

API No. <u>42-003-47645</u> Drilling Permit # <u>830904</u> SWR Exception Case/Docket No. _____		RAILROAD COMMISSION OF TEXAS OIL & GAS DIVISION APPLICATION FOR PERMIT TO DRILL, RECOMPLETE, OR RE-ENTER <i>This facsimile W-1 was generated electronically from data submitted to the RRC.</i> <i>A certification of the automated data is available in the RRC's Austin office.</i>			FORM W-1 07/2004 Permit Status: Approved	
1. RRC Operator No. <u>500794</u>		2. Operator's Name (as shown on form P-5, Organization Report) LIME ROCK RESOURCES IV-A, L.P.		3. Operator Address (include street, city, state, zip): 1111 BAGBY STREET SUITE 4600 HOUSTON, TX 77002-0000		
4. Lease Name UL 10 HARMON		5. Well No. 3W				
GENERAL INFORMATION						
6. Purpose of filing (mark ALL appropriate boxes): <input checked="" type="checkbox"/> New Drill <input type="checkbox"/> Recompletion <input type="checkbox"/> Reclass <input type="checkbox"/> Field Transfer <input type="checkbox"/> Re-Enter <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Amended as Drilled (BHL) (Also File Form W-1D)						
7. Wellbore Profile (mark ALL appropriate boxes): <input checked="" type="checkbox"/> Vertical <input type="checkbox"/> Horizontal (Also File Form W-1H) <input type="checkbox"/> Directional (Also File Form W-1D) <input type="checkbox"/> Sidetrack						
8. Total Depth 15000		9. Do you have the right to develop the minerals under any right-of-way? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		10. Is this well subject to Statewide Rule 36 (hydrogen sulfide area)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
SURFACE LOCATION AND ACREAGE INFORMATION						
11. RRC District No. 08		12. County ANDREWS		13. Surface Location <input checked="" type="checkbox"/> Land <input type="checkbox"/> Bay/Estuary <input type="checkbox"/> Inland Waterway <input type="checkbox"/> Offshore		
14. This well is to be located <u>14.2</u> miles in a <u>SW</u> direction from <u>Andrews</u> which is the nearest town in the county of the well site.						
15. Section 34		16. Block 10		17. Survey UL		
		18. Abstract No. A-U318		19. Distance to nearest lease line: 330 ft.		
20. Number of contiguous acres in lease, pooled unit, or unitized tract: 330.75						
21. Lease Perpendiculars: <u>330</u> ft from the <u>N</u> line and <u>800</u> ft from the <u>E</u> line.						
22. Survey Perpendiculars: <u>330</u> ft from the <u>N</u> line and <u>800</u> ft from the <u>E</u> line.						
23. Is this a pooled unit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		24. Unitization Docket No.: _____		25. Are you applying for Substandard Acreage Field? <input type="checkbox"/> Yes (attach Form W-1A) <input checked="" type="checkbox"/> No		
FIELD INFORMATION List all fields of anticipated completion including Wildcat. List one zone per line.						
26. RRC District No.	27. Field No.	28. Field Name (exactly as shown in RRC records)	29. Well Type	30. Completion Depth	31. Distance to Nearest Well in this Reservoir	
08	28899249	EMMA (ELLENBURGER)	Injection Well	12500	0.00	
08	33176001	FUHRMAN-MASCHO	Injection Well	4350	0.00	
08	82572666	SHAFTER LAKE, N. (SAN ANDRES)	Injection Well	4500	0.00	
BOTTOMHOLE LOCATION INFORMATION is required for DIRECTIONAL, HORIZONTAL, AND AMENDED AS DRILLED PERMIT APPLICATIONS						
Remarks [FILER Oct 12, 2017 10:30 AM]: Amending permit to add Emma (Ellenburger) field, amend TD & submit a revised plat.			Certificate: I certify that information stated in this application is true and complete, to the best of my knowledge. <div style="display: flex; justify-content: space-between;"> <div> Carla Martin Name of filer </div> <div> Oct 12, 2017 Date submitted </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> (713)292-9510, x5720 Phone </div> <div> cmartin@limerockresources.com E-mail Address (OPTIONAL) </div> </div>			
RRC Use Only Data Validation Time Stamp: Oct 18, 2017 1:58 PM(Current Version)						

