

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 41

Summary of the National Bulk Carriers, Inc., Edna L. Hild #1  
Towner County, North Dakota

by Carole Smith  
December 1953  
Permit #243, Well #227

National Bulk Carriers, Inc.--Edna L. Hild #1. Located in Towner County, North Dakota--Section 31, T., 158N., R. 66W. (100' west of center of the SE 1/4 SW 1/4). Elevation: 1459 G.L., 1463 D.F., 1465 K.B.

The National Bulk Carriers Hild #1, drilled by Wakefield Drilling Company, was spudded in November of 1952. 202 feet of 8 5/8" casing was set with 220 sacks of cement. 15 sack plugs were set at 3270 and 2035; a 20 sack plug was set at 1440; a 25 sack plug was set at 202; a 5 sack plug was set at the top of the casing. The well was abandoned December 13, 1952.

Cored intervals:

1193-1241  
1958-1985  
1987-2035  
2036-2059

Tests: DST #1 (2059 feet)-- 20 minutes, shut-in 15 minutes. Recovered 405 feet of saltwater.

FORMATIONS

<u>Formation</u>	<u>Top</u>
Niobrara	655
Greenhorn	1040
Dakota	1436
Sundance	1630
Piper	1861
Red Beds	1950
Mission Canyon	2030
Nisku	2142
Duperow	2193
Souris River	2485
Dawson Bay	2585
Ashern	2808
Interlake	2845
Upper Stony Mountain	3107
Lower Stony Mountain	3188
Red River	3273
Winnipeg Shale	3868
Winnipeg Sand	3995
Pre-Cambrian	4498

Tops were picked from samples and electric logs. Colors from rock color chart.

<u>From</u>	<u>To</u>	<u>Description</u>
40	100	Medium sand to gravel, clayey; trace gypsum.
100	200	Medium sand to gravel.
200	240	Missing sample.
240	260	Gravel--well rounded.
260	340	Shale--medium grey, firm, slightly green tinged in part; traces of inoceramus fragments; starting at 330.
340	480	Shale--medium grey, firm, platy, somewhat green tinged in part; traces of inoceramus fragments; traces of moderate yellowish brown, sub-crystalline dolomite (440-470); small amount very light brown bentonite (470-480).
480	500	Bentonitic shale--medium light grey, soft, lumpy.
500	510	Shale--medium grey, soft, lumpy; some dolomite as above; small amount bentonitic shale as above.
510	520	Shale--bentonitic shale as above; much medium grey to dark grey, lumpy to very flaky shale.
520	540	Shale--dark grey to grey black, flaky to lumpy, sandy (becoming less sandy at 30).
540	630	Shale--grey black to black, soft, flaky, fossiliferous; traces of fine sand.
630	640	Shale--black, soft, flaky, pyritic.
640	690	Shale--grey black (becoming lighter grey) soft, flaky to lumpy, increasingly calcareous, fossiliferous, pyritic.
690	700	Calcareous shale--medium grey to medium light grey, lumpy; a few inoceramus fragments.
700	770	Shale--dark grey to black, lumpy, partly flaky; traces of sand pyrite, inoceramus fragments. Missing samples 710-720.
770	790	Limestone--medium dark grey, micro-sugary, hard; much dark yellow orange to moderate yellow brown, sub-crystalline limestone (calcite?) much shale as above (780-790).
790	860	Shale--as above, traces of limestone as above more at 820-830.
860	870	Limestone--grey black, argillaceous, very dense; some shale as above.
870	1020	Shale--grey black, lumpy, partly flaky; traces of limestone as above.
1020	1040	Shale--black to grey black, flaky, becoming more lumpy.
1040	1190	Calcareous shale--medium dark grey, white spotted, somewhat flaky, mostly lumpy; much shale as above (1040-1060); traces of inoceramus fragments and inoceramus limestone beginning at 1100.
1193	1200	Sand--medium to coarse, well rounded, polished, coring.
1200	1240	Sand--as above; an increasing amount of gravel and dark grey shale (partly calcareous) coring.
1240	1250	Sand--as above, a small amount of gravel; some black shale, partly calcareous.
1250	1280	Shale--dark grey, partly calcareous, some sand as above.
1280	1320	Shale--dark grey to black, calcareous, pyritic (1290-1300), much sand as above, silty (1300-1320).
1320	1370	Shale--grey black, flaky and lumpy, pyritic, fossiliferous; traces of sand, bentonite.
1370	1400	Shale--medium dark grey, flaky and lumpy, pyritic; traces of sand.

