

Barnsdall Federal SWD #1 NOI SUNDRY

This document serves as Apache Corporation's procedure to review and verify Section F, item 1 and 2 of the notice of intent sundry:

- 1) Properly evaluate the injection zone utilizing open hole logs, swab testing and/or any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.
- 2) Restrict the injection fluid to the approved formation

PERF INTERVAL: 8,370' – 9,556'

MUD LOG

No oil cut, or fluorescence, is recorded in the mud log from 8,370' MD to well TD of 9,556' as shown in Figure 1. Over this interval, there are no gas shows with the exception of 103 units around 9,400' MD and 321 units around 9,500' MD. The mud log is shown over the injection interval from 8,370' to 9,556' MD. Track 1 records drilling info and notes. Track 2 records drilling rate shown in minutes/foot. Track 3 records visual porosity with increasing quality of poor, fair and good towards the left. Track 4 shows the interpreted lithology. Track 5 records percent oil fluorescence in poor, fair, and good with increasing quality to the right. Track 6 contains sample descriptions and remarks. Track 7 records total gas and chromatography from C1 to C4. C1 is recorded in red, C2 recorded in blue, C3 is recorded in a dashed green line, IC4 is recorded in pink, and NC4 is recorded in purple.

OPEN HOLE LOGS

Open hole logs only cover the interval from 100' to 8,390' MD. The logging job was prior to setting casing to 8,370' and do not cover the open hole disposal interval.

NEARBY SWD WELLS

Figure 2 shows the location of nearby SWD wells in relation to the Barnsdall Federal SWD #1. There are four SWD wells within 10,000' of the Barnsdall SHL. The M Dodd A #047 (API# 30-015-20408) is located 2,262' north in section 22 and disposes into the Upper Penn from a depth of 9,055' to 9,470'. The Burch Keely Unit #113 (API# 30-015-03068) disposes into the Upper Penn from 9,265' to 9,299' and is located 7,750' to the east in section 24. The Chase 21 State Com #1 (API# 30-015-30874) disposes into the Cisco from 8,820' to 9,421' and is located 7,935' to the west in section 21. Muskegon 16 State Com #1 (API# 30-015-27108) disposes into the Cisco from 8,900' to 9,300' and is located 9,184' to the northwest in section 16.

