

Company: Slate Creek Development Program
 Farm: Mountain Mission School
 Well No.: 1
 Elevation: 1181' Ground
 Total Depth: 3600'
 Location: Buchanan County
 12,600' N. of 37°15'
 3,150' E. of 82°05'
 Drilling Commenced:
 Well Completed:
 Result: Dry hole

Geologic Log
 Samples studied and
 described by:
 John M. Wilson
 Virginia Division of
 Mineral Resources
 March, 1963

GEOLOGIC LOG

<u>Depth</u>	<u>Interval</u>	<u>Description</u>
0-431	431	No samples.
431-436	5	Sandstone, white, clear, moderately cemented, medium to very coarse-grained, poorly sorted, subrounded to angular, siliceous, with: rare biotite, rare muscovite, and common iron oxide stains. Nonporous to slightly porous.
436-446	10	Interbedded, Sandstone, white, light gray, moderately cemented, very fine-to medium grained, medium sorted, subrounded to subangular, interstitially silty, siliceous, with: abundant biotite, common muscovite, common carbonaceous material and common iron oxide stains. Nonporous to slightly porous. Siltstone, locally finely sandy, light to dark gray, moderately hard, brittle, no apparent bedding, argillaceous, with: common biotite, common muscovite, and common carbonaceous material.
446-450	4	Sandstone, white, clear, moderately cemented, very fine-to medium-grained, medium sorted, subrounded to angular, siliceous, with: rare biotite, common muscovite, and rare iron oxide stains. Slightly porous to porous.

450-453	3	Sandstone, white, clear, milky white, moderately cemented, medium to very coarse-grained, medium sorted, rounded to angular, siliceous, with: rare biotite, rare muscovite, rare chlorite, and common iron oxide stains. Slightly porous.
453-458	5	Sandstone, white, clear, moderately cemented, very fine-to medium-grained, medium sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite, Nonporous to slightly porous.
458-469	11	Conglomeratic, white, clear, milky white, moderately cemented, fine-to very coarse-grained, abundant granules, poorly sorted, subrounded to angular, siliceous, with: rare biotite, rare muscovite. Slightly porous.
469-1366	897	No samples
1366-1434	68	Sandstone, white, clear, moderately cemented, fine-to medium-grained, well sorted, rounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite, and common iron oxide stains. Nonporous to slightly porous.
1434-1441	7	Siltstone, locally finely sandy, medium to dark gray, red-brown, moderately hard, flaky, no apparent bedding, argillaceous, with: rare biotite, common muscovite, rare carbonaceous material. With stringers of Sandstone, white, clear, milky white, moderately cemented, fine-to coarse-grained, medium-sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite, Nonporous to slightly porous.
1441-1457	16	Sandstone, white, light gray, poorly cemented, very fine-to medium grained, medium sorted, subrounded to subangular, interstitially silty, siliceous (slightly), calcareous, with: rare biotite, rare muscovite, and rare iron oxide stains. Nonporous to slightly porous. With stringers of Siltstone, locally finely sandy, medium gray, red-brown, moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, with: rare biotite, rare muscovite, and rare carbonaceous material.

1457-1471	14	Siltstone, locally shaly, light gray, green (light), moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, with: chert (abundant round brown nodules), and rare iron oxide stains.
1471-1479	8	Siltstone, locally finely sandy, light gray, white, flaky, no apparent bedding, calcareous (slightly), siliceous, argillaceous, with: rare biotite, and rare muscovite.
1479-1485	6	Siltstone, variegated, light gray, red, green, brown (light), moderately soft, flaky, no apparent bedding to poorly fissile, calcareous, siliceous, ferruginous, with: rare biotite, common muscovite.
1485-1490	5	Sandstone, white, clear, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite. Nonporous to slightly porous. Siltstone, locally finely sandy, light gray, red, green, moderately soft, flaky, no apparent bedding, argillaceous, with: rare muscovite.
1490-1568	78	Siltstone, variegated, locally shaly, light gray, red, green, tan, moderately hard, brittle, no apparent bedding to poorly fissile, calcareous, argillaceous, with: rare biotite, rare muscovite, and rare calcite.
1568-1584	16	Interbedded; Sandstone, white, light gray, well cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite. Nonporous to slightly porous. Siltstone, locally finely sandy, light to medium gray, red, moderately hard, flaky, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite.
1584-1603	19	Siltstone, locally finely sandy, green (light), moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, abundant muscovite, and rare carbonaceous material.

