

8/15/49

Ed L. Boggs No. 8989 Well

Otter District., Braxton County, W. Va.

By Hope Natural Gas Co., 445 W. Main St., Clarksburg, W. Va.

Located 4.52 Mi. S. of 38° 45' and 4.36 Mi. W. of 80° 45' - *NE* -

Gassaway Quadrangle

Elevation - 1055' L.

Permit No. Bra - 226

Drilling commenced July 16, 1945; completed April 6, 1946

DRY HOLE

Fresh Water at 70' and 113'

Salt Water at 1263', 1375-84', 1412', 1628', 6160', 6280', 6292-6295'

20" casing 19' 6" ^{16"} 158'; 13" 778'; 10" 1535'; 8-1/4" 2560'; 6-5/8" 6171';
all left in

13", 10", 8-1/4" and 6-5/8" casing set in cement

Coal Not recorded

Section based on samples from 10' to 6340', examined by Russell R Flowers

Conemaugh and Allegheny Formation, 431, plus, feet

Top	Bottom	Thickness	
10	29	19	Siltstone and clay-shale (very silty), greenish-gray, a large amount is stained brown by iron oxide, very highly micaceous, chloritic
29	59	30	Clay-shale and some siltstone (sandy in part), greenish to dark greenish gray, very highly micaceous and chloritic, contains many dark yellowish brown, sideritic spherulites; some is stained with iron oxide
59	64	5	Siltstone to sandstone (fine), greenish-gray to highly medium-gray, very highly micaceous, chloritic, moderately calcareous in part; <u>shale</u> , medium-gray to greenish- and dark greenish gray, containing a few siderite spherulites; small amount of dark yellowish brown siderite (concretions)

- 64 78 14 Limestone, light brownish gray to light olive gray, moderately to highly sideritic (dark yellowish to dusky brown) in part to a partly calcareous and sideritic, medium-gray to greenish and dark greenish gray siltstone and shale that contains much mica; toward the bottom, the amount of limestone decreases and siderite increases
- 78 113 35 Siltstone and sandstone (very fine with some fine grains), greenish-gray to medium light and medium-gray, some dark greenish gray, very highly micaceous, highly sideritic in part (mostly spherulites); some medium-gray to greenish-gray shale
- 113 138 25 Sandstone, very light to light-gray, subangular to subrounded, fine- to medium-grained, chloritic, somewhat micaceous, slightly calcareous and sideritic in part
- 138 145 7 Siltstone (argillaceous, medium-gray to greenish-gray) to clay-shale (light olive gray, silty); some dark yellowish brown siderite
- 145 156 11 Sandstone, light to medium light gray (with brownish cast), very highly micaceous (mostly biotite), the quartz grains are very fine, some chlorite and kaolinite, very slightly sideritic
- 156 195 39 Sandstone, white to light-gray, medium-grained with some coarse grains, fine- to medium-grained (at the bottom), subrounded, contains some chlorite and some pieces of shale, slightly to moderately calcareous, highly calcareous at the top and bottom
- 195 201 6 Sandstone, white to light-gray, medium-grained with some coarse grains, some chlorite, highly calcareous, 20%; sandstone (very fine, silty), medium light gray to greenish-gray, contains much mica (biotite and muscovite) some chlorite and some kaolinitic material, 80%
- 201 212 11 Sandstone (very fine) to siltstone and shale (silty), greenish-gray, some medium-gray, highly micaceous, some chlorite and kaolinitic material, a small amount ^{of} ~~is~~ siderite (mostly spherulites); a moderate amount of interbedded, dark yellowish brown siderite and sideritic shale; a small amount of grayish-black to black (highly carbonaceous) shale

- 212 237 25 Siltstone and shale (silty) to sandstone (very fine), greenish-gray to medium light gray, micaceous, moderately to highly sideritic (dark yellowish brown) in part; small amount of dark yellowish brown, highly sideritic shale; some grayish-black to black (highly carbonaceous) shale at the top; some greenish-gray to light olive gray clay-shale
- 237 242 5 Shale, medium light and medium dark gray to greenish-gray, micaceous; some greenish-gray, highly micaceous siltstone and sandstone (very fine), sideritic in part; small amount of dark yellowish brown, sideritic shale
- 242 249 7 Shale, medium-to dark-gray with black, highly carbonaceous, "coaly" streaks, some medium light gray; some dark yellowish brown, sideritic shale
- 249 268 19 Shale and clay-shale, light olive gray to brownish-gray, silty and sandy (medium) in part; at the top, a moderate amount of dark-gray to grayish-black shale with streaks of coal; some interbedded, sandy, highly micaceous siltstone (sideritic in part)
- 268 300 32 Sandstone, very light to light-gray, medium-grained with some coarse grains, fine- to medium-grained in part toward the bottom, subangular to subrounded, contains some chlorite and scattered pieces of shale, somewhat sideritic in part (at the bottom); some medium-gray to greenish-gray shale at the bottom
- 300 324 24 Shale and siltstone, medium to medium dark gray, some ~~greenish-gray, sideritic dark gray,~~ some greenish-gray, sideritic in part (dark to dusky yellowish brown spherulites), highly micaceous and somewhat sandy in part toward the middle; a moderate amount of moderate to dark yellowish brown siderite and sideritic shale; some light olive gray to brownish-gray shale (in the lower part); trace of black to "coaly" shale at the bottom

- 324 336 12 Shale, medium-gray and brownish-gray to dark-gray with some black, carbonaceous streaks, very silty and sandy in part; some interbedded, grayish-black to black, highly carbonaceous shale; some coal in the upper part (U. Kittanning); small amount of dark yellowish brown, sideritic shale
- 336 342 6 Shale, grayish-black to black (highly carbonaceous), some medium dark gray, 60%; shale, brownish-gray to brownish-black, slightly to moderately sideritic in part
- 342 350 8 Shale, dark-gray and brownish-gray (slightly to moderately sideritic) to black (highly carbonaceous) with black "coaly" streaks, 70%; shale (very silty and sandy) light olive gray to sandstone (very silty) light olive gray to light-gray, 30%; small amount of very fine to fine-grained, light-gray sandstone at the bottom
- 350 380 30 Sandstone, very light to light-gray, fine- to medium-grained, subangular to subrounded, many of the quartz grains show secondary crystal facets, somewhat chloritic, slightly micaceous, a few scattered dark-gray to black shale fragments toward the bottom with an increase in the amount of chlorite and a moderate amount of included shale grains, very slightly dolomitic
- 380 386 6 Shale, medium-gray to brownish-gray with a few black carbonaceous streaks, dark-gray to brownish-black to black (highly carbonaceous); small amount of fine - to medium-grained, light-gray sandstone
- 386 423 37 Sandstone, light-gray with some dark streaks, fine-grained, fine to very fine grained in part, contains some carbonaceous material, some chlorite and mica, some dark-gray to black shale fragments; at the bottom, fine to very fine, sandstone with dark-gray, highly carbonaceous and sideritic, shaly streaks; at the top, considerable medium-gray and brownish-gray to black shale
- 423 431 8 Shale (very silty) to sandstone (shaly and silty) fine to very fine grained, 40%; sandstone, fine-grained to very fine grained, 60%; this sample is too highly stained with rust to examine properly

