

GEORGIA  
MITCHELL COUNTY

Operator: Stanolind Oil & Gas Co.

G.G.S.No. 109

Landowner: J.H.Pullen, Well 1

Elevation: 338 ft.

Location: Land District 10, Land Lot  
133, 700 ft. south of north  
line, and 700 ft. west of  
east line of Land Lot 133

Total Depth: 7490 ft.

Completed: Aug.14,1944

SUMMARY OF STRATIGRAPHY

		Depth to top (feet)	Thickness (feet)
TERTIARY			
In Eocene			
lower	Beds of Wilcox age; 1st sample 1335 ft.		
Paleocene			
	Clayton Limestone	1560	130
	Cretaceous		
Gulf			
	Beds of Navarro age	1690	220
	Beds of Taylor age	1910	440
	Beds of Austin age	2350	480
	Atkinson Formation, upper member	2830	530
	do                      lower member	3360	280
Comanche	undifferentiated	3640	2580
	Triassic(?)		
Upper(?)	Newark Group(?)	6220(?)	total depth 1270

Pullen Well 1 Lithologic and paleontologic description of cores and cuttings. Samples are cuttings unless otherwise stated.

Depth	Description
0-1355	Samples not studied Tertiary In Eocene
	Lower Eocene                      Beds of Wilcox age
1355-1350	Limestone, white, chalky, underlies a sequence of glauconite sand and gray glauconitic clay. The sample is probably in the Salt Mountain Limestone, the top of which is at about 1320 ft. as suggested by the electric log of the Pullen well. Specimens of <u>Discocyclina weaveri</u> occur in the other sample of the limestone, although none were observed in this sample.
1350-1560	Samples not studied. Paleocene Clayton Limestone
1560-1575	The top of the Clayton Limestone is at about 1560 ft. on the basis of the electric log of the Pullen well. This sample contains the highest occurrence of white, hard, rough-textured limestone.
1575-1590	No samples.
1590-1605	Limestone, white, hard, chalky and abundant fragments of grayish-brown chert. The sample contains a few specimens of <u>Anomalina alleni</u> .
1605-1620	Limestone, white, hard, chalky (composed of very small chalky fragments), and abundant fragments of chert. The sample contains some specimens of Foraminifera indicative of the Clayton Limestone. Same to:

Pullen Well 1

Depth	Description
1680-1695	<p>Limestone, somewhat sandy (fine-grained sand) and slightly glauconitic; chert is abundant and seems to occur in streaks in the limestone. Specimens of <u>Anomalina vulgaris var.</u>, <u>A. alleni</u>, and other forms typical of the Clayton Limestone are common in the sample. Beds of Midway age seem to overlie the Clayton Limestone, inasmuch as specimens of <u>Vaginulina robusta</u> occur in cavings in this sample.</p> <p style="text-align: center;">Cretaceous</p> <p style="text-align: center;">Gulf Series</p> <p style="text-align: center;">Beds of Navarro Age</p> <p>The top of the beds of Navarro age is placed at 1690 ft. on the basis of lithologic data and electric log characteristics. The highest occurrences of specimens of Foraminifera that definitely indicate the cretaceous age of the beds is at 1800 ft. The highest occurrence of <u>Globotruncana arca</u> is in the sample at 1815-1830 ft.</p>
1695-1710	Samples not described.
1710-1725	Clay, dark brownish-gray, marly, occurs in this sample and increases in abundance in the samples just below this depth.
1725-1845	Samples not described.
1845-1860	<p>The microfauna in this sample contains specimens of species characteristic of the beds of Navarro age;</p> <p style="text-align: center;"><u>Pseudogumbelina costulata</u>, <u>Anomalina</u>  <u>Pseudopapillosa</u>, <u>Globotruncana cretacea</u>,  <u>Pseudoclarulina clavata</u>.</p>

Depth	Description
1860-1870	Limestone, light-gray, hard, very finely glauconitic, sandy (fine-grained sand) occurs in this sample and in the sample at 1845-1860 ft. The microfauna is sparse and Navarro in character.
1870-1905	No change.

Beds of Taylor Age

The top of the beds of Taylor age is placed at 1910 ft. on the basis of electric log characteristics.

