

Rhoades Estate No. 1

Total Depth - 4222'

Center SWSW of Sec. 14-11-23W,
TREGO COUNTY, KANSAS.

Elevation - 2301'

Commenced - April, 1934.
Completed - August, 1934.

Company - Alma Oil Company
Contractor - Rose-Spring Drilling Company

CORRELATION:

- 210 - Base Fort Hays *Mc*
- 610 - Top Dakota SS. *Mc*
- 1140 - Top Red Beds *Mc*
- 1770-1800 - Lower Enid Anhydrite *C*
- 2010 - Base Red Beds *Mc*
- 2120-2220 - Salt Zone *C*
- 2290 - Top Anhydrite *C*
- 2330 - Top first Dolomite-*C* TOP MARION
- 2380 - Winfield Zone *C*
- 2460 - Fort Riley Zone *C*
- 2580 - Base Florence Zone *C*
- 2840-2900 - Foreker Zone *C*
- 3090-3120 - Detrital Zone in middle Wabaunsee. *C* Note this zone usually carries HFW in cable tool logs.
- 3230-3260 - Burlingame Zone *C*
- 3305 - TOP HOWARD - Topeka Zone *C*
- 3500 - TOP OREAD *C*
- 3552 - Top Lansing-Kansas City *Mc + Phillips*
- 3740 - Top Marmaton *Lerke*
- 3842 - Top Detrital Zone "
- 3910 - Top Mississippi Lime "
- 3925 - Top of Kinder Hook (Weathered) *Mc Lerke says Simpson*
- 3952 - Top Ordovician Detrital *Lerke*
- 3960 - Top Simpson - Weathered *Lerke*
- 3978 - Top of first Siliceous Lime *Lerke*

Due to the Detrital Zones below this depth, the top of the Arbuckle will be doubtful until later drilling defines the character of this formation in this area.

DRILLERS LOG:

Rotary to - 3593'	Lime	-	3832
8" set - cemented w/ 250 sacks at 3555'	Shale and Red	-	3853
Lime - show oil	Red	-	3860
blue shale	Lime	-	3870
Lime - show oil	Red	-	3877
Sand - HFW	Red and Shells	-	3915
Lime - show oil	Show oil	-	3890
Shale	Lime and Chert	-	3930
Sandy Lime	Show oil	-	3910
White Lime	Lime	-	3940
Lime	Shale	-	3955
Black Shale	Lime	-	3967
Shale	Chert Lime & Shale & Red	-	3978
Lime	Lime	-	4025
Shale	Red	-	4026
Lime	Lime 1 BW	-	4070
Red Rock	Sand 2 BW	-	4080
Lime	Lime	-	4095
Shale	Lime	-	4215
Lime	HFW	-	4100
Red Rock	Lime	-	4222

September 1, 1934.
Plugged back to 3627'
Treated with 2000 gallons acid.
Pumping 135 barrels oil per day with some water.

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ROTARY:

- 1790-1800 - Anhydrite 60%; brick red shale & grey shale; trace tan dolomite.
- 1800-1810 - Brick red & pale green shale, & brown shale 60%; anhydrite 10%; grey shale 30%.
- 1810-1820 - Red rock 70%; red & green shale; pale green shale; anhydrite 10%.
- 1820-1830 - Pale green & red shale.
- 1830-1840 - Red, green & grey shale.
- 1840-1850 - Anhydrite 5%; grey shale 60%; red shale.
- 1850-1860 - Red shale 70%; grey & grey green shale.
- 1860-1870 - Same.
- 1870-1880 - Trace bright yellow shale; red shale & pale green shale 80%; grey shale.
- 1880-1890 - 3% tan gypsum; grey shale 40%; red & pale green shale.
- 1890-1900 - Same.
- 1900-1910 - Grey shale 70%; red & pale green shale 30%; trace gypsum.
- 1910-1920 - Grey shale 40%; red & pale green shale; trace gypsum; trace pyrites. ✓
- 1920-1930 - Grey shale 50%; red, pale green, brown & yellow shale; 5% anhydrite.
- 1930-1940 - Same.
- 1940-1950 - Red shale 60%; grey & grey green shale.
- 1950-1960 - Red rock 40%; grey & grey green shale.
- 1960-1970 - Grey shale 70%; red & pale green shale.
- 1970-1980 - Same.
- 1980-1990 - Red rock & pale green shale 80%; grey shale 20%.
- 1990-2000 - Same (trace anhydrite).
- 2000-2010 - Same.
- 2010-2020 - Grey shale 40% red & pale green shale.
- 2020-2030 - Same.
- 2030-2040 - Grey shale 70%; red & green shale; little gypsum.
- 2040-2050 - 5% fine sand; grey shale 70%; sand imbedded in grey shale; red & pale green shale.
- 2050-2060 - Same.
- 2060-2070 - Grey shale; red rock 10% to 20%.
- 2070-2080 - Same.
- 2080-2090 - Same.
- 2090-2100 - Same (trace brown shale).
- 2100-2110 - Same (red rock increase to 30%).
- 2110-2120 - Red rock 40%; grey, grey green shale.
- 2120-2130 - Grey shale 80%; red rock 20 to 25%.
- 2130-2140 - Same.
- 2140-2150 - Red shale 70%; grey shale 30%.
- 2150-2160 - Same.
- 2160-2170 - Same (increase grey shale).
- 2170-2180 - Trace craggy gypsum (may represent salt) Red rock 60%; grey shale 40%.
- 2180-2190 - Red rock 80%; grey shale.
- 2190-2200 - Same, little anhydrite.
- 2200-2210 - Few pieces craggy gypsum (looks like salt solution); Red rock 80%; grey shale.
- 2210-2220 - Anhydrite 5%; several pieces craggy; grey shale 40%; Red rock 65%.
- 2220-2230 - Grey shale 40%; Red rock 60%.
- 2230-2240 - Grey shale 70%; Red rock 30%.
- 2240-2250 - Grey shale 80%; Red rock 20%; trace gypsum.
- 2250-2260 - 10% anhydrite; craggy gypsum; grey shale 70%; red rock 30%.
- 2260-2270 - Anhydrite 15%; grey shale 60%; Red rock 25%.
- 2270-2280 - Same.
- 2280-2290 - Red rock 60%; grey & pale grey shale; little siltstone.
- 2290-2300 - Anhydrite 10%; red rock 60%; grey shale 40%.
- 2300-2310 - Anhydrite 20%; grey shale 60%; Red rock (craggy anhydrite).
- 2310-2320 - Anhydrite 30%; grey shale; trace red rock (craggy anhydrite).
- 2320-2330 - Anhydrite 40%; grey shale; little red rock; trace pyrites. ✓
- 2330-2340 - Dense buff dolomite 30%; grey shale; little red rock; anhydrite 15%.
- 2340-2350 - Same - increase red & grey shale.
- 2350-2360 - Trace buff dolomite; anhydrite 40%; red rock 40%; grey shale 20%.
- 2360-2370 - Anhydrite 30%; red rock; grey shale; little dolomite.
- 2370-2380 - Red rock 40%; grey shale; anhydrite; little dolomite.
- 2380-2390 - Buff & grey mottled dolomite 10%; grey shale 60% red rock 30%.
- 2390-2400 - Anhydrite 15%; grey shale; red rock; trace dolomite.
- 2400-2410 - Poor sample - red, green, gray shale; anhydrite; trace dolomite; pyrites & sand.
- 2410-2420 - Buff porous dolomite 50%; grey shale 40%; red rock & anhydrite.
- 2420-2430 - Same; some sand.
- 2430-2440 - 60% grey & grey green shale; 20% light buff dense dolomite; red rock 20%.
- 2440-2450 - Same.
- 2450-2460 - Same - dolomite porous.