Pottsville Formation, 855 feet

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|-----|-----|----|--|
| 431 | 450 | 19 | Sandstone, very light gray, fine- to medium-grained, subangular to subrounded, some of the quartz grains have secondary crystal facets, contains some chlorite and some pieces of medium-gray to black shale (partly cavings), slightly calcareous toward the bottom |
| 450 | 453 | 3 | Sandstone, very light gray, fine- to medium-grained, 40%; shale, medium- to dark-gray, very silty, contains carbonaceous material, mica, and some siderite, 60%; some dark yellowish brown siderite |
| 453 | 462 | 9 | Shale, medium-gray to brownish-gray (slightly sideritic) to dark-gray; a large amount of medium-gray to brownish-gray (partly sideritic) somewhat sandy siltstone containing mica and carbonaceous material at the top; some light-gray sandstone (cavings) |
| 462 | 473 | 11 | Shale, medium- to dark-gray and brownish-gray (sideritic), some dark yellowish brown (highly sideritic), some black (highly carbonaceous to "coaly" shale) at the bottom |
| 473 | 487 | 14 | Siltstone (coarse) to sandstone (very fine), light- to medium-gray (with dark-gray to black, highly carbonaceous, micaceous, shaly streaks), slightly to moderately sideritic, slightly dolomitic at the bottom |
| 487 | 499 | 12 | Shale, medium- to dark-gray, some brownish-gray (sideritic) to dark yellowish brown (highly sideritic), some brownish- and grayish-black (with black, highly carbonaceous to "coaly" streaks) at the bottom |
| 499 | 504 | 5 | Shale, silty to siltstone, light olive gray to brownish-gray, some medium dark gray, slightly to moderately sideritic in part, 80%; shale, dark-gray to black (highly carbonaceous to coal), 20% |
| 504 | 514 | 10 | Sandstone, light olive gray to medium-gray, very fine grained, micaceous (biotite and muscovite), kaolinitic, a little chlorite, 60%; shale, brownish-gray to medium-gray to black (highly carbonaceous), 40%; some coal |

514	600	86	Sandstone, very light to light-gray (with dark-gray to black, highly carbonaceous, highly sideritic, and micaceous streaks in the lower part), fine-grained, fine to medium-grained in lower part, some chlorite, mica, many shale fragments (medium-gray to black and brown sideritic) very slightly calcareous, slightly to moderately sideritic; considerable interbedded, dark-gray to black (highly carbonaceous to "coaly") shale from 5398 to 550'
600	606	6	Sandstone, very light to light-gray, fine-grained with some medium grains, 30%; shale, medium dark gray to grayish-black, some dark yellowish brown, sideritic shale, 70%
606	615	9	Shale, dark-gray and grayish-black at the top to grayish-black and black at the bottom, some medium dark gray in the upper part; some dark yellowish brown to dusky-brown, highly sideritic shale; trace of coal at the bottom
615	630	15	Shale, (silty) to siltstone, light olive gray to brownish-gray (sideritic); shale, medium dark gray to black (highly carbonaceous), micaceous; some dark to dusky yellowish brown siderite and sideritic shale; in the lower part, sandstone, light-gray with medium- to dark-gray (very silty, highly carbonaceous and micaceous, shaly streaks), very fine grained, highly kaolinitic, micaceous, somewhat sideritic
630	637	7	Shale, brownish-black (highly micaceous, somewhat carbonaceous with black highly carbonaceous streaks), some medium dark gray to grayish-black; some coal and partially pyritized "coaly" shale; small amount of light-gray to light olive gray, fine to very fine grained sandstone
637	647	10	Clay-shale, medium dark gray to grayish-black, some brownish-black, very silty, micaceous in part, small amount is slightly dolomitic and sideritic; some black "coaly" shale; small amount of dark to dusky yellowish brown, highly sideritic shale

- 647 656 9 Shale, medium dark gray to grayish-black, some brownish-gray to brownish-black, somewhat micaceous and carbonaceous; small amount of black "coaly" shale; trace of dusky/yellowish brown siderite
- 656 665 9 Shale (very silty) to siltstone (shaly), dark-gray to grayish-black, highly micaceous, somewhat carbonaceous; small amount of brownish-black shale (with black, highly carbonaceous streaks); small amount of dark to dusky yellowish brown siderite and sideritic shale
- 665 672 7 Sandstone, very light gray, very fine grained with some fine to medium grains (very highly stained with iron rust,) slightly calcareous; some dark-gray, silty shale
- 672 679 7 Sandstone, light-gray, very ~~fine~~ fine grained, 20%; interstratified silty shale and siltstone, medium- to dark-gray with some highly micaceous and carbonaceous streaks, 80%
- 679 691 12 Siltstone (shaly) to shale (silty), medium- to dark-gray, kaolinitic, micaceous, some dark carbonaceous and sideritic streaks
- 691 712 21 Shale, medium dark gray to grayish-black (slightly sideritic) brownish-black (moderately sideritic) to dusky-brown and dark yellowish brown (highly sideritic); some medium- to dark-gray siltstone
- 712 719 7 Shale, medium dark gray to black (highly carbonaceous), some brownish-black, 80%; shale, light olive gray to light brown(ish gray (with a few dark-brown, sideritic spherulites), 20%; trace of dusky-brown siderite
- 719 722 3 Shale (silty) and some siltstone, light olive gray to medium light gray (with dusky-brown, siderite spherulites) micaceous and kaolinitic, 70%; shale, dark-gray to black (highly carbonaceous), 30%
- 722 731 9 Shale (silty) to siltstone, light olive gray to medium light gray, micaceous and kaolinitic, part contains some dusky-brown, siderite spherulites; considerable interbedded, siltstone medium-gray to medium-dark gray (kaolinitic and micaceous with some carbonaceous streaks) to shale, dark-gray to black (highly carbonaceous)

- 731 746 15 Shale, medium dark gray to grayish-black, highly micaceous with streaks of black, carbonaceous material and some siderite; contains some interbedded, medium-gray, micaceous and kaolinitic siltstone
- 746 757 11 Siltstone, (shaly) to sandstone (very fine with some fine to medium grains toward the bottom), medium- to dark-gray and brownish-gray in the upper part, medium light to medium dark gray and some brownish-gray in the lower part, kaolinitic, some chlorite, highly micaceous and carbonaceous with some siderite in the upper part; some medium dark to dark-gray shale in the lower part
- 757 778 21 Siltstone to sandstone (very fine), medium- to light-gray and light olive gray (with dark-gray to black, highly carbonaceous and micaceous, shaly streaks), highly kaolinitic, some chlorite, slightly to moderately calcareous in part, slightly to moderately sideritic; a large amount of interbedded, silty, dark-gray to grayish-black shale at the top
- 778 786 8 Siltstone to sandstone (very fine), light- to medium-gray, 20%; shale (silty) and siltstone, medium dark to dark-gray, somewhat sandy (very fine), micaceous and kaolinitic some carbonaceous material, 50%; shale, grayish-black to black, highly carbonaceous, 30%
- 786 798 12 Shale, medium dark to dark-gray, some grayish-black to black (highly carbonaceous), a little brownish-gray to dusky-brown (sideritic); some light- to medium-gray, very fine sandstone at the top
- 798 803 5 Shale, dark-gray to grayish-black, small amount of black, small amount of dark to dusky yellowish brown (highly sideritic), partly sandy to a very silty and shaly sandstone (medium to medium dark gray)
- 803 813 10 Sandstone, light- to medium-gray (silty, somewhat shaly) to dark-gray (very silty and shaly, some carbonaceous material), kaolinitic, micaceous and sideritic in part, slightly to moderately calcareous in part toward the bottom; some interbedded, medium dark to dark-gray shale