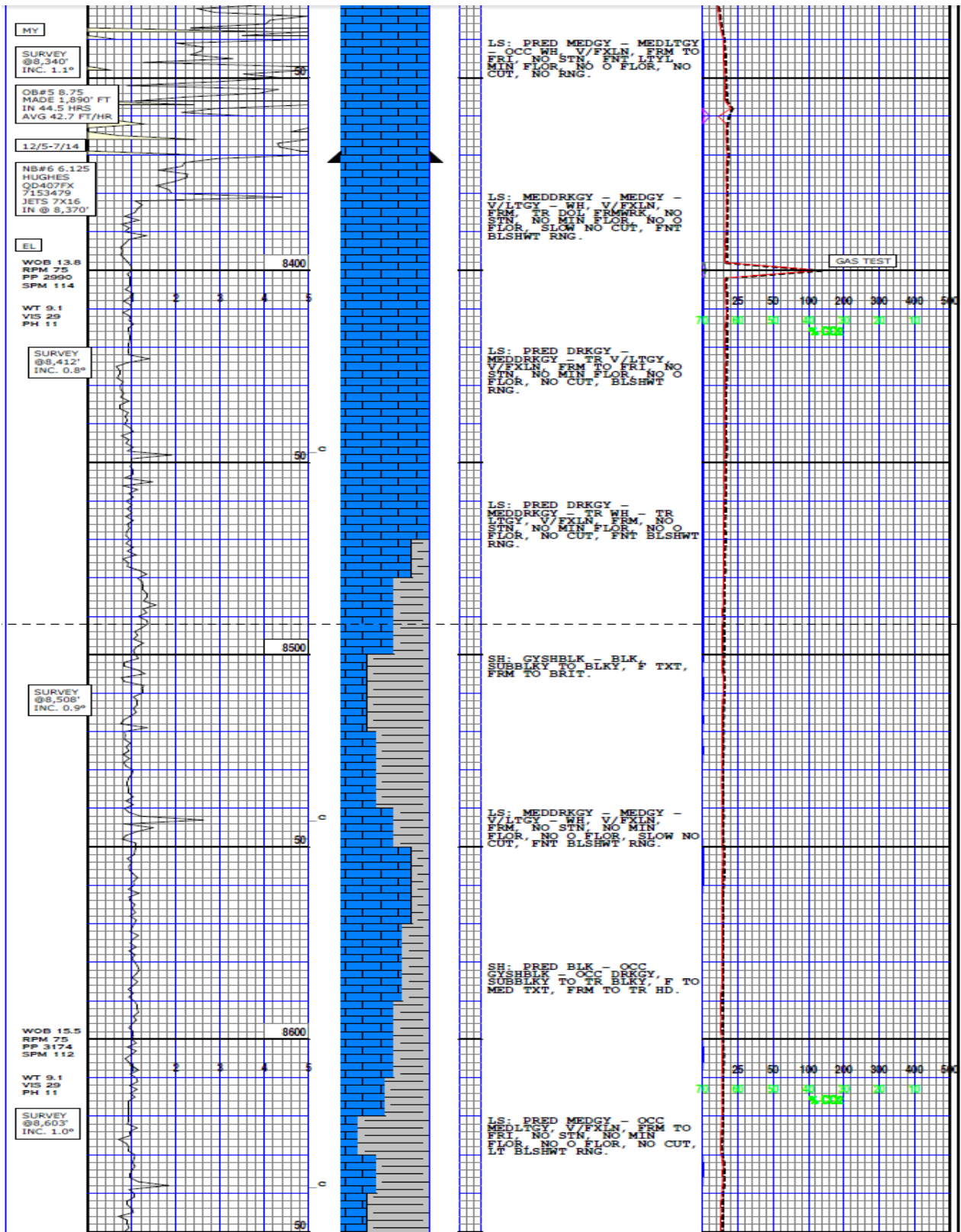
GEOLOGIST: MIKE MUNCY

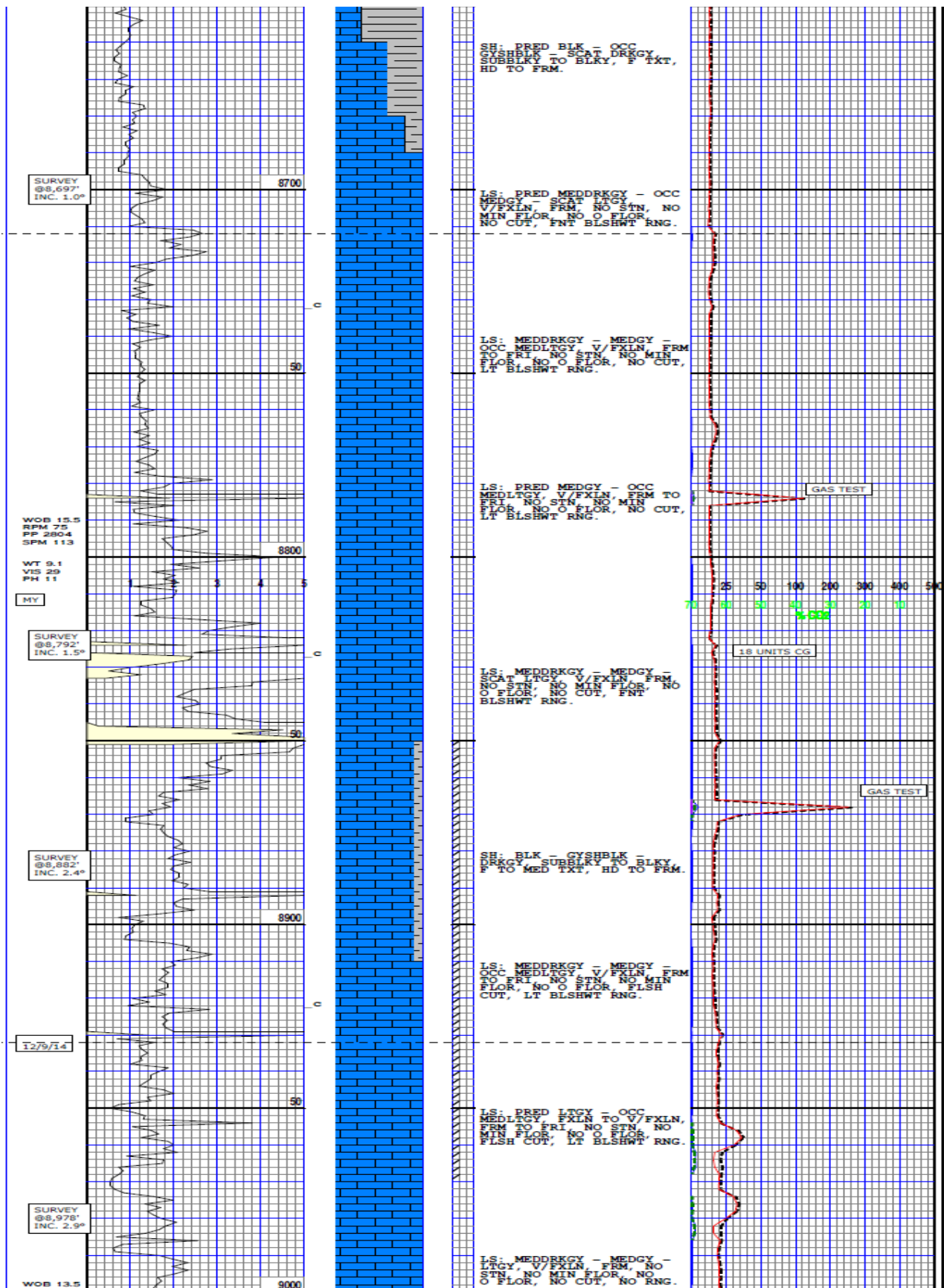