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- 2460-2470 - White dolomite 40%; calcareous shale 40%; shale, red rock, anhydrite.
- 2470-2480 - Buff & white dolomite 40%; calcareous shale, grey & red shale.
- 2480-2490 - Buff crystalline dolomite 70%; grey & little red shale.
- 2490-2500 - Same.
- 2500-2510 - 5% sand; increase red rock; decrease grey shale; dolomite; some pyrites.
- 2510-2520 - Buff granular slightly foss. Limestone 15%; cluster of small round balls, may be colites; dolomite 30%; red shale; grey shale; pyrites; trace sand.
- 2520-2530 - Buff granular to dense lime 40%; dark red shale 10%; dolomite; red rock; grey shale.
- 2530-2540 - Same.
- 2540-2550 - Grey shale 60%; lime, dolomite, red rock.
- 2550-2560 - Same - pyrites.
- 2560-2570 - Coarse grey & buff mottled lime 15%; buff dolomite 30%; grey shale and red rock.
- 2570-2580 - Grey shale 60%; dolomite & limestone same.
- 2580-2590 - Red rock 70%; round pieces green shale & lime - detrital zone.
- 2590-2600 - Same.
- 2600-2610 - Poor sample - increase lime, red rock & grey shale.
- 2610-2620 - Same.
- 2620-2630 - Same.
- 2630-2640 - Coarse buff to dense buff limestone - few fossils - 40%; red rock and grey shale.
- 2640-2650 - Same.
- 2650-2660 - Same.
- 2660-2670 - Same.
- 2670-2680 - Red rock 40%; grey & grey green shale; lime 15%.
- 2680-2690 - Increase buff coarse lime, red rock & grey shale same.
- 2690-2700 - Dark red rock 60%; grey & green shale & little lime.
- 2700-2710 - Coarse buff lime 30%; red rock & grey shale.
- 2710-2720 - Same.
- 2720-2730 - Same - decrease lime.
- 2730-2740 - 10% buff siltstone; red shale; little grey shale & lime.
- 2740-2750 - Dense buff lime 30%; red rock & grey shale.
- 2750-2760 - Siltstone - red & grey shale; little lime.
- 2760-2770 - Coarse granular buff lime 40%; red rock & grey shale.
- 2770-2780 - Same (Poor sample).
- 2780-2790 - Same Increase lime.
- 2790-2800 - Same - lime 70%.
- 2800-2810 - Light buff porous lime 40%; red rock & grey shale.
- 2810-2820 - Grey shale 60%; lime & red rock.
- 2820-2830 - Red rock 70%; few imbedded sand grains; lime & grey shale.
- 2830-2840 - Calcareous siltstone 30%; red rock 60%; lime & grey shale.
- 2840-2850 - Buff porous drusy lime 70%; red rock & grey shale.
- 2850-2860 - Grey shale 40%; dense grey lime 40%; red rock.
- 2860-2870 - Grey shale 70%; dense grey lime & red rock.
- 2870-2880 - 5% chert; grey shale 30%; grey lime 40%; red rock.
- 2880-2890 - Dense buff to grey lime 70%; little chert; grey shale & red rock.
- 2890-2900 - Grey shale 40%; lime & red rock.
- 2900-2910 - Red rock 30%; grey shale; little lime.
- 2910-2920 - Greenish grey shale; red rock 20%.
- 2920-2930 - Red rock 30%; grey shale; lime 20%.
- 2930-2940 - Grey shale; red rock 20%.
- 2940-2950 - Grey shale; red rock & lime 30%.
- 2950-2960 - Same.
- 2960-2970 - Grey shale; red rock 20%.
- 2970-2980 - Same.
- 2980-2990 - Red rock 40%; grey shale; little soft lime.
- ~~2990-3000 - No sample.~~
- 3000-3010 - Grey to white crystalline limestone 40%; red rock; grey & green shale.
- 3010-3020 - Same.
- 3020-3030 - Same.
- 3030-3040 - Grey shale 40%; dense grey lime 40%; red rock.
- 3040-3050 - Coarse grey lime slightly cherty 60%; grey shale & red rock.
- 3050-3060 - Red rock 40%; grey cherty lime 30%; grey shale; pale green shale; pyrites.
- 3060-3070 - Grey fissile shale 60% porous grey lime 20% red rock 20%.
- 3070-3080 - Same; little increase lime and red rock.
- 3080-3090 - Same; decrease lime & red rock.
Detrital Zone.
- 3090-3100 - Irregular sand grains 20%; siltstone; chert fine; pyrites; grey shale; red rock; porous lime.