<u>From</u>	<u>To</u>	<u>Description</u>
1400	1440	Sand--medium, sub-round, quartz; much shale as above; traces of pyrite and limestone; mostly shale (1430-1440), cave?
1440	1450	Sand--fine to coarse, some silt, some pyrite.
1450	1480	Sandstone--medium grained, limy, quartzose; some medium to coarse quartz sand; some pyrite.
1480	1510	Sand--coarse, sub-angular to sub-round; small amounts of limy sandstone as above; some shale and pyrite (1480-1500), the pyrite ending at 1500.
1510	1520	Sand--as above; increasing amounts of shale; much orange, pink and white, limy, fine grained sandstone.
1520	1530	Sand--medium to coarse, round, quartz; much grey, flaky shale; traces of pyrite, siltstone, limestone.
1530	1540	Silt--greyish orange pink, limy; much sand as above; some shale.
1540	1560	Sand--as above; some silt as above; some shale.
1560	1580	Shale--dark grey, pale green, partly calcareous; much medium to coarse quartz sand as above.
1580	1600	Shale--as above, decreasing an quantity; increasing amounts of sand as above; much greyish orange pink, partly limy, argillaceous siltstone.
1600	1640	Sand--as above; some grey and green, partly limy shale as above.
1640	1650	Shale--light brown (5YR 5/6), grey, pale green, flaky and lumpy, partly calcareous; much sand as above.
1650	1660	Shale--black, flaky; much red orange, partly calcareous shale; much sand as above.
1660	1670	Shale--as above; much sand and limy sandstone; much soft, white and very pale pink gypsum.
1670	1700	Argillaceous limestone--white and black, somewhat banded, fine sugary; some sand, shale,
1700	1710	Shale--black, some reddish and green as above; some sand; some limestone as above, partly pale yellow brown.
1710	1720	Limestone--black and white, fine sugary, very fossiliferous, partly brownish; some sand.
1720	1730	Limestone--as above; some pale yellow grey, sub-crystalline limestone with pale red to dark red mottlings, fossiliferous; some sand.
1730	1750	Shale--grey black, flaky; much sand; some limestone as above; traces of gypsum (1740-1750).
1750	1760	Sand--as above; some yellow grey, soft, calcareous, argillaceous siltstone; some black, grey and reddish shale; some pale yellow orange, sub-crystalline, fossiliferous limestone.
1760	1780	Sand--medium to coarse, sub-round, quartz; much moderate reddish brown, slightly calcareous shales; some flaky black shale; traces of pyrite, white gypsum.
1780	1790	Shale--reddish brown, somewhat calcareous; much flaky, black shale; small amounts of sand, gypsum, pale green shale.
1790	1840	Sand--medium to coarse, round, quartz; some grey, reddish, greenish, black, partly calcareous shale; traces of pyrite, gypsum; more shale (1830-1840).