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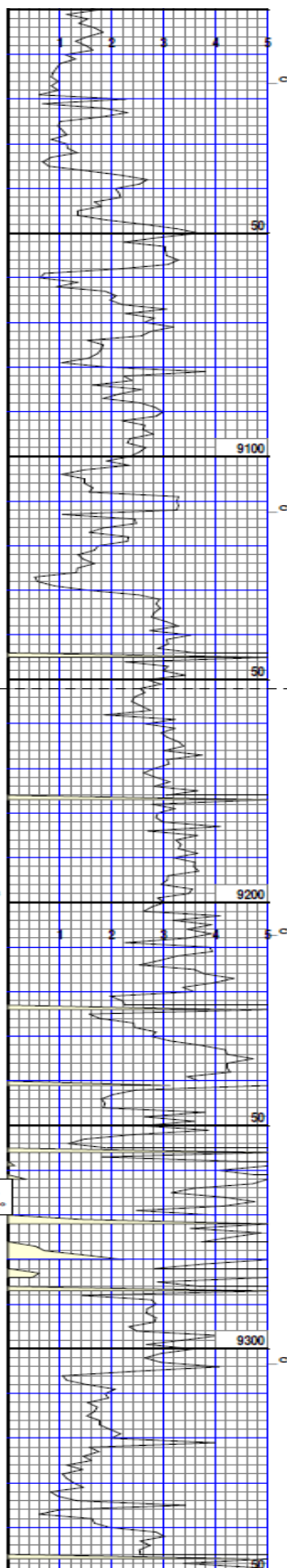
FIGURE 1: Mud log from 8,350' to 9,600' MD