813	820	7	Shale, dark-gray to grayish-black, very silty and sandy to a very silty and argillaceous sandstone, light to medium dark gray, contains a large amount of carbonaceous material, kaolinitic, and micaceous, sideritic in part
820	825	5	Shale and siltstone, medium dark to dark gray, some brownish-grayish (somewhat sideritic), some medium-gray to light-gray and light olive gray, small amount of grayish-black to black (highly carbonaceous)
825	830	5	Shale and siltstone, light olive gray to brownish-gray (sideritic, contains many spherulites), medium dark to dark-gray, grayish-black to black (highly carbonaceous)
830	838	8	Shale, grayish-black to black, some dark to dusky yellowish brown (highly sideritic); some coal
838	845	7	Sandstone, (very fine) to siltstone (coarse), white to very light gray (highly stained with iron rust), somewhat kaolinitic, very slightly micaceous, somewhat pyritic at the bottom; interbedded, medium light to medium-gray, highly micaceous, and kaolinitic siltstone containing some carbonaceous material (at the bottom); considerable medium dark gray to black shale (cavings)
845	850	5	Sandstone (very fine) to siltstone (coarse), white to light-gray, kaolinitic, 30%; siltstone and shale, medium-to dark-gray, some grayish-black to black (highly carbonaceous), 70%
850	856	6	Shale, dark-gray to grayish-black, silty, micaceous in part; siltstone, light to medium-gray, shaly in part, kaolinitic, micaceous and sideritic in part; some sandstone, light gray, fine-to coarse-grained
856	885	29	Shale, medium dark to dark-gray; some light-gray siltstone at the bottom
885	915	30	Sandstone, very light gray to yellowish-gray, fine-grained, fine- to medium-grained at the bottom, very highly argillaceous, sideritic in part, contains very small amounts of chloritic, micaceous, and carbonaceous material; a large amount of interbedded, light olive gray to light brownish gray (sideritic in part, mostly spherulites), dark-gray to black (highly carbonaceous) shale in the upper 10 feet

- 915 920 5 Sandstone, very light gray to yellowish-gray, fine- to medium-grained, sideritic in part, 40%; shale, dark-gray to grayish-black, some black, 60%
- 920 925 5 Shale, light olive gray to light brownish-gray, ^(with abundant moderate to yellowish gray brown, siderite spherulites), 60%; shale, medium-gray to grayish-black, some black (highly carbonaceous), some dusky yellowish brown to brownish-black, (highly sideritic), 40%
- 925 943 18 Shale, dark-gray to grayish-black, some medium dark gray, some shale (sandy) to a sandstone (fine, light- to medium-gray) in the middle part; some light olive gray to light brownish gray shale at the top
- 943 948 5 Shale and siltstone, light olive gray to brownish-gray (with abundant dark-brown, siderite spherulites), some dusky brown to brownish-black (highly sideritic), partly sandy; some dark-gray to grayish-black shale
- 948 958 10 Shale and some siltstone, light olive gray to brownish-gray (sideritic in part, mostly spherulites); some dark to dusky yellowish brown, highly sideritic, shale and sandy shale; a large amount of interbedded, medium dark gray to grayish-black shale (958' corrected to 954')
- 954 966 12 Shale and siltstone, light-gray and light olive gray to brownish-gray (sideritic in part), dark to dusky yellowish brown (highly sideritic shale to siderite); a large amount of interbedded, medium dark gray to grayish-black shale
- 966 985 19 Siltstone, light- to medium-gray (with dark-gray, highly micaceous, somewhat carbonaceous and sideritic, shaly streaks), kaolinitic and micaceous; a moderate amount of interbedded, medium dark gray to black (highly carbonaceous) shale
- 985 1003 18 Shale, dark-gray to grayish-black, some medium dark gray, sandy and silty in part to an argillaceous siltstone and very fine sandstone; small amount of dark yellowish brown, sideritic shale to siderite
- 1003 1008 5 Shale and siltstone, dark-gray to grayish-black, slightly sideritic in part

- 1008 1113 5 Siltstone, light- to medium-gray and brownish-gray (sideritic in part, with dark-gray highly micaceous, somewhat carbonaceous and sideritic, shaly streaks); a large amount of interbedded, medium dark gray to grayish-black shale; some dark yellowish-brown, highly sideritic shale
- 1013 1018 5 Siltstone, light-gray to light olive gray, coarse to very coarse, kaolinitic, some mica, and a little chlorite, slightly to moderately sideritic, slightly to moderately calcareous in part; small amount of dark-gray to grayish-black, silty shale
- 1018 1030 12 Siltstone, light- to medium-gray (with dark-gray shaly streaks), kaolinitic, slightly sideritic in part; some dark yellowish brown, sideritic shale
- 1030 1036 6 Shale and siltstone, medium dark gray to grayish-black, some black, medium-gray to light olive gray and brownish-gray (somewhat sideritic), some dusky-brown (highly sideritic), 80%; sandstone, white to olive-gray, very fine grained, 20%
- 1036 1042 6 Sandstone, very light to light-gray (with some dark-gray to black, silty, highly carbonaceous streaks), very fine grained, kaolinitic, very slightly calcareous; small amount is sideritic (mostly spherulites)
- 0
142 1048 6 Sandstone, very light to light-gray, very fine grained, present in a very small amount; shale, dark-gray to black (highly carbonaceous), silty, 70%; siltstone, medium-gray to brownish-gray, kaolinitic, micaceous, and some carbonaceous material
- 1048 1055 7 Shale (silty and sandy) to siltstone (sandy, very fine), light olive gray to light brownish gray, 60%; siltstone, medium- to dark-gray and shale, dark-gray to black (highly carbonaceous), 40%
- 1055 1060 5 Sandstone (very fine) to siltstone (coarse), very light gray (with moderate yellowish brown spots of siderite), somewhat kaolinitic, slightly micaceous, 70%; shale, light olive gray (sideritic spherulites) to siltstone medium- and brownish-gray, and shale, grayish-black to black, 30%

- 1060 1064 4 Sandstone (very fine) to siltstone (coarse), light-gray to light olive gray (some medium- to dark-gray, micaceous, shaly streaks), some kaolinitic material and some mica, slightly calcareous in part, sideritic in part; small amount of dark-gray to black shale
- 1064 1069 5 Siltstone, light- to medium-gray and brownish-gray (with dark-gray, highly micaceous, shaly streaks), highly kaolinitic; a moderate amount of dark-gray to grayish-black shale; some dark yellowish brown, sideritic shale
- 1069 1076 7 Shale, dark-gray to grayish-black; some dark yellowish brown, sideritic shale
- 1076 1081 5 Sandstone (very fine, silty) to siltstone (sandy), medium light to medium-gray, some greenish-gray, highly micaceous and kaolinitic, some carbonaceous material, and some siderite
- 1081 1092 11 Siltstone, light- to medium-gray and brownish-gray, carbonaceous, sideritic, and micaceous, interbedded with shale, medium dark to dark-gray, silty, somewhat sideritic; some dark yellowish brown, highly sideritic shale in the lower part
- 1092 1098 6 Sandstone, very light to light-gray, fine-grained, quartz grains are angular to subangular (some show secondary crystal facets); considerable medium-gray to black (highly carbonaceous) shale and some coal in the upper part
- 1098 1115 17 Shale and siltstone, light olive gray to brownish-gray, sideritic in part (abundant siderite spherulites in the middle part); a moderate amount of medium to dark-gray and some grayish-black to black (highly carbonaceous) shale at the top; a moderate amount of dark-gray to black shale, a moderate amount of medium-gray to greenish-gray shale and siltstone, and some light-gray, very fine grained sandstone at the bottom
- 1115 1119 4 Sandstone (light-gray, very fine) and some siltstone (medium- and brownish-gray), kaolinitic, moderately to highly sideritic in part; interbedded medium dark to dark-gray, very silty, micaceous shale (with black, carbonaceous streaks); some dark yellowish brown siderite

