CP-60925
Revision 0

Model Package Report: Central Plateau Vadose Zone Geoframework

Version 1.0

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

P.O. Box 1600
Richland, Washington 99352

Approved for Public Release;
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S. D. Springer
CH2M HILL Plateau Remediation Company

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Model Package Report

Central Plateau Vadose Zone Geoframework

Version 1.0

March 2018

Prepared for:

Hanford Site Composite Analysis

Prepared by:

Bruce A. Williams, Sarah Springer, Craig Arola, (CH2M HILL Plateau Remediation Company)
Travis Hammond, Frank Roecker, Terry Tolan (INTERA)

Signature Page

Model Preparer	BA Williams / Senior Hydrogeologist CHPRC	Date 10/18/17
Model Checker	R Nell / Hydrogeologist INTERA	Date 3/8/18
Model Senior Reviewer	G Ruskauff / Principal Hydrogeologist INTERA	Date 3/12/18
Responsible Manager	AH Aly / Risk Assessment & Modeling Integration Manager CHPRC	Date 3/13/18

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Executive Summary

The purpose of the Central Plateau Vadose Zone (CPVZ) Geoframework model (GFM) is to provide a reasonable, consistent, and defensible three-dimensional (3D) representation of the vadose zone beneath the Central Plateau at the Hanford Site to support the Composite Analysis (CA) vadose zone contaminant fate and transport models. The GFM is a 3D representation of the subsurface geologic structure. From this 3D geologic model, exported results in the form of point, surface, and/or volumes are used as inputs to populate and assemble the various numerical model architectures, providing a 3D-layered grid that is consistent with the GFM.

The objective of this report is to define the process used to produce a hydrostratigraphic model for the vadose zone beneath the Hanford Site Central Plateau and the corresponding CA domain.

The GFM may support several other CHPRC project needs and objectives, including providing geologic information to support Central Plateau operable unit remedial investigations and actions and as a tool to present Central Plateau geology and contaminant extents. The GFM was constructed based on information through 2016 available in the Integrated Data Management System (IDMS), Hanford Environmental Information System (HEIS), and the Hanford geologic contacts (GeoContacts) datasets.

Revisions to the CPVZ GFM may occur to incorporate new data and information. Each version will be maintained in configuration control using date stamps for identifying supporting databases, figures, and interpretations. Supporting data include the final 3D vadose zone geoframework scene, two-dimensional (2D) stratigraphic cross sections and maps, and all the geologic contact inputs and interpreted geologic log data. These final products provide a supporting set of geologic information that together allow the creation of the GFM. This information is managed, updated, and maintained via CHPRC under the Remediation Decisions Support (RDS) Task of the Environmental Programs and Strategic Planning Organization, and on CHPRC's Environmental Model Management Archive (EMMA [CHPRC-00189, Appendix G, "CHPRC Quality Assurance Project Plan for Modeling"1]).

[1] CHPRC-00189, 2014, *CH2M HILL Plateau Remediation Company Environmental Quality Assurance Program Plan*, Rev. 12, CH2M HILL Hanford Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0071641H.

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Terms

2D	two-dimensional
3D	three-dimensional
CA	composite analysis
CHPRC	CH2M HILL Plateau Remediation Company
CPVZ	Central Plateau Vadose Zone
CRBG	Columbia River Basalt Group
DOE	U.S. Department of Energy
EDA	Environmental Data Application
EMMA	Environmental Model Management Archive
GeoContacts	geologic contacts
GFM	geoframework model
HEIS	Hanford Environmental Information System
IDMS	Integrated Data Management System
LiDAR	Light Detection and Ranging
RDS	Remediation Decisions Support
Rlm	Ringold Formation lower mud unit
Rwia	Ringold Formation member of Wooded Island, unit A
Rwie	Ringold Formation member of Wooded Island, unit E

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1 Purpose

The purpose of the Central Plateau Vadose Zone (CPVZ) Geoframework Model (GFM) is to provide a reasonable, consistent, and defensible three-dimensional (3D) representation of the vadose zone beneath the Central Plateau. The GFM will support the vadose zone contaminant fate and transport models that evaluate potential vadose zone radionuclide contaminant impacts to the uppermost unconfined aquifer at the Hanford Site.

The CPVZ GFM is a 3D representation of the subsurface geologic structure. From the 3D geologic model, exported results in the form of point, surface, and/or volumes, are used as inputs to populate and assemble the various numerical model architectures being used by the CA.

Although the initial purpose of the CPVZ GFM is to support Composite Analysis (CA), it is recognized that this product will have many additional applications beyond that specific analysis. Accordingly, the CPVZ GFM has been developed with additional applications in mind, and it is planned to transition this product to a programmatic function for continual maintenance after the initial issue of this model.

1.1 Need

The need for this GFM is to meet the needs of the CA. The CA is being updated in compliance with the requirements of DOE O 435.1, *Radioactive Waste Management* (CP-60649, *Summary Analysis Hanford Site Composite Analysis Update*). DOE O 435.1 governs U.S. Department of Energy's (DOE's) disposal of low-level radioactive waste; this order requires that a CA be prepared and maintained that evaluates the total radiological dose from all sources that combine with releases from low-level waste disposal facilities evaluated under Performance Assessments. DOE O 435.1 requires that any Performance Assessment, which is facility-specific analysis to demonstrate protection of human health in the post-closure period, be supported by a CA. The Hanford Site CA supports multiple Performance Assessments, including those for the 200 West Low-Level Burial Grounds, the 200 East Low-Level Burial Grounds, the Environmental Restoration Disposal Facility, the Integrated Disposal Facility, and the Waste Management Area C.

During the scoping phase of the Hanford Site CA update, the need to create a GFM for the vadose zone was identified to support development of 3D, multiple-waste-site vadose zone fate and transport models (CP-60405, *Hanford Site Composite Analysis Technical Approach Description: Vadose Zone*).

The GFM models that have been created to date, provide sufficient and adequate detail for groundwater flow and transport modeling across the Central Plateau, but there has not been a detailed GFM representative of the vadose zone beneath the Central Plateau or CA Domain. This model package report describes the development of the vadose zone component of the CPVZ GFM. The CPVZ GFM developed in support of this requirement was constructed with data and information available through 2016.

1.2 Background

Prior site-wide analyses comparable to the CA include the initial CA (PNNL-11800, *Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*; PNNL-11800-Addendum-1, *Addendum to Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*), the incomplete CA update of 2006 (PNNL-16209, *A Demonstration of the System Assessment Capability (SAC) Rev. 1 Software for the Hanford Remediation Assessment Project*), and the DOE/EIS-0391, *Final Tank Closure and Waste Management Environmental Impact Statement*. For the vadose zone facet of each of these site-wide evaluations, an evolving approach to incorporate vadose zone geology into the structural basis of the vadose zone fate and transport models has reflected evolving geologic interpretations, additional geologic data, and evolving technology for representation of the

subsurface geology interpretation. Further background on how geology for the vadose zone was represented in these prior site-wide studies is summarized in the next subsection.

Since these prior site-wide analyses were prepared, significant advances have been made toward integrating geologic data and interpretations into 3D GFMs for the saturated zone at Hanford (ECF-HANFORD-13-0029, *Development of the Hanford South Geoframework Model*, Rev. 4; ECF-HANFORD-13-0020, *Process for Constructing a Three-Dimensional Geological Framework Model of the Hanford Site's 100 Area*, Rev. 5). These saturated zone GFMs have demonstrated the value of integrating this information into a maintainable model that is updated periodically (typically annually) to incorporate the latest geologic data and interpretations, and then used to update the geologic basis of fate and transport models.

Table 1 summarizes the key aspects of the evolving approach used to represent vadose zone geologic structure in prior site-wide assessment modeling, contrasting it with the approach proposed for the Hanford Site CA update. Aspects summarized include the model dimensionality used for the vadose zone, the number of waste sites included in each vadose zone model (one, or multiple), the methodology used to define the geologic structure for the vadose zone fate and transport model, and the evolution in the geologic nomenclature and geologic units defined. Development of the CPVZ GFM provides the consistent geologic structure needed to support the 3D, multiple-waste site modeling approach proposed in CP-60405, while incorporating all available geologic data and interpretations in a maintainable product using current site-standard lithostratigraphic units.

1.2.1 Overview of Physical Setting, Site Infrastructure, and Process and Operational History of the CA Model Setting

Figure 1 is a general map of the Hanford Site showing location of principle facilities. The Central Plateau encompasses about 194 km^2 (75 mi^2) and is located south of Gable Butte and Gable Mountain; it includes the 200 West and 200 East Areas. These areas, in an upland area termed the Central Plateau, were the location where chemical separations of nuclear fuel rods were performed to isolate plutonium for nuclear weapons production. The nuclear fuel rods were irradiated in the 100 Areas of the site along the Columbia River, then transported to the Central Plateau for processing.

Facilities in the 200 West and 200 East Areas included "canyons" (large chemical separations plants), waste disposal facilities (large underground tank farms for the most contaminated wastes, ponds, ditches, cribs, trenches, and reverse wells for subsurface infiltration of less contaminated liquid waste), and other ancillary facilities.

Table 1. Composite Analysis – Vadose Zone Geologic Modeling History 1998 Through Present

Aspect	Initial CA (1998)	Incomplete 2006 CA	TC & WM EIS (2012)*	Proposed for CA Update
Supported Model Dimensionality	1D	1D	3D	3D
Waste Sites per Vadose Zone Model	1	1	1	Multiple
Method to Define Geology for Vadose Zone Models	18 profiles, based on 18 selected borehole logs	18 profiles, based on available well data in hydrologic provinces, with different configurations for waste site types	Individually developed for each vadose zone model: Geology determined using field data from over 5,000 boring logs. Single or multiple cross sections used to specify the 3D spatial distribution of soil types in row/column views	Central Plateau Vadose Zone Geoframework
Geologic Units	<u>7 sediment types</u> • East Hanford Gravel • East Hanford Sand • East Ringold • West Hanford Sand • West Early Palouse • Plio-Pleistocene • West Ringold	<u>10 soil types</u> • Backfill (B) • Hanford silty sand (Hss) • Hanford fine sand (Hfs) • Hanford coarse sand (Hcs) • Hanford gravelly sand (Hgs) • Hanford sandy gravel (Hg) • Hanford gravel (Hrg) • Plio-Pleistocene silt (PPlz) • Plio-Pleistocene caliche (PPlc) • Ringold (Rg)	<u>16 soil types (match GW)</u> • Alluvium • Hanford gravel • Hanford sand • Hanford silt • Hanford mud • Plio-Pleistocene gravel • Plio-Pleistocene sand • Plio-Pleistocene silt • Plio-Pleistocene mud • Plio-Pleistocene cement • Cold Creek gravel • Cold Creek sand • Ringold gravel • Ringold sand • Ringold silt • Ringold mud	<u>8 lithostratigraphic surfaces (Vadose)</u> • Hf1 • Hf2 • Hf3 • CCU • CCUc • CCUg • Rtf • Rwie <u>Model Upper and Lower Bounds</u> LiDAR Topography Water Table/Basalt (adopted from HSGF)

* DOE/EIS-0391, *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC & WM EIS)*

3D = three-dimensional
CA = composite analysis
CCU = Cold Creek unit
CCUc = Cold Creek unit Caliche
CCUg = Cold Creek unit sand
Hf1 = Hanford formation 1
Hf2 = Hanford formation 2
Hf3 = Hanford formation 3
HSGF = Hanford South GFM
LiDAR = light detection and ranging
Rtf = Ringold Formation member of Taylor Flat upper fines
Rwie = Ringold Formation member of Wooded Island unit E

Process operations and waste management activities on the Central Plateau resulted in the storage and disposal of large quantities of solid and liquid wastes. More than 1.7 billion m^3 (450 billion gallons) of liquid waste, some containing radionuclides and hazardous chemicals, have been discharged to the ground and contaminated both the vadose zone and groundwater.

Cleanup of the Central Plateau is organized into several different *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* regulated operable units and *Resource Conservation and Recovery Act* regulated treatment, storage, and disposal facilities. The vadose zone and groundwater resources beneath the Central Plateau now contain residual contamination released during past-practice operations and pose a potential present and future impact to the public. The current CA domain extends across the entire Central Plateau (Figure 1) and spatially encompasses the area to adequately support CA modeling.

The vadose zone beneath the Central Plateau is typically over 100 m (328.1 ft) thick and directly overlies the unconfined aquifer. The CPVZ GFM documented in this report defines the natural geologic architecture beneath those waste disposal facilities that controls, and constrains liquid and contaminant migration.

Three-dimensional (3D) GFMs have been used successfully at the Hanford Site for the past several years to provide maintainable, consistent, multidimensional interpretations of the geologic structure to support vadose zone contaminant conceptual models and saturated zone flow and transport models. An overview of the history and development of various Hanford Site GFMs is summarized in Table 2.

1.3 Document Organization

This model package report is organized in chapters that describe the steps implemented to construct the CPVZ GFM. The overall purpose, need, background, and objectives of the CPVZ GFM is summarized in Chapters 1 and 2. Chapter 3 describes the GFM technical approach, beginning with the regional stratigraphy and nomenclature used for the CPVZ GFM domain and the process for interpreting and correlating the borehole data to define the vadose zone stratigraphy. This chapter also summarizes the use of Kingdom® geologic interpretational software to validate and quality control the geologic contacts (GeoContacts) data and develop the 2-dimensional (2D) structure maps of the modeled surfaces. The use of Leapfrog® Geo Software to construct a 3D solid model of the CPVZ GFM is also provided.

Chapter 4 discusses model implementation, expanding on the workflows and modeling methodologies used for both the Kingdom and Leapfrog modeling software. Chapter 5 discusses model uncertainty.

Chapter 6 discusses limitations of the CPVZ GFM and Chapter 7 provides the details for model configuration management. Finally, future model recommendations are contained in Chapter 8.

Supporting information used to construct the CPVZ GFM is contained in the appendices (electronic version only), and defined external links.

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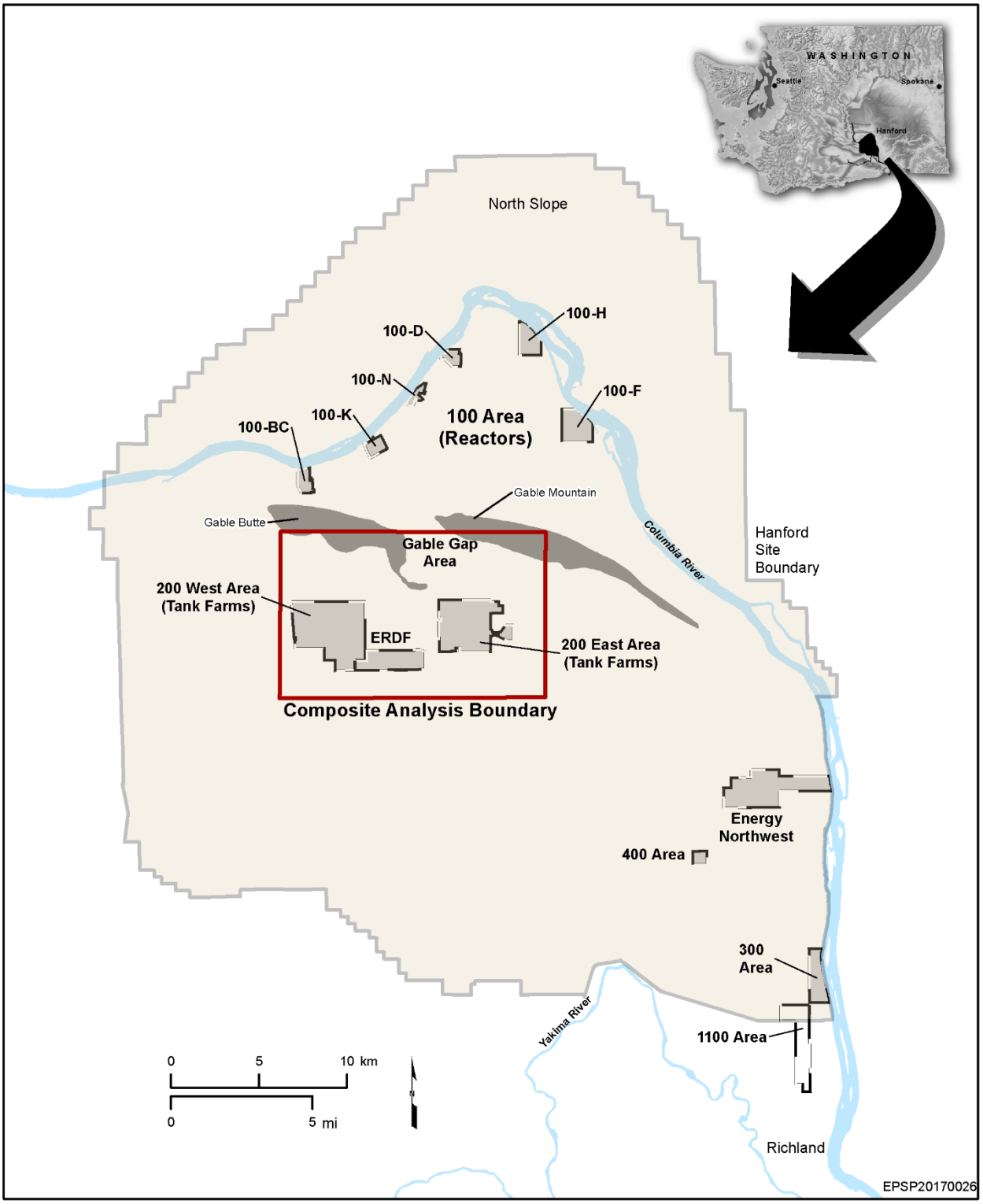


Figure 1. Composite Analysis Domain, Geographic Location, and Principal Facilities at the Hanford Site

Table 2. Summary of Hanford Site 3D Geologic Interpretation Activities

Period	Activity
1990s to 2006	Early 3D geologic models of Hanford areas developed and created by Pacific Northwest National Laboratory using EarthVision® software (e.g., PNNL-13641, *Uncertainty Analysis Framework - Hanford Site-Wide Groundwater Flow and Transport Model*)
2012	Development of 100 Area 3D GFMs initiated (e.g., 100-N SR-90 Vadose Zone Plume) (DOE/RL-2012-15, *Remedial Investigation/Feasibility Study for the 100-NR-1 and 100-NR-2 Operable Units*); 3D Columbia River LiDAR bathymetry integrated into the 100 Area GFM (PNNL-19878, *Development of a High-Resolution Bathymetry Dataset for the Columbia River Through the Hanford Reach*)
2013	First issue of the 100 Area GFM (ECF-HANFORD-13-0020 Rev.0, *Process for Constructing a Three-dimensional Geological Framework Model of the Hanford Site's 100 Area)*
2014	Periodic update of 100 Area GFM (ECF-HANFORD-13-0020 Rev.1) Initial issue of the Hanford South GFM (ECF-HANFORD-13-0029 Rev. 0, *Development of the Hanford South Geologic Framework Model, Hanford Site Washington*)
2015	Periodic update of 100 Area GFM (ECF-HANFORD-13-0020 Rev.2) Periodic update of 100 Area GFM (ECF-HANFORD-13-0020 Rev.3) Periodic update of Hanford South GFM (ECF-HANFORD-13-0029 Rev. 1) Periodic update of Hanford South GFM (ECF-HANFORD-13-0029 Rev. 2)
2016	Periodic update of 100 Area GFM (ECF-HANFORD-13-0020 Rev.4) Development of local scale geoframework to support modeling for the 100-BC remedial investigation/feasibility study (ECF-100BC5-15-0039, *Development of a Geologic Framework Model and Three Dimensional Contaminant Plumes to Support Fate and Transport Modeling Efforts in 100-BC Operable Unit of the Hanford Site, Washington*)
2017	Periodic update of Hanford South Geoframework (ECF-HANFORD-13-0029 Rev. 3) Periodic update of Hanford South Geoframework (ECF-HANFORD-13-0029 Rev. 4)
2016 to 2017	Development of the CPVZ GFM (documented in this report)

3D = three-dimensional
CPVZ = Central Plateau Vadose Zone
GFM = geoframework model
LiDAR = Light Detection and Ranging
PNNL = Pacific Northwest National Laboratory

2 Geoframework Model Objectives

The objective of this GFM development effort is to provide an accurate regional representation of the current understanding of the subsurface geologic environment within the Central Plateau in support of the CA modeling needs (i.e., radiological contaminant fate and transport). The model is constructed based on the most up to date (through fiscal year 2016) and defensible 3D interpretations of the Hanford Site's extensive geologic database. Hanford Site geologic data and information is currently archived and accessible internally via CH2M HILL Plateau Remediation Company (CHPRC) managed Integrated Data Management System (IDMS), Hanford Environmental Information System (HEIS), and the Hanford GeoContacts datasets.

Overall the objective of this report is to describe the process used to update the geologic conceptual model for the vadose zone beneath the Hanford Site Central Plateau and the corresponding CA domain. This work is a continuation and update of previous geologic interpretational work completed by past authors:

- RHO-ST-23, *Geology of the Separation Areas, Hanford Site, South-Central Washington*
- WHC-SD-EN-TI-014, *Hydrogeologic Model of the 200 West Groundwater Aggregate Area*
- WHC-SD-EN-TI-019, *Hydrogeologic Model for the 200 East Groundwater Aggregate Area*
- WHC-SD-EN-TI-008, *Geologic Setting of the 200 West Area: An Update*
- WHC-SD-EN-TI-012, *Geologic Setting of the 200 East Area: An Update*
- PNNL-12261, Revised Hydrogeology for the Suprabasalt Aquifer System, 200-East Area and Vicinity, Hanford Site
- PNNL-13858, Revised Hydrogeology for the Suprabasalt Aquifer System, 200-West Area and Vicinity, Hanford Site, Washington
- PNNL-15955, Geology Data Package for the Single-Shell Tank Waste Management Areas at the Hanford Site)

Work supporting the 200-DV-1 OU characterization in 2014 (SGW-50900, *Geologic Cross Section Development in the Vicinity of S-Complex and T-Complex to Support the 200-DV-1 Operable Unit Conceptual Models*) is also included.

Specific GFM attributes required include the following:

- Define and construct a set of consistently interpreted geologic surfaces, volumes, and data that represent major vadose zone units beneath the CA domain.
- Maintain under configuration control all data, interpretations, and outputs that support this CPVZ GFM.
- Using the vadose zone surfaces as inputs along with other supporting well and borehole data, construct the 3D CPVZ GFM of the vadose zone that includes, and has been integrated, with the existing saturated zone GFM (Hanford South GFM from ECF-HANFORD-13-0029, Rev. 4).
- Use qualified software that is site-standard and approved for use to develop the CPVZ GFM.

This report documents the process of assembling the CPVZ GFM.

3 Geoframework Model Technical Approach

The geologic layers defined in the CPVZ GFM are based on the assumption that they are laterally continuous between defining boreholes, and their outer boundaries are defined by borehole control and geologic structural and depositional features, based on existing and previous geologic reports, studies, and other historical interpretational documents. The layered geoframework includes both porous units and less porous, or relatively lower permeability units (i.e., silt and clay dominant zones) that can be defensibly and consistently correlated in the Central Plateau area.

Refinements to this CPVZ GFM will occur in coming revisions as new or improved vadose zone interpretations become available.

The technical approach for creating the CPVZ GFM included using the existing Hanford South GFM (ECF-HANFORD-13-0029, Rev. 4) and previously published interpretations of the major geologic units to refine and update a database of major vadose zone stratigraphic contacts. In addition, an evaluation of available and applicable borehole data was included to interpret vadose contacts where none were previously recorded. During this process, comparisons to the existing GeoContacts data set and area specific type logs were made to guide, verify, and ultimately select the best-estimate contacts for use in the model. The best-estimate contacts and ground surface elevations were then selected, based on professional judgment and general consensus, to develop 2D interpretations, structure and isopach maps, and geologic cross sections. These interpretations were used to further evaluate vadose zone stratigraphic continuity, boundary extents and conditions, and correlation of the units between boreholes across the CA domain. Data anomalies identified in the geologic interpretations and boreholes were re-evaluated to verify the best-estimate GeoContacts relative to the raw borehole data and type logs. Changes were made as necessary; the corrected and updated contacts data were defined, through an iterative process, and the final best-estimate contacts data set was used to complete the 2D interpretations.

The best-estimate vadose zone structure maps were manipulated to create input files for use in Leapfrog Geo software and were further modified to create the 3D volume representing the detailed CA vadose zone stratigraphic interpretation or the CPVZ GFM.

The process and approach described above was conducted in two phases by dividing the CA domain into two halves, east and west, and completing each evaluation separately then combining the two into a single GFM. Significantly different vadose zone structures and geologic units occur in these two areas. This phased approach created improved efficiencies for completing the evaluations and reduced the challenges of interpreting and correlating complex vadose zone geology across such a large domain.

A brief description of the technical activities and methodologies used is provided in this section.

3.1 Features, Events, and Processes

The CPVZ GFM is a static, current representation of the subsurface geologic structure and therefore, for the CA modeling workflow remains fixed and unchanged until it is revised in the future. There are no features, events, or processes included in this model construction. However, features and events such as historical geologic depositional environments and related structures were used to inform development of the CPVZ GFM interpretation.

3.2 Defining the Stratigraphy and Interpreting the Central Plateau Geology

This section provides an overview of the geologic history of the Pasco Basin and Hanford Site, to provide context and defensibility for development of the stratigraphy used to construct the GFM for the Central Plateau and for readers unfamiliar with the hydrogeologic setting.

3.2.1 Understanding Regional Geology of the Pasco Basin and Hanford Site

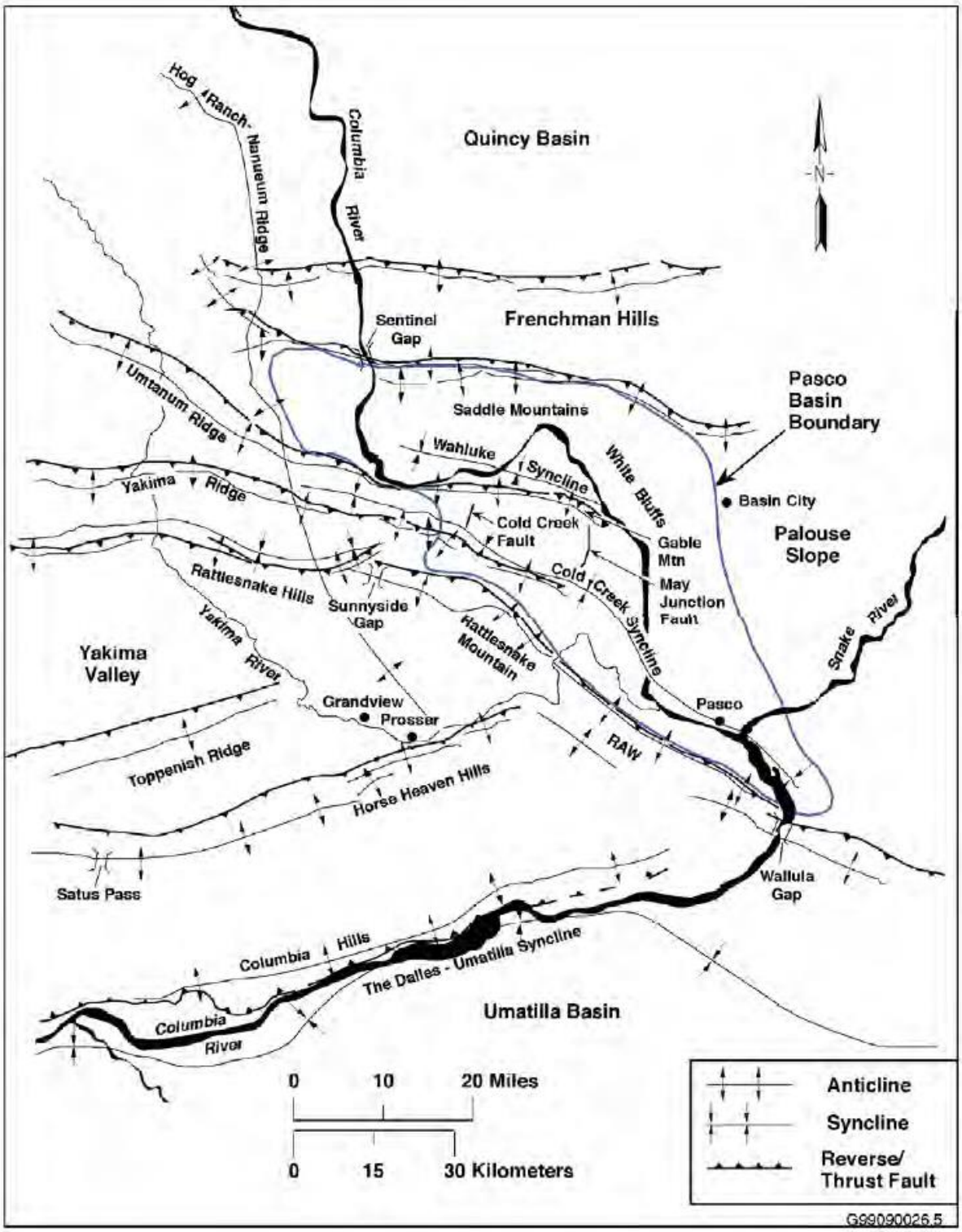
The description presented here is a synopsis of the regional geology discussion presented in PNNL-17913, *Hydrogeology of the Hanford Site Central Plateau – A Status Report for the 200 West Area*. More detailed descriptions of the hydrogeology of the Central Plateau can also be found in PNNL-12261, *Revised Hydrogeology for the Suprabasalt Aquifer System, 200-East Area and Vicinity*; PNNL-13858, *Revised Hydrogeology for the Suprabasalt Aquifer System, 200-West Area and Vicinity*; and references therein. An understanding of the geologic history of the area is key to interpretation of the major stratigraphic units and their spatial configuration. Of primary interest to this study are the large unconformity-bound sedimentary sequences overlying the basalt bedrock.

The Hanford Site lies within the Pasco Basin, which is a structural and topographic basin within the Yakima Fold Belt structural subprovince of the Columbia Plateau (RHO-BWI-ST-4, *Geologic Studies of the Columbia Plateau: A Status Report*; Reidel et al., 2013a, "Tectonic Evolution of the Columbia River Flood Basalt Province"). The Columbia Plateau is a broad plain situated between the Cascade Range to the west, and the Rocky Mountains to the east, and is underlain by the Miocene Columbia River Basalt Group (CRBG) (Figure 2). Structural basins within the Yakima Fold Belt, including the Pasco Basin (and Hanford Site), are filled with middle Miocene to Pliocene sedimentary sequences from ancestral river systems, Pleistocene cataclysmic Ice Age flood deposits, and localized Pleistocene to Holocene deposits of colluvium and loess. The broad chronology of these events is described in the following sections.

3.2.2 Columbia River Basalt Volcanism and Deposition of the Ellensburg Formation

During the period from 17 to 6 million years ago, vast quantities of tholeiitic flood basalt erupted from north-northwest–trending fissures or linear vent systems in north-central and northeastern Oregon, eastern Washington, and western Idaho (Swanson et al., 1979, "Revisions in Stratigraphic Nomenclature of the Columbia River Basalt Group"; Reidel et al., 2013b, "The Columbia River Flood Basalt Province – Stratigraphy, Areal Extent, Volume, and Physical Volcanology"). These basalt flows constitute the CRBG that forms the main bedrock of the Pasco Basin and Hanford Site (Figure 3). The CRBG consists of more than 210,000 km^3 (50,381.7 mi^3) of basalt flows that cover approximately 210,000 km^2 (81,081.5 mi^2) Reidel et al., 2013b). Some eruptions had volumes as great as 5,000 km^3 (1,199.6 mi^3) (Reidel and Tolan, 2013, "The Grande Ronde Basalt, Columbia River Basalt Group"), with the greatest amounts being erupted between 16.5 and 14.5 million years before present.

Subsidence during and since the Columbia River basalt volcanism formed the Pasco Basin, while other tectonic forces folded the basalt flows into narrow anticlinal ridges and broad synclinal valleys (Reidel et al., 1989, "Geologic Evolution of the Central Columbia Plateau"; Reidel et al., 2013a). Weathering, soil development, erosion, and/or sediment deposition occurred between eruptions, particularly between the younger CRBG flows. In the Pasco Basin region these sediments interbedded with the CRBG are part of the Ellensburg Formation.



Source: PNNL-15955, *Geology Data Package for the Single-Shell Tank Waste Management Areas at the Hanford Site*

Figure 2. Main Structural Features of the Pasco Basin and Surrounding Area

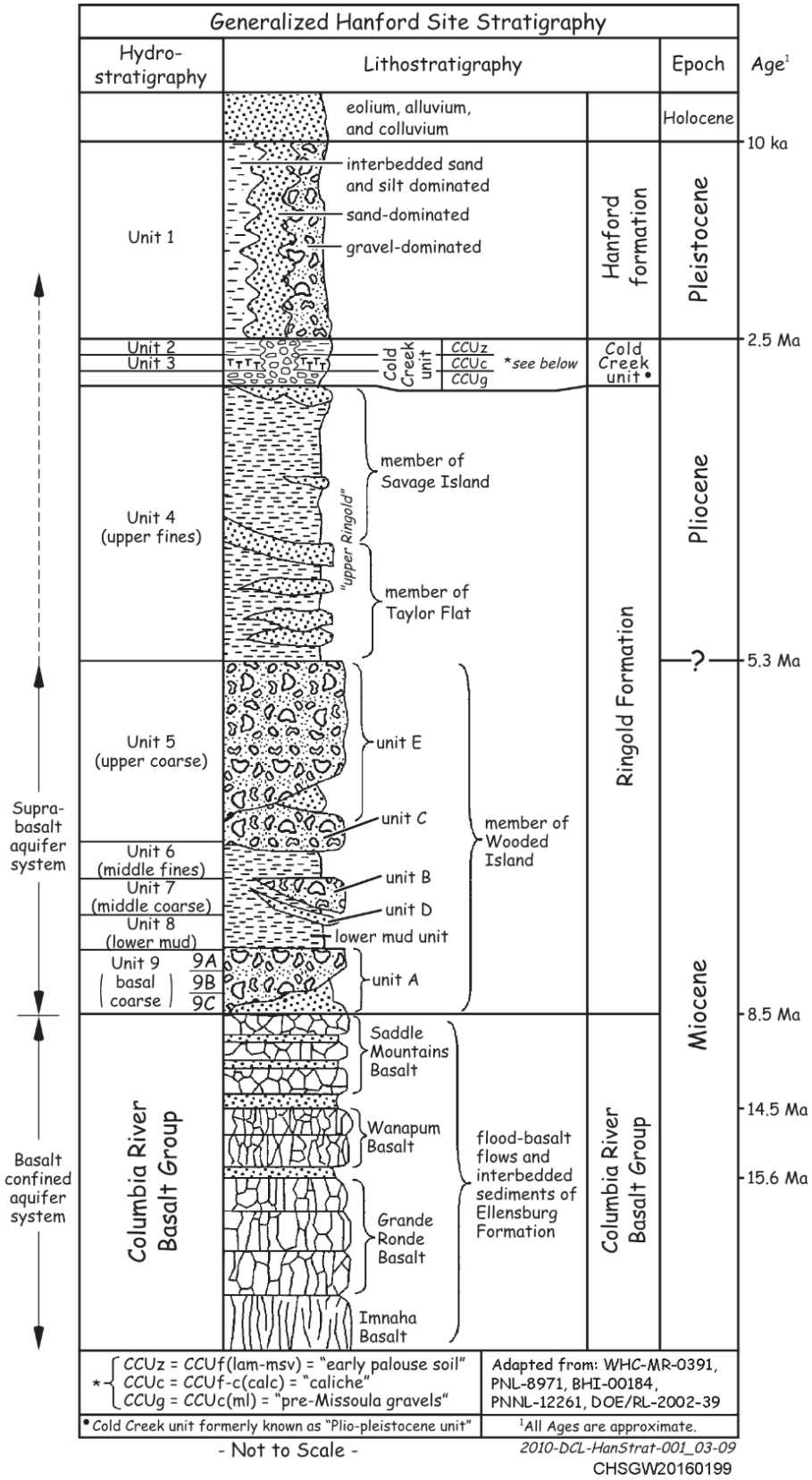


Figure 3. Generalized Stratigraphic Column for the Hanford Site

Uplift along anticlinal ridges has resulted in erosion to different depths within the Pasco Basin. North of the Central Plateau near Gable Gap (Figure 1), the Saddle Mountains Basalt has been locally eroded by the ancestral Columbia River and Pleistocene proglacial Ice Age flooding. The Ice Age flooding repeatedly flowed across and through Gap Gable, erosionally thinning or removing uplifted basalt, and creating a complex basalt surface (Figure 4) that remains mostly buried beneath sedimentary deposits belonging to the Ringold Formation, Cold Creek unit, and the Hanford formation. In some areas on the Central Plateau, the uppermost water table is not present due to these buried basalt erosional ridges and structural highs. At Hanford, this basalt topography has influenced or controlled groundwater and contaminant flow directions across the northern Central Plateau along with human-induced elevation changes in the water table created by historical large volume liquid waste disposal operations in the area.

Source: PNNL-19702, *Hydrogeologic Model for the Gable Gap Area, Hanford Site*
Note: View looking north; blue block arrows show general movement of floodwaters, which scoured and overtopped the crest of the basalt ridge along left side of image.

Figure 4. Example of Highly Irregular CRBG Topography Eroded by Ice Age Floods, Lower Grand Coulee, Channeled Scabland

3.2.3 Ringold Formation

The oldest depositional sequence overlying the CRBG in the Pasco Basin is the Ringold Formation deposited between 10.5 and 3.4 million years ago. The Ringold Formation is composed of a relatively thick sedimentary sequence comprising river (fluvial) deposits of gravel, sand, and silt near ancestral river channels, and finer grained silt and clay deposited in sluggish or impounded river systems and lake (lacustrine) environments. Active regional tectonics during that time created variable features including structural ridges, faults, and subsiding synclinal basins that account for the depositional variability of the Ringold Formation.

BHI-00184, *Miocene- to Pliocene-Aged Suprabasalt Sediments of the Hanford Site, South-Central Washington*, divided the Ringold Formation into three informal members: Wooded Island, Taylor Flat, and Savage Island members (Figure 4). The Wooded Island member is further divided into five subunits, A through E. The Ringold Formation that underlies the Central Plateau mostly belongs to the Wooded Island member along with remnants of the Taylor Flat member. Ringold Formation units identified beneath the Central Plateau and that are included in the CPVZ GFM have been grouped into the following stratigraphic intervals from oldest to youngest:

- Ringold Formation member of Wooded Island unit A or Rwia (also known as hydrostratigraphic unit 9 in PNNL-12261)
- Ringold Formation member of Wooded Island lower mud unit or Rlm (also referred to as Ringold Formation lower mud unit) composed of units B, C, and D (hydrostratigraphic units 8, 7, and 6, in PNNL-12261)
- Ringold Formation member of Wooded Island unit E or Rwie (hydrostratigraphic unit 5 in PNNL-12261)
- Ringold Formation member of Taylor Flat upper fines or Rtf (hydrostratigraphic unit 4 in PNNL-12261)

The Rwia is composed of extensive gravel with interbedded sand. It was deposited in a braided plain of a meandering ancestral Columbia River that exited the Pasco Basin through the present Yakima River gap along the southeast end of the Rattlesnake Mountain anticline (Fecht et al., 1987, “Paleodrainage of the Columbia River on the Columbia Plateau of Washington State - A Summary”). About 6.7 million years ago, the river outlet was captured through the present Wallula Gap. The main ancestral Columbia River channel was still through the Central Plateau region but the depositional environment changed to a much lower energy sandy fluvial system with intervals of lake formation (lacustrine deposition) that create the laterally extensive Rlm.

The Rlm is composed of a relatively thick sequence of lacustrine silt and clay that can include small lenses of sand or gravel. The Rlm unit thickens into the Cold Creek Syncline, more or less conforming with the basalt structure. The Rlm was subsequently covered as the depositional environment evolved back into a predominantly fluvial system that deposited an extensive sequence of mostly fluvial gravels and sand of the Rwie. Locally, the Rwie also contains fine–grained lenses that may have low permeability. About 5 million years ago, the depositional environment slowed again, produced more than 90 m (295.3 ft) of sandy-silty Taylor Flat deposits, followed by lacustrine deposits of the Savage Island member from 4.8 to 3.4 million years ago.

Regional uplift starting 3.4 million years ago led to extensive erosion removing an estimated 100 m (328.1 ft) of mostly Ringold Formation deposits from the Hanford Site. The Savage Island member has been completely removed from the Central Plateau region and the Taylor Flat member has been removed over much of it. The erosion cut deeper and more extensive in the eastern portion of the Central Plateau where the main Columbia River and paleo-flood channels passed through the gap between Gable Mountain and Gable Butte. Remnants of the Taylor Flat member are preserved in the vicinity of the BC-cribs and across much of the 200 West area.

3.2.4 Cold Creek Unit

Following the Ringold Formation erosional period was a relatively quiescent period. Alluvial gravel, sand, and silt deposits developed along the main stream channel south of the Gable Gap often referred to as the pre-Missoula gravels (c[ml]) in (Figure 5) and now informally named the Cold Creek unit (DOE/RL-2002-39, *Standardized Stratigraphic Nomenclature for Post-Ringold Formation Sediments Within the Central Pasco Basin*). Along Cold Creek and Dry Creek, deep drainage channel cuts were filled with alluvium. To the north of the Cold Creek paleo-channel (Figure 5), overbank and windblown (eolian) exposure of Ringold Formation sediment supported formation of a calcified soil horizon. Later, the depositional environment evolved further with the deposition of overbank deposits of silt and fine sand which created a calcified soil horizon named the upper Cold Creek fine–grained overbank/eolian facies (Figure 5). To the south of the Cold Creek paleochannel, coarser grained colluvium from Rattlesnake Mountain accumulated.

Except for a very small segment of the Cold Creek channel fill gravel in the 200 East Area, the western portion of the Cold Creek unit lays above the historical Missoula Floods high water level. Despite being located within the vadose zone, the Cold Creek unit had a large influence on aquifer recharge and groundwater dynamics during the operational period of the Hanford Site. Significant perching of water disposed in waste disposal sites at the surface delayed and laterally offset the arrival of this water at the aquifer.

3.2.5 Ice Age Flooding and the Hanford Formation

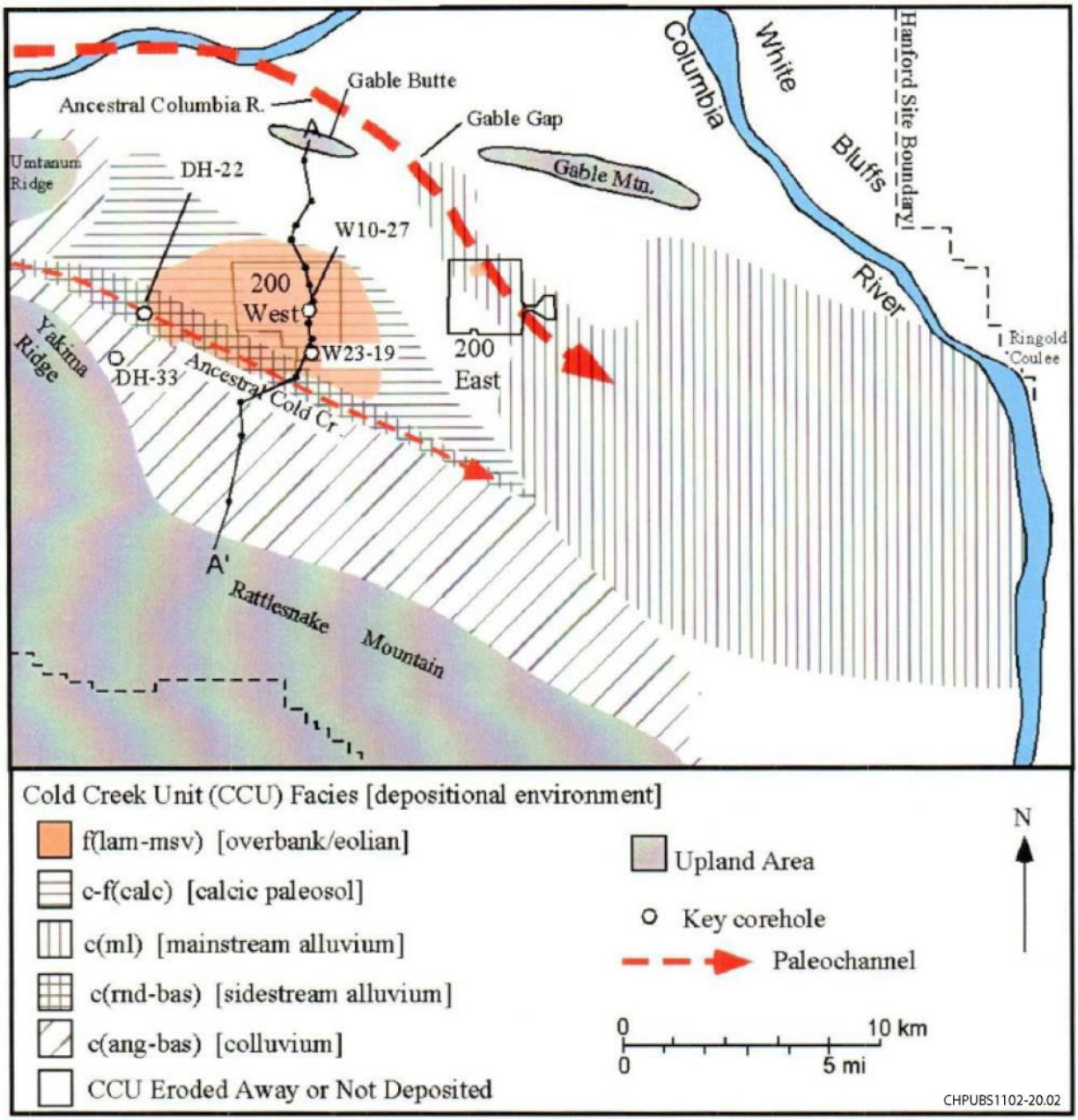
The last major sedimentary unit beneath the Central Plateau area was deposited during the last major Ice Age some 2.6 million years ago, when cataclysmic floods (including the Missoula Floods) repeatedly inundated the Pasco Basin, depositing a thick sequence of sediment informally called the Hanford formation (Bjornstad, 2006, *On the Trail of the Ice Age Floods*). These huge floods (some containing more than 500 mi^3 of water) occurred when ice dams failed, releasing large volumes of water from ice marginal lakes (e.g., glacial Lake Missoula).