<u>From</u>	<u>To</u>	<u>Description</u>
1840	1860	Sand--as above; some medium sugary, very limy sandstone; some black, grey, reddish, partly calcareous shale, increasing in quantity (especially the black shale).
1860	1870	Dolomite--white, very dense, partly oolitic, slightly porous.
1870	1880	Dolomitic limestone--white, lithographic, partly oolitic; trace chert, sand.
1880	1890	Limy dolomite--very pale orange, very pale yellow grey, hard micro-sugary, argillaceous; small amounts of black shale and and quartz sand.
1890	1930	Limestone---white, very fine, sugary to micro-sugary; small amounts of black shale and quartz sand, increasing at 1920.
1930	1940	Limestone--light grey, very fine sugary, to micro-sugary; much black shale and sand as above.
1946	1950	Shale--grey black; much medium quartz sand; some very pale orange and very pale yellow grey limestone.
1950	1958	Shale--moderate reddish brown (dolomitic), black; much quartz sand; trace gypsum.
1958	1985	Cored interval. Core #2.
1958	1970	Anhydrite--white, chalky to sub-crystalline; much light brown, dense, very fine sugary dolomite (1961-1964).
1970	1973	Anhydrite--as above; much greyed red siltstone; much light greenish grey dolomitic shale with veinlets of anhydrite.
1973	1976	Anhydrite--white and grey, dense; much moderate brownish and greyish red siltstone.
1976	1979	Siltstone--as above, only slightly dolomitic, with thin interbeds of white anhydrite; much light greenish grey, slightly dolomitic shale.
1979	1982	Shale--moderate brown to reddish brown; some green grey shale as above; some anhydrite as above.
1982	1985	Dolomitic shale--light green grey and pale brown; much anhydrite.
1987	2034	Cored interval. Core #3
1987	1989	Dolomitic shale--green grey and very pale orange brown, soft interbedded with white anhydrite; some dark yellow brown and light brown dolomitic shale with rusty spots.
1989	1992	Dolomitic shale--pale greyish orange pink, soft, with veinlets of white anhydrite.
1992	1995	Anhydrite--white, with traces of waxey, greenish grey shale.
1995	1998	Shaly dolomite and dolomitic shale--very pale orange to green grey, with white anhydrite.
1998	2007	Shale--moderate reddish brown, slightly dolomitic; increasing amounts of white to blue grey, splintery to glassy anhydrite.
2007	2010	Shale--pale green, dolomitic, with veinlets of white anhydrite; some white anhydrite.
2010	2013	Shale--pale green, slightly dolomitic, with traces of imbedded round quartz sand.
2013	2022	Shale--moderate reddish brown, hard; some white anhydrite appearing at 2016 and increasing in quantity, partly interbedded with the shale.
2022	2025	Anhydrite--white and orangish, bedded with sand, pale green, dolomitic shale.

<u>From</u>	<u>To</u>	<u>Description</u>
2025	2028	Shale--moderate reddish brown, siltz, slightly dolomitic, with many anhydrite veinlets and thin beds.
2028	2031	Anhydrite--orange, partly argillaceous; small amounts of dense, pale yellow grey dolomite; bruciated.
2031	2034	Anhydrite--as above; much very fine sugary, white limestone; traces of moderate to dark reddish brown, siltz shale.
2036	2059	Core #4
2036	2038	Anhydrite--orangish, white, sub-crystalline; much greyish orange pink, very fine sugary dolomite.
2038	2041	Limy dolomite--pale red, hard fine sugary; much yellow grey to greyed yellow, hard, limy dolomite.
2041	2044	Limestone--greyed pale red, dense.
2044	2047	Limestone--greyed yellow to yellow grey, dense.
2047	2053	Limestone--greyish orange pink, hard, dense, becoming pinker.
2053	2056	Limestone--very light grey, very fine sugary, partly chalky, partly pink.
2056	2059	Limestone--orange pink, very fine sugary.
2059	2065	Limestone--greyish orange pink, fine sugary to micro-sugary; some pale red, dense, dolomitic limestone; some sand, red shale, black shale.
2065	2085	Shale--reddish, black, some green; some pale red, micro-crystalline dolomite; some limestone as above, becoming chalky white; some sand.
2085	2090	Shale--reddish, black, grey, green grey; much sand; some fine sugary to chalky, white limestone.
2090	2095	Limestone--greyish orange pink, very fine sugary; some pale red, dense dolomite; some shale and quartz sand.
2095	2110	Shale and sand--as above; much limestone as above; much pale red dolomite as above; traces of pyrite.
2110	2125	Dolomite--pale red; dense; much very pale orange to pale yellow grey, very fine sugary limestone; some shale and sand as above.
2125	2135	Shale--reddish black; much pale red, dense dolomite; much very fine sugary to chalk, pale limestone; some coarse sand and reddish siltstone beginning at 2130.
2135	2140	Sand--coarse, round, quartz; much very pale orange, chalky and fragmental limestone; some shale; small amounts of limy dolomite.
2140	2150	Limy dolomite--greyish orange pink, sugary, porous; increasing amounts of sand.
2150	2159	Limy dolomite--light brown, becoming orangish and pinkish, fine sugary slightly vuggy; small amounts of white anhydrite.
2159	2170	Limy dolomite--pale red to moderate reddish brown, very fine sugary, hard; small amounts of shale, sand, anhydrite.
2170	2185	Limy dolomite--orangish pink, hard, fine sugary; traces of white anhydrite; missing samples: 2175-2180.
2185	2195	Limestone--greyed yellow to orange pink, fine sugary to medium sugary, slightly dolomitic in part; trace of soft, white anhydrite.
2195	2200	Dolomite--pale yellow brown, sugary; much pale orange, sugary, dolomitic limestone; some pale red dolomitic shale.