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- 3100-3110 - Forous lime 30%; grey shale; red rock; little sand.
- 3110-3120 - Chert, siltstone, sand grains, red rock, fusulina 70%; grey shale & porous lime 30%.
- 3120-3130 - Grey shale 40%; grey siltstone & porous grey lime 20%; red rock 40%.
- 3130-3140 - Same; slight decrease grey shale.
- 3140-3150 - Same - trace chert.
- 3150-3160 - Same.
- 3160-3170 - Light grey lime 30%; grey shale & red rock.
- 3170-3180 - Red rock & pale green shale 50%; grey shale & grey porous lime; pyrites.
- 3180-3190 - Bright red shale 70%; siltstone with calcareous bond and pale green shale.
- 3190-3200 - Same; little chert, lime & pyrites.
- 3200-3210 - Red rock 90%; pale green shale 10%.
- 3210-3220 - Same; little lime & few pieces chert.
- 3220-3230 - Same (sample labled BAD CAVE).
- 3230-3240 - Same - 20% porous rotten lime (BAD CAVE).
- 3240-3250 - Siltstone & rotton lime - trace chert 30%; red rock & pale green shale 70%.
- 3250-3260 - Dark grey shale 15%; clustered tan lime & grey lime cherty 30%; red rock 50%; little siltstone; glauconite.
- 3260-3270 - Red rock & pale green shale 80%; lime & siltstone.
- 3270-3280 - Grey shale 30%; grey cherty lime 30%; red rock.
- 3280-3290 - Shale grey 40%; grey lime 30%; red rock.
- 3290-3300 - Grey shale 60%; coarse grey lime 30%; red rock.
- 3300-3305 - Grey shale 70%; grey & buff mottled crystalline lime 10%; grey lime & little tan lime; red rock 5%.
- 3305-3310 - White & grey crystalline lime 30%; grey shale 70%; red rock 10%.
- 3310-3315 - Same; trace brown chert.
- 3315-3320 - Grey shale 80%; dense grey lime; little red rock.
- 3320-3325 - 10% dark red shale; 80% grey shale; 10% grey lime.
- 3325-3330 - Pearl grey & buff lithographic lime 30%; some chert; grey shale & trace red.
- 3330-3360 - CORED
- 3330-3335 - Porous to dense grey lime 40%; grey shale; red rock 10% (rim).
- 3335-3340 - Same (Rim).
- 3340-3345 - Same - increase red (Rim).
- 3340-3345 - Light buff ztalline lime (sample is base of core).
- 3345-3350 - (Rim) Buff & grey porous lime 30%; grey shale & red rock.
- 3345-3350 - Light buff to grey lime 70%; grey shale & red rock.
- 3350-3355 - (U.R.) Grey lime 20%, grey shale; 5% red.
- 3350-3355 - Grey to buff porous & dense lime 70%; grey shale; 5% red.
- 3355-3360 - (U.R.) Grey porous lime 20%; grey shale.
- 3355-3360 - Grey dense to porous lime 60%; grey shale.
- 3360-3365 - Grey lime 30%; grey shale; little red.
- 3365-3370 - Grey shale 90%; dense grey lime, lime and red rock.
- 3370-3375 - Coarse grey mottled lime 40%; grey shale; trace red.
- 3375-3380 - Grey shale 70%; red rock 10%; light grey lime; fossils; crynoid stems & plant stems.
- 3380-3385 - White to light buff lime 30%; trace chert; grey shale; 3% red rock.
- 3385-3390 - White porous lime, increase chert 40%; grey shale; little red rock.
- 3390-3395 - Same.
- 3395-3400 - White to grey porous lime 50%; little chert; grey shale 30%; red rock 10%.
- 3400-3405 - Same.
- 3405-3410 - White & grey granular lime 70%; little chert; grey shale 20%; red rock 10%.
- 3410-3415 - Same.
- 3415-3420 - Same - increase grey shale; decrease red rock.
- 3420-3425 - Same.
- 3425-3430 - Grey shale 70%; coarse reworked lime 20%; red rock 10%.
- 3430-3435 - White porous lime 20%; grey shale 60%; anhydrite & red rock (cavings)
- 3435-3440 - Light grey porous lime 60%; grey shale 30%; red rock - pyrites.
- 3440-3445 - Same.
- 3445-3450 - No Sample.
- 3450-3455 - Grey shale 70%; red rock 20%; lime 10%.
- 3455-3460 - Grey & grey green shale 60%; red rock 20%; lime buff to grey rotton 20%.
- 3460-3465 - Grey fissile shale 90%; red rock & lime.
- 3465-3470 - Grey shale 70%; red rock & lime 30%; trace chert.
- 3470-3475 - Coarse buff lime 20%; red rock 20%; grey shale 60%.
- 3475-3480 - Soft buff lime 40%; red rock 20%; trace chert; grey shale.

