DH 1, ELEY. 789.3, Centerline, 6+33 Logged by: 6. C. Johnson 12/20/65 Drilling Equipment: Sprague & Denwood 40 CL	DH 4, ELEV. 787.7 8+75 Centerline Logged by: H. R. Marien 1/3/66 Drilling Equipment: Sprague & Henwood 40 CL	Bottom profile: 66' U.S 776.0 81' U.S 775.8 87' H.S 772.8 to end - 772.8
Unif. STANDARD PENETRATION SAMPLES Soil Type Hole Depth Class Bit From To % From To Description of Materials Symb. Blows Per 6" Used No. Ft. Ft. Rec.	Unif. STANDARD PENETRATION Soil Type Hole Depth Class Bit From To % From To Description of Materials Symb. Blows Per 6" Used No. Type Ft. Ft. Rec.	TP 302, 7+00, 54' U.S. to 25' U.S.
0.0 8.0 Gravel, sandy & clayey; brn GC 55-28-28 GpT 1 0.0 1.5 100 with several other colors 28-35-55 " 2 1.5 3.0 1.00 present, slightly moist; some cobbles, 50% gravel, 35% sand, 32-42-42 " 4 4.5 6.0 65 1.5% moderately plastic fines. 32-50-68 " 5 6.0 7.5 65 8.0 12.0 Siltstone, weathered, 78-200/0.3 " 6 7.5 8.3 100 greenish gry, can be scratch-	0.0 0.5 Forest litter, topsoil, roots, etc. 1-3-33-100 SpT 1 Jar 0.0 2.0 66 0.5 2.0 Gravel, silty, brn, wet, 25% GM NXM 4.5 5.5 100 low plastic fines, 20% well " 5.5 7.0 100 graded sand, gravel is sub- angular, well graded, olive " 11.0 16.0 100 siltstone. " 16.0 21.0 100	0.0 0.8 Topsoil, roots, etc. 0.8 2.5 Silt, sandy with gravel, clayey, moist, lt. brn, 35% well graded sand, 75% ML gravel, fines are low plastic, trace cobbles. 2.5 Gravel with sand & silt, red-brn, moist to wet, 5% cobbles; matrix is: 20% GM low plastic fines, 35% well graded sand, 45% well graded gravel, seeps 0.5' above bedrock. Bottom of hole.
ed with fingernail, fractured & broken into gravel size, reddish-bru staining, largest piece 0.3' long, thin pieces can be broken with fingers, dip equals 65°. 10.9 13.0 18.0 18.0 18.0 18.0 23.5 100 23.5 28.5 100 Note: Samples 1 through 6 jar type 12.0 28.5 0iltstone, gry, highly fractured into gravel to 18.0',	At 50° from vertical on azimuth of N8°W 23.5 26.0 100 4.5 5.0 Siltstone, sandy, weathered, gry, gravel size pieces. 5.0 27.0 Siltstone, weathered, olive, 25% of core is sand size particles, 40% gravel size, rest is pieces 0.1' to 0.5' long, siltstone is fractured, laminated with cleavage plans: (1)	Profile: Top Bottom 54' U.S. 478.8 476.1 Elev. 40' U.S. 472.5 39' U.S. 477.4 471.6 TP 303, 7+00, 32' to 89' D S
dip of 65°, brn staining, thin (0.01') to thick bedded, 0.5' broken zones at 20.0', 21.2', & 24.0'. Pieces of core from 0.5' to 2.5' long. 28.5 Bottom of hole - WL (12/22/65) 16.1' WL (12/23/65) 6.5'	along bedding, (2) perpendicular to beds, and (3) along crossbeds, laminations are thin and broken easily with fingers, can be scratched easily with fingers, iron stains. 27.0 33.2 Siltstone, some very fine sand, gry, slightly weathered along beds, slight iron staining, pieces are cylindrical 0.1 to 0.9 long, gradational contact, thin lenses	From 32' D.S. to 89' D.S. 0.0 0.8 Topsoil, roots, etc first 6' covered by 2.0' of med. cobbles over topsoil. 0.8 2.7 Silt with sand & gravel, lt. brn to gry, moist to wet below 2.0', trace cobbles, ML 25% well graded gravel, 20% well graded sand, low plastic fines.