RPM 75
PP 3146
SPM 110

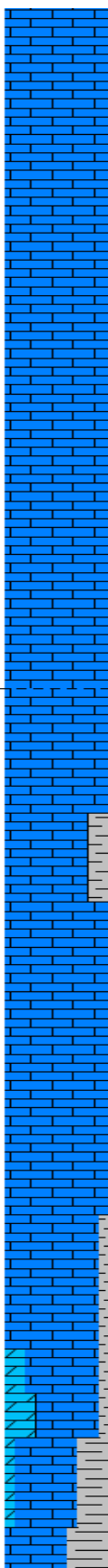
WT 5.1
VIS 29
PH 11



WOB 10.3
RPM 75
PP 3178
SPM 109

WT 9.5
VIS 29
PH 10.5

SURVEY
@9,263'
INC. S.1°



LS: PRED LTGY - MEDLTGY,
FXLN, FRM TO FRI, NO
STN, NO MIN FLOR, NO
FLOR, NO CUT, NO RNG.

LS: PRED LTGY - OCC
MEDLTGY, FXLN TO V/FXLN,
FRM TO FRI, NO STN, NO
STN, NO MIN FLOR, NO
NO CUT, FNT BLSHWT RNG.

LS: MEDDRKGY - MEDGY -
LTGY, V/FXLN, FRM, NO
STN, NO MIN FLOR, NO
O FLOR, NO CUT, NO RNG.

LS: LTGY - MEDLTGY,
FXLN, FRM TO FRI, NO
STN, NO MIN FLOR, NO
FLOR, NO CUT, NO RNG.

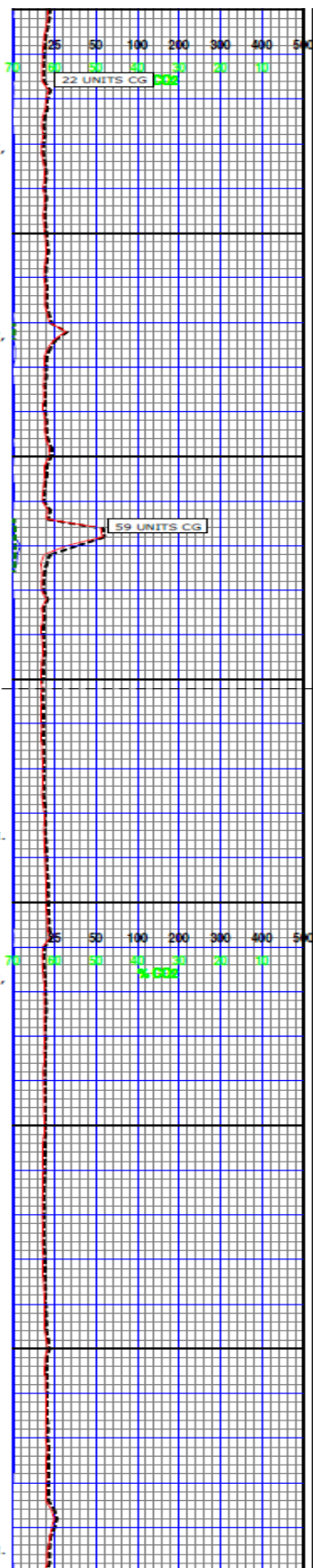
SH: BLK - GYSHBLK -
DRKGY, SUBBLKY TO BLKY,
F TO MED TXT, HD TO FRM.

