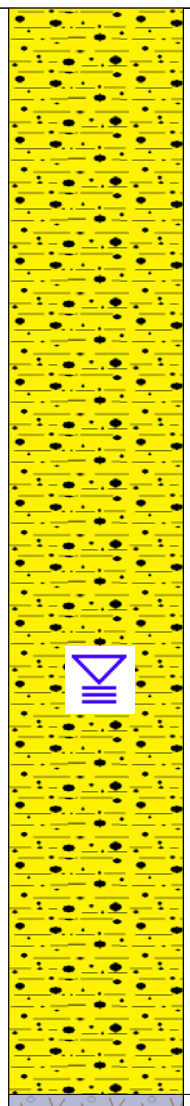
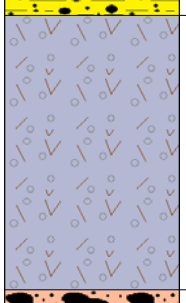
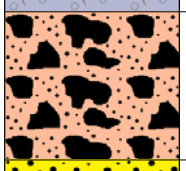
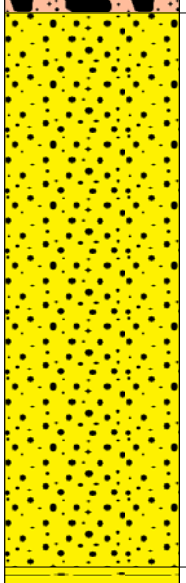
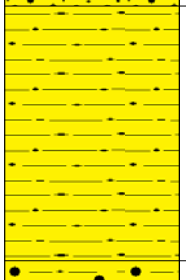
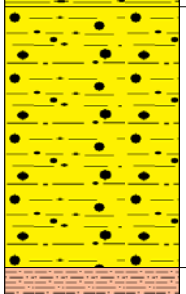
Summary Lithologic Log for NC-EWDP-32P

Depth 1in:70ft	Lithology	Description
0 – 100 – 200 – 300		(0 to 396 feet [ft]) WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM) INTERBEDDED WITH WELL-GRADED SAND WITH GRAVEL (SW): This unit is composed of a thick sequence of well-graded sand with silt and gravel (SW-SM) interbedded with thin layers less than 10 ft thick of well-graded sand with gravel (SW). A thin layer of well-graded gravel with sand (GW) is present from 132 to 135 ft. Fines contained within the unit are nonplastic. Gravels are volcanic in origin with angular clasts from 0 to 100 ft and subrounded clasts from 100 to 396 ft. Sediment color ranges from yellowish brown (10YR 6/4) to reddish brown (5YR 5/3) from 0 to 230 ft, brown (7.5YR 4/4) from 230 to 248 ft, and dark reddish brown (10YR 5/4) to yellowish red (5YR 4/6) from 248 to 396 ft. Sediments are noncemented throughout the interval. Sediments display no reaction to 10% hydrochloric acid (HCl) with the exception of the intervals from 7.5 to 30 ft and 152.5 to 217.5 ft where reaction is weak to strong. Samples were dry to 230 ft, moist from 230 to 260 ft and wet beyond 260 ft. Contact with underlying basalt is sharp.