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- ✓ 3480-3485 - Light buff very cherty lime 80%; many fusuline; grey shale 15%; red rock & pyrites.
- 3485-3490 - Grey shale 40%; trace glauconitic siltstone; red rock 10%; lime & chert same 50%.
- ✓ 3490-3495 - Soft grey shale 70%; buff rotten cherty lime, red rock & pyrites.
- 3495-3500 - Same.
- 3500-3505 - Soft white lime cherty; abundant fusuline; 15% red rock; 15% grey shale.
- 3505-3410 - Porous white & grey lime 80%; grey shale, trace red rock.
- 3510-3515 - Same.
- 3515-3520 - Lime same 95%; grey shale, trace red rock.
- 3520-3525 - Same - slight increase shale.
- ✓ 3525-3530 - Dark & light grey shale 15%; lime same 85%; increase red.
- ✓ 3530-3535 - Grey & grey green shale 40%; lime same, little chert, pyrites.
- ✓ 3535-3540 - Grey & grey green shale 40%; red, brown & green shale 20%; pyrites; light buff to white porous lime.
- 3540-3545 - Grey and grey green shale 70%; red rock 20%; porous light buff lime 10%.
- 3545-3550 - Grey green shale 60%; red rock 20%; porous light buff lime 20%.
- 3550-3555 - Coarse to dense buff lime & some chert 40%; grey shale 50%; red rock 10%.
- 3555-3560 - Buff & grey mottled colitic lime 5%; dense buff lime 60%; grey shale 30%; red rock.
- 3560-3565 - Glauconitic siltstone 5%; coarse weathered red & brown shale 15%; dark & light grey shale 40%; dense buff to light grey lime & some chert 40%.
- 3565-3567½ - Granular white to light buff finely xtalline lime, slightly colitic 70%; grey shale & little red.
- 3567½-3570 - Dense light buff lime, little chert 80%; trace drusy porous lime; grey shale & some red rock.
- 3570-3572½ - Dense cream lime abundant chert 90%; grey shale & trace red rock.

STANDARD TOOL HOLE.

- 3578-93 - Soft buff porous lime 70%, brown stain; dense grey lime 10%; grey shale (Rim Rat Hole) good saturation.
- 3593-3601 - 20% grey & orange chert; grey lime 30%; grey green shale, oil stain.
- 3601-06 - Grey green shale, lime cherty 20%.
- 3606-08 - Dense grey lime 30%; grey shale, trace brown shale, trace chert, oil stain.
- 3608-10 - Grey shale, trace brown and purple shale, some oil stains.
- 3610-16 - Dense grey lithographic lime 70%; grey green shale; trace brown shale; fossil stems, some oil stains.
- 3615-20 - Brown shale 15%; soft buff finely xtalline lime 70%; grey green shale (oil sample label) saturation.
- 3620-22 - Brown shale 30%; lime same 40%, grey green shale.
- 3622-23 - Same; trace red chert.
- 3623-27 - Grey & buff finely xtalline lime 60%; grey and brown shale, oil stains.
- 3627-32 - White dense to fine crystalline lime 40%; grey shale 40%; brown shale; trace soft buff lime, oil stains.
- 3632-36 - Lime white to light buff crystalline 80%; many free calrite crystals; grey green shale; trace rotten tan to brown shale; oil stains.
- 3636-40 - Grey fissile shale 70%; dark buff & light grey lime; few pieces of lime are drusy, may be oolite casts; oil stains.
- 3640-48 - Brown shale 15%; soft light grey lime 40%; grey shale.
- No sample.
- 3652-55 - Dense light grey lithographic lime 70%; grey shale & trace brown shale.
- 3655-62 - Dense white & light grey lime 80%; grey shale & trace brown shale.
- 3662-70 - Lime same 90%; grey shale.
- 3670-72 - Lime same 70%; increase grey green shale; (several chunks of soft oil stained clusters with material foreign to rest of sample?).
- 3672-74 - Grey to buff finely xtalline lime 70%; brownish grey shale.
- 3674-84 - Brownish grey to olive grey shale 70%; coarse grey lime.
- 3688-92 - Grey shale 90%; soft buff lime & imbedded chert.
- 3690-94 - Grey shale with 15% brown shale; trace lime.
- 3692-94 - (3694 - 3692) Grey shale & 15% brown shale; trace white soft lime; few pieces chert; few pieces calcite.