- 1119 1125 6 Shale, dark-gray to grayish-black; some dark yellowish brown to dusky-brown, highly sideritic shale
- 1125 1131 6 Shale, light olive gray to brownish-gray, abundant brownish-black, siderite spherulites, some black "coaly" streaks; small amount of coal; some dark-gray to grayish-black shale; some brownish-gray siltstone
- 1131 1136 5 Shale and siltstone, medium to medium dark gray to olive-gray; some interbedded, light olive gray to brownish-gray very fine, kaolinitic sandstone; a small amount of grayish-black to black shale
- 1136 1165 29 Shale (silty) medium dark to dark-gray, slightly to moderately sideritic in part to siltstone, shaly and sandy, highly micaceous, moderately sideritic in part; 1145' - 1151' mostly siltstone; some dark yellowish brown sideritic shale; at the bottom, some very fine to fine-grained sandstone, light-gray to light olive gray
- 1165 1244 79 Sandstone, very light to light-gray, 1211' to 1224' light brownish gray (a large part of the cement is siderite), some light brownish gray at the bottom, fine- to medium-grained, very fine to fine (at the top), some coarse grains (in the middle part), fine to coarse (near the bottom), and very fine to fine (at the bottom), quartz is subangular to subrounded (some of the grains show secondary crystal facets), slightly to moderately sideritic, very highly sideritic in part (mostly cement), contains some shale grains and some chloritic material; a large amount of medium- to dark-gray shale at top and near the middle (probably cavings); some light-gray to light greenish gray, very fine to fine sandstone (at the bottom), micaceous and chloritic, somewhat pyritic
- 1244 1248 4 Shale Shale, medium dark gray to grayish-black, some black (highly carbonaceous), some brownish-gray to dusky-brown (highly sideritic); small amount of light-gray, fine- to medium-grained sandstone at the top

- 1248 1255 7 Shale and siltstone, medium- to dark-gray; some medium-gray to brownish-gray clay-shale; some grayish-black (carbonaceous) and some dark yellowish brown (highly sideritic) shale
- 1255 1286 31 Sandstone, very light to light-gray (some rust stain), conglomerate^{ic}, fine to very coarse grained, some granules, slightly to moderately sideritic in part, slightly calcareous (at the bottom), contains some chloritic and argillaceous material, and a little iron oxide, quartz grains subangular to subrounded (some have secondary crystal facets); bottom 10 feet, fine to medium-grained, highly pyritic (in part), light to medium light gray sandstone with shale grains and chloritic material with a large amount of interbedded, medium-gray to greenish-gray clay-shale (this shale might be included pebbles from weathering of Mauch Chunk or possibly be the top of the Mauch Chunk group)
- Mauch Chunk, 237 Feet
- 1286 1288 2 Clay-shale, very dusky red to dusky-brown; interbedded clay-shale, greenish-gray to medium-gray, some dark-gray (somewhat carbonaceous), contains a very large number of dark-brown, siderite spherulites
- 1288 1294 6 Shale and clay-shale, very dusky red to dusky-brown, some greenish-gray to medium-gray (with sideritic spherulites); interbedded, medium light gray to greenish-gray, moderately calcareous, highly dolomitic siltstone and shale
- 1294 1303 9 Shale and clay-shales; some greenish-gray siltstone and grayish-red to very dusky red, some dusky brown shale; some dark-gray to grayish-black shale at the bottom
- 1303 1309 6 Shale and siltstone, medium-gray and greenish-gray; some interbedded, grayish-red to very dusky-red clay-shale; small amount of dusky-brown, sideritic (spherulites) shale

- 1309 1321 12 Shale, grayish-red to very dusky red, micaceous in part, highly calcareous in part; a very large amount of interbedded, greenish-gray to medium-gray, moderately calcareous and dolomitic in part, small amounts ^{are} sideritic
- 1321 1328 7 Clay-shale, grayish-brown
- 1328 1339 11 Shale and clay-shale, grayish-red to very dusky red, some grayish-brown; some mottled, grayish-brown, yellowish-brown, and greenish-gray clay-shale; some medium-gray to greenish-gray and some dark-gray to grayish-black shale; some of the red and brown shales contain siderite spherulites
- 1339 1344 5 Shale, medium- to dark-gray, silty, soft, micaceous; some grayish-red to grayish-brown clay-shale; small amount of light-gray, fine- to medium-grained sandstone
- 1344 1428 84 Sandstone, white to very light gray, fine to very fine grained, fine- to medium-grained at the top, some medium grains at the bottom, subrounded, mostly clear and glassy quartz broken into individual grains, many grains have crystal faces; the top 4' is 70% shale (medium- to dark-gray and grayish-red to grayish-brown); 1378' - 1391' some shale; the remainder of the samples contain a little shale (cavings?)
- 1428 1432 4 Clay-shale, dark greenish gray to greenish-black, slightly pyritic in part, 75%; olive-gray, calcareous dolomite, 15% sandstone, very light gray, fine-grained, 10%
- 1432 1439 7 Clay-shale, dark-gray to dark greenish-gray and greenish-black, very dusky red to dusky brown to brownish-black; small amount of olive- ~~tan~~ gray, calcareous dolomite (1439' corrected to 1437')
- 1437 14⁴₄ 7 Shale (very soft) and clay-shale, dark-gray, very highly laminated; small amount of dark greenish gray and very dusky red to dusky-brown clay-shale; trace of medium-gray limestone
- 1444 1449 5 Limestone, medium-gray to brownish-gray, with white to light gray spots, shaly to a highly calcareous shale, contains a large amount of fossil fragments; a very large amount of soft, dark-gray shale and a little greenish-gray and grayish-brown shale (mostly cavings)

- 1449 1468 19 Limestone, brownish-gray to brownish-black (with light-gray to light brownish gray spots), moderately shaly, contains many fossil fragments; contains medium- to dark-gray and some grayish-brown shale cavings
- 1468 1473 5 Limestone, brownish-gray to brownish-black, some light-gray to light brownish gray, very shaly, ^{to} calcareous shale, highly oolitic in part, contains some fossil ^f fragments
- 1473 1478 5 Limestone, brownish-gray to brownish-black, very shaly to a highly calcareous shale, 20%; limestone, light-gray to light brownish gray, very silty and sandy, contains many fossil fragments, 60%; shale, medium- to dark-gray to greenish-gray (cavings ?), 20%
- 1488 1482 4 Sandstone (very fine, silty, highly argillaceous) to shale (sandy and silty), medium light gray to greenish and dark greenish gray, calcareous, 60%; shale, medium dark to dark-gray, soft, distinctly laminated, 40%; small amount of light-gray to light brownish gray limestone
- 1482 1507 25 Sandstone, very light gray to yellowish-gray, very fine grained and silty in the upper part, fine to very fine grained in the lower part, slightly calcareous at top and bottom, mostly clear and glassy quartz, somewhat kaolinitic; some argillaceous, silty sandstone (very fine) to sandy shale, medium light gray to greenish-gray and some medium- to dark-gray shale (at the top and as partings or cavings in the sandstone)
- 1507 1511 4 Sandstone, very light gray to yellowish-gray, fine to very fine grained, 50%; shale, dark-gray to grayish-black, soft distinctly laminated, some greenish-gray (probably cavings) 50%
- 1511 1518 7 Shale, dark-gray to grayish-black, a large amount of medium dark gray in the lower part, slightly calcareous in upper part to calcareous and somewhat dolomitic in the lower part, soft, distinctly laminated
- 1518 1523 5 Shale, medium dark gray to grayish-black, soft, distinctly laminated, 40%; limestone, brownish-black, some light brownish gray, clastic texture, shaly, highly oolitic in part, contains many fossil fragments, 60%

Greenbrier Limestone, 198 Feet

1523	1529	6	Limestone, light-gray to light brownish and light olive gray, silty, somewhat sandy, contains some fossil fragments; an extremely large amount of medium dark gray to grayish-black, soft, distinctly laminated shale (mostly cavings)
1529	1532	3	Limestone, brownish-gray to brownish-black, fossiliferous, shaly to very highly calcareous shale; some light-gray to light brownish gray limestone; a very large amount of dark-gray to grayish-black shale (cavings)
1532	1535	³ / ₅	Limestone, light brownish gray to brownish-gray with light-gray spots, silty, somewhat sandy, contains fossil fragments; a very large amount of dark-gray to grayish-black, some greenish-gray shale (cavings)
1535	1548	13	Limestone, light olive gray to light brownish gray, some yellowish-gray, very sandy (fine-grained), somewhat shaly and silty (10" casing to 1535')
1548	1551	3	Limestone, brownish-gray to brownish-black, some light brownish gray, somewhat shaly and silty, crystalline texture, very fine grained
1551	1554	3	Limestone, light brownish to brownish-gray, some brownish-black, somewhat sandy, oolitic in part, contains fossil fragments
1554	1558	4	Limestone, white to light brownish gray, highly oolitic, some fossil fragments; dolomite, light olive gray to greenish-gray, silty, calcareous
1558	1568	10	Limestone, light brownish gray, some pinkish-gray, light brownish to brownish-gray toward the bottom, somewhat shaly and silty, some fossil fragments
1568	1574	6	Limestone, brownish-gray to brownish-black, some light brownish/gray, shaly, slightly silty and sandy, mostly very fine textured
1574	1582	8	Limestone, pale yellowish brown, some brownish-gray, slightly silty, somewhat oolitic in part, contains some fossil fragments, slightly dolomitic to dolomite (moderate amount)