The cataclysmic outburst floods caused repeated large erosional and depositional events, which have significantly shaped the Central Plateau geology and topography that is seen today. Some of these floods may have been the largest ever identified in the history of the world (O'Connor and Costa, 2004, *The World's Largest Floods, Past and Present – Their Causes and Magnitudes*). The many large floods left a series of overprinted features including scour channels in the basalt, deep erosion into the underlying Cold Creek and Ringold units, highly conductive gravel and sand-dominated channel fill deposits extending from the Gable Gap southeast to the Columbia River, and relatively lower energy sand-dominated deposits that stacked up creating the elevated Central Plateau (a.k.a. the Cold Creek Flood Bar). Figure 6, from DOE/RL-2002-39, depicts the inferred pathways of these floods and shows the distributions of the major facies groups. As would be expected of deposits formed from multiple erosive/depositional flood events, there are large vertical and horizontal variations within the gravel dominated facies ranging from fine sand to open framework deposits, described as boulders in some borehole logs.

Gravel dominated sediments are generally confined to relatively narrow tracts within or near flood channel ways. Sand-dominated sediments, on the other hand, occur primarily as a broad sheet over most of the central basin.

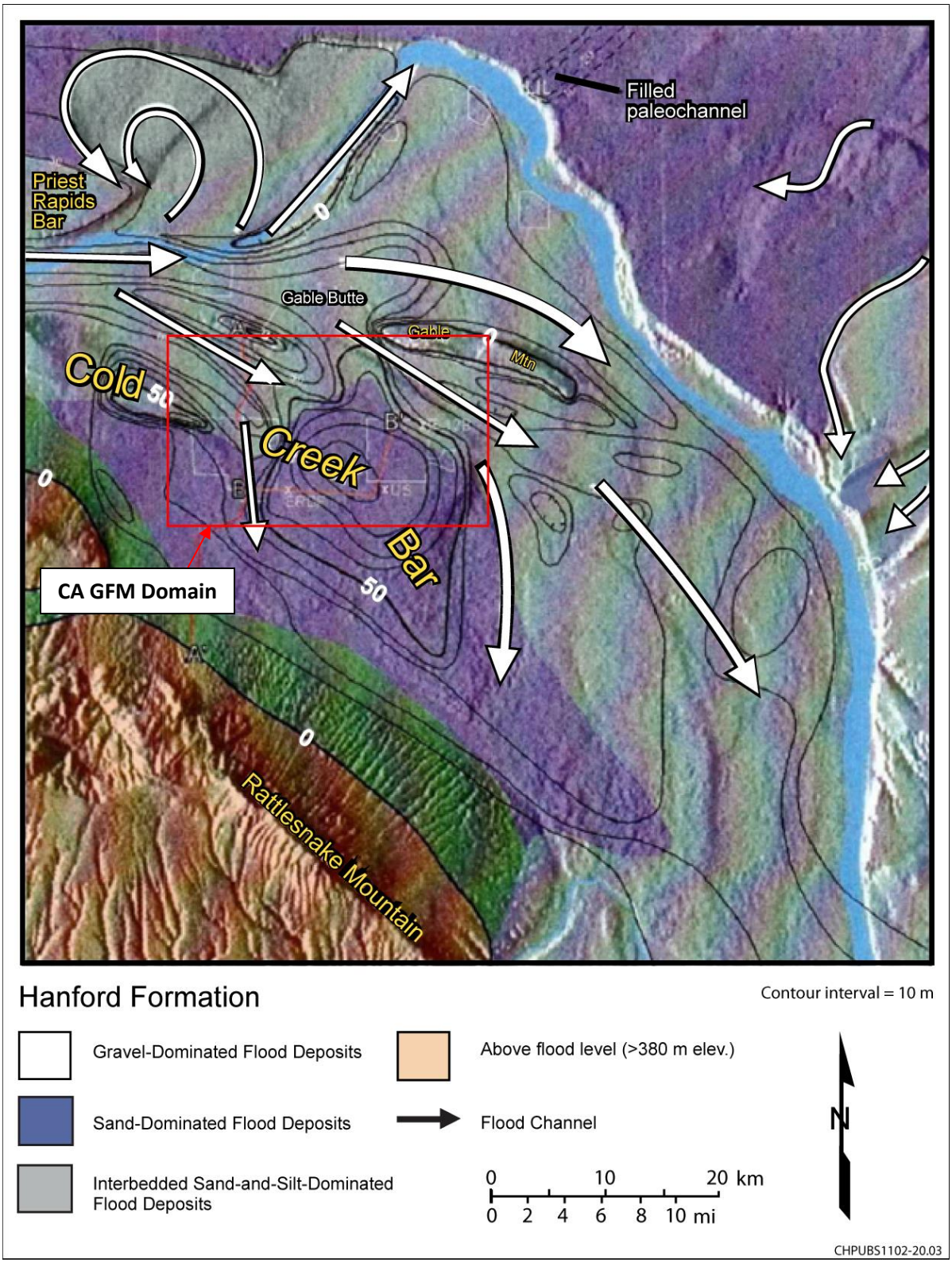
3.2.6 Holocene Deposits

After the last Pleistocene Ice Age flood drained from the Pasco Basin, the Columbia River channel continued to erode and rework the sediment and migrate across the northern Hanford Site to its present position. Elsewhere on the Site, winds reworked and mobilized, unconsolidated sediments creating dune fields until vegetation was able to stabilize it. Stabilized sand dunes cover much of the Pasco Basin, but there are areas, such as along the Hanford Reach National Monument, where sand dunes remain active. Locally, fluvial and colluvial processes also have shaped the landscape and deposited locally derived sediments.



Source: DOE/RL-2002-39, *Standardized Stratigraphic Nomenclature for Post-Ringold Formation Sediments within the Central Pasco Basin.*

Figure 5. Distribution of Cold Creek Facies Across the Central Plateau



Source: DOE/RL-2002-39, *Standardized Stratigraphic Nomenclature for Post-Ringold-Formation Sediments within the Central Pasco Basin.*

Figure 6. Inferred Cataclysmic Flood Routes, Thickness, and Distribution of the Hanford Formation Depositional Facies

3.3 Stratigraphic Contacts Beneath the Central Plateau

Defining the stratigraphic contacts for wells and boreholes in the Central Plateau follows a similar process to that defined in PNNL-17913. This section describes the methodology used to compile and integrate available information on the vertical location of stratigraphic contacts that define the tops of major vadose and saturated zone stratigraphic units (e.g., formations, members, and mappable facies associations) beneath the Central Plateau. The resulting updated and revised database will be used to update and revise the GFMs used across the Central Plateau.

3.3.1 Stratigraphic Nomenclature

A standardized stratigraphic nomenclature has been used to document the geologic contact intervals that are presently defined beneath the Central Plateau. This nomenclature (Figure 3) maintains consistency through time, with historically documented GeoContacts naming conventions. WMP-22817, *Geologic Contacts Database for the 200 Areas of the Hanford Site*, evaluated the various sources of geologic contact information and translated them into 12 main lithostratigraphic units that can be correlated across the Central Plataea. These units were based on the standardized stratigraphic nomenclature for post-Ringold sediments defined by DOE/RL-2002-39, and in part on the informal Hanford formation subdivisions (Hf1, Hf2, etc.) identified by Lindsey et al., 1994, "Geohydrologic Setting of the Hanford Site, South-Central Washington" (RPP-6149, *Vadose Zone Geology of Boreholes 299-W22-50 and 299-W23-19 S-SX Waste Management Area Hanford Site, South-Central Washington*; RPP-8681, *Vadose Zone Geology of Boreholes 299-E33-45 and 299-E33-46 B-BX-BY Waste Management Area Hanford Site, South-Central Washington*; HNF-5507, *Subsurface Conditions Description for the B-BX-BY Waste Management Area*; RPP-14430, *Subsurface Conditions Description of the C and A-AX Waste Management Area*). The nomenclature for units within the Ringold Formation was based on that defined by BHI-00184. Eight of these stratigraphic unit names are defined as part of the CPVZ GFM.

3.3.1.1 Subdivision of the Hanford Formation

Defining the various vadose zone geologic unit correlations and their spatial extent across the Central Plateau has required a simplified approach in order to maintain continuity and identify key lateral changes. Previous authors and geologists have used a similar approach for subdivisions within the Hanford formation in both the 200 East Area and the 200 West Area, however, paleo-magnetic polarity data indicate that the subdivisions in 200 East Area are not necessarily time correlative with those in 200 West Area (PNNL-18835, *Hydrogeology of the Hanford Site Central Plateau − A Status Report for the 200 East Area*). Therefore, these subdivisions do not represent the same time-stratigraphic depositional sequences, but for this work, the nomenclature defined by RPP-6149 and HNF-5507: upper coarse-dominated (Hf1), sand-dominated (Hf2), and lower coarse-dominated (Hf3), to represent the main lithostratigraphic subdivision of the Hanford formation is being used.

3.3.1.2 Hanford Formation/Cold Creek Unit/Ringold Formation

Correlation of the vadose zone geologic units in the northern 200 East Area and north toward Gable Gap is difficult, due to significant erosion by both the ancestral Columbia River and Ice Age cataclysmic floods. In this area, the stratigraphic unit identification of sediment at the base of the Hanford formation and overlying the top of the CRBG is difficult due to the relatively thin remnant strata making up this interval, and the poor quality of most available borehole data, which relies on older vintage well information. For this model, we have adopted the interpretation defined in PNNL-18835 for differentiating the Lower Hanford formation, Cold Creek unit, and Ringold Formation sediment. Where present in 200 East Area and north to Gable Gap, fine–grained sediment at the base of the Hanford

formation are defined as the Cold Creek unit due to their thickness, color, and minimal weathering and compaction.

There is still considerable uncertainty associated with delineating the nature and extent of these units in this area of the model. Specifically, the uppermost Cold Creek unit, traditionally called the CCUz or Cold Creek silt unit could potentially be divided into different lithologic units ranging from a silt with high clay fraction to a silty sand. For this regional model we refer to this fine-grained unit as simply the Cold Creek unit (CCU) and will address the different hydraulic properties in future more detailed models.

3.3.2 Stratigraphic Contact Data

The first step in assembling the GFM involved compiling available borehole and well data located within the model domain, and interpreting the data to determine the vadose zone geologic unit contacts. The distinguishing characteristics of sediments penetrated by the borehole can be used to identify and define geologic unit contacts along with using existing knowledge, published interpretations, offset log correlations, and area type logs. In some cases the existing Hanford Site GeoContacts dataset provided vadose zone unit contact information which could also be used. The final "best-estimate" contacts dataset form the building blocks for the geologic unit surfaces that ultimately are used to construct the CPVZ GFM. This process integrates the available borehole geologic and geophysical log data reports, Well Summary Sheets, and other supporting data (sediment or hydraulic testing information, etc.) into a comprehensive borehole interpretation. The process details are outlined in the sections that follow.

3.3.2.1 Reduce Uncertainty and Improve Traceability to Raw Borehole Data

The geologic unit interpretations are based almost entirely on subsurface borehole records and geophysical data (both historical and new). The quality of the interpretations is directly related to the availability and pedigree of the borehole records and data. Data uncertainty was reduced by beginning with the existing GeoContacts data set which contains a record of existing geologic contact interpretations tabulated from published and unpublished sources. The process of revising and updating the existing GeoContacts dataset is described in PNNL-17913. Currently, the GeoContacts data set is revised and updated annually to add new well data and revise any changes in contact interpretations (e.g., ECF-HANFORD-13-0029, Rev. 4). New or updated geologic unit contact interpretations defined for this GFM were routinely compared to those that exist in the GeoContacts dataset, allowing for duplicates to be eliminated, and multiple values for the same contact to be identified and resolved, so that ultimately the best-estimate geologic unit contacts can be defined.

All vadose zone geologic unit contact interpretations are provided in Appendix A. The graphic borehole log profiles that illustrate the individual borehole geologic unit contact correlations, and that can be tied back to the raw borehole data, form the record interpretation used for each borehole, and are available in Environmental Model Management Archive (EMMA) and Appendix B. Hanford Site users may request these data by contacting the CHPRC Modeling Team Leader, Will Nichols.

Over 5,150 wells are located within the 151 km^2 (58.3 mi^2) CA domain. Of these boreholes, only 1,251 were applicable and selected for the final detailed vadose zone geologic interpretation that forms the CPVZ GFM. Many of the wells within the CA boundary were either not deep enough, or did not provide detailed geologic information for delineating the vadose zone stratigraphic units and were eliminated from consideration. Others were older wells that have been superseded by adjacent or nearby wells with more definitive data. Figure 7 shows the spatial locations of the boreholes used in the domain, and Appendix C provides a list of these selected borehole locations and total depths.

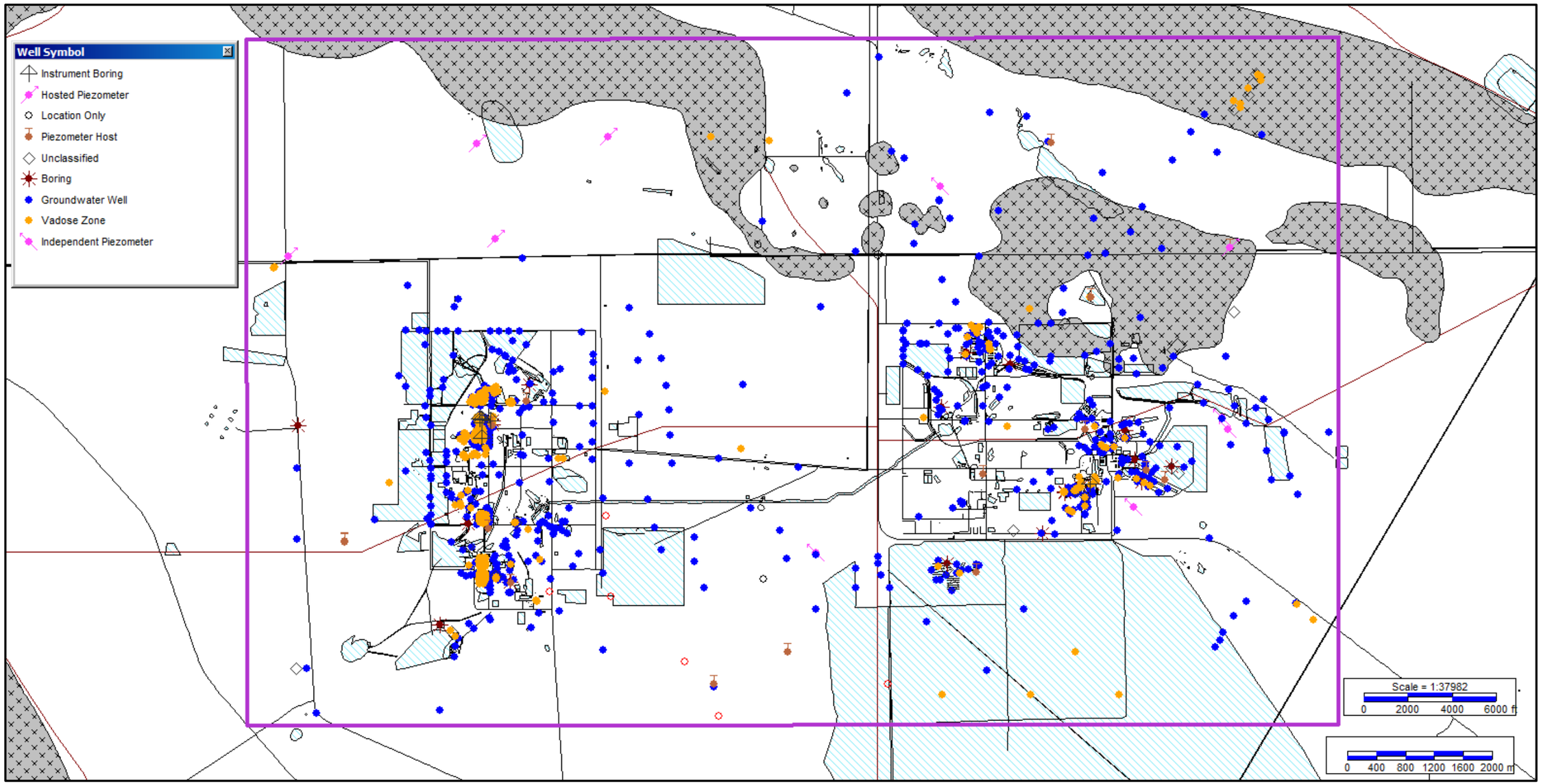


Figure 7. Composite Analysis Map Area Showing the 1,058 Boreholes Used in the Vadose Zone Geoframework Model

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3.3.2.2 Develop Type Logs by Region to Assist Detailed Vadose Zone Correlations

Previous geologic and hydrogeologic studies have shown that the Central Plateau can be divided into two primary areas based on their geologic differences, closely aligned with 200 West and 200 East Areas. The Hanford formation extends across the entire CA domain, but within the 200 West Area, significantly more Ringold Formation sediment has been preserved and this formation makes up approximately the lower one-half to one-third of the thick vadose zone. The 200 East Area was more directly impacted by the repeated Pleistocene cataclysmic floods and ancestral Columbia River, which caused significant erosion and removal of a large portion of the Ringold Formation. Therefore, in the 200 East Area most of the thick vadose zone is composed of Hanford formation. Only the oldest Ringold Formation sediment remains as thin remnants in the northern portion of 200 East Area, but thickens to the south into the Cold Creek Syncline.

Type logs, composed of comprehensive interpretations of the most defensible and highest quality data, have been assembled to illustrate the geologic unit variations within the CA domain and to aid in the geologic contact interpretation of borehole data. The type logs serve as representative interpretations of the signature geologic unit contacts that have been defined for a region. The type logs do not necessarily correlate across the entire domain, or even the 200 West or 200 East areas, but do represent the local changes, and allow those limited geologic unit extents to be consistently defined between regions. Appendix D provides the type logs developed and used for supporting the CA geologic contact correlations.

The borehole data evaluation began with all available borehole data defined within the 200 West Area. Well names and identification numbers along with available records (from IDMS) were defined and filtered in Microsoft® Excel® spreadsheets. This filtering provided a high-level screen to eliminate very shallow wells for which no detailed vadose zone data could be discerned or were not drilled deep enough to provide meaningful correlation data. Additionally, the filter was used to define boreholes with the most complete and highest quality of data (Table 3). These higher quality datasets typically corresponded to the most recently drilled boreholes. A second spreadsheet composed of all of the wells with GeoContacts that exist within the domain was also generated and their documented GeoContacts were added for comparison during the data interpretation process. In many cases GeoContacts were available for some, but not all, vadose zone geologic units that were being evaluated.

The filtered list defining the applicable boreholes provided the basis for the initial borehole evaluations. Each set of borehole records was reviewed, compared to the type logs, and evaluated to interpret the geologic unit contacts present. These new contacts were compared to the existing contacts spreadsheet to define missing or duplicate data and resolve differences. The new geologic unit contact interpretations were recorded in spreadsheets and notes retained that describe details of the evaluation, as appropriate. The spreadsheets define the unique well information, total depth, completion date, the depth to each geologic unit identified (based on the eight unit nomenclature developed for this CA) and the geologist responsible for the interpretation. These geologic unit contacts are archived and maintained in CHPRC by the RDS function (contacts are Bruce A. Williams or Sarah D. Springer) Additionally, borehole geologic profiles were created using the borehole or drillers logs and available geophysical log data and annotated with the interpreted contacts. These borehole profiles form the record interpretation used for each borehole and are available in EMMA and Appendix B. Hanford users may request these data by contacting the CHPRC Modeling Team Leader, Will Nichols.

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Table 3. Example IDMS Data Query Table Used to Identify Available Well Data

WELL_NAME	WELL_ID	GWIA	WELL_TYPE	STATUS	DRILL_ DATE	DRILL_ DEPTH	DRILL_ DEPTH_ UNITS	CONST_ DEPTH	Borehole Log	Geophysical Log	Drill Log	Well Summary Sheet	Well Construction Summary Report & As Build	Gross Gamma	Borehole Summary Report	Composite Borehole Log	Reports	Well Completion Log
699-55-95	A5263	200-ZP	PIEZOMETER HOST	IN-USE	1/17/1959	530	ft	--	--	5	2	--	5	--	--	--	--	--
699-55-95P	A9487	200-ZP	HOSTED PIEZOMETER	IN-USE	1/1/7/1959	530	ft	--	--	2	--	--	--	--	--	--	--	--
699-35-6	A8548	200-PO	UNCLASSIFIED	CANDIDATE FOR DECOMMISSIONING	1/31/1981	530	ft	--	1	--	--	--	--	--	--	--	1	--
299-W13-1	C4238	200-ZP	GROUNDWATER WELL	IN-USE	2/10/2004	527.3	ft	427.94	2	1	--	2	2	--	--	--	--	1
299-W14-22	C7030	200-ZP	GROUNDWATER WELL	IN-USE	10/30/2012	527.3	ft	518.9	1	2	--	2	1	--	--	--	1	1
299-W11-90	C7022	200-ZP	GROUNDWATER WELL	IN-USE	12/22/2009	525.9	ft	519.53	1	1	1	3	1	--	--	--	3	--
699-37-47A	B2822	200-PO	GROUNDWATER WELL	IN-USE	5/19/1996	525.5	ft	338.7	1	2	--	1	1	1	--	--	1	--
299-W14-21	C7494	200-ZP	GROUNDWATER WELL	IN-USE	9/3/2009	525	ft	520	1	1	1	1	1	--	--	--	3	1
299-W15-46	C3426	200-ZP	GROUNDWATER WELL	IN-USE	10/3/2003	525	ft	292.79	2	2	--	1	1	--	3	--	--	1
699-42-67	C8069	200-UP	GROUNDWATER WELL	IN-USE	9/8/2011	524.37	ft	519.7	1	--	--	1	1	--	--	--	1	--
699-38-19	A8595	200-PO	VADOSE WELL	DECOMMISSIONED-V	3/31/1980	521	ft	--	1	5	--	--	--	--	--	--	4	--
299-W15-228	C8716	200-ZP	GROUNDWATER WELL	IN-USE	3/11/2014	520.23	ft	445.51	1	1	--	1	1	--	--	--	2	--
699-39-23	A8606	200-PO	VADOSE WELL	DECOMMISSIONED-V	6/30/1980	520	ft	--	1	3	--	--	1	--	--	--	2	--
699-56-42F	A8890	200-BP	UNCLASSIFIED	DECOMMISSIONED-V	6/30/1981	520	ft	--	1	4	--	--	--	--	--	--	1	--
299-W10-35	C7573	200-ZP	GROUNDWATER WELL	IN-USE	9/7/2010	519	ft	459.7	1	2	--	1	1	--	--	--	2	--
699-37-43	A5146	200-PO	GROUNDWATER WELL	IN-USE	11/3/1955	517	ft	517	--	9	2	--	5	--	--	--	1	--

GWIA = groundwater interest area
ID = identification

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This same process work flow was followed to evaluate borehole data and determine vadose zone contacts within the 200 East half of the domain.

3.3.2.3 Supporting Data Sources for Geologic Contacts

As discussed above, determining the geologic unit contacts present beneath the Hanford Site relies predominantly on borehole data. Borehole data are created and recorded during the drilling of boreholes and wells. Drilling of boreholes has been ongoing at the Hanford Site since the 1940s, and the quality and quantity of the associated drilling records vary significantly. Hanford available borehole records are maintained electronically and can be retrieved via the Environmental Data Application (EDA) query tool (https://ehs.hanford.gov/eda/). PNNL-13653, *A Catalog of Geologic Data for the Hanford Site*, also provides a good supplemental source catalog for Hanford's geologic data. As required by the DOE, new borehole records are added to the electronic data record as they become available.

Early Hanford sediment descriptive records consisted of a driller's observation of cuttings returned to the surface and are considered the least defensible data set for defining GeoContacts. Through time descriptions of borehole drill cuttings in field records have become more descriptive, consistent, and comparable. Current practice requires geologic observations to be described and recorded by a trained geologist following approved geologic logging procedures. In addition to these borehole log records, digital photos of sediment cuttings, and grab samples are retained that support geologic evaluation of the data. Related supporting borehole records include well construction profiles or as-built diagrams (currently called Well Summary Sheets), Well Development Records, Geophysical Borehole Log Data Reports, etc. A complete listing of available borehole record types is included in EDA.

Geophysical borehole logging is now routinely performed at most new boreholes, as defined in project-specific sampling and analysis plans. The geophysical log data reports contain the interpreted results from the geophysical logging activity conducted in the boreholes. Older geophysical borehole logging data and reports of various quality and pedigree are also maintained and accessed via EDA and stored in IDMS. Many of the older reports still have value to the interpreter. These older geophysical log types include borehole scintillation logs which record some of the earliest available total gamma activity in the boreholes (both manmade contamination and natural activity), and more recently acquired gross and total gamma log plots. Current logging tools (using the spectral gamma logging system) can define specific manmade and naturally occurring gamma emitting radioisotopes and vadose zone moisture profiles (using the Neutron Moisture Logging System). The spectral gamma logging system coupled with Neutron Moisture Logging System provide the most comprehensive geophysical logging capability available today.

The geophysical log data can be used to help define changes in lithologic units, more accurately define geologic unit contact boundaries, and identify areas where manmade radionuclides are or were present at the time the borehole was logged. From a geologic standpoint, geophysical logs are the second most important borehole data set, and the single most important geologic correlation data set. The usefulness of the geophysical logs for geologic correlation is dependent on many factors, including:

- The vintage of the log (e.g., old scintillation logs versus current spectral gamma logs)
- Logged interval (vadose versus saturated zones)
- Type of logging tools utilized (e.g., gamma, neutron moisture, passive neutron)
- Logging speed (logging too fast can reduce natural formation resolution)

- Borehole construction attributes (e.g., multiple casings and seals can mask or attenuation borehole signal causing reduced data resolution)

Integration of the borehole geologic log (or older drillers' log) and geophysical borehole log data form the most consistent and accurate geologic unit correlation method when working with many boreholes with varying quality and quantity of borehole records. Geophysical log inflections most often correlate to geologic zones and units, are accurately recorded in borehole depth profiles, and can be visually distinguished and matched to adjacent offset boreholes much easier and more consistently then attempting to define and isolate the contact boundaries in borehole geologic and drillers' logs (Figure 8). However, identification of geologic unit intervals and zones based on the geophysical log inflections can only be validated and confirmed using the descriptive data from the borehole geologic log. The borehole-type logs (Appendix D) used during this project are one example of how this information can be integrated into comprehensive subsurface geologic correlation tools that ensure consistent and accurate borehole-to-borehole interpretation of the surrounding subsurface geologic environment.

3.3.2.4 Geologic Contact Elevation Uncertainty

Key sources of error that have been identified in past geologic unit contact interpretations include ongoing record changes in depths and elevation:

1. Use of different surface or well elevations over time. Surface and well elevations over time can change due to well casing or maintenance repairs, well pad replacement, surface changes due to the addition of clean protective cover material, and other factors.

2. Rounding errors introduced from unit conversions.

– To alleviate these possible errors, all current GeoContacts are defined as depth below ground surface based on the original drilling records. Recording contacts as depth also allows traceability back to the original borehole data.

3.4 Stratigraphic Correlations and Vadose Zone Unit Depositional Extent

The spreadsheets containing the geologic unit contacts that were generated during the borehole data evaluation process are imported into Kingdom geologic interpretation software and graphically overlain onto the electronic geologic and geophysical log profiles. These data are visually compared for consistency in interpretation, and contact validation. These borehole profiles are used to create 2D cross sections with contacts formed that link the individual borehole contacts together. The Kingdom software is used as an iterative tool to evaluate and adjust the contact depths along the section or in the borehole profile, resolve anomalies, constrain boundaries, etc. 2D geologic cross sections and structure maps are generated in Kingdom for export as visual geologic interpretations, and as surfaces and datasets for input into additional modeling applications.

Details of this process and the geologic unit correlations are provided in Chapter 4.

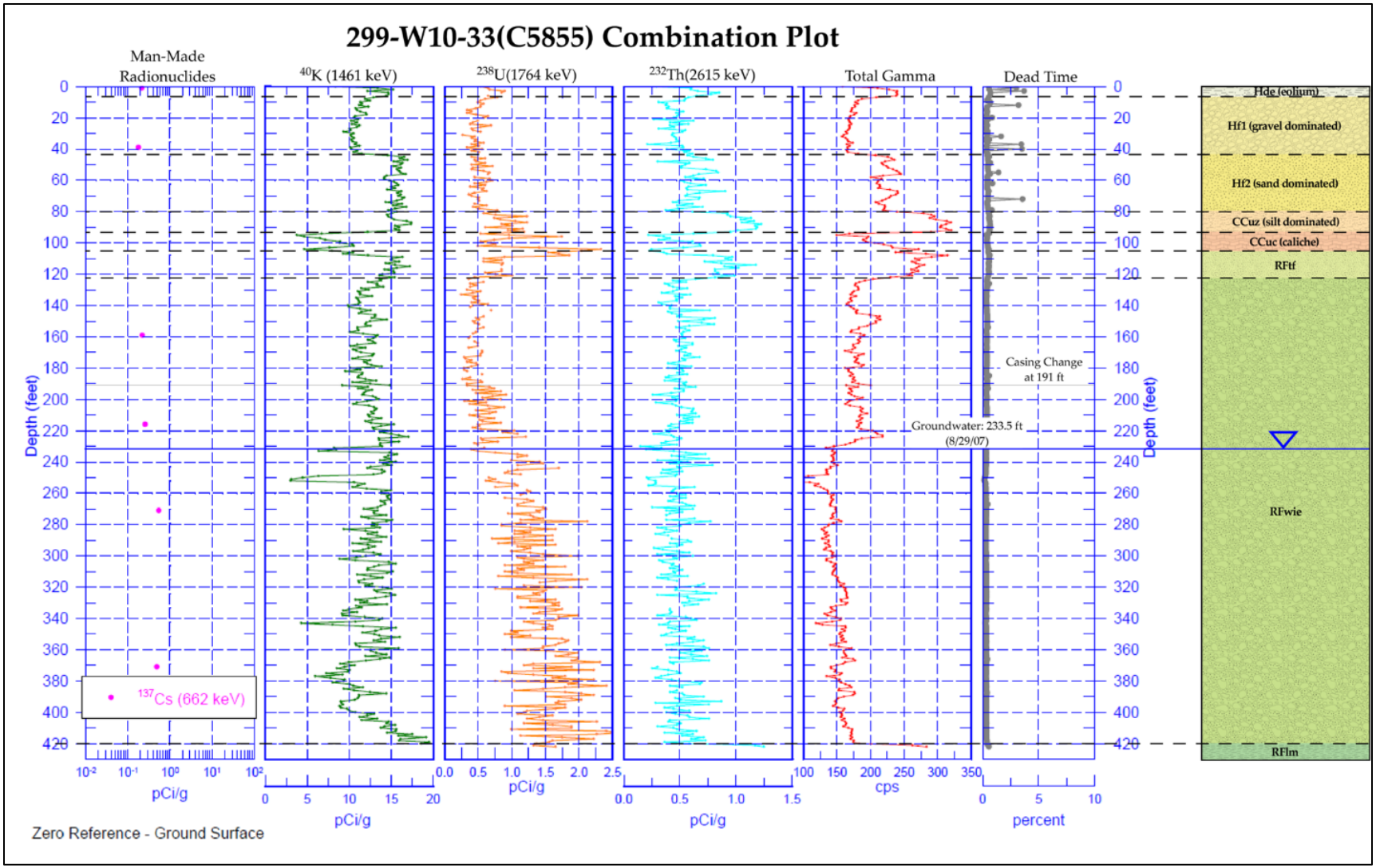

Figure 8. Example Lithologic Correlation Defined Using Geophysical Borehole Logs

3.5 Geoframework 3-Dimensional Solid Model Construction and Evaluation

Leapfrog Geo modeling software was used to provide a 3D environment for the display of geologic unit volumes representing the vadose zone stratigraphic units within the CA domain. This was achieved by importing the vadose zone geologic surfaces created in Kingdom into Leapfrog Geo and then calculating the respective geologic volumes defined by the constraints of the surface extents and truncations (e.g., pinch-outs) with underlying and/or adjacent surfaces and hard model boundaries (e.g., topography, top of CRBG and bounding maximum and minimum horizontal extents). The following steps outline the creation of the Leapfrog Geo CPVZ GFM:

- Surfaces directly exported from Kingdom are converted to a format (*.asc) usable by Leapfrog Geo using a Python® script which converts the Kingdom *.dat formatted surface files to *.asc format (Appendix F).
- The radial basis functions governing algorithm of Leapfrog Geo takes input data (borehole and surfaces data) and interpolates it to first create clipping surfaces that extend to the edges of the model domain. The intersections of these clipping surfaces can represent pinch-outs and other unit truncations.
- When surfaces used for inputs do not extend to the model domain boundaries, the software interpolates the clipping surfaces out to those boundaries often leading to surface unit extents that are not consistent with the input data. Because of the nature of fitting the Kingdom-generated geologic surfaces information into the required pre-set GFM boundaries, a significant amount of additional control in the form of artificial point data and polyline constraints must be applied to force the surface truncation to be consistent to the input surface file extent.
- To ensure that the Leapfrog Geo interpretation adequately honored the input data, quality checks and validations were performed that compared the interpolated Leapfrog unit surfaces with the input data.

Data-related assumptions associated with Leapfrog GFM development are directly inherited from the Kingdom model since the Leapfrog GFM directly employs the surfaces interpolated in Kingdom. Specifically, Leapfrog Geo constructs the 3D implicit surfaces by distance-weighting the sums of the radial basis functions. This in turn allows for smooth surfaces but is not without limitations. For example, inferred or unrealistic volumes can be created in some cases of isosurface extraction in which the volume for a particular geologic unit is separated into multiple parts (i.e., polyline or boundary enclosures). Scattered data sets with larger distances between groups of data points can also result in artifact effects that can include increases or decreases in surface elevations, due to the inability of the model variograms to disperse surface trends at long distances between data points.

® Python is a registered trademark of the Python Software Foundation.

3.6 Revise/Update GeoContact Database and Stratigraphic Vadose Zone Model

Refinements, changes, and corrections to the geologic unit contacts input data set are easily managed using the interactive Kingdom geologic interpretation software. As the geologic 2D interpretations are iteratively validated, and quality checked in Kingdom, the contacts associated with those products are recorded and managed in a Kingdom database under configuration control. The final set of geologic unit structure maps and cross sections are provided in Appendix E. The final GeoContacts data set used to construct the vadose zone geologic unit surfaces is listed in Appendix A. This supporting information is maintained under configuration control in EMMA and at CH2M HILL Plateau Remediation Company (CHPRC) via the RDS task.

4 Model Implementation

This chapter introduces the modeling software and its qualifications for use in building the CPVZ GFM. It also details the implementation of the software to assemble and interpret the data into 2D and 3D geologic interpretations of the vadose zone.

4.1 Software

Two modeling packages were instrumental in the geologic interpretation and assembly of the CPVZ GFM: Kingdom Geology Suite (IHS), and Leapfrog Geo 3D geoframework modeling software.

Kingdom Geology Suite is software designed for geologic interpretation of spatial and well data, including well logs. It was selected for use because of the ability to quickly and accurately link geophysical borehole log and geologic log data together to create visual displays for subsurface geologic interpretation and correlation. Kingdom also allows well-to-well cross-sectional correlations and structure map generation, which greatly improves consistency and continuity in the geologic unit interpretations.

Leapfrog Geo 3D (ARANZ Geo Limited) provides a tool that creates a visual 3D spatial geoframework of the geologic unit inputs. Inputs can be imported as map surfaces, or well location and GeoContacts data. The software can be used to identify anomalous, incorrect, or erroneous data and iteratively refine the interpretation. The finished model can be exported as a 3D visual volume of the geoframework, which greatly aids presentations of the data.

Leapfrog Geo and Kingdom Geology are qualified for use at Hanford as Safety Software (Level C) under PRC-PRO-IRM-309, *Controlled Software Management*, which implements DOE O 414.1d (*Quality Assurance)* requirements. Table 4 provides the software control documentation required as part of software configuration management.

Table 4. Software Control Documentation

Document	Leapfrog	Kingdom
Software Management Plan	CHPRC-01753 Rev. 1	CHPRC-02937 Rev. 0
Software Test Plan	CHPRC-01754 Rev. 1	CHPRC-02938 Rev. 0
Software Test Report	CHPRC-01755 Rev. 4 (Version 3.0.0)	CHPRC-02939 Rev. 0 (in development)

References:

CHPRC-01753, *Leapfrog-Hydro and Leapfrog-Geo Software Management Plan*

CHPRC-01754, *Leapfrog-Hydro and Leapfrog-Geo Software Test Plan*

CHPRC-01755, *Leapfrog-Hydro and Leapfrog-Geo Acceptance Test Report*

CHPRC-02937, *Kingdom-Geology Software Management Plan*

CHPRC-02938, *Kingdom-Geology Software Test Plan*

CHPRC-02939, *Kingdom-Geology Acceptance Test Report*

4.2 Kingdom Workflow and Model Methodology

This chapter defines the use of the Kingdom software (IHS Kingdom Geology Version 2016.1) to validate the GeoContacts data, and refine the geologic correlations in a 2D platform. Geologic structure maps are ultimately generated for output to other modeling software.

4.2.1 Define Data Inputs

Kingdom can handle a variety of different data types; the easiest way to import data is by formatting the data in a line-order tab or space delimited text file. All formation tops for all wells on the Hanford Site were imported from the GeoContacts dataset, the borehole header information (location, elevation, elevation reference, total depth, date drilled, well status etc.) was directly imported from the HEIS well attribute tables. Digitally available borehole geophysical logs are imported from HEIS GPL. The boreholes selected from the larger dataset as input to the model are listed in Appendix C of this report.

4.2.2 Evaluation and Validation of Borehole GeoContacts

After developing the CPVZ GFM geologic unit contacts using the methods described in Chapter 3, the contacts depth data were imported to the Kingdom software.

- CPVZ GeoContacts are imported by selecting Tops→Import→File. Then browse to file and select. Import CPVZ GeoContacts data in line-order and assign appropriate column names to the appropriate columns, then import.

Geology contact data can be imported as either measured depth or elevation. For this project, the CPVZ geology contacts are recorded as measured depth in feet below ground surface so the data are imported in x=meters, y=meters, and z=feet. This is consistent with the original drilling and borehole logs, which record depth in feet below ground surface rather than meters.

In Kingdom, the CPVZ geology contacts were viewed in context of geologic and geophysical log profiles, with borehole data automatically aligned with surface elevations.

4.2.2.1 Step 1 – One-Dimensional CPVZ Geologic Unit Contacts Validation

Step 1 is a visual quality check of the CPVZ geologic unit contacts orientation and alignment in the boreholes. The following questions guided the visual quality check:

1. Are the CPVZ geologic unit contacts located where they should be in the borehole profiles?
2. Are the CPVZ geologic unit contact depths supported by characteristic formation data provided in the borehole log descriptions, and
3. Are corresponding geophysical log inflections identified in the respective borehole profiles?

Boreholes with inconsistent or anomalous CPVZ geologic unit contacts data were assessed by reevaluating the supporting borehole data, contrasting with adjacent borehole data, and through an iterative process adjusted until the best-estimate values were defined. The process of evaluation, data review, CPVZ geologic unit contacts update, etc. was done as a team to achieve consensus that the best available interpretation is used.

4.2.2.2 Step 2 –Two-Dimensional CPVZ Geologic Unit Contact Validation and Interpretation

Step 2 is a visual quality control correlation check of defined CPVZ geologic unit contacts relative to prior existing GeoContacts interpretations and to adjacent or neighboring borehole interpretations. Kingdom allows importing the existing GeoContacts data set, which can be posted along with the updated CPVZ geologic unit contacts dataset for comparison, contrast, and to delineate interpretational discrepancies, or missing contacts. For older boreholes with limited quality descriptive data, the CPVZ geologic unit contact interpretation is strongly aligned with the geophysical borehole log character which allows more consistent well-to-well correlation where minimal descriptive geologic data is available. Two-dimensional (2D) cross sections can be generated to assist with the correlations and vadose zone geologic interpretation (e.g., Figure 9). The 2D cross sections support evaluation of the geologic unit lateral continuity and extent, i.e., pinch-outs, erosional truncations, depositional thinning, etc.

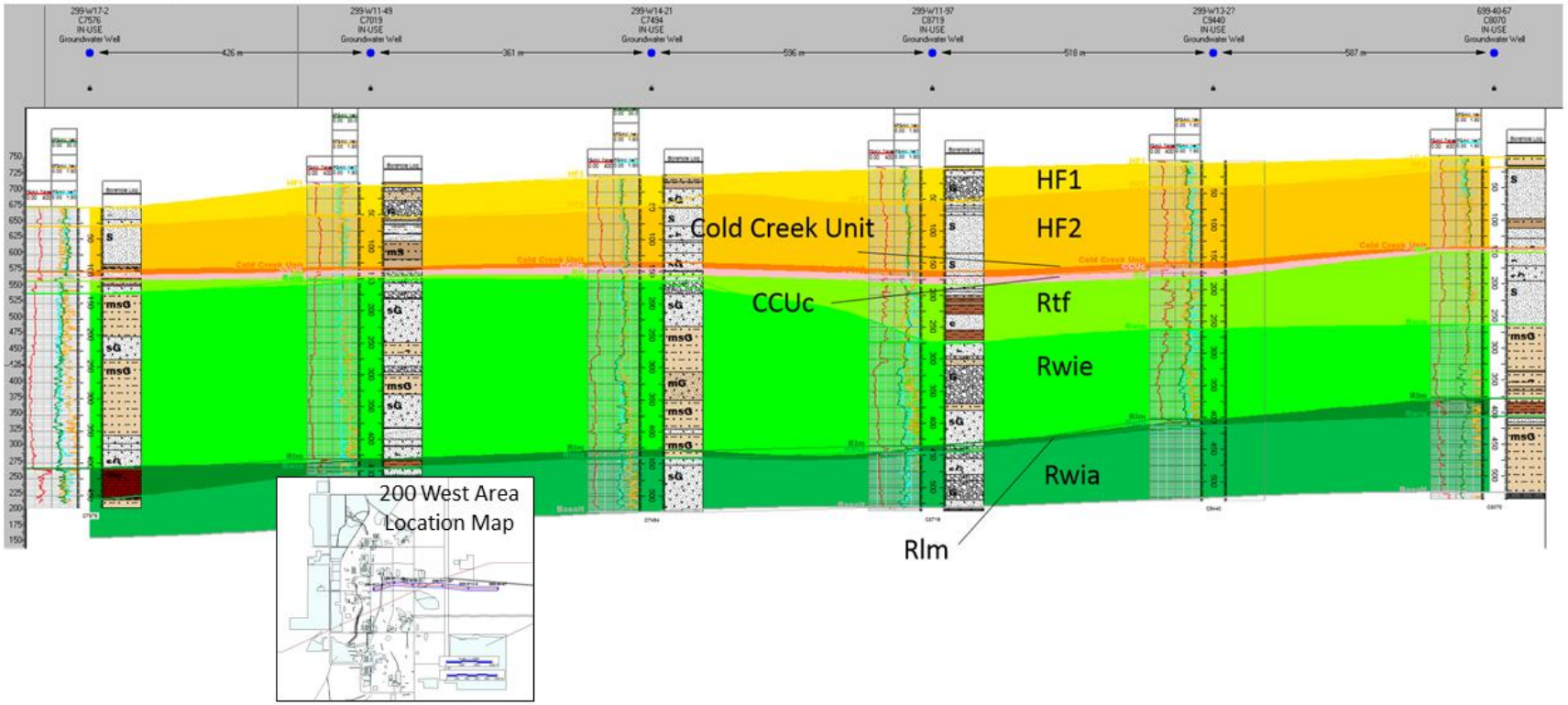

Figure 9. Example Kingdom Geologic Software Generated Two-Dimensional Cross Section

4.2.2.3 Step 3 – Creation of Geologic Surface Grids and Validation

Results from Steps 1 and 2 are used to verify and complete the selection of the initial set of borehole geologic contact depths. Following these steps, the final best-estimate CPVZ geologic unit contacts data for the selected boreholes are used to generate surface interpolations of the various geologic units. With GFMs the term "surface" is used for defining the variable plane that fits the CPVZ geologic unit contacts data, and forms the top of a stratigraphic unit.

When mapping geologic unit surfaces by hand, contour lines are drawn to assign elevation values to the spaces between the data points defined at the boreholes. When mapping geologic surfaces in a mapping or modeling software package, a gridding algorithm is utilized to interpolate the elevation of the surface between data points. In the Kingdom software there are a variety of different gridding algorithms to choose from, but for a GFM it is easiest and most powerful to use the Dynamic Map Update Modeling module:

- Dynamic Map Update is activated by going to View→Toolbars→Dynamic Depth Conversion and Map Update
- Select Edit Model from the Dynamic Map Update toolbar
- Under the Manage tab select "New" to start a new model

Within the module (Figure 10) the user can then set up a new model by defining the different layers (i.e., surfaces) to be modeled and which input data should be used to create those layers. When discussing the setup of a dynamically updated model, stratigraphic units are referred to as "layers." Once the model is run, the module produces gridded surfaces that represent those defined GFM (geologic formation) layers.

The gridded surfaces are quality checked for interpretational and data consistency. The quality checks include:

1. Reviewing the surface extents against known natural boundaries or borders, and adjusting accordingly with control data as detailed in step 5 below.
2. Checking the gridded surface for unusual structural anomalies that don't conform to the surface data trend, or interpretational expectations. In some cases, the original data set is re-evaluated to correct or refine data interpretation errors.

The final gridded surfaces are the product that is exported from Kingdom to be used as inputs elsewhere (e.g., Leapfrog Geo). More than one dataset can be used for each layer (for instance, you can add multiple authors' geology contacts data, and control points for each layer). The layers should be organized in sequential stratigraphic order.