<u>From</u>	<u>To</u>	<u>Description</u>
2200	2210	Dolomitic shale--pale to moderate reddish brown; small amounts of dolomite and limestone as above.
2213	2215	Dolomitic shale--orange pink, soft partly pale green.
2215	2230	Dolomitic limestone--yellow grey to yellow brown, quite pink tinged, fine sugary to medium sugary; traces of shale, sand, anhydrite.
2230	2235	Dolomitic limestone--moderate red, argillaceous, fine sugary; small amount of limestone as above.
2235	2240	Limestone--pale yellow brown, slightly pink tinged, fine sugary, argillaceous.
2240	2245	Dolomitic limestone--yellowish and pinkish, very fine sugary; traces of chalky white limestone and oolitic limestone.
2245	2250	Missing samples.
2250	2260	Dolomitic--moderate reddish orange to pale reddish brown, sugary; traces of chalky limestone, oolitic limestone, shale, pyrite, sand.
2260	2265	Dolomitic limestone and limy dolomite--pinkish and yellowish fine sugary to sub-lithographic.
2265	2285	Limestone--light brown, becoming yellow brown, sugary, partly chalky; some shale and sand, ending at 2280; some vuggy, light brown limestone (2280-2285).
2285	2290	Limy dolomite--dark yellow brown, sugary, porous; small amounts of chalky, white limestone.
2290	2310	Limestone--pale yellow brown, fine sugary and chalky, becoming denser and more chalky; much sand and shale (2290-2295).
2310	2315	Dolomitic limestone--yellow brown, sugary, hard; much pale red to moderate red, sugary porous, hard dolomite.
2315	2340	Dolomite--pale yellow brown, slightly pink in part, sugary; much reddish, greenish, black shale (2325-2340).
2340	2345	Dolomite--light brown, fine sugary, hard, some is harder and pinkish.
2345	2350	Dolomite--pale brown to pinkish brown, fine sugary and micro-sugary; some soft white limestone.
2350	2390	Dolomite--light brown, sugary, porous, becoming somewhat denser; some shale (2355-2360, 2365-2370).
2390	2405	Dolomite--pale yellow brown, becoming increasingly pink, micro-sugary; traces of anhydrite; some sugary and chalky, pink, white, yellow brown limestone (2400-2405).
2405	2410	Limy dolomite--very-pale brown, pinkish, very fine sugary, hard; some very fine sugary, white limestone.
2410	2425	Limestone--white to pinkish, very fine sugary to sub-lithographic, mottled and streaked with moderate red, fossiliferous; traces of shale, sand.
2425	2435	Limestone--very pale orange, pale yellow grey, fine sugary and chalky; traces of shale, sand.
2435	2440	Dolomite--pale brown, sugary, porous; traces of limestone, shale, sand, anhydrite.
2440	2445	Limestone--white, dense; small amounts of pale, sugary and chalky limestone; traces of shale, sand.
2445	2455	Limestone--very pale orange to white, slightly pink in part, very fine sugary and/or chalky; traces of shale and sand.