DH 2, ELEV. 822.8, Centerline, 5+51 Logged by: H. R. Jarien 12/27/65	of olive siltstone interbedded. 33.2 35.0 Same as from 5.0' to 27.0', occasional pieces of gry siltstone. 35.0 Bottom of Boring - Wh (1/6/66) 23.5'	2.7 3.7 Cobbles, gravel, sand & silt, 15% med. cobbles, It. brn, wet; fatrix is: 15% GM low plastic fines, 25% sand, 60% gravel. From 32' D.S. to 73' D.S.
Unif. STANDARD PENETRATION SAMPLES Soil type Class Bit From To %	DH 5, ELEV. 817.8, 9+50 Centerline Logged by: M. R. Marien 1/6 & 7/66 Drilling Equipment: Sprague & Henwood 40 CL	3.7 Sand with gravel & silt, red-brn, moist to wet below 4.5', 20% low plastic SM fines, 20% gravel, trace cobbles, residual. Bottom of hole From 73' B.S. to 89' D.S.
From To Description of Materials Symb. Blows Per 6" Used No. Ft. Ft. Rec. 0.0 0.8 Topsoil, roots, etc. 3-7-9 SpT 1 0.0 1.5 60 50 60	Wole Depth Soil Type Class Bit From To %	3.7 Shale, weathered, gry, excavates as gravel, 10% fines. Nottom of hole. GW-GP Refusal - see side for profile of top and bottom.
brn, moist, 20% sand, 25% 24-14-16 " 3 3.0 4.5 80 gravel, low plastic fines, 31,33,37 " 4 4.5 6.0 66 coarse particles subangular, 24-61-30 " 5 6.0 7.5 80 moderately durable olive- 13-12-11 " 6 7.5 9.0 20 1 gry siltstone. 14-9-26 " 7 9.0 10.5 60 2.2 12.0 Gravel, sandy with silt; 1t. GM 31-34-94 " 8 10.5 12.0 60	From To Description of Materials Symb. Blows Per 6" Used No. Type Ft. Ft. Rec. 0.0 0.5 Topsoil, roots, forest litter, etc. 2-1-1 SpT 1 Jar 0.0 1.5 33 0.5 3.0 Sand, gravelly, red-brn, slightly SN 1-1-2-14 " 2 " 1.5 3.5 20 moist, 30% fine to med. gravel, 70 " 3 " 3.5 4.0 100 15% low plastic fines, coarse NXM 4.9 5.0 80 particles red-brn sandy siltstone. NXM 5.0 9.5 100	Profile: Top Sottom 32' D.S. 475.7 470.1 Elev. 57' D.S. 471.8 467.7 58' D.S. 466.8 74' D.S. 467.3 75' D.S. 463.8
brn, some cobbles, slightly moist, 20% low plastic fines, 25% sand, coarse particles are moderately durable, subangular olive-gry siltstone. NXM 12.0 15.0 32 15.0 16.0 50 16.0-19.0 60 19.0 21.5 88 21.5 25.0 100	3.0 5.5 Siltstone, highly weathered, red, all gravel sized pieces, can be scratched with fingernail. 5.5 7.4 Siltstone, weathered, red, fre- 7 24.5 29.0 100	81' D.S. 466.4 89' D.S. 471.1 466.3
olive-gry siltstone. 12.0 13.0 Siltstone, highly weathered, olive-gry, core is gravel size pieces, 20% sand size, iron stained, pieces are moderately durable, mud seams.	quent mud seams up to 1/4" thick, pieces of core up to 0.4' long, many gravel sized pieces. Can be scratched with fingernail. 7.5 17.7 Siltstone, weathered, red, traces of very thin mud seams, pieces of	TP 304, ELEV. 767.5, 7+00, 138' D.S. 0.0 1.5 Topsoil, silt, brn, wet, 20% fine sand. 1.5 3.0 Silt, sandy, lt. brn, wet, 20% fine sand, 15% well graded gravel, low plastic ML fines. 3.0 4.0 Shale, lt. brn-gry, weathered, excavates as blocky gravel, less than 5% fines OP-GW
Lost drilling water at 13.5' 13.0 22.0 Sandstone, weathered, fine to med. grained, gry with fine brn specks, cannot be scratched with knife blade, fractured, iron stains, pieces from 0.1' to	core up to 1.2' long, some sand & gravel sized pieces, can be scratched with fingernail. 17.7 27.0 Sandstone, slightly weathered, It. red on fresh dry surface, dk. red on wet, fresh surface; longest piece of core is	#.0 Bottom of hole - wet TP 305, ELEV. 767.3, 7+00, 203' 0.S.