The specific dynamic map update settings for the CPVZ GFM are detailed in Tables 5 and 6.

4.2.2.4 Step 4 – Defining the CPVZ GFM Domain

The CPVZ GFM domain essentially encompasses the Central Plateau and surrounding area (Figure 1). The user can use an existing polygon (or digitize a new polygon) to define the domain of the overall model and choose an appropriate xy cell size for the model. The CPVZ GFM domain was determined by the project team as the furthest extent of available quality vadose zone data that still encompasses the CA vadose modeling areas of interest. The xy coordinates in m are:

578597.03, 141668.31

578610.98, 132207.70

563562.63, 132193.75

563562.63, 141654.37

The grid cell size of 10 m (32.8 ft) was selected to align with the vadose zone fate and transport modeling efforts.

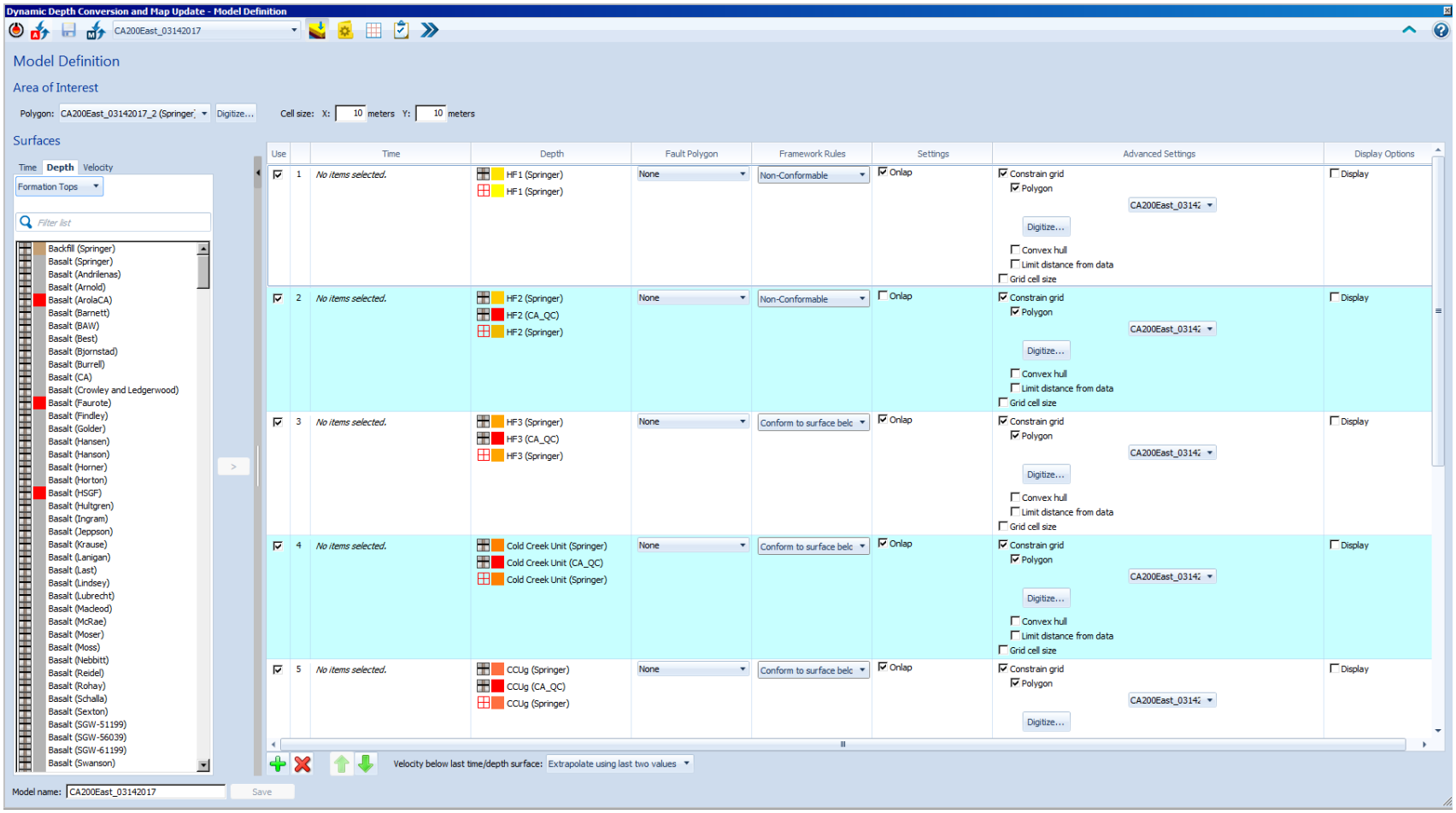

Figure 10. An Example Dynamic Depth Conversion and Map Update Window

Table 5. 200 East Composite Analysis Vadose Zone Geoframework Model

Area of Interest Polygon: CA200East_03142017_2 (Springer)					
Layer	**Input Depth Data (Author)**	**Fault Polygon**	**Framework Rules**	**Onlap**	**Constraints**
1	HF1 FM Tops (Springer) HF1 Cntrl Pts (Springer)	None	Conform to surface below	Yes	None
2	HF2 FM Tops (Springer HF2 Cntrl Pts (Springer) HF2 FM Tops (CA_QC)	None	Nonconformable	No	Polygon: CA200East_03142017_Layer2 (Springer)
3	HF3 FM Tops (Springer) HF3 Cntrl Pts (Springer)	None	Conform to surface below	Yes	Polygon: CA200East_03142017_Layer3 (Springer)
4	HF3 FM Tops (CA_QC) Cold Creek Unit FM Tops (Springer) Cold Creek Unit Cntrl Pts (Springer)	None	Conform to surface below	Yes	Polygon: CA200East_03142017_Layer4_1 (Springer)
5	Cold Creek Unit FM Tops (CA_QC) CCUg FM Tops (Springer) CCUg Cntrl Pts (Springer) CCUg FM Tops (CA_QC)	None	Conform to surface below	Yes	Polygon: CA200East_03142017_Layer5_1 (Springer)

Table 5. 200 East Composite Analysis Vadose Zone Geoframework Model

Area of Interest Polygon: CA200East_03142017_2 (Springer)					
Layer	**Input Depth Data (Author)**	**Fault Polygon**	**Framework Rules**	**Onlap**	**Constraints**
6	Rtf FM Tops (Springer) Rtf Cntrl Pts (Springer) Rtf FM Tops (CA_QC)	None	Conform to surface below	Yes	Polygon: CA200East_03142017_Layer6 (Springer)
7	Rwie FM Tops (Springer) Rwie Cntrl Pts (Springer) Rwie FM Tops (CA_QC)	None	Conform to surface below	Yes	Polygon: 200East_test_Layer7_1 (Springer)
8	Rlm FM Tops (Springer) Rlm Cntrl Pts (Springer) Rlm FM Tops (CA_QC)	None	Nonconformable	Yes	Polygon: 200East_test_Layer8 (Springer)

Table 5. 200 East Composite Analysis Vadose Zone Geoframework Model

Area of Interest Polygon: CA200East_03142017_2 (Springer)					
Layer	**Input Depth Data (Author)**	**Fault Polygon**	**Framework Rules**	**Onlap**	**Constraints**
9	Rwia FM Tops (Springer) Rwia Cntrl Pts (Springer Rwia FM Tops (CA_QC)	None	Conform to surface below	Yes	None
10	Basalt FM Tops (Springer) Basalt Cntrl Pts (Springer)	None	Nonconformable	No	None

Cntrl Pts = control points
FM = formation
HF 1 = Hanford formation unit 1
HF 2 = Hanford formation unit 2
HF 3 = Hanford formation unit 3
RLM = Ringold Formation member of Wooded Island – lower mud unit
Rtf = Ringold Formation member of Taylor Flat
Rwia = Ringold Formation member of Wooded Island – unit A
Rwie = Ringold Formation member of Wooded Island – unit E

Table 6. 200 West Composite Analysis Vadose Zone Geoframework Model

Area of Interest Polygon: CA01192017_onlap_tests_2 (Springer)					
Layer	**Input Depth Data (Author)**	**Fault Polygon**	**Framework Rules**	**Onlap**	**Constraints**
1	HF1 FM Tops (Springer) HF1 Cntrl Pts (Springer)	None	Uncomformity	No	None
2	HF2 FM Tops (Springer HF2 FM Tops (CA_QC) HF2 Cntrl Pts (Springer)	None	Uncomformity	Yes	None
3	HF3 FM Tops (Springer) HF3 FM Tops (CA_QC) HF3 Cntrl Pts (Springer)	None	Conform to surface below	Yes	Convex hull 50 m
4	Cold Creek Unit FM Tops (Springer) Cold Creek Unit FM Tops (CA_QC) Cold Creek Unit Cntrl Pts (Springer)	None	Conform to surface below	Yes	None
5	CCUc FM Tops (Springer) CCUc FM Tops (CA_QC) CCUc Cntrl Pts (Springer)	None	Conform to surface below	Yes	None
6	Rtf FM Tops (Springer) Rtf FM Tops (CA_QC) Rtf Cntrl Pts (Springer)	None	Conform to surface below	Yes	None

Table 6. 200 West Composite Analysis Vadose Zone Geoframework Model

Area of Interest Polygon: CA01192017_onlap_tests_2 (Springer)					
Layer	**Input Depth Data (Author)**	**Fault Polygon**	**Framework Rules**	**Onlap**	**Constraints**
7	Rwie FM Tops (Springer) Rwie FM Tops (CA_QC) Rwie Cntrl Pts (Springer)	None	Conform to surface below	Yes	None
8	Rlm FM Tops (Springer) Rlm Cntrl Pts (Springer)	None	Conform to surface below	Yes	None
9	Rwia FM Tops (Springer) Rwia Cntrl Pts (Springer	None	Conform to surface below	Yes	None
10	Basalt FM Tops (Springer) Basalt Cntrl Pts (Springer)	None	Nonconformable	No	None

Cntrl Pts = control points

FM = formation

HF 1 = Hanford formation unit 1

HF 2 = Hanford formation unit 2

HF 3 = Hanford formation unit 3

RLM = Ringold Formation member of Wooded Island – lower mud unit

Rtf = Ringold Formation member of Taylor Flat

Rwia = Ringold Formation member of Wooded Island – unit A

Rwie = Ringold Formation member of Wooded Island – unit E

4.2.2.5 Step 5 – Defining Geologic Interval Boundaries

Step 5 entails using the modeling software to both interpolate and refine the individual geologic unit surface extents. Framework rules are a way to define how the model layers interact with adjacent or nearby layers. The settings defined determine how Kingdom calculates and generates grids for each layer of the model. This includes rules for how surfaces either conform to or truncate one another, thus creating the lateral extent or boundary of a geologic unit. The geology of the Hanford Site Central Plateau is dominated by large-scale erosional and depositional events. Therefore, it is important to use these framework rules to adjust nonconformable boundaries between the depositional layers as defined by the available interpreted geology of the region.

The framework rules are not fixed and are generally used as guidelines in areas of the model where point data (borehole formation tops) are scarce or not available. In the settings, the user can select either "onlap" or "non-onlap." This determines how a surface is truncated by other surface unconformities. In an onlap situation a formation top dips downward onto the older unit below and the younger unit narrowing to a zero thickness is a depositional feature, rather than erosional (Figure 11). With an erosional feature we would expect to see an abrupt truncation where the thickness of the unit never narrows to zero, a phenomenon called a pinchout. In the CPVZ GFM, changing relief in the basalt surface often controls the deposition of the suprabasalt units that lie above and as a result some of the layers in our model have the onlap setting checked. In some parts of the model, often in areas with sparse well control, it is necessary to force pinchouts manually by giving formation tops the same depth. An example of this can be seen in Figure 12 where wells to the East have H2, H3 and CCUg present. As the section moves to the west the H3 unit disappears so in wells 299-E25-13 and 299-E24-5 the H3 and H2 formation tops are located at the same depth. Often the two methods, onlap and manually forcing pinchouts, produce similar results but one may be easier to employ locally or may better resemble the interpreted depositional environment.

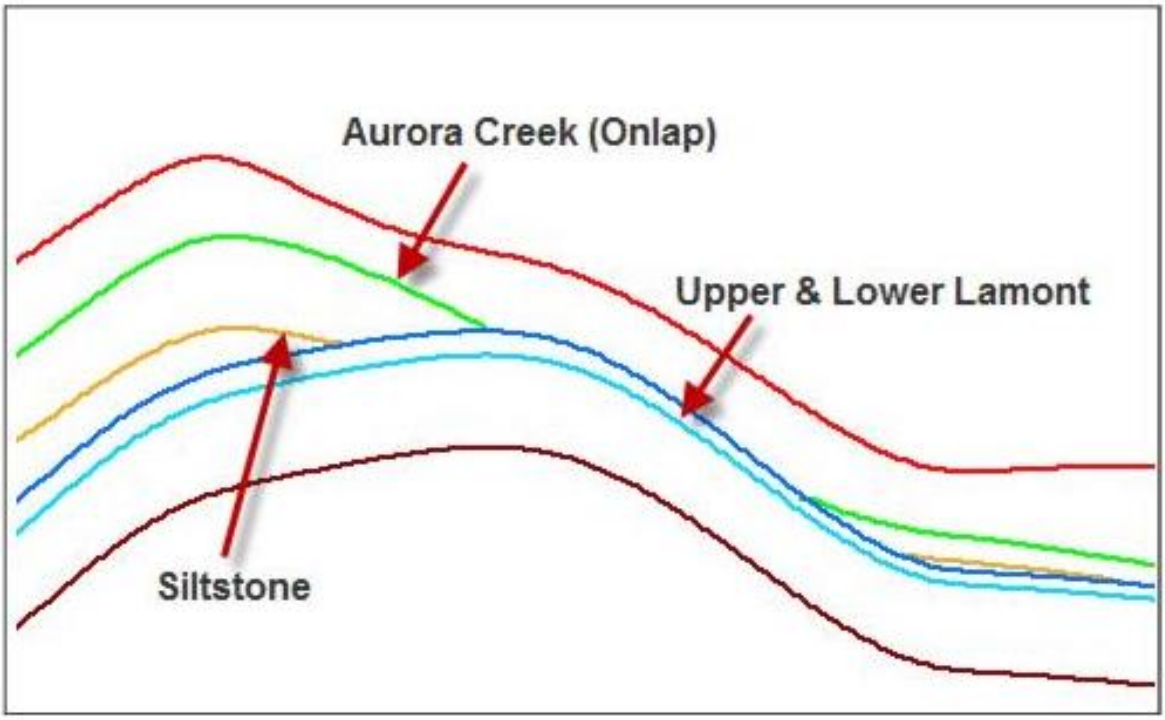

Figure 11. An Example of How the Dynamic Map Update Module Applies the Onlap Rule (from the Kingdom Help Manual)

In the advanced settings geographical constraints can be applied to the model layers. In some cases, a convex hull function can be defined, where the outer most data points form a hull and the surfaces are not interpolated past that boundary. In other cases, the user may opt to draw polygons to form the limits of a geologic layer (e.g., layer truncation at a fault).

The definition of flex gridding as explained in the IHS Kingdom Help Manual (IHS Kingdom 2016.1):

> *Flex gridding uses a system of differential equations whose solution yields the values of grid nodes that meet the following two criteria:*
>
> *1) The interpolated surface must pass through or at least very close to the data in the XYZ space and*
>
> *2) As much as possible without violating criterion 1, the surface must first a mathematical criterion selected by the user:*
>
> *Minimum Tension or rubber sheet—the surface must be tightly stretched over the data. Visualize a rubber sheet with a grommet at each grid node, stretched over a set of posts through each grommet. When a node has data, the grommet is nailed to the post at the level of the datum. The other grommets slide up or down their posts under the tension of the stretched rubber; the rubber sheet will relax to the position where its overall tension is minimized. The function that gives the solution for one grid node is:*
>
> *a. Called the LaPlacian operator, named for the LaPlacian equation that it solves.*
>
> *b. Minimum Curvature or as smooth as possible—the RMS curvature of the surface shall be as small as possible. Visualize, instead of the rubber sheet, a thin sheet of spring steel that will relax to the smoothest surface it can when grommets with data are nailed to their posts; the surface will relax to the position where the overall curvature is minimized. The function that gives the solution for one grid node is called the "biharmonic operator," named for the "biharmonic equation" that it solves.*
>
> *c. A blend of a. and b.—the operator used is a weighted blend of the biharmonic and LaPlacian operators.*
>
> *Because a simultaneous solution of all the equations is computationally intractable, an iterative solution is used. Each of the equations applies to one grid node and has terms that include just a dozen of its neighbors. Thus they are all coupled together, but the coupling to distant nodes is weak and indirect. For this reason, each equation is solved to yield a grid value, assuming the neighboring nodes are constant. As the other nodes change, this process is repeated. With an infinite number of iterations, the grid will converge to the desired solution, but in practice we get a good result with far fewer iterations.*
>
> *Because the filters apply a local operator to each grid node, a very many iterations are needed to massage the influence of a datum across many grid columns or rows. Indeed, the number of iterations needed to spread the influence across N rows or columns seems to be roughly proportional to exp)N).*
>
> *Because of this, we start with a very small initial grid. Each datum is applied to the nearest grid node, and the filter is applied to make a smooth surface between the data. Because the grid is very small, the data are smeared across only a few columns and rows, and the filter has only to hit a small number of nodes. Then the tiny grid is copied and interpolated into a finer grid, and the*

flexing is repeated. This process of multi-grid refinement and flexing is repeated until the final grid is acceptable. The flexing of the tiny coarse grids massages in the overall trends, and the flexing of the finer grids works in the local details, so the finer grids do not need a large number of passes of the flexing filter.

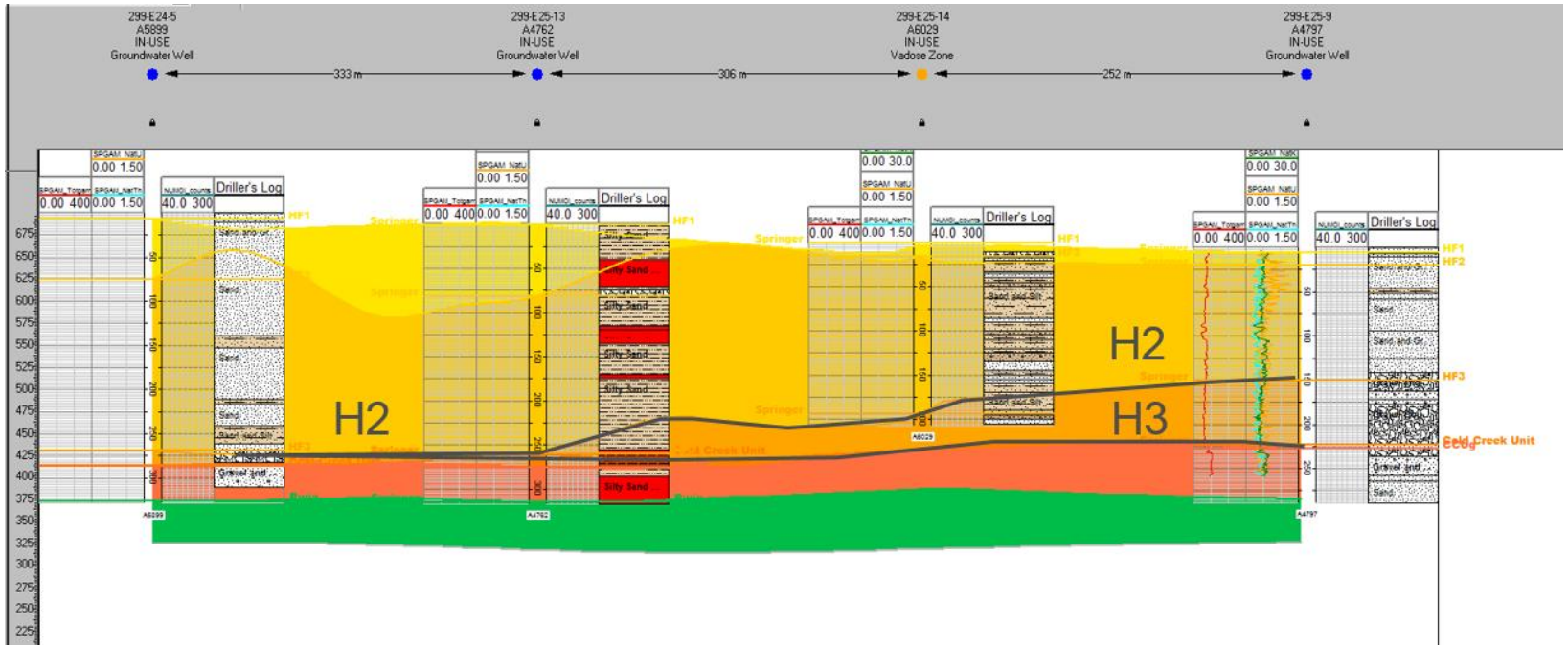

Figure 12. An Example Cross Section in 200 East That Shows How a Stratigraphic Pinch-Out Can be Forced by Adding Formation Tops at the Same Depth as the Stratigraphic Unit Below

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For this GFM it was determined that the midway point between minimum tension and minimum curvature was the best method to honor the data points, without causing slope discontinuities at each data point.

The next level of quality control come as the formation tops are assessed in the context of the gridded surfaces. The following information was evaluated:

1. Are the surfaces continuous where they should be continuous?
2. Are the surfaces absent where they should be absent?
3. If a borehole is too shallow to encounter deeper stratigraphic units, do the deep stratigraphic units interpolate through consistently?
4. Are there areas of the model where two or more boreholes close together cause the surfaces to have an abnormal shape?

If needed, control points and less reliable contacts data are excluded (e.g., using the most reliable data from two wells that are in very close proximity). In many instances several wells in close proximity to each other were drilled at different times, and their data quality and completeness vary considerably. For example, if there is a cluster of three boreholes within a close distance (10 to 20 m [32.8 to 65.6 ft] apart), but one of those locations has a complete set of geophysical and borehole logs, and was drilled in the last decade, and the other two are older with less complete data, a decision was made to only select the newer, more defensibly sound borehole geologic unit tops as an input to the GFM.

Once the GFM is completed, the GFM is locked for editing and the dynamic update function is turned off. One of the automatic protocols in the Dynamic Map Update module is to produce a gridded surface for each model layer (Figure 13). Each of those surfaces is then available in the grid menu of the Kingdom project tree. Each surface is subsequently exported as an XYZ *.dat file for input to other tools.

Tables 5 and 6 list the settings employed within the dynamic map update to create the CPVZ GFM.

4.2.3 Kingdom Data File Conversion for Use Within Leapfrog Geo

The *.dat surfaces exported from Kingdom are in text format and were converted to a format usable by Leapfrog Geo (i.e., *.asc) using a python script (rasta.py, Appendix F). After converting the *.dat files to *.asc for importation into Leapfrog Geo, the conversion with rasta.py was checked by comparing the unit tops data values at their respective locations within both the *.dat and *.asc files. In addition to the borehole data, surface elevations were checked at random points between borehole data locations for further evaluation of the quality of the conversion. Tolerances were set at a difference of one meter as this distance was considered a conservative estimator of the quality of the conversion. The results of these visual tolerance checks suggest the following.

a. The converted *.dat surfaces matched exactly with their corresponding *.asc conversions. This was done by point sampling each grid point location in each file and then comparing the elevations at each corresponding sampled grid point.
b. Most borehole data fell within the 1 m (3.3 ft) tolerance limit with a few exceptions. These exceptions are readily explainable and do not reflect model defects that result in inaccurate representations of the modeled geologic unit surfaces.

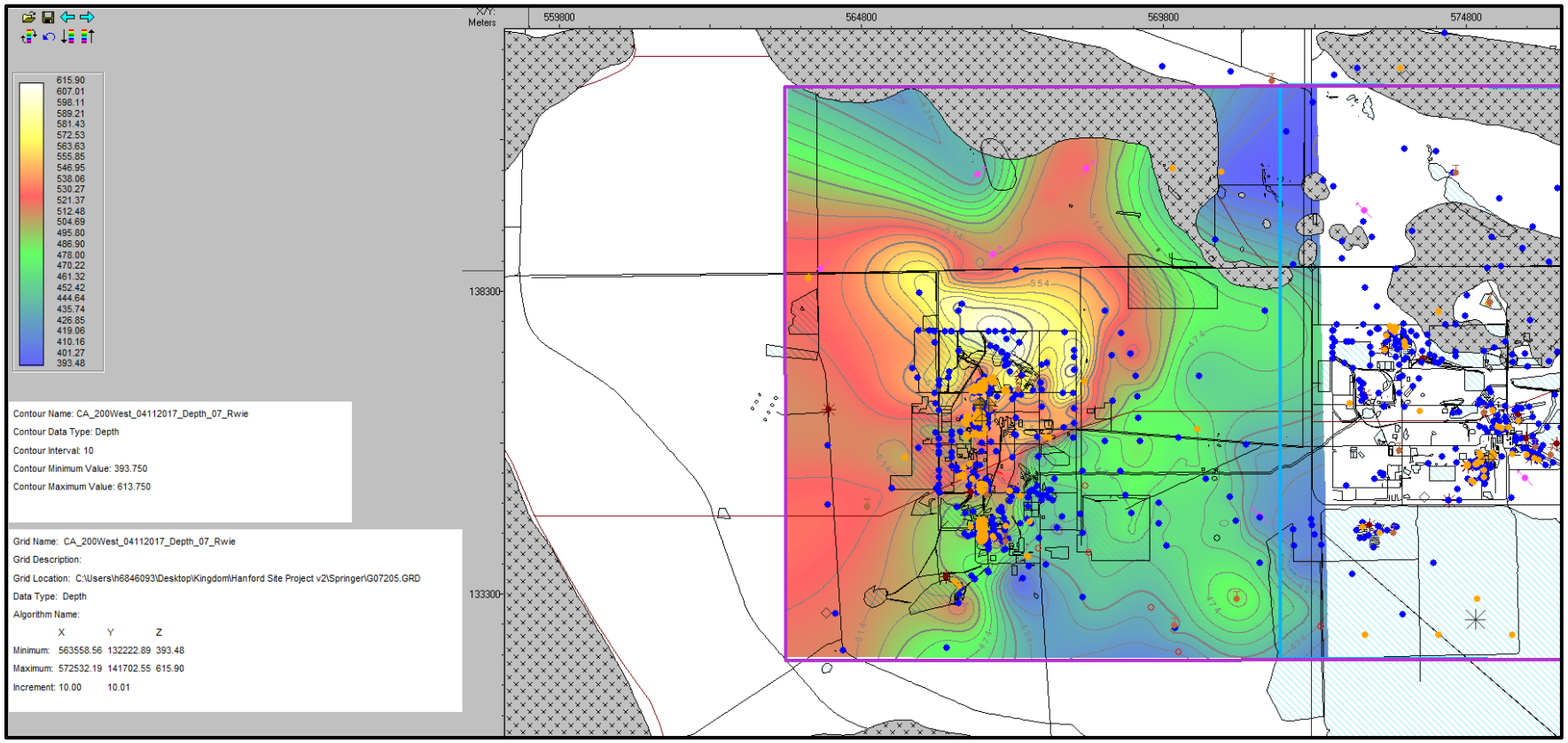

Figure 13. Example Kingdom Geologic Software Surface of the Ringold Formation Unit E, 200 West Area

4.2.4 Kingdom Data Management

The geologic unit surfaces created in Kingdom that form the geoframework are called grids and are exported as xyz point data in either feet or meters. The grids are output as *.dat files. Images of the complete set of surfaces for 200 West and 200 East Area are displayed in Appendix E and are the grid files are archived and maintained in EMMA. Geologic unit contacts used to construct the CPVZ GFM surfaces are presented in Appendix A. These formation tops will also be added to the GeoContacts dataset and eventually imported into the HEIS GEO, the database slated to replace GeoContacts. For each set of final Kingdom-generated surfaces and supporting data, the information is maintained and managed in EMMA (Figure 14)

4.3 Leapfrog Workflow and Model Methodology

This chapter defines use of the Leapfrog Geo software to construct the 3D solid model (CPVZ GFM) from geologic structural surfaces exported from Kingdom. The completed CPVZ GFM scene is used to support the visual interrogation and quality checks of the solid model and the data input used to construct it. This GFM scene is also a very useful visual aid for displaying the geologic boundary relationships and detail.

The Leapfrog workflow for creating the CPVZ GFM follows a generalized, but consistent, structure. In summary, geologic surfaces interpreted in Kingdom and the Hanford South GFM (ECF-Hanford-13-0029, Rev. 4; see Section 4.3.4 of this document) were used to define geologic unit contacts as subsurface surfaces. The space between the imported surfaces is interpolated within the Leapfrog Geo framework to define geologic unit surfaces that form the upper (i.e., top of the geologic unit surface) and lower bounding model surfaces of the geologic unit intervals that, combined together, represent the solid model. The basic methodology for development and construction of the 3D GFM is as follows:

1. Define the model boundaries and gather the site specific descriptions, information, and geologic data for constructing the geologic unit layers of the model.
2. Run the model to generate the surface interpolations needed to assemble the geologic unit surface/layer components of the solid model. Subtract from the top down, or add from the bottom up, the interpolated surfaces to generate the volume and spatial orientation of each geologic unit. Apply additional control points or edit with polylines as necessary to constrain known hydrogeologic features (e.g., pinch-outs, faults, etc.) within the model domain.
3. Save the new model as a unique 3D geologic model “scene” for visual exploration and graphic presentations. Retain copies and records of all supporting data used in the model in user-accessible folders maintained in internal CHPRC RDS links and EMMA.

4.3.1 Defining Model Construction Boundaries – Topography, Basalt Surfaces, and Importing Borehole and Geologic Surface Data

This section provides a discussion of the steps involved in constructing the 3D GFM boundaries using Leapfrog Geo.

4.3.1.1 Topography

The top and bottom bounding layers of the model are imported from other sources as complete surfaces. The first step in creating the model top layer is to define the topography, or the ground surface, of the model. Detailed elevation data of the Hanford Site and bathymetry of the adjoining Columbia River are used to complete construction of the surface layer for this model. This requires combining land surface

topography (Aero-Metric LiDAR, 2008, *RCCC-Hanford Battelle/PNNL/DOE, Digital Orthophotography & LiDAR Surveys Photogrammetric Report*) with the Columbia River bathymetry (PNNL-19878, *Development of a High-Resolution Bathymetry Dataset for the Columbia River through the Hanford Reach*). This surface was created using a continuous (grid) interpolated from 0.5 m (1.6 ft) resolution LiDAR for land surface, integrated with continuous (grid) 0.2 m (7.8 inch) bathymetry data to represent the bottom of the Columbia River. The two grids (LiDAR & bathymetry) were combined to create one continuous surface using a mosaic spatial analysis function in ArcMap® 10.1. (ArcGIS, 2011 Desktop, Release 10.1, Redlands, California. Environmental Systems Research Institute).

4.3.1.2 Top of Basalt

The base of the 3D GFM is created with the undifferentiated top of the CRBG ("basalt") surface. The top of basalt surface used in this model has been updated and revised over time and incorporates new well data, interpreted seismic data, surface resistivity, time domain electromagnetic surveys, and check shot data. In some places, the basalt surface of the Central Plateau extends above the unconfined aquifer and has direct impact on groundwater and contaminant flow and transport. The integration of the various top of basalt data sets has improved resolution and mapping of the surface in these key areas. Early development of the basalt surface is summarized in SGW-52573-VA, *Gable Gap and LERF Geophysics Investigation Update*. The basalt surface was interpolated into a 15-m grid from contours based on published interpretations of the top of basalt surface (e.g., SGW-52573-VA; PNNL-14753, Groundwater Data Package for Hanford Assessments; and SGW-48478, *Interpretation and Integration of Seismic Data in the Gable Gap*) using the contours spatial analysis function in ArcMap 10.1. Further refinements were made to the basalt surface using the Topo-to-Raster function in ArcMap 10.1 which can use point data, contour data, boundary data and drain enforcement to create a geologically robust surface with/or without sinks or drains. A recently reconfigured top of basalt surface (ECF-Hanford-16-0128, *Development of Contiguous Top of Basalt Surface for Use in Development of Site Geoframeworks*) is utilized in this CPVZ GFM.

4.3.1.3 Borehole Information

Borehole data used in construction of the Kingdom software 2D surfaces was also imported into Leapfrog Geo, for the purposes of providing context and visual confirmation of the borehole control supporting the volumes created using Leapfrog Geo. Note that no borehole data interpolation was performed in creating the volumes in Leapfrog Geo, only the surfaces were used. Location coordinates and corresponding geologic unit contact elevation data are contained in the files that were imported. The imported geologic information used in Leapfrog Geo to create the 3D GFM data generates the exact stratigraphic nomenclature and geologic unit contact elevations from the Kingdom-generated surfaces.

4.3.1.4 Validating Borehole Contacts and Defining Vadose Zone Geologic Unit Extents

Borehole contacts information interpreted from geologic, drillers' and geophysical logs, were validated as part of the quality checks discussed in Section 4.2.2. Vadose Zone geologic unit extents were also determined and quality checked as discussed in Section 4.2.2.

4.3.2 Integrating Vadose Zone Interpretations with Published Saturated Zone GFM

Key elements from the published Hanford South GFM (ECF-Hanford-13-0029, Rev. 4) were imported into the CPVZ GFM input file in Leapfrog, for use in completing the model by adding the saturated zone geologic units that underlie the vadose zone geologic units. The vadose zone within the CPVZ GFM is a totally new interpretation, whereas the underlying saturated zone is just a replicate from the current published GFM model (i.e., Hanford South GFM). The imported surfaces, which were interpolated in the

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Hanford South GFM, include the topography (top layer of the GFM), top of CRBG (bottom surface of the GFM), top of Ringold Formation unit A, and base of Ringold Formation unit E. These surfaces were imported into the CPVZ GFM and used to define their represented geologic contacts.

The integration of the new CPVZ GFM with the Hanford South GFM will allow a single Central Plateau 3D GFM to be utilized for both vadose zone and groundwater fate and transport numerical modeling.

4.3.2.1 Refine Geologic Unit Continuity

Defining the continuity of geologic units within the CPVZ GFM was achieved by:

1. Import Kingdom geologic surfaces for both the 200 West and 200 East Areas into Leapfrog as elevation grids.
2. Add each geologic surface, 200 East and 200 West, to the stratigraphy and chronologically designate the older to younger units.
    a. Since Leapfrog cannot use surfaces that do not extend beyond the model boundary, the vertices of each surface were extracted.
3. Most of the geologic surfaces are composed of a 200 East and 200 West surface that either connect across the model domain or are physically separated. Data points near the middle overlapping area of the model for geologic surfaces that are physically separate across the model domain (where there is little to no well control data), were ignored to allow the Leapfrog interpolation engine to combine the 200 East and 200 West surfaces into a single surface. A comparison between the original surface halves and the re-interpolated domain-wide merged surface was completed to check that the pre-post merge data are honored.

4.3.2.2 Spatial Resolution

The CPVZ GFM is constructed at a resolution of 200 m (656.2 ft). Finer resolution would be optimal if application of the GFM within numerical fate and transport models is desired on smaller areas within the domain. Resolutions less than 200 m (656.2 ft) proved impractical for this domain size, because of extended Leapfrog run times required for interpolation of volumes at finer resolutions.

4.3.2.3 Constructing Surfaces

The geologic unit surfaces, control points, and polylines imported from Kingdom, required additional control in order to constrain the surface extents to their intended results. To conform the surfaces to pinch-out, or truncate correctly and in the correct orientation, additional control was added in Leapfrog Geo as outlined in the following steps:

1. Polylines and curved polylines were used to mold the geologic surfaces to better represent the data. This included forcing surfaces up or down to pinch-out units, or better control the contact surfaces outside of the extents of the original Kingdom import data set.
2. Pinch-outs are created by using curved polylines to bring one surface up or down to intersect with another contact surface. The curved polyline is placed near the location where the pinch-out or truncation needs to occur.
3. Polylines and curved polylines are created by drawing a line across the model to create a vertical slice/cross section. A line is then traced along the slice varying in any direction along the slice/cross section.

4. Control points were used to shape geologic surfaces over a large area. Control points are created by generating a grid of points set at a specific elevation. An arbitrary grid spacing was selected and the elevation was chosen to either raise or lower a surface. Using control points can be more efficient that using multiple polylines to shape a surface.

4.3.3 Geologic Interpretation - Quality Check and Verification

Once assembled, the CPVZ GFM is checked to verify that the geologic units are represented correctly. Since the geologic surface inputs for this model were interpolated in Kingdom, this verification only deals with the final surfaces and volumes generated in Leapfrog. The steps include:

- Visual interrogation of each individual geologic unit volume, checking that the mapped extent, cross-sectional orientation, shape, and overall volume is consistent with the geologic conceptual interpretation.
  - Visual interrogation to confirm that the geologic surfaces honor the borehole profiles contact depths.

  Evaluation of Leapfrog Geo surface residuals.
  - Residuals are calculated by the difference in elevation between the borehole contact and that of the final Leapfrog Geo surface at that borehole location.
  - The residuals are plotted as Residual vs. Contact Elevation to visualize any possible anomalous data.
  - Anomalies were detected in area of high borehole density or related to outdated data were dismissed.

Anomalous data was evaluated, and modifications to the control data set were applied as applicable. Anomalies are defined as significant differences between Kingdom and Leapfrog surfaces, or differences between borehole contact elevations and the surface elevation.

4.3.4 Addition of Feature Data

Additional feature data is added to the geological models as reference points, and attributes of interest. Particularly important are the sources and information for the wells and boreholes. The following feature data is also added to the CPVZ GFM to improve spatial orientation and for view enhancement:

1. Groundwater Area Interest Area boundaries (DOE/RL-2015-07, Hanford Site Groundwater Monitoring Report for 2014)
2. Waste sites boundaries (HGIS, 2016)
3. Well names, and color-indicators, by category, of the well information provided at that location. Information may include well screen information, geologic information, or well status, i.e., well decommissioned (HGIS, 2016)
4. Published interpretations of the water table
5. A surface representing the region of subsurface borehole data interpretation extent
6. Well screen information

Additional feature data can be added to any GFM at the request of project staff. The feature data sets are captured and archived with the completed GFM data package.

4.3.5 Export Products and Files

The primary Leapfrog Geo export is a 3D model "scene" representing the CPVZ GFM. The completed scene is unique, composed of the top and bottom boundaries of the model as defined in the workflow above, and the data inputs (pre-defined). Each model scene (or version), including the supporting data and information used in the construction of the model, are archived in EMMA and within CHPRC (managed by the RDS task), as a complete model data package to support future re-creation of the model.

4.4 Calibration

Adjustments and updates to the CPVZ GFM will be completed during future model revisions. Model revisions are planned annually as new well data become available. No model calibrations are planned.

4.5 Model Sensitivity and Uncertainty Analysis

This is a static GFM that represents the geologic architecture within the subsurface of the CA domain. No sensitivity analysis is performed on this model. Uncertainties are discussed below.

4.6 Sensitivity Analysis

No sensitivity analyses were performed.

4.7 Uncertainty

Uncertainties in the CPVZ GFM occur from the lack of information concerning the geologic features and detail, or a lack of understanding of the geologic depositional process and extent. It is important to understand these uncertainties and their potential impact on model results. Additional uncertainty arises from simplifications required in developing the GFM.

Uncertainty is continually reduced as more and improved geologic information becomes available, through the acquisition of new borehole data and refinements in the overall interpretation.

Improvements in geologic knowledge, and therefore model detail, continue to be made as new well data and geologic information is obtained. Additionally, access to improved analytical tools (geophysics) and interpretational software allow for a spatially more informed, defensible, and robust process of data evaluation and correlation to be completed. These improvements are aimed at reducing model uncertainty within the CPVZ GFM.

5 Model Limitations

Model related limitations and assumptions associated with the Leapfrog CPVZ GFM development are directly inherited from the Kingdom model, since the Leapfrog GFM directly employs the geologic surfaces interpolated in Kingdom. Specifically, Leapfrog Geo constructs the 3D implicit surfaces by distance-weighting the sums of the radial basis functions. This in turn allows for smooth surfaces but is not without limitations. For example, inferred or unrealistic volumes can be created in some cases of isosurface extraction in which the volume for a particular geologic unit is separated into multiple parts (i.e. polyline or boundary enclosures). Scattered data sets with larger distances between groups of data points can also result in artificial effects that can include increases or decreases in surface elevations, due to the inability of the model variograms to handle surface trends at long distances between data points.

6 Model Configuration Management

6.1 Kingdom Geological Configuration Management

The geologic surfaces created in Kingdom that form the CPVZ GFM are called grids within Kingdom, and are exported as xyz point data in either feet or meters. The grids are output as *.dat files. The complete set of surfaces for 200 West and 200 East are archived and maintained in EMMA. Formation tops from the CPVZ GFM will be added to the GeoContacts dataset and eventually imported into the HEIS GEO, the database slated to replace the Hanford GeoContacts dataset. All information supporting the completion of the surfaces and cross sections are maintained in EMMA (Contact Will Nichols), and also within CHPRC RDS task (contact Bruce A. Williams or Sarah D. Springer).

6.2 Leapfrog Geo Configuration Management

The CPVZ GFM created in Leapfrog Geo are also archived in EMMA by GFM name, date, and version. End-user, read-only, CPVZ GFM scenes are also maintained in accessible share folders by CHPRC RDS Task.

The final GFM scenes are also integrated with the published electronic version of the Hanford Site annual groundwater report. This report provides an interactive geologic cross section query tool for visually interrogating the subsurface geology of the Hanford Site, allowing production of user identified "on-the-fly" cross sections. The annual reports are accessed via the web link (i.e., www.hanford.gov/page.cfm/SoilGroundwaterAnnualReports).

6.3 Versioning

Version numbering for the CPVZ GFM will be tracked by simple indexing, with version 1 corresponding to the first release of the GFM, and each subsequent version incrementally numbered. At this time, sub-versioning is not planned. Figure 14 lists the data output files that form the basis for the CPVZ GFM. These data were generated in the Kingdom software. This information (version 1) is archived in EMMA and can be defined by the file names in Figure 14.

The Leapfrog Geo data output files that form the 3D CPVZ GFM are also archived in EMMA and are defined by the file names in Figure 14.

6.4 Version History

Figure 14 documents the first version data outputs for construction of the initial CPVZ GFM.

Formation Tops

File Name	Description
CPVZ_GFM_V1_07242017_200East_Geocontacts_Elevatic	Formation tops in feet elevation for 200 East
CPVZ_GFM_V1_07242017_200East_Geocontacts_MD	Formation tops in feet below ground surface for 200 East
CPVZ_GFM_V1_07242017_200West_Geocontacts_Elevati	Formation tops in feet elevation for 200 West
CPVZ_GFM_V1_07242017_200West_Geocontact_MD	Formation tops in feet below ground surface for 200 West

Control Points

File Name	Description
CPVZ_GFM_V1_07242017_Control_Points	X, Y, Z coordinates for control points used in the CPVZ GFM

Polygons

File Name	Description
200East_CPVZ_GFM_V1_07242017_CCUg_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the CCUg surface in 200East
200East_CPVZ_GFM_V1_07242017_Cold_Creek_Unit_poly	X and Y coordinates for the vertices of the polygon used to control the extent of the Cold Creek Unit surface in 200East
200East_CPVZ_GFM_V1_07242017_HF2_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the HF2 surface in 200East
200East_CPVZ_GFM_V1_07242017_HF3_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the HF3 surface in 200East
200East_CPVZ_GFM_V1_07242017_Rlm_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the Rlm surface in 200East
200East_CPVZ_GFM_V1_07242017_Rtf_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the Rtf surface in 200East
200East_CPVZ_GFM_V1_07242017_Rwie_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the Rwie surface in 200East
200East_CPVZ_GFM_V1_07242017_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the 200East portion of the CPVZ GFM
200West_CPVZ_GFM_V1_07242017_polygon	X and Y coordinates for the vertices of the polygon used to control the extent of the 200West portion of the CPVZ GFM

Grids

File Name	Description
200East_CPVZ_GFM_V1_07242017_Basalt_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Basalt surface in 200East
200East_CPVZ_GFM_V1_07242017_CCUg_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the CCUg surface in 200East
200East_CPVZ_GFM_V1_07242017_Cold_Creek_Unit_grid	XYZ (in meters) point file representing the gridded structural surface interpolated for the Cold Creek Unit surface in 200East
200East_CPVZ_GFM_V1_07242017_HF1_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the HF1 surface in 200East
200East_CPVZ_GFM_V1_07242017_HF2_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the HF2 surface in 200East
200East_CPVZ_GFM_V1_07242017_HF3_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the HF3 surface in 200East
200East_CPVZ_GFM_V1_07242017_Rlm_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rlm surface in 200East
200East_CPVZ_GFM_V1_07242017_Rtf_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rtf surface in 200East
200East_CPVZ_GFM_V1_07242017_Rwia_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rwia surface in 200East
200East_CPVZ_GFM_V1_07242017_Rwie_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rwie surface in 200East
200West_CPVZ_GFM_V1_07242017_Basalt_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Basalt surface in 200West
200West_CPVZ_GFM_V1_07242017_CCUc_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the CCUc surface in 200West
200West_CPVZ_GFM_V1_07242017_Cold_Creek_Unit_gric	XYZ (in meters) point file representing the gridded structural surface interpolated for the Cold Creek Unit surface in 200West
200West_CPVZ_GFM_V1_07242017_HF1_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the HF1 surface in 200West
200West_CPVZ_GFM_V1_07242017_HF2_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the HF2 surface in 200West
200West_CPVZ_GFM_V1_07242017_HF3_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the HF3 surface in 200West
200West_CPVZ_GFM_V1_07242017_Rlm_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rlm surface in 200West
200West_CPVZ_GFM_V1_07242017_Rtf_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rtf surface in 200West
200West_CPVZ_GFM_V1_07242017_Rwia_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rwia surface in 200West
200West_CPVZ_GFM_V1_07242017_Rwie_grid.dat	XYZ (in meters) point file representing the gridded structural surface interpolated for the Rwie surface in 200West

Control polylines

File name	Description
CPVZ_GFM_V1_07242017_CCu - H3 contacts.shp	Shapefile used to control the Ccu - H3 contact surface
CPVZ_GFM_V1_07242017_CCuc - CCu West_Pinch.shp	Shapefile used to control the CCuc - CCu contact surface
CPVZ_GFM_V1_07242017_CCug - CCu East_Pinch.shp	Shapefile used to control the CCug - CCu contact surface
CPVZ_GFM_V1_07242017_H1 - Aeolian contacts.shp	Shapefile used to control the H1 - Aeolian contact surface
CPVZ_GFM_V1_07242017_H2 - H1 contacts.shp	Shapefile used to control the H2 - H1 contact surface
CPVZ_GFM_V1_07242017_H3 - H2 contacts.shp	Shapefile used to control the H3 - H2 contact surface
CPVZ_GFM_V1_07242017_Rtf - CCuc contacts.shp	Shapefile used to control the Rtf - CCuc contact surface
CPVZ_GFM_V1_07242017_Rwie - Rtf West_Pinch.shp	Shapefile used to control the Rwie -Rtf contact surface
CPVZ_GFM_V1_07242017_Rlm - Rwie contacts2.shp	Shapefile used to control the Rlm - Rwie contact surface

Figure 14. Data Output Files

7 Model Recommendations

Additional refinements to the CPVZ GFM (Kingdom and Leapfrog) will be included in future updates to the models.