<u>From</u>	<u>To</u>	<u>Description</u>
2455	2465	Limestone--very pale orange, micro-sugary, increasingly fossiliferous and pseudo-oolitic.
2465	2475	Limestone--very pale orange to pale red, fine sugary, hard.
2475	2485	Limy dolomite--pink to yellow to orange, fine sugary, argillaceous.
2485	2495	Dolomitic--pale yellow, pale red, fine sugary; some pale red, argillaceous limestone.
2495	2500	Dolomite--pale yellow, pale red, fine sugary; some pale red, argillaceous limestone.
2500	2505	Dolomite--greyish orange pink, very fine sugary.
2505	2510	Dolomite--white, pale pink, grey, yellow, very fine sugary.
2510	2525	Limy dolomite--pale red to very pale red, some very light grey, very fine sugary, partly chalky, moderate red mottled, argillaceous.
2525	2530	Anhydrite--white, fine sugary; some dolomite as above.
2530	2535	Dolomite--pale yellow grey, micro-sugary, mottled with dark red; some sub-crystalline anhydrite.
2535	2540	Dolomite--pale red to very light grey to very pale brown, very fine sugary and chalky, mottled with dark red small amounts of anhydrite and shale.
2540	2550	Argillaceous dolomite--very pale orange, pink, light grey, micro-sugary and chalky; much pale green grey, dense dolomite (2540-2545).
2550	2565	Limy dolomite--pale red, very fine sugary, argillaceous, becoming brownish.
2565	2585	Limy dolomite--pale yellow brown, pale pinkish brown, fine sugary and chalky; becoming quite limy and shale at 2580.
2585	2595	Dolomitic limestone--pale brown, dense, argillaceous; small amounts of dense to chalky limestone.
2595	2600	Limy dolomite--light grey to yellow grey to pale pinkish brown, fine sugary and chalky, argillaceous.
2600	2605	Missing samples.
2605	2610	Sand--coarse, quartz, rounded (Cave?); some limy dolomite as above.
2610	2620	Limy dolomite--very pale orange, very fine sugary and chalky, argillaceous; small amounts of sand and shale (Cave?).
2620	2630	Limy dolomite--pale pinkish brown, very fine sugary and chalky, argillaceous.
2630	2640	Dolomitic limestone--very pale orange, greyish orange pink, micro-sugary and chalky; some sand and shale (Cave).
2640	2665	Limestone--greyish orange pink to pale brown, micro-sugary to fine sugary, very hard; much greyish purple and reddish purple, shaly limestone beginning at 2655.
2665	2675	Dolomite--very pale orange, very fine sugary to micro-sugary, mottled with reddish grey purple; some is limestone (2665-2670).
2675	2680	Limy dolomite--very pale grey; slightly pink, very fine sugary and chalky, argillaceous.
2680	2690	Dolomite--very pale grey, slightly pink, very fine sugary and chalky, argillaceous, slightly limy.
2690	2695	Limestone and dolomitic limestone--very pale orange slightly pink, micro-sugary.