1905-1920	Materials like the sample at 1860-1870 ft. The sample contains one specimen of <u>Planulina dumblei</u> , many specimens of <u>Anomalinoidea pinguis</u> , and a few fragments <u>Bolivinoidea decorata</u> .
1920-1935	Like sample at 1905-1920 ft., with the addition of specimens of <u>Lituola taylorensis</u> (common).
1935-1950	Like sample at 1920-1935 ft., and some fragments of light-green bentonite.
1950-1965	Sandstone, gray, hard, fine-grained, calcareous; specimens of <u>Lituola taylorensis</u> are common.
1965-1980	Shale, gray, composes most of a very small sample. The sample contains some <u>Inoceramus</u> prisms and a few specimens of <u>Heterostonella americana</u> .
1980-1995	Like sample at 1965-1980 ft. Fragments of <u>Inoceramus</u> are common.
1995-2010	The micro fauna in this sample contains specimens of species characteristic of the beds of Taylor age; <u>Planulina texana</u> , <u>Gyroidea umbilicata</u> , <u>Globorotalites conicus</u> , <u>Bolivina incrassata</u> ; <u>Bullininella carseyae</u> .

## Depth

- 2010-2025 No sample.
- 2025-2040 Sample is mainly cavings from higher levels. Some specimens of Stensioina americana are in the sample but these may have caved, as the species usually occurs at or near the top of the Beds of Taylor age.
- 2040-2295 Samples not described.
- 2295-2310 Sandstone, extremely fine-grained, calcareous, micaceous, containing abundant fragments of Inoceramus, many nodules of pyrite, and some fragments of gray, micaceous marl. The microfauna is a mixture of specimens from several stratigraphic units but includes specimens of Planulina taylorensis and other Taylor species.
- 2310-2325 Like sample at 2295-2310 ft., but marly shale fragments are dominant in the relatively small sample. The microfauna contains species of Foraminifera that are characteristic of the beds of Taylor age.
- 2325-2370 Like sample at 2310-2325 ft.  
Beds of Austin age.  
The top of the beds of Austin age is placed at 2350 ft. on the basis of electric log correlation.
- 2370-2385 Similar to sample at 2310-2325 ft., but the material is somewhat harder, more calcareous and leaves a larger washed residue. The fauna is also similar to that in the samples below 2310 ft., but contains a few specimens of Pseudoclavulina clavata and Heterotomella austiniana.

## Depth

- 2385-2400 Like samples at 2370-2385 ft., and containing specimens of Pseudogaudryinella capitosa, Planulina dumblei, Globotruncana arca, and Globorotalites conicus.
- 2475-2505 Samples not described.
- 2505-2520 Clay, dark-gray, soft, marly, containing specimens of Globorotalites umbilicatus.
- 2520-2580 Samples not described.
- 2580-2595 Sandstone, gray, extremely fine grained, glauconitic, calcareous, micaceous, and some fragments of gray, flaky, marly, micaceous shale. The sample contains many fragments of Inoceramus and of Ostrea sp. The microfauna is largely a mixture of specimens that caved from higher levels, but contains some specimens of species that are characteristic of the beds of Austin age.
- 2595-2610 Like sample at 2580-2595 ft.
- 2610-2685 No change.
- 2685-2700 Shale, brownish-gray, marly, a few fragments of gray, fine-grained sandstone, and many fragments of Inoceramus. The foraminiferal fauna is chiefly a mixture of specimens that caved from higher levels, but contains a few specimens of species that are characteristic of the Beds of Austin age.

Pullen Well 1

## Description

## Depth

- 2700-2730 No change.
- 2730-2745 Like sample at 2685-2700 ft., with the addition of fragments of light-cream, hard, dense, sandy (fine-grained sand) limestone.
- 2745-2760 Like sample at 2730-2745 ft., but showing an increase in the amount of frgments of sandy limestone. The fauna is a mixture of specimens of Foraminifera from higher levels, including species characteristic of the beds of Austin age.
- 2760-2785 The sample is composed, mainly, of gray marly shale and a small amount of sandy limestone. The Fauna is similar to that in the sample at 2745-2760 ft.
- 2785-2790 No sample.
- 2790-]805 Shale, gray, flaky, marly, and a few fragments of greenish-gray marly shale. The foraminiferal fauna is a mixture of specimens from various higher levels, but Austin forms, especially Citharina texana are very abundant.
- 2805-2830 No change, except that specimens of Citharina texana are much less abundant.

