

NYE County NWRPO -Technical Data Report

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contamination from sediments uphole.

Evidence from other boreholes in alluvial sediments indicates that the mechanical action of the rotary bit results in sample degradation and particle size distribution bias (see discussion in the Nye County Drilling, Geologic Sampling and Testing, Logging, and Well Completion Report for the Early Warning Drilling Program Phase III Boreholes, Section 2.1.2, RID 5579). In general, the mechanical action of the bit reduces large-size particles to smaller-size particles effectively decreasing the gravel-size component and effectively increasing the sand and "fines"-size component. This is a relatively minor problem in unsaturated alluvium and in the upper part of saturated alluvium where water production is low. In underlying saturated alluvium this drilling impact renders particle size distribution data useless.

The Alluvium Logging Form includes preliminary field estimates of grain size distribution for the 260 ft of alluvium penetrated. The estimates are made on every 2.5 foot sample interval and used for preliminary layering information and general planning of wells prior to receipt of laboratory data. These field estimates of grain size distribution as well as USCS group symbol data should be considered reasonably representative of geologic samples and have not been censored. Grain size distribution data determined by laboratory analysis on every second 2.5 foot sample interval are considered representative of the geologic samples.

In addition, some sample handling disturbance may have been introduced into samples by: 1) material accumulating on wet drill pipe and rotating splitter during wet drilling; 2) unsaturated zone sample homogenization process and sample splitting.

Sample weights in sample density data do not include material that is lost to winnowing of unsaturated fines (dust), partial returns of drill cuttings due to lost circulation problems, or material that was "cleaned out" of the borehole after each 20 ft drill run. Therefore unsaturated zone sample weight data is not representative of the volume of the borehole drilled, should not be used in density calculations, and has been censored. The intervals from 320 to 340 ft and 485 to 495 ft do not have density and sample weight data recorded due to field error.

In the upper section of the saturated zone from 430 to 745 ft, the water production data is limited and recorded as "0". Injection water was required to lift the sample and maintain a clean drill string as the drilling air was suppressing water flow from the formation. Beginning at 765 ft, timed volume water tests were conducted generally at 40 to 60 foot intervals to measure the production of water.

Evaluations of cementation and structure as recorded on the logging forms are difficult to accurately determine because intact pieces of in-situ material are not available in cuttings.

In summary, laboratory measurements of grain size distribution of alluvium drill cuttings in this borehole are considered to be modified to some extent from in situ conditions due to a number of drilling related factors. However, for the most part these factors were unavoidable. Disturbance from sample handling related factors is considered minimal. Except for censored data mentioned above, geologic drill cutting samples from NC-EWDP-13P are considered approximately representative of in situ conditions. The geologic data recorded in these geologic logs are used to produce a Summary Lithologic Log.

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**Governing
QA Docs.** TP-8.0 Rev. 5, TP-7.0 Rev. 3

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**Frequency
of
Transmittal** Once per borehole/well

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**Direct Questions
About Data
To-** NWRPO QA Records Center