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- 3692-95 - Dense cream lime & cream chert.
 3695-3700 - Dense white lime.
 3700-09 - Dense buff lime; trace grey & brown shale.
 3709-12 - Grey green shale 40%; tan lime 30%; buff lime & trace brown shale.
 - No Sample.
 3714-18 - Dense grey lime & hard tan lime 70%; grey green shale.
 3718-24 - Red shale 15%; grey shale 60%; grey, buff and tan lime.
 3724-27 - Grey shale; 10% red rock.
 - No Sample.
 3728-33 - Dense light grey lime 30%; grey shale 50%; red rock 20%.
 3733-37 - Same.
 - No Sample.
 3743-50 - Grey shale; trace brown shale & lime.
 3750-56 - Same - several large chunks of lime.
 3756-63 - Tan chert 10%; dense buff lime; coarse buff lime 40%; grey shale & trace brown shale.
 3763-72 - Brown shale 15%; grey shale 60% coarse buff & grey lime.
 - No Sample.
 3775-79 - Same.
 3779-90 - Grey lime 40%; grey shale & little brown shale.
 3790-96 - Brown shale 20%; grey shale 60%; buff & grey lime.
 3796-8800 - Large chunks of grey shale 70%, buff xtalline 20%; brown shale.
 - No Sample.
 3806-10 - Dense buff & grey lime 30%; grey shale with some brown shale.
 3810-14 - Grey shale 70%; grey & buff lime 20%; brown shale 10%.
 3314-20 - Brown shale 20%; grey shale & some lime.
 3820-24 - Same - increase lime.
 3826-28 - Buff porous lime 60%; red & green shale.
 3828-30 - Grey green, brown, and red & green shale 70%; buff & grey coarse lime.
 3830-39 - Same.
 3839-43 - Red rock & red & green shale 80%; greenish grey lime.
 3843-48 - Same; lime weathered; trace siltstone.
 3848-53 - Same.
 3853-60 - Same - increase weathered grey lime.
 3860-63 - Dense grey lime 40%; red rock & weathered lime.
 3863-65 - Same; few quartz pebbles - good cross section of fusulina in dark grey lime; few free fusulina; bryzoa and plant stems.
 3865-70 - Same.
 3870-74 - Red, reddish green & little yellow shale; 5% lime.
 3874-77 - Same; lime 15%.

TOP CONGLOMERATE

- 3877-80 - Large quartz pebbles; red, orange & yellow chert; weathered lime; red & green shale.
 3880-85 - Same.
 3885-86 - Few quartz pebbles; red & yellow shale; decrease chert; increase weathered lime.
 3886-88 - Red rock; green & yellow shale; few quartz pebbles; little weathered lime.
 3888-93 - Grey & grey green weathered lime 20%; red, green & grey green shale; few quartz pebbles slight saturation.
 3888-96 - Same.
 3896-3902 - Same.
 3901-03 - Red, grey, orange & yellow chert 70%; red, grey green shale & weathered lime; few large quartz pebbles.
 3903-09 - Same.
 3909-12 - Weathered grey lime 30%; red rock & chert 60%; grey green & green shale slight saturation.
 3912-16 - Weathered grey lime 40%; grey & buff chert 15%; buff weathered lime 10%; red rock & quartz pebbles.
 3916 $\frac{1}{2}$ -19 - Coarse white lime; 15% grey chert; trace red rock.
 (Looks like Mississippi Lime).
 3919-25 - Grey & white chert 80%; trace orange chert; little weathered red & grey shale & lime.
 3925-30 - Coarse purple-red lime 50%; chert, grey shale, grey lime & red rock.
 3930-35 - Buff to light grey finely xtalline lime 80%; grey shale, red rock & chert.
 3935-39 - Pale green shale 80%; grey chert & lime.
 3939-45 - Olive & pale green shale; few pieces bright green shale.
 3945-49 - Olive green shale.
 3949-57 - Brownish grey coarse lime 80%; black fissile shale 20%.