Recommendations for future revisions include the following:

- Addition of the surface fill/recent (eolian) volume to the CPVZ GFM. The current dataset was incomplete and relatively unconstrained, which did not allow accurate representation of the surface fill and recent depositional extents beneath most waste sites.
- Update the surface topography through the incorporation of updated LiDAR. The updated topography is needed to reflect the current extent of ongoing surface remediation and accurately calculate the volume and extent of the surface fill volume.
- Refine the outer vadose zone geologic unit extents in areas where little data is available to constrain the 3D GFM. Additional work can be done to improve the overall model structure and continuity in the outer area.
- Refine and extend the vadose zone interpretation to include additional surfaces and volumes in support of creating increased vertical lithologic resolution and smaller grid spacing for local scale models (i.e., Waste Management Area A-AX) that fit within the CPVZ GFM domain. This effort will greatly improve the numerical model resolution and defensibility.

Documentation will be revised accordingly to reflect these model updates.

8 References

Aero-Metric LiDAR, 2008, *RCCC-Hanford Battelle/PNNL/DOE, Digital Orthophotography & LiDAR Surveys Photogrammetric Report*, prepared by Aero-metric, Seattle, Washington.

BHI-00184, 1995, *Miocene- to Pliocene-Aged Suprabasalt Sediments of the Hanford Site, South-Central Washington*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0083482H.

Bjornstad B.N., 2006, *On the Trail of the Ice Age Floods*. Keokee Co. Publishing, Inc., Sandpoint, Idaho.

CHPRC-01753, 2015, *Leapfrog-Hydro and Leapfrog-Geo Software Management Plan*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington.

CHPRC-01754, 2015, *Leapfrog-Hydro and Leapfrog-Geo Software Test Plan*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington.

CHPRC-01755, 2016, *Leapfrog-Hydro and Leapfrog-Geo Acceptance Test Report*, Rev. 4, CH2M HILL Plateau Remediation Company, Richland, Washington.

CHPRC-02937, 2015, *Kingdom-Geology Software Management Plan*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington.

CHPRC-02938, 2015, *Kingdom-Geology Software Test Plan*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington.

CHPRC-02939, 2016, *Kingdom-Geology Acceptance Test Report*, Leapfrog-Hydro Version 2.3.2 and Leapfrog-Geo Version 3.0.0, Rev. 4, CH2M HILL Plateau Remediation Company, Richland, Washington.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq., Pub. L. 107-377, December 31, 2002. Available at: https://www.csu.edu/cerc/researchreports/documents/CERCLASummary1980.pdf.

CP-60405, 2017, *Hanford Site Composite Analysis Technical Approach Description: Vadose Zeon*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington.

CP-60649, 2017, *Summary Analysis Hanford Site Composite Analysis Update*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington.

DOE O 414.1D, Admin Chg 1, 2011, *Quality Assurance*, U.S. Department of Energy, Washington, D.C. Available at: https://www.directives.doe.gov/directives-documents/400-series/0414.1-BOrder-d/@@images/file.

DOE O 435.1 Chg 1, 2007, *Radioactive Waste Management*, U.S. Department of Energy, Washington, D.C. Available at: https://www.directives.doe.gov/directives-documents/400-series/0435.1-BOrder-chg1-PgChg/@@images/file.

DOE/EIS-0391, 2012, *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC & WM EIS)*, U.S. Department of Energy, Office of River Protection, Richland, Washington. Available at: http://energy.gov/nepa/downloads/eis-0391-final-environmental-impact-statement.

DOE/RL-2002-39, 2002, *Standardized Stratigraphic Nomenclature for Post-Ringold-Formation Sediments Within the Central Pasco Basin*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0081471H.

DOE/RL-2015-07, Hanford Site Groundwater Monitoring Report for 2014, Prepared for the U.S. Department of Energy Assistant Secretary for Environmental Management by CH2M HILL Plateau Remediation Company, Richland, WA. Available at: http://www.hanford.gov/c.cfm/sgrp/GWRep14/start.htm.

ECF-HANFORD-13-0020, 2013, *Process for Constructing a Three-dimensional Geologic Framework Model of the Hanford Site 100 Area*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington.

ECF-HANFORD-13-0020, 2014, *Process for Constructing a Three-dimensional Geologic Framework Model of the Hanford Site 100 Area*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington.

ECF-HANFORD-13-0020, 2015, *Process for Constructing a Three-dimensional Geologic Framework Model of the Hanford Site 100 Area*, Rev. 2, CH2M HILL Plateau Remediation Company, Richland, Washington.

ECF-HANFORD-13-0020, 2015, *Process for Constructing a Three-dimensional Geologic Framework Model of the Hanford Site 100 Area*, Rev. 3, CH2M HILL Plateau Remediation Company, Richland, Washington.

ECF-HANFORD-13-0020, 2016, *Process for Constructing a Three-dimensional Geological Framework Model of the Hanford Site 100 Area*, Rev. 4, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0079495H.

ECF-HANFORD-13-0029, 2017, *Development of the Hanford South Geologic Framework Model, Hanford Site, Washington*, Fiscal Year 2016 Update, Rev. 4, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0072357H.

ECF-HANFORD-13-0029, 2014, *Development of the Hanford South Geologic Framework Model, Hanford Site, Washington*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/pdf.cfm?accession=0072753H.

ECF-HANFORD-13-0029, 2015, *Development of the Hanford South Geologic Framework Model, Hanford Site, Washington*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0080813H.

ECF-HANFORD-13-0029, 2015, *Development of the Hanford South Geologic Framework Model, Hanford Site Washington*, Rev. 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

ECF-HANFORD-13-0029, 2016, *Development of the Hanford South Geologic Framework Model, Hanford Site, Washington*, Rev. 3, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0072750H.

ECF-HANFORD-13-0029, 2017, *Development of the Hanford South Geologic Framework Model, Hanford Site, Washington*, Fiscal Year 2016 Update, Rev. 4, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0072357H.

ECF-HANFORD-16-0128, 2016, *Development of Contiguous Top of Basalt Surface for Use in Development of Site Geoframeworks*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0072755H.

Fecht, K.R., S.P. Reidel, and A.M. Tallman, 1987, "Paleodrainage of the Columbia River System on the Columbia Plateau of Washington State: A Summary," *Selected Papers on the Geology of Washington*, Washington Department of Natural Resources, Division of Geology and Earth Resources, Bulletin 77, pp. 219-248.

HGIS, 2016, HGIS geospatial map portal in HLAN, Source for shape files imwelwel.shp and ehsitirp.shp, Accessed on 10/13/2016 and 10/18/2016 respectively.

HNF-5507, 2000, *Subsurface Conditions Description for the B-BX-BY Waste Management Area*, Rev. 0A, CH2M HILL Hanford Group, Inc., Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0911240519.

IHS Kingdom 2016.1, 2017, Online Kingdom Help, IHS Markit, London, England. Available at: http://kingdom.ihs.com/pages/kb/help/tks_latest.

Lindsey, K.A., S.P. Reidel, K.R. Fecht, J.L. Slate, A.G. Law, and A.M. Tallman, 1994, "Geohydrologic Setting of the Hanford Site, South-Central Washington," 1994 Geological Society of America Annual Meeting, Department of Geological Sciences, University of Washington, Seattle, Washington, *Geologic Field Trips of the Pacific Northwest*, pp. K-1 to K-16. Available at: https://www.researchgate.net/publication/270105787_Geohydrologic_setting_of_the_Hanford_Site_south_central_Washington.

O'Connor, Jim E. and John E. Costa, 2004, *The World's Largest Floods, Past and Present: Their Causes and Magnitudes*, Circular 1254, U.S Geological Survey, Reston, Virginia. Available at: https://pubs.usgs.gov/circ/2004/circ1254/pdf/circ1254.pdf.

PNNL-11800, 1998, *Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0079141H.

PNNL-11800, 2001, *Addendum to Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*, Addendum 1, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0084085.

PNNL-12261, 2000, *Revised Hydrogeology for the Suprabasalt Aquifer System, 200-East Area and Vicinity, Hanford Site, Washington*, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0906180659.

PNNL-13641, 2001, *Uncertainty Analysis Framework – Hanford Site-Wide Groundwater Flow and Transport Model*, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/pnnl-13641.pdf.

PNNL-13653, 2005, *A Catalog of Geologic Data for the Hanford Site*, Rev. 2, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/PNNL-13653Rev2.pdf.

PNNL-13858, 2002, *Revised Hydrogeology for the Suprabasalt Aquifer System, 200-West Area and Vicinity, Hanford Site, Washington*, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/PNNL-13858.pdf.

PNNL-15955, 2007, *Geology Data Package for the Single-Shell Tank Waste Management Areas at the Hanford Site*, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/PNNL-15955rev1.pdf.

PNNL-17913, 2009, *Hydrogeology of the Hanford Site Central Plateau – A Status Report for the 200 West Area*, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/PNNL-17913rev1.pdf.

PNNL-18835, *Hydrogeology of the Hanford Site Central Plateau − A Status Report for the 200 East Area*. PNNL-18835, Draft Final Report – Limited Distribution, Pacific Northwest National Laboratory Richland, Washington.

PNNL-19878, 2010, *Development of a High-Resolution Bathymetry Dataset for the Columbia River Through the Hanford Reach*, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/PNNL-19878.pdf.

PRC-PRO-IRM-309, 2014, *Controlled Software Management*, Revision 5, Change 0, CH2M HILL Plateau Remediation Company, Richland, Washington.

Reidel, S.P., K.R Fecht, M.C. Hagood, and T.L. Tolan, 1989, "Geologic Evolution of the Central Columbia Plateau," in Reidel, S.P., and Hooper, P.R., editors, Volcanism and Tectonism in the Columbia River Flood-basalt Province: Geological Society of America Special Paper 239.

Reidel, S.P., and T.L. Tolan, 2013. "The Grande Ronde Basalt, Columbia River Basalt Group," in, Reidel, S.P., V.E. Camp, M.E. Ross, J.A. Wolff, B.S. Martin, T.L. Tolan, and R.E. Wells, eds., The Columbia River Flood Basalt Province: Geological Society of America Special Paper 497, p. 117-153.

Reidel, S.P., V.E. Camp, T.L. Tolan, J.D. Kauffman, and D.L. Garwood, 2013a. "Tectonic Evolution of the Columbia River Flood Basalt Province," in, Reidel, S.P., V.E. Camp, M.E. Ross, J.A. Wolff, B.S. Martin, T.L. Tolan, and R.E. Wells, eds., The Columbia River Flood Basalt Province: Geological Society of America Special Paper 497, p. 293-324.

Reidel, S.P., V.E. Camp, T.L. Tolan, and B.S. Martin, 2013b. "The Columbia River Flood Basalt Province – Stratigraphy, Areal Extent, Volume, and Physical Volcanology," In, Reidel, S.P., V.E. Camp, M.E. Ross, J.A. Wolff, B.S. Martin, T.L. Tolan, and R.E. Wells, eds., The Columbia River Flood Basalt Province: Geological Society of America Special Paper 497, p. 1-43.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq. Available at: https://elr.info/sites/default/files/docs/statutes/full/rcra.pdf.

RHO-BWI-ST-4, 1979, *Geologic Studies of the Columbia Plateau: A Status Report*, Rockwell Hanford Operations, Richland, Washington. Available at:
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196002105.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000171.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000172.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000173.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000174.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000175.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000176.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000177.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000178.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000179.
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196000180.

RHO-ST-23, 1979, *Geology of the Separation Areas, Hanford Site, South-Central Washington*, Rockwell Hanford Operations, Richland, Washington. Available at:
http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195065394.

Rodriguez, S., and Sen, G., 2013. "Eruption of the Grande Ronde Basalt lavas, Columbia River Basalt Group: Results of numerical modeling," in, Reidel, S.P., V.E. Camp, M.E. Ross, J.A. Wolff, B.S. Martin, T.L. Tolan, and R.E. Wells, eds., The Columbia River Flood Basalt Province:Geological Society of America Special Paper 497, p. 259-272.

RPP-6149, 2000, *Vadose Zone Geology of Boreholes 299-W22-50 and 299-W23-19 S-SX Waste Management Area Hanford Site, South-Central Washington*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-8681, 2001, *Vadose Zone Geology of Boreholes 299-E33-45 and 299-E33-46 B-BX-BY Waste Management Area Hanford Site, South-Central Washington*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-14430, 2003, *Subsurface Conditions Description of the C and A-AX Waste Management Area*, Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0911240298.

SGW-48478, 2011, *Interpretation and Integration of Seismic Data in the Gable Gap*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=1104140880.

SGW-50900, 2014, *Geologic Cross Section Development in the Vicinity of S-Complex and T-Complex to Support the 200-DV-1 Operable Unit Conceptual Models*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0081649H.

SGW-52573-VA, 2012, *Gable Gap and LERF Geophysics Investigation Update, Hanford Site, Washington*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0072756H.

Swanson, D.A., T.L. Wright. P.R. Hooper and R.D. Bentley, 1979, "Revisions in Stratigraphic Nomenclature of the Columbia River Basalt Group," in U.S. Geological Survey Bulletin 1457-G, G1-G59.

WHC-SD-EN-TI-008, 1991, *Geologic Setting of the 200 West Area: An Update*, Rev. 0, Westinghouse Hanford Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0077162H.

WHC-SD-EN-TI-012, 1992, *Geologic Setting of the 200 East Area: An Update*, Rev. 0, Westinghouse Hanford Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=E0019549.

WHC-SD-EN-TI-014, 1992, *Hydrogeologic Model of the 200 West Groundwater Aggregate Area*, Rev. 0, Westinghouse Hanford Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196100569.

WHC-SD-EN-TI-019, 1992, *Hydrogeologic Model for the 200 East Groundwater Aggregate Area*, Rev. 0, Westinghouse Hanford Company, Richland, Washington. Available at: http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196113608.

WMP-22817, 2004, *Geologic Contacts Database for the 200 Areas of the Hanford Site*, Fluor Hanford, Inc., Richland, Washington.

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Appendix A

Vadose Zone Geologic Contact Data

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Contents

A1 Introduction A-1

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Table A-2. GeoContacts Depths for the 200 East Area A-25
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Terms

CA	composite analysis
CCUc	Cold Creek Unit calcic geosol
CCUg	Cold Creek Unit gravels
GeoContacts	geologic contacts
HF1	Hanford formation unit 1
HF2	Hanford formation unit 2
HF3	Hanford formation unit 3
ID	Identification
Rlm	Ringold Formation lower mud unit
Rtf	Ringold Formation member of the Taylor Flat
Rwia	Ringold Formation member of Wooded Island, unit A
Rwie	Ringold Formation member of Wooded Island, unit E

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A1 Introduction

This appendix contains the geologic contacts (GeoContacts) data (Tables A-1 through A-4), that were used as input for development of the Composite Analysis geoframework model. The data tables do not list wells and boreholes not used as inputs, including wells or boreholes which were not deep enough, did not provide detailed geologic data, or older wells superseded by adjacent or nearby wells which provided more definitive data. This allowed for a more accurate delineation of the vadose zone geological unit contacts.

The tables are organized as follows:

- Table A-1 lists GeoContacts elevations for the 200 East Area
- Table A-2 list GeoContacts depths for the 200 East Area
- Table A-3 lists GeoContacts elevations for the 200 West Area
- Table A-4 lists GeoContacts depths for the 200 West Area

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Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
CA Control Well 2	CA Control Well 2	--	--	--	--	--	438.31	424.44	254.73	185.55	108.22
299-E13-1	A5849	745.5	720.97	533.99	--	--	432.66	432.22	--	--	--
299-E13-14	A4726	744.08	736.85	525.19	--	--	471.87	445.96	--	--	--
299-E13-15	A5860	730.39	728.2	537.61	--	--	471.87	444.52	--	--	--
299-E13-17	A5862	729.64	725.33	536.2	--	--	493.85	455.32	--	--	--
299-E13-18	A5863	733.28	719.49	536.06	--	--	485.79	429.33	334.58	--	--
299-E13-19	A5864	729.63	726.04	533.16	--	--	491.3	414.86	--	--	--
299-E13-2	A5850	745.5	718.84	523.18	--	--	459.49	453.17	--	--	--
299-E13-20	A5865	743.35	713.47	507.28	--	--	430.22	429.32	330.01	272.16	157.9
299-E13-51	A5867	739.79	735.43	--	--	--	--	--	--	--	--
299-E13-52	A5868	742.64	738.32	--	--	--	--	--	--	--	--
299-E13-63	C5924	740.51	739.73	516	--	--	--	--	--	--	--
299-E13-64	C5925	742.65	738.33	--	--	--	--	--	--	--	--
299-E13-7	A5855	742.64	738.32	516.16	--	--	466.84	436.61	--	--	--
299-E13-8	A5856	737.58	735.45	506.91	--	--	474.9	435.84	--	--	--
299-E13-9	A5857	734.73	732.55	521.73	--	--	479.59	447.35	--	--	--
299-E16-1	A4727	--	696.58	482.46	436.22	429.28	--	395.69	322.36	253.76	225.82
299-E16-2	A5878	--	666.67	518.8	428.27	424.01	--	353.89	347.91	341.78	--
299-E17-1	A4728	--	718.65	458.96	444.49	415.16	--	407.14	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E17-11	A5883	--	700.17	--	--	--	--	--	--	--	--
299-E17-12	A4730	--	680.59	500.36	--	--	--	432.89	--	--	--
299-E17-13	A4731	--	678.81	498.59	--	--	--	437.93	--	--	--
299-E17-14	A4732	--	722.69	461.08	433.36	428.88	--	421.57	--	--	--
299-E17-15	A4733	--	722.33	488.24	424.07	422.62	--	416.18	--	--	--
299-E17-16	A4734	--	721	487.09	426.91	425.46	--	416.19	--	--	--
299-E17-17	A4735	--	719.85	490.1	414.05	413.3	--	411.86	--	--	--
299-E17-18	A4736	--	720.37	488.25	436.33	435.75	--	425.69	--	--	--
299-E17-19	A4737	--	719.26	455.26	428.16	427.43	--	414.82	--	--	--
299-E17-2	A5879	--	718.59	455.9	409.79	404.02	--	396.35	328.3	311.01	--
299-E17-20	A4738	--	713.47	484.87	457.02	453.38	--	424.93	--	--	--
299-E17-22	C3826	--	725.58	463.45	--	--	--	410.31	--	--	--
299-E17-23	C3827	--	734.25	480.7	408.13	408.08	407.58	407.14	--	--	--
299-E17-24	C3828	--	737.11	459.86	409.49	409.21	--	408.9	--	--	--
299-E17-25	C3926	--	738.28	463.37	410.39	410.31	--	409.79	--	--	--
299-E17-26	C4648	--	735.97	481.43	--	--	--	415.24	--	--	--
299-E17-4	A5881	--	718.09	462.78	427.14	414.04	--	409.12	334.97	318.93	--
299-E17-5	A4739	--	696.69	480.12	436.04	427.02	--	405.86	--	--	--
299-E17-51	A5886	--	699.02	--	--	--	--	--	--	--	--
299-E17-53	A5887	--	720.99	--	--	--	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E17-54	A5888	--	693.84	--	--	--	--	--	--	--	--
299-E17-6	A4740	--	719.82	490.52	439.85	439.27	--	424.29	351.22	296.19	--
299-E17-8	A4741	--	719.84	458.77	415.18	410.87	--	394.48	--	356.95	--
299-E17-9	A4742	--	697.3	458.18	413.06	411.6	--	402.93	--	--	--
299-E18-1	A4743	--	719.81	495.72	420.65	418.92	--	417.39	--	--	--
299-E18-2	A4744	--	708.84	488.2	--	--	--	412.86	--	--	--
299-E18-3	A4745	--	704.25	488.79	466.53	466.53	--	419.62	--	--	--
299-E18-4	A4746	--	721.53	489.94	466.51	465.11	--	416.75	--	--	--
299-E19-1	A5889	736.83	715.18	493.41	434.57	434.26	433.85	432.27	362.88	248.27	217.6
299-E23-2	A4748	--	711.14	457.04	--	--	--	356.13	352.12	310.12	278.12
299-E24-1	A5896	--	697.85	454.08	428.91	427.46	--	414.35	--	376.2	--
299-E24-10	A5902	--	677.31	452.31	--	--	--	435.31	--	409.31	--
299-E24-100	A5955	--	719.84	--	--	--	--	--	--	--	--
299-E24-101	A5956	--	719.77	--	--	--	--	--	--	--	--
299-E24-102	A5957	--	719.74	--	--	--	--	--	--	--	--
299-E24-103	A5958	--	719.68	--	--	--	--	--	--	--	--
299-E24-104	A5959	--	719.84	--	--	--	--	--	--	--	--
299-E24-105	A5960	--	719.23	--	--	--	--	--	--	--	--
299-E24-106	A5961	--	719.82	--	--	--	--	--	--	--	--
299-E24-107	A5962	--	719.23	--	--	--	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E24-109	A5964	--	719.23	--	--	--	--	--	--	--	--
299-E24-11	A5903	--	698.39	485.19	467.68	453.27	--	434.33	--	409.29	--
299-E24-110	A5965	--	719.77	--	--	--	--	--	--	--	--
299-E24-12	A5904	--	718	452.68	428.84	418	--	409.43	--	--	--
299-E24-13	A4749	--	689.32	--	425.32	407.32	--	--	--	--	--
299-E24-14	A4750	--	689.38	--	417.38	404.38	--	--	--	--	--
299-E24-16	A4751	--	718.1	461.08	429.63	427.45	--	416.16	--	--	--
299-E24-160	A6021	--	718.09	--	--	--	--	--	--	--	--
299-E24-17	A4752	--	718.68	467.35	450.54	449.83	--	435.52	--	414.59	--
299-E24-18	A4753	--	719.81	498.77	467.54	450.59	--	429.92	--	--	--
299-E24-2	A4755	--	698.95	452.62	444.07	444.07	--	413.83	--	408.26	--
299-E24-20	A4756	686.63	684.97	416.95	414.35	408.69	--	--	--	--	--
299-E24-21	C3177	--	716.32	451.79	446.37	444.92	--	385.76	--	--	--
299-E24-22	C4123	686.49	685.94	424.21	418.24	415.49	--	--	--	377.17	--
299-E24-23	C5301	--	696.71	441.47	430.62	417.2	--	381.44	--	365.41	--
299-E24-24	C4647	723.38	723.3	503.23	479.82	478.07	--	411.7	--	--	--
299-E24-25	C7514	681.9	674.43	440.64	409.22	408.5	--	--	--	369.48	330.52
299-E24-3	A5897	--	685.32	415.32	--	--	--	--	--	--	--
299-E24-33	C4257	673.51	668.75	421.63	419.79	407.7	--	--	--	363.7	--
299-E24-4	A5898	--	678.91	423.91	--	--	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E24-5	A5899	--	688.52	429.52	--	--	--	--	--	--	--
299-E24-51	A5908	--	702.5	--	--	--	--	--	--	--	--
299-E24-52	A5909	--	705.38	--	--	--	--	--	--	--	--
299-E24-53	A5910	--	686.31	--	--	--	--	--	--	--	--
299-E24-54	A5911	--	694.42	--	--	--	--	--	--	--	--
299-E24-55	A5912	--	701.34	--	--	--	--	--	--	--	--
299-E24-56	A5913	--	699.57	--	--	--	--	--	--	--	--
299-E24-57	A5914	--	690.93	--	--	--	--	--	--	--	--
299-E24-58	A5915	--	693.27	--	--	--	--	--	--	--	--
299-E24-59	A5916	--	688.08	--	--	--	--	--	--	--	--
299-E24-60	A5917	--	691.52	--	--	--	--	--	--	--	--
299-E24-7	A4757	--	716.91	444.06	442.9	442	--	387.15	342.19	321.54	270.01
299-E24-76	A5931	--	719.83	--	--	--	--	--	--	--	--
299-E24-77	A5932	--	719.83	--	--	--	--	--	--	--	--
299-E24-78	A5933	--	719.83	--	--	--	--	--	--	--	--
299-E24-79	A5934	--	719.24	--	--	--	--	--	--	--	--
299-E24-80	A5935	--	719.84	--	--	--	--	--	--	--	--
299-E24-81	A5936	--	719.81	--	--	--	--	--	--	--	--
299-E24-82	A5937	--	719.77	--	--	--	--	--	--	--	--
299-E24-83	A5938	--	719.23	--	--	--	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E24-84	A5939	--	719.26	--	--	--	--	--	--	--	--
299-E24-85	A5940	--	718.68	--	--	--	--	--	--	--	--
299-E24-86	A5941	--	719.24	--	--	--	--	--	--	--	--
299-E24-87	A5942	--	719.24	--	--	--	--	--	--	--	--
299-E24-88	A5943	--	719.68	--	--	--	--	--	--	--	--
299-E24-89	A5944	--	719.81	--	--	--	--	--	--	--	--
299-E24-9	A5901	--	717.67	450.1	433.04	427.39	--	412.76	--	--	--
299-E24-90	A5945	--	719.55	--	--	--	--	--	--	--	--
299-E24-91	A5946	--	719.26	--	--	--	--	--	--	--	--
299-E24-92	A5947	--	718.67	--	--	--	--	--	--	--	--
299-E24-93	A5948	--	720.07	--	--	--	--	--	--	--	--
299-E24-94	A5949	--	720.07	--	--	--	--	--	--	--	--
299-E24-95	A5950	--	719.77	--	--	--	--	--	--	--	--
299-E24-96	A5951	--	720.1	--	--	--	--	--	--	--	--
299-E24-97	A5952	--	719.23	--	--	--	--	--	--	--	--
299-E24-98	A5953	--	719.18	--	--	--	--	--	--	--	--
299-E24-99	A5954	--	719.23	--	--	--	--	--	--	--	--
299-E25-1	A4759	--	663.76	--	423.76	411.76	--	--	--	--	--
299-E25-1000	A6536	--	669.6	501.5	435.51	426.48	--	327.95	--	311.3	295.3
299-E25-11	A4761	--	665.52	519.97	428.06	426.1	--	377.23	364.37	359.36	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E25-12	A6028	--	660.32	525.75	365.95	365.95	--	365.95	365.95	360.95	--
299-E25-13	A4762	--	680.65	--	425.65	410.65	--	--	--	369.06	--
299-E25-14	A6029	664.6	649.09	470.92	--	--	--	--	--	--	--
299-E25-15	A4763	--	677.87	--	417.87	412.87	--	--	--	--	--
299-E25-16	A6030	680.4	635.07	418.94	417.24	409.65	--	--	--	361.56	--
299-E25-17	A6031	--	677.68	528.63	463.54	457.67	--	410.48	--	387.69	--
299-E25-18	A4764	--	675.47	521.12	467.71	453.61	--	426.4	--	392.32	--
299-E25-19	A4765	--	672.36	533.46	462.09	456.78	--	424.65	--	392.32	--
299-E25-190	A6596	--	673.05	--	--	--	--	--	--	--	--
299-E25-191	A6597	--	674.23	--	--	--	--	--	--	--	--
299-E25-193	A6599	--	673.6	--	--	--	--	--	--	--	--
299-E25-2	A4766	671.57	554.57	--	416.57	406.57	--	--	--	346.57	311.57
299-E25-20	A4767	--	672.61	518.46	458.15	454.17	--	407.25	--	393.12	--
299-E25-21	A4768	--	678.2	508.99	438.2	433.94	--	--	--	--	--
299-E25-22	A6032	--	675.19	520.19	445.19	445.19	--	--	--	419.19	--
299-E25-23	A6033	--	664.41	513.61	425.47	424.07	--	387.69	--	--	--
299-E25-236	C6542	--	570.51	418.69	418.73	414.83	--	--	--	--	--
299-E25-237	C8922	694.16	571.35	418.37	417.89	414.83	--	--	--	365.75	322.56
299-E25-26	A4771	--	665.18	508.11	453.13	452.76	--	404.04	402.95	401.84	--
299-E25-28	A4773	662.4	563.29	513.21	442.77	441.63	--	--	375.14	374.92	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E25-29	A6034	--	669.49	555.69	472.44	470.72	--	--	--	401.73	349.97
299-E25-3	A6024	--	683.28	548.17	462.18	461.02	--	--	--	408.89	--
299-E25-30	A6035	--	679.39	520.55	416.59	413.72	--	--	--	369.66	--
299-E25-31	A4778	--	674.99	494.99	477.99	477.99	--	--	--	437.99	--
299-E25-32B	A6037	663.62	642.73	514.84	417.62	417.62	--	--	--	386.67	324.71
299-E25-35	A4783	--	664.06	498.86	454.17	453.01	--	412.24	409.59	400	--
299-E25-36	A4784	707.56	619.96	437.86	434.64	433.71	--	--	--	394.04	--
299-E25-37	A4785	--	664.04	509.04	479.04	479.04	--	--	--	404.04	--
299-E25-38	A4786	--	664.09	509.27	454.16	453.69	--	405.21	--	--	--
299-E25-39	A4787	665.21	651.7	492.89	442.34	432.39	--	--	--	--	--
299-E25-4	A4788	653.74	643.35	461.69	428.94	426.83	--	--	--	384.01	--
299-E25-40	A4789	--	661.21	466.74	412.09	400.92	--	--	--	--	--
299-E25-41	A4790	--	656.86	466.75	418.53	409.73	--	--	--	--	--
299-E25-42	A4791	664.37	662.02	462.91	437.54	428.6	--	395.37	395.17	394.99	--
299-E25-46	A4793	--	692.9	426.9	422.49	416.29	--	--	--	--	--
299-E25-48	A4795	665.2	662.03	466.15	431.78	428.08	--	401.48	--	400.7	--
299-E25-50	A6039	--	671.31	516.47	425.62	420.24	--	385.44	--	--	--
299-E25-52	A6041	--	711.19	--	--	--	--	--	--	--	--
299-E25-53	A6042	--	686.33	--	--	--	--	--	--	--	--
299-E25-54	A6043	--	656.99	--	--	--	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E25-55	A6044	667.08	622.08	--	--	--	--	--	--	--	--
299-E25-56	A6045	641.56	607.39	--	--	--	--	--	--	--	--
299-E25-58	A6047	661.13	556.13	--	--	--	--	--	--	--	--
299-E25-6	A4796	661.21	642.78	485.32	434	429.39	--	--	--	386.39	--
299-E25-9	A4797	653.75	638.72	509.15	436.33	431.72	--	--	--	--	--
299-E25-93	C4122	676.83	670.06	415.27	414.51	414.12	--	--	--	363.4	--
299-E25-94	C4665	691.74	689.42	424.74	422.63	411.03	--	--	--	--	--
299-E26-11	A4800	595.29	--	439.7	433.92	433.92	--	--	--	405.6	402.15
299-E26-14	C8204	597.6	--	421.79	418.34	417.76	--	--	--	381.36	378.46
299-E26-3	A6640	639.22	632.96	498.26	443.55	443.55	--	--	--	374.43	--
299-E26-4	A4804	648.66	628.68	470.08	444.04	443.57	--	--	--	372.1	--
299-E26-5	A6641	646.79	631.13	466.63	408.59	408.3	--	--	--	362.95	--
299-E26-6	A6642	--	637.01	468.01	410.01	406.01	--	--	--	--	--
299-E26-7	A6643	--	633.99	487.99	--	--	--	--	--	--	--
299-E26-77	C6455	600.47	--	444.32	439.12	439.12	--	--	--	401.56	398.12
299-E26-79	C6826	597.62	--	--	--	--	--	--	--	--	391.2
299-E27-155	C5852	678.49	586.81	423.66	418.47	417.31	--	--	--	365.47	345.62
299-E27-18	A6674	640.35	581.22	464.54	440.88	440.88	--	--	--	--	385.99
299-E27-19	A6675	644.4	585.84	444.9	436.2	436.2	--	--	--	--	--
299-E27-2	A6670	--	647.28	--	412.28	403.28	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E27-21	C4127	653.41	607.92	432.24	412.15	410.36	--	--	--	369.38	--
299-E27-22	C4124	627.69	549.37	447.88	424.2	424.2	--	--	--	381.82	364.35
299-E27-23	C4190	664.02	557.49	425.56	419.85	419.39	--	--	--	370.07	--
299-E27-24	C7570	664.42	628.79	426.82	424.5	418.48	--	--	--	365.07	351.36
299-E27-26?	C9449	638.66	601.25	439.28	419.2	418.47	--	--	--	371.2	361.43
299-E27-3	A6671	680.17	615.41	446.41	406.42	405.21	--	--	--	349.23	335.52
299-E27-4	C4125	651.37	562.07	430.62	417.5	417.04	--	--	--	--	--
299-E27-5	A6672	684.79	680.77	436.34	409.17	407.72	--	--	--	365.79	--
299-E27-6	A6673	662.3	587.72	416.67	414.78	406.78	--	--	--	347.83	329.77
299-E28-1	A6784	685.65	665.41	491.81	488.76	450.67	--	--	--	--	--
299-E28-10	A6789	678.39	651.61	--	433.66	408.57	--	--	--	380.98	369.66
299-E28-13	A6791	705.24	685.32	506.15	477.58	471.86	--	--	--	399.77	346.28
299-E28-18	A4821	693.2	659.19	--	498.77	463.13	--	--	--	417.74	--
299-E28-19	A6795	--	665.66	--	--	--	--	--	--	--	--
299-E28-2	A6785	682.47	655.75	472.33	431.32	422.68	--	--	--	388.65	367.32
299-E28-20	A6796	689.14	656.71	504.77	501.22	465.58	--	--	--	407.26	--
299-E28-21	A6797	687.52	654.33	498.48	493.91	466.32	--	--	--	--	--
299-E28-22	A6798	702.09	677.91	491.82	426.88	425.97	--	--	--	343.88	332.65
299-E28-26	A4822	687.59	612.23	515.06	483.45	463.21	--	--	--	388.67	362.71
299-E28-27	A4823	681.13	601.75	487.54	469.69	450.27	--	--	--	405.7	381.38

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E28-28	A4824	685.99	617.97	527.19	498.03	483.44	--	--	--	393.49	--
299-E28-3	A6786	694.51	660.57	461.97	444.19	440.03	--	--	--	388.63	--
299-E28-30	C7515	--	673.96	473.51	444.63	443.95	--	--	--	399.46	338.79
299-E28-31	C9447	--	666.33	--	468.65	462.18	--	--	--	366.34	343.88
299-E28-32	C9448	--	689.02	487.89	449.39	447.58	--	--	--	355.56	333.94
299-E28-5	A6787	668.05	649.38	444.92	431.66	426.46	--	--	--	374.29	368.66
299-E28-6	A4826	701.14	667.89	491.48	427.94	426.54	--	--	--	--	--
299-E28-8	A6788	669.44	634.61	439.96	428.13	426.36	--	--	--	383.07	374.62
299-E28-9	A4828	--	622.59	--	--	--	--	--	--	--	--
299-E28-95	A6846	707.35	675.8	550.21	517.78	508.91	--	--	--	427.07	--
299-E29-54	C5860	--	689.46	500.81	456.59	454.77	--	--	--	372.69	332.11
299-E32-1	A4829	658.06	603.99	465.47	460.49	457.36	--	--	--	387.47	385.27
299-E32-2	A4830	670.66	630.18	481.91	471.35	460.85	--	--	--	386.89	--
299-E32-3	A4831	677.67	614.5	483.27	475.16	474.34	--	--	--	385.14	--
299-E32-4	A4832	687.43	616.14	509.21	502.67	501.91	--	--	--	391.71	--
299-E32-5	A4833	681.77	614.51	494.63	487.34	487.34	--	--	--	--	--
299-E32-6	A4834	666.61	627.7	485.46	476.15	456.75	--	--	--	391.48	--
299-E32-7	A4835	657.47	--	--	--	--	--	--	--	393.76	--
299-E32-8	A4836	645.29	620.97	475.54	440.43	440.05	--	--	--	392.08	--
299-E33-10	A6853	646.08	616.9	465.94	464.15	434.28	--	--	--	392.66	387.05

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Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E33-11	A6854	620.13	607.98	446.16	427.43	420.48	--	--	--	--	396.18
299-E33-12	A4839	624.3	597.23	450.76	439.25	437.5	--	--	--	--	395.83
299-E33-14	A4841	622.92	603.82	459.92	457.64	454.17	--	--	--	398.57	396.52
299-E33-15	A4842	612.76	583.98	477.85	447.95	437.82	--	--	--	--	389.86
299-E33-17	A4843	633.39	616.22	454.03	433.24	417.24	--	--	--	397.45	391.22
299-E33-2	A4846	630.19	580.68	486.93	446.17	441.32	--	--	--	--	397.57
299-E33-205	C5989	655.24	626.08	440.72	437.07	419.11	--	--	--	394.85	389.94
299-E33-21	A4848	666.23	621.43	--	447.13	441.58	--	--	--	--	388.46
299-E33-24	A4849	637.16	603.14	--	441.69	438.21	--	--	--	--	393.76
299-E33-25	A6858	631.09	606.24	491.36	431.79	431.64	--	--	--	--	395.82
299-E33-26	A4850	--	582.3	493.68	443.58	443.46	--	--	--	--	394.45
299-E33-265	C7564	666.59	620.44	468.11	463.27	446.24	--	--	--	--	385.2
299-E33-266	C7565	665.81	619.61	468.94	459.2	447.07	--	--	--	--	385.2
299-E33-267	C8242	647.13	621.78	--	444.01	442.96	--	--	--	394.46	392.28
299-E33-27	A4851	659.41	620.04	433.61	420.44	417.74	--	--	--	--	--
299-E33-28	A4852	666.06	617.47	507.28	479.75	456.24	--	--	--	396.74	390.62
299-E33-296	A7092	631.91	592.28	446.27	442.7	439.61	--	--	--	--	--
299-E33-3	A4854	--	568.67	486.93	436.46	431.26	--	--	--	--	393.06
299-E33-30	A4855	665.51	590.44	462.46	450.27	436.51	--	--	--	--	389.23
299-E33-302	A7098	628.2	582.88	472.36	438.52	435.15	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E33-304	A7100	639.93	614.58	444.91	443.41	438.56	--	--	--	--	--
299-E33-33	A4858	--	605.48	464.01	434.52	429.91	--	--	--	390.79	390.03
299-E33-333	B8079	643.22	625.67	--	441.4	441.99	--	--	--	--	--
299-E33-337	C3390	662.16	607.06	447.16	434.73	432.44	--	--	--	391.93	--
299-E33-34	A4859	633.72	612.6	493.54	459.35	439.23	--	--	--	--	394.25
299-E33-340	C5853	617.91	584.73	462.57	433.04	432.11	--	--	--	--	392.03
299-E33-341	C5856	627.08	576.75	477.06	442.7	436.8	--	--	--	--	395.5
299-E33-342	C5857	635.6	587.24	457.42	446.88	445.48	--	--	--	--	394.51
299-E33-343	C5858	652.29	615.01	443.68	437.52	412.94	--	--	--	391.17	390.71
299-E33-35	A4860	642.54	607.72	503.2	444.06	439.21	--	--	--	--	394.64
299-E33-350	C8914	653.3	617.06	456.07	438.73	--	--	--	--	--	--
299-E33-360	C8923	647.34	616.09	442.45	437.96	409.16	--	--	--	397.65	392.49
299-E33-361	C8924	647.35	623.72	466.27	445.03	441.44	--	--	--	384.63	380.81
299-E33-38	A4863	633.29	583.32	447.84	443.39	435.77	--	--	--	--	395.47
299-E33-4	A4865	628.47	568.74	481.9	438.52	438.19	--	--	--	--	399.64
299-E33-44	B8554	641.94	620.06	447.48	439.16	433.24	--	--	--	--	396.09
299-E33-47	C4259	646.44	602.01	441.06	435.5	425.18	--	--	--	395.25	--
299-E33-48	C4260	663.56	629.29	447.62	421.84	415.2	--	--	--	399.32	378.97
299-E33-49	C4261	664.92	617.72	456.12	449.66	442.56	--	--	--	394.42	382.99
299-E33-5	A4870	607.29	582.62	462.46	452.42	447.22	--	--	--	--	395.82

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E33-50	C5195	625.35	614.93	465.42	439.93	438.2	--	--	--	--	392.03
299-E33-58	A6866	641.42	620.63	--	--	--	--	--	--	--	--
299-E33-59	A6867	640.72	620.92	--	--	--	--	--	--	--	--
299-E33-60	A6868	642.48	624.76	--	--	--	--	--	--	--	--
299-E33-7	A4871	611.11	576.8	480.49	430.79	427.78	--	--	--	--	395.83
299-E33-75	A6883	650.94	614.52	--	--	--	--	--	--	--	--
299-E33-8	A4872	650.6	609.97	--	446.07	440.87	--	--	--	--	397.12
299-E33-9	A4873	653.04	608	456.32	454.3	441.59	--	--	--	--	390.54
299-E34-10	A4875	639.76	587	457.05	438.54	438.54	--	--	--	--	392.93
299-E34-11	A4876	595.27	562.17	428	422.81	422.81	--	--	--	--	399.83
299-E34-12	A5433	634.59	591.05	444.33	428.74	429.32	--	--	--	--	392.93
299-E34-13	C7566	616.08	528.23	444.9	421.2	421.2	--	--	--	--	400.41
299-E34-2	A4877	632.24	502.67	452.98	422.96	422.96	--	--	--	--	392.36
299-E34-3	A4878	613.05	--	452.39	--	--	--	--	--	--	400.98
299-E34-4	A4879	588.37	--	447.19	443.74	443.74	--	--	--	--	413.72
299-E34-5	A4880	589.5	423.16	422.45	403.58	403.58	--	--	--	--	400.99
299-E34-6	A4881	599.91	454.15	416.01	--	--	--	--	--	--	406.2
299-E34-7	A4882	603.39	--	--	--	--	--	--	--	--	400.42
299-E34-8	A4883	638.6	600.84	457.64	429.33	429.33	--	--	--	--	--
299-E34-9	A4884	627.04	588.15	444.31	427.55	427.55	--	--	--	--	395.78

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E35-1	A4885	598.19	--	--	--	--	--	--	--	407.5	406.76
299-E35-2	A4886	--	--	439.77	431.26	431.26	--	--	--	--	403.16
699-30-47	A8499	664.58	661.82	467.95	--	--	441.73	422.42	--	--	--
699-30-51	A8500	691.4	690.63	--	--	--	--	--	--	--	--
699-30-55	A8501	691.29	689.93	426.76	--	--	426.5	426.41	--	--	--
699-30-57?	C9417	692.91	687.03	--	--	--	--	432.85	287.01	--	--
699-31-53A	A8506	707.26	692.86	435.15	--	--	--	421.43	277.75	--	--
699-32-42	A8516	--	517.88	433.01	--	--	--	393.5	--	--	--
699-32-43	A5127	--	517.31	427.98	--	--	--	390.55	--	--	--
699-32-49A	A8517	711.62	702.99	--	--	--	--	--	--	--	--
699-33-38	A8531	--	535.62	492.27	--	--	--	--	--	--	--
699-33-42	A5132	--	516.43	426.51	--	--	--	395.75	--	--	--
699-33-56	A5133	712.32	708.68	438.7	--	--	428.87	428.82	313.7	--	--
699-34-39A	A5134	--	537.76	495.87	--	--	--	--	--	--	--
699-34-39B	A8539	--	536.32	492.98	--	--	--	--	--	--	--
699-34-41B	A5135	--	568.72	508.89	--	--	--	422.34	--	--	--
699-34-42	A5136	--	540.94	463.3	--	--	--	395.22	--	--	--
699-34-51	A5137	735.41	733.23	484.75	--	--	449.22	419.23	--	--	--
699-35-57	A8556	717.37	715.19	425.13	--	--	424.64	424.11	--	--	--
699-35-58	A8557	715.28	711.64	--	--	--	--	434.41	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-35-58D	C9427	--	725.53	--	--	--	466.18	413.97	--	--	--
699-35-59	A8558	--	718.57	--	--	--	--	424.14	--	--	--
699-36-58A	A8571	736.16	702.22	430.68	--	--	429.79	425.53	--	--	--
699-36-58B	A8572	721.05	718.86	--	--	--	--	424.28	--	--	--
699-37-43	A5146	--	691.7	499.49	--	--	--	428.01	355.13	264.17	187.6
699-37-47A	B2822	--	716.37	507.39	--	--	--	406.66	351.66	278.06	201.36
699-39-39	A5150	536.34	--	451.47	--	--	--	--	418.64	--	--
699-40-39	A5155	531.96	--	459.95	--	--	--	--	417.91	341.9	--
699-40-40A	A5156	541.1	461.27	460.4	--	--	--	--	420.9	354.39	--
699-41-40	A5161	545.75	466.67	466.09	--	--	--	--	420.85	386.91	--
699-41-42	A5162	--	643.69	480.72	--	--	--	--	403.79	387.89	308.17
699-42-37	A5164	517.57	--	--	--	--	--	--	428.07	389.81	270.68
699-42-39A	A5165	552.94	--	438.15	--	--	--	--	418.57	393.37	--
699-42-39B	A5166	553.65	--	443.71	--	--	--	--	424.42	387.61	--
699-42-40C	A5169	545.01	--	450.8	--	--	--	--	400.4	399.14	329.12
699-42-41	A5170	566.65	487.83	466.99	--	--	--	--	415.18	414.32	--
699-42-42A	A8670	--	598.15	481.42	--	--	--	--	396.05	395.76	309.63
699-42-42B	A5171	--	583.06	474.93	--	--	--	--	--	398.29	--
699-43-40	A5173	540.66	--	442.15	--	--	--	--	411.48	--	--
699-43-41G	A5176	550.71	--	463.4	--	--	--	--	429.46	409.24	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-43-42	A5177	563.05	536.94	474.94	--	--	--	--	414.61	412.97	359.44
699-43-42K	A8695	--	581.44	473.49	--	--	--	--	--	399.89	339.24
699-43-44	B8758	570.98	554.84	474.55	437.06	437.06	--	--	--	421.24	372.24
699-43-45	A5180	590.79	549.39	451.51	424.86	424.86	--	--	--	411.9	--
699-44-42	A5186	579.19	525.96	466.27	--	--	--	--	--	417.21	--
699-44-43B	A5187	579.11	550.62	459.34	444.91	440.87	--	--	--	420.62	--
699-45-42	A5195	577.64	554.27	461.22	--	--	--	--	--	419.37	391.92
699-46-91	C8916	598.64	--	421.5	410.37	410.37	--	--	--	--	401.9
699-47-42	A8749	470.8	418.59	418.12	--	--	--	--	--	417.73	403.51
699-47-46A	A5200	580.87	--	--	--	--	--	--	--	406.72	387.9
699-47-50	A5201	583.64	375.01	--	--	--	--	--	--	--	369.55
699-47-51	A8752	584.51	--	--	--	--	--	--	--	--	426.01
699-48-48A	A8768	573.66	--	--	--	--	--	--	--	--	384.23
699-48-48B	A8769	572.73	--	--	--	--	--	--	--	--	384.92
699-48-50	A5212	573.66	--	--	--	--	--	--	--	--	--
699-48-50B	C5196	604.06	566.21	497.61	487.78	439.21	--	--	--	402.57	399.64
699-49-55B	A5218	529.48	481.91	467.28	466.29	426.4	--	--	--	--	397.5
699-50-42	A5224	466.29	--	--	--	--	--	--	--	429.47	404.06
699-50-42P	A9486	467.78	--	--	--	--	--	--	--	429.46	402.3
699-50-45	A5225	451.9	--	--	--	--	--	--	--	--	415.63