400		(396 to 496 ft) BASALT: Basalt flow consists of three primary zones. The upper zone, from 396 to 425 ft, ranges in color from dusky red (10YR 3/4) to very dark brown (10YR 2/2) to dark gray (10YR 4/1). A well-developed olive brown (2.5YR 4/4) paleosol is present at the top of this zone from 396 to 405 ft. Below the paleosol, the upper zone consists of a dense sucrosic groundmass containing 1 to 2% hornblende crystals up to 4 millimeters (mm) long, and 1 to 2% crystals of altered pyroxene (iddingsite). Both crystal types display reaction rims and many of the basalt fragments have white (N 9) coatings indicative of fracture-fill. The middle zone, from 425 to 472.5 ft, is comprised of the massive core of the basalt flow. The color ranges from reddish black (2.5YR 2.5/1) to dark brownish black (10YR 2/1) to black (N 1). This zone has the same mineralogy as the upper zone, but is highly fractured and contains reddish yellow (7.5 YR 8/6) zeolite coatings on the fractures both from 425 to 435 ft and 455 to 467.5 ft. The basal zone, from 472.5 to 496 ft, ranges in color from dark reddish brown (5YR 3/4) to a yellowish red (5YR 5/6) at the lower contact with the underlying sediments. The basalt contains 2% dark brown (10YR 2/2) hornblende phenocrysts, and 1% iddingsite (after pyroxene) and is locally vesicular. Calcite cemented breccia fragments and plucked hornblende crystals are ubiquitous throughout the interval. Lithic fragments increase in abundance below 475 ft. A light brown (7.5YR 6/4) clay (CL) is present at the basal contact from 494 to 496 ft. Overall, the basalt displayed no reaction to 10% HCl in the upper and middle zones of the flow, and a weak reaction in the lower zone from 462.5 to 494 ft. All samples were wet. Contact with underlying sandstone is sharp.
500		(496 to 550 ft) CONGLOMERATIC SANDSTONE: Conglomeratic sandstone is pale green (5GY 5/2) and comprised of a strongly cemented matrix of green arkosic sand and large heterolithic clasts. The sand is medium grained, angular, and poorly sorted. The large clasts are up to 37 mm in diameter, subrounded, and heterolithic derived from volcanics, quartzite, chert, and rare limestone. Many of the volcanic clasts display flow banding and a few clasts have rinds of sand matrix preserved. Samples have no reaction to 10% HCl. Contact with underlying sediments is sharp. All samples were wet.
600 – 700		(550 to 752 ft) WELL-GRADED SAND WITH GRAVEL (SW): This thick sequence of well-graded sand with gravel (SW) contains thin layers of clay (CL) 1 to 2 ft thick. Gravels are subrounded and range in size from 6 to 25 mm in diameter. Sediment color is predominantly light brown (7.5YR 6/3). Gravels are heterolithic and derived from tuff, quartzite, chert, and rare limestone. Interval is not cemented and sediment does not react to 10% HCl. All samples were wet.
800		(752 to 845 ft) SILTY SAND (SM) WITH A LAYER OF SANDY SILT (ML): Interval is mainly composed of silty sand (SM) with a layer of sandy silt (ML) from 754 to 770 ft. The top of the unit from 752 to 754 ft is comprised of a white (N 9) limestone layer. Thin layers less than 5 ft thick of silty gravel with sand (GM) are present at 780 and 815 ft. Overall sediment color is a uniform brown (7.5YR 5/3). Gravels are subrounded and volcanic in origin. No cementation was observed and sediments generally reacted weakly to 10% HCl, but strongly in the interval from 805 to 810 ft. All samples were wet.
900		(845 to 940 ft) POORLY GRADED SAND WITH SILT (SP-SM): Unit is predominantly a thick sequence of poorly graded sand with silt (SP-SM) with a thin layer of silty sand (SM) from 870 to 885 ft. Color of sediment is light to dark brown (7.5YR 5/3 to 5/4 to 4/6). Gravel content is predominantly 10% or less but there are 2 intervals where gravel increases to 15% or greater from 860 to 865 ft and 890 to 900 ft. Plasticity of fines ranges from none to low, with the exception of a few intervals that exhibit high plasticity. Gravel clasts are volcanic in origin and subrounded. Sediments are uncemented except at the very top where weak cement is present. Reaction to 10% HCl is predominantly weak from 845 to 890 ft and generally weak to no reaction from 890 to 940 ft. All samples were wet. Contact with underlying siltstone is sharp.
1000		(940 to 1,000 ft [Total Depth]) SILTSTONE: Unit consists of a thick, massive, moderately well-indurated siltstone except from 965 to 970 ft where laminations are present. Siltstone color ranges from yellowish brown (5Y 6/4) in the upper part of the unit, dark gray (7.5YR 4/1) in the middle, and light brownish gray (2.5Y 6/2) in the lower part. The reaction to 10% HCl ranges from no reaction to a strong reaction. All samples were wet.