Depth

Atkinson Formation

Upper Member

- 2830-2850 Shale, dominantly greenish-gray, and some gray shale.  
The shale contains small, brown, granular, irregular-shaped nodules of siderite. Specimens of Pleurostomella watersi and Valvulineria infrequens (Eggle Ford variety) are present.  
The samples from 2830 to 2895 ft. are characteristic of the deeper-water marine facies of the upper member of the Atkinson Formation.
- 2850-2865 Sample not described.
- 2865-2880 Like sample at 2830-2850 ft.; contains specimens of Gaudryina filiformis.
- 2880-2895 Like sample at 2830-2850 ft.; contains in addition, specimens of Ammobaculites sp., characteristic of the Eagle Ford Shale in Texas.
- 2895-2900 Sandstone, quartz, light-gray to white, fine-grained, containing many fragments of Ostrea sp., and some fish bones, glauconite and mica. The samples from 2895 to about 3360 ft. are characteristic of the shallow-water marine facies of the upper member of the Atkinson Formation. The depth of 2895 ft. is probably the top of the Tuscaloosa Formation of some geologists.
- 2900-2910 No sample.
- 2910-2925 Like sample at 2895-2900 ft., with the addition of fragments of flaky, smooth, green shale.

Pullen Well 1

## DEscription

## Depth

- 2925-2940 Shale, gray, flaky, fragments of green shale, fragments of Ostrea sp., and fragments of light-gray, micaceous, glauconitic sandstone which also contains phosphatic material and fish bones.
- 2924-2933 Core. Recovery?  
Sand, clear quartz, fine-grained, well-sorted, containing a little mica and some tan-gray flaky clay. The clay contains small fragments of carbonaceous material.
- 2933-2943 Core. Recovery?  
Top. Shale, bluish-green, thinly flaky, containing a few sandy and pyritic flakes, small fragments of brown and black carbonaceous material, a little mica, and a trace of blue-green glauconite. No specimens of Foraminifera were observed.  
Middle. Like top part of core.  
Bottom. Sandstone, light greenish-gray, fine-grained, highly micaceous, containing inclusions of flaky green shale and small fragments of carbonaceous material that is highly pyritic in small scattered areas.
- 2940-2955 Shale, green, flaky and many cavings from higher levels.
- 2955-2970 Like sample at 2940-2955 ft., and many fragments of Ostrea sp. that are probably cavings.
- 2970-2985 Shale, flaky, many fragments of Ostrea sp., and fragments of white, fine-grained, well-sorted sandstone that contains a little light green glauconite, mica, and a few fragments of Ostrea sp.

Pullen Well 1

## Description

## Depth

2985-3060	No change.
3060-3075	Like sample at 2970-2985 ft. and in addition, many moderately large fragments of brown, fibrous, carbonaceous material.
3075-3120	No change.
3120-3135	Shale, flaky, and sandstone as described in the immediately preceding sample. The sample also contains fragments of oyster shells and large grains of quartz.
3135-3150	No sample.
3150-3160	Like sample at 3120-3135 ft., and also very coarse grains of quartz and some grains of pink feldspar.
3160-3210	No change.
3210-3225	Like sample at 3150-3160 ft., about 50 percent and about 50 percent of dark-brown carbonaceous material.
3225-3255	No change.
3255-3270	Shale, greenish-gray, and some bluish-green shale; a little coarse-grained sand and carbonaceous material like the sample at 3210-3225 ft.
3270-3315	Sample not described.
3315-3330	Like immediately preceding samples but the shale is more micaceous and irregularly sandy (very fine-grained sand). The only fossils observed seemed to be caving from beds of Austin age.

3330-3345 Like sample at 3315-3330 ft., and in addition, specimens of *Gumbelina* sp. that are characteristic of the upper member of the Atkinson Formation (Eagle Ford age).