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-50-48A	A8812	552.92	--	--	--	--	--	--	--	--	433.53
699-50-48B	A5226	551.12	--	--	--	--	--	--	--	--	441.01
699-50-53A	A5227	558.29	463.43	415.34	402.29	402.29	--	--	--	402.29	401.96
699-50-56	C5197	551.76	491.8	449.46	445.44	416.09	--	--	--	391.74	391.01
699-50-59	C4882	562.52	399.89	399.75	399.59	399.37	--	--	--	397.87	397.66
699-51-46	A5230	445.99	--	--	--	--	--	--	--	434.99	433.99
699-52-46A	A5234	457.21	--	--	--	--	--	--	--	420.45	407.53
699-52-48	A5235	464.47	--	--	--	--	--	--	--	441.66	441.58
699-52-52	A8842	560.17	417.42	--	--	--	--	--	--	411.82	411.53
699-52-54	A5236	568.89	469.46	432.12	425.65	421.96	--	--	--	--	401.75
699-52-55	C5861	571.02	463.92	438.57	426.76	418.64	--	--	--	--	397.11
699-52-55B	C5862	568.32	458.37	445.92	424.92	416.8	--	--	--	--	396.55
699-52-57	A5237	561.64	454.37	--	424.86	424.2	--	--	--	--	402.32
699-53-51	B8695	439.23	--	--	--	--	--	--	--	--	409.84
699-53-55A	A5244	572.84	461.9	386.56	371.12	364.38	--	--	--	--	319.75
699-54-42	A5250	512.31	--	--	--	--	--	--	--	418.35	314.57
699-54-45A	A5251	494.29	--	--	--	--	--	--	--	415	--
699-54-48	A5252	454.56	--	--	--	--	--	--	--	395.19	364.2
699-54-57	A5253	575.5	--	--	--	--	--	--	--	399.51	395.02
699-55-40	A5255	543.23	--	--	--	--	--	--	--	420.48	399.01

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-55-44	A5256	515.96	--	--	--	--	--	--	--	421.37	--
699-55-50A	A8865	440.1	--	--	--	--	--	--	--	354.58	347.46
699-55-50D	A8867	437.41	--	--	--	--	--	--	--	352.45	351.51
699-55-57	A5259	567.49	--	--	--	--	--	--	--	402.97	398.67
699-56-43	A5264	539.44	--	--	--	--	--	--	--	487.87	487.79
699-56-51	A8891	438.34	--	--	--	--	--	--	--	337.48	336.52
699-56-53	A5265	433.84	--	--	--	--	--	--	--	--	335.93
699-57-41A	A8896	706.33	--	--	--	--	--	--	--	--	632.42
699-57-41B	A8897	710.56	--	--	--	--	--	--	--	--	645.93
699-57-41C	A8898	709.97	--	--	--	--	--	--	--	--	651.32
699-57-41E	A8900	697.31	--	--	--	--	--	--	--	663.42	663.02
699-57-41F	A8901	707.25	--	--	--	--	--	--	--	--	628.79
699-57-42	A8902	662.62	--	--	--	--	--	--	--	629.67	628.8
699-57-59	A5269	575.23	--	--	--	--	--	--	--	--	--
699-58-40	A8907	746.91	--	--	--	--	--	--	--	--	745.15
699-58-41A	A8908	706.36	--	--	--	--	--	--	--	--	691.03
699-58-41B	A8909	688.24	--	--	--	--	--	--	--	--	628.81
699-58-41C	A8910	688.26	--	--	--	--	--	--	--	--	608.03
699-58-41E	A8912	699.15	--	--	--	--	--	--	--	--	691.03
699-58-41F	A8913	693.75	--	--	--	--	--	--	--	--	629.71

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-59-58	A5277	497.9	--	--	--	--	--	--	--	--	--
B8826	B8826	--	666.91	476.12	457.01	446.06	--	413.89	411.82	401.49	--
C3104	C3104	662.39	632.16	--	446.76	442.26	--	--	--	--	--
C3245	C3245	--	640.8	464.55	423.03	421.91	--	--	--	--	--
C3246	C3246	--	671.2	454.57	442.87	442.5	--	--	--	415.2	--
C3247	C3247	--	673.05	--	--	--	--	--	--	--	--
C4106	C4106	--	666.1	517.83	440.49	439.91	--	--	--	--	--
C4160	C4160	--	694.95	467.43	--	--	--	426.13	--	--	--
C4191	C4191	729.65	727.52	540.36	--	--	494.19	432.98	--	--	--
C4304	C4304	747.75	746.24	--	--	--	--	--	--	--	--
C4545	C4545	--	643	488	424	424	--	--	--	--	--
C4560	C4560	--	706.58	--	--	--	--	--	--	--	--
C4562	C4562	--	734.83	473.19	448.62	448.32	--	447.7	356.61	303.39	196
C4993	C4993	--	657.4	492.22	428.3	422.62	--	376.06	368.23	368.23	300
C4996	C4996	668.34	582.72	513.58	416.19	415.47	--	--	367.71	367.43	320.43
C4997	C4997	--	659.73	509.56	424.08	421.78	--	--	--	358.39	294
C4998	C4998	--	668.42	516.47	429.16	426.86	--	362.63	--	355.72	295.35
C5515	C5515	708.44	707.99	438.28	432.56	412.14	--	--	--	--	--
C5941	C5941	--	677.65	509.57	454.98	454.06	--	414.07	392.65	--	--
C6552	C6552	--	682.03	456.75	435.08	432.87	--	414.89	--	395.14	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
C6756	C6756	744.08	741.9	--	--	--	--	--	--	--	--
C6911	C6911	--	682.99	--	--	--	--	--	--	--	--
C7517	C7517	--	714.05	--	--	--	--	--	--	--	--
C7518	C7518	--	714.62	--	--	--	--	--	--	--	--
C7519	C7519	--	714.64	--	--	--	--	--	--	--	--
C7520	C7520	--	714.65	--	--	--	--	--	--	--	--
C7521	C7521	--	714.04	--	--	--	--	--	--	--	--
C8706	C8706	621.73	565.88	487.79	427.07	425.75	--	--	--	--	--
C9487	C9487	643.65	615.98	438.62	436.37	--	--	--	--	--	--
C9488	C9488	--	584.06	476.99	435.17	418.26	--	--	--	--	--

Table A-1. GeoContacts Elevations for the 200 East Area

Well Name	Hanford ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUg Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
C9491	C9491	636.7	613.77	--	448.85	445.72	--	--	--	--	--
C9549	C9549	607.53	557.14	486.62	435.04	434.61	--	--	--	--	--
C9550	C9550	623.11	579.08	509.71	426.73	424.14	--	--	--	--	--
C9552	C9552	629.15	572.78	469.48	433.66	429.85	--	--	--	--	--

Note: Blank cells indicated no information.

CCUg = Cold Creek Unit gravels

HF1 = Hanford formation unit 1

HF2 = Hanford formation unit 2

HF3 = Hanford formation unit 3

ID = identification

Rlm = Ringold Formation lower mud unit

Rtf = Ringold Formation member of the Taylor Flat

Rwia = Ringold Formation member of Wooded Island unit A

Rwie = Ringold Formation member of Wooded Island unit E

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
CA Control Well 2	CA Control Well 2	--	--	--	--	--	228.69	242.56	412.27	481.45	558.78
CA Well 1	CA Well 1	--	--	--	--	--	--	--	--	--	--
299-E13-1	A5849	0.78	25.31	212.3	--	--	313.62	314.06	--	--	--
299-E13-10	A4724	--	--	--	--	--	--	--	--	--	--
299-E13-11	A5858	--	--	--	--	--	--	--	--	--	--
299-E13-12	A4725	--	--	--	--	--	--	--	--	--	--
299-E13-13	A5859	--	--	--	--	--	--	--	--	--	--
299-E13-14	A4726	1.97	9.2	220.87	--	--	274.19	300.1	--	--	--
299-E13-15	A5860	9.3	11.49	202.08	--	--	267.82	295.17	--	--	--
299-E13-16	A5861	--	--	--	--	--	--	--	--	--	--
299-E13-17	A5862	4.73	9.04	198.18	--	--	240.53	279.05	--	--	--
299-E13-18	A5863	0.31	14.1	197.53	--	--	247.8	304.26	399	--	--
299-E13-19	A5864	1.04	4.63	197.51	--	--	239.37	315.81	--	--	--
299-E13-2	A5850	1.77	28.43	224.08	--	--	287.78	294.1	--	--	--
299-E13-20	A5865	0.57	30.45	236.64	--	--	313.7	314.61	413.91	471.77	586.02
299-E13-20O	A9453	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E13-20P	A9454	--	--	--	--	--	--	--	--	--	--
299-E13-20Q	A9455	--	--	--	--	--	--	--	--	--	--
299-E13-20R	A9456	--	--	--	--	--	--	--	--	--	--
299-E13-3	A5851	--	--	--	--	--	--	--	--	--	--
299-E13-4	A5852	--	--	--	--	--	--	--	--	--	--
299-E13-5	A5853	--	--	--	--	--	--	--	--	--	--
299-E13-51	A5867	3.9	8.26	--	--	--	--	--	--	--	--
299-E13-52	A5868	2.6	6.91	--	--	--	--	--	--	--	--
299-E13-6	A5854	--	--	--	--	--	--	--	--	--	--
299-E13-62	C5923	--	--	--	--	--	--	--	--	--	--
299-E13-63	C5924	2.39	3.17	226.91	--	--	--	--	--	--	--
299-E13-64	C5925	2.39	6.71	--	--	--	--	--	--	--	--
299-E13-7	A5855	2.23	6.55	228.71	--	--	278.03	308.27	--	--	--
299-E13-8	A5856	6.96	9.09	237.63	--	--	269.65	308.7	--	--	--
299-E13-9	A5857	10.24	12.42	223.24	--	--	265.38	297.62	--	--	--
299-E16-1	A4727	--	0	214.12	260.36	267.3	--	300.89	374.22	442.82	470.76
299-E16-2	A5878	--	14.85	162.72	253.25	257.51	--	327.63	333.61	339.74	--
299-E17-1	A4728	--	1.75	261.44	275.91	305.24	--	313.26	--	--	--
299-E17-10	A4729	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E17-11	A5883	--	20.63	--	--	--	--	--	--	--	--
299-E17-12	A4730	--	42.04	222.27	--	--	--	289.74	--	--	--
299-E17-13	A4731	--	42.21	222.43	--	--	--	283.09	--	--	--
299-E17-14	A4732	--	0.04	261.65	289.37	293.85	--	301.16	--	--	--
299-E17-15	A4733	--	0	234.1	298.26	299.72	--	306.15	--	--	--
299-E17-16	A4734	--	0.42	234.33	294.5	295.96	--	305.23	--	--	--
299-E17-17	A4735	--	0.75	230.49	306.55	307.29	--	308.74	--	--	--
299-E17-18	A4736	--	0.91	233.03	284.95	285.54	--	295.6	--	--	--
299-E17-19	A4737	--	0.75	264.75	291.85	292.58	--	305.18	--	--	--
299-E17-2	A5879	--	0	262.7	308.8	314.57	--	322.24	390.29	407.58	--
299-E17-20	A4738	--	6.4	235.01	262.86	266.49	--	294.94	--	--	--
299-E17-21	B8500	--	--	--	--	--	--	--	--	--	--
299-E17-22	C3826	--	0.96	263.09	--	--	--	316.23	--	--	--
299-E17-23	C3827	--	0.12	253.67	326.25	326.29	326.79	327.23	--	--	--
299-E17-24	C3828	--	0.42	277.66	328.04	328.31	--	328.62	--	--	--
299-E17-25	C3926	--	0	274.9	327.89	327.97	--	328.49	--	--	--
299-E17-26	C4648	--	0.37	254.91	--	--	--	321.11	--	--	--
299-E17-3	A5880	--	--	--	--	--	--	--	--	--	--
299-E17-4	A5881	--	0.5	255.81	291.46	304.55	--	309.48	383.63	399.66	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E17-5	A4739	--	24.33	240.9	284.98	294	--	315.16	--	--	--
299-E17-51	A5886	--	21.54	--	--	--	--	--	--	--	--
299-E17-53	A5887	--	0.29	--	--	--	--	--	--	--	--
299-E17-54	A5888	--	28.69	--	--	--	--	--	--	--	--
299-E17-6	A4740	--	1.21	230.5	281.17	281.76	--	296.73	369.8	424.83	--
299-E17-7	A5882	--	--	--	--	--	--	--	--	--	--
299-E17-8	A4741	--	0.46	261.53	305.12	309.43	--	325.82	--	363.35	--
299-E17-9	A4742	--	22.21	261.33	306.46	307.91	--	316.59	--	--	--
299-E18-1	A4743	--	0.29	224.38	299.45	301.19	--	302.72	--	--	--
299-E18-2	A4744	--	13.1	233.74	--	--	--	309.08	--	--	--
299-E18-3	A4745	--	17.88	233.34	255.61	255.61	--	302.51	--	--	--
299-E18-4	A4746	--	0.54	232.13	255.56	256.96	--	305.32	--	--	--
299-E19-1	A5889	0.73	22.37	244.15	302.99	303.3	303.71	305.28	374.68	489.29	519.95
299-E23-1	A4747	--	--	--	--	--	--	--	--	--	--
299-E23-2	A4748	--	10.77	264.87	--	--	--	365.78	369.79	411.79	443.79
299-E23-2O	A9457	--	--	--	--	--	--	--	--	--	--
299-E23-2P	A9458	--	--	--	--	--	--	--	--	--	--
299-E23-2Q	A9459	--	--	--	--	--	--	--	--	--	--
299-E24-1	A5896	--	20.25	264.02	289.19	290.65	--	303.76	--	341.9	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E24-10	A5902	--	40	265	--	--	--	282	--	308	--
299-E24-100	A5955	--	0.17	--	--	--	--	--	--	--	--
299-E24-101	A5956	--	0	--	--	--	--	--	--	--	--
299-E24-102	A5957	--	0	--	--	--	--	--	--	--	--
299-E24-103	A5958	--	0	--	--	--	--	--	--	--	--
299-E24-104	A5959	--	0.29	--	--	--	--	--	--	--	--
299-E24-105	A5960	--	0.54	--	--	--	--	--	--	--	--
299-E24-106	A5961	--	0.08	--	--	--	--	--	--	--	--
299-E24-107	A5962	--	0.54	--	--	--	--	--	--	--	--
299-E24-109	A5964	--	0.54	--	--	--	--	--	--	--	--
299-E24-11	A5903	--	21.18	234.38	251.89	266.31	--	285.25	--	310.29	--
299-E24-110	A5965	--	0	--	--	--	--	--	--	--	--
299-E24-12	A5904	--	0	265.32	289.16	300.01	--	308.57	--	--	--
299-E24-13	A4749	--	5	--	269	287	--	--	--	--	--
299-E24-14	A4750	--	5	--	277	290	--	--	--	--	--
299-E24-16	A4751	--	0.79	257.81	289.26	291.44	--	302.72	--	--	--
299-E24-160	A6021	--	0.83	--	--	--	--	--	--	--	--
299-E24-17	A4752	--	0.67	252	268.81	269.52	--	283.83	--	304.75	--
299-E24-18	A4753	--	0.12	221.17	252.4	269.35	--	290.02	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E24-19	A4754	--	--	--	--	--	--	--	--	--	--
299-E24-2	A4755	--	20.03	266.37	274.92	274.92	--	305.16	--	310.73	--
299-E24-20	A4756	2.7	4.36	272.38	274.98	280.64	--	--	--	--	--
299-E24-21	C3177	--	1	265.53	270.94	272.39	--	331.56	--	--	--
299-E24-22	C4123	1	1.55	263.28	269.25	272	--	--	--	310.33	--
299-E24-23	C5301	--	17.88	273.12	283.97	297.39	--	333.15	--	349.18	--
299-E24-24	C4647	0	0.08	220.15	243.57	245.31	--	311.68	--	--	--
299-E24-25	C7514	5.85	13.32	247.11	278.53	279.26	--	--	--	318.27	357.23
299-E24-3	A5897	--	15	285	--	--	--	--	--	--	--
299-E24-33	C4257	2.44	7.2	254.31	256.16	268.24	--	--	--	312.24	--
299-E24-4	A5898	--	20	275	--	--	--	--	--	--	--
299-E24-5	A5899	--	10	269	--	--	--	--	--	--	--
299-E24-51	A5908	--	8.49	--	--	--	--	--	--	--	--
299-E24-52	A5909	--	4.61	--	--	--	--	--	--	--	--
299-E24-53	A5910	--	27.16	--	--	--	--	--	--	--	--
299-E24-54	A5911	--	19.25	--	--	--	--	--	--	--	--
299-E24-55	A5912	--	11.65	--	--	--	--	--	--	--	--
299-E24-56	A5913	--	16.93	--	--	--	--	--	--	--	--
299-E24-57	A5914	--	25.03	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E24-58	A5915	--	24.7	--	--	--	--	--	--	--	--
299-E24-59	A5916	--	30.48	--	--	--	--	--	--	--	--
299-E24-60	A5917	--	28.45	--	--	--	--	--	--	--	--
299-E24-7	A4757	--	0.5	273.35	274.51	275.41	--	330.27	375.23	395.87	447.4
299-E24-76	A5931	--	0.21	--	--	--	--	--	--	--	--
299-E24-77	A5932	--	0.21	--	--	--	--	--	--	--	--
299-E24-78	A5933	--	0.21	--	--	--	--	--	--	--	--
299-E24-79	A5934	--	0.37	--	--	--	--	--	--	--	--
299-E24-8	A4758	--	--	--	--	--	--	--	--	--	--
299-E24-80	A5935	--	0.29	--	--	--	--	--	--	--	--
299-E24-81	A5936	--	0.12	--	--	--	--	--	--	--	--
299-E24-82	A5937	--	0	--	--	--	--	--	--	--	--
299-E24-83	A5938	--	0.71	--	--	--	--	--	--	--	--
299-E24-84	A5939	--	0.25	--	--	--	--	--	--	--	--
299-E24-85	A5940	--	1.29	--	--	--	--	--	--	--	--
299-E24-86	A5941	--	0.5	--	--	--	--	--	--	--	--
299-E24-87	A5942	--	0.67	--	--	--	--	--	--	--	--
299-E24-88	A5943	--	0	--	--	--	--	--	--	--	--
299-E24-89	A5944	--	0.12	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E24-8P	A9555	--	--	--	--	--	--	--	--	--	--
299-E24-9	A5901	--	0	267.57	284.63	290.28	--	304.91	--	--	--
299-E24-90	A5945	--	0	--	--	--	--	--	--	--	--
299-E24-91	A5946	--	0.75	--	--	--	--	--	--	--	--
299-E24-92	A5947	--	1.33	--	--	--	--	--	--	--	--
299-E24-93	A5948	--	0	--	--	--	--	--	--	--	--
299-E24-94	A5949	--	0	--	--	--	--	--	--	--	--
299-E24-95	A5950	--	0	--	--	--	--	--	--	--	--
299-E24-96	A5951	--	0	--	--	--	--	--	--	--	--
299-E24-97	A5952	--	0.54	--	--	--	--	--	--	--	--
299-E24-98	A5953	--	0	--	--	--	--	--	--	--	--
299-E24-99	A5954	--	0.42	--	--	--	--	--	--	--	--
299-E25-1	A4759	--	30	--	270	282	--	--	--	--	--
299-E25-10	A4760	--	--	--	--	--	--	--	--	--	--
299-E25-1000	A6536	--	4.7	172.8	238.8	247.82	--	346.35	--	363	379
299-E25-11	A4761	--	17.67	163.22	255.14	257.1	--	305.96	318.82	323.83	--
299-E25-12	A6028	--	21.62	156.19	316	316	--	316	316	321	--
299-E25-13	A4762	--	5	--	260	275	--	--	--	316.6	--
299-E25-14	A6029	0.58	16.1	194.26	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E25-15	A4763	--	15	--	275	280	--	--	--	--	--
299-E25-16	A6030	14.08	59.41	275.54	277.24	284.83	--	--	--	332.92	--
299-E25-17	A6031	--	0.33	149.38	214.47	220.34	--	267.53	--	290.32	--
299-E25-18	A4764	--	5.3	159.65	213.05	227.16	--	254.37	--	288.45	--
299-E25-19	A4765	--	6.2	145.11	216.47	221.78	--	253.91	--	286.24	--
299-E25-190	A6596	--	10.27	--	--	--	--	--	--	--	--
299-E25-191	A6597	--	8.9	--	--	--	--	--	--	--	--
299-E25-193	A6599	--	8.28	--	--	--	--	--	--	--	--
299-E25-2	A4766	5	122	--	260	270	--	--	--	330	365
299-E25-20	A4767	--	5.5	159.65	219.96	223.94	--	270.86	--	284.98	--
299-E25-21	A4768	--	0.04	169.25	240.04	244.3	--	--	--	--	--
299-E25-22	A6032	--	0	155	230	230	--	--	--	256	--
299-E25-23	A6033	--	16.88	167.68	255.83	257.22	--	293.6	--	--	--
299-E25-236	C6542	--	124.27	276.09	276.04	279.94	--	--	--	--	--
299-E25-237	C8922	0.95	123.76	276.74	277.22	280.28	--	--	--	329.36	372.55
299-E25-24	A4769	--	--	--	--	--	--	--	--	--	--
299-E25-25	A4770	--	--	--	--	--	--	--	--	--	--
299-E25-26	A4771	--	4.4	161.47	216.45	216.82	--	265.54	266.63	267.74	--
299-E25-27	A4772	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E25-28	A4773	1.11	100.22	150.3	220.73	221.88	--	--	288.37	288.59	--
299-E25-29	A6034	--	6.12	119.93	203.17	204.9	--	--	--	273.89	325.65
299-E25-29P	A4774	--	--	--	--	--	--	--	--	--	--
299-E25-29Q	A4775	--	--	--	--	--	--	--	--	--	--
299-E25-3	A6024	--	9.76	144.87	230.85	232.02	--	--	--	284.15	--
299-E25-30	A6035	--	1.37	160.22	264.17	267.04	--	--	--	311.11	--
299-E25-30P	A4776	--	--	--	--	--	--	--	--	--	--
299-E25-30Q	A4777	--	--	--	--	--	--	--	--	--	--
299-E25-31	A4778	--	0	180	197	197	--	--	--	237	--
299-E25-32	A6036	--	--	--	--	--	--	--	--	--	--
299-E25-32B	A6037	9.93	30.82	158.71	255.92	255.92	--	--	--	286.88	348.84
299-E25-32P	A4779	--	--	--	--	--	--	--	--	--	--
299-E25-32Q	A4780	--	--	--	--	--	--	--	--	--	--
299-E25-33	A4781	--	--	--	--	--	--	--	--	--	--
299-E25-34	A4782	--	--	--	--	--	--	--	--	--	--
299-E25-35	A4783	--	10.47	175.67	220.36	221.52	--	262.29	264.95	274.53	--
299-E25-36	A4784	0.46	88.07	270.17	273.39	274.32	--	--	--	313.99	--
299-E25-37	A4785	--	10	165	195	195	--	--	--	270	--
299-E25-38	A4786	--	10.01	164.84	219.95	220.41	--	268.9	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E25-39	A4787	6.69	20.21	179.02	229.57	239.51	--	--	--	--	--
299-E25-4	A4788	9.05	19.43	201.1	233.85	235.96	--	--	--	278.78	--
299-E25-40	A4789	--	5.15	199.63	254.28	265.44	--	--	--	--	--
299-E25-41	A4790	--	14.82	204.93	253.15	261.95	--	--	--	--	--
299-E25-42	A4791	18.83	21.18	220.29	245.66	254.6	--	287.82	288.02	288.2	--
299-E25-43	A4792	--	--	--	--	--	--	--	--	--	--
299-E25-44	A5448	--	--	--	--	--	--	--	--	--	--
299-E25-45	A5449	--	--	--	--	--	--	--	--	--	--
299-E25-46	A4793	--	2.23	268.23	272.65	278.85	--	--	--	--	--
299-E25-47	A4794	--	--	--	--	--	--	--	--	--	--
299-E25-48	A4795	17.8	20.97	216.85	251.22	254.91	--	281.52	--	282.3	--
299-E25-49	A6038	--	--	--	--	--	--	--	--	--	--
299-E25-5	A6025	--	--	--	--	--	--	--	--	--	--
299-E25-50	A6039	--	7.36	162.2	253.04	258.43	--	293.23	--	--	--
299-E25-52	A6041	--	0.75	--	--	--	--	--	--	--	--
299-E25-53	A6042	--	11.27	--	--	--	--	--	--	--	--
299-E25-54	A6043	--	20	--	--	--	--	--	--	--	--
299-E25-55	A6044	25	70	--	--	--	--	--	--	--	--
299-E25-56	A6045	47.77	81.94	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E25-58	A6047	30	135	--	--	--	--	--	--	--	--
299-E25-6	A4796	1.08	19.52	176.97	228.3	232.91	--	--	--	275.91	--
299-E25-7	A6026	--	--	--	--	--	--	--	--	--	--
299-E25-8	A6027	--	--	--	--	--	--	--	--	--	--
299-E25-9	A4797	5.4	20.43	149.99	222.81	227.42	--	--	--	--	--
299-E25-93	C4122	3.18	9.95	264.74	265.5	265.9	--	--	--	316.61	--
299-E25-94	C4665	1.53	3.85	268.53	270.63	282.23	--	--	--	--	--
299-E25-95	C9630	--	--	--	--	--	--	--	--	--	--
299-E26-1	A4798	--	--	--	--	--	--	--	--	--	--
299-E26-10	A4799	--	--	--	--	--	--	--	--	--	--
299-E26-11	A4800	5.03	--	160.62	166.4	166.4	--	--	--	194.72	198.17
299-E26-12	A4801	--	--	--	--	--	--	--	--	--	--
299-E26-13	A4802	--	--	--	--	--	--	--	--	--	--
299-E26-14	C8204	1.12	--	176.94	180.39	180.97	--	--	--	217.37	220.27
299-E26-15	C8913	--	--	--	--	--	--	--	--	--	--
299-E26-2	A4803	--	--	--	--	--	--	--	--	--	--
299-E26-3	A6640	3.2	9.46	144.16	198.86	198.86	--	--	--	267.98	--
299-E26-4	A4804	0.8	20.78	179.38	205.42	205.89	--	--	--	277.36	--
299-E26-5	A6641	4.88	20.54	185.03	243.07	243.37	--	--	--	288.72	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E26-6	A6642	--	16	185	243	247	--	--	--	--	--
299-E26-7	A6643	--	14	160	--	--	--	--	--	--	--
299-E26-77	C6455	3.2	--	159.35	164.54	164.54	--	--	--	202.1	205.55
299-E26-79	C6826	0.67	--	--	--	--	--	--	--	--	207.09
299-E26-8	A4805	--	--	--	--	--	--	--	--	--	--
299-E27-1	A4807	--	--	--	--	--	--	--	--	--	--
299-E27-10	A4808	--	--	--	--	--	--	--	--	--	--
299-E27-11	A4809	--	--	--	--	--	--	--	--	--	--
299-E27-12	A4810	--	--	--	--	--	--	--	--	--	--
299-E27-13	A4811	--	--	--	--	--	--	--	--	--	--
299-E27-14	A4812	--	--	--	--	--	--	--	--	--	--
299-E27-15	A4813	--	--	--	--	--	--	--	--	--	--
299-E27-155	C5852	2.86	94.55	257.7	262.89	264.05	--	--	--	315.89	335.73
299-E27-16	A4814	--	--	--	--	--	--	--	--	--	--
299-E27-17	A4815	--	--	--	--	--	--	--	--	--	--
299-E27-18	A6674	10.1	69.23	185.91	209.57	209.57	--	--	--	--	264.46
299-E27-19	A6675	6.74	65.3	206.24	214.94	214.94	--	--	--	--	--
299-E27-2	A6670	--	20	--	255	264	--	--	--	--	--
299-E27-20	C4126	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E27-21	C4127	19.16	64.64	240.33	260.41	262.21	--	--	--	303.19	--
299-E27-22	C4124	4.19	82.51	184	207.69	207.69	--	--	--	250.06	267.53
299-E27-23	C4190	10.71	117.24	249.17	254.88	255.34	--	--	--	304.66	--
299-E27-24	C7570	1.06	36.69	238.66	240.98	247	--	--	--	300.41	314.12
299-E27-25	C7571	--	--	--	--	--	--	--	--	--	--
299-E27-26?	C9449	1.91	39.32	201.29	221.37	222.1	--	--	--	269.37	279.14
299-E27-3	A6671	5.19	69.95	238.95	278.94	280.15	--	--	--	336.12	349.84
299-E27-4	C4125	20.18	109.47	240.93	254.05	254.51	--	--	--	--	--
299-E27-5	A6672	1	5.02	249.45	276.61	278.07	--	--	--	320	--
299-E27-6	A6673	9.84	84.42	255.46	257.36	265.35	--	--	--	324.3	342.37
299-E27-7	A4816	--	--	--	--	--	--	--	--	--	--
299-E27-8	A4817	--	--	--	--	--	--	--	--	--	--
299-E27-9	A4818	--	--	--	--	--	--	--	--	--	--
299-E28-1	A6784	0	20.24	193.85	196.89	234.98	--	--	--	--	--
299-E28-10	A6789	0.64	27.42	--	245.37	270.45	--	--	--	298.05	309.37
299-E28-11	A6790	--	--	--	--	--	--	--	--	--	--
299-E28-12	A4819	--	--	--	--	--	--	--	--	--	--
299-E28-13	A6791	1.57	21.5	200.67	229.23	234.95	--	--	--	307.05	360.53
299-E28-14	A6792	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E28-16	A6794	--	--	--	--	--	--	--	--	--	--
299-E28-17	A4820	--	--	--	--	--	--	--	--	--	--
299-E28-18	A4821	0	34.01	--	194.43	230.07	--	--	--	275.46	--
299-E28-19	A6795	--	32.17	--	--	--	--	--	--	--	--
299-E28-2	A6785	0	26.72	210.14	251.15	259.8	--	--	--	293.82	315.15
299-E28-20	A6796	1.11	33.54	185.48	189.03	224.67	--	--	--	282.99	--
299-E28-21	A6797	2.1	35.29	191.14	195.71	223.31	--	--	--	--	--
299-E28-22	A6798	0	24.18	210.27	275.21	276.12	--	--	--	358.21	369.44
299-E28-23	A6799	--	--	--	--	--	--	--	--	--	--
299-E28-24	A6800	--	--	--	--	--	--	--	--	--	--
299-E28-25	A6801	--	--	--	--	--	--	--	--	--	--
299-E28-26	A4822	0.82	76.18	173.35	204.96	225.2	--	--	--	299.74	325.7
299-E28-27	A4823	0.29	79.68	193.88	211.73	231.16	--	--	--	275.72	300.04
299-E28-28	A4824	1.34	69.36	160.13	189.3	203.89	--	--	--	293.84	--
299-E28-29	C3542	--	--	--	--	--	--	--	--	--	--
299-E28-3	A6786	0	33.95	232.54	250.32	254.48	--	--	--	305.89	--
299-E28-30	C7515	--	30	230.45	259.34	260.01	--	--	--	304.5	365.17
299-E28-31	C9447	--	30.51	--	228.19	234.66	--	--	--	330.5	352.96
299-E28-32	C9448	--	15.57	216.7	255.19	257.01	--	--	--	349.02	370.65

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E28-4	A4825	--	--	--	--	--	--	--	--	--	--
299-E28-5	A6787	6.15	24.82	229.28	242.55	247.75	--	--	--	299.91	305.54
299-E28-6	A4826	0	33.25	209.66	273.19	274.6	--	--	--	--	--
299-E28-7	A4827	--	--	--	--	--	--	--	--	--	--
299-E28-8	A6788	0.7	35.53	230.17	242.01	243.77	--	--	--	287.07	295.52
299-E28-9	A4828	--	79.79	--	--	--	--	--	--	--	--
299-E28-95	A6846	0.64	32.2	157.79	190.22	199.09	--	--	--	280.93	--
299-E29-54	C5860	--	14.8	203.44	247.67	249.48	--	--	--	331.56	372.15
299-E32-1	A4829	0	54.07	192.59	197.57	200.7	--	--	--	270.59	272.79
299-E32-10	A5432	--	--	--	--	--	--	--	--	--	--
299-E32-2	A4830	0.82	41.3	189.57	200.13	210.63	--	--	--	284.6	--
299-E32-3	A4831	1.22	64.39	195.63	203.74	204.55	--	--	--	293.75	--
299-E32-4	A4832	0.82	72.11	179.04	185.57	186.33	--	--	--	296.53	--
299-E32-5	A4833	0.93	68.19	188.07	195.36	195.36	--	--	--	--	--
299-E32-6	A4834	0.64	39.55	181.79	191.09	210.5	--	--	--	275.77	--
299-E32-7	A4835	0.76	--	--	--	--	--	--	--	264.46	--
299-E32-8	A4836	0.17	24.5	169.92	205.03	205.41	--	--	--	253.38	--
299-E32-9	A4837	--	--	--	--	--	--	--	--	--	--
299-E33-10	A6853	28.13	57.3	208.26	210.05	239.93	--	--	--	281.54	287.15

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E33-11	A6854	2.08	14.22	176.04	194.77	201.73	--	--	--	--	226.02
299-E33-12	A4839	0	27.08	173.54	185.05	186.8	--	--	--	--	228.48
299-E33-13	A4840	--	--	--	--	--	--	--	--	--	--
299-E33-14	A4841	0.5	19.6	163.5	165.78	169.25	--	--	--	224.85	226.9
299-E33-15	A4842	15.35	44.13	150.25	180.16	190.29	--	--	--	--	238.25
299-E33-16	A6855	--	--	--	--	--	--	--	--	--	--
299-E33-17	A4843	0	17.18	179.36	200.15	216.15	--	--	--	235.94	242.18
299-E33-18	A4844	--	--	--	--	--	--	--	--	--	--
299-E33-19	A4845	--	--	--	--	--	--	--	--	--	--
299-E33-1A	A4838	--	--	--	--	--	--	--	--	--	--
299-E33-2	A4846	0.47	49.99	143.74	184.5	189.35	--	--	--	--	233.1
299-E33-20	A4847	--	--	--	--	--	--	--	--	--	--
299-E33-205	C5989	1.97	31.13	216.49	220.14	238.1	--	--	--	262.36	267.27
299-E33-21	A4848	1.15	45.95	--	220.25	225.8	--	--	--	--	278.92
299-E33-22	A6856	--	--	--	--	--	--	--	--	--	--
299-E33-24	A4849	1.15	35.17	--	196.63	200.1	--	--	--	--	244.55
299-E33-25	A6858	0	24.85	139.74	199.31	199.45	--	--	--	--	235.28
299-E33-26	A4850	--	51.35	139.97	190.08	190.2	--	--	--	--	239.2
299-E33-265	C7564	0	46.15	198.48	203.32	220.36	--	--	--	--	281.4

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E33-266	C7565	2.04	48.24	198.91	208.65	220.79	--	--	--	--	282.65
299-E33-267	C8242	0.38	25.73	--	203.5	204.55	--	--	--	253.05	255.22
299-E33-268	C8243	--	--	--	--	--	--	--	--	--	--
299-E33-27	A4851	0.03	39.4	225.83	239	241.7	--	--	--	--	--
299-E33-28	A4852	0.17	48.77	158.95	186.49	209.99	--	--	--	269.5	275.62
299-E33-29	A4853	--	--	--	--	--	--	--	--	--	--
299-E33-296	A7092	0.47	40.09	186.1	189.67	192.76	--	--	--	--	--
299-E33-3	A4854	--	54.91	136.65	187.13	192.32	--	--	--	--	230.53
299-E33-30	A4855	0	75.07	203.05	215.24	229	--	--	--	--	276.28
299-E33-302	A7098	0.6	45.92	156.44	190.27	193.65	--	--	--	--	--
299-E33-304	A7100	0.35	25.7	195.37	196.88	201.73	--	--	--	--	--
299-E33-31	A4856	--	--	--	--	--	--	--	--	--	--
299-E33-32	A4857	--	--	--	--	--	--	--	--	--	--
299-E33-33	A4858	--	35.26	176.73	206.22	210.83	--	--	--	249.95	250.71
299-E33-333	B8079	10.19	27.74	--	212	211.42	--	--	--	--	--
299-E33-334	B8810	--	--	--	--	--	--	--	--	--	--
299-E33-335	B8811	--	--	--	--	--	--	--	--	--	--
299-E33-337	C3390	0.53	55.63	215.53	227.96	230.25	--	--	--	270.76	--
299-E33-34	A4859	0.29	21.41	140.48	174.67	194.79	--	--	--	--	239.77

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E33-340	C5853	0	33.18	155.34	184.86	185.79	--	--	--	--	225.88
299-E33-341	C5856	0.38	50.7	150.4	184.75	190.65	--	--	--	--	231.95
299-E33-342	C5857	1.33	49.69	179.51	190.05	191.46	--	--	--	--	242.42
299-E33-343	C5858	0	37.27	208.61	214.77	239.35	--	--	--	261.12	261.57
299-E33-345	C6226	--	--	--	--	--	--	--	--	--	--
299-E33-35	A4860	1.05	35.87	140.4	199.54	204.39	--	--	--	--	248.95
299-E33-350	C8914	0.7	36.94	197.93	215.27	--	--	--	--	--	--
299-E33-36	A4861	--	--	--	--	--	--	--	--	--	--
299-E33-360	C8923	5.37	36.63	210.26	214.75	243.55	--	--	--	255.07	260.23
299-E33-361	C8924	7.6	31.23	188.68	209.93	213.51	--	--	--	270.33	274.15
299-E33-37	A4862	--	--	--	--	--	--	--	--	--	--
299-E33-38	A4863	0	49.98	185.46	189.9	197.53	--	--	--	--	237.82
299-E33-39	A4864	--	--	--	--	--	--	--	--	--	--
299-E33-4	A4865	0.2	59.93	146.77	190.15	190.47	--	--	--	--	229.02
299-E33-40	A4866	--	--	--	--	--	--	--	--	--	--
299-E33-41	A4867	--	--	--	--	--	--	--	--	--	--
299-E33-42	A4868	--	--	--	--	--	--	--	--	--	--
299-E33-43	A4869	--	--	--	--	--	--	--	--	--	--
299-E33-44	B8554	1.2	23.08	195.66	203.98	209.9	--	--	--	--	247.05

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E33-45	C3269	--	--	--	--	--	--	--	--	--	--
299-E33-46	C3360	--	--	--	--	--	--	--	--	--	--
299-E33-47	C4259	2.33	46.77	207.72	213.28	223.6	--	--	--	253.53	--
299-E33-48	C4260	1.1	35.37	217.03	242.81	249.46	--	--	--	265.34	285.69
299-E33-49	C4261	1.87	49.07	210.67	217.13	224.23	--	--	--	272.37	283.8
299-E33-5	A4870	25.05	49.73	169.88	179.92	185.13	--	--	--	--	236.53
299-E33-50	C5195	0.43	10.85	160.36	185.85	187.57	--	--	--	--	233.75
299-E33-58	A6866	11.1	31.89	--	--	--	--	--	--	--	--
299-E33-59	A6867	12.85	32.65	--	--	--	--	--	--	--	--
299-E33-6	A6852	--	--	--	--	--	--	--	--	--	--
299-E33-60	A6868	10.2	27.92	--	--	--	--	--	--	--	--
299-E33-7	A4871	14.58	48.88	145.2	194.89	197.9	--	--	--	--	229.85
299-E33-75	A6883	0.63	37.04	--	--	--	--	--	--	--	--
299-E33-8	A4872	0.15	40.77	--	204.68	209.88	--	--	--	--	253.63
299-E33-9	A4873	0.5	45.53	197.21	199.23	211.95	--	--	--	--	263
299-E34-1	A4874	--	--	--	--	--	--	--	--	--	--
299-E34-10	A4875	0.58	53.35	183.3	201.8	201.8	--	--	--	--	247.42
299-E34-11	A4876	22.87	55.97	190.13	195.33	195.33	--	--	--	--	218.3
299-E34-12	A5433	4.57	48.12	194.84	210.43	209.85	--	--	--	--	246.24

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E34-13	C7566	9.9	97.75	181.07	204.78	204.78	--	--	--	--	225.57
299-E34-2	A4877	0.33	129.9	179.59	209.61	209.61	--	--	--	--	240.21
299-E34-3	A4878	0	--	160.66	--	--	--	--	--	--	212.07
299-E34-4	A4879	0.37	--	141.55	145	145	--	--	--	--	175.02
299-E34-5	A4880	3.08	169.41	170.13	188.99	188.99	--	--	--	--	191.58
299-E34-6	A4881	0.25	146.01	184.15	--	--	--	--	--	--	193.96
299-E34-7	A4882	1.33	--	--	--	--	--	--	--	--	204.29
299-E34-8	A4883	2.54	40.29	183.49	211.81	211.81	--	--	--	--	--
299-E34-9	A4884	2.29	41.17	185.01	201.77	201.77	--	--	--	--	233.54
299-E35-1	A4885	0.62	--	--	--	--	--	--	--	191.31	192.05
299-E35-2	A4886	--	--	162.95	171.45	171.45	--	--	--	--	199.56
699-30-47	A8499	2.8	5.56	199.43	--	--	225.65	244.96	--	--	--
699-30-51	A8500	2	2.77	--	--	--	--	--	--	--	--
699-30-55	A8501	3.32	4.68	267.85	--	--	268.11	268.2	--	--	--
699-30-57?	C9417	3.27	9.15	--	--	--	--	263.33	409.17	--	--
699-31-53A	A8506	1.46	15.85	273.57	--	--	--	287.29	430.97	--	--
699-31-53B	A8507	--	--	--	--	--	--	--	--	--	--
699-31-53BO	A9638	--	--	--	--	--	--	--	--	--	--
699-31-53BP	A9639	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-31-53BQ	A9640	--	--	--	--	--	--	--	--	--	--
699-32-42	A8516	--	0.42	85.29	--	--	--	124.8	--	--	--
699-32-43	A5127	--	0.21	89.54	--	--	--	126.96	--	--	--
699-32-49A	A8517	1.92	10.55	--	--	--	--	--	--	--	--
699-33-38	A8531	--	0.36	43.71	--	--	--	--	--	--	--
699-33-42	A5132	--	0	89.92	--	--	--	120.68	--	--	--
699-33-56	A5133	6.6	10.24	280.23	--	--	290.05	290.1	405.23	--	--
699-34-39A	A5134	--	0.16	42.05	--	--	--	--	--	--	--
699-34-39B	A8539	--	0.16	43.5	--	--	--	--	--	--	--
699-34-41B	A5135	--	0.83	60.65	--	--	--	147.21	--	--	--
699-34-42	A5136	--	0	77.64	--	--	--	145.72	--	--	--
699-34-51	A5137	0.57	2.75	251.23	--	--	286.76	316.75	--	--	--
699-35-57	A8556	8.73	10.91	300.98	--	--	301.46	302	--	--	--
699-35-58	A8557	9.62	13.26	--	--	--	--	290.48	--	--	--
699-35-58D	C9427	--	0.47	--	--	--	259.82	312.03	--	--	--
699-35-59	A8558	--	7.64	--	--	--	--	302.07	--	--	--
699-36-46P	A8568	--	--	--	--	--	--	--	--	--	--
699-36-46Q	A8569	--	--	--	--	--	--	--	--	--	--
699-36-46R	A8570	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-36-46S	A5143	--	--	--	--	--	--	--	--	--	--
699-36-58A	A8571	0.94	34.88	306.42	--	--	307.31	311.57	--	--	--
699-36-58B	A8572	6.6	8.79	--	--	--	--	303.37	--	--	--
699-37-43	A5146	--	0.58	192.8	--	--	--	264.27	337.15	428.11	504.68
699-37-43O	A9670	--	--	--	--	--	--	--	--	--	--
699-37-43P	A9671	--	--	--	--	--	--	--	--	--	--
699-37-43Q	A9672	--	--	--	--	--	--	--	--	--	--
699-37-43R	A9673	--	--	--	--	--	--	--	--	--	--
699-37-47A	B2822	--	0.29	209.27	--	--	--	310	365	438.6	515.3
699-39-39	A5150	1.35	--	86.22	--	--	--	--	119.05	--	--
699-40-39	A5155	10.19	--	82.2	--	--	--	--	124.24	200.26	--
699-40-40A	A5156	0	79.83	80.7	--	--	--	--	120.2	186.71	--
699-40-40B	A5157	--	--	--	--	--	--	--	--	--	--
699-41-40	A5161	0.47	79.55	80.13	--	--	--	--	125.37	159.31	--
699-41-42	A5162	--	0	162.98	--	--	--	--	239.91	255.8	335.52
699-42-37	A5164	1.98	--	--	--	--	--	--	91.48	129.74	248.87
699-42-39A	A5165	5.1	--	119.88	--	--	--	--	139.46	164.66	--
699-42-39B	A5166	4.57	--	114.52	--	--	--	--	133.81	170.62	--
699-42-40A	A5167	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-42-40B	A5168	--	--	--	--	--	--	--	--	--	--
699-42-40C	A5169	2.13	--	96.34	--	--	--	--	146.74	147.99	218.01
699-42-41	A5170	0.73	79.56	100.39	--	--	--	--	152.2	153.06	--
699-42-42A	A8670	--	5.32	122.05	--	--	--	--	207.42	207.71	293.84
699-42-42B	A5171	--	0	108.13	--	--	--	--	--	184.77	--
699-43-40	A5173	1.46	--	99.97	--	--	--	--	130.64	--	--
699-43-41E	A5174	--	--	--	--	--	--	--	--	--	--
699-43-41F	A5175	--	--	--	--	--	--	--	--	--	--
699-43-41G	A5176	0.62	--	87.94	--	--	--	--	121.88	142.1	--
699-43-42	A5177	4	30.11	92.11	--	--	--	--	152.45	154.08	207.61
699-43-42K	A8695	--	0.83	108.79	--	--	--	--	--	182.38	243.04
699-43-43	A5179	--	--	--	--	--	--	--	--	--	--
699-43-44	B8758	8.47	24.62	104.9	142.4	142.4	--	--	--	158.21	207.21
699-43-45	A5180	7.14	48.53	146.41	173.06	173.06	--	--	--	186.03	--
699-44-39B	A5185	--	--	--	--	--	--	--	--	--	--
699-44-42	A5186	0	53.23	112.93	--	--	--	--	--	161.98	--
699-44-43B	A5187	1.33	29.82	121.1	135.53	139.56	--	--	--	159.82	--
699-45-42	A5195	1.58	24.95	118.01	--	--	--	--	--	159.86	187.31
699-46-91	C8916	2.36	--	179.5	190.63	190.63	--	--	--	--	199.1

