Additional Information

Supporting Documentation

The Rustler is considered to be dominantly anhydrite in this area of New Mexico and not an underground source of drinking water.

IX. Describe the proposed stimulation program, if any

A cleanup acid job may be used to remove mud and drill cuttings from the formation. However, no other formation stimulation is currently planned.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted)

Logs will be submitted to OCD upon completion of the well.

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken

No active water supply wells with water chemistry data were identified within one mile of the proposed SWD. Data from various sources permit a conclusion that groundwater within the Chinle Formation is potable. In this area, groundwater in the underlying Rustler formation may be relatively brackish. The Ogallala Aquifer may be saturated in some locations.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water

Randall T. Hicks, a Professional Geologist with decades of experience in hydrogeology, affirms, on behalf of Ridgeway Arizona Oil Corp, that

- The USGS has mapped quaternary faults in New Mexico and no such faults are mapped in the area of the proposed[2] Schooner SWD #1[2]
- ~~The Texas Bureau of Economic Geology has mapped older faults (e.g. basement and Woodford) in New Mexico and the closest mapped Woodford fault is about 2.5 miles southwest[3]. The closest basement fault is about 3 miles west~~
- With respect to migration of produced water from the injection zone to underground sources of drinking water via faults or other natural conduits, the following conditions were considered
    - The lowest underground source of drinking water is the Chinle Formation.
    - About 10,000 feet of sedimentary rock separates the bottom of the Chinle Formation and the top of the injection zone. Many of the formations that lie between the injection zone and the lowermost aquifer are permeable

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[2] https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf

[3] ~~Bureau of Economic Geology (Accessed April 2019). University of Texas at Austin. Basement Faults (Ewing 1990, Tectonic Map of Texas); Precambrian Faults (Frenzel et al. 1988, Figure 6); Woodord Faults (Comer 1991, plate 1). Http://www.beg.utexas.edu/resprog/permianbasin/gis.htm~~

William Boyd

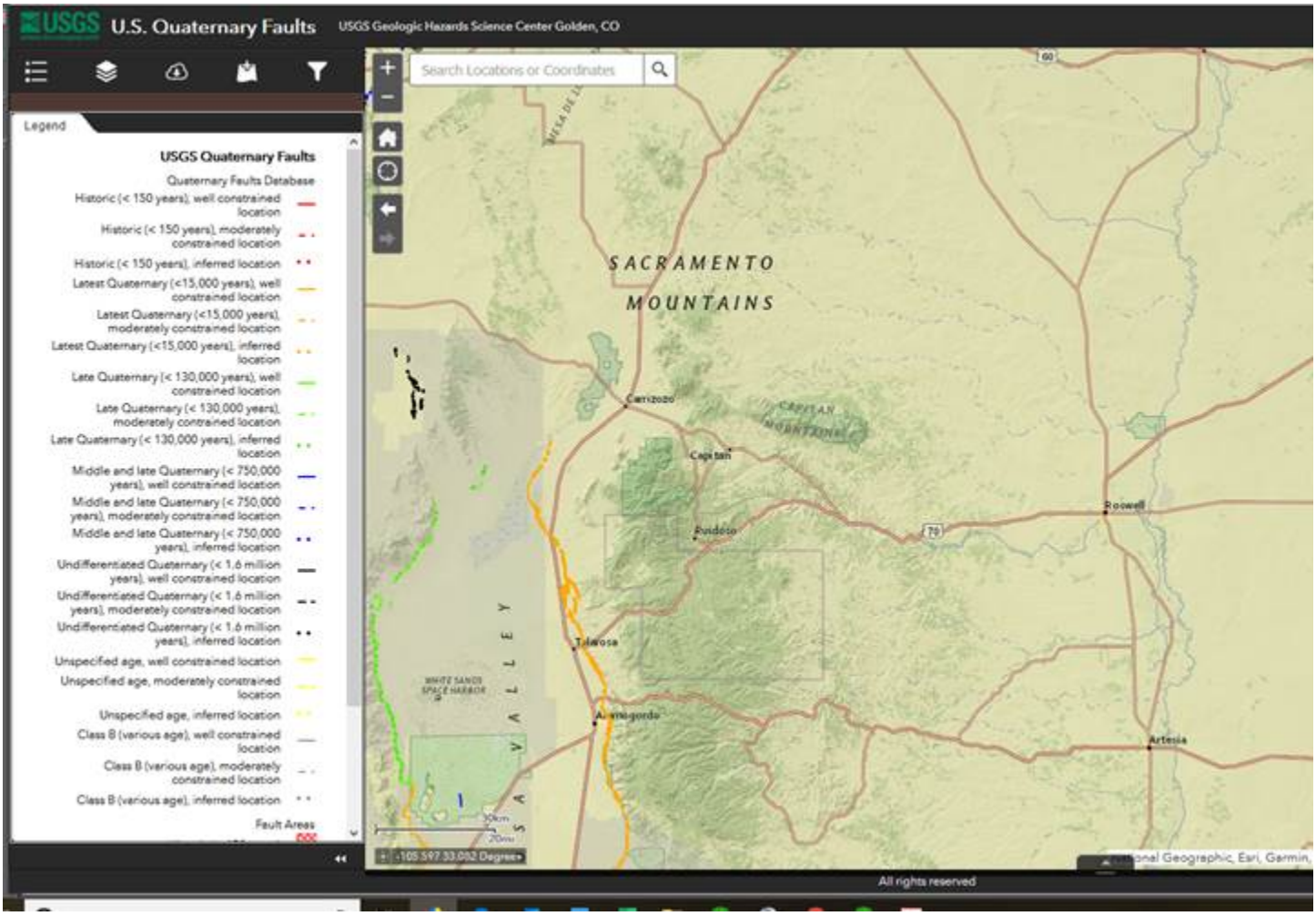
From: r@rthicksconsult.com
Sent: Tuesday, October 22, 2019 12:13 PM
To: William Boyd; 'Benjamin Jacobson'
Subject: Ridgeway Kizar SWD - Woodford
Attachments: Section XII.pdf