<u>From</u>	<u>To</u>	<u>Description</u>
2695	2700	Limestone--white, very pale orange, pale yellow grey, micro-crystalline to sub-crystalline.
2700	2710	Dolomite--very pale yellow brown, medium sugary, porous.
2710	2720	Limy dolomite and dolomite--very pale red, fine sugary to micro-sugary; much shales (Cave).
2720	2765	Dolomite--very pale orange to pale yellow brown, very fine sugary to micro-crystalline to slightly vuggy, hard, brittle; traces of shales anhydrite; reddish, black, grey, greenish shale appearing at 2750 and sharply increasing.
2765	2775	Shale--reddish, grey, greenish shale; some sand; some dense dolomite and limestone.
2775	2780	Shale--as above; much very pale red and orange, very dense, micro-sugary limestone; a small amount of soft, white anhydrite.
2780	2800	Limestone--very pale orange, micro-sugary and chalky, mottled with dark red (2780-2785); some shale as above; small amounts of white anhydrite appearing at 2790.
2800	2805	Dolomitic limestone--very pale orange to greyish orange pink, fine sugary to micro-sugary, hard; some pale red, dense to chalky dolomite.
2805	2810	Limestone--white to very pale orange, very fine sugary to dense; some dolomite as above.
2810	2820	Dolomite--pale red, fine sugary to micro-sugary and chalky, argillaceous; decreasing small amounts of limestone as above.
2820	2845	Dolomitic shale--moderate reddish brown; small amounts of chalky, white limestone; the shale becomes partly limy beginning at 2835.
2845	2850	Dolomitic shale--moderate reddish orange, soft, partly limy; some hard, dense pale limestone.
2850	2860	Dolomite--white to very pale red, fine sugary to micro-sugary, partly limy.
2860	2875	Limestone--very pale orange to very light grey, micro-sugary; much very fine sugary, pink dolomite (2870-2875).
2875	2885	Limestone--pale red, very fine sugary to chalky; some pale sub-crystalline limestone.
2885	2895	Sandy limestone--greyish orange pink, micro-sugary to chalky; some sub-crystalline, pink orange dolomite (2890-2895).
2895	2900	Dolomite--pale orange to greyed orange, micro-sugary, very hard, brittle.
2900	2940	Limestone--very pale orange to white, micro-sugary to chalky; much moderate to dark reddish brown shale (2920-2925); much orangish, dense dolomite (2930-2935).
2940	2945	Gravel to coarse sand--sub-round, quartz; a small amount of limestone as above.
2945	2965	Sand--sub-round, quartz; much reddish and black shale; much micro-crystalline, pale limestone ending at 2960.
2965	2985	Shale--flaky black and calcareous reddish brown; much medium to coarse, round quartz sand; increasing amounts of pale, dense dolomite; traces of dense limestone; much dense limestone (2980-2985).



<u>From</u>	<u>To</u>	<u>Description</u>
2985	2995	Dolomite--white to very pale orange, micro-sugary to sub-lithographic; increasing amounts of shale and sand.
2995	3005	Limestone--very pale orange to very pale red to white, dense; much reddish, grey, black, greenish shale and free quartz; traces of pyrite.
3005	3020	Dolomite--pale, very dense; some shale as above, and sand.
3020	3025	Limestone and dolomitic limestone--white, pinkish, very pale orange, micro-sugary; some shale and sand.
3025	3035	Dolomite--very pale orange, micro-sugary, very hard, brittle; traces of sand, shale, pseudo-oolitic dolomite.
3035	3045	Gravel and coarse sand--well rounded, quartz (Cave?); a small amount of dolomite as above.
3045	3055	Dolomite--white to very pale orange, lithographic; traces of sand and shale.
3055	3060	Dolomite--white to very pale orange, very fine sugary to micro-sugary, very hard, slightly limy.
3060	3065	Limestone and dolomite--white to very pale orange, micro-sugary, very hard, brittle; traces of shale and sand.
3065	3070	Dolomitic limestone--pale red to very pale red, dense, argillaceous; some limestone as above, traces of shale and sand.
3070	3075	Dolomite--pale red to very pale red, dense, argillaceous, partly limy; some limestone as above; traces of sand and shale.
3075	3100	Dolomite--white, dense, very hard, partly limy; some very pale orange, sub-crystalline limestone; traces of shale and sand.
3100	3120	Dolomitic limestone--white to pale red, micro-sugary, argillaceous, hard, brittle, partly pseudo-oolitic, becoming less pink and more orange.
3120	3130	Limy dolomite and dolomitic limestone--pale red to white to pale green, argillaceous, mottled with dark red; much pale red, chalky, argillaceous limestone (3125-3130).
3130	3135	Limestone--pale red, fine sugary, argillaceous, slightly dolomitic, dark red mottles; some shale and sand.
3135	3140	Gravel--well rounded (Cave?).
3140	3155	Dolomitic limestone--pale red to moderate red, fine sugary, argillaceous; some gravel (Cave?); trace chert.
3155	3160	Limestone and dolomite--pale red to very pale red, very fine sugary, sandy; small amounts of shale and sand.
3160	3175	Limy dolomite--white to pale red to very pale red, very fine sugary, sandy; increasing amounts of sand and shale.
3175	3180	Limy dolomite--very light grey, very pale brown, orange pink, very fine sugary, hard, brittle, argillaceous; some sand and shale.
3180	3190	Dolomite--very pale orange, very fine sugary, hard; some pale, fine sugary and chalky limestone; some shale and sand.
3190	3205	Limestone--pale green, very fine sugary and chalky; some light grey, fine sugary and chalky limestone; some fine sugary, pinkish, argillaceous limestone.
3205	3220	Argillaceous limestone--orange pink, pale green, light grey, very fine sugary to micro-sugary, fossiliferous; small amounts of sand and shale.