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-47-42	A8749	0.06	52.27	52.74	--	--	--	--	--	53.13	67.35
699-47-46A	A5200	0.84	--	--	--	--	--	--	--	175	193.82
699-47-50	A5201	1.43	210.06	--	--	--	--	--	--	--	215.52
699-47-51	A8752	0.52	--	--	--	--	--	--	--	--	159.02
699-48-48A	A8768	1.36	--	--	--	--	--	--	--	--	190.79
699-48-48B	A8769	0.39	--	--	--	--	--	--	--	--	188.2
699-48-50	A5212	0.97	--	--	--	--	--	--	--	--	--
699-48-50B	C5196	4.72	42.57	111.17	121.01	169.57	--	--	--	206.22	209.15
699-49-55A	A5217	--	--	--	--	--	--	--	--	--	--
699-49-55B	A5218	2.34	49.91	64.54	65.53	105.42	--	--	--	--	134.32
699-49-57A	A5219	--	--	--	--	--	--	--	--	--	--
699-49-57B	A5220	--	--	--	--	--	--	--	--	--	--
699-50-42	A5224	2.08	--	--	--	--	--	--	--	38.9	64.31
699-50-42P	A9486	0	--	--	--	--	--	--	--	38.31	65.47
699-50-45	A5225	0.65	--	--	--	--	--	--	--	--	36.92
699-50-48A	A8812	0.52	--	--	--	--	--	--	--	--	119.91
699-50-48B	A5226	0.84	--	--	--	--	--	--	--	--	110.95
699-50-53A	A5227	0	94.87	142.96	156	156	--	--	--	156	156.33
699-50-53B	A5228	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-50-56	C5197	0	59.97	102.3	106.32	135.68	--	--	--	160.03	160.76
699-50-59	C4882	2.11	164.73	164.88	165.03	165.25	--	--	--	166.76	166.97
699-51-46	A5230	0	--	--	--	--	--	--	--	11	12
699-52-46A	A5234	0	--	--	--	--	--	--	--	36.76	49.68
699-52-48	A5235	4.09	--	--	--	--	--	--	--	26.9	26.98
699-52-52	A8842	0.65	143.4	--	--	--	--	--	--	149	149.29
699-52-54	A5236	0	99.43	136.77	143.24	146.93	--	--	--	--	167.15
699-52-55	C5861	2.99	110.09	135.44	147.25	155.37	--	--	--	--	176.9
699-52-55B	C5862	5.33	115.28	127.73	148.73	156.85	--	--	--	--	177.1
699-52-57	A5237	0	107.27	--	136.78	137.44	--	--	--	--	159.32
699-53-47B	A5240	--	--	--	--	--	--	--	--	--	--
699-53-48A	A5241	--	--	--	--	--	--	--	--	--	--
699-53-50	A5243	--	--	--	--	--	--	--	--	--	--
699-53-51	B8695	5.78	--	--	--	--	--	--	--	--	35.17
699-53-55A	A5244	4.48	115.42	190.76	206.21	212.94	--	--	--	--	257.58
699-53-55AO	A9732	--	--	--	--	--	--	--	--	--	--
699-53-55AP	A9733	--	--	--	--	--	--	--	--	--	--
699-53-55AQ	A9734	--	--	--	--	--	--	--	--	--	--
699-53-55AR	A9735	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-53-55AS	A9736	--	--	--	--	--	--	--	--	--	--
699-53-55B	A5245	--	--	--	--	--	--	--	--	--	--
699-53-55C	A5246	--	--	--	--	--	--	--	--	--	--
699-54-42	A5250	1.04	--	--	--	--	--	--	--	95	198.78
699-54-45A	A5251	0.45	--	--	--	--	--	--	--	79.74	--
699-54-45B	A8862	--	--	--	--	--	--	--	--	--	--
699-54-48	A5252	3.57	--	--	--	--	--	--	--	62.94	93.93
699-54-49	A8863	--	--	--	--	--	--	--	--	--	--
699-54-57	A5253	1.49	--	--	--	--	--	--	--	177.49	181.97
699-55-40	A5255	0.1	--	--	--	--	--	--	--	122.86	144.33
699-55-44	A5256	4.94	--	--	--	--	--	--	--	99.52	--
699-55-50A	A8865	4.81	--	--	--	--	--	--	--	90.33	97.45
699-55-50B	A8866	--	--	--	--	--	--	--	--	--	--
699-55-50C	A5257	--	--	--	--	--	--	--	--	--	--
699-55-50D	A8867	4.74	--	--	--	--	--	--	--	89.7	90.64
699-55-57	A5259	1.5	--	--	--	--	--	--	--	166.02	170.32
699-56-40A	A8881	--	--	--	--	--	--	--	--	--	--
699-56-40B	A8882	--	--	--	--	--	--	--	--	--	--
699-56-40C	A8883	--	--	--	--	--	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-56-41	A8884	--	--	--	--	--	--	--	--	--	--
699-56-42A	A8885	--	--	--	--	--	--	--	--	--	--
699-56-42B	A8886	--	--	--	--	--	--	--	--	--	--
699-56-42C	A8887	--	--	--	--	--	--	--	--	--	--
699-56-42D	A8888	--	--	--	--	--	--	--	--	--	--
699-56-42E	A8889	--	--	--	--	--	--	--	--	--	--
699-56-42F	A8890	--	--	--	--	--	--	--	--	--	--
699-56-43	A5264	1.43	--	--	--	--	--	--	--	53	53.08
699-56-51	A8891	2.14	--	--	--	--	--	--	--	103	103.96
699-56-53	A5265	2.08	--	--	--	--	--	--	--	--	99.99
699-57-41A	A8896	0.65	--	--	--	--	--	--	--	--	74.56
699-57-41B	A8897	0	--	--	--	--	--	--	--	--	64.62
699-57-41C	A8898	0.32	--	--	--	--	--	--	--	--	58.97
699-57-41D	A8899	--	--	--	--	--	--	--	--	--	--
699-57-41E	A8900	1.1	--	--	--	--	--	--	--	35	35.4
699-57-41F	A8901	0.39	--	--	--	--	--	--	--	--	78.85
699-57-42	A8902	1.05	--	--	--	--	--	--	--	34	34.88
699-57-59	A5269	1.38	--	--	--	--	--	--	--	--	--
699-58-40	A8907	0	--	--	--	--	--	--	--	--	1.75

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-58-41A	A8908	3.57	--	--	--	--	--	--	--	--	18.9
699-58-41B	A8909	15.78	--	--	--	--	--	--	--	--	75.22
699-58-41C	A8910	14.62	--	--	--	--	--	--	--	--	94.85
699-58-41E	A8912	1.23	--	--	--	--	--	--	--	--	9.35
699-58-41F	A8913	5.72	--	--	--	--	--	--	--	--	69.76
699-59-55	A8918	--	--	--	--	--	--	--	--	--	--
699-59-58	A5277	0.84	--	--	--	--	--	--	--	--	--
B8826	B8826	--	4.73	195.52	214.63	225.59	--	257.75	259.83	270.16	--
C3104	C3104	0.3	30.52	--	215.93	220.43	--	--	--	--	--
C3245	C3245	--	16.28	192.53	234.05	235.17	--	--	--	--	--
C3246	C3246	--	34.27	250.9	262.6	262.97	--	--	--	290.27	--
C3247	C3247	--	45.08	--	--	--	--	--	--	--	--
C4106	C4106	--	12.3	160.57	237.92	238.49	--	--	--	--	--
C4160	C4160	--	25.28	252.8	--	--	--	294.1	--	--	--
C4191	C4191	5.61	7.74	194.9	--	--	241.07	302.28	--	--	--
C4304	C4304	3.33	4.83	--	--	--	--	--	--	--	--
C4545	C4545	--	19	174	238	238	--	--	--	--	--
C4560	C4560	--	7.95	--	--	--	--	--	--	--	--
C4562	C4562	--	0.17	261.81	286.37	286.68	--	287.3	378.39	431.6	539

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
C4666	C4666	--	--	--	--	--	--	--	--	--	--
C4993	C4993	--	0.83	166	229.92	235.61	--	282.16	290	290	358.23
C4996	C4996	1.7	87.32	156.46	253.85	254.57	--	--	302.32	302.61	349.61
C4997	C4997	--	17.13	167.3	252.79	255.08	--	--	--	318.47	382.87
C4998	C4998	--	8.44	160.39	247.71	250	--	314.23	--	321.14	381.51
C5515	C5515	7.2	7.65	277.36	283.08	303.5	--	--	--	--	--
C5941	C5941	--	5.74	173.82	228.41	229.33	--	269.32	290.74	--	--
C6552	C6552	--	35.65	260.93	282.59	284.81	--	302.78	--	322.54	--
C6756	C6756	2.49	4.68	--	--	--	--	--	--	--	--
C6911	C6911	--	21.63	--	--	--	--	--	--	--	--
C7517	C7517	--	5.99	--	--	--	--	--	--	--	--
C7518	C7518	--	5.78	--	--	--	--	--	--	--	--
C7519	C7519	--	5.7	--	--	--	--	--	--	--	--
C7520	C7520	--	5.78	--	--	--	--	--	--	--	--
C7521	C7521	--	5.86	--	--	--	--	--	--	--	--
C8706	C8706	0.97	56.82	134.91	195.63	196.95	--	--	--	--	--
C9487	C9487	8.57	36.24	213.6	215.85	--	--	--	--	--	--
C9488	C9488	--	57.34	164.41	206.23	223.13	--	--	--	--	--
C9491	C9491	28.65	51.58	--	216.5	219.63	--	--	--	--	--

Table A-2. GeoContacts Depths for the 200 East Area

Well Name	Hanford ID	HF1 Depth (ft)	HF1 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUg Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
C9549	C9549	14.51	64.9	135.42	187	187.43	--	--	--	--	--
C9550	C9550	0.9	44.93	114.3	197.27	199.87	--	--	--	--	--
C9552	C9552	0.77	57.13	160.44	196.25	200.07	--	--	--	--	--

Note: Blank cells indicated no information.

CCUg = Cold Creek Unit gravels

HF1 = Hanford formation unit 1

HF2 = Hanford formation unit 2

HF3 = Hanford formation unit 3

ID = identification

Rlm = Ringold Formation lower mud unit

Rtf = Ringold Formation member of the Taylor Flat

Rwia = Ringold Formation member of Wooded Island unit A

Rwie = Ringold Formation member of Wooded Island unit E

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-E11-1	C9484	737.38	685.08	--	--	--	564.71	460.08	342.48	--	--
299-E20-1	C9482	755.9	715.13	--	--	--	582.27	470.7	367.93	--	--
299-E20-2	C9483	737.36	692.46	--	--	--	557.72	454.02	354.96	--	--
299-W10-1	A7136	676.86	639.42	--	593.22	583.3	567.99	543.52	--	--	--
299-W10-101	A7191	649.18	638.9	--	597.51	587.98	--	--	--	--	--
299-W10-102	A7192	650.02	639.53	--	598.13	--	--	--	--	--	--
299-W10-103	A7193	638.9	625.52	--	596.23	585.41	--	--	--	--	--
299-W10-104	A7194	638.25	627.43	--	593.69	582.23	--	--	--	--	--
299-W10-105	A7195	645.91	636.97	--	598.16	587.35	--	--	--	--	--
299-W10-108	A7198	635.45	627.84	--	594.97	585.8	--	--	--	--	--
299-W10-110	A7200	634.45	619.79	--	594.36	583.55	--	--	--	--	--
299-W10-115	A7205	639.31	627.21	--	594.34	--	--	--	--	--	--
299-W10-117	A7207	640.18	632.52	--	592.43	586.06	--	--	--	--	--
299-W10-119	A7209	639.54	635.1	--	594.34	586.04	--	--	--	--	--
299-W10-120	A7210	635.45	620.19	--	594.33	583.88	--	--	--	--	--
299-W10-123	A7213	630.6	620.43	--	591.13	585.4	--	--	--	--	--
299-W10-124	A7214	641.08	629.96	--	589.27	584.78	--	--	--	--	--
299-W10-125	A7215	635.09	616.61	--	593.05	584.11	--	--	--	--	--
299-W10-126	A7216	650.84	629.95	--	593.69	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W10-127	A7217	639.53	627.44	--	597.51	--	--	--	--	--	--
299-W10-128	A7218	--	632.52	--	593.05	583.52	--	--	--	--	--
299-W10-130	A7220	644.35	631.89	--	593.07	584.77	--	--	--	--	--
299-W10-138	A7228	641.09	628.07	--	590.48	580.95	--	--	--	--	--
299-W10-14	A4891	700.68	646.95	--	586.19	574.17	567.22	--	254.49	--	--
299-W10-140	A7230	653.22	630.35	--	591.12	582.64	--	--	--	--	--
299-W10-143	A7233	647.54	636.98	--	591.14	583.53	--	--	--	--	--
299-W10-144	A7234	651.64	638.67	--	591.15	581.38	--	--	--	--	--
299-W10-146	A7236	651.66	638.65	--	599.8	590.06	--	--	--	--	--
299-W10-147	A7237	645.93	636.98	--	593.72	583.55	--	--	--	--	--
299-W10-149	A7239	650.84	635.1	--	594.94	586.69	--	--	--	--	--
299-W10-15	A4892	665.9	627.88	--	597.79	583.76	560.85	541.14	--	--	--
299-W10-151	A7241	637.62	620.43	--	592.43	584.13	--	--	--	--	--
299-W10-152	A7242	643.55	632.51	--	590.49	580.31	--	--	--	--	--
299-W10-161	A7245	673.12	616.72	--	585.18	572.99	--	--	--	--	--
299-W10-166	A7249	643.54	628.09	--	591.15	580.97	571.44	554.9	--	--	--
299-W10-167	A7250	641.93	634.45	--	598.15	584.12	565.05	555.47	--	--	--
299-W10-168	A7251	674.31	639.94	--	--	582.01	567.98	552.72	--	--	--
299-W10-169	A7252	670.99	635.33	--	592.71	583.77	566.58	562.78	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W10-17	A4894	670.35	629.68	584.16	581.47	570.77	558.94	543.02	--	--	--
299-W10-176	A7255	645.94	636.97	--	590.5	580.33	--	--	--	--	--
299-W10-2	A4896	669.26	612.56	--	595.42	578.83	562.92	549.54	--	--	--
299-W10-20	A5439	681.68	644.24	612.51	596.38	587.45	--	570.9	--	--	--
299-W10-22	A9890	681.19	648.74	--	598.45	588.23	570.45	537.95	--	--	--
299-W10-23	B8545	670.36	635.34	--	597.8	590.15	567.87	546.23	--	--	--
299-W10-24	B8546	678.56	643.55	--	603.45	588.19	566.55	558.26	--	--	--
299-W10-26	B8548	669.45	630.04	--	582.85	574.09	561.51	544.84	--	--	--
299-W10-27	C3125	669.9	627.81	--	583.3	574.1	559.67	546.34	--	--	--
299-W10-29	C4988	693.78	634.86	--	583	578.55	574.75	561.36	--	--	--
299-W10-3	A4897	652.65	635.09	--	590.32	580.74	562.91	548.29	--	--	--
299-W10-30	C4989	691.79	643.47	620.94	582.35	574.1	564.52	557.55	--	--	--
299-W10-31	C5194	687.38	616.06	--	601.44	586.78	578.53	567.07	--	--	--
299-W10-33	C5855	666.05	629.15	--	--	579.47	564.85	551.46	--	--	--
299-W10-36	C8066	690.47	--	--	619.93	--	590.64	552.42	258.35	244.33	--
299-W10-52	A7142	675.45	635.45	--	--	583.31	562.27	554.67	--	--	--
299-W10-56	A7146	650.11	636.09	--	591.54	580.09	566.7	548.92	--	--	--
299-W10-57	A7147	650.12	637.99	--	590.31	580.73	565.47	550.81	--	--	--
299-W10-59	A7149	648.84	622.12	--	592.2	578.81	560.99	544.44	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W10-62	A7152	649.5	625.29	--	593.47	579.45	561.61	557.17	--	--	--
299-W10-65	A7155	649.5	634.87	--	--	--	--	--	--	--	--
299-W10-67	A7157	648.83	621.47	--	592.83	578.8	559.74	554.01	--	--	--
299-W10-69	A7159	646.33	613.83	--	589.67	574.36	562.89	538.05	--	--	--
299-W10-70	A7160	648.21	608.75	--	592.85	575.02	562.28	533	--	--	--
299-W10-71	A7161	--	--	--	--	--	--	537.46	--	--	--
299-W10-72	A7162	646.91	609.37	--	--	--	--	--	--	--	--
299-W10-73	A7163	655.23	622.77	--	--	--	--	--	--	--	--
299-W10-75	A7165	647.57	638.67	--	--	--	--	--	--	--	--
299-W10-76	A7166	673.55	638.02	--	--	--	--	--	--	--	--
299-W10-8	A4899	680.47	631.52	--	600.95	586.33	556.4	542.37	--	--	--
299-W10-80	A7170	637.38	609.38	--	590.95	586.46	569.91	--	--	--	--
299-W10-82	A7172	668.93	623.02	--	580.99	569.65	557.81	540.39	--	--	--
299-W10-83	A7173	668.98	625.96	--	583.31	572.98	561.14	544.47	--	--	--
299-W10-88	A7178	673.6	628.19	--	582.36	--	--	--	--	--	--
299-W10-89	A7179	671.74	631.9	--	583.3	--	--	--	--	--	--
299-W10-9	A4900	674.78	620.7	--	590.77	581.24	557.44	541.13	--	--	--
299-W10-90	A7180	673.14	620.41	--	583.77	--	--	--	--	--	--
299-W10-91	A7181	671.74	624.13	--	581.01	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W10-92	A7182	672.68	619.68	--	578.68	--	--	--	--	--	--
299-W10-93	A7183	672.19	620.42	--	582.83	--	--	--	--	--	--
299-W10-94	A7184	673.1	629.67	--	586.53	--	--	--	--	--	--
299-W10-95	A7185	673.6	628.18	--	582.83	--	--	--	--	--	--
299-W10-96	A7186	674.03	628.93	--	582.83	--	--	--	--	--	--
299-W10-97	A7187	672.21	614.12	--	581.94	--	--	--	--	--	--
299-W10-98	A7188	672.21	618.56	--	584.71	--	--	--	--	--	--
299-W10-99	A7189	668.5	623.77	--	581	--	--	--	--	--	--
299-W11-1	A7275	695.38	674.39	--	602.88	594.19	580.48	553.44	--	--	--
299-W11-12	A4902	681.14	635.86	--	597.72	579.9	--	555.71	--	--	--
299-W11-14	A4903	705.95	678.82	--	618.19	611.25	603.18	567.22	--	--	--
299-W11-16	A7282	711.01	669.63	--	623.16	612.98	594.95	581.18	--	--	--
299-W11-17	A7283	706.59	662.64	--	620.65	600.25	572.25	562.71	--	--	--
299-W11-18	A7284	692.58	653.11	--	627.67	613	593.29	578.63	--	--	--
299-W11-2	A7276	716.2	656.98	--	607.23	598.41	586.43	568.48	294.13	278.23	203.11
299-W11-23	A4905	683	658.85	--	603.45	581.18	--	562.71	--	--	--
299-W11-24	A4906	688.1	647.41	--	593.92	584.99	575.45	548.09	--	--	--
299-W11-25B	C4669	684.94	653.73	--	599.01	588.83	569.72	556.34	282.64	--	--
299-W11-26	A7287	696.43	632.12	--	609.21	592.66	565.3	557	284.56	267.37	192.89