3345-3375 Like sample at 3330-3345 ft.; also fragments of *Ostrea* sp. and of carbonaceous material, all of which may be caving.

## Atkinson Formation

## Lower Member

The top of the lower member of the Atkinson Formation is placed at 3360 ft. on the basis of electric log correlation.

3375-3420 Samples no described.

3420-3435 The sample is composed of material similar to the immediately preceding samples, and, in addition, fragments of darker gray, flaky, unctuous shale that resembles the characteristic "marine shale" of the Tuscaloosa Formation.

3435-3465 Samples not described.

3465-3480 Shale, dark gray, flaky, somewhat carbonaceous, is strongly dominant in the sample. Specimens of Foraminifera in the sample seem to be caving from much higher levels.

3480-3495 No sample.

3495-3510 Shale, grayish-green, flaky, slightly micaceous. The sample contains one specimen of *Trochammina rainwateri* which is characteristic of the lower member of the Atkinson Formation (Woodbine age). The base of the "marine shale" of the Tuscaloosa is placed at 3500 ft. on the basis of electric log correlation.

Pullen Well 1

## Description

## Depth

- 3510-3525 Like sample at 3495-3510 ft., and, in addition the sample contains specimens of species of Ammobaculites agrestis that are characteristic of the lower member of the Atkinson Formation.
- 3525-3540 Sample is mainly shale, but contains also, fragments of white fine-grained, somewhat glauconitic sandstone.
- 3540-3570 No change.
- 3570-3585 Sample contains much gray flaky shale, and some coarse-grained sand. Many worn fragments of Ostrea sp. and other bivalves, with attached sand grains are also present. The shell fragments seem to be indigenous in beds near this depth; they are chalky and grains of glauconite and phosphate grains are attached to them.
- 3585-3615 Samples not described.
- 3615-3640 Shale, flaky, is the dominant material; siderite pellets, some glauconitic sandstone, and some shell fragments are also present.
- Comanche Series  
Undifferentiated
- 3640-366- Shale fragments, like sample at 3615-3640 ft., some coarse-grained sand, and a few fragments of red, highly ferruginous clay.
- 3660-3675 No sample.
- 3675-3690 Like sample at 3640-3660 ft., and many small fragments of red and mustard-colored clay.

## Depth

3690-3705	Clay, gray, that may be caving, and small fragments brick-red clay.
3705-3720	Sand, coarse, subangular, containing a few pink grains, a few greenish-yellow grains, and a few grains of feldspar.
3720-3810	No change.
3810-3825	Sand, coarse, like sample at 3705-3720 ft; pink and yellow grains are more abundant.
3825-3870	No change.
3870-3885	Sand, coarse, like sample at 3810-3825 ft; greenish- yellow grains very abundant.
3885-3960	No change.
3960-3975	Sand, like sample at 3870-3885 ft., and a fragment of mulberry-colored somewhat micaceous clay-shale.
3975-4200	Samples are, mainly, sand like the preceding samples, and a few scattered fragments of gray-hard, dense, very fine grained sandstone.
4200-4210	Sand, like the samples at 3975-4200 ft., and the highest occurrence of multicolored (gray, purplish-red, and mustard-colored), very finely and highly micaceous shale. The multicolored shale occurs in the upper part of the Comanche Series in many wells in the southeastern Gulf region.

## Depth

4210-4250	Samples not described.
4250-4251	Core. Recovery?  Sand, quartz, very fine to moderately coarse, angular and about 50 percent fragments of brown and green streaked ferruginous clay shale.
4251-4270	Samples not described.
4270-4285	Sand, fine to coarse-grained and many fragments of gray and of brick-red streaked, finely micaceous, highly sandy (very fine-grained sand) clay; also some fragments of raspberry-colored clay shale.
4278-4288	Core. Recovery?  Top. Sand, pink-stained, fine-grained, moderately well sorted, and many flakes of colorless and colored mica.  Middle. Sand, etched, fine-grained, moderately well sorted, about 10 percent pink grains, and a few grains of feldspar; gray mica flakes are abundant; brown, gray and green mica flakes are common.  Bottom. Sand, fine-grained, and small fragments of dark brownish-red and yellowish-green, sandy, micaceous clay.
4288-4298	Core. Recovery?  Top. Clay, highly sandy (very fine-grained sand), highly micaceous, highly ferruginous.  Bottom. Washed sample. Sand, pink-stained, fine-grained, angular, well-sorted and mica (mostly colorless).