1603-1620	17	Siltstone, locally finely sandy, medium to dark gray, green, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and rare carbonaceous material.
1620-1630	10	Interbedded; Sandstone, white, light gray, moderately cemented, fine-to medium-grained, well sorted, rounded to subangular, interstitially silty, calcareous, with: abundant biotite, common muscovite. Nonporous to slightly porous. Siltstone, locally finely sandy, light to dark gray, moderately hard, brittle, no apparent bedding, calcareous, argillaceous, with: common biotite, common muscovite, and common carbonaceous material.
1630-1743	113	Shale, silty, medium to dark gray, red (rare), moderately hard, brittle, poor to fair fissility, argillaceous, with: rare biotite, rare muscovite, and common pyrite.
1743-1760	17	Interbedded; Shale, silty, medium to dark gray, red (rare), moderately soft, flaky, poor to fair fissility, argillaceous, with: rare biotite, rare muscovite. With Sandstone, white, light gray, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, calcareous, with: common biotite, common muscovite, and rare iron oxide stains. Nonporous to slightly porous.
1760-1772	12	No samples.
1772-1778	6	Shale, silty, light to dark gray, moderately hard, brittle, no apparent bedding to fair fissility, argillaceous, with: common biotite, common muscovite, and rare carbonaceous material. With stringers of Sandstone, white, light gray, moderately cemented, very fine-to grained, well sorted, subrounded to subangular, interstitially silty, siliceous, calcareous, with: rare biotite, rare muscovite, Nonporous to slightly porous.

1778-1785	7	Interbedded; Siltstone, locally finely sandy, light gray, moderately soft, flaky, no apparent bedding, argillaceous, with: abundant biotite, abundant muscovite, with: Shale, locally silty, medium to dark gray, moderately hard, brittle, poor to fair fissility, argillaceous, with: rare pyrite,
1785-1812	27	Siltstone, grades locally to very fine-grained Sandstone, locally finely sandy, green (light), moderately soft, flaky, no apparent bedding, siliceous, argillaceous, with: abundant biotite, abundant muscovite, and abundant iron oxide stains.
1812-1820	8	Siltstone as in 1785-1812, with stringers of Sandstone, white, clear, moderately cemented, fine-to medium-grained, well sorted, subrounded to angular, siliceous, with: rare muscovite, and rare iron oxide stains. Slightly porous to porous.
1820-1828	8	Sandstone, as in 1812-1820.
1828-1829	1	No samples
1829-1837	8	Shale, locally silty, light to dark gray, moderately hard, flaky, fair to good fissility, argillaceous, with: rare muscovite, rare iron oxide stains, and stringers of Sandstone, white, light gray, poorly cemented, very fine-to medium-grained, medium sorted, rounded to subangular, interstitially silty, siliceous, calcareous (slightly), with: abundant biotite, abundant muscovite, and common carbonaceous material. Nonporous to slightly porous.
1837-1901	64	Siltstone, locally finely sandy, locally shaly, green (light), moderately soft, flaky, no apparent bedding to poorly fissile, siliceous, argillaceous, with: common biotite, common muscovite, rare carbonaceous material, and rare iron oxide stains.
1901-1937	36	Sandstone, white, light gray, moderately cemented, very fine-to fine-grained, well sorted, rounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite, rare carbonaceous material, rare iron oxide stains. Slightly porous.