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER 830904	DATE PERMIT ISSUED OR AMENDED (AMENDED) Oct 18, 2017	DISTRICT * 08
API NUMBER 42-003-47645	FORM W-1 RECEIVED Oct 12, 2017	COUNTY ANDREWS
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Vertical	ACRES 330.75
OPERATOR LIME ROCK RESOURCES IV-A, L.P. 1111 BAGBY STREET SUITE 4600 HOUSTON, TX 77002-0000		NOTICE This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored. District Office Telephone No: (432) 684-5581
LEASE NAME UL 10 HARMON		WELL NUMBER 3W
LOCATION 14.2 miles SW direction from ANDREWS		TOTAL DEPTH 15000
Section, Block and/or Survey SECTION 34 BLOCK 10 ABSTRACT U318 SURVEY UL		
DISTANCE TO SURVEY LINES 330 ft. N 800 ft. E		DISTANCE TO NEAREST LEASE LINE 330 ft.
DISTANCE TO LEASE LINES 330 ft. N 800 ft. E		DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below
FIELD(s) and LIMITATIONS: * SEE FIELD DISTRICT FOR REPORTING PURPOSES *		
FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH NEAREST WE
EMMA (ELLENBURGER)	330.75	12,500
UL 10 HARMON	330	0
RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.		
SHAFTER LAKE, N. (SAN ANDRES)	330.75	4,500
UL 10 HARMON	330	0
RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.		
FUHRMAN-MASCHO	330.75	4,350
UL 10 HARMON	330	0

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FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH NEAREST WE
WELL # NEAREST WE		
DIST		
<p>RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.</p> <p align="center">THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS</p> <p>This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.</p> <p>This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.</p>		

**RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
SWR #13 Formation Data**

ANDREWS (003) County

Formation	Shallow Top	Deep Top	Remarks	Geological Order	Effective Date
YATES	2,500	3,200		1	12/17/2013
SEVEN RIVERS	3,000	3,000		2	12/17/2013
QUEEN	3,600	4,800		3	12/17/2013
GRAYBURG	3,100	5,000		4	12/17/2013
SAN ANDRES	3,700	5,300	CO2 flood, high flows, H2S, corrosive	5	12/17/2013
HOLT	5,000	5,500		6	12/17/2013
GLORIETA	5,100	6,000		7	12/17/2013
TUBB	6,100	6,300		8	12/17/2013
CLEARFORK	5,600	7,600		9	12/17/2013
PERMIAN DETRITAL	7,800	7,900		10	12/17/2013
LEON	7,900	7,900		11	12/17/2013
WICHITA ALBANY	6,500	8,100		12	12/17/2013
SPRABERRY	7,300	8,600		13	12/17/2013
DEAN	9,200	9,500		14	12/17/2013
WOLFCAMP	7,500	9,900		15	12/17/2013
CANYON	8,600	10,200		16	12/17/2013
PENNSYLVANIAN	8,700	10,200		17	12/17/2013
MCKEE	8,300	10,600		18	12/17/2013
STRAWN	8,800	11,000		19	12/17/2013
FUSSELMAN	8,400	11,900		20	12/17/2013
DEVONIAN	7,600	12,500		21	12/17/2013
SILURIAN	8,000	12,500		22	12/17/2013
ELLENBURGER	7,900	13,900		23	12/17/2013

The above list may not be all inclusive, and may also include formations that do not intersect all wellbores. Formation "TOP" information listed reflects an estimated range based on geologic variances across the county. To clarify, the "Deep Top" is not the bottom of the formation; it is the deepest depth at which the "TOP" of the formation has been or might be encountered. This is a dynamic list subject to updates and revisions. It is the operator's responsibility to make sure that at the time of spudding the well the most current list is being referenced. Refer to the RRC website at the following address for the most recent information.
<http://www.rrc.texas.gov/oil-gas/compliance-enforcement/rule-13-geologic-formation-info>

GROUNDWATER PROTECTION DETERMINATION

Form GW-2



Groundwater Advisory Unit

Date Issued: 14 September 2017**GAU Number:** 180077**Attention:** LIME ROCK RESOURCES IV-A,
1111 BAGBY STREET SUITE
HOUSTON, TX 77002**API Number:**
County: ANDREWS
Lease Name: UL 10 Harmon**Operator No.:** 500794**Lease Number:**
Well Number: 3W
Total Vertical Depth: 6000
Latitude: 32.135992
Longitude: -102.661723
Datum: NAD27**Purpose:** New Drill**Location:** Survey-UL; Block-10; Section-34