1582	1590	8	Limestone, pale yellowish brown to light brownish gray, moderately silty and sandy, elastic texture, oolitic, highly dolomitic in part, trace of glauconite
1590	1602	12	Limestone (very silty and sandy, at the top) to a sandstone (very fine to fine, some medium grains, rounded, very highly calcareous, at the bottom), pale yellowish brown to brownish-gray, oolitic in part, highly dolomitic at top to slightly dolomitic toward the bottom
1602	1609	7	Limestone, pale yellowish brown, some light brownish gray, elastic texture, very sandy, somewhat silty, oolitic in part; some highly calcareous, greenish-gray dolomite
1609	1638	29	Limestone, pale yellowish to brownish-gray, elastic texture, very sandy (very fine to fine, some medium, rounded grains) to a highly calcareous sandstone at the bottom, very highly oolitic
1638	1648	10	Dolomite, pinkish-gray to very pale orange, some pale yellowish brown in the lower part, moderately calcareous; in the lower part, some pale yellowish brown, very highly oolitic limestone, with a moderate to high amount of pore space between the oolites, somewhat sandy (gas at 1646')
1648	1654	6	Limestone, pinkish-gray and very pale orange to light brownish gray, elastic texture, very highly oolitic, a moderate to large amount of pore space between the oolites; small amount of dolomite
1654	1661	7	Limestone, very pale orange, oolitic in part, very fine textured, a few quartz grains with crystal faces, moderately to highly dolomitic in part
1661	1668	7	Limestone, very pale orange (highly dolomitic) very silty, some brownish-gray, moderately silty, elastic texture, contains many oolites, some fossil fragments, slightly sandy
1668	1679	11	Limestone, pale yellowish brown, some brownish-gray, some pale orange (at the top) to dark yellowish brown and brownish-gray at the bottom, somewhat silty, dolomitic in part at the top, slightly dolomitic limestone to a calcareous dolomite at the bottom

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| 1679 | 1687 | 8 | Limestone, pale yellowish brown to brownish-gray, somewhat silty, slightly shaly, slightly to moderately dolomitic, very fine textured |
| 1687 | 1694 | 7 | Limestone, light brownish to brownish-gray, clastic texture, sandy and oolitic in part, some calcareous dolomite |
| 1694 | 1700 | 6 | Limestone, pale yellowish brown to light brownish gray, clastic texture, oolitic, very sandy and silty; trace of glauconite |
| 1700 | 1706 | 6 | Dolomite, light greenish gray to brownish-gray, clastic texture, very silty, somewhat sandy, calcareous |
| 1706 | 1712 | 6 | Dolomite, brownish-gray and greenish-gray, sandy, moderately calcareous |
| 1712 | 1714 | 2 | Limestone, pale yellowish brown to light brownish gray, clastic texture, very sandy and very silty, dolomitic in part |
| 1714 | 1721 | 7 | Dolomite, light brownish gray to greenish-gray, calcareous, very sandy and very silty, 60%; shale, brownish-gray and dark-gray to brownish-black, moderately to highly dolomitic, calcareous in part, 40% |

Pocene Formation, 361 feet.

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| 1721 | 1741 | 20 | Siltstone, greenish-gray, some medium-gray, kaolinitic, somewhat micaceous, moderately sideritic in part, small amount of brownish-gray to brownish-black, shaly limestone at the top |
| 1741 | 1755 | 14 | Siltstone and shale, greenish-gray to medium and medium dark gray, some brownish-gray to brownish-black, kaolinitic, micaceous, contains some carbonaceous material; some moderate to dark yellowish brown, sideritic shale and siderite |
| 1755 | 1764 | 9 | Siltstone, medium to medium dark gray to greenish-gray, some brownish-gray, kaolinitic, micaceous; some medium dark to dark-gray shale; small amount of moderate yellowish brown, highly sideritic siltstone and shale |
| 1764 | 1775 | 11 | Siltstone, light to medium light gray with medium-gray to brownish-gray streaks, some greenish-gray, kaolinitic, micaceous, slightly calcareous |

1775	1792	17	Siltstone, light to medium dark gray, some light brownish gray in the lower part, contains kaolinitic and a little carbonaceous material, some mica; some medium dark/gray shale
1792	1823	31	Siltstone, light- to medium-gray, light brownish gray, some medium dark gray, some brownish-gray, and some greenish-gray, coarse to very coarse grained, highly kaolinitic, some mica, some carbonaceous material; small amount of brownish-gray limestone at the bottom (cavings)
1823	1831	8	Siltstone, light brownish gray, coarse, sandy (very fine), slightly calcareous, contains a very large amount of brown iron oxide cement, some kaolinitic material and some mica
1831	1856	25	Siltstone, light-gray and greenish-gray to medium-gray, some medium dark gray, some kaolinitic material, some mica; shale (particularly in the middle part), medium dark to dark-gray
1856	1877	21	Shale, medium dark to dark-gray; some light-to medium-gray siltstone at the top
1877	1890	13	Shale, dark-gray to grayish-black; small amount of light-to medium-gray siltstone
1890	1929	39	Siltstone, light- to medium-gray and greenish-gray, some brownish-gray to grayish-black (at the top), kaolinitic, micaceous and chloritic, slightly dolomitic in the upper part; a large amount of interbedded, medium to medium dark gray and dark greenish gray shale, some dark-gray; some olive gray siltstone (moderately sideritic) to moderate yellowish brown shale and siltstone (highly sideritic)
1929	1948	19	Siltstone and shale, medium dark gray to dark greenish gray, some medium- and some dark-gray, some kaolinitic material, some mica and chlorite; some moderate yellowish brown, fossiliferous, sideritic shale

- 1948 2049 101 Siltstone and shale, medium-gray to greenish-gray, some light-gray, some medium dark gray, contains kaolinite, chlorite and mica; some dark greenish gray, very fine, micaceous and chloritic sandstone at the bottom; some olive-gray (sideritic) and some moderate yellowish brown (highly ~~sks~~ sideritic) siltstone and shale, slightly calcareous and slightly dolomitic in part
- 2049 2064 15 Siltstone (coarse) to sandstone (very fine), light-gray and light greenish gray to medium-gray and greenish-gray, contains kaolinite, some mica and chlorite, slightly calcareous in part, somewhat fossiliferous; considerable interbedded, medium to medium dark gray and greenish-gray to dark greenish gray shale (particularly in the lower part)
- 2064 2073 9 Sandstone (very fine, silty), light-gray and light greenish gray to medium-gray and dark greenish gray, and shale, medium dark gray to dark greenish gray (Berea ?), 70%; sandstone (very fine), brownish-black, very silty, 30%
- Devonian Shales, 4085 feet
- 2073 2082 9 Siltstone and sandstone (very fine) light dark to greenish gray, and shale, medium dark gray to dark greenish gray; small amount of brownish-black siltstone
- 2082 2100 18 Siltstones and shale, greenish-gray and medium-gray, some medium dark gray, very sandy to sandstone (in the lower part), very fine, micaceous, chloritic and some kaolinitic material, somewhat sideritic in part, 70% at top to 85% in lower part; shale, grayish-brown to dusky-brown, 30% in upper part to 15% toward the bottom
- 2100 2106 6 Sandstone (very fine, silty), greenish-gray to dark greenish gray; shale, medium to medium dark gray to dark greenish gray, silty, sandy in part
- 2106 2122 16 Sandstone (very fine) to siltstone (sandy in part), greenish to dark greenish gray and medium to medium dark gray, kaolinitic, micaceous, and chloritic; a large amount of interbedded, medium dark gray to dark greenish gray shale; some grayish-brown to dusky-brown shale