Gents

I screwed up and when I was using the “Schooner” SWD template for my write-up and caught every mention of Schooner except one. The mention of Schooner was associated with the Woodford faults, which was a bullet that I intended to delete. Attached is a “corrected/strikethrough” page and below is a screen shot showing that there are no Quaternary faults in the area per the referenced link in the footnote.

This corrected page should be satisfactory to OCD

Sorry about that.



Rose-Coss, Dylan H, EMNRD

From: William Boyd <wboyd@pedevco.com>
Sent: Thursday, October 24, 2019 8:20 AM
To: Rose-Coss, Dylan H, EMNRD
Subject: [EXT] RE: Pooling Order & C-108
Attachments: Kizer_SWD_2_Lithologic_Description-Injection-Confining_Intervals_Pg1.JPG; Kizer_SWD_2 _Lithologic_Description-Injection-Confining_Intervals_Pg2.JPG; Tops-Porosity_Old Hippie.zip; Kizer_SWD_2_Lithologic_Description-Injection-Confining_Intervals_Pg2.JPG; Kizer_SWD_2 _Lithologic_Description-Injection-Confining_Intervals_Pg2.JPG

Dylan,

As analyzed by our geologist Ben Jacobson, I can provide the following response to your questions regarding lithology, deposition, and confining intervals, and supporting documentation attached:

Attached is the marked porosity log for the Old Hippie well, located 2035' FSL-2122' FWL-TWP: 6 S-Range: 34 E-Section 32; approximately 6 miles NW from the proposed Kizer SWD #2 location. It clearly contains proper modern logs to evaluate the AOI. The evidence shows the Devonian (300' gross thickness) is a dolomitic rock, containing as much as 6 percent porosity within the upper primary injection interval, and 6-14 percent in the lower interval above the Ellenburger. The Ellenburger (100' gross thickness), dolomitic rock, contains as much as 17 percent porosity. The Mississippian interval (100' gross thickness) limestone above the Devonian and Woodford, contains < 1 percent porosity. The Pennsylvanian (400' gross thickness) limestone above the Mississippian, contains 2-4 percent porosity with several massive layers containing less than 2 percent porosity. The Wolfcamp (400' gross thickness) limestone, contains 2-4 percent porosity within the lower 2/3rds, with several massive layers containing less than 2 percent porosity.

The two .jpeg files also serve to further describe some of the depositional sequences.

Please let me know if I can provide anything further.