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

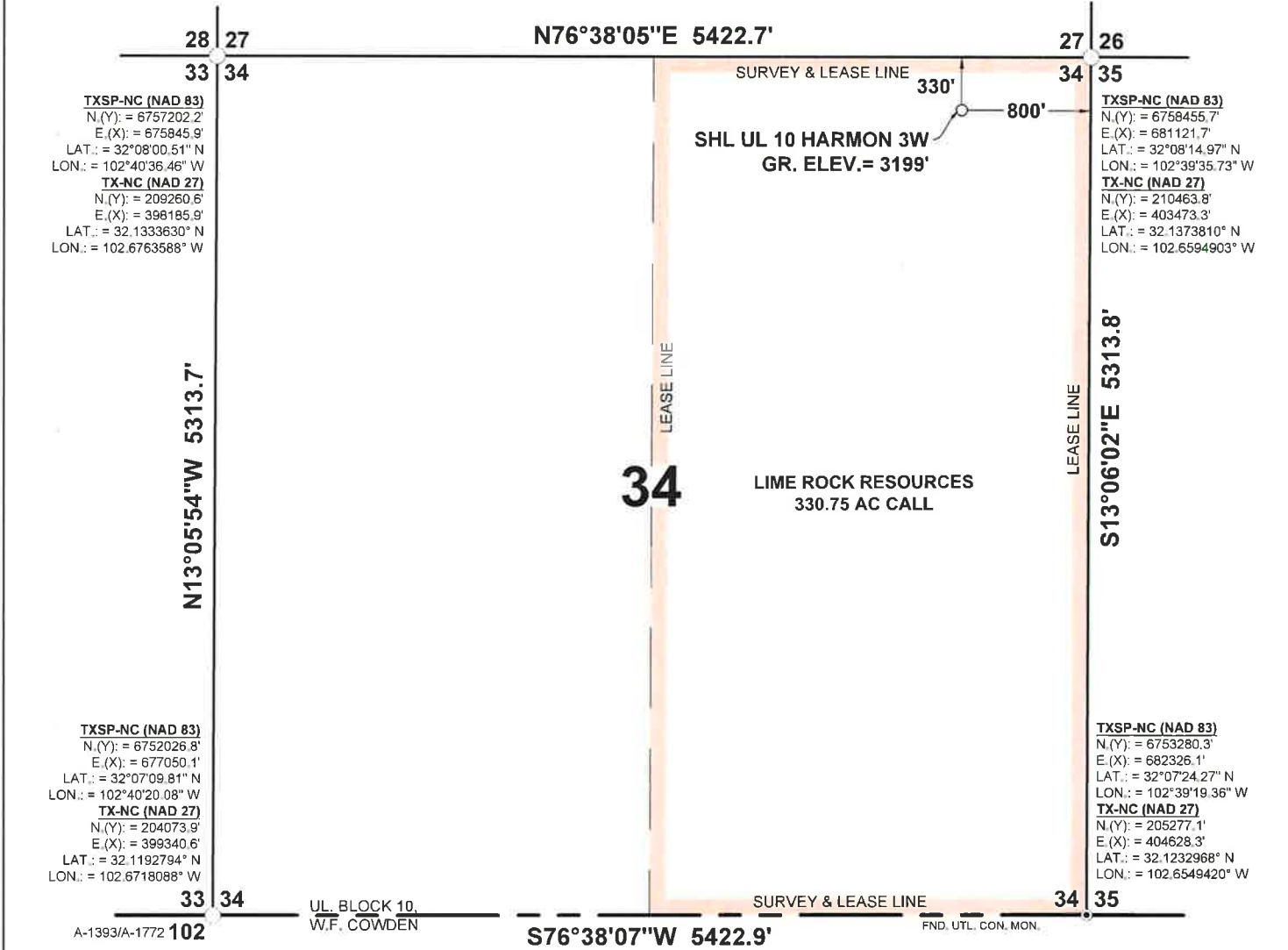
The interval from the land surface to a depth of 250 feet, and the zone from 1000 to 1550 feet must be protected.

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. This recommendation is for normal drilling, production, and plugging operations only. It does not apply to saltwater disposal operation into a nonproductive zone (RRC Form W-14).

This determination is based on information provided when the application was submitted on 09/13/2017. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary. If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.

Groundwater Advisory Unit, Oil and Gas Division

PERMIT PLAT
SECTION 34, BLOCK 10, UNIVERSITY LAND SURVEY,
ANDREWS COUNTY, TEXAS

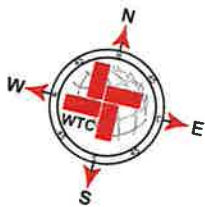


SURFACE HOLE LOCATION	NAD 83, TX-NC, N _c (Y): = 6757949.4', E _c (X): = 680418.2' - LAT.: = 32°08'09.69" N, LON.: = 102°39'43.67" W
	NAD 27, TX-NC, N _c (Y): = 209964.2', E _c (X): = 402765.0' - LAT.: = 32.1359138° N, LON.: = 102.6616965° W