- 2128 2144 22 Shale and siltstone, greenish to dark greenish gray, some medium to medium dark gray, small amount of brownish-gray to grayish-brown in the middle and upper parts, contains mica, chloritic, and kaolinitic material, highly micaceous and chloritic in part
- 2144 2184 40 Siltstone and shale, greenish-gray to dark greenish gray and medium-gray, grayish-brown to brownish-gray, micaceous and chloritic, some kaolinitic material; mostly siltstone (sandy) at the bottom
- 2184 2212 28 Siltstone (sandy) to sandstone (very fine), light to dark greenish gray, some medium-gray, micaceous, kaolinitic, and chloritic; some dark greenish gray to medium and medium dark gray shale
- 2212 2220 8 Siltstone, greenish-gray to dark greenish gray, some medium dark gray, a large amount of grayish-brown to brownish-gray, micaceous and chloritic; some kaolinitic material; some dark greenish gray to medium and medium dark gray shale
- 2220 2265 45 Siltstone and shale, greenish-gray and medium-gray to dark greenish gray and medium dark gray, small amount of grayish-brown to brownish-gray, small amount of olive-gray (sideritic) to moderate yellowish brown (highly sideritic); trace of limestone
- 2265 2284 19 Siltstone, greenish and dark greenish gray, some medium-gray, coarse, sandy in part (fine), micaceous, chloritic, and kaolinitic, 70%; shale, medium dark gray, some medium-gray, 30%
- 2284 2328 44 Siltstone, greenish-gray to dark greenish gray and some medium-gray (with light-gray, fossiliferous, highly calcareous spots); shale, medium dark gray, some medium-gray, and some dark greenish gray
- 2328 2335 7 Siltstone (sandy) to shale (sandy and silty), medium dark gray with a smaller amount of dark greenish gray to greenish-gray, kaolinitic, chloritic and micaceous in part

2335	2342	7	Sandstone, greenish-gray, some light greenish gray, very fine grained, silty, kaolinitic, some chlorite and mica, slightly to moderately calcareous
2342	2350	8	Sandstone, greenish and dark greenish gray (some chlorite) brownish-black (carbonaceous) to brownish-gray, very fine grained, silty, slightly calcareous, kaolinitic, some mica, some medium dark gray shale shale
2350	2377	27	Siltstone, (somewhat sandy), greenish-gray to dark greenish gray; interbedded shale, medium dark gray, some dark greenish gray
2377	2398	21	Siltstone, greenish-gray to dark greenish gray (with medium-gray streaks), chloritic, micaceous, somewhat kaolinitic; some interbedded, olive-gray to medium dark and dark-gray shale
2398	2413	15	Siltstone and shale, greenish-gray to medium-gray, some medium dark gray; some light greenish-gray, conglomeratic (very fine to fine-grained) with medium to very coarse grains), sandstone, slightly to moderately calcareous; some medium-gray to grayish-black (carbonaceous), fine-grained, silty sandstone; the sandstone is confined to the lower part of the interval
2413	2457	44	Siltstone, greenish and dark greenish gray, sandy in part (very fine), micaceous, chloritic, and kaolinitic, some fossil fragments; some interbedded, medium dark to dark gray shale
2457	2462	5	Siltstone, brownish-gray to brownish-black, sandy, greenish and dark greenish-gray, slightly to moderately calcareous; some medium dark to dark-gray shale
2462	2607	145	Siltstone (sandy) to sandstone (very fine, silty), greenish and dark greenish gray to medium-gray, (with some light-gray to lightolive gray, highly fossiliferous limestone spots), moderately calcareous in part; a large amount of interbedded, medium- to dark-gray shale; 2495' to 2503' and at the bottom a large amount of interbedded, brownish-gray to brownish-black sandstone (very fine, silty); some light-gray to yellowish-gray limestone at 2556' to 2564'

- 2607 2661 54 Siltstone (coarse) in upper part to siltstone and sandstone (very fine) in middle and lower parts, greenish-gray to medium-gray, highly calcareous to a light-gray highly fossiliferous limestone (as scattered spots), kaolinitic, micaceous, and chloritic; some interbedded, medium- to dark-gray shale; some brownish-gray to brownish-black siltstone (in the upper part) and some brownish-gray to grayish-brown siltstone (in the middle part)
- 2661 2722 61 Siltstone, greenish-gray, some medium-gray and dark greenish gray (with some scattered highly fossiliferous, highly calcareous to limestone, light gray spots, particularly at the bottom), kaolinitic, micaceous, and chloritic; some interbedded, medium- to dark-gray shale; some yellowish-black, carbonaceous, silty shale near the top
- 2722 2788 66 Siltstone, greenish-gray to medium-gray, some dark greenish gray and medium dark gray, moderately to highly calcareous in part; some medium- to dark-gray, somewhat carbonaceous, slightly dolomitic siltstone at the top; some interbedded, medium- to dark-gray shale
- 2788 2907 119 Siltstone, greenish-gray, some dark greenish gray, some medium-gray (slightly carbonaceous) at the top, contains mica, chlorite and kaolinitic material, slightly calcareous in part at the top and moderately calcareous at the bottom, some light-gray spots (fossiliferous calcite) in the lower part; a small amount of medium- to dark-gray shale except at the top, where it is present in moderate amount
- 2907 2990 83 Siltstone, greenish and dark greenish gray to medium-gray (with light-gray to light olive gray spots and streaks of highly fossiliferous calcite in the upper and middle parts), kaolinitic, micaceous, chloritic; small amount of medium- to dark-gray shale; some interbedded, medium- to dark-gray and dark greenish gray shale at the bottom

2990	3060	50	Siltstone and a little shale, greenish and dark greenish gray, some medium to medium dark gray, micaceous, chloritic, somewhat kaolinitic; a large amount of brownish-gray to brownish-black, somewhat sideritic, somewhat carbonaceous siltstone, and a trace of grayish-black to black, carbonaceous siltstone at the top
3060	3223	163	Siltstone and shale, greenish-gray to medium-gray, some medium dark gray, contains some mica, chlorite and kaolinitic material, trace of carbonaceous material; mostly siltstone in the upper part; some dark-gray and some dark greenish gray shale toward the bottom; small amount of calcareous and dolomitic siltstone at the top and a moderate amount near the bottom; small amount of brownish-gray to brownish-black siltstone at the bottom
3223	3248	25	Siltstone and shale, brownish-gray to brownish-black (slightly dolomitic), greenish-gray to medium-gray, some dark gray; trace of light-gray dolomite
3248	3312	64	Siltstone and shale, greenish-gray to medium-gray, some dark greenish gray to medium dark gray, some olive-gray to brownish-gray in the lower part, some brownish-gray to brownish-black (slightly dolomitic and calcareous in part at the bottom), micaceous, somewhat kaolinitic and chloritic
3312	3358	46	Siltstone and shale, medium- to dark-gray, some olive-gray to brownish-gray, highly micaceous in part
3358	3401	43	Siltstone and shale, greenish-gray and medium light gray to medium dark gray, brownish-gray to brownish- and grayish-black (somewhat carbonaceous) slightly dolomitic in part, kaolinitic and micaceous
3401	3465	64	Siltstone and shale, greenish-gray and medium-gray to medium dark gray (with dark-gray to grayish-black, some brownish-gray streaks), somewhat brownish-gray at the bottom, micaceous, somewhat kaolinitic, some carbonaceous material; trace of calcite at the bottom