1937-2031	94	No samples.
2031-2049	18	Siltstone, locally finely sandy, red, green (rare), moderately soft, flaky, no apparent bedding, argillaceous, ferruginous, with: rare biotite, abundant muscovite.
2049-2074	15	Siltstone, locally finely sandy, light gray, green (light), moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: abundant biotite, abundant muscovite,
2074-2112	38	Sandstone, white, light gray, moderately cemented, very fine-to medium-grained, medium sorted, subrounded to angular, interstitially silty, siliceous, calcareous (slightly), with: common biotite, common muscovite, rare iron oxide stains, and common silty - micaceous partings (contamination ?). Nonporous to slightly porous.
2112-2122	10	Interbedded; Siltstone, locally shaly, light to dark gray, red (rare), green (light), moderately hard, flaky, no apparent bedding to poorly fissile, argillaceous, with: rare biotite, rare muscovite. Sandstone, white, light gray, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, calcareous, with: abundant biotite, abundant muscovite, and rare iron oxide stains. Nonporous to slightly porous.
2122-2130	8	Siltstone, light gray (rare), tan (rare), moderately hard, brittle, no apparent bedding, argillaceous, ferruginous, with: rare biotite, rare muscovite, and rare carbonaceous material.
2130-2181	51	Siltstone, light gray, red, green, tan, moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, ferruginous, with: rare biotite, rare muscovite, and rare carbonaceous material, rare iron oxide stains.

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| 2181-2189 | 8 | Sandstone, white, light gray, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: abundant biotite, abundant muscovite. Nonporous to slightly porous. |
| 2189-2235 | 46 | Siltstone, grades locally to a very fine-grained Sandstone, locally finely sandy, light to medium gray, green (light), moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: rare biotite, rare muscovite. |
| 2235-2253 | 18 | Siltstone, variegated, light gray, red, green, tan, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: rare biotite, rare muscovite, and rare carbonaceous material. |
| 2253-2260 | 7 | Siltstone, locally shaly, light to dark gray, moderately hard, brittle, no apparent bedding to poorly fissile, siliceous, argillaceous, with: rare biotite, rare muscovite, and rare iron oxide stains. |
| 2260-2296 | 36 | Interbedded; Sandstone, white, clear, light gray, moderately cemented, very fine-to medium grained, medium sorted, subrounded to angular, siliceous, calcareous (slightly), with: rare biotite, rare muscovite, and common iron oxide stains. Slightly porous. Siltstone, locally finely sandy, light to medium gray, moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, with: rare muscovite, and common iron oxide stains. |
| 2296-2319 | 23 | Siltstone, locally shaly, light to medium gray, red, moderately hard, brittle, no apparent bedding to poorly fissile, argillaceous, with: rare biotite, rare muscovite, rare pyrite, and rare carbonaceous material. |
| 2319-2334 | 15 | Siltstone, shaly, light to medium gray, red, (contamination ?), moderately soft, flaky, poor to fair fissility, argillaceous, with: common biotite, common pyrite. |

2334-2351	17	Shale, silty, light to dark gray, moderately soft, flaky, poor to fair fissility, calcareous, (slightly), argillaceous, with: rare biotite, rare muscovite, rare calcite, and rare carbonaceous material.
2351-2363	12	Siltstone, grades locally to very fine-grained Sandstone, locally finely sandy, locally shaly, light to dark gray, moderately soft, brittle, no apparent bedding to poorly fissile, calcareous (slightly), siliceous, argillaceous, with: common biotite, common muscovite, and abundant carbonaceous material.
2363-2428	65	Siltstone, locally finely sandy, light gray, red, green, moderately soft, flaky, no apparent bedding, calcareous (locally), argillaceous, ferruginous, with: abundant biotite, common muscovite, and common carbonaceous material.
2428-2434	6	Sandstone, white, clear, light gray, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite, and common iron oxide stains. Nonporous to slightly porous.
2434-2480	46	Siltstone, locally finely sandy, light gray, green, moderately soft, flaky, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and rare carbonaceous material.
2480-2503	23	Siltstone, red, green, moderately hard, brittle, no apparent bedding, argillaceous, ferruginous, with: rare biotite, rare muscovite.
2503-2518	15	Interbedded, Siltstone, locally finely sandy, red, green, moderately hard, flaky, no apparent bedding, argillaceous, ferruginous, with: common biotite, common muscovite. Shale, slightly silty, light to medium gray, moderately soft, flaky, fair to good fissility, argillaceous, with: rare muscovite.