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- 3957-62 - Pea green shale 40%; dense buff to light grey lime.
- 3962-67 - Weathered red, brown, yellow, purple & green shale; chert and lime.
- 3967-73 - Same; increase green shale.
- 3973-80 - Fine angular sand 20%; buff xtalline dolomite 15%; chert and varicolored shale; sand grains imbedded in shale.
- No Sample.
- 3985-90 - Pink, buff and grey crystalline dolomite 40%; varicolored shale and varicolored chert.
- No. Sample.
- 3997-4001 - Polished sand with few large irregular pebbles 10%; coarse buff and dense buff dolomite 60%; chert and weathered shale.
- 4001-07 - Sand same 30%; sugary dolomite chert and varicolored shale; trace glauconite.
- 4008-15 - Light grey to buff xtalline dolomite 70%; varicolored shale; decrease sand and chert.
- 4015-19 - Olive green and purplish red shale 80%; chert & dolomite.
- 4019-82 - Varicolored shale 70%; dolomite chert and few sand grains.
- 4022-25 - Pink and buff dolomite and chert 70%; few large chunks of glauconitic sand with imbedded pyrite; red and green shale.
- 4025-30 - Increase glauconitic sand with dolomite and shale matrix 10%; red and green shale 40%; brown and buff dolomite and chert.
- 4030-33 - Polished sand grains 15%; chert 30%; buff crystalline dolomite 30%; red and green shale.
- 4033-38 - Angular sand and polished sand 30%; mixture of varicolored shale; varicolored chert and dolomite.
- 4038-39 - Glauconitic sand shale matrix 10%; red and green shale 60%; chert and little dolomite.
- 4039-40 - Large polished sand grains; glauconitic sand clusters 30%; dolomite, chert, red and green shale.
- No Sample.
- 4048-52 - Light buff crystalline dolomite 90%; little sand and green shale; trace red shale.
- 4052-57 - Round polished sand and glauconitic sand clusters with green shale matrix 60%; pink & buff dolomite; little red & green shale.
- 4057-68 - Same; trace chert.
- 4068-74 - Buff translucent dolomite many free oolites 80%; angular & frosted sand grains 20%; little chert.
- 4074-82 - Brownish red shale 70%; bright green shale and green & red shale 10%; sand grains, pebbles and chert.
- 4082-85 - Glauconitic sand clusters; polished sand grains & pyrite 50%; green shale; red shale chert & dolomite 50%.
- 4085-90 - Polished and angular sand 60%; greasy brown and green shale, dolomite and chert.
- No Sample.
- 4094-4100 - Same, increase dolomite.
- No Sample.
- 4101-02 - Same, dolomite and chert increase.
- 4101-05 - Buff and grey dolomite 70%; angular sand and frosted sand; little green shale.
- 4105-11 - Same.
- 4111-16 - Same.
- 4116-25 - Buff xtalline dolomite.
- 4125-30 - Pale green shale 20%; buff and grey dolomite, few sand grains
- 4130-35 - Buff xtalline dolomite; sand angular and some rounded 20%.
- 4135-42 - Light buff dolomite.
- 4142-55 - Same.
- No. Sample.
- 4160-65 - Same.
- 4165-72 - Same, little pale green shale.
- 4172-77 - Same.
- 4177-82 - Same.
- 4182-88 - Same.
- 4188-94 - Same.
- 4194-4200 - Same.
- 4200-08 - Same.
- No Sample
- 4215-22 - Same. - T. D.