1.2' long, mud seams. 22.0 27.5 Siltstone, weathered, olive- gry, 5% of core is sand size iron stains, pieces from 0.05' to 0.25' long, can be scratched	0.9', a few sand & gravel sized pieces, can be scratched with knife, dip equals 60°. 27.0 33.0 Sandstone, weathered, fine grained, gry-brn, lt. gry on dry surface, longest piece of core is 0.7; clay (red-brn) seams up to 1/4" thick	0.0 0.8 Topsoil, roots, etc. 0.8 1.5 Silt, sandy, brn, very wet, 10% fine sand, low plastic. 1.5 3.0 Shale, weathered, excavates as gravel, blocky, lt. brn-gry, 10% fines.
easily with fingernail. 27.5 Bottom of hole - dry hole WL (12/30/65) Dry DR 3, ELEV. 772.1, 7+78Centerline	from 28.9-29.7' & 31.0-31.1', can be scratched with knife, dip equals 60°. 33.0 34.0 Sandstone, red-brn, fine grained, no clay seams. Bottom of Boring - Dry hole.	DH 306, ELEV. 770.0, 7400, 110' D.S. Logged by: H. R. Marien 1/3/66 Prilling Equipment: Sprague & Henwood 40 CL Unif. STANDARD PENSTRATION SAMPLES
Logged by: M. R. Marien 12/29/65 Drilling Equipment: Sprague & Henwood 40 CL Unif. STANDARD PENETRATION SAMPLES	DH 6, ELEV. 771.0, 8+10 Centerline Logged by: H. R. Marien 1/14/66 Drilling Equipment: Sprague & Henwood 40 CL	Hole Depth Class From To Description of Materials Symb. Blows Per 6" Used No. Type Ft. Ft. Rec
Hole Depth Class Blows Bit From To % From To Description of Materials Symb. Per 6" Used No. Type Pt. Ft. Rec.	Unif. STAMPARD PEDETRATION SAMPLES Soil Type Unif. STAMPARD PEDETRATION SAMPLES Class Sit From To %	0.0 3.5 Eand, silty, brn, moist, 10% low 5.4-5W 9-9-8 5pT 1 Jar 0.0 1.5 66 plastic fines, 15% fine gravel, 5-5-21 2 1.5 3.0 30 sand is well graded, coarse particles are red sandy siltstone, 5.5 5.0 4W subangular to subround, wet
0.0 0.6 Topsoil, roots, etc. 13-3-4 SpT 1 Jar 0.0 1.5 66 0.6 3.0 Sand, silty, brn, wet, 25% SM 7-9-28 7 2 1.5 3.0 40 1.5 1.5 3.0 5.0 50 50 50 50 50 6.0 6.0 60 60 60 60 60 60 60 60 60 60 60 60 60	From To Description of Naterials Symb. Blows Fer 5" Used No. Type Ft. Ft. Rec. 0.0 0.2 Topsoil, roots, etc. 0.2 4.0 Silt, sandy, wet, brn, 15% fine ML 1-14-15-9 " 2 " 2.0 4.0 70 sand, low plastic fines, trace 52-100 " 3 " 4.0 5.0 80	subangular to subround, wet below 2.0'. 3.5 5.5 Siltstone, highly weathered, gry to olive-gry, mud seams, por (bid) recovery, 60% of core sand size or 5.4 10.0 76 10.0 15.0 10.0 15.1 20.0 10.0 27.0 25.0 100 28.1 27.5 100