## Depth

- 4298-4308      Core. Recovery?  
Top. Sand, quartz, fine to coarse-grained, roughly angular; some greenish-yellow and some pink grains of feldspar; a little mica.  
Another part of core. Clay, red-brown, streaked with bluish-gray and yellowish-green areas, micaceous, highly sandy (very fine-grained sand).
- 4308-4318      Core. Recovery?  
Top. Sand, poorly sorted, very fine to very coarse grained; many greenish-yellow grains; and feldspar.  
Bottom. Sand, like top part of core but contains some mica.
- 4318-4328      Core. Recovery?  
Top. Sand, to very coarse grained; many greenish-yellow grains and some pink grains; feldspar common.  
Bottom. Clay, greenish-gray, highly sandy (very fine grained sand), highly micaceous. Much of the mica is dark (brown, gray and green), but some is colorless.
- 4328-4338      Core. Recovery?  
Top. Sand, fine to coarse-grained.  
Bottom. Clay, red, sandy (fine to moderately coarse grained).
- 4338-4348      Core. Recovery?  
Clay, tan, sandy (fine to coarse grained sand); many sand grains are etched.

## Description

## Depth

4348-4358	Core.	Recovery? Clay, bluish-gray and yellowish-brown streaked, hard, sandy (very fine grained sand), highly micaceous.
4358-4368	Core.	Recovery? Sand, fine to coarse-grained, roughly angular, somewhat micaceous.
4368-4378	Core.	Recovery? Sand, fine to moderately coarse grained; many greenish-yellow grains and some feldspar; a little mica.
4378-4388	Core.	Recovery? Top. Sand, mainly fine-grained and a few coarse grains; a little mica. Middle. Clay, brick-red, streaked with bluish-green areas; highly micaceous. Bottom. Clay, red, sandy, very highly micaceous. The flakes of mica are coarse and green and brown flakes are common.
4388-4398	Core.	Recovery? Bottom. Sand, mainly moderately fine grained, poorly sorted. Many sand grains are greenish-yellow and a few are pink. Both colorless and colored flakes of mica are present.
4398-4405		Sample not described.
4405-4420	Core.	Recovery? Sand, coarse-grained; many greenish-yellow grains; a few grains of tourmaline (?); a little mica.

Pullen Well 1

## Description

## Depth

- 4405-4420 Sand, coarse-grained; many grains are greenish-yellow.  
The sample contains cavings of gray clay and varicolored micaceous clay.
- 4420-4440 No change.
- 4440-4450 Core. Recovery?  
Sand, fine to coarse-grained, green, brown and gray flakes of mica are common, some of which seem to show transition to glauconite.
- 4450-4460 Core 23. Recovery 3-1/2 ft.  
Top 1-1/2 ft. Sand, quartz, fine to medium grained, in a matrix of gray clay.  
Middle 1 ft. Like top part of core, but fine grains are strongly dominant.  
Bottom 1 ft. Sand, quartz, fine to coarse-grained, roughly angular, in a matrix of gray clay; medium grains are dominant.
- 4465-4480 Sand, quartz, fine to coarse-grained, roughly angular; coarse grains are dominant; a few grains are pink, a few are yellow. The sample contains a few fragments of dark-red and grayish-green mottled, micaceous shale.
- 4460-4470 Core 24. Recovery 7 ft.  
Sand, quartz, fine to coarse-grained (medium grains dominant) in a matrix of gray clay. The sample contains a few tinted grains, and a few grains of feldspar.

