about 1.3 miles to the northeast from this location.

Groundwater vulnerability area: No.

Mitigation:

- Lined reserve pit
- Adequate surface casing
- Berms/dykes, re-routed drainage
- Closed mud system
- Off-site disposal of solids/liquids (in approved facility)

Other:

Comments: Steel surface casing will be run and cemented to surface to protect ground water. (Rule 36.22.1001).

Comments: 2,055' surface casing will be drilled with freshwater, steel casing will be run to 2,055' and cemented back to surface, to protect freshwater zones in adjacent water wells, Rule 36.22.1001. Also, covering Fox Hills aquifer. Adequate surface casing and BOP equipment to prevent problems, (5,000 psi annular and double ram), Rule 36.22.1014.)

5. SOILS/VEGETATION/LAND USE

Vegetation: Grassland.

Stream crossings: None anticipated.

High erosion potential: Possible erosion potential, medium cut of up to 12.4' and a small fill of up to 3.1', required.

Loss of soil productivity: No, location will be restored after drilling if unproductive.

Unusually large wellsite (Describe dimensions): A large well site 465'X450' required for a three well pad.

Damage to improvements: Slight.

Conflict with existing land use/values:

Mitigation

Avoid improvements (topographic tolerance)

Exception location requested

Stockpile topsoil

Stream Crossing Permit (other agency review)

Reclaim unused part of wellsite if productive

Special construction methods to enhance reclamation

Access Road: Access will be over existing county road #147 and County Road 351. A new access of 3,123' will be built into location.

Drilling fluids/solids: Oil based invert drilling fluids will be recycled. Completion fluids will be hauled to a commercial Class II disposal. Cuttings will be disposed of off site.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: Closes residences are located about 1 mile to the north and multiple about 1.1 miles to the southeast. The town of Fairview, MT is about 13.9 road miles to the southeast.

Possibility of H2S: Possibility in Mississippian formations.

Size of rig/length of drilling time: 10-15 days.

Mitigation:

Proper BOP equipment

Topographic sound barriers

H2S contingency and/or evacuation plan

Special equipment/procedures requirements

Other:

7. WILDLIFE/RECREATION

Sage Grouse: No.

Proximity to sensitive wildlife areas (DFWP identified): None.

Proximity to recreation sites: None.

Creation of new access to wildlife habitat: No.

Conflict with game range/refuge management: No.

Threatened or endangered Species: Listed threatened or endangered species in Richland County are the Pallid Sturgeon, Interior Least Tern, Whooping Crane, Piping Plover, and the Northern Long-eared Bat. The Montana Natural Heritage Program website lists seventeen (17) species of concern, Northern Myotis, Great Blue Heron, Veery, Piping Plover, Black-billed Cuckoo, Whooping Crane, Red-headed Woodpecker, Least Tern, Northern Redbelly Dace, Blue Sucker, Iowa Darter, Shortnose Gar, Sturgeon Chub, Sicklefin Chub, Paddlefish, Sauger, and Pallid Sturgeon.

Mitigation:

- Avoidance (topographic tolerance/exception)
- Other agency review (DFWP, federal agencies, DNRC Trust Lands)
- Screening/fencing of pits, drillsite
- Other:

Comments: Private cultivated surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands. No concerns.

IV. IMPACTS ON THE HUMAN POPULATION

8. HISTORICAL/CULTURAL/PALEONTOLOGICAL

Proximity to known sites:

Mitigation

- avoidance (topographic tolerance, location exception)
- other agency review (SHPO, DNRC Trust Lands, federal agencies)

Other:

9. SOCIAL/ECONOMIC

Substantial effect on tax base

- Create demand for new governmental services
- Population increase or relocation

Comments: No concerns.

IV. SUMMARY

No long term impacts expected. Some short term impacts will occur, but can be mitigated. I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

EA Checklist Prepared By:	Name: John Gizicki	Date: 07/22/20
	Title: Compliance Specialist	

APD Review Checklist

Company: Kraken
 Yes No N/A

Lease: Rowin 17-5

Well #: #3H

Location: 26N-59E-20

36.22.601 - Public Notice

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proof of publication of notice in Helena and County of proposed well
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Comment: Helena: 6/17/20, County: 6/17/20

36.22.602 - Surveying

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Includes survey plat certified by registered surveyor with well location and reference to nearest lines
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Topographic map with well location, access route, residences, and water wells within 1/2 mile radius
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sketch of well site with dimensions and orientation, size and location of pits, topsoil stockpile, and estimated cut/fill
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sketch of reserve pits if utilized (top and two side views)

Comment:

36.22.604 - Permit Issuance

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Written demand for hearing has been filed within 10 days following date of publication of notice
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Environmental Assessment done

Comment:

36.22.608 - Well Stimulation Activities

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Processes, anticipated volumes, and types of material planned described
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Comment:

36.22.620 - Notification of Application for Permit to Drill

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Proof of notice to owners of occupied structures within 1,320 ft
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Written demand for hearing has been filed within 14 days following date of owner receiving notice

Comment: No occupied structures within 1/4 mile.

36.22.702 - Well Spacing

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Location is legal
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Comment: Order 16-2020 established OTSU, order 17-2020 authorizes three total wells in OTSU.

36.22.1001 - Casing/Cement

Surface

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Drilled with fresh water mud or air
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cemented back to surface
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Setting depth deep enough to cover all fresh water zones and wells

Intermediate/Production

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cement top adequate
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Well construction adequate for proposed/future stimulation/hydraulic fracturing considerations

Comment:

36.22.1005 - Drilling Waste Disposal and Surface Restoration

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pit Liner Description and specifications
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Plan for treatment and/or disposal of reserve pit fluids and solids after well is drilled

Comment: Closed loop

36.22.1013 - Well Logs

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Request logging waiver
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Comment:

36.22.1014 - Well Control

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rated working pressure of all well control equipment equal or exceeds the max anticipated pressure at surface
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Comment: SM system

Sage Grouse Habitat

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Approval to proceed
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Comment:

Date Permit Approved: 7/23/2020