<u>From</u>	<u>To</u>	<u>Description</u>
3220	3275	Limestone--white to medium grey, crystalline and chalky, very fossiliferous (bryozoa, brachiopods, crinoids, etc.); traces of pyrite, shale, sand.
3275	3290	Limestone--very pale orange to very light grey, micro-sugary, hard brittle; much very pale red to pale orange pink, lithographic, limy dolomite (3285-3290).
3290	3300	Limestone--white, micro-sugary, hard, brittle.
3300	3305	Dolomitic limestone--very pale orange to very light grey, very fine sugary; some limestone as above.
3305	3310	Limy dolomite--very pale orange, very fine sugary; some limestone as above.
3310	3330	Limestone--white to very pale orange, fine sugary to chalky, becoming slightly pink and brown; some fine sugary, pale yellow brown, limy dolomite (3320-3325).
3330	3340	Dolomite--very pale orange, somewhat pink in part, lithographic.
3340	3360	Dolomitic limestone--very pale orange, with pale red tint and mottlings, micro-sugary, argillaceous, brittle, somewhat vuggy (vugginess ending at 3345).
3360	3390	Dolomite--white to very pale orange, fine sugary, with pinpoint, vugs, argillaceous, becoming limy, becoming somewhat fossiliferous at 3375; trace chert.
3390	3395	Dolomite--white to very pale orange, micro-sugary, very hard.
3395	3410	Dolomitic limestone--white to very pale orange, micro-sugary argillaceous, hard, fossiliferous beginning 3400 (mostly bryozoa); traces of chert.
3410	3425	Limy dolomite--very pale orange to very pale yellow brown, fine sugary; traces of chert, anhydrite. Missing samples: 3415-3420.
3425	3430	Limestone--very pale orange to very pale yellow brown, micro-sugary to fine sugary, partly chalky; traces of shale, fossils.
3430	3435	Dolomitic limestone--very pale orange to very pale yellow brown, micro-sugary to fine sugary, argillaceous; much pale, dense limestone; many dark, limy fossils; a small amount of reddish brown, dolomitic shale.
3435	3440	Limestone--very pale orange, sub-lithographic, hard; much pale yellow brown, fine sugary limestone; small amounts of dark fossils (bryozoa, etc.) and chalky white limestone.
3440	3450	Gravel--rounded (Cave?); small amounts of dense limestone and dolomite.
3450	3460	Limestone--greyish orange pink, fine sugary, chalky, crystalline fossiliferous; small amounts of sand and gravel (Cave?).
3460	3470	Limestone--very pale yellow brown, slightly pink in part, micro-sugary to very fine sugary to chalky; small amounts of sand and shale.
3470	3485	Limy dolomite to dolomitic limestone--greyish orange pink, fine sugary, becoming mostly limy dolomite; traces of sand and shale.
3485	3495	Limestone--greyish orange pink, micro--sugary to chalky, dense.