## Depth

- 4470-4480      Core 25.    Recovery 3 ft. 2 in.  
Clay, red and greenish-gray, micaceous, highly silty, and gray, highly sandy (very fine-grained sand), micaceous clay.
- 4480-4490      Core 26.    Recovery 4 ft.  
Top 2 ft. Shale, red and grayish-green, mottled.  
Bottom 2 ft. shale, red and grayish-green, mottled, unctuous.
- 4490-4500      Core 27.    Recovery 1-1/2 ft.  
Sand, quartz, light-gray, soft, fine to medium-grained, argillaceous; mica common.
- 4495-4510      Sand, quartz, coarse-grained; some feldspar. About 25 percent of the sample is red and green mottled shale.
- 4510-4525      Washed sample composed of coarse-grained sand, like sample at 4495-4510 ft., and a few fragments of red and grayish-green mottled shale.
- 4525-4555      No change.
- 4555-4570      Sand, like sample at 4510-4525 ft., and about 25 percent red and gray mottled, finely micaceous shale.
- 4570-4585      Sand and about 10 percent shale, like sample at 4555-4570 ft., some cavings.
- 4580-4590      Core 28.    Recovery?  
Sand, quartz, fine to coarse-grained, in a matrix of soft white clay; medium grains are dominant; a few twined grains and a few grains of feldspar are present.

Pullen Well 1

Depth	Description
4585-4600	Washed sample; composed of fine to coarse-grained quartz sand and some feldspar; coarse grains are common. The sample contains many cavings of material from the Gulf Series.
4600-4615	Like sample at 4585-4600 ft., and in addition, a few fragments of red and gray mottled shale.
4615-4630	No change.
4630-4645	Like sample at 4600-4615 ft., and in addition, a few nodules of red-stained limestone.
4645-4660	Sand, quartz, fine to coarse-grained (coarse grains common); some sand grains are tinted yellow and some pink. The sample contains a few grains of feldspar and a few fragments of red and gray mottled shale.
4660-4690	No change.
4690-4705	Mainly sand, like sample at 4645-4660 ft., and a few fragments of red chert.
4705-4735	No change.
4735-4750	Sand, mainly coarse grains; a few tinted grains; a little feldspar. The sample contains a few fragments of gray, moderately hard, highly micaceous, silty clay.
4750-4765	Sand, like sample at 4735-4750 ft., and a few fragments of red shale.
4765-4774	No change.

## Depth

4774-4780      Core 29. Recovery 5-1/2 ft.  
Top 5 ft. 3 in. Sand, quartz, fine to coarse-grained (fine to medium grains dominant), argillaceous, and some feldspar, in a matrix of white, Dentonitic clay.  
Bottom 3 in. Clay mottled, red, gray and mustard-colored, micaceous, somewhat sandy.

4780-4790      Core 30. Recovery 8 ft.  
Sand, light-gray, micaceous, fine to coarse-grained (medium grains dominant).

4795-4810      Sand, fine to coarse-grained (coarse grains dominant), mainly quartz and some feldspar. Some sand grains are tinted pink and some yellow.

4810-4890      No change.

4890-4900      Core 31. Recovery 3 ft.  
Sand, gray and red, soft, fine-grained, argillaceous.

4900-4915      Sample not described.

4915-4930      Sand, fine to coarse-grained, and about 10 percent fragments of dark purplish-red, gray mottled, very fine micaceous shale.

4930-4987      No change.

4987-4989      Core 32. Recovery?  
Sand, clear quartz, etched, coarse-grained, in a matrix of soft white ashy clay.

4990-5005      Sand, fine to coarse-grained and about 25 percent fragments of red shale.

Depth	Description
5005-5020	Sand, fine to coarse-grained. About 10 percent of the sample is composed of red shale. The sample contains many cavings.
5020-5035	Sand, about 50 percent of the sample; cavings about 50 percent; a little red shale.
5035-5050	No change.
5050-5065	Small washed sample composed of about 50 percent sand and 50 percent red shale.
5065-5080	No change.
5080-5095	Mainly sand, about 50 percent coarse grains, and 50 percent fine grains.
5095-5110	Shale, red, about 75 percent; sand about 25 percent.
5110-5125	Sand, coarse, and fine-grained in roughly equal amounts constitutes about 75 percent of the sample; about 25 percent of the sample is composed of red shale and a few nodules of limestone.
5125-5155	Sand, like the samples at 5110-5125 ft., and about 10 percent red shale.
5155-5170	Sand, like sample at 5110-5125 ft., a few nodules of limestone, and 50 to 75 percent dark-red, very finely micaceous shale.
5170-5185	No change.