- 3465 3554 89 Siltstone and shale, greenish-gray to medium and medium dark gray, dark-gray to grayish-black (somewhat carbonaceous), micaceous, somewhat kaolinitic, small amount of dolomitic siltstone; 3475'-3490' and in the lower part of interval a moderate amount of interbedded, brownish-gray to brownish-black siltstone to a very large amount at the bottom; some light-gray chips showing slickensides at 3507'-3522'
- 3554 3644 90 Siltstone and shale, medium light gray and greenish-gray to medium dark gray; some interbedded, brownish-gray and dark-gray to grayish-black, kaolinitic and micaceous, slightly to moderately dolomitic toward the bottom
- 3644 3711 67 Siltstone and shale, medium light to medium dark gray, some greenish-gray, dark-gray to grayish-black (carbonaceous), some brownish-gray to brownish-black toward the bottom, kaolinitic and micaceous
- 3711 3767 56 Siltstone and shale, medium light to medium dark gray to greenish-gray, some dark-gray to grayish-black (carbonaceous), small amount of brownish-gray in the middle part, micaceous, kaolinitic; small amount of calcareous and dolomitic siltstone at the top to a moderate amount at the bottom
- 3767 3800 35 Siltstone, brownish-gray, some brownish-black, and some light olive gray; siltstone and shale, medium light to medium dark gray to greenish-gray; some dark-gray to grayish-black (carbonaceous) shale
- 3800 3843 43 Siltstone and some shale, light- to medium-gray to greenish-gray, light olive gray to brownish-gray to brownish-black, some dark-gray to grayish-black (carbonaceous), micaceous, and kaolinitic; small amount of slightly to moderately dolomitic siltstone
- 3843 3901 58 Siltstone, light-gray to medium light gray and light olive gray, some brownish-gray and greenish-gray, kaolinitic, somewhat micaceous, some calcareous and dolomitic siltstone in the lower part; some interbedded, brownish-gray to brownish-black siltstone at the top; a moderate amount of interbedded, medium- to dark-gray siltstone and shale; small amount of grayish-black to black (highly carbonaceous) shale at top where it is present in moderate amount

3901	3942	41	Siltstone and shale, dark-gray to grayish-black and black (highly carbonaceous), brownish-gray to brownish-black (considerable at top), micaceous, 60% to 70%; interbedded siltstone, light-gray to medium-gray and light olive gray, some greenish-gray and light olive gray, some greenish-gray, kaolinitic, micaceous, 30% to 40%
3942	4097	155	Siltstone and shale, light- to medium-gray and light olive gray to brownish-gray, some medium dark gray; considerable dark-gray to grayish-black (carbonaceous) shale, some black (highly carbonaceous); some calcareous and dolomitic siltstone at the top and at 4034 to 4046'; some scattered pyrite "oolites" and spherulites
4097	4129	32	Siltstone, medium light to medium dark gray, kaolinitic and micaceous; siltstone and shale, medium dark gray to grayish-black, some carbonaceous material, micaceous in part, slightly pyritic
4129	4190	61	Siltstone, medium light to medium dark gray, some light-gray (highly calcareous) at the top and near the bottom; some shale and siltstone, dark-gray to grayish-black (carbonaceous); considerable interbedded, light olive gray to brownish-gray, micaceous, somewhat kaolinitic siltstone
4190	4250	60	Siltstone and shale, light- to medium-gray, and some light olive gray (kaolinitic, micaceous), and some medium dark gray to grayish-black (micaceous and carbonaceous), small amount of black (highly carbonaceous); some interbedded, brownish-gray to brownish-black siltstone at the top; at 4225 to 4234', a very large amount of interbedded, dark-gray to black (carbonaceous) and brownish-gray to brownish-black siltstone and shale; some calcareous, highly dolomitic siltstone in the middle part
4250	4272	22	Shale, medium to medium dark gray, some dark-gray to grayish-black (carbonaceous); some medium light to medium-gray, kaolinitic, micaceous siltstone; some olive-gray, sideritic siltstone and siderite

4272	4307	35	Siltstone, brownish-gray (micaceous) to brownish-black and dark-gray to black (highly carbonaceous) shale, 70% at top to 15% at the bottom; siltstone and shale light to medium dark gray, some greenish-gray, kaolinitic, micaceous in part; small amount of light-gray, calcareous, highly dolomitic shale at the top to a moderate amount at the bottom
4307	4479	172	Siltstone and shale, medium light gray and greenish-gray to medium dark gray; moderate to small amount of dark-gray and brownish-gray to black (carbonaceous) shale 4451' - 4479', moderately calcareous and dolomitic, mostly siltstone, sandy in part; a moderate amount of calcareous and dolomitic siltstone at 4379' to 4390'
4479	4511	32	Shale, medium- to dark-gray, some grayish-black to black (carbonaceous); some medium light to medium-gray and greenish-gray, partly calcareous siltstone; small amount of olive-gray, sideritic shale
4511	4574	63	Siltstone and shale, medium- to medium dark gray, some greenish-gray, considerable amount of light olive gray and medium light gray at the top and bottom; a moderate amount of dark-gray to grayish-black shale at the top to a small amount at the center
4574	4666	92	Siltstone and shale, medium light to medium dark gray, some greenish-gray and brownish-gray, some dark-gray (with occasional black, carbonaceous streak), kaolinitic and micaceous in part, some calcareous, dolomitic siltstone; 4634' - 4645', considerable greenish-gray to brownish-gray siltstone and shale
4666	4720	54	Siltstone and shale, medium light to medium dark-gray, some greenish-gray, some dark-gray to black, slightly calcareous, kaolinitic and micaceous; considerable interbedded, brownish-gray to brownish-black, micaceous and kaolinitic siltstone, slightly to moderately dolomitic in part
4720	4784	64	Siltstone and some shale, medium light to medium dark gray, some greenish-gray, some dark-gray, micaceous, kaolinitic; some calcareous and dolomitic siltstone in the upper part; an increase in amount of (continued on following sheet)

4720	4784	64	(continued) shale toward the bottom; 4743' - 4753', considerable interbedded, brownish-gray, micaceous siltstone
4784	4869	85	Siltstone and shale, medium light to medium dark gray, some greenish-gray to light olive gray, kaolinitic, micaceous in part; small amount of calcareous, dolomitic siltstone, moderate amount at the bottom; some dark-gray and brownish-gray to black (carbonaceous) shale; small amount of pyrite throughout the interval
4869	4880	11	Shale, dark-gray and brownish-gray to brownish-black and black, silty in part, highly carbonaceous, 90%; siltstone and shale, medium light gray to medium dark gray, 10%; trace of pyrite
4880	4915	35	Siltstone and shale, light olive gray to medium and medium dark gray, some greenish-gray, somewhat kaolinitic and micaceous, 60% to 40%; interbedded dark-gray and brownish-gray to black, moderately to highly carbonaceous, 40% to 60%
4915	4930	15	Siltstone and shale, medium light to medium dark gray, small amount of greenish- and brownish-gray, micaceous and kaolinitic; some dark-gray to black (carbonaceous) shale at the top; a moderate amount of calcareous siltstone in the middle part
4930	5050	120	Shale and siltstone, medium light to medium dark gray, some greenish- and brownish-gray, some dark-gray to black (carbonaceous), kaolinitic and micaceous in part
5050	5070	20	Shale, dark-gray and brownish-gray to brownish-black and black, moderately to highly carbonaceous, silty in part, 70% at the top to 30% at the bottom; siltstone and shale, light olive gray and medium light to medium dark gray, 30% at top to 70% at bottom
5070	5120	50	Shale and siltstone, light olive gray and medium light gray to medium dark gray, some brownish-gray and some greenish-gray, kaolinitic and micaceous in part; moderate amount of dark-gray to black (carbonaceous) shale; trace of pyrite
5120	5140	20	Shale and some siltstone, medium light gray and some greenish-gray to medium dark gray, brownish-gray to brownish black, dark-gray to grayish-black, some black