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W11-28	A4908	685.59	655.66	--	587.56	574.18	568.45	554.47	--	--	--
299-W11-3	A5473	717.42	674.16	--	615.59	604.12	588.43	565.35	--	--	--
299-W11-31	A5472	706.6	675.51	--	644.22	637.21	629.32	612.37	--	--	--
299-W11-39	C3117	685.58	654.37	--	599.65	591.36	569.73	559.55	--	--	--
299-W11-4	A7277	715.05	655.06	--	596.23	592.68	569.12	548.13	--	--	--
299-W11-40	C3118	685.6	655.67	--	600.3	584.99	570.37	553.83	--	--	--
299-W11-41	C3119	685.59	651.22	--	597.73	588.2	567.8	557.63	--	--	--
299-W11-42	C3242	686.85	650.56	--	597.08	590.07	573.53	563.99	--	--	--
299-W11-43	C4694	711.05	684.33	--	616.81	613.81	602.49	588.8	--	--	--
299-W11-45	C4948	694.48	673.49	--	601.53	596.44	570.37	560.19	--	--	--
299-W11-46	C4950	689.36	653.75	--	594.57	579.9	568.44	560.19	--	--	--
299-W11-47	C4990	677.95	656.96	--	595.82	588.85	567.17	557.64	281.36	--	--
299-W11-48	C5243	680.5	658.23	628.94	601.53	591.36	574.17	558.27	284.56	--	--
299-W11-49	C7019	702.75	655.04	--	575.31	569.48	561.05	555.85	276.21	261.93	--
299-W11-5	A7278	717.45	660.79	--	605.2	595.25	576.88	556.08	--	--	--
299-W11-50	C7020	695.77	666.48	--	601.53	--	567.16	556.34	--	--	--
299-W11-55	A7297	711.96	668.68	--	597.22	589.69	577.63	568.69	--	--	--
299-W11-56	A7298	709.43	687.11	--	598.04	591.62	--	571.9	--	--	--
299-W11-57	A7299	712.59	670.56	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W11-59	A7301	707.51	677.57	--	--	--	--	--	--	--	--
299-W11-60	A7302	708.4	681.42	--	598.19	589.72	--	--	--	--	--
299-W11-61	A7303	711.93	675.69	--	--	--	--	--	--	--	--
299-W11-62	A7304	690.94	--	--	--	--	--	--	--	--	--
299-W11-63	A7305	706.87	673.14	--	603.02	587.2	572.58	563	--	--	--
299-W11-64	A7306	713.15	683.95	--	--	--	--	--	--	--	--
299-W11-65	A7307	687.16	669.97	--	596.57	588.48	565.57	548.38	--	--	--
299-W11-66	A7308	707.21	669.96	--	--	--	--	--	--	--	--
299-W11-67	A7309	707.51	669.92	--	--	--	--	--	--	--	--
299-W11-68	A7310	--	665.21	--	--	--	--	--	--	--	--
299-W11-69	A7311	692.6	666.48	--	603.46	592.64	--	--	--	--	--
299-W11-7	A4910	710.65	670.01	--	604.38	591.08	581.4	571.27	--	--	--
299-W11-70	A7312	668.94	637.06	--	582.84	571.14	555.22	545.96	--	--	--
299-W11-80	A7322	700.22	656.32	--	--	--	--	--	--	--	--
299-W11-81	A7323	700.86	674.14	--	--	--	--	--	--	--	--
299-W11-82	A7324	669.39	635.6	--	--	--	--	--	--	--	--
299-W11-86	C5101	730.57	665.4	--	617.64	608.75	604.17	584.55	--	300.66	240.16
299-W11-88	C5572	718.44	673.89	--	656.13	--	591.11	562.46	291.31	288.74	239.1
299-W11-9	A4911	--	674.27	--	615.06	592.14	570.97	540.17	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W11-90	C7022	713.11	671.24	--	601.83	590.15	567.94	545.7	--	--	192.75
299-W11-92	C7025	670.81	629.69	595.74	579.15	570.03	557.45	541.9	266.73	223.02	--
299-W11-93	C7026	723.58	673.58	--	613.58	588.58	562.87	536.16	296.58	285.58	216.58
299-W11-97	C8719	--	678.37	--	570.13	559.42	548.43	458.97	297.57	287.54	201.65
299-W12-1	A4912	722.68	664.63	--	636.89	--	622.46	587.82	--	--	--
299-W12-2	C7027	729.06	674.93	--	644.36	614.97	609.34	574.37	--	--	232.49
299-W12-3	C7028	732.21	694.67	--	649.44	638.64	632.25	602.37	--	315.08	237.58
299-W12-4	C7029	727.01	677.32	--	600.59	587.84	575.13	533.46	303.46	301.07	--
299-W13-1	C4238	727.73	669.96	--	581.8	571.75	561.36	544.22	272.47	270.83	205.24
299-W13-2?	C9440	737.72	701.58	--	584.02	572.92	560.42	479.85	338.65	328.92	--
299-W14-1	A4913	664.86	640.41	--	580.53	572.27	554.48	545.22	--	--	--
299-W14-11	C4668	668.96	638.39	--	579.6	572.47	558.39	545.43	--	--	--
299-W14-12	A4914	669.43	636.92	--	576.8	569.13	556.55	544.68	--	--	--
299-W14-13	B8549	667.56	637.28	--	580.96	572.46	558	545.79	--	--	--
299-W14-14	B8547	670.35	638.01	--	577.69	--	549.13	--	269.49	232.82	--
299-W14-15	C3114	670.35	633.59	--	584.63	568.01	555.05	548.01	--	--	--
299-W14-18	C3396	667.57	636.7	--	584.24	571.52	559.65	552.64	--	--	--
299-W14-19	C3957	669.9	634.31	--	578.14	567.67	549.13	544.33	--	--	--
299-W14-2	A7328	668.05	639.67	--	581.48	575.57	554.85	548.93	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W14-20	C7018	669.43	635.05	--	580.53	572.09	556.91	546.17	277.62	241.33	--
299-W14-21	C7494	717.58	670.29	--	583.75	575	563	553.93	290.8	278.48	194.85
299-W14-22	C7030	732.2	697.37	--	586.12	569.32	568.16	543.28	295.38	292.93	--
299-W14-3	A7329	668.05	635.97	--	580.55	572.61	558.19	550.43	--	--	--
299-W14-4	A7330	667.57	636.73	--	580.5	570.78	556.7	549.31	--	--	--
299-W14-5	A5475	665.75	638.21	--	587.88	567.49	555.25	540.82	--	--	--
299-W14-51	A7335	662.02	625.24	--	--	--	--	--	--	--	--
299-W14-53	A7337	670.33	637.06	--	581	572.98	--	--	--	--	--
299-W14-54	A7338	720.32	689.38	--	--	--	--	--	--	--	--
299-W14-55	A7339	722.21	689.71	--	--	--	--	--	--	--	--
299-W14-6	A7331	662.95	635.42	--	578.15	562.83	549.5	542.46	--	--	--
299-W14-62	A7346	669.39	642.26	--	--	--	--	--	--	--	--
299-W14-71	C5102	712.46	660.29	--	558.52	552.05	547.2	447.71	286.33	254.9	--
299-W14-72	C5103	705.07	659.25	--	575.32	569.49	558.78	551.99	273.3	--	--
299-W14-73	C7021	709.05	664.22	--	588.35	578.3	556.83	538.33	239.04	236.08	--
299-W14-74	C7024	--	--	--	601.76	589.01	577.43	538.09	--	280.92	--
299-W14-9	A4915	672.62	637.28	--	563.78	557.45	548.74	533.7	255.37	210.83	150.03
299-W15-1	A7348	674.52	646.79	604.32	562.42	553.45	540.15	501.91	--	--	--
299-W15-10	A4916	673.61	627.78	589.83	554.79	550.24	535.68	504.23	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-103	A7402	674.08	625.81	--	577.72	--	--	--	--	--	--
299-W15-104	A7403	670.37	623.92	--	577.7	--	--	--	--	--	--
299-W15-105	A7404	672.21	626.89	--	576.31	--	--	--	--	--	--
299-W15-106	A7405	672.68	625.05	--	577.71	--	--	--	--	--	--
299-W15-107	A7406	672.21	623.96	--	575.88	--	--	--	--	--	--
299-W15-109	A7408	672.19	625.06	--	574.92	--	--	--	--	--	--
299-W15-110	A7409	670.81	622.1	--	574.47	--	--	--	--	--	--
299-W15-111	A7410	666.62	621.35	--	577.22	--	--	--	--	--	--
299-W15-112	A7411	672.21	621.72	--	577.71	--	--	--	--	--	--
299-W15-113	A7412	672.67	627.29	--	580.47	--	--	--	--	--	--
299-W15-116	A7415	671.72	629.51	--	577.25	--	--	--	--	--	--
299-W15-117	A7416	672.68	628.76	--	575.45	--	--	--	--	--	--
299-W15-118	A7417	669.9	623.2	--	581.93	--	--	--	--	--	--
299-W15-119	A7418	670.79	624.67	--	575.86	--	--	--	--	--	--
299-W15-12	A4917	669.43	629.67	--	580.53	572.64	558.19	542.64	--	--	--
299-W15-121	A7420	673.6	626.88	--	578.66	--	--	--	--	--	--
299-W15-122	A7421	671.72	623.96	--	574.95	--	--	--	--	--	--
299-W15-124	A7423	671.27	624.32	--	576.37	--	--	--	--	--	--
299-W15-125	A7424	670.34	624.68	--	575.44	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-128	A7427	671.74	625.06	--	--	--	--	--	--	--	--
299-W15-129	A7428	663.86	622.1	--	576.33	--	--	--	--	--	--
299-W15-13	A4918	668.96	628.9	--	583.29	571.51	551.14	537.43	--	--	--
299-W15-130	A7429	669.85	619.89	--	--	--	--	--	--	--	--
299-W15-131	A7430	668.05	621.72	--	--	--	--	--	--	--	--
299-W15-132	A7431	671.75	623.57	--	--	--	--	--	--	--	--
299-W15-133	A7432	670.38	622.47	--	579.55	--	--	--	--	--	--
299-W15-134	A7433	670.35	624.31	--	575.41	--	--	--	--	--	--
299-W15-135	A7434	670.8	623.59	--	574	--	--	--	--	--	--
299-W15-137	A7436	669.44	623.58	--	574.48	--	--	--	--	--	--
299-W15-138	A7437	669.9	620.96	--	578.6	--	--	--	--	--	--
299-W15-139	A7438	671.72	621.72	--	577.22	--	--	--	--	--	--
299-W15-14	A7350	698.14	606.94	--	558.81	543.98	531.01	514.81	240.74	192.58	136.58
299-W15-140	A7439	674.05	626.55	--	--	--	--	--	--	--	--
299-W15-141	A7440	673.09	622.84	--	--	--	--	--	--	--	--
299-W15-142	A7441	667.1	622.83	--	--	--	--	--	--	--	--
299-W15-143	A7442	671.72	622.09	--	--	--	--	--	--	--	--
299-W15-144	A7443	675.43	626.17	--	579.53	--	--	--	--	--	--
299-W15-145	A7444	675.89	626.93	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-146	A7445	673.61	627.27	--	--	--	--	--	--	--	--
299-W15-147	A7446	670.83	623.21	--	--	--	--	--	--	--	--
299-W15-148	A7447	671.75	625.05	--	--	--	--	--	--	--	--
299-W15-149	A7448	672.19	621.72	--	574.89	--	--	--	--	--	--
299-W15-15	A4919	698.6	603.7	575.16	562.5	551.84	541.89	523.6	--	--	--
299-W15-152	C4685	677.96	643.61	567.78	556.76	547.03	539.57	510.73	--	--	--
299-W15-153	A7451	670.35	625.8	--	--	--	--	--	--	--	--
299-W15-154	A7452	669.39	619.5	--	--	--	--	--	--	--	--
299-W15-155	A7453	671.72	623.93	--	570.72	561.72	--	--	--	--	--
299-W15-156	A7454	665.75	622.09	--	--	--	--	--	--	--	--
299-W15-158	A7456	671.26	624.3	--	--	--	--	--	--	--	--
299-W15-159	A7457	667.58	620.96	--	572.61	--	--	--	--	--	--
299-W15-160	A7458	668.51	620.23	--	576.78	--	--	--	--	--	--
299-W15-161	A7459	670.36	623.95	--	582.83	--	--	--	--	--	--
299-W15-162	A7460	672.21	626.18	--	584.24	--	--	--	--	--	--
299-W15-163	A7461	673.13	623.21	--	578.2	--	--	--	--	--	--
299-W15-164	A7462	669.85	626.16	--	580.05	--	--	--	--	--	--
299-W15-166	A7464	670.37	623.95	--	573.97	563.58	--	--	--	--	--
299-W15-167	A7465	671.25	619.88	--	573.52	563.22	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-169	A7467	671.72	622.85	--	--	--	--	--	--	--	--
299-W15-170	A7468	671.26	622.84	--	--	--	--	--	--	--	--
299-W15-171	A7469	674.08	626.18	--	575.84	--	--	--	--	--	--
299-W15-173	A7471	674.99	629.5	--	578.59	--	--	--	--	--	--
299-W15-174	A7472	681.47	--	--	576.31	--	--	--	--	--	--
299-W15-176	A7474	673.13	625.81	--	577.23	--	--	--	--	--	--
299-W15-177	A7475	671.26	623.95	--	574.42	568.01	--	--	--	--	--
299-W15-178	A7476	669.87	622.83	--	575.37	566.51	--	--	--	--	--
299-W15-179	A7477	671.72	625.05	--	--	--	--	--	--	--	--
299-W15-180	A7478	667.56	622.08	--	570.29	--	--	--	--	--	--
299-W15-181	A7479	669.4	623.96	--	573.6	--	--	--	--	--	--
299-W15-182	A7480	668.02	622.84	--	576.35	--	--	--	--	--	--
299-W15-184	A7482	672.67	629.3	--	582.37	--	--	--	--	--	--
299-W15-185	A7483	673.14	625.22	--	583.31	--	--	--	--	--	--
299-W15-186	A7484	672.67	623.37	--	581.47	--	--	--	--	--	--
299-W15-190	A7488	673.1	625.06	--	--	--	--	--	--	--	--
299-W15-197	A7495	671.26	624.68	--	578.13	--	--	--	--	--	--
299-W15-2	A5466	691.63	636.1	--	584.17	573.05	564.17	553.42	--	--	--
299-W15-209	A7507	666.54	646.45	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-210	A7508	658.12	647.76	--	--	--	--	--	--	--	--
299-W15-211	A7509	666.21	641.59	--	--	--	--	--	--	--	--
299-W15-212	A7510	663.29	648.38	--	--	--	--	--	--	--	--
299-W15-22	A4925	666.21	624.69	575.15	567.95	561.21	550.85	544.69	--	--	--
299-W15-224	C4986	673.11	650.1	607.96	555.46	551.24	530.82	508.55	--	--	--
299-W15-225	C7017	663.3	615.68	--	567.97	561.54	547.94	538.54	261.46	214.14	--
299-W15-226	C7574	694.89	634.54	--	586.76	568.22	560.84	549.34	257.49	216.77	--
299-W15-227	C7575	699.08	626.75	--	563.84	548.63	529.53	504.56	245.64	204.8	--
299-W15-228	C8716	682.28	607.75	--	565.62	544.32	--	525.78	243.39	178.12	--
299-W15-23	A4926	683.76	602.76	--	562.11	551.14	540.73	523.13	--	--	--
299-W15-24	A4927	684.23	590.73	--	549.99	535.16	524.96	514.36	--	--	--
299-W15-3	A4928	672.65	618.55	--	580.53	571.14	549.3	534.48	--	--	--
299-W15-36	B2752	635.62	594.86	--	571.42	559.22	551.82	545.82	--	--	--
299-W15-37	B2753	661.1	589.8	--	553.83	--	535.63	523.13	--	--	--
299-W15-4	A4929	663.39	624.5	--	573.96	559.67	552.65	543.03	--	--	--
299-W15-40	B8550	665.55	605.28	575.24	572.13	563.8	547.6	540.46	--	--	--
299-W15-41	B8815	663.88	621.53	573.61	571.68	562.28	552.28	543.77	--	--	--
299-W15-43	C3955	653.27	638.04	587.53	567.54	561.22	546.96	531.4	--	--	--
299-W15-44	C3956	669.79	634.67	575.73	570.31	562.45	550.86	545.07	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-49	C4301	674.39	640.24	619.6	558.03	552.52	530.14	503.92	257.61	--	--
299-W15-50	C4302	661.56	621.71	--	566.63	557.88	553.33	532.91	--	--	--
299-W15-53	A7354	675.42	647.1	--	--	--	--	--	--	--	--
299-W15-54	A7355	673.14	647.74	603.99	--	--	--	--	--	--	--
299-W15-55	A7356	674.95	648.09	604.32	564.25	553.76	539.83	--	--	--	--
299-W15-56	A7357	674.53	648.42	606.91	564.73	553.13	538.22	--	--	--	--
299-W15-57	A7358	674.96	646.81	603.67	564.26	553.13	540.48	--	--	--	--
299-W15-59	A7360	672.66	646.12	603.33	570.76	552.46	539.16	502.88	--	--	--
299-W15-6	A7349	660.62	625.63	--	562.41	552.38	547.83	527.74	--	--	--
299-W15-60	A7361	673.13	648.08	--	567.03	552.46	538.53	502.23	--	--	--
299-W15-61	A7362	676.35	647.43	--	563.81	553.11	540.14	502.88	--	--	--
299-W15-62	A7363	662.48	623.4	--	566.14	554.87	544.5	531.16	--	--	--
299-W15-63	A7364	663.86	625.99	576.51	574.46	563.75	548.95	539.7	--	--	--
299-W15-64	A7365	657.83	620.44	--	561.5	554.49	547.48	538.95	--	--	--
299-W15-66	A7367	663.39	618.57	--	--	--	--	--	--	--	--
299-W15-67	A7368	680.06	627.29	--	581.86	568.01	552.83	542.46	--	--	--
299-W15-68	A7369	670.84	625.04	--	--	--	--	--	--	--	--
299-W15-69	A7370	669.44	622.47	--	569.37	561.35	546.92	538.04	--	--	--
299-W15-7	A5476	665.27	618.57	569.18	566.14	557.45	543.77	533.39	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W15-70	A7371	669.42	622.09	--	566.56	557.29	548.41	--	--	--	--
299-W15-71	A7372	673.6	625.43	--	572.6	563.56	550.26	543.22	--	--	--
299-W15-72	A7373	670.35	622.47	--	575.84	565.8	552.47	543.22	--	--	--
299-W15-73	A7374	668.8	627.64	--	566.61	559.47	548.9	536.91	--	--	--
299-W15-74	A7375	668.17	628.39	--	574	560.97	547.92	537.66	--	--	--
299-W15-75	A7376	671.74	628.01	--	571.74	565.05	551.71	542.09	--	--	--
299-W15-76	A7377	663.39	620.06	--	--	--	--	--	--	--	--
299-W15-763	C3339	662.51	622.65	--	569.81	561.9	553.77	546.35	--	--	--
299-W15-79	A7380	673.6	629.67	--	582.36	570.76	560.39	543	--	--	--
299-W15-80	A7381	664.61	638.36	--	562.9	--	--	--	--	--	--
299-W15-81	A7382	666.54	645.8	596.59	566.14	--	--	--	--	--	--
299-W15-83	C4683	677.64	656.26	601.48	550.94	548.66	535.73	515.92	--	--	--
299-W15-94	C4684	676.35	646.85	592.4	551.57	--	537.31	512.04	--	--	--
299-W17-1	C4237	649.08	596.31	--	551.4	536.13	525.97	520.83	--	--	--
299-W17-2	C7576	668.94	640.5	--	569.22	560.79	554.31	534.87	262.64	--	--
299-W18-100	A7583	670.83	621.93	--	--	--	--	--	--	--	--
299-W18-101	A7584	668.98	618.07	--	--	--	--	--	--	--	--
299-W18-102	A7585	669.91	616.75	--	--	--	--	--	--	--	--
299-W18-103	A7586	668.5	616.42	--	549.06	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W18-104	A7587	669.42	621.64	--	--	--	--	--	--	--	--
299-W18-105	A7588	665.73	616.42	--	--	--	--	--	--	--	--
299-W18-107	A7590	671.27	618.38	--	--	--	--	--	--	--	--
299-W18-109	A7592	667.58	616.1	--	--	--	--	--	--	--	--
299-W18-110	A7593	668.02	615.15	--	--	--	--	--	--	--	--
299-W18-114	A7597	668.97	618.39	--	--	--	--	--	--	--	--
299-W18-116	A7599	669.9	617.74	--	--	--	--	--	--	--	--
299-W18-117	A7600	668.96	616.76	--	--	--	--	--	--	--	--
299-W18-118	A7601	667.09	615.16	--	--	--	--	--	--	--	--
299-W18-119	A7602	667.1	618.39	--	554.17	--	--	--	--	--	--
299-W18-120	A7603	665.74	616.42	--	--	--	--	--	--	--	--
299-W18-121	A7604	665.71	617.74	--	--	--	--	--	--	--	--
299-W18-122	A7605	666.67	616.44	--	--	--	--	--	--	--	--
299-W18-123	A7606	666.68	616.43	--	--	--	--	--	--	--	--
299-W18-124	A7607	669.89	618.06	--	--	--	--	--	--	--	--
299-W18-125	A7608	671.27	616.76	--	--	--	--	--	--	--	--
299-W18-126	A7609	668.96	618.06	--	--	--	--	--	--	--	--
299-W18-127	A7610	668.04	617.4	--	--	--	--	--	--	--	--
299-W18-128	A7611	667.09	618.06	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W18-129	A7612	667.57	618.07	--	554.17	--	--	--	--	--	--
299-W18-130	A7613	667.1	618.39	--	--	--	--	--	--	--	--
299-W18-131	A7614	666.67	617.08	--	--	--	--	--	--	--	--
299-W18-133	A7616	665.74	617.41	--	--	--	--	--	--	--	--
299-W18-134	A7617	666.63	617.74	--	--	--	--	--	--	--	--
299-W18-135	A7618	668.97	596.01	--	--	--	--	--	--	--	--
299-W18-137	A7620	665.25	616.75	--	--	--	--	--	--	--	--
299-W18-138	A7621	668.51	620.33	--	--	--	--	--	--	--	--
299-W18-139	A7622	668.51	613.19	--	--	--	--	--	--	--	--
299-W18-140	A7623	667.56	619.68	--	--	--	--	--	--	--	--
299-W18-141	A7624	665.73	618.71	--	553.7	--	--	--	--	--	--
299-W18-142	A7625	667.09	619.34	--	--	--	--	--	--	--	--
299-W18-143	A7626	666.2	620.33	--	--	--	--	--	--	--	--
299-W18-144	A7627	666.66	617.41	--	555.06	--	--	--	--	--	--
299-W18-145	A7628	661.1	617.73	--	--	--	--	--	--	--	--
299-W18-146	A7629	660.64	617.08	--	--	--	--	--	--	--	--
299-W18-147	A7630	667.11	611.58	--	--	--	--	--	--	--	--
299-W18-15	A4932	--	627.1	--	541.84	526.25	504.87	489.86	--	--	--
299-W18-16	C4303	664.73	632.32	602.86	555.21	544.83	532.51	515.99	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W18-17	A5479	647.9	601.23	558.77	555.69	--	--	--	--	--	--
299-W18-176	A7658	668.05	617.08	--	--	--	--	--	--	--	--
299-W18-178	A7660	668.96	609.28	--	--	--	--	--	--	--	--
299-W18-18	A7531	665.26	599.21	--	552.89	540.69	534.69	525.46	--	--	--
299-W18-19	A7532	661.54	625.94	577.49	562.17	546.27	537.04	526.84	--	--	--
299-W18-2	A5478	682.07	624.67	579.18	554.74	544.14	530.24	514.04	--	--	--
299-W18-20	A5471	661.08	639.35	--	563.08	547.21	531.48	512.05	--	--	--
299-W18-21	A4933	--	599.87	--	--	--	--	--	--	--	--
299-W18-22	A4934	668.5	588.4	--	553.24	534.74	525.9	519.9	227.3	--	--
299-W18-23	A4935	693.49	606.42	--	553.24	532.41	528.24	520.37	--	--	--
299-W18-24	A4936	668.97	627.81	573.7	552.9	542.25	529.93	513.74	--	--	--
299-W18-247	A7727	671.89	626.99	565.66	551.5	535.34	526.07	516.34	--	--	--
299-W18-25	A4937	665.69	646.76	--	542.73	529.59	525.89	--	--	--	--
299-W18-251	A7731	659.8	623.39	--	545.43	520.02	--	--	--	--	--
299-W18-260	C8925	660.72	624.74	--	562.63	543.72	536.58	516.82	--	--	--
299-W18-27	A4939	684.22	601.23	--	549.07	541.64	538.4	532.87	--	--	--
299-W18-28	A4940	678.25	608.35	--	542.15	532.41	529.61	524.55	--	--	--
299-W18-30	A4942	662.65	612.74	--	--	549.88	--	517.8	--	--	--
299-W18-31	A4943	663.87	643.03	--	551.97	537.93	529.17	509.7	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W18-4	A7522	683.01	641.34	--	555.68	545.98	529.85	520.03	--	--	--
299-W18-41	C8920	666.66	606	--	546.77	532.4	522.67	517.14	235.65	195.85	--
299-W18-51	A7534	668.97	617.74	--	--	--	--	--	--	--	--
299-W18-53	A7536	667.57	615.79	--	550.9	536.1	520.84	--	--	--	--
299-W18-54	A7537	667.1	617.09	--	566.2	--	--	--	--	--	--
299-W18-55	A7538	666.67	615.47	--	--	--	--	--	--	--	--
299-W18-7	A7524	664.74	622.3	592.15	554.72	546.14	534.48	518.29	--	--	--
299-W18-86	A7569	670.25	624.56	581.46	551.5	540.95	--	--	--	--	--
299-W18-88	A7571	664.42	631.38	602.31	552.43	542.58	--	--	--	--	--
299-W18-9	A7526	683.13	623.73	567.68	551.03	537.16	532.99	524.66	--	--	--
299-W18-90	A7573	667.1	616.11	--	--	--	--	--	--	--	--
299-W18-91	A7574	665.28	616.44	--	--	--	--	--	--	--	--
299-W18-95	A7578	675.58	627.88	--	--	--	--	--	--	--	--
299-W18-97	A7580	674.23	627.47	--	--	--	--	--	--	--	--
299-W19-1	A4944	665.24	625.06	--	545.52	528.81	520.38	502.23	--	--	--
299-W19-101	C4966	699.02	647.11	--	530.63	517.63	502.89	453.46	--	--	--
299-W19-105	C4968	--	644.01	--	534.3	504.02	498.51	453.45	--	--	--
299-W19-107	C5193	707.58	641.81	--	535.5	525.14	515.76	470.38	282.41	--	--
299-W19-111	C8718	697.88	642.8	--	564.35	558.87	553.04	543.63	285.99	257.81	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W19-114	C8928	698.09	645.92	--	535.77	521.19	503.69	458	--	--	--
299-W19-116	C9412	712.21	681.68	--	540.48	528.68	506.45	467.11	269.41	--	--
299-W19-12	A4945	670.74	624.92	--	--	--	--	513.89	--	--	--
299-W19-13	A7740	696.55	587.02	--	540.82	526.93	517.11	496.88	--	--	--
299-W19-14	A4946	694.97	606.11	--	533.91	524.21	511.21	500.57	--	--	--
299-W19-15	A4947	695.46	604.9	--	548.13	532.36	527.73	514.8	--	--	--
299-W19-18	A7743	695.38	600.62	--	555.55	536.08	525.45	515.72	--	--	--
299-W19-24	A4952	697.81	623.28	--	532.33	513.55	498.86	448.62	--	--	--
299-W19-25	A7746	692.24	638.1	--	536.67	512.14	508.44	458.44	--	--	--
299-W19-28	A4954	702.9	626.06	--	538.53	519.1	514	491.76	--	--	--
299-W19-29	A4955	701.49	626.96	--	534.66	513.06	501.49	455.66	--	--	--
299-W19-31	A4956	666.22	623.45	--	--	--	--	--	--	--	--
299-W19-32	A4957	673.34	630.59	--	--	--	--	--	--	--	--
299-W19-36	B2461	703.21	628.38	--	539.94	519.11	504.74	461.68	--	--	--
299-W19-37	B2465	700.58	624.21	--	535.31	514.48	501.51	458.44	--	--	--
299-W19-38	B2463	696.72	624.57	--	534.15	513.73	500.46	456.71	--	--	--
299-W19-39	B2460	689.48	633.01	--	528.34	519.11	501.98	451.04	--	--	--
299-W19-40	B2464	687.6	612.17	--	522.8	503.34	488.54	453.8	--	--	--
299-W19-41	B8551	673.98	621.28	--	548.72	535.29	530.74	520.71	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W19-42	B8553	667.19	630.57	--	555.24	535.62	530.74	517.46	--	--	--
299-W19-44	C3393	675.29	616.8	--	545.5	533.66	526.55	521.67	--	--	--
299-W19-45	C3394	668.8	623.28	--	542.73	537.56	529.14	520.39	--	--	--
299-W19-46	C3958	697.66	638.19	--	529.62	516.02	499.47	455.09	--	--	--
299-W19-47	C4258	666.22	621.17	--	550.6	539.82	529.46	511.63	--	--	--
299-W19-48	C4300	693.16	638.21	--	535.26	517.63	495.27	436.94	276.02	--	--
299-W19-49	C4695	699.02	637.53	--	539.92	519.55	501.42	444.05	--	--	--
299-W19-5	A7734	686.24	614.96	--	544.17	529.79	519.76	504.77	--	--	--
299-W19-53	A7751	671.72	618.06	--	--	--	--	--	--	--	--
299-W19-54	A7753	672.2	617.73	--	--	--	--	--	--	--	--
299-W19-63	A7763	695.95	--	--	--	--	--	--	--	--	--
299-W19-7	A7735	686.24	612.51	--	544.52	530.69	527.45	508.41	--	--	--
299-W19-72	A7772	703.7	--	--	--	--	--	--	--	--	--
299-W19-73	A7773	704.13	--	--	--	--	--	--	--	--	--
299-W19-74	A7774	670.84	623.25	--	--	--	--	--	--	--	--
299-W19-75	A7775	671.26	622.92	--	--	--	--	--	--	--	--
299-W19-76	A7776	671.73	624.22	--	--	--	--	--	--	--	--
299-W21-2	C4639	693.51	644.34	--	529.72	508.88	478.22	458.55	--	--	--
299-W21-3	C9415	693.72	663.18	--	532.62	497.22	474.05	454.62	278.22	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W22-10	A7835	648.79	603.75	--	551.76	539.62	518.82	505.56	--	--	--
299-W22-113	C8943	665.82	609.89	--	546.79	528.87	513.47	492.38	--	--	--
299-W22-114	C9411	--	632.73	--	515.24	497.86	484.57	450.99	--	--	--
299-W22-115	C9430	665.83	618.38	--	548.32	521.58	513.47	497.76	--	--	--
299-W22-13	A7838	655.19	608.7	--	546.36	536.6	528.79	518.16	--	--	--
299-W22-14	A7839	669.06	618.82	--	540.68	522.86	509.25	486.25	--	--	--
299-W22-15	A7840	668.18	606.84	--	549.39	535.51	523.34	506.01	--	--	--
299-W22-17	A4964	652.39	610.48	--	556.03	539.13	528.13	515.93	--	--	--
299-W22-18	A7842	660.28	616.37	--	549.93	538.93	519.26	505.97	--	--	--
299-W22-2	A7828	642.67	623.25	--	540.63	529.69	518.75	500.49	--	--	--
299-W22-25	A7846	679.22	611.65	--	561.43	536.49	529.32	497.59	--	--	--
299-W22-26	A4968	678.76	622.76	--	547.29	532.93	523.87	504.9	--	--	--
299-W22-28	A4969	672.78	625.55	--	534.81	507.05	--	--	--	--	--
299-W22-3	A7829	645.01	604.21	--	551.03	536.53	516.28	501.23	--	--	--
299-W22-30	A7849	665.37	626.5	--	542.64	524.82	511.87	496.06	--	--	--
299-W22-31	A7850	664.42	605.85	--	549.14	534.94	524.41	510.23	--	--	--
299-W22-37	A7856	673.23	613.6	--	544.63	531.2	518.23	502.03	--	--	--
299-W22-38	A7857	686.16	627.41	--	544.51	534.34	523.88	501.29	--	--	--
299-W22-39	A4970	664.42	613.17	--	548.74	521.17	517.53	513.88	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W22-4	A7830	666.78	607.67	--	549.18	540	526.01	507.51	--	--	--
299-W22-45	A4976	660.73	616.15	--	548.74	520.36	510.88	496.03	--	--	--
299-W22-47	C4667	669.07	598.51	--	553.63	534.94	516.72	492.39	--	--	--
299-W22-48	B8812	668.51	620.47	--	545.8	533.09	518.05	493.18	--	--	--
299-W22-5	A7831	664.42	612.73	--	549.91	538.91	525.62	513.45	--	--	--
299-W22-50	B8814	667.24	606.69	--	551.03	531.11	518.61	505.32	212.18	173.7	--
299-W22-63	A7870	682.99	620.77	--	--	--	--	--	--	--	--
299-W22-69	C4969	678.5	621.55	--	560.15	538.85	524.5	504.93	--	--	--
299-W22-72	C4970	679.36	625.58	--	538.94	516.2	498.89	464.83	--	--	--
299-W22-74	A7878	678.9	621.11	--	--	--	--	--	--	--	--
299-W22-75	A7879	686.67	638.04	--	538.92	--	--	--	--	--	--
299-W22-8	A7833	677.79	627.39	--	530.77	504.08	484.48	453.73	--	--	--
299-W22-81	C3123	665.55	628.55	--	558.8	541.42	531.55	512.55	--	--	--
299-W22-84	C3398	675.98	615.93	--	540.47	525.64	519.17	503.41	--	--	--
299-W22-86	C4971	663.99	613.96	--	537.97	517.96	507.96	482.03	--	--	--
299-W22-87	C4977	688.03	638.97	--	534.33	508.87	--	--	--	--	--
299-W22-88	C4978	688.9	644.21	--	531.11	505.19	471.51	441.14	269.9	--	--
299-W22-89	C7664	670	587.61	--	548.99	528.16	517.16	484.8	--	--	--
299-W22-91	C8096	665.83	607.89	--	550.34	533.75	517.2	504.7	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W22-92	C8097	668.16	624.9	--	535.23	523.22	512.47	479.69	--	--	--
299-W22-93	C8202	675.09	623.32	--	544.62	530.72	520.05	500.15	--	--	--
299-W22-94	C8203	665.62	620.03	--	546.95	534.24	517.45	491.41	--	--	--
299-W22-95	C8240	682.53	606.14	--	548.3	537.9	527.49	492.25	--	--	--
299-W23-1	A4979	665.82	614.09	--	546.95	--	--	--	--	--	--
299-W23-10	A7884	659.05	609.94	--	544.98	529.7	509.75	495.33	--	--	--
299-W23-103	A7939	661.2	597.2	--	--	--	--	--	--	--	--
299-W23-108	A7944	662.07	573.13	--	533.69	--	--	--	--	--	--
299-W23-11	A4980	653.45	613.98	--	541.27	528.26	509.76	495.85	--	--	--
299-W23-121	A7957	654.74	570.8	--	538.87	--	--	--	--	--	--
299-W23-125	A7961	661.68	595.35	--	535.41	--	--	--	--	--	--
299-W23-126	A7962	661.21	592.11	--	--	--	--	--	--	--	--
299-W23-128	A7964	662.61	590.27	--	--	--	--	--	--	--	--
299-W23-129	A7965	662.13	599.07	--	--	--	--	--	--	--	--
299-W23-13	A4982	665.36	606.6	--	536.66	526.38	--	--	--	--	--
299-W23-130	A7966	665.36	599.06	--	--	--	--	--	--	--	--
299-W23-132	A7968	664.9	607.4	--	536.12	--	--	--	--	--	--
299-W23-133	A7969	654.26	600.43	--	--	--	--	--	--	--	--
299-W23-134	A7970	664	600.9	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W23-135	A7971	665.36	597.66	--	537	--	--	--	--	--	--
299-W23-136	A7972	661.19	594.44	--	--	--	--	--	--	--	--
299-W23-137	A7973	655.62	587.92	--	537.92	--	--	--	--	--	--
299-W23-140	A7976	665.36	603.23	--	--	--	--	--	--	--	--
299-W23-141	A7977	661.2	598.6	--	--	--	--	--	--	--	--
299-W23-142	A7978	654.71	585.64	--	--	--	--	--	--	--	--
299-W23-143	A7979	660.26	579.59	--	534.82	--	--	--	--	--	--
299-W23-145	A7981	668.16	620.56	--	--	--	--	--	--	--	--
299-W23-147	A7983	664.45	620.58	--	--	--	--	--	--	--	--
299-W23-148	A7984	665.84	601.14	--	--	--	--	--	--	--	--
299-W23-149	A7985	664.42	591.85	--	--	--	--	--	--	--	--
299-W23-153	A7989	660.27	595.1	--	--	--	--	--	--	--	--
299-W23-154	A7990	667.24	606.2	--	--	--	--	--	--	--	--
299-W23-155	A7991	665.85	608.08	--	--	--	--	--	--	--	--
299-W23-156	A7992	666.29	601.12	--	--	--	--	--	--	--	--
299-W23-159	A7995	663.53	599.26	--	--	--	--	--	--	--	--
299-W23-16	A7885	667.2	623.15	--	545.28	521.31	--	495.08	--	--	--
299-W23-160	A7996	666.29	607.12	--	--	--	--	--	--	--	--
299-W23-161	A7997	668.16	621.02	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W23-162	A7998	668.59	600.66	--	--	--	--	--	--	--	--
299-W23-164	A8000	666.32	607.62	--	--	--	--	--	--	--	--
299-W23-165	A8001	665.82	602.54	--	--	--	--	--	--	--	--
299-W23-167	A8003	664	603	--	--	--	--	--	--	--	--
299-W23-168	A8004	665.82	614.09	--	--	--	--	--	--	--	--
299-W23-17	A7886	654.21	623.65	--	541.69	526.25	--	495.06	--	--	--
299-W23-170	A8006	666.3	612.23	--	--	--	--	--	--	--	--
299-W23-171	A8007	665.83	614.53	--	--	--	--	--	--	--	--
299-W23-174	A8010	665.85	599.75	--	--	--	--	--	--	--	--
299-W23-176	A8012	665.83	596.03	--	--	--	--	--	--	--	--
299-W23-178	A8014	667.67	605.77	--	--	--	--	--	--	--	--
299-W23-179	A8015	667.71	618.75	--	--	--	--	--	--	--	--
299-W23-181	A8017	666.31	605.78	--	--	--	--	--	--	--	--
299-W23-182	A8018	665.36	601.59	--	--	--	--	--	--	--	--
299-W23-183	A8019	663.54	597.44	--	--	--	--	--	--	--	--
299-W23-184	A8020	664	601.6	--	--	--	--	--	--	--	--
299-W23-19	B8809	663.53	--	--	539.33	--	--	--	--	--	--
299-W23-190	A8026	666.29	607.83	--	--	--	--	--	--	--	--
299-W23-191	A8027	663.99	603.23	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W23-193	A8029	661.68	598.61	--	--	--	--	--	--	--	--
299-W23-194	A8030	662.59	593.02	--	--	--	--	--	--	--	--
299-W23-195	A8031	663.05	590.75	--	--	--	--	--	--	--	--
299-W23-196	A8032	651.92	582.39	--	--	--	--	--	--	--	--
299-W23-197	A8033	664.9	610.16	--	--	--	--	--	--	--	--
299-W23-198	A8034	664.9	607.4	--	--	--	--	--	--	--	--
299-W23-2	A4985	663.53	610.63	--	534.83	511.87	505.78	501.31	--	--	--
299-W23-201	A8037	665.36	600.2	--	--	--	--	--	--	--	--
299-W23-202	A8038	665.85	606.25	--	--	--	--	--	--	--	--
299-W23-203	A8039	663.53	601.6	--	--	--	--	--	--	--	--
299-W23-204	A8040	666.76	615.46	--	--	--	--	--	--	--	--
299-W23-206	A8042	667.2	610.84	--	--	--	--	--	--	--	--
299-W23-207	A8043	665.38	602.08	--	--	--	--	--	--	--	--
299-W23-208	A8044	664.9	591.4	--	--	--	--	--	--	--	--
299-W23-212	A8046	664.89	594.65	--	--	--	--	--	--	--	--
299-W23-213	A8047	665.35	603.42	--	--	--	--	--	--	--	--
299-W23-216	A8048	666.31	603.91	--	542.34	--	--	--	--	--	--
299-W23-218	A8049	667.22	614.09	--	543.25	--	--	--	--	--	--
299-W23-220	A8050	665.38	602.08	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W23-223	A8051	655.63	599.97	--	--	--	--	--	--	--	--
299-W23-225	A8052	665.36	600.42	--	--	--	--	--	--	--	--
299-W23-226	A8053	655.62	580.99	--	--	--	--	--	--	--	--
299-W23-227	A8054	661.19	581.01	--	--	--	--	--	--	--	--
299-W23-3	A4986	664.43	597.85	--	541.85	521.58	509.42	494.46	--	--	--
299-W23-4	A4987	653.95	610.06	--	546.33	523.08	--	494.56	--	--	--
299-W23-5	A4988	662.15	598.62	--	542.18	520.76	511.45	500.49	--	--	--
299-W23-51	A7887	667.25	622.45	--	539.11	--	--	--	--	--	--
299-W23-52	A7888	660.28	609.95	--	538.65	--	--	--	--	--	--
299-W23-53	A7889	665.36	592.79	--	539.52	--	--	--	--	--	--
299-W23-55	A7891	662.59	600.66	--	535.36	--	--	--	--	--	--
299-W23-56	A7892	667.22	610.82	--	538.62	--	--	--	--	--	--
299-W23-57	A7893	665.85	602.08	--	538.65	--	--	--	--	--	--
299-W23-59	A7895	664.44	595.8	--	--	--	--	--	--	--	--
299-W23-6	A4989	664.02	613.55	--	545.88	527.65	513.48	502.54	--	--	--
299-W23-60	A7896	662.61	599.98	--	--	--	--	--	--	--	--
299-W23-62	A7898	665.83	601.36	--	--	--	--	--	--	--	--
299-W23-65	A7901	661.2	570.37	--	--	--	--	--	--	--	--
299-W23-66	A7902	663.06	611.09	--	541.63	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W23-67	A7903	662.61	595.37	--	--	--	--	--	--	--	--
299-W23-68	A7904	663.51	580.08	--	--	--	--	--	--	--	--
299-W23-69	A7905	658.9	583.3	--	--	--	--	--	--	--	--
299-W23-70	A7906	660.74	575.91	--	--	--	--	--	--	--	--
299-W23-72	A7908	662.13	589.33	--	--	--	--	--	--	--	--
299-W23-73	A7909	664	602.3	--	--	--	--	--	--	--	--
299-W23-74	A7910	662.6	606	--	--	--	--	--	--	--	--
299-W23-75	A7911	661.66	604.13	--	--	--	--	--	--	--	--
299-W23-79	A7915	663.07	599.53	--	--	--	--	--	--	--	--
299-W23-8	A4991	661.19	597.82	--	541.29	512.78	500.09	482.49	--	--	--
299-W23-83	A7919	662.6	597.2	--	--	--	--	--	--	--	--
299-W23-84	A7920	662.6	593.03	--	--	--	--	--	--	--	--
299-W23-85	A7921	662.13	597.67	--	--	--	--	--	--	--	--
299-W23-9	A7883	655.73	605.31	--	542.73	525.36	503.94	494.33	--	--	--
299-W23-92	A7928	661.68	587.48	--	536.97	--	--	--	--	--	--
299-W23-94	A7930	661.21	581.95	--	536.11	--	--	--	--	--	--
299-W23-97	A7933	661.67	594.9	--	--	--	--	--	--	--	--
299-W23-98	A7934	662.14	595.81	--	--	--	--	--	--	--	--
299-W23-99	A7935	661.22	587.05	--	535.65	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W26-1	A8057	652.31	608.96	--	--	--	--	--	--	--	--
299-W26-12	A5409	674	606.22	--	550.12	525.04	507.12	485.12	--	--	--
299-W26-13	B8817	651.06	601.65	--	539.04	518.62	514.16	495.93	--	--	--
299-W26-14	B8828	668.61	593.18	--	551.51	534.38	509.28	481.51	--	--	--
299-W26-4	A8059	651.09	601.26	--	--	--	--	--	--	--	--
299-W26-5	A8060	652.88	600.86	--	--	--	--	--	--	--	--
299-W26-6	A5445	653.13	607.74	--	545.88	522.25	515.78	504.83	--	--	--
299-W27-1	A8062	671.5	613.34	--	517.31	497.07	481.67	--	--	--	--
299-W5-1	C8721	727.11	691.72	--	627.66	--	613.59	593.6	--	392.95	263.06
299-W5-2?	C9439	--	673.51	--	645.02	636.09	635.31	580.01	--	365.33	270.41
299-W6-1	A4996	697.47	--	--	663.73	659.29	643.34	605.8	291.32	278.58	247.36
299-W6-10	A5435	708.89	--	--	658.89	652.88	648.39	603.84	--	--	--
299-W6-11	A5436	699.2	678.85	--	645.12	622.2	617.07	606.9	--	--	--
299-W6-12	A5437	692.19	671.2	--	628.3	619.07	611.8	608.83	--	--	--
299-W6-14	C8065	695.54	--	--	636.76	--	612.81	600.71	--	272.86	221.3
299-W6-15	C8720	724.58	685.11	--	646.93	605.21	591.95	570.53	--	380.82	244.6
299-W6-3	A4998	699.99	--	--	639.72	623.18	610.48	602.18	285.16	274.99	--
299-W6-4	A4999	701.27	--	--	639.97	631.47	608.99	598.39	--	--	--
299-W6-6	A5001	709.38	699.09	--	680.09	669.11	649.56	601.8	284.17	270.15	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
299-W6-8	A5003	690.32	671.84	--	627.93	619.62	614.97	610.11	--	--	--
299-W6-9	A5434	696.42	--	--	639.17	632.11	--	602.18	--	--	--
299-W7-1	A5004	692.15	651.64	--	628.54	619.65	583.99	555.99	--	--	--
299-W7-11	A5006	681.4	--	--	636.2	--	598.95	581.91	--	--	--
299-W7-13	C8945	688.4	--	--	627.95	619.01	591.01	562.36	262.52	--	--
299-W7-2	A5008	676.8	655.09	--	644.48	634.9	593.56	583.98	--	--	--
299-W7-3	A5009	676.95	--	--	643.86	--	597.38	572.54	320.44	305.17	203.97
299-W7-4	A5010	672.63	632.71	--	617.35	607.82	592.51	569.59	--	--	--
299-W7-5	A5011	673.14	655.67	--	642.56	632.01	611.22	598.01	--	--	--
299-W8-1	A5016	703.04	652.81	--	626	615.82	583.97	550.88	--	--	--
299-W9-1	A5017	738.97	643.07	--	590.64	579.83	--	546.09	--	--	--
299-W9-2	C8201	733.85	--	--	596.85	582.33	570.87	551.81	--	--	--
699-29-66?	C9413	677.51	673.81	--	473.81	473.71	459.01	423.81	299.31	213.18	--
699-29-78	A5121	647.43	602.89	--	527.89	--	--	479.31	205.48	143.91	61.25
699-29-83	A8494	625.03	568.43	--	--	--	--	516.58	253.29	178.73	71.78
699-30-66	C4298	689.54	685.37	--	472.87	--	462.71	446.04	284.94	--	--
699-31-65	A5124	684.42	681.19	--	465.46	--	456.22	440.92	287.26	255.72	--
699-31-68?	C9416	692.33	687.69	--	467.34	466.86	455.3	438.17	315.97	302.51	--
699-31-84B	A5125	--	572.47	--	--	--	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-31-84C	A8510	--	--	--	--	--	--	--	--	--	--
699-32-62	A5128	707.9	707	--	--	--	--	486.6	307.9	240.76	--
699-32-70B	A5129	668.69	644.62	--	505.15	485.59	464.76	443.92	--	--	--
699-32-77	A5131	654.32	604.91	--	545.13	535.22	529.15	518.22	--	--	--
699-33-74	C4973	673.35	614.44	--	496.68	472.98	464.47	403.72	--	--	--
699-33-75	C4974	675.11	602.41	--	541.25	517.18	506.98	478.28	--	--	--
699-33-76	C4976	666.08	597.21	--	537.53	524.09	510.19	480.09	--	--	--
699-34-61	A5463	727.2	725.8	--	--	--	463.78	462.84	--	--	--
699-34-72	C4972	670.46	632.24	--	521.12	490.74	479.28	440.77	--	--	--
699-35-58D	C9427	--	725.53	--	--	--	--	413.97	--	--	--
699-35-59	A8558	--	718.57	--	--	--	--	424.14	--	--	--
699-35-66A	A5139	717.78	693.24	--	528.55	--	525.44	463.41	330.54	293.04	--
699-36-61A	A5144	744.92	694.49	--	--	--	505.12	425.49	--	--	--
699-36-61B	A8573	742.16	694.03	--	--	--	504.2	429.2	350.96	273.63	199.56
699-36-63B?	C9593	--	--	--	--	--	540.1	--	330.37	--	--
699-36-66B	C6219	722.44	688.43	--	542.32	--	539.64	460.74	--	--	--
699-36-70A	A9901	701.09	676.56	--	529.36	505.53	466.63	451.36	274.03	--	--
699-36-70B	C4299	694.17	680.73	--	537.07	510.13	480.53	455.97	278.67	--	--
699-37-66	C5704	720.11	711.31	--	546	--	522.71	462.95	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-37-68	B2732	709.42	703.89	--	532.12	495.56	490.92	473.79	--	--	--
699-37-82A	A5147	--	602.44	--	--	--	--	--	--	--	--
699-37-82B	A8580	632.69	612.33	--	565.56	543.36	532.69	524.83	239.16	145.19	32.69
699-37-84	A8584	636.87	586.37	--	553.1	543.06	535.5	529	219.3	133.17	19.3
699-38-68A	A9516	705.27	697.87	--	544.16	532.13	480.76	476.13	--	--	--
699-38-70B	C4236	724.25	693.71	--	552.51	537.01	502.75	473.11	279.11	271.25	--
699-38-70C	C4256	734.43	686.3	--	556.66	539.56	516.86	478.9	--	--	--
699-40-62	A5158	747.74	711.18	--	--	--	439.84	438.48	376.91	--	--
699-40-65	C4235	751.73	717.93	--	487.95	486.43	484.13	476.73	390.6	322.1	--
699-40-67	C8070	747.68	731.94	--	606.48	603.68	599.51	486.58	371.28	343.51	225.44
699-40-80	A8643	656.32	605.86	--	566.96	539.66	531.03	507.26	217.95	167.48	109.15
699-40-84	A8644	641.49	603.65	--	557.69	554.14	550.29	516.49	241.49	157.26	45.66
699-41-64B	A8658	750.02	709.76	--	--	--	--	--	--	--	--
699-42-67	C8069	745.79	705.53	--	--	--	631	478.24	370.81	333.78	236.55
699-43-67B	C8386	745.82	678.22	--	--	--	657.61	490.28	380.98	351.38	250.45
699-43-69	C5573	741.63	703.67	--	647.2	638.3	633.29	503.23	379.13	343.03	243.03
699-44-64	A5188	717.76	656.63	--	--	--	--	456.63	409.43	392.3	285.33
699-44-67	C8068	725.44	666.17	--	627.31	--	625.44	511.11	395.34	368.47	264.81
699-44-70	A8712	730.07	708.3	--	653.67	--	634.87	--	--	--	212.47

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
699-45-67B	C8717	716.18	671.28	--	646.73	--	635.17	526.25	405.97	350.9	275.9
699-45-69C	C5574	720.05	658.75	--	624.69	--	617.67	512.65	391.82	362.19	273.29
699-46-68	C8067	707.4	679.14	--	632.84	--	593.04	518.97	407.37	356.44	278.67
699-48-77A	A8772	674.89	--	--	653.26	648.77	608.07	594.68	--	280.22	222.28
699-48-77C	A8774	674.29	658.35	--	655.17	650.08	613.83	593.43	--	334.95	243.92
699-49-69	C8786	690.28	610.5	--	552.16	--	549.25	545.81	--	374.04	282.84
699-49-79	A5221	--	672.32	--	--	--	602.34	574.93	--	--	--
699-49-85A	A8797	745.07	704.16	--	--	--	--	--	268.91	235.81	135.9
699-49-85B	A8798	745.71	702.47	--	--	--	--	--	267.67	235.18	137.14
699-50-74	C4697	651.33	612.27	--	551.54	546.55	545.83	536.14	--	396.03	--
699-50-85S	A9728	739.34	690.77	--	669.95	668.58	623.47	529.28	264.46	209.1	146.07
699-51-75Q	A9731	641.17	592.81	--	514.78	514.19	513.61	513.21	--	378.24	262.42
699-55-70P	A9740	567.94	--	--	--	--	--	522.11	401.17	390.35	365.51
699-55-76P	A9742	583.19	440.46	--	440.46	440.08	439.71	439.37	438.99	437.77	362.33
C3102	C3102	672.67	639.31	--	583.31	575.57	559.68	552.26	--	--	--
C3808	C3808	668.03	625.93	--	548.27	529.6	521.3	514.81	--	--	--
C3830	C3830	673.6	623.22	--	573.98	--	--	--	--	--	--
C3832	C3832	670.81	627.29	--	569.84	561.35	--	--	--	--	--
C4129	C4129	639.64	604.81	--	577.31	567.91	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
C4175	C4175	665.23	641.51	--	584.23	574.85	557.81	552.26	--	--	--
C4557	C4557	668.61	614.77	--	543.22	530.09	520.72	498.77	--	--	--
C4738	C4738	705.95	677.31	--	619.95	610.13	596.82	--	--	--	--
C6174	C6174	654.72	599.21	--	--	--	--	--	--	--	--
C6913	C6913	672.19	625.22	--	--	--	--	--	--	--	--
C6917	C6917	672.65	630.42	--	580.99	--	--	--	--	--	--
C6927	C6927	673.6	627.3	--	584.23	572.64	--	--	--	--	--
C6931	C6931	668.98	--	--	584.71	577.45	--	--	--	--	--
C6933	C6933	667.58	--	--	583.78	577.81	--	--	--	--	--
C6935	C6935	669.42	636.31	--	--	574.48	--	--	--	--	--
C6943	C6943	668.49	--	--	582.83	575.23	--	--	--	--	--
C9492	C9492	662.23	635.47	--	592.21	576.95	--	--	--	--	--

Table A-3. GeoContacts Elevations for the 200 West Area

Well Name	Well ID	HF1 Elevation (ft)	HF2 Elevation (ft)	HF3 Elevation (ft)	Cold Creek Unit Elevation (ft)	CCUc Elevation (ft)	Rtf Elevation (ft)	Rwie Elevation (ft)	Rlm Elevation (ft)	Rwia Elevation (ft)	Basalt Elevation (ft)
C9499	C9499	707.2	670.88	--	611.52	606.45	--	--	--	--	--
C9505	C9505	682.4	--	--	593.27	--	--	--	--	--	--
C9506	C9506	662.26	623.73	--	585.16	577.82	--	--	--	--	--
C9507	C9507	663.39	617.46	--	570.25	563.38	555.24	547.85	--	--	--

Note: Blank cells indicated no information.

CCUc = Cold Creek Unit calcic geosol

HF1 = Hanford formation unit 1

HF2 = Hanford formation unit 2

HF3 = Hanford formation unit 3

ID = identification

Rlm = Ringold Formation lower mud unit

Rtf = Ringold Formation member of the Taylor Flat

Rwia = Ringold Formation member of Wooded Island unit A

Rwie = Ringold Formation member of Wooded Island unit E

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-E11-1	C9484	9.67	61.97	--	--	--	182.34	286.97	404.57	--	--
299-E20-1	C9482	4.63	45.4	--	--	--	178.26	289.83	392.6	--	--
299-E20-2	C9483	10.23	55.13	--	--	--	189.87	293.57	392.63	--	--
299-W10-1	A7136	1.28	38.72	--	84.92	94.84	110.15	134.62	--	--	--
299-W10-101	A7191	28.53	38.81	--	80.2	89.73	--	--	--	--	--
299-W10-102	A7192	27.6	38.09	--	79.49	--	--	--	--	--	--
299-W10-103	A7193	37.76	51.14	--	80.43	91.26	--	--	--	--	--
299-W10-104	A7194	38.28	49.1	--	82.84	94.3	--	--	--	--	--
299-W10-105	A7195	31.15	40.09	--	78.9	89.71	--	--	--	--	--
299-W10-108	A7198	39.74	47.35	--	80.22	89.39	--	--	--	--	--
299-W10-110	A7200	40.31	54.97	--	80.4	91.21	--	--	--	--	--
299-W10-115	A7205	35.62	47.72	--	80.59	--	--	--	--	--	--
299-W10-117	A7207	35.14	42.8	--	82.89	89.26	--	--	--	--	--
299-W10-119	A7209	35.71	40.15	--	80.91	89.21	--	--	--	--	--
299-W10-120	A7210	39.38	54.64	--	80.5	90.95	--	--	--	--	--
299-W10-123	A7213	45.11	55.28	--	84.58	90.31	--	--	--	--	--
299-W10-124	A7214	34.01	45.13	--	85.82	90.31	--	--	--	--	--
299-W10-125	A7215	40.43	58.91	--	82.47	91.41	--	--	--	--	--
299-W10-126	A7216	24.45	45.34	--	81.6	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W10-127	A7217	35.1	47.19	--	77.12	--	--	--	--	--	--
299-W10-128	A7218	--	42.9	--	82.37	91.9	--	--	--	--	--
299-W10-130	A7220	31.95	44.41	--	83.23	91.53	--	--	--	--	--
299-W10-138	A7228	32.26	45.28	--	82.87	92.4	--	--	--	--	--
299-W10-14	A4891	0	53.73	--	114.49	126.51	133.46	--	446.19	--	--
299-W10-140	A7230	22	44.87	--	84.1	92.58	--	--	--	--	--
299-W10-143	A7233	28.53	39.09	--	84.93	92.54	--	--	--	--	--
299-W10-144	A7234	23.29	36.26	--	83.78	93.55	--	--	--	--	--
299-W10-146	A7236	26.71	39.72	--	78.57	88.31	--	--	--	--	--
299-W10-147	A7237	30.37	39.32	--	82.58	92.75	--	--	--	--	--
299-W10-149	A7239	27.07	42.81	--	82.97	91.22	--	--	--	--	--
299-W10-15	A4892	10.17	48.19	--	78.28	92.31	115.22	134.93	--	--	--
299-W10-151	A7241	38.91	56.1	--	84.1	92.4	--	--	--	--	--
299-W10-152	A7242	29.11	40.15	--	82.17	92.35	--	--	--	--	--
299-W10-161	A7245	0.36	56.76	--	88.3	100.49	--	--	--	--	--
299-W10-166	A7249	31.39	46.84	--	83.78	93.96	103.49	120.03	--	--	--
299-W10-167	A7250	32.9	40.38	--	76.68	90.71	109.78	119.36	--	--	--
299-W10-168	A7251	0.32	34.69	--	--	92.62	106.65	121.91	--	--	--
299-W10-169	A7252	7.51	43.17	--	85.79	94.73	111.92	115.72	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W10-17	A4894	0.9	41.57	87.09	89.78	100.48	112.31	128.23	--	--	--
299-W10-176	A7255	29.35	38.32	--	84.79	94.96	--	--	--	--	--
299-W10-2	A4896	6.78	63.48	--	80.62	97.21	113.12	126.5	--	--	--
299-W10-20	A5439	6.47	43.91	75.64	91.77	100.7	--	117.25	--	--	--
299-W10-22	A9890	1.28	33.73	--	84.02	94.24	112.02	144.52	--	--	--
299-W10-23	B8545	7.75	42.77	--	80.31	87.96	110.24	131.88	--	--	--
299-W10-24	B8546	7.06	42.07	--	82.17	97.43	119.07	127.36	--	--	--
299-W10-26	B8548	2.03	41.44	--	88.63	97.39	109.97	126.64	--	--	--
299-W10-27	C3125	2.34	44.43	--	88.94	98.14	112.57	125.9	--	--	--
299-W10-29	C4988	0.5	59.43	--	111.28	115.73	119.53	132.92	--	--	--
299-W10-3	A4897	22.41	39.97	--	84.74	94.32	112.15	126.77	--	--	--
299-W10-30	C4989	0	48.32	70.85	109.44	117.69	127.27	134.24	--	--	--
299-W10-31	C5194	0.51	71.83	--	86.45	101.11	109.36	120.82	--	--	--
299-W10-33	C5855	7.1	44	--	--	93.68	108.3	121.69	--	--	--
299-W10-36	C8066	0	--	--	70.54	--	99.83	138.05	432.12	446.14	--
299-W10-52	A7142	0	40	--	--	92.14	113.18	120.78	--	--	--
299-W10-56	A7146	25.21	39.23	--	83.78	95.23	108.62	126.4	--	--	--
299-W10-57	A7147	25.3	37.43	--	85.11	94.69	109.95	124.61	--	--	--
299-W10-59	A7149	25.53	52.25	--	82.17	95.56	113.38	129.93	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W10-62	A7152	25.16	49.37	--	81.19	95.21	113.05	117.49	--	--	--
299-W10-65	A7155	23.42	38.05	--	--	--	--	--	--	--	--
299-W10-67	A7157	25.8	53.16	--	81.8	95.83	114.89	120.62	--	--	--
299-W10-69	A7159	26.73	59.23	--	83.39	98.7	110.17	135.01	--	--	--
299-W10-70	A7160	25.21	64.67	--	80.57	98.4	111.14	140.42	--	--	--
299-W10-71	A7161	--	--	--	--	--	--	136.38	--	--	--
299-W10-72	A7162	26.21	63.75	--	--	--	--	--	--	--	--
299-W10-73	A7163	17.69	50.15	--	--	--	--	--	--	--	--
299-W10-75	A7165	25.49	34.39	--	--	--	--	--	--	--	--
299-W10-76	A7166	0	35.53	--	--	--	--	--	--	--	--
299-W10-8	A4899	0	48.95	--	79.52	94.14	124.07	138.1	--	--	--
299-W10-80	A7170	35.25	63.25	--	81.68	86.17	102.72	--	--	--	--
299-W10-82	A7172	1.83	47.74	--	89.77	101.11	112.95	130.37	--	--	--
299-W10-83	A7173	4.93	47.95	--	90.6	100.93	112.77	129.44	--	--	--
299-W10-88	A7178	1.1	46.51	--	92.34	--	--	--	--	--	--
299-W10-89	A7179	2.53	42.37	--	90.97	--	--	--	--	--	--
299-W10-9	A4900	0.51	54.59	--	84.52	94.05	117.84	134.16	--	--	--
299-W10-90	A7180	0.9	53.63	--	90.27	--	--	--	--	--	--
299-W10-91	A7181	2.07	49.68	--	92.8	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W10-92	A7182	1.13	54.13	--	95.13	--	--	--	--	--	--
299-W10-93	A7183	0.6	52.37	--	89.96	--	--	--	--	--	--
299-W10-94	A7184	1.66	45.09	--	88.23	--	--	--	--	--	--
299-W10-95	A7185	0.9	46.32	--	91.67	--	--	--	--	--	--
299-W10-96	A7186	0.37	45.47	--	91.57	--	--	--	--	--	--
299-W10-97	A7187	1.83	59.92	--	92.1	--	--	--	--	--	--
299-W10-98	A7188	1.47	55.12	--	88.97	--	--	--	--	--	--
299-W10-99	A7189	1.8	46.53	--	89.3	--	--	--	--	--	--
299-W11-1	A7275	14.26	35.25	--	106.76	115.45	129.16	156.2	--	--	--
299-W11-12	A4902	0.87	46.16	--	84.29	102.11	--	126.3	--	--	--
299-W11-14	A4903	11	38.13	--	98.76	105.71	113.77	149.73	--	--	--
299-W11-16	A7282	0	41.38	--	87.85	98.03	116.07	129.83	--	--	--
299-W11-17	A7283	0.78	44.73	--	86.72	107.12	135.12	144.66	--	--	--
299-W11-18	A7284	15.12	54.59	--	80.03	94.7	114.41	129.07	--	--	--
299-W11-2	A7276	0.23	59.45	--	109.2	118.02	129.99	147.95	422.3	438.2	513.32
299-W11-23	A4905	5.87	30.02	--	85.42	107.69	--	126.16	--	--	--
299-W11-24	A4906	0.05	40.74	--	94.23	103.16	112.7	140.06	--	--	--
299-W11-25B	C4669	3.21	34.42	--	89.14	99.32	118.43	131.81	405.51	--	--
299-W11-26	A7287	0.64	64.95	--	87.86	104.41	131.77	140.07	412.51	429.7	504.18