3.0 5.5 Sandstone, med. grained, " 8.0 10.0 95 weathered, reddish tan, " 10.0 18.0 97 fractured into pieces 0.05' " 18.8 100 to 0.3' long, mud seams, " 18.8 29.0 100	gravel, alluvial. 4.0 5.0 Gravel, silty, brn to brn-gry GM 7.0 9.0 100 wet, 20% low plastic fines, 30% well 9.0 10.9 100 graded sand, gravel is well graded, " 10.9 15.0 100	finer, can be scratched with fingernail. " 27.5 30.0 100 5.5 0.5 Candstone, fine grained, lightly weathered, gry, fracture along bedding and perpendicular to bedding, slight ir n Soil descriptions and classifications are
pieces are durable, iron stains. 5.5 8.8 Siltstone, weathered, olive- gry when wet - gry when dry, mud seams, weathered to gravel size pieces, largest piece of	highly weathered, gry & red siltstone subangular, residual. 5.0 15.0 Siltstone, gry, highly weathered to 10.0', slightly weathered below that; soft increasing to med, soft with depth,	stains, crossbedded, sixty, difficult to based on physical examination and may be scratch with knife. 9.5 30.0 Siltstone, slightly weathere, slightly testing. The percentages of gravel, sand crossbedded, gry, can be scratched with and fines in the matrix are estimated on the basis of 1.0% passing 5-inches.
core is 0.15' long, vertical fractures, can be scratched with fingernail, contact abrupt at zero degree dip. 8.8 39.0 Siltstone, weathered, fractured,	fractured, 15% core above 10.0' is sand & fine gravel size, pieces from 0.05' to 0.2' long weathered, 0.3' to 2.0' long unweathered.	BRIAR CREEK WATERSHED FLOODWATER RETARDING DAM PA-498
gry, core is up to 20% sand size particles in lenses, iron stains, pieces from 0.2' to 0.4' long. Fractures at 50° and 65°, few vertical fractures, less fractured with depth. 39.0 Bottom of boring - WL (12/30/65) 2.0'	15.0 Bottom of Boring - WL (1/14/66) 0.4' TP 301, ELEV. 779.5, 83' U.S., 7+00 100' U.S. to 66' U.S.	For location of drill holes & test pits see sheets 2,4,7,8,9,810. COLUMBIA & LUZERNE COUNTIES, PENNSYLVANIA LOGS OF DRILL HOLES & TEST PITS
	0.0 0.7 Topsoil, roots, etc. 0.7 2.0 Silt, sandy with gravel, clayey, lt. brn, moist, 10% well graded platy gravel, ML 20% well graded sand, low to med. plastic, gravel is gry siltstone.	U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
	2.0 3.5 Gravel, silty & sandy lt. brn, moist to wet, 15% cobbles, trace boulders; CM matrix is: 15% low plastic fines, 25% well graded sand, 60% gravel, cobbles are disk shaped, and are gry siltstone, seeps at 2.5*. 3.5 Sand with silt and gravel, red-brn, moist to wet, 5% cobbles, trace boulders; SM matrix is: 20% low plastic fines, 40% well graded sand, 35% fine to med.	Designed H.R. MARIEN Title Title
	gravel - Sottom of hole. Continued	Checked & C Johnson 8-2-66 Ct 23 PA-498-P

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