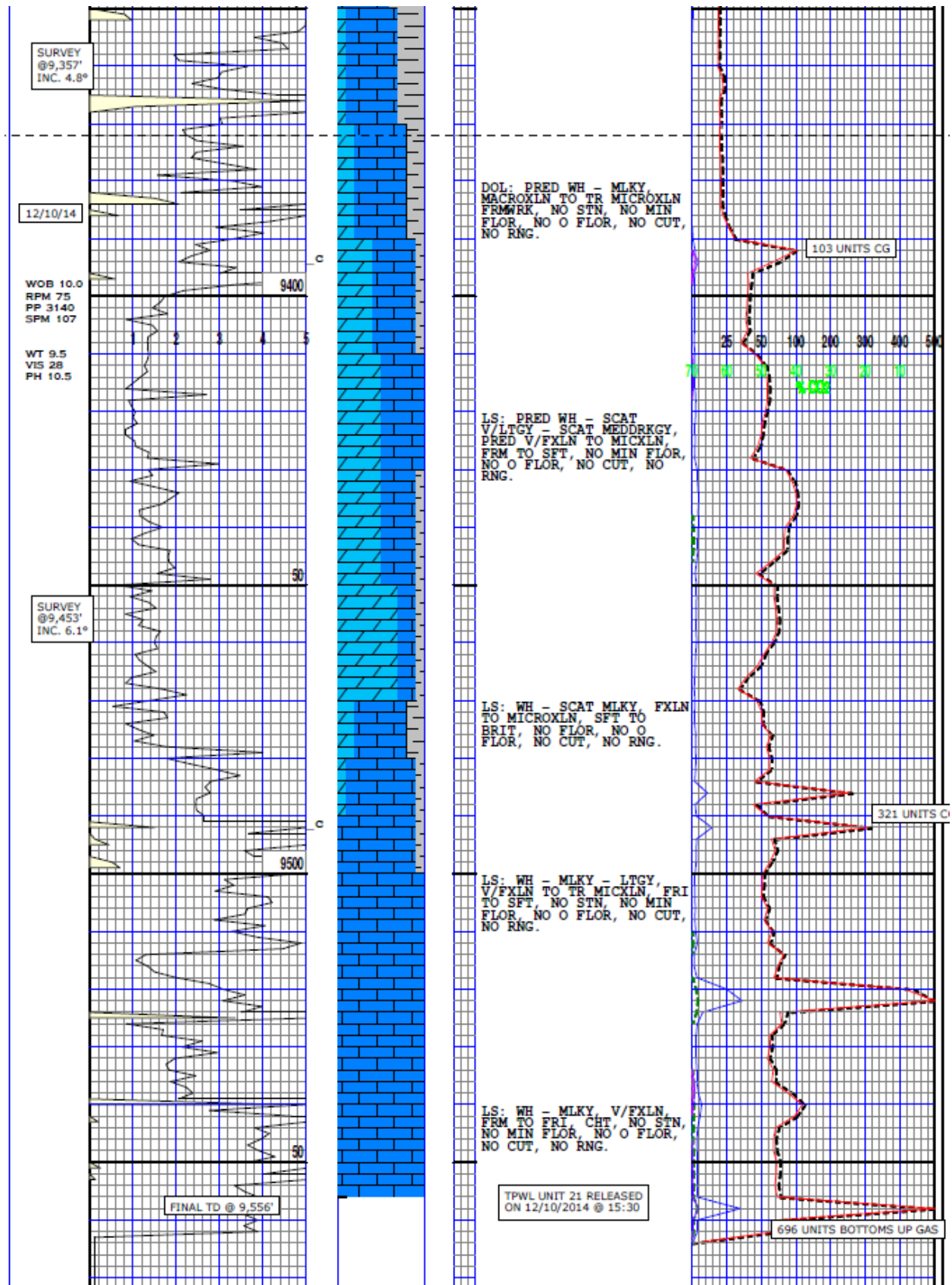
LS: WT - GY - LTGY -
MEDLTGY, FXLN, FRM TO
FRI, NO STN, NO MIN
STN, NO MIN FLOR, NO
NO RNG.

LS: MEDDRKGY - MEDGY -
LTGY, V/FXLN, FRM, NO
STN, NO MIN FLOR, NO
O FLOR, NO CUT, NO RNG.

LS: LTGY - MEDLTGY,
FXLN, FRM TO FRI, NO
STN, NO MIN FLOR, NO
FLOR, NO CUT, NO RNG.

SH: BLK - GYSHBLK -
DRKGY, SUBBLKY TO BLKY,
F TO MED TXT, HD TO FRM.