2518-2528	10	Sandstone, white, clear, moderately cemented, very fine-to medium-grained, medium-sorted, subrounded to angular, siliceous, calcareous (slightly), with: rare biotite, rare muscovite, and rare iron oxide stains. Nonporous to slightly porous.
2528-2534	6	Siltstone, locally finely sandy, light to medium gray, moderately hard, brittle, no apparent bedding, argillaceous, with: common biotite, common muscovite, and rare iron oxide stains.
2534-2560	26	Siltstone, variegated, locally finely sandy, red, green, tan, moderately soft, flaky, no apparent bedding, argillaceous, ferruginous, with: rare biotite, rare muscovite, and rare iron oxide stains.
2560-2564	4	Sandstone, white, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, rare muscovite, and rare iron oxide stains. Nonporous to slightly porous. With stringers of Siltstone, light gray, red, green, moderately hard, brittle, no apparent bedding, argillaceous, with: rare biotite, rare muscovite.
2564-2569	5	No samples.
2569-2577	8	Lithologies as in 2560-2564.
2577-2596	19	Siltstone, locally shaly, light to dark gray, moderately hard, flaky, poorly fissile, argillaceous, with: common biotite, common muscovite, and rare iron oxide stains.
2596-2605	9	Limestone, shaly, light to dark gray, hard, common fossils (crinoids), no apparent bedding to platy, microcrystalline, with: common mica, and abundant calcite.
2605-2619	14	Limestone as in 2596-2605, with stringers of Siltstone, grades locally to very fine-grained Sandstone, locally finely sandy, light gray, moderately hard, tough, no apparent bedding, calcareous, siliceous, argillaceous, with: common biotite, and common muscovite.

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| 2619-2647 | 28 | Siltstone, light to medium gray, green, moderately soft, flaky, no apparent bedding, calcareous (locally), argillaceous, with: rare biotite, rare muscovite, and rare iron oxide stains. |
| 2647-2657 | 10 | Interbedded; Limestone, dolomitic, light gray, light brown, moderately hard, fossil fragmental, no apparent bedding, microcrystalline, with: rare calcite. Siltstone, locally finely sandy, light gray, green, moderately soft, brittle, no apparent bedding siliceous, with: rare biotite, rare muscovite and common carbonaceous material. |
| 2657-2668 | 11 | Interbedded; Sandstone, white, light gray, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: abundant biotite, common muscovite, and rare carbonaceous material. Nonporous to slightly porous. Shale, silty, light to medium gray, moderately soft, flaky, poor to fair fissility, calcareous (slightly), argillaceous, with: rare biotite, and rare muscovite. |
| 2668-2675 | 7 | Siltstone, locally finely sandy, light to dark gray, moderately, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and common iron oxide stains. |
| 2675-2680 | 5 | Sandstone, white, clear, milky white, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite, and rare iron oxide stains. Nonporous to slightly porous. |
| 2680-2695 | 15 | Siltstone, medium to dark gray, moderately hard, tough, no apparent bedding, argillaceous, with: abundant biotite, abundant muscovite, and rare iron oxide stains. |