Depth	Description
5185-5200	Sand, many nodules of limestone, some of which are red-stained, and about 10 percent red shale.
5200-5230	No change.
5230-5245	Sand, nodules of limestone, and about 25 percent dark-red shale, like the sample at 5185-5200 ft.
5245-5260	Sand, nodules of limestone, and about 5 percent red shale.
5260-5290	No change.
5290-5305	No change in materials, but red shale composes about 25 percent of the sample.
5305-5320	No change.
5320-5335	Sand, fine to coarse-grained, many nodules of limestone, some of which are red-stained; a little red shale.
5335-5350	Sample contains red shale, some nodules of limestone and a little sand, like the immediately preceding samples; 50 to 75% of the sample is composed of cavings of materials from various levels in the Gulf Series.
5350-5625	No change.
5625-5650	Sand, fine to coarse grained, nodules of limestone, and about 25 percent dark-red, finely micaceous shale, and some grayish-green, slightly red mottled, micaceous shale.
5650-5665	Mainly cavings.
5665-5680	Sand, nodules of limestone, a little red shale, and abundant cavings.

Depth	Description
5680-5695	Sand, many nodules of limestone, a little red shale, abundant cavings.
5695-5710	No change.
5710-5725	Shale, dark-red, finely micaceous, is about 50 percent of the sample; 50% is composed of a little sand, many nodules of limestone and abundant cavings.
5725-5740	Like sample at 5710-5725 ft., but the red shale is about 25 percent of the sample.
5740-5830	No change.
5830-5845	Shale, dark-red, micaceous, is about 50 percent of the sample; 50 percent is composed of a little sand, many nodules of limestone and abundant cavings. Many of the limestone nodules are sandy.
5845-5890	No change.
5890-5905	The indegenous material seems to be a conglomerate composed of pebbles of varicolored quartzite, but amber is the most common color. The individual grain-size varies in different fragments of the quartzite. Other materials in the sample are sand, nodules of limestone, fragments of red shale, and cavings, all of which occur in the immediately preceding samples.
5905-5920	No change.
5920-5935	Mainly cavings and a little red shale.

Depth	Description
5935-5950	Like the sample at 5920-5935, with the addition of a few nodules of limestone.
5950-5965	Like the sample at 5935-5950, but with the addition of fragments of green shale, and an increase in the amount of limestone nodules. Some of the nodules are sandy.
5965-6025	No change.
6025-6040	Like the sample at 5950-5965 ft., with the addition of a few fragments of chert and a few fragments of quartzite.
6040-6130	No change.
6130-6145	Shale, red and green mottled; many nodules of limestone; a little sand (including a few fragments of green pebbles), a few coarse grains of chert, and a few of quartzite.
6145-6190	No change.
6190-6205	Shale, red and grayish-green mottled; some cavings.
6205-6220	Shale, red (in part bright-red), and some mottled red and grayish-green; many nodules of limestone; fragments of chert; fragments of quartzite; fragments of green (slate ?) and other materials.
	Triassic (?)
	Upper Triassic (?) Newark Group (?)
6220-6250	Like sample at 6205-6220 ft., but bright-red shale is much more common.

Depth	Description
6250-6295	No change.
6295-6310	Shale, bright-red, moderately hard, a little sand, nodules of limestone, fragments of chert, like the sample at 6205-6220 ft. The red shale shows a little mottling of light grayish-green, and contains a few pebbles.
6310-6385	No change.
6385-6400	Shale, bright-red, slightly grayish-green mottled, and many fragments of light-pink to greenish-gray, fine-grained micaceous sandstone.
6400-6410	No sample.
6410-6415	Like sample at 6385-6400 ft.
6415-6430	Shale, like sample at 6385-6400 ft., a few nodules of limestone, and a few fragments of pebbles of various kinds of material.
6430-6510	No change.
6510-6525	Shale, bright-red with light-green mottling, like samples beginning about 6205-6220 ft. The shale contains irregular-shaped nodules of siderite (?) and a few fragments of chert.
6525-6540	Like sample at 6510-6525 ft., but siderite seems to be absent.
6540-6550	No change.

## Depth

6550-6560 Shale, like sample at 6510-6525 ft., and many fragments of diabase, some of which is possibly weathered.