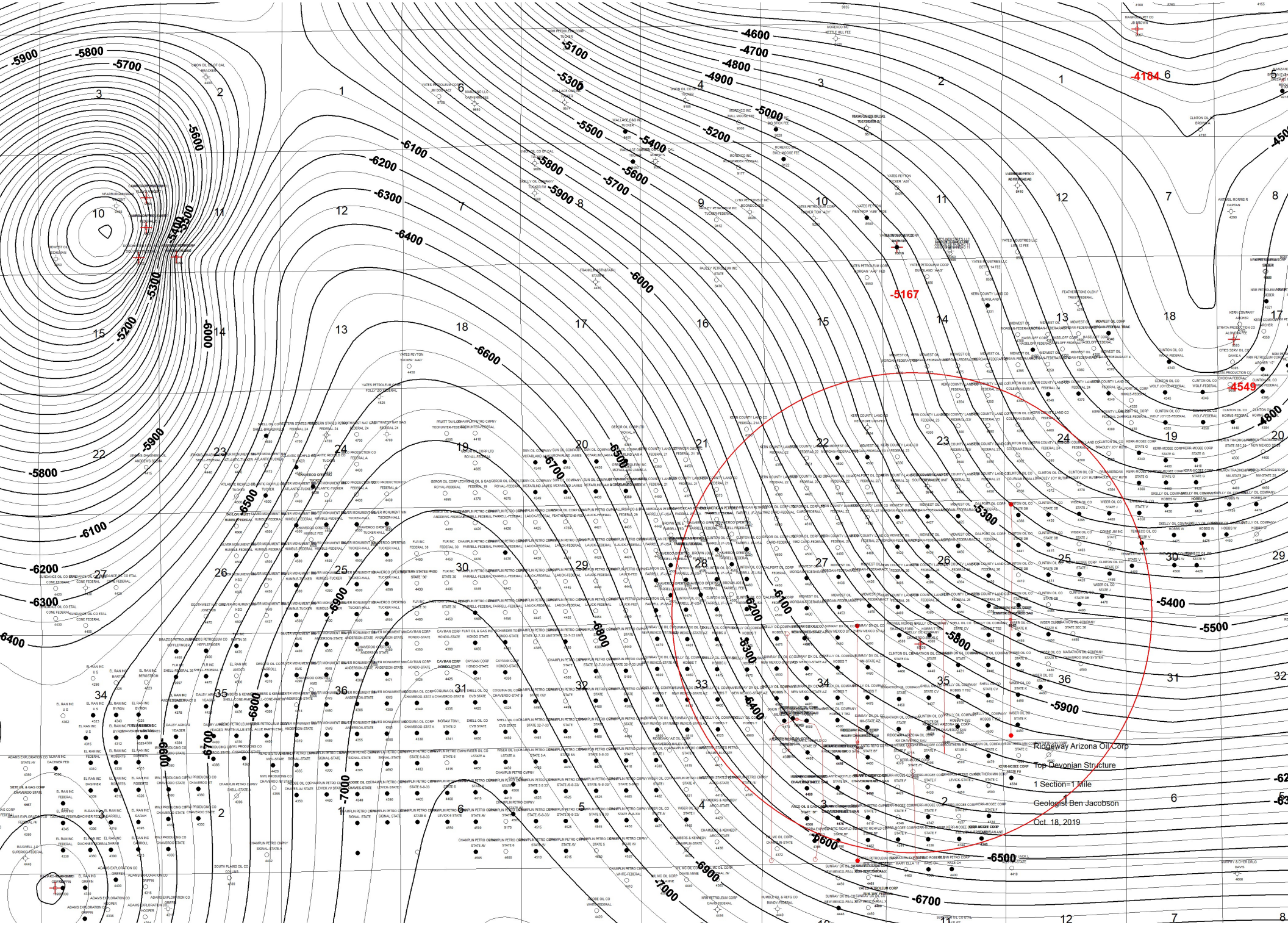
Sincerely,
William

William L. Boyd, CPL
Land & Regulatory Manager
(713) 574-7912 Direct
(832) 691-4322 Mobile