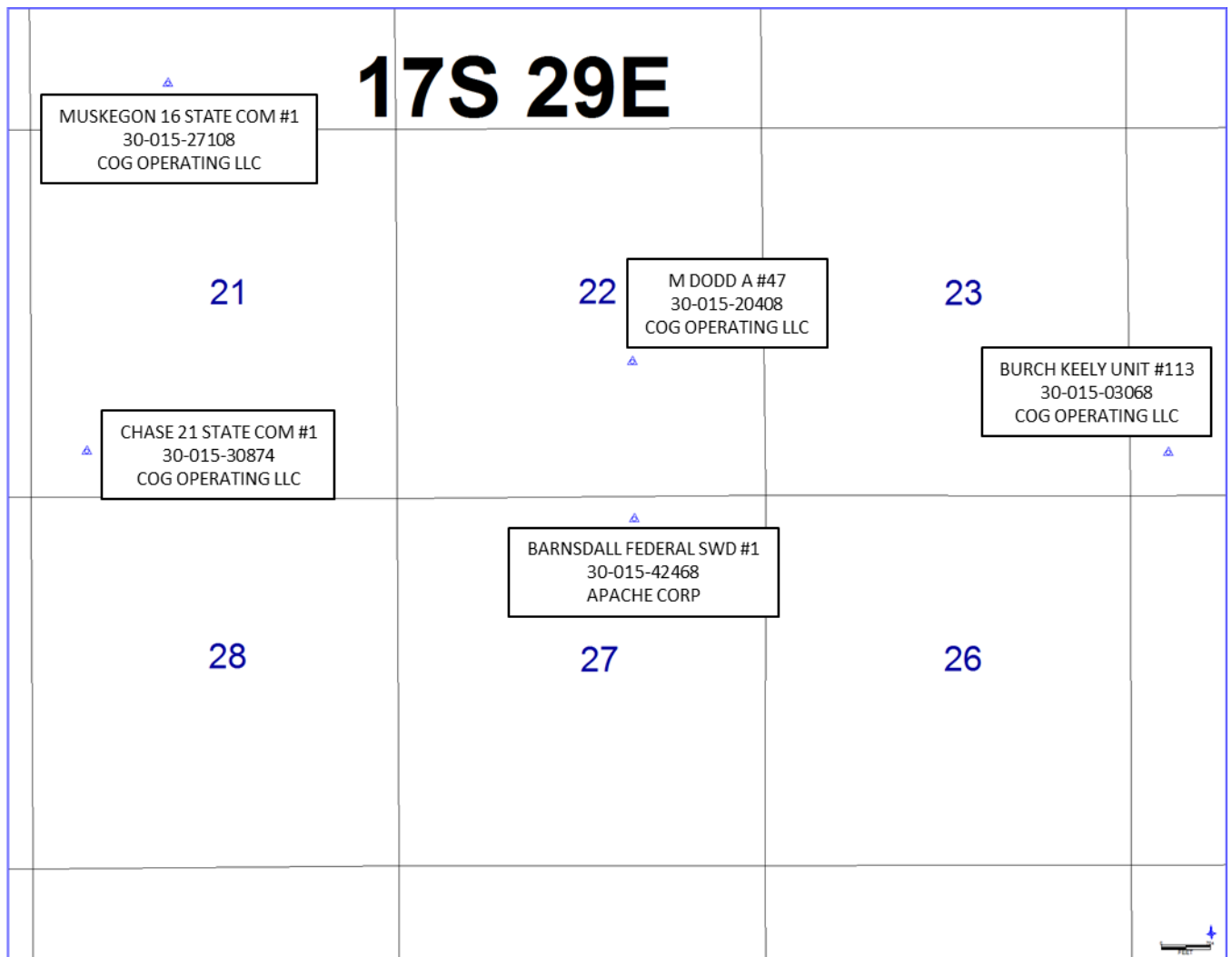


FIGURE 2: Location of nearby SWD wells in comparison with the Barnsdall Federal SWD #1. These SWDs are disposing into the Cisco/Upper Penn.