5140	5160	20	Shale, dark-gray and brownish-gray to black, moderately to highly carbonaceous, some light olive gray and medium-gray, slightly pyritic
5160	5238	78	Shale and some siltstone, dark-gray to black (highly carbonaceous), brownish-gray to brownish-black (carbonaceous), medium light gray, light olive gray and greenish-gray to medium dark gray, micaceous and kaolinitic in part, a large amount of dark-gray to black at the top
5238	5302	64	Shale, dark-gray and brownish-black to black, highly carbonaceous; some medium to medium dark gray shale and siltstone and a little greenish-gray; considerable brownish-gray to brownish-black, somewhat dolomitic siltstone at 5290' - 5296'; small amount of pyrite throughout the interval
5302	5325	23	Siltstone, brownish-gray to brownish-black, slightly to moderately dolomitic with veinlets of white dolomite, micaceous; shale, dark-gray to black (highly carbonaceous), siltstone and shale, medium to medium dark gray, present in large amount at the bottom
5325	5402	77	Shale and siltstone, medium light to medium dark gray, brownish-gray to brownish-black, some greenish-gray and some olive-gray, kaolinitic and micaceous, small amount is calcareous and dolomitic; shale, dark-gray to black (highly carbonaceous); some of the shale has streaks and veinlets of dolomite; pyritic in part
5402	5540	138	Shale and some siltstone, brownish-gray to brownish-black (dolomitic in part), medium dark to dark-gray, some olive-gray; a moderate to large amount of interbedded, grayish-black to black, highly carbonaceous shale, pyritic in part
5540	5571	31	Shale and some siltstone, medium dark gray to olive- and brownish-gray with some brownish-black at the top, brownish-gray to brownish-black with some olive-gray to medium dark gray at the bottom, the brownish-gray shale contains streaks and veinlets of dolomite; some grayish-black to black shale in the lower part
5571	5616	35	Shale, brownish-gray to brownish-black (silty, with spots and streaks of dolomite), dark-gray to black (highly carbonaceous), some medium dark gray to olive-gray, mostly dark-gray to black in the lower part

5616	5671	55	Shale, medium dark gray to grayish-black, (carbonaceous), some olive- and brownish-gray to brownish-black, some black (highly carbonaceous), contains streaks and spots of dolomite
5671	5736	⁶ 55	Shale, olive-gray and medium dark gray to brownish-gray and dark-gray, brownish and grayish-black (carbonaceous) to black (highly carbonaceous), a few streaks of dolomite
5736	5814	78	Shale, dark-gray and brownish-gray to brownish-black (carbonaceous), some black (highly carbonaceous), calcareous and dolomitic in part
5814	5886	72	Shale, dark-gray, some medium dark gray, some grayish-black (carbonaceous), contains highly calcareous and dolomitic spots and streaks, small amount of olive-gray, greenish to dark greenish gray, and brownish-gray
5886	5961	75	Shale, grayish- and brownish-black, to black, highly carbonaceous, some dark-gray, dolomitic, contains fine streaks of calcite and dolomite, a marked increase in black toward the bottom
5961	6038	77	Shale, black ("coaly"), some grayish-black at the top, slightly to moderately calcareous and dolomitic in the upper and middle part, slightly calcareous in part toward the bottom; small amount of medium to medium dark shale and siltstone; trace of pyrite
6038	6044	6	Limestone, brownish-gray, shaly to shale, brownish-black, highly calcareous, 30%; shale, grayish-black to black ("coaly"), 70%; trace of pyrite
6044	6051	7	Shale, grayish-black to black (coaly), 60%; limestone, brownish-gray, fossiliferous, shaly to shale brownish-black, highly calcareous, 40%; some medium-gray dolomite; trace of pyrite
6051	6094	43	Shale, black, "coaly", calcareous in part, somewhat pyritic; some limestone, brownish-gray, shaly to shale, brownish-black, highly calcareous in the upper part; small amount of greenish-gray and medium to medium dark gray shale and siltstone

Huntersville Chert, 183 feet

- 6094 6105¹¹ Shale, black, "coaly", some brownish-black, calcareous and dolomitic in part, 80%; limestone, brownish-gray to brownish-black with light-gray spots, 15%; shale, brownish-gray to brownish-black, very highly micaceous, highly pyritic, in part, 5%; (Corniferous Lime at 6095 from driller's log)
- 6105 6111 6 Limestone, brownish-gray to brownish-black with white to light-gray spots, cherty to chert, light- to medium-gray, brownish-gray, to dark-gray, calcareous; some brownish-gray to brownish-black, very highly micaceous (probably biotite), pyritic; a very large amount of black "coaly" shale (cavings)
- 6111 6128 17 Limestone, brownish-gray to brownish-black with light-gray spots, cherty and shaly to chert, mottled with white to light-gray and dark-gray to brownish-black and black, highly calcareous, the dark chert is very shaly
- 6128 6141 13 Limestone (very cherty) to chert (highly calcareous) brownish-gray to brownish-black with very light gray to yellowish-gray spots, some white to light-gray, some dark-gray to black, shaly, slightly dolomitic at the top to moderately dolomitic at the bottom
- 6141 6166 25 Chert, white to medium- and brownish-gray, mottled white to light-gray and brownish-black to black (very shaly) highly calcareous, moderately dolomitic in part, mostly white and light-gray to brownish-gray at the bottom, somewhat glauconitic
- 6166 6179 13 Chert, white and light- to medium-gray, calcareous, slightly dolomitic, somewhat glauconitic, to highly stained with iron rust at the bottom for description
- 6179 6183 4 Chert, light- to medium-gray with dark-gray and brownish-black streaks, glauconitic, moderately calcareous, highly dolomitic (much dolomite occurs in rhombs in the chert)
- 6183 6200 17 Chert, appears to be mostly white to light- and medium gray (contains a very large amount of iron rust), moderately to highly calcareous, slightly to moderately dolomitic

- 6200 6202 2 Chert, white to light- and medium-gray, some dark-gray, glauconitic, moderately calcareous, moderately dolomitic
- 6202 6218 16 Chert, light- to medium-gray, (highly stained with iron rust), glauconitic, moderately calcareous, moderately to highly dolomitic
- 6218 6229 11 Chert, light- to medium-gray, some dark-gray, sandy and silty, moderately to, highly dolomitic, glauconitic
- 6229 6243 14 Sandstone, light- to medium-gray, very fine grained, silty, slightly to moderately dolomitic (probably cementing material), a large amount of the sand grains are chert
- 6243 6246 3 Chert, light- to medium- and dark-gray, shaly, somewhat glauconitic
- 6251 6277 26 Sandstone, light- to medium-gray with some dark-gray in the upper part, light- to medium-gray in the middle, very light to light-gray with some medium-gray in the lower part, very cherty, very fine grained to silt, glauconitic, moderately calcareous, highly calcareous at the bottom, moderately dolomitic

Oriskany Sandstone, 63, plus, feet

- 6277 6318 41 Sandstone, white to light-gray, fine- to medium-grained and subrounded to rounded in the upper part (some of the quartz grains show secondary crystal facets), quartzose (clear and glassy), very fine grained at the bottom, most of the samples are crushed too fine to determine the grain sizes, slightly calcareous, somewhat calcareous in the upper part; small amount of glauconite at the top
- 6318 6340 22 Sandstone, very light gray in the upper part, very light to light-gray with some dark-gray streaks in the lower part, mostly quartz, poorly sorted, very fine to medium grained, subrounded to rounded, a large amount of medium to coarse grains at the top, fine to very fine grained with some medium grains in the lower part, fine to very fine grained at the bottom, slightly calcareous in the upper part, moderately calcareous 6331' to 6339' with highly calcareous spots; a small amount of chert containing glauconite at the top (probably cavings).

6340

TOTAL DEPTH