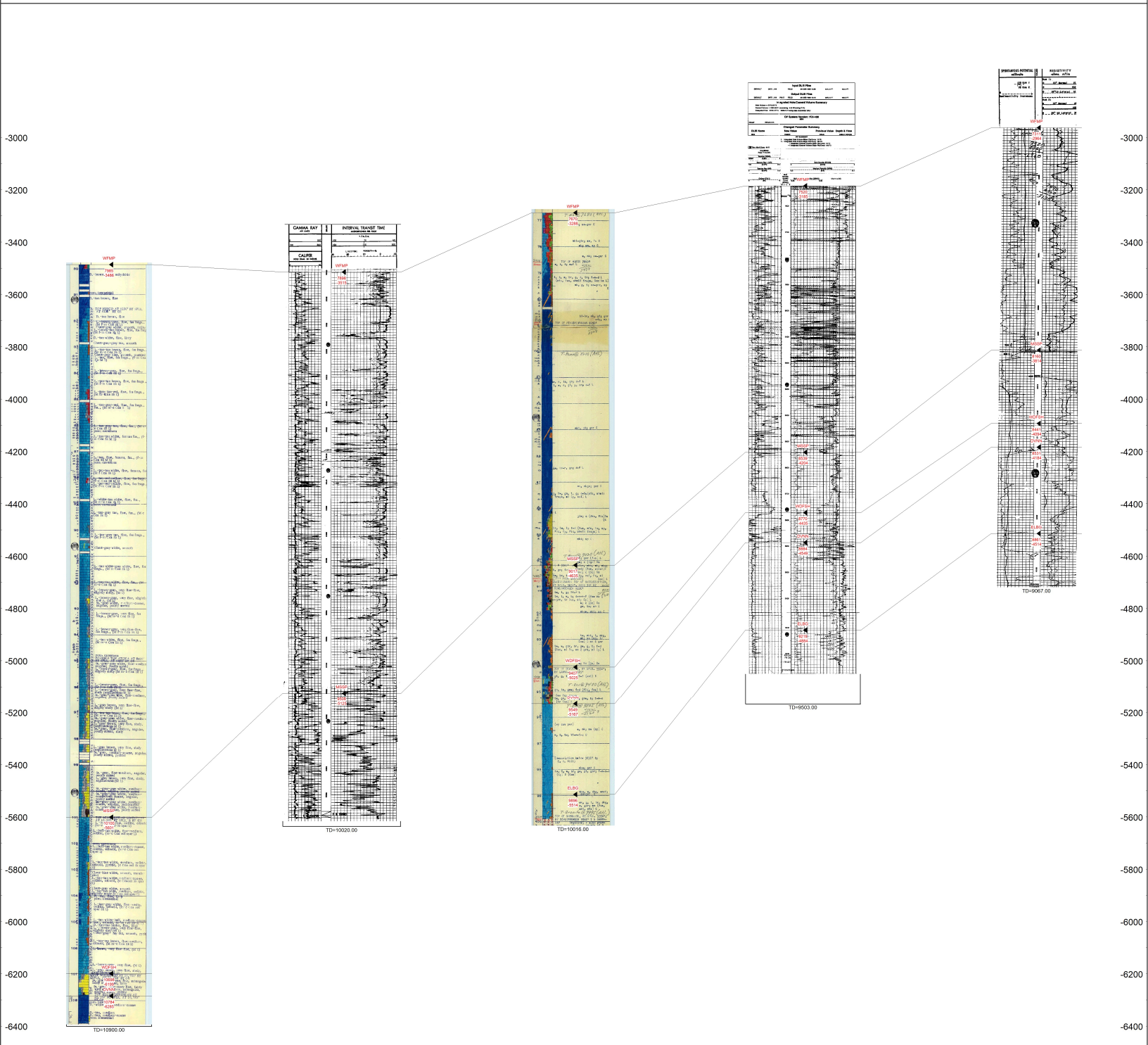
PLEASE NOTE NEW ADDRESS AND PHONE NUMBER EFFECTIVE IMMEDIATELY

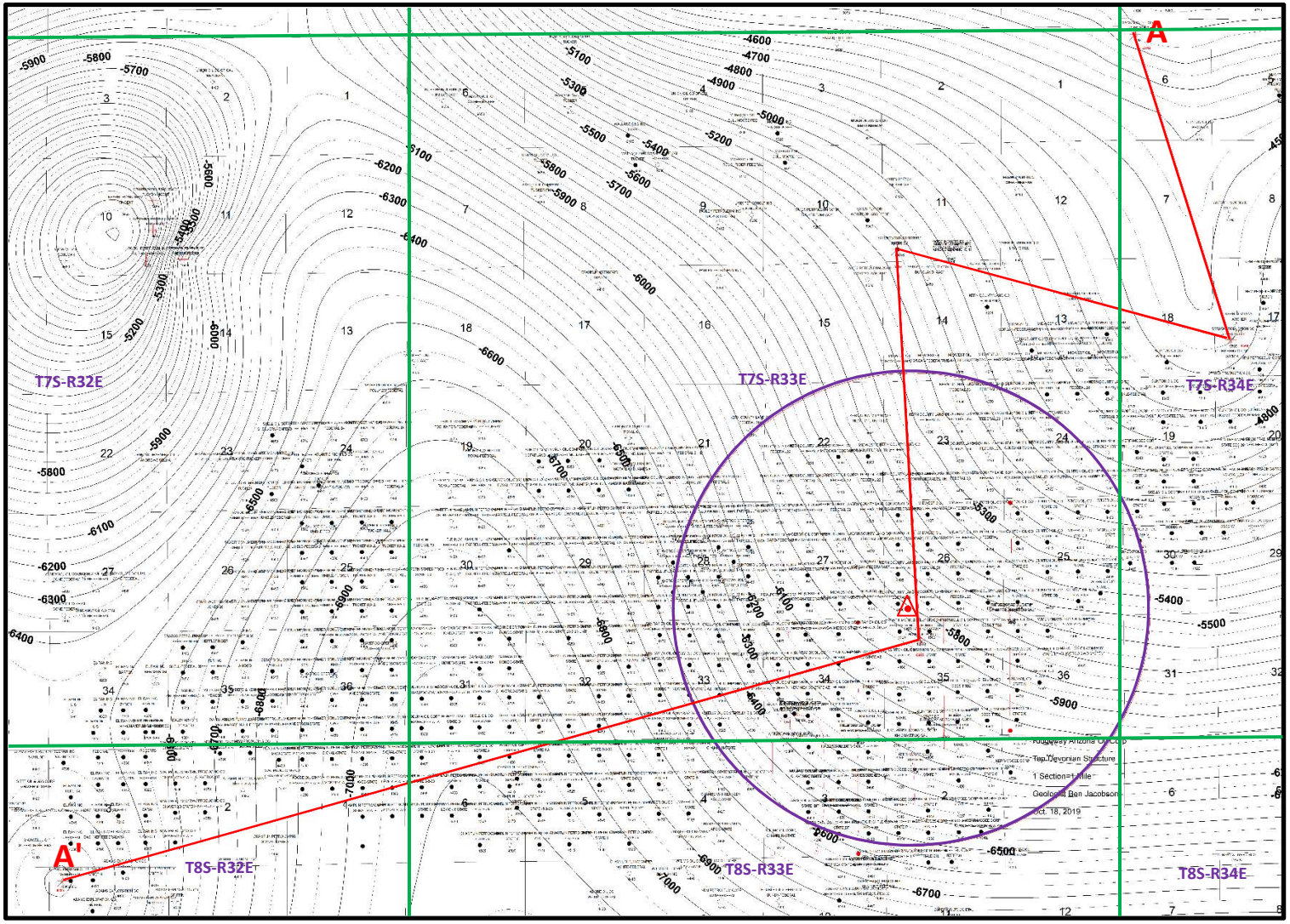
PEDEVCO

575 N Dairy Ashford Rd, Suite 210
Energy Center II
Houston, TX 77079


Ridgeway Arizona Oil Corp
Top Devonian Structure
1 Section=1 Mile
Geologist Ben Jacobson
Oct. 18, 2019

30005203120000	39517 ft	30041203330000	17482 ft	30041001450000	15358 ft	30041208770000	14295 ft	30041001350000
HILLIARD-PMRY SMITH GRIFFIN 1 660 FNL/660 FWL TWP: 8 S - Range: 32 E - Sec. 10		SKELLY OIL COMPANY CHAVEROO-BOUG C 1 990 FNL/1650 FWL TWP: 7 S - Range: 33 E - Sec. 35		MAGNOLIA PET CO AK SMITH 1 660 FSL/660 FWL TWP: 7 S - Range: 33 E - Sec. 11		STRATA PRODUCTION CO ALONDRA FEE 1 1650 FSL/730 FWL TWP: 7 S - Range: 34 E - Sec. 17		MAGNOLIA PET CO JB BROWN 1 660 FNL/660 FWL TWP: 7 S - Range: 34 E - Sec. 6





