

FORM NO. 22 R 10/09		SUBMIT IN QUADRUPPLICATE TO:		ARM 36.22.307 ARM 36.22.601		Lease Name: Sarah 5-8-17	
MONTANA BOARD OF OIL AND GAS CONSERVATION 2535 ST. JOHNS AVENUE, BILLINGS, MONTANA 59102						Lease Type (Private/State/Federal): Private	
Application for Permit To:						Well Number: #2H	
Drill <input checked="" type="checkbox"/> Deepen <input type="checkbox"/> Re-enter <input type="checkbox"/> Oil <input checked="" type="checkbox"/> Gas <input type="checkbox"/> Other <input type="checkbox"/>						Field Name or Wildcat: Wildcat, Richland	
Operator: Kraken Operating LLC Address: 945 Bunker Hill Road, Suite 1200 City: Houston State: TX Zip: 77024 Telephone Number: 713-360-7705						Unit Name (if applicable): N/A	
Surface Location of Well (quarter-quarter and footage measurements): Lot 2 Section 05, T24N, R59E - 395' FNL & 2116' FEL						Objective Formation(s): Middle Bakken	
Proposed Total Depth and Bottom-hole Location(s) if directional or horizontal well: TD 22,828' MD, 10,465' TVD SWSW Section 17, T24N, R59E - 205' FSL & 800' FWL						Township, Range, and Section: T24N, R59E, Section 05	
County:						Elevation (indicate GL or KB):	
						Richland County, MT	
						2191' GL	
Size and description of drilling/spacing unit and applicable order, if any:				Formation at total depth:		Anticipated Spud Date:	
1477 a(Sec.05, 08 & 17)T24N R59E Order# 1414-2024				Middle Bakken		10/31/2025	

Hole Size	Casing Size	Weight / Foot	Grade (API)	Depth	Sacks of Cement	Type of Cement
12 1/4	9 5/8	36#	J-55	1970	444	Type III
8 3/4	7	32#	P-110	10981	683	Type 1L
6	4 1/2	13.5#	P-110	22828	630	Class G

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 Sarah 1-5H (API#: 25-083-22776) located NE Sec 05 T24N R59E.

BOARD USE ONLY			
Approved (date) NOV 06 2025	Permit Fee \$150.00	The undersigned hereby certifies that the information contained on this application is true and correct: Signed (Agent) <u><i>Mark Dan</i></u> Title Senior Regulatory Analyst Date 8/26/2025 Telephone Number (713) 360-7705	
By <u><i>Bermyna Davis</i></u>	Check Number 23844		
Title Technical Program Coordinator	Permit Expires MAY 06 2026		
	Permit Number 33084		
THIS PERMIT IS SUBJECT TO THE CONDITIONS OF APPROVAL STATED ON THE BACK API Number: 25 - 083 - 23517			

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

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RECEIVED

SUPPLEMENTAL INFORMATION

AUG 27 2025

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

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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:

SEE ATTACHED
CONDITIONS OF APPROVAL

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

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Kraken Operating, LLC Proposed Well Stimulation

Total Clean Fluid – 235,000 bbls

Maximum Anticipated Treating Pressure – 9,800 psi

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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	Imospec	Flowback Additive	MISDS and Non-MISDS Ingredients Listed Below			7,435.80	0.00759%
FRP-1S	Liberty Oilfield Services	Friction reduction	MISDS and Non-MISDS Ingredients Listed Below			252,853.79	0.25823%
DVA-75	Liberty Oilfield Services	Diverging Agent	MISDS and Non-MISDS Ingredients Listed Below			469.00	0.00048%
Bioclear 5000	Libitrol	Biocide	MISDS and Non-MISDS Ingredients Listed Below			8,387.32	0.00857%
ScaleCease 7103	Imospec	Scale Inhibitor	MISDS and Non-MISDS Ingredients Listed Below			15,850.17	0.01619%
HCL-15	Liberty Oilfield Services	Solvent	MISDS and Non-MISDS Ingredients Listed Below			17,295.26	0.01766%
ACI-300	WST	Corrosion Inhibitor	MISDS and Non-MISDS Ingredients Listed Below			67.43	0.00007%
WA-100	WST	Wetting Agent	MISDS and Non-MISDS Ingredients Listed Below			34.79	0.00004%
IC-50S	WST	Iron Control	MISDS and Non-MISDS Ingredients Listed Below			125.74	0.00013%
Liberty Clean Out	Liberty Oilfield Services	Cleanup Solution	MISDS and Non-MISDS Ingredients Listed Below			74.86	0.00008%
Crystalline Silica	Liberty Oilfield Services	Sand	MISDS and Non-MISDS 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	0.15623%
	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%
	Imospec	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	Polyoxy-1,2-ethanediyl, a-tridecylw-hydroxy-, branched	69011-36-5	3.00%	7,585.61	0.00772%
	Liberty Oilfield Services	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%
	Libitrol	Biocide	2,2-dibromo-3-nitropropionamide	10222-01-2	10.00%	838.73	0.00086%
	Imospec	Scale Inhibitor	BHMT Phosphonate	Proprietary	5.00%	792.51	0.00081%
	Imospec	Scale Inhibitor	Benzenesulfonic Acid dodecyl-empl with 2-aminoethanol	Proprietary	5.00%	792.51	0.00081%
	Imospec	Flowback Additive	Dodecylbenzene sulfonate, triethanolamine salt	27323-41-7	10.00%	743.58	0.00076%
	Liberty Oilfield Services	Diverging Agent	Polyketide Resin	9051-89-2	100.00%	469.00	0.00048%
	Imospec	Flowback Additive	Sodium Alpha Olefin Sulfonate	68439-57-6	5.00%	371.79	0.00038%
	WST	Iron Control	2,2-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%
	Liberty Oilfield Services	Corrosion Inhibitor	2-P-ropyr-1-ol compound with methylxutane	38172-91-7	15.00%	10.11	0.00001%
	Imospec	Cleanup Solution	C.I. Solvent Yellow 33	8003-22-3	1.00%	0.75	0.00000%
	Imospec	Flowback Additive	Trethanolamine	103-71-6	0.01%	0.67	0.00000%
	Imospec	Flowback Additive	Ethanolamine	141-43-5	0.01%	0.67	0.00000%

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