

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

CRANE (103) County

Formation	Shallow Top	Deep Top	Remarks	Geological Order	Effective Date
RUSTLER	1,000	1,000		1	12/17/2013
YATES	1,200	3,000		2	12/17/2013
GRAYBURG	2,100	3,100	Active CO2 flood	3	12/17/2013
SAN ANDRES	1,850	3,500	Usable Quality Water/Active CO2 flood	4	12/17/2013
SAN ANGELO	3,600	3,700		5	12/17/2013
SEVEN RIVERS	1,300	3,970		6	12/17/2013
GLORIETA	2,700	4,200		7	12/17/2013
PERMIAN GENERAL	3,900	4,200		8	12/17/2013
QUEEN	2,100	4,370		9	12/17/2013
CLEARFORK	2,900	4,400		10	12/17/2013
MONTOYA	5,300	5,300		11	12/17/2013
TUBB	3,350	5,400		12	12/17/2013
WICHITA ALBANY	5,400	6,000		13	12/17/2013
FUSSELMAN	6,400	7,400		14	12/17/2013
WOLFCAMP	5,000	7,500		15	12/17/2013
WADDELL	6,100	7,600		16	12/17/2013
BEND	7,700	7,700		17	12/17/2013
PENNSYLVANIAN	7,200	8,000		18	12/17/2013
CISCO	7,400	8,500		19	12/17/2013
STRAWN	8,600	8,600		20	12/17/2013
DEVONIAN	4,900	9,700	Active CO2 flood	21	12/17/2013
ELLENBURGER	5,400	11,700		22	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: 17 May 2017 **GAU Number:** 171156

Attention:	BAM PERMIAN OPERATING, SUITE 110 PMB #53 MIDLAND, TX 79707	API Number:	
Operator No.:	048351	County:	CRANE
		Lease Name:	University Morgan
		Lease Number:	
		Well Number:	1
		Total Vertical Depth:	9500
		Latitude:	31.508479
		Longitude:	-102.425556
		Datum:	NAD27

Purpose: New Drill
Location: Survey-UL; Block-31; Section-13

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 the base of the Santa Rosa, which is estimated to occur at a depth of 800 feet, must be protected.

This recommendation is applicable for all wells drilled in this N/2 of sec. 13.

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 04/26/2017. 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.

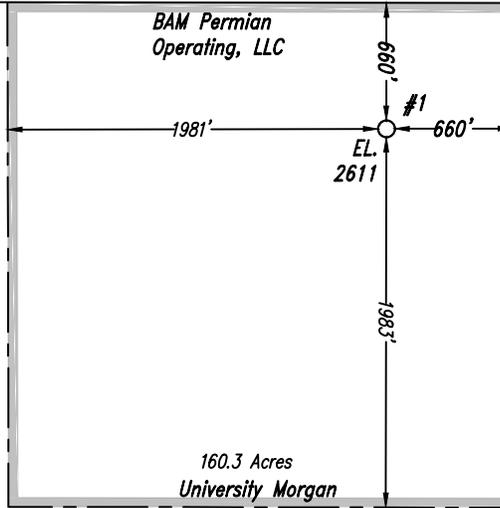
Groundwater Advisory Unit, Oil and Gas Division

Form GW-2 P.O. Box 12967 Austin, Texas 78771-2967 512-463-2741 Internet address: www.rrc.texas.gov
Rev. 02/2014

Block 31, University Land

11 12
14 13

7
18



Block 30,
University Land

23 24

19

Note: Survey Reconstruction filed in the Office of Luchini and Mertz Land Surveying Company.
 Note: All bearings and coordinates shown are based on the Texas Coordinate System of 1927, Central Zone.
 Note: The above sketch represents the location as staked on the ground and is for permit purposes only.
 Note: NAD '27 Coordinates & Latitude/Longitude on well location in Section 13.
 Note: Well location is approximately 8.7 miles northwest of Crane.
 Note: This does not constitute a boundary survey.
 Note: Lease description provided by client.

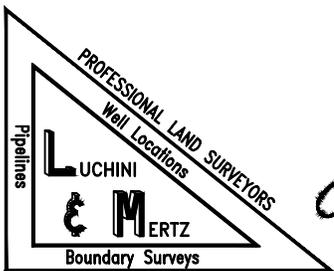
#1
 X: 1348017.15 Latitude: 31.50848192°
 Y: 675981.98 Longitude: -102.42555587°
 NAD 83: Lat: 31.50861894°, Long: -102.42597681°
 660' FNL, 660' FEL - Section 13



Jeffrey D. Suiter

April 21, 2017

170421R-SC



Railroad Commission Drawing

#1 University Morgan
 BAM Permian Operating, LLC
 "University Morgan" Lease
 NE/4 of
 Section 13, Block 31,
 University Land Survey,
 Crane County, Texas

Scale: 1" = 1000'