LEGEND

- Kizer SWD #2 proposed
- 2 Mile Radius
- Cross Section
- Township Lines

CROSS SECTION DATA POINTS

A JB Brown 1
041-00135
Alondra Fee 1
041-12087
AK Smith 1
041-00145
Chav-Bout C-1
041-20333

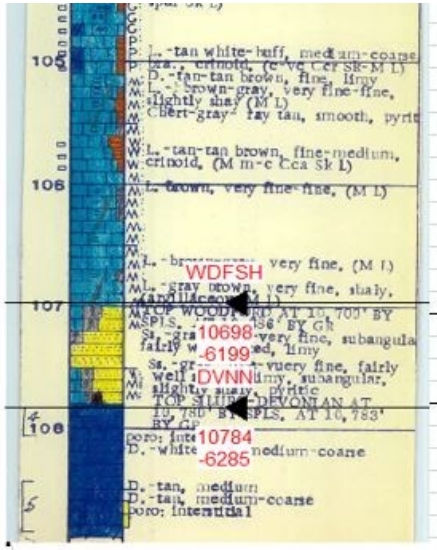
A' Griffin 01
005-20312

Contour depths shown subsea

N W E S

0 0.5 1
Miles

Ridgeway Arizona Oil Corporation 575 N Dairy Ashford Rd, Suite 210 Energy Center II Houston, TX 77079	Cross Section Top of Devonian Formation	Ben Jacobsen, Geologist
	Kizer SWD #2	October 2019



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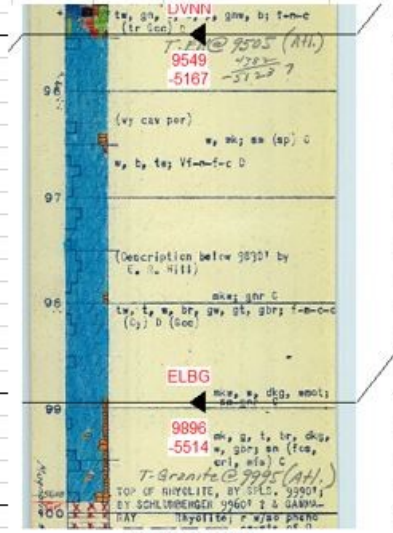
MAGNOLIA PET CO
AK SMITH 1
660 FSL/660 FWL
TWP: 7 S - Range: 33 E - Sec. 11



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DOL	Shallow Restricted Depositional Setting		
DOL	Intercrystalline Porosity		
DOL	Estimated Avg Porosity 4-6 Percent		
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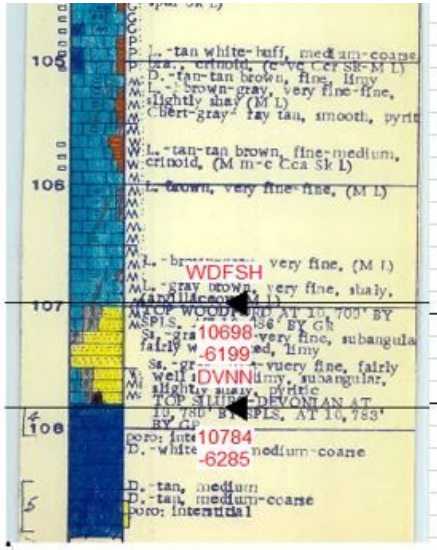
			Granite_Rhyolite



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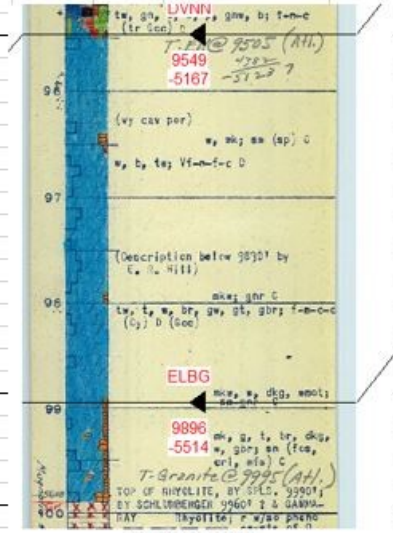
MAGNOLIA PET CO
AK SMITH 1
660 FSL/660 FWL
TWP: 7 S - Range: 33 E - Sec. 11



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Shaly SD	Terrigenous Clastics-LS		
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			Granite_Rhyolite
			Granite_Rhyolite