DRIVING DIRECTIONS:
BEGINNING AT THE INTERSECTION OF U.S. HWY. 385 AND SW 8000 RD. IN ANDREWS COUNTY, TEXAS;
HEAD SOUTH/SOUTHWEST ON SW 8000 RD. ±8.7 MILES TO A BEND IN THE ROAD. CONTINUE AROUND
BEND, HEADING NORTH/NORTHWEST ON SW 4001 RD. FOR ±1.8 MILES TO SW 7000 RD. TURN LEFT INTO
SWD 7000 RD. AND HEAD SOUTH/SOUTHWEST ±2.7 MILES TO A LEASE ROAD ON RIGHT. TURN RIGHT
ONTO LEASE ROAD AND HEAD NORTH/NORTHWEST ±0.4 MILES TO A TEE IN THE ROAD. TURN RIGHT
AT TEE AND HEAD NORTH/NORTHEAST ±0.1 MILES TO A TEE ON THE ROAD. TURN RIGHT AT TEE AND
HEAD EAST ±0.1 MILES TO A FORK IN THE ROAD. TURN LEFT AT FORK AND HEAD NORTH/NORTHWEST
±0.3 MILES. THE FLAGGED LOCATION IS ±658 FEET NORTH/NORTHEAST FROM LEASE ROAD.

SURVEYOR'S NOTES:

- ALL DOWNHOLE, POINT OF PENETRATION AND BOTTOM HOLE INFORMATION AND THEIR LOCATIONS WERE PROVIDED BY LIME ROCK RESOURCES, AND ARE NOT GUARANTEED BY THIS SURVEYOR.
- SEE DOCUMENTS FILED IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THESE SECTION AND/OR BLOCKS, USING FOUND MONUMENTATION, GLO AND COURTHOUSE DOCUMENTATION.
- NO SURFACE OWNERSHIP WAS PROVIDED OR REQUESTED BY LIME ROCK RESOURCES AND NONE WAS RESEARCHED OR PROVIDED BY WTC, INC.
- BASIS OF BEARING IS GEODETIC, WGS84 (TRUE NORTH). COORDINATES, AND DISTANCES ARE A LAMBERT CONICAL PROJECTION OF THE TEXAS COORDINATE SYSTEM, STATE PLANE GRID, NAD 83, TEXAS NORTH CENTRAL (4202), WITH A CONVERGENCE ANGLE OF -02°16'18.66" AND COMBINED SCALE FACTOR OF 0.999845571, BASED ON AN OPUS SOLUTION ON CONTROL POINT CRUD AT N=6762813.132' - E=679561.581'
- THIS LOCATION IS APPROXIMATELY S31°W 14.2 MILES FROM ANDREWS, TEXAS.



LEGEND

- DENOTES PROPOSED/ PERMITTED
- SHL WELL LOCATION
- DENOTES EXISTING WELL
- DENOTES POINT OF PENETRATION
- DENOTES BOTTOM HOLE/
- TERMINUS LOCATION
- DENOTES FIRST/ LAST TAKE
- DENOTES FOUND SECTION CORNER
- DENOTES CALCULATED CORNER
- DENOTES LEASE AREA

1000 0 1000 2000 FEET

SCALE: 1" = 1000'



I, THE UNDERSIGNED, DO HEREBY CERTIFY THAT THE SURVEY INFORMATION FOUND ON THIS PERMIT PLAT WAS DERIVED FROM FIELD NOTES OR ELECTRONIC DATA OF AN ACTUAL ON-THE-GROUND SURVEY MADE BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. NO WARRANTY IS MADE OR INTENDED FOR THE LOCATION OF ANY OR ALL EASEMENTS THAT MAY EXIST WITHIN THE BOUNDS OF THIS SURVEY. THE INFORMATION PRESENTED HEREON IS FOR TEXAS RAILROAD COMMISSION PERMITTING ONLY, AND DOES NOT CONSTITUTE OR REPRESENT A COMPLETE BOUNDARY SURVEY AS DEFINED BY THE T.B.P.L.S., "PROFESSIONAL LAND SURVEYING PRACTICES ACT." IF THERE ARE ANY ALTERATIONS MADE, (HAND DRAWN OR HANDWRITTEN ADDITIONS) THIS SURVEYOR IS NO LONGER RESPONSIBLE FOR THE VALIDITY OF THIS PLAT.

GREGORY W. SHOULTS RPLS #5356
SURVEY DATE: 09/08/2017
JOB NO.: WTC52095

10/12/2017
DATE
DRAFT: M.Y.
SHEET: 1 OF 1



LIME ROCK
RESOURCES

UL 10 HARMON 3W
SHL 330' FNL & 800' FEL
SECTION 34, BLOCK 10, U.T.L. SURVEY,
ANDREWS COUNTY, TEXAS



WTC, INC.
405 S.W. 1st STREET
ANDREWS, TEXAS 79714
(432) 523-2181
TEXAS REGISTERED ENGINEERING FIRM F-2745
TEXAS REGISTERED SURVEYOR FIRM #100792-00