2695-2701	6	Sandstone, white, clear, well cemented, fine-to medium-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite, and rare iron oxide stains. Nonporous to slightly porous.
2701-2738	37	Siltstone, locally shaly, light to dark gray, hard, tough, no apparent bedding to poorly fissile, argillaceous, with: common biotite, common muscovite, and common pyrite, common iron oxide stains.
2738-2755	17	Shale, calcareous, medium to dark gray, moderately soft, flaky, fair to good fissility, argillaceous, with: rare biotite, rare muscovite, rare pyrite, rare calcite, and common fossils.
2755-2817	62	Limestone, shaly, light to dark gray, hard, with: abundant fossils (predominately crinoid stems), no apparent bedding, microcrystalline, with: rare mica, abundant calcite.
2817-2877	70	Limestone, silty, light to dark gray, light brown, moderately soft, fossil fragmental, no apparent bedding, microcrystalline, with: rare mica, and abundant calcite.
2877-2911	34	Limestone, silty, light to dark gray, moderately hard, common fossils (crinoids), no apparent bedding, microcrystalline, with: abundant pyrite, rare calcite.
2911-2945	34	Limestone, light brown, tan, white, moderately soft, oolitic, abundant fossil fragments (crinoid, brachiopod), microcrystalline, with: abundant calcite.
2945-2952	7	Limestone, silty, light to dark gray, moderately hard, fossil fragmental, no apparent bedding, microcrystalline, with: abundant calcite.
2952-2986	34	Limestone, dark gray, black, moderately hard, rare fossil fragments, no apparent bedding, microcrystalline, with: rare calcite.

2986-2999	13	Limestone, light gray, tan, moderately hard, rare fossil fragments, no apparent bedding, microcrystalline.
2999-3003	4	No samples.
3003-3060	57	Limestone, as in 2985-2999.
3060-3124	64	Limestone, light to dark brown, white, moderately soft, oolitic, rare fossils, no apparent bedding, microcrystalline, with: common calcite.
3124-3337	213	Limestone, light to dark brown, tan, white, moderately hard, oolitic, no apparent fossil content, no apparent bedding, cryptocrystalline, microcrystalline, with: abundant calcite.
3337-3360	23	Limestone, light to dark gray, light brown, moderately hard, rare fossil fragments, no apparent bedding, cryptocrystalline to microcrystalline, with: rare pyrite, rare chert, and common calcite.
3360-3371	11	Siltstone, locally finely sandy, light gray, red, green, moderately hard, brittle, no apparent bedding, argillaceous, with: common biotite, common muscovite.
3371-3390	19	No samples
3390-3398	8	Siltstone, as in 3360-3371.
3398-3404	6	No samples.
3404-3417	13	Siltstone, as in 3360-3371.
3417-3441	24	Shale, locally finely sandy, maroon-drab, moderately soft, flaky, no apparent bedding, argillaceous, ferruginous, with: common biotite, and abundant muscovite.
3441-3454	13	No samples.
3454-3470	16	Siltstone, as in 3417-3441.
3470-3483	13	No samples

3483-3493	10	Siltstone, variegated, locally finely sandy, light gray, green, maroon-drab, moderately hard, brittle, no apparent bedding, argillaceous, ferruginous, with: common biotite, common muscovite, and rare carbonaceous material.
3493-3505	12	No samples.
3505-3520	15	Siltstone, grades to very fine-grained Sandstone, locally finely sandy, light gray, moderately soft, flaky, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and rare iron oxide stains.
3520-3543	23	No samples.
3543-3563	20	Siltstone, locally finely sandy, light gray, dark gray, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and common carbonaceous material, rare iron oxide stains.
3563-3582	19	No samples.
3582-3593	11	Siltstone, as in 3543-3563, with rare pyrite.
3593-3600	7	No samples
3600' - T. D.		

GEOLOGIC SUMMARY

Pennsylvanian System

Lee Formation	in	431
	bottom	1457

Mississippian System

Bluestone Formation	top	1457
	bottom	1820

Princeton Sandstone	top	1820
	bottom	1940 [±]

Hinton Formation	top	1940 [±]
	bottom	2577

Stony Gap Sandstone	top	2351
	bottom	2577

Bluefield Formation	top	2577
	bottom	2755

Greenbrier Limestone	top	2755
	bottom	3360

Maccrady Formation	top	3360
	in	3593 (deepest sample)

Correlations by: J. M. Wilson and R. C. Milici

September 1963