<u>From</u>	<u>To</u>	<u>Description</u>
3495	3500	Limy dolomite--pale yellow brown, partly pink tinged, sugary, hard; some micro-sugary, pale red, hard, limy dolomite.
3500	3505	Dolomitic limestone--greyish orange pink, sugary, hard, somewhat fine vuggy.
3505	3510	Limy dolomite--greyish orange pink, sugary, hard, slightly vuggy; a small amount of limestone as above.
3510	3515	Dolomitic limestone--greyish orange pink, sugary; some is limy dolomite.
3515	3520	Limestone--very pale orange, very fine sugary, slightly dolomitic; traces of sand and shales.
3520	3525	Limestone--white to greyish orange pink to very pale yellow brown, micro-sugary to chalky, traces of dark fossils, shales, quartz.
3525	3530	Limestone--white to greyish orange pink to pale yellow brown, fine sugary and chalky; traces of shale and sand.
3530	3550	Limestone--very pale orange, partly pink tinged, very fine sugary to micro-sugary, dense; traces of shale and sand.
3550	3565	Limestone--pale red, micro-sugary; much pale yellow brown, micro-sugary, hard limestone; fossiliferous (bryozoa, etc.) beginning at 3555.
3565	3575	Limestone--pale yellow grey, very dense to chalky, partly pale yellow brown; traces of fossils; shale, sand, a small amount of light olive grey, dense, limy dolomite.
3575	3590	Limestone--very pale yellow grey to very light grey, fine sugary and chalky, partly medium sugary starting at 3585; some shale (3575-3580).
3590	3610	Limestone--very pale yellow brown, medium sugary and chalky, becoming more a very light grey; traces of shell impressions, shale, sand, chert, bryozoa.
3610	3630	Limestone--as above; much quartz sand and shale (Cave); small amounts of white chert.
3630	3660	Limestone--light grey, very fine to micro-sugary, chalky; much reddish brown and dark grey shale (Cave?), decreasing in quantity; dark fossils; shell impressions; traces of sand and chert.
3660	3690	Limestone--light grey to very pale yellow grey, very fine sugary and chalky; traces of shale chert (ending at 3675).
3690	3720	Limestone--light grey to very pale yellow brown, fine sugary and chalky, becoming mostly white and very light grey at 3705; traces of shale and sand.
3720	3750	Limestone--light grey to pale olive grey, micro-sugary and/or chalky, becoming slightly yellow tinged.
3750	3785	Limestone--very light grey to very pale yellow brown, micro-sugary and/or chalky, becoming quite hard at 3780; much sand and gravel 3775-3780 (Cave?).
3785	3805	Limestone--very light grey to pale yellow brown, very fine sugary and/or chalky, very hard.
3805	3825	Limestone--light grey, becoming light olive grey, micro-sugary and/or chalky, argillaceous.
3825	3865	Limestone--light olive grey to pale yellow brown, micro-sugary and/or chalky, argillaceous.

<u>From</u>	<u>To</u>	<u>Description</u>
3865	3875	Limestone--light grey, very pale orange, very pale yellow brown, micro-sugary and chalky; much green grey to pale green; partly lumpy, calcareous shale (3870-3875).
3875	3880	Shale--much shale as above; much pale yellow brown, partly lumpy, calcareous shale; some quartz sand.
3880	3890	Calcareous shale--as above; some light brown to reddish orange, calcareous shale.
3890	3905	Shale--pale green, lumpy, slightly calcareous; some dark shale, light brown shale, sand, gravel.
3905	3910	Calcareous shale--light brown, lumpy; small amounts of black, green, olive, brown shale, and sand.
3910	3920	Calcareous shale--pale green, light brown, lumpy, sandy, becoming mostly light brown.
3920	3930	Calcareous shale--pale green, greyed olive, light brown, sandy, lumpy.
3930	3945	Calcareous shale--greenish, lumpy, sandy, increasing amounts of orange brown shale.
3945	3955	Shale--pale green, light brown, lumpy, sandy, slightly calcareous.
3955	3965	Shale--pale green, lumpy, slightly calcareous; some sandy, reddish brown, calcareous shale (3960-3965).
3965	3980	Calcareous shale--reddish brown to reddish orange, greenish lumpy. Missing samples: 3975-3980.
3980	3985	Shale--reddish brown to reddish orange, greenish, lumpy, slightly calcareous.
3985	3995	Sandy shale--pale green, light brown, lumpy, slightly calcareous.
3995	4000	Sand and silt; some sandy shale as above.
4000	4030	Sandstone--fine to coarse, somewhat shaly, limy cement; much splintery, green shale (4025-4030).
4030	4035	Granite.