6560-6570 Like sample at 6550-6560 ft. but contains less diabase.

6570-6580 Shale, red, and about 50 percent fragments of diabase.

6580-6640 No change.

6640-6650 Shale, red; much less diabase than in the samples beginning at 6550 ft.; many fragments of light-red fine-grained, argillaceous sandstone.

6650-6660 Like sample at 6640-6650 ft., but contains less sandstone.

6660-6670 Shale, red, mottled with green areas; some diabase that is probably caving; very little sandstone; a few fragments of red chert.

6670-6680 No change.

6680-6690 Shale, red, mottled with light-green areas; a few fragments of chert pebbles; a few cavings of diabase. The shale is a somewhat duller shade of red than in the preceding samples.

6690-6780 No change.

6780-6790 Shale, and a few cavings of diabase; a few fragments of pink, moderately hard, fine-grained, argillaceous, micaceous sandstone.

6790-6800 No change.

Depth	Description
6800-6810	Shale, like sample at 6780-6790 ft., and in addition, a few fragments of light pinkish-tan, fine to medium-grained sandstone containing colored grains of different kinds of materials that give the sandstone a finely speckled appearance.
6810-6820	No change.
6820-6830	Mainly shale; a few fragments of sandstone, like sample at 6800-6810 ft.; a few cavings of diabase.
6830-7030	No change.
7030-7040	Shale, red, somewhat green-mottled.
7040-7059	No change.
7059-7065	Core 33. Recovery? Top 2 ft. Shale, red. Middle do Bottom do
7065-7070	No sample
7070-7080	Shale, red, somewhat green-mottled, and a few fragments of diabase.
7080-7100	Shale, red, and a few fragments of diabase.
7100-6110	Shale and about 25 percent diabase.
7110-7120	Shale and a little diabase.

Pullen Well 1

Depth	Description
7120-7130	Shale and about 10 percent diabase.
7130-7140	Mainly red shale, and a little diabase.
7140-7230	No change.
7230-7240	Shale and a little diabase, like sample at 7130-7140 ft., with the addition of fragments of light-red, hard, fine-grained, micaceous sandstone.
7240-7250	Like sample at 7230-7240 ft., but showing an increase in fragments of sandstone.
7250-7260	Shale, red; a little diabase; a few fragments of sandstone.
7260-7310	No change.
7310-7320	Shale and some fragments of diabase like sample at 7250-7260 ft. A few fragments of shale contain small inclusions of limestone.
7320-7330	No sample.
7330-7340	Like sample at 7310-7320 ft.
7340-7350	Like sample at 7330-7340 ft., and many cavings.
7350-7360	Shale, red, and many fragments of black shale similar in texture to the red shale. The black coloring is due, possibly, to alteration by intrusions of diabase.
7360-7370	Similar to samples at 7350-7360 ft., but this sample contains less black shale and more diabase.

Pullen Well 1

Depth	Description
7370-7380	Shale, red, and 50 percent diabase.
7375-7377-1/2	Core 34. Recovering 14 in.
	Diabase
7380-7390	Shale, red, and about 25 percent diabase.
7390-7400	Shale, red, and from 50 to 75 percent diabase.
7400-7410	No change.
7410-7420	Like sample at 7390-7400 ft., and in addition, a few fragments of splintery gray shale which may be indigenous in beds near this depth.
7420-7430	Shale, red, about 20 percent diabase, and a few fragments of gray to greenish-gray shale.
7423	Bit sample. Shale, red and cavings.
7430-7440	Shale, red, about 50 percent diabase, and a few fragments of quartzite pebbles.
7440-7450	Shale, red, and about 75 percent diabase.
7450-7480	No change.
7483	Bit sample? Like the immediately preceding samples, with the addition of many fragments of pink, hard, dense, fine-grained, arkosic sandstone.

Depth	Description
7480-7487	Like sample at 7483 ft., but this sample contains less sandstone.
7486-7489	Core 39. Recovery? Top 14 in. Black rock (?) Bottom 5 in. Sandstone, pinkish-gray, dense, somewhat arkosic, very fine grained.
7489-7490 T.D.	No sample.