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W11-28	A4908	7.84	37.77	--	105.87	119.25	124.98	138.96	--	--	--
299-W11-3	A5473	1.93	45.19	--	103.76	115.23	130.92	154	--	--	--
299-W11-31	A5472	0.64	31.73	--	63.02	70.03	77.92	94.87	--	--	--
299-W11-39	C3117	3.03	34.24	--	88.96	97.25	118.88	129.06	--	--	--
299-W11-4	A7277	0	59.99	--	118.82	122.37	145.93	166.92	--	--	--
299-W11-40	C3118	2.38	32.31	--	87.68	102.99	117.61	134.15	--	--	--
299-W11-41	C3119	2.3	36.67	--	90.16	99.69	120.09	130.26	--	--	--
299-W11-42	C3242	2.71	39	--	92.48	99.49	116.03	125.57	--	--	--
299-W11-43	C4694	0	26.72	--	94.24	97.24	108.56	122.25	--	--	--
299-W11-45	C4948	3.94	24.93	--	96.89	101.98	128.05	138.23	--	--	--
299-W11-46	C4950	0	35.61	--	94.79	109.46	120.92	129.17	--	--	--
299-W11-47	C4990	9.9	30.89	--	92.03	99	120.68	130.21	406.49	--	--
299-W11-48	C5243	4.86	27.13	56.42	83.83	94	111.19	127.09	400.8	--	--
299-W11-49	C7019	5.93	53.64	--	133.37	139.2	147.63	152.83	432.47	446.75	--
299-W11-5	A7278	0.91	57.57	--	113.17	123.11	141.49	162.28	--	--	--
299-W11-50	C7020	0.68	29.97	--	94.92	--	129.29	140.11	--	--	--
299-W11-55	A7297	0.96	44.24	--	115.7	123.23	135.29	144.23	--	--	--
299-W11-56	A7298	3.49	25.81	--	114.88	121.3	--	141.02	--	--	--
299-W11-57	A7299	0.46	42.49	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W11-59	A7301	0.32	30.26	--	--	--	--	--	--	--	--
299-W11-60	A7302	3.27	30.25	--	113.48	121.95	--	--	--	--	--
299-W11-61	A7303	0.46	36.7	--	--	--	--	--	--	--	--
299-W11-62	A7304	18.24	--	--	--	--	--	--	--	--	--
299-W11-63	A7305	0.5	34.23	--	104.35	120.17	134.79	144.37	--	--	--
299-W11-64	A7306	0	29.2	--	--	--	--	--	--	--	--
299-W11-65	A7307	19.98	37.17	--	110.57	118.66	141.57	158.76	--	--	--
299-W11-66	A7308	0	37.25	--	--	--	--	--	--	--	--
299-W11-67	A7309	0.91	38.5	--	--	--	--	--	--	--	--
299-W11-68	A7310	--	34.42	--	--	--	--	--	--	--	--
299-W11-69	A7311	4.54	30.66	--	93.68	104.5	--	--	--	--	--
299-W11-7	A4910	0.36	41.01	--	106.63	119.93	129.61	139.74	--	--	--
299-W11-70	A7312	2.84	34.72	--	88.94	100.64	116.56	125.82	--	--	--
299-W11-80	A7322	0.23	44.13	--	--	--	--	--	--	--	--
299-W11-81	A7323	0.64	27.36	--	--	--	--	--	--	--	--
299-W11-82	A7324	1.8	35.59	--	--	--	--	--	--	--	--
299-W11-86	C5101	0	65.17	--	112.93	121.82	126.4	146.02	--	429.91	490.41
299-W11-88	C5572	7.01	51.56	--	69.32	--	134.34	162.99	434.14	436.71	486.35
299-W11-9	A4911	--	50.1	--	109.31	132.23	153.4	184.2	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W11-90	C7022	2.58	44.45	--	113.86	125.54	147.75	169.99	--	--	522.94
299-W11-92	C7025	0.37	41.49	75.44	92.03	101.15	113.73	129.28	404.45	448.16	--
299-W11-93	C7026	0	50	--	110	135	160.71	187.42	427	438	507
299-W11-97	C8719	--	54.76	--	163	173.71	184.7	274.16	435.56	445.59	531.48
299-W12-1	A4912	4.9	62.96	--	90.69	--	105.12	139.76	--	--	--
299-W12-2	C7027	0.23	54.36	--	84.93	114.32	119.95	154.92	--	--	496.8
299-W12-3	C7028	0	37.54	--	82.77	93.57	99.96	129.84	--	417.13	494.63
299-W12-4	C7029	2.54	52.23	--	128.96	141.71	154.42	196.09	426.09	428.48	--
299-W13-1	C4238	3.27	61.04	--	149.2	159.25	169.64	186.78	458.53	460.17	525.76
299-W13-2?	C9440	4.63	40.77	--	158.33	169.43	181.93	262.5	403.7	413.43	--
299-W14-1	A4913	4.32	28.77	--	88.65	96.91	114.7	123.96	--	--	--
299-W14-11	C4668	1.57	32.14	--	90.93	98.06	112.14	125.1	--	--	--
299-W14-12	A4914	1.17	33.68	--	93.8	101.47	114.05	125.92	--	--	--
299-W14-13	B8549	2.87	33.15	--	89.47	97.97	112.43	124.64	--	--	--
299-W14-14	B8547	0.97	33.31	--	93.63	--	122.19	--	401.83	438.5	--
299-W14-15	C3114	0.84	37.6	--	86.56	103.18	116.14	123.18	--	--	--
299-W14-18	C3396	2.57	33.44	--	85.9	98.62	110.49	117.5	--	--	--
299-W14-19	C3957	2.34	37.93	--	94.1	104.57	123.11	127.91	--	--	--
299-W14-2	A7328	3.6	31.98	--	90.17	96.08	116.8	122.72	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W14-20	C7018	1.17	35.55	--	90.07	98.51	113.69	124.43	392.98	429.27	--
299-W14-21	C7494	1.97	49.26	--	135.8	144.55	156.55	165.62	428.75	441.07	524.7
299-W14-22	C7030	1.46	36.29	--	147.54	164.34	165.5	190.38	438.28	440.73	--
299-W14-3	A7329	3.46	35.54	--	90.96	98.9	113.32	121.08	--	--	--
299-W14-4	A7330	4.6	35.44	--	91.67	101.39	115.47	122.86	--	--	--
299-W14-5	A5475	1.5	29.04	--	79.37	99.76	112	126.43	--	--	--
299-W14-51	A7335	3	39.78	--	--	--	--	--	--	--	--
299-W14-53	A7337	2.3	35.57	--	91.63	99.65	--	--	--	--	--
299-W14-54	A7338	4.67	35.61	--	--	--	--	--	--	--	--
299-W14-55	A7339	3.93	36.43	--	--	--	--	--	--	--	--
299-W14-6	A7331	2.36	29.89	--	87.16	102.48	115.81	122.85	--	--	--
299-W14-62	A7346	3.67	30.8	--	--	--	--	--	--	--	--
299-W14-71	C5102	4.85	57.02	--	158.79	165.26	170.11	269.6	430.98	462.41	--
299-W14-72	C5103	2.5	48.32	--	132.25	138.08	148.79	155.58	434.27	--	--
299-W14-73	C7021	2	46.83	--	122.7	132.75	154.22	172.72	472.01	474.97	--
299-W14-74	C7024	--	--	--	124.75	137.5	149.08	188.42	--	445.59	--
299-W14-9	A4915	8.08	43.42	--	116.92	123.25	131.96	147	425.33	469.87	530.67
299-W15-1	A7348	2.67	30.4	72.87	114.77	123.74	137.04	175.28	--	--	--
299-W15-10	A4916	4.47	50.3	88.25	123.29	127.84	142.4	173.85	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-103	A7402	1.44	49.71	--	97.8	--	--	--	--	--	--
299-W15-104	A7403	1.77	48.22	--	94.44	--	--	--	--	--	--
299-W15-105	A7404	1.83	47.15	--	97.73	--	--	--	--	--	--
299-W15-106	A7405	0.9	48.53	--	95.87	--	--	--	--	--	--
299-W15-107	A7406	1.47	49.72	--	97.8	--	--	--	--	--	--
299-W15-109	A7408	0.73	47.86	--	98	--	--	--	--	--	--
299-W15-110	A7409	1.26	49.97	--	97.6	--	--	--	--	--	--
299-W15-111	A7410	2.3	47.57	--	91.7	--	--	--	--	--	--
299-W15-112	A7411	1.4	51.89	--	95.9	--	--	--	--	--	--
299-W15-113	A7412	1.86	47.24	--	94.06	--	--	--	--	--	--
299-W15-116	A7415	1.63	43.84	--	96.1	--	--	--	--	--	--
299-W15-117	A7416	0.77	44.69	--	98	--	--	--	--	--	--
299-W15-118	A7417	0.66	47.36	--	88.63	--	--	--	--	--	--
299-W15-119	A7418	2.07	48.19	--	97	--	--	--	--	--	--
299-W15-12	A4917	1.36	41.12	--	90.26	98.15	112.6	128.15	--	--	--
299-W15-121	A7420	1.1	47.82	--	96.04	--	--	--	--	--	--
299-W15-122	A7421	1.47	49.23	--	98.24	--	--	--	--	--	--
299-W15-124	A7423	0.97	47.92	--	95.87	--	--	--	--	--	--
299-W15-125	A7424	1.86	47.52	--	96.76	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-128	A7427	2.63	49.31	--	--	--	--	--	--	--	--
299-W15-129	A7428	6.8	48.56	--	94.33	--	--	--	--	--	--
299-W15-13	A4918	1.73	41.79	--	87.41	99.18	119.55	133.26	--	--	--
299-W15-130	A7429	1.24	51.2	--	--	--	--	--	--	--	--
299-W15-131	A7430	1.5	47.83	--	--	--	--	--	--	--	--
299-W15-132	A7431	1.8	49.98	--	--	--	--	--	--	--	--
299-W15-133	A7432	1.23	49.14	--	92.06	--	--	--	--	--	--
299-W15-134	A7433	3.33	49.37	--	98.27	--	--	--	--	--	--
299-W15-135	A7434	1.7	48.91	--	98.5	--	--	--	--	--	--
299-W15-137	A7436	2.44	48.3	--	97.4	--	--	--	--	--	--
299-W15-138	A7437	4.37	53.31	--	95.67	--	--	--	--	--	--
299-W15-139	A7438	1.53	51.53	--	96.03	--	--	--	--	--	--
299-W15-14	A7350	0.7	91.9	--	140.03	154.86	167.83	184.03	458.1	506.26	562.26
299-W15-140	A7439	1.27	48.77	--	--	--	--	--	--	--	--
299-W15-141	A7440	0.1	50.35	--	--	--	--	--	--	--	--
299-W15-142	A7441	5.2	49.47	--	--	--	--	--	--	--	--
299-W15-143	A7442	1.47	51.1	--	--	--	--	--	--	--	--
299-W15-144	A7443	1.14	50.4	--	97.04	--	--	--	--	--	--
299-W15-145	A7444	1.63	50.59	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-146	A7445	2.3	48.64	--	--	--	--	--	--	--	--
299-W15-147	A7446	2.03	49.65	--	--	--	--	--	--	--	--
299-W15-148	A7447	1.83	48.53	--	--	--	--	--	--	--	--
299-W15-149	A7448	1.13	51.6	--	98.43	--	--	--	--	--	--
299-W15-15	A4919	0.74	95.64	124.17	136.84	147.5	157.44	175.74	--	--	--
299-W15-152	C4685	9.07	43.42	119.25	130.27	140	147.46	176.3	--	--	--
299-W15-153	A7451	1	45.55	--	--	--	--	--	--	--	--
299-W15-154	A7452	1.3	51.19	--	--	--	--	--	--	--	--
299-W15-155	A7453	1.27	49.06	--	102.27	111.27	--	--	--	--	--
299-W15-156	A7454	3.76	47.42	--	--	--	--	--	--	--	--
299-W15-158	A7456	1.3	48.26	--	--	--	--	--	--	--	--
299-W15-159	A7457	1.83	48.45	--	96.8	--	--	--	--	--	--
299-W15-160	A7458	1.27	49.55	--	93	--	--	--	--	--	--
299-W15-161	A7459	2.5	48.91	--	90.03	--	--	--	--	--	--
299-W15-162	A7460	1.6	47.63	--	89.57	--	--	--	--	--	--
299-W15-163	A7461	1.44	51.36	--	96.37	--	--	--	--	--	--
299-W15-164	A7462	5.57	49.26	--	95.37	--	--	--	--	--	--
299-W15-166	A7464	3.64	50.06	--	100.04	110.43	--	--	--	--	--
299-W15-167	A7465	2.04	53.41	--	99.77	110.07	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-169	A7467	1.37	50.24	--	--	--	--	--	--	--	--
299-W15-170	A7468	1.63	50.05	--	--	--	--	--	--	--	--
299-W15-171	A7469	1.8	49.7	--	100.04	--	--	--	--	--	--
299-W15-173	A7471	2.27	47.76	--	98.67	--	--	--	--	--	--
299-W15-174	A7472	1	--	--	106.16	--	--	--	--	--	--
299-W15-176	A7474	1.37	48.69	--	97.27	--	--	--	--	--	--
299-W15-177	A7475	1.86	49.17	--	98.7	105.11	--	--	--	--	--
299-W15-178	A7476	2.1	49.14	--	96.6	105.46	--	--	--	--	--
299-W15-179	A7477	1.53	48.2	--	--	--	--	--	--	--	--
299-W15-180	A7478	1	46.48	--	98.27	--	--	--	--	--	--
299-W15-181	A7479	3.2	48.64	--	99	--	--	--	--	--	--
299-W15-182	A7480	5.3	50.48	--	96.97	--	--	--	--	--	--
299-W15-184	A7482	1.57	44.94	--	91.87	--	--	--	--	--	--
299-W15-185	A7483	0.93	48.85	--	90.76	--	--	--	--	--	--
299-W15-186	A7484	1.8	51.1	--	93	--	--	--	--	--	--
299-W15-190	A7488	1.27	49.31	--	--	--	--	--	--	--	--
299-W15-197	A7495	3.34	49.92	--	96.47	--	--	--	--	--	--
299-W15-2	A5466	1.73	57.26	--	109.19	120.31	129.19	139.94	--	--	--
299-W15-209	A7507	11.5	31.59	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-210	A7508	19.07	29.43	--	--	--	--	--	--	--	--
299-W15-211	A7509	10.19	34.81	--	--	--	--	--	--	--	--
299-W15-212	A7510	14.33	29.24	--	--	--	--	--	--	--	--
299-W15-22	A4925	4.88	46.4	95.94	103.14	109.88	120.24	126.4	--	--	--
299-W15-224	C4986	10.31	33.32	75.46	127.96	132.18	152.6	174.87	--	--	--
299-W15-225	C7017	8.77	56.39	--	104.1	110.53	124.13	133.53	410.61	457.93	--
299-W15-226	C7574	1.86	62.21	--	109.99	128.53	135.91	147.41	439.26	479.98	--
299-W15-227	C7575	2.2	74.53	--	137.44	152.65	171.75	196.72	455.64	496.48	--
299-W15-228	C8716	3.24	77.77	--	119.9	141.2	--	159.74	442.13	507.4	--
299-W15-23	A4926	16.13	97.13	--	137.78	148.76	159.16	176.76	--	--	--
299-W15-24	A4927	15.6	109.1	--	149.84	164.67	174.87	185.47	--	--	--
299-W15-3	A4928	0.7	54.8	--	92.82	102.21	124.05	138.87	--	--	--
299-W15-36	B2752	33.2	73.96	--	97.4	109.6	117	123	--	--	--
299-W15-37	B2753	5	76.3	--	112.27	--	130.47	142.97	--	--	--
299-W15-4	A4929	1.14	40.03	--	90.57	104.86	111.88	121.5	--	--	--
299-W15-40	B8550	7.21	67.48	97.52	100.63	108.96	125.16	132.3	--	--	--
299-W15-41	B8815	1.43	43.78	91.7	93.63	103.03	113.03	121.54	--	--	--
299-W15-43	C3955	25.13	40.36	90.87	110.86	117.18	131.44	147	--	--	--
299-W15-44	C3956	0.05	35.17	94.11	99.53	107.39	118.98	124.77	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-49	C4301	9.26	43.41	64.05	125.62	131.13	153.51	179.73	426.04	--	--
299-W15-50	C4302	2.8	42.65	--	97.73	106.48	111.03	131.45	--	--	--
299-W15-53	A7354	1.8	30.12	--	--	--	--	--	--	--	--
299-W15-54	A7355	3.16	28.56	72.31	--	--	--	--	--	--	--
299-W15-55	A7356	2.37	29.23	73	113.07	123.56	137.49	--	--	--	--
299-W15-56	A7357	2.23	28.34	69.85	112.03	123.63	138.54	--	--	--	--
299-W15-57	A7358	2.07	30.22	73.36	112.77	123.9	136.55	--	--	--	--
299-W15-59	A7360	4.17	30.71	73.5	106.07	124.37	137.67	173.95	--	--	--
299-W15-6	A7349	2.36	37.35	--	100.57	110.6	115.15	135.24	--	--	--
299-W15-60	A7361	3.86	28.91	--	109.96	124.53	138.46	174.76	--	--	--
299-W15-61	A7362	1.2	30.12	--	113.74	124.44	137.41	174.67	--	--	--
299-W15-62	A7363	5.03	44.11	--	101.37	112.64	123.01	136.35	--	--	--
299-W15-63	A7364	2.8	40.67	90.15	92.2	102.91	117.71	126.96	--	--	--
299-W15-64	A7365	6.24	43.63	--	102.57	109.58	116.59	125.12	--	--	--
299-W15-66	A7367	1.46	46.28	--	--	--	--	--	--	--	--
299-W15-67	A7368	1.07	53.84	--	99.27	113.12	128.3	138.67	--	--	--
299-W15-68	A7369	3.43	49.23	--	--	--	--	--	--	--	--
299-W15-69	A7370	2.47	49.44	--	102.54	110.56	124.99	133.87	--	--	--
299-W15-7	A5476	2.47	49.17	98.56	101.6	110.29	123.97	134.35	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W15-70	A7371	1.47	48.8	--	104.33	113.6	122.48	--	--	--	--
299-W15-71	A7372	1.16	49.33	--	102.16	111.2	124.5	131.54	--	--	--
299-W15-72	A7373	3	50.88	--	97.51	107.55	120.88	130.13	--	--	--
299-W15-73	A7374	0.75	41.91	--	102.94	110.08	120.65	132.64	--	--	--
299-W15-74	A7375	0.1	39.88	--	94.27	107.3	120.35	130.61	--	--	--
299-W15-75	A7376	0.27	44	--	100.27	106.96	120.3	129.92	--	--	--
299-W15-76	A7377	5.34	48.67	--	--	--	--	--	--	--	--
299-W15-763	C3339	0.8	40.66	--	93.5	101.41	109.54	116.96	--	--	--
299-W15-79	A7380	1.03	44.96	--	92.27	103.87	114.24	131.63	--	--	--
299-W15-80	A7381	13.79	40.04	--	115.5	--	--	--	--	--	--
299-W15-81	A7382	12	32.74	81.95	112.4	--	--	--	--	--	--
299-W15-83	C4683	7.88	29.26	84.04	134.58	136.86	149.79	169.6	--	--	--
299-W15-94	C4684	10.68	40.18	94.63	135.46	--	149.72	174.99	--	--	--
299-W17-1	C4237	1.86	54.63	--	99.54	114.81	124.97	130.11	--	--	--
299-W17-2	C7576	2.03	30.47	--	101.75	110.18	116.66	136.1	408.33	--	--
299-W18-100	A7583	1.8	50.7	--	--	--	--	--	--	--	--
299-W18-101	A7584	0.57	51.48	--	--	--	--	--	--	--	--
299-W18-102	A7585	0	53.16	--	--	--	--	--	--	--	--
299-W18-103	A7586	0.03	52.11	--	119.47	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W18-104	A7587	1.57	49.35	--	--	--	--	--	--	--	--
299-W18-105	A7588	4.9	54.21	--	--	--	--	--	--	--	--
299-W18-107	A7590	0.8	53.69	--	--	--	--	--	--	--	--
299-W18-109	A7592	2.06	53.54	--	--	--	--	--	--	--	--
299-W18-110	A7593	1.2	54.07	--	--	--	--	--	--	--	--
299-W18-114	A7597	1.36	51.94	--	--	--	--	--	--	--	--
299-W18-116	A7599	0.6	52.76	--	--	--	--	--	--	--	--
299-W18-117	A7600	1.8	54	--	--	--	--	--	--	--	--
299-W18-118	A7601	1.73	53.66	--	--	--	--	--	--	--	--
299-W18-119	A7602	1.13	49.84	--	114.06	--	--	--	--	--	--
299-W18-120	A7603	2.3	51.62	--	--	--	--	--	--	--	--
299-W18-121	A7604	2.2	50.17	--	--	--	--	--	--	--	--
299-W18-122	A7605	1.17	51.4	--	--	--	--	--	--	--	--
299-W18-123	A7606	0.73	50.98	--	--	--	--	--	--	--	--
299-W18-124	A7607	1.23	53.06	--	--	--	--	--	--	--	--
299-W18-125	A7608	0.7	55.21	--	--	--	--	--	--	--	--
299-W18-126	A7609	1.57	52.47	--	--	--	--	--	--	--	--
299-W18-127	A7610	1.7	52.34	--	--	--	--	--	--	--	--
299-W18-128	A7611	1.5	50.53	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W18-129	A7612	0.76	50.26	--	114.16	--	--	--	--	--	--
299-W18-130	A7613	1.2	49.91	--	--	--	--	--	--	--	--
299-W18-131	A7614	1.07	50.66	--	--	--	--	--	--	--	--
299-W18-133	A7616	2.23	50.56	--	--	--	--	--	--	--	--
299-W18-134	A7617	1.67	50.56	--	--	--	--	--	--	--	--
299-W18-135	A7618	1.04	73.99	--	--	--	--	--	--	--	--
299-W18-137	A7620	3.93	52.43	--	--	--	--	--	--	--	--
299-W18-138	A7621	1.1	49.28	--	--	--	--	--	--	--	--
299-W18-139	A7622	1.04	56.36	--	--	--	--	--	--	--	--
299-W18-140	A7623	1.26	49.14	--	--	--	--	--	--	--	--
299-W18-141	A7624	2.8	49.82	--	114.83	--	--	--	--	--	--
299-W18-142	A7625	1.67	49.42	--	--	--	--	--	--	--	--
299-W18-143	A7626	2.03	47.9	--	--	--	--	--	--	--	--
299-W18-144	A7627	2.07	51.32	--	113.67	--	--	--	--	--	--
299-W18-145	A7628	6.87	50.24	--	--	--	--	--	--	--	--
299-W18-146	A7629	6.97	50.53	--	--	--	--	--	--	--	--
299-W18-147	A7630	0.63	56.16	--	--	--	--	--	--	--	--
299-W18-15	A4932	--	35	--	120.26	135.85	157.22	172.24	--	--	--
299-W18-16	C4303	17.32	49.73	79.19	126.84	137.22	149.54	166.06	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W18-17	A5479	25.22	71.89	114.35	117.43	--	--	--	--	--	--
299-W18-176	A7658	1.3	52.27	--	--	--	--	--	--	--	--
299-W18-178	A7660	3.83	63.51	--	--	--	--	--	--	--	--
299-W18-18	A7531	5.57	71.62	--	117.94	130.14	136.14	145.37	--	--	--
299-W18-19	A7532	10.4	46	94.45	109.77	125.67	134.9	145.1	--	--	--
299-W18-2	A5478	2.53	59.93	105.42	129.86	140.46	154.36	170.56	--	--	--
299-W18-20	A5471	10.4	32.13	--	108.4	124.27	140	159.43	--	--	--
299-W18-21	A4933	--	70.23	--	--	--	--	--	--	--	--
299-W18-22	A4934	1.6	81.7	--	116.86	135.36	144.2	150.2	442.8	--	--
299-W18-23	A4935	4.83	91.9	--	145.08	165.91	170.08	177.95	--	--	--
299-W18-24	A4936	16.85	58.01	112.12	132.92	143.57	155.89	172.08	--	--	--
299-W18-247	A7727	9.83	54.73	116.06	130.22	146.38	155.65	165.38	--	--	--
299-W18-25	A4937	0.84	19.77	--	123.8	136.94	140.64	--	--	--	--
299-W18-251	A7731	8.6	45.01	--	122.97	148.38	--	--	--	--	--
299-W18-260	C8925	12.01	47.99	--	110.1	129.01	136.15	155.91	--	--	--
299-W18-27	A4939	5.86	88.86	--	141.01	148.44	151.68	157.21	--	--	--
299-W18-28	A4940	1.56	71.46	--	137.66	147.4	150.2	155.26	--	--	--
299-W18-30	A4942	10.18	60.09	--	--	122.95	--	155.03	--	--	--
299-W18-31	A4943	0.26	21.1	--	112.16	126.2	134.96	154.43	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W18-4	A7522	3.37	45.04	--	130.7	140.4	156.53	166.34	--	--	--
299-W18-41	C8920	5.1	65.76	--	124.99	139.36	149.09	154.62	436.11	475.91	--
299-W18-51	A7534	0.97	52.2	--	--	--	--	--	--	--	--
299-W18-53	A7536	0.53	52.31	--	117.2	132	147.26	--	--	--	--
299-W18-54	A7537	1.36	51.37	--	102.26	--	--	--	--	--	--
299-W18-55	A7538	1.3	52.5	--	--	--	--	--	--	--	--
299-W18-7	A7524	14.58	57.02	87.17	124.6	133.18	144.84	161.03	--	--	--
299-W18-86	A7569	14.52	60.21	103.31	133.27	143.82	--	--	--	--	--
299-W18-88	A7571	16.44	49.48	78.56	128.43	138.28	--	--	--	--	--
299-W18-9	A7526	0	59.4	115.45	132.1	145.97	150.14	158.47	--	--	--
299-W18-90	A7573	0.84	51.83	--	--	--	--	--	--	--	--
299-W18-91	A7574	2.4	51.24	--	--	--	--	--	--	--	--
299-W18-95	A7578	8.17	55.87	--	--	--	--	--	--	--	--
299-W18-97	A7580	8.5	55.26	--	--	--	--	--	--	--	--
299-W19-1	A4944	10.31	50.49	--	130.03	146.74	155.17	173.32	--	--	--
299-W19-101	C4966	1.23	53.14	--	169.62	182.62	197.36	246.79	--	--	--
299-W19-105	C4968	--	54.67	--	164.38	194.66	200.17	245.23	--	--	--
299-W19-107	C5193	3.27	69.04	--	175.35	185.71	195.09	240.47	428.44	--	--
299-W19-111	C8718	5.07	60.15	--	138.6	144.08	149.91	159.32	416.96	445.14	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W19-114	C8928	2.93	55.1	--	165.25	179.83	197.33	243.02	--	--	--
299-W19-116	C9412	4.77	35.3	--	176.5	188.3	210.53	249.87	447.57	--	--
299-W19-12	A4945	4.09	49.91	--	--	--	--	160.94	--	--	--
299-W19-13	A7740	0	109.53	--	155.73	169.62	179.43	199.67	--	--	--
299-W19-14	A4946	0	88.86	--	161.06	170.76	183.76	194.4	--	--	--
299-W19-15	A4947	0	90.56	--	147.33	163.1	167.73	180.66	--	--	--
299-W19-18	A7743	5.17	99.93	--	145	164.47	175.1	184.83	--	--	--
299-W19-24	A4952	0.74	75.27	--	166.22	185	199.69	249.93	--	--	--
299-W19-25	A7746	0.76	54.9	--	156.33	180.86	184.56	234.56	--	--	--
299-W19-28	A4954	0.83	77.67	--	165.2	184.63	189.73	211.97	--	--	--
299-W19-29	A4955	0.63	75.16	--	167.46	189.06	200.63	246.46	--	--	--
299-W19-31	A4956	8.44	51.21	--	--	--	--	--	--	--	--
299-W19-32	A4957	2.08	44.83	--	--	--	--	--	--	--	--
299-W19-36	B2461	1.83	76.66	--	165.1	185.93	200.3	243.36	--	--	--
299-W19-37	B2465	0.26	76.63	--	165.53	186.36	199.33	242.4	--	--	--
299-W19-38	B2463	3.47	75.62	--	166.04	186.46	199.73	243.48	--	--	--
299-W19-39	B2460	1	57.47	--	162.14	171.37	188.5	239.44	--	--	--
299-W19-40	B2464	1.17	76.6	--	165.97	185.43	200.23	234.97	--	--	--
299-W19-41	B8551	1.14	53.84	--	126.4	139.83	144.38	154.41	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W19-42	B8553	7.05	43.67	--	119	138.62	143.5	156.78	--	--	--
299-W19-44	C3393	2.26	60.75	--	132.05	143.89	151	155.88	--	--	--
299-W19-45	C3394	5.93	51.45	--	132	137.17	145.59	154.34	--	--	--
299-W19-46	C3958	2.43	61.9	--	170.47	184.07	200.62	245	--	--	--
299-W19-47	C4258	8.15	53.2	--	123.77	134.55	144.91	162.74	--	--	--
299-W19-48	C4300	2.8	57.75	--	160.7	178.33	200.69	259.02	419.94	--	--
299-W19-49	C4695	1.2	62.69	--	160.3	180.67	198.8	256.17	--	--	--
299-W19-5	A7734	2.37	73.65	--	144.44	158.82	168.85	183.84	--	--	--
299-W19-53	A7751	1.57	55.23	--	--	--	--	--	--	--	--
299-W19-54	A7753	2.53	57	--	--	--	--	--	--	--	--
299-W19-63	A7763	0.4	--	--	--	--	--	--	--	--	--
299-W19-7	A7735	3.65	77.38	--	145.37	159.2	162.44	181.48	--	--	--
299-W19-72	A7772	2.3	--	--	--	--	--	--	--	--	--
299-W19-73	A7773	1.87	--	--	--	--	--	--	--	--	--
299-W19-74	A7774	1.2	48.79	--	--	--	--	--	--	--	--
299-W19-75	A7775	1.37	49.71	--	--	--	--	--	--	--	--
299-W19-76	A7776	0.74	48.25	--	--	--	--	--	--	--	--
299-W21-2	C4639	9.04	58.21	--	172.83	193.67	224.33	244	--	--	--
299-W21-3	C9415	4.93	35.47	--	166.03	201.43	224.6	244.03	420.43	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W22-10	A7835	24.66	69.7	--	121.69	133.83	154.63	167.89	--	--	--
299-W22-113	C8943	3.6	59.53	--	122.63	140.55	155.95	177.04	--	--	--
299-W22-114	C9411	--	47.71	--	165.2	182.58	195.87	229.45	--	--	--
299-W22-115	C9430	2.16	49.61	--	119.67	146.41	154.52	170.23	--	--	--
299-W22-13	A7838	24	70.49	--	132.83	142.59	150.4	161.03	--	--	--
299-W22-14	A7839	10.13	60.37	--	138.51	156.33	169.94	192.94	--	--	--
299-W22-15	A7840	3.5	64.84	--	122.29	136.17	148.33	165.67	--	--	--
299-W22-17	A4964	20.53	62.44	--	116.89	133.79	144.79	156.99	--	--	--
299-W22-18	A7842	11.56	55.47	--	121.91	132.91	152.58	165.87	--	--	--
299-W22-2	A7828	27.6	47.02	--	129.64	140.58	151.52	169.78	--	--	--
299-W22-25	A7846	2.3	69.87	--	120.09	145.03	152.2	183.93	--	--	--
299-W22-26	A4968	2.4	58.4	--	133.87	148.23	157.29	176.26	--	--	--
299-W22-28	A4969	17.43	64.66	--	155.4	183.16	--	--	--	--	--
299-W22-3	A7829	24.77	65.57	--	118.75	133.25	153.5	168.54	--	--	--
299-W22-30	A7849	6.57	45.44	--	129.3	147.12	160.07	175.88	--	--	--
299-W22-31	A7850	6.54	65.11	--	121.82	136.02	146.55	160.73	--	--	--
299-W22-37	A7856	13.9	73.53	--	142.5	155.93	168.9	185.1	--	--	--
299-W22-38	A7857	2.22	60.97	--	143.87	154.04	164.5	187.09	--	--	--
299-W22-39	A4970	4.34	55.59	--	120.02	147.59	151.23	154.88	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W22-4	A7830	8.93	68.04	--	126.53	135.71	149.7	168.2	--	--	--
299-W22-45	A4976	5.73	50.31	--	117.72	146.1	155.58	170.43	--	--	--
299-W22-47	C4667	5.23	75.8	--	120.67	139.36	157.58	181.91	--	--	--
299-W22-48	B8812	11.04	59.08	--	133.75	146.46	161.5	186.37	--	--	--
299-W22-5	A7831	8.87	60.56	--	123.38	134.38	147.67	159.84	--	--	--
299-W22-50	B8814	2.54	63.09	--	118.75	138.67	151.17	164.46	457.6	496.07	--
299-W22-63	A7870	0.24	62.46	--	--	--	--	--	--	--	--
299-W22-69	C4969	1.51	58.46	--	119.86	141.16	155.51	175.08	--	--	--
299-W22-72	C4970	0.88	54.66	--	141.3	164.04	181.35	215.41	--	--	--
299-W22-74	A7878	4.42	62.22	--	--	--	--	--	--	--	--
299-W22-75	A7879	6.2	54.83	--	153.96	--	--	--	--	--	--
299-W22-8	A7833	7.44	57.84	--	154.46	181.15	200.75	231.5	--	--	--
299-W22-81	C3123	10	47	--	116.75	134.13	144	163	--	--	--
299-W22-84	C3398	5.74	65.79	--	141.25	156.08	162.55	178.31	--	--	--
299-W22-86	C4971	10.87	60.9	--	136.89	156.9	166.9	192.83	--	--	--
299-W22-87	C4977	5.1	54.16	--	158.8	184.26	--	--	--	--	--
299-W22-88	C4978	10.37	55.06	--	168.16	194.08	227.76	258.13	429.37	--	--
299-W22-89	C7664	4.06	86.45	--	125.07	145.91	156.9	189.26	--	--	--
299-W22-91	C8096	4.77	62.71	--	120.26	136.85	153.4	165.9	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W22-92	C8097	6.23	49.49	--	139.16	151.17	161.92	194.7	--	--	--
299-W22-93	C8202	3.66	55.43	--	134.13	148.03	158.7	178.6	--	--	--
299-W22-94	C8203	14.46	60.05	--	133.13	145.84	162.63	188.67	--	--	--
299-W22-95	C8240	0.74	77.13	--	134.97	145.37	155.78	191.02	--	--	--
299-W23-1	A4979	3.2	54.93	--	122.07	--	--	--	--	--	--
299-W23-10	A7884	6.36	55.48	--	120.43	135.71	155.67	170.08	--	--	--
299-W23-103	A7939	2.83	66.83	--	--	--	--	--	--	--	--
299-W23-108	A7944	0	88.94	--	128.38	--	--	--	--	--	--
299-W23-11	A4980	11.6	51.07	--	123.78	136.79	155.29	169.2	--	--	--
299-W23-121	A7957	7.1	91.04	--	122.97	--	--	--	--	--	--
299-W23-125	A7961	1.37	67.7	--	127.64	--	--	--	--	--	--
299-W23-126	A7962	4.14	73.24	--	--	--	--	--	--	--	--
299-W23-128	A7964	3.06	75.4	--	--	--	--	--	--	--	--
299-W23-129	A7965	4.1	67.16	--	--	--	--	--	--	--	--
299-W23-13	A4982	1.5	60.26	--	130.2	140.48	--	--	--	--	--
299-W23-130	A7966	1	67.3	--	--	--	--	--	--	--	--
299-W23-132	A7968	1.43	58.93	--	130.21	--	--	--	--	--	--
299-W23-133	A7969	12.07	65.9	--	--	--	--	--	--	--	--
299-W23-134	A7970	2.23	65.33	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W23-135	A7971	0.94	68.64	--	129.3	--	--	--	--	--	--
299-W23-136	A7972	3.86	70.61	--	--	--	--	--	--	--	--
299-W23-137	A7973	9.27	76.97	--	126.97	--	--	--	--	--	--
299-W23-140	A7976	1.1	63.23	--	--	--	--	--	--	--	--
299-W23-141	A7977	5.03	67.63	--	--	--	--	--	--	--	--
299-W23-142	A7978	10.96	80.03	--	--	--	--	--	--	--	--
299-W23-143	A7979	2.17	82.84	--	127.61	--	--	--	--	--	--
299-W23-145	A7981	0.76	48.36	--	--	--	--	--	--	--	--
299-W23-147	A7983	7.06	50.93	--	--	--	--	--	--	--	--
299-W23-148	A7984	1.74	66.44	--	--	--	--	--	--	--	--
299-W23-149	A7985	2.63	75.2	--	--	--	--	--	--	--	--
299-W23-153	A7989	5.77	70.94	--	--	--	--	--	--	--	--
299-W23-154	A7990	2.83	63.87	--	--	--	--	--	--	--	--
299-W23-155	A7991	1.43	59.2	--	--	--	--	--	--	--	--
299-W23-156	A7992	0.66	65.83	--	--	--	--	--	--	--	--
299-W23-159	A7995	2.9	67.17	--	--	--	--	--	--	--	--
299-W23-16	A7885	6.87	50.92	--	128.79	152.76	--	178.99	--	--	--
299-W23-160	A7996	2.76	61.93	--	--	--	--	--	--	--	--
299-W23-161	A7997	0.7	47.84	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W23-162	A7998	0.33	68.26	--	--	--	--	--	--	--	--
299-W23-164	A8000	0.9	59.6	--	--	--	--	--	--	--	--
299-W23-165	A8001	1.33	64.61	--	--	--	--	--	--	--	--
299-W23-167	A8003	2.46	63.46	--	--	--	--	--	--	--	--
299-W23-168	A8004	3.3	55.03	--	--	--	--	--	--	--	--
299-W23-17	A7886	12.48	43.04	--	125	140.44	--	171.63	--	--	--
299-W23-170	A8006	2.16	56.23	--	--	--	--	--	--	--	--
299-W23-171	A8007	2.83	54.13	--	--	--	--	--	--	--	--
299-W23-174	A8010	1.46	67.56	--	--	--	--	--	--	--	--
299-W23-176	A8012	0.76	70.56	--	--	--	--	--	--	--	--
299-W23-178	A8014	0.14	62.04	--	--	--	--	--	--	--	--
299-W23-179	A8015	1.8	50.76	--	--	--	--	--	--	--	--
299-W23-181	A8017	1.2	61.73	--	--	--	--	--	--	--	--
299-W23-182	A8018	3.27	67.04	--	--	--	--	--	--	--	--
299-W23-183	A8019	2.5	68.6	--	--	--	--	--	--	--	--
299-W23-184	A8020	2.4	64.8	--	--	--	--	--	--	--	--
299-W23-19	B8809	0.8	--	--	125	--	--	--	--	--	--
299-W23-190	A8026	0.27	58.73	--	--	--	--	--	--	--	--
299-W23-191	A8027	2.5	63.26	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W23-193	A8029	3.7	66.77	--	--	--	--	--	--	--	--
299-W23-194	A8030	2.4	71.97	--	--	--	--	--	--	--	--
299-W23-195	A8031	2.3	74.6	--	--	--	--	--	--	--	--
299-W23-196	A8032	12.74	82.27	--	--	--	--	--	--	--	--
299-W23-197	A8033	1.56	56.3	--	--	--	--	--	--	--	--
299-W23-198	A8034	1.53	59.03	--	--	--	--	--	--	--	--
299-W23-2	A4985	2.77	55.67	--	131.47	154.43	160.52	164.99	--	--	--
299-W23-201	A8037	0.97	66.13	--	--	--	--	--	--	--	--
299-W23-202	A8038	1.43	61.03	--	--	--	--	--	--	--	--
299-W23-203	A8039	2.9	64.83	--	--	--	--	--	--	--	--
299-W23-204	A8040	1.97	53.27	--	--	--	--	--	--	--	--
299-W23-206	A8042	0.87	57.23	--	--	--	--	--	--	--	--
299-W23-207	A8043	2.03	65.33	--	--	--	--	--	--	--	--
299-W23-208	A8044	1.46	74.96	--	--	--	--	--	--	--	--
299-W23-212	A8046	2.1	72.34	--	--	--	--	--	--	--	--
299-W23-213	A8047	1.7	63.63	--	--	--	--	--	--	--	--
299-W23-216	A8048	1.46	63.86	--	125.43	--	--	--	--	--	--
299-W23-218	A8049	1.87	55	--	125.84	--	--	--	--	--	--
299-W23-220	A8050	1.84	65.14	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W23-223	A8051	10.6	66.26	--	--	--	--	--	--	--	--
299-W23-225	A8052	1.33	66.27	--	--	--	--	--	--	--	--
299-W23-226	A8053	9	83.63	--	--	--	--	--	--	--	--
299-W23-227	A8054	3.86	84.04	--	--	--	--	--	--	--	--
299-W23-3	A4986	2	68.58	--	124.58	144.85	157.01	171.97	--	--	--
299-W23-4	A4987	10.54	54.44	--	118.16	141.41	--	169.93	--	--	--
299-W23-5	A4988	5.03	68.56	--	125	146.42	155.73	166.69	--	--	--
299-W23-51	A7887	2.2	47	--	130.34	--	--	--	--	--	--
299-W23-52	A7888	9.2	59.53	--	130.83	--	--	--	--	--	--
299-W23-53	A7889	1.5	74.07	--	127.34	--	--	--	--	--	--
299-W23-55	A7891	2.17	64.1	--	129.4	--	--	--	--	--	--
299-W23-56	A7892	1.93	58.33	--	130.53	--	--	--	--	--	--
299-W23-57	A7893	1.37	65.14	--	128.57	--	--	--	--	--	--
299-W23-59	A7895	1.46	70.1	--	--	--	--	--	--	--	--
299-W23-6	A4989	3.26	53.73	--	121.4	139.63	153.8	164.74	--	--	--
299-W23-60	A7896	4.8	67.43	--	--	--	--	--	--	--	--
299-W23-62	A7898	0.83	65.3	--	--	--	--	--	--	--	--
299-W23-65	A7901	0.8	91.63	--	--	--	--	--	--	--	--
299-W23-66	A7902	1.33	53.3	--	122.76	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W23-67	A7903	1.13	68.37	--	--	--	--	--	--	--	--
299-W23-68	A7904	1.9	85.33	--	--	--	--	--	--	--	--
299-W23-69	A7905	4.87	80.47	--	--	--	--	--	--	--	--
299-W23-70	A7906	0.93	85.76	--	--	--	--	--	--	--	--
299-W23-72	A7908	1.84	74.64	--	--	--	--	--	--	--	--
299-W23-73	A7909	2.36	64.06	--	--	--	--	--	--	--	--
299-W23-74	A7910	1.5	58.1	--	--	--	--	--	--	--	--
299-W23-75	A7911	2.54	60.07	--	--	--	--	--	--	--	--
299-W23-79	A7915	1.1	64.64	--	--	--	--	--	--	--	--
299-W23-8	A4991	3.34	66.7	--	123.24	151.75	164.44	182.04	--	--	--
299-W23-83	A7919	1.34	66.74	--	--	--	--	--	--	--	--
299-W23-84	A7920	1.47	71.04	--	--	--	--	--	--	--	--
299-W23-85	A7921	1.87	66.33	--	--	--	--	--	--	--	--
299-W23-9	A7883	9.42	59.84	--	122.42	139.79	161.21	170.82	--	--	--
299-W23-92	A7928	1.83	76.03	--	126.54	--	--	--	--	--	--
299-W23-94	A7930	1.94	81.2	--	127.04	--	--	--	--	--	--
299-W23-97	A7933	2.23	69	--	--	--	--	--	--	--	--
299-W23-98	A7934	1.5	67.83	--	--	--	--	--	--	--	--
299-W23-99	A7935	1.83	76	--	127.4	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W26-1	A8057	2.54	45.89	--	--	--	--	--	--	--	--
299-W26-12	A5409	1.75	69.53	--	125.63	150.71	168.63	190.63	--	--	--
299-W26-13	B8817	1.95	51.36	--	113.97	134.39	138.85	157.08	--	--	--
299-W26-14	B8828	2.9	78.33	--	120	137.13	162.23	190	--	--	--
299-W26-4	A8059	2.25	52.08	--	--	--	--	--	--	--	--
299-W26-5	A8060	2.2	54.22	--	--	--	--	--	--	--	--
299-W26-6	A5445	1.72	47.11	--	108.97	132.6	139.07	150.02	--	--	--
299-W27-1	A8062	4.94	63.1	--	159.12	179.36	194.76	--	--	--	--
299-W5-1	C8721	0.23	35.62	--	99.68	--	113.75	133.74	--	334.39	464.28
299-W5-2?	C9439	--	41.67	--	70.16	79.09	79.87	135.17	--	349.85	444.77
299-W6-1	A4996	6.92	--	--	40.66	45.1	61.05	98.59	413.07	425.81	457.03
299-W6-10	A5435	4.26	--	--	54.26	60.27	64.76	109.31	--	--	--
299-W6-11	A5436	4.17	24.52	--	58.25	81.17	86.3	96.47	--	--	--
299-W6-12	A5437	0.78	21.77	--	64.67	73.9	81.17	84.14	--	--	--
299-W6-14	C8065	0.36	--	--	59.14	--	83.09	95.19	--	423.04	474.6
299-W6-15	C8720	0.32	39.79	--	77.97	119.69	132.95	154.37	--	344.08	480.3
299-W6-3	A4998	0	--	--	60.27	76.81	89.51	97.81	414.83	425	--
299-W6-4	A4999	0	--	--	61.3	69.8	92.28	102.88	--	--	--
299-W6-6	A5001	0.91	11.2	--	30.2	41.18	60.73	108.49	426.12	440.14	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
299-W6-8	A5003	4.49	22.97	--	66.88	75.18	79.84	84.7	--	--	--
299-W6-9	A5434	0.32	--	--	57.57	64.63	--	94.56	--	--	--
299-W7-1	A5004	0	40.51	--	63.61	72.5	108.16	136.16	--	--	--
299-W7-11	A5006	0.09	--	--	45.29	--	82.54	99.58	--	--	--
299-W7-13	C8945	0.6	--	--	61.05	69.99	97.99	126.64	426.48	--	--
299-W7-2	A5008	0	21.71	--	32.32	41.9	83.24	92.82	--	--	--
299-W7-3	A5009	0.37	--	--	33.46	--	79.94	104.78	356.88	372.15	473.35
299-W7-4	A5010	0	39.92	--	55.28	64.81	80.12	103.04	--	--	--
299-W7-5	A5011	0.87	18.34	--	31.45	42	62.79	76	--	--	--
299-W8-1	A5016	0	50.23	--	77.04	87.22	119.07	152.16	--	--	--
299-W9-1	A5017	0	95.89	--	148.33	159.14	--	192.88	--	--	--
299-W9-2	C8201	0.28	--	--	137.28	151.8	163.26	182.32	--	--	--
699-29-66?	C9413	1.2	4.9	--	204.9	205	219.7	254.9	379.4	465.53	--
699-29-78	A5121	0.46	45	--	120	--	--	168.58	442.41	503.98	586.64
699-29-83	A8494	0	56.6	--	--	--	--	108.45	371.74	446.3	553.25
699-30-66	C4298	1	5.17	--	217.67	--	227.83	244.5	405.6	--	--
699-31-65	A5124	1.17	4.4	--	220.13	--	229.37	244.67	398.33	429.87	--
699-31-68?	C9416	0.53	5.17	--	225.52	226	237.56	254.69	376.89	390.35	--
699-31-84B	A5125	--	55.93	--	--	--	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-31-84C	A8510	--	--	--	--	--	--	--	--	--	--
699-32-62	A5128	0.1	1	--	--	--	--	221.4	400.1	467.24	--
699-32-70B	A5129	0.07	24.14	--	163.61	183.17	204	224.84	--	--	--
699-32-77	A5131	0.76	50.17	--	109.95	119.86	125.93	136.86	--	--	--
699-33-74	C4973	0.43	59.34	--	177.1	200.8	209.31	270.06	--	--	--
699-33-75	C4974	2.7	75.4	--	136.56	160.63	170.83	199.53	--	--	--
699-33-76	C4976	0.58	69.45	--	129.13	142.57	156.47	186.57	--	--	--
699-34-61	A5463	0.5	1.9	--	--	--	263.92	264.86	--	--	--
699-34-72	C4972	2.66	40.88	--	152	182.38	193.84	232.35	--	--	--
699-35-58D	C9427	--	0.47	--	--	--	--	312.03	--	--	--
699-35-59	A8558	--	7.64	--	--	--	--	302.07	--	--	--
699-35-66A	A5139	10.1	34.64	--	199.33	--	202.44	264.47	397.34	434.84	--
699-36-61A	A5144	5.04	55.47	--	--	--	244.84	324.47	--	--	--
699-36-61B	A8573	7.47	55.6	--	--	--	245.43	320.43	398.67	476	550.07
699-36-63B?	C9593	--	--	--	--	--	207.27	--	417	--	--
699-36-66B	C6219	0.81	34.82	--	180.93	--	183.61	262.51	--	--	--
699-36-70A	A9901	5.04	29.57	--	176.77	200.6	239.5	254.77	432.1	--	--
699-36-70B	C4299	9.53	22.97	--	166.63	193.57	223.17	247.73	425.03	--	--
699-37-66	C5704	5.6	14.4	--	179.71	--	203	262.76	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-37-68	B2732	5.14	10.67	--	182.44	219	223.64	240.77	--	--	--
699-37-82A	A5147	--	35.47	--	--	--	--	--	--	--	--
699-37-82B	A8580	4.8	25.16	--	71.93	94.13	104.8	112.66	398.33	492.3	604.8
699-37-84	A8584	0.03	50.53	--	83.8	93.84	101.4	107.9	417.6	503.73	617.6
699-38-68A	A9516	10.63	18.03	--	171.74	183.77	235.14	239.77	--	--	--
699-38-70B	C4236	3.5	34.04	--	175.24	190.74	225	254.64	448.64	456.5	--
699-38-70C	C4256	6.8	54.93	--	184.57	201.67	224.37	262.33	--	--	--
699-40-62	A5158	3.17	39.73	--	--	--	311.07	312.43	374	--	--
699-40-65	C4235	3.97	37.77	--	267.75	269.27	271.57	278.97	365.1	433.6	--
699-40-67	C8070	2.76	18.5	--	143.96	146.76	150.93	263.86	379.16	406.93	525
699-40-80	A8643	0.17	50.63	--	89.53	116.83	125.46	149.23	438.54	489.01	547.34
699-40-84	A8644	0	37.84	--	83.8	87.36	91.2	125	400	484.23	595.83
699-41-64B	A8658	4.17	44.43	--	--	--	--	--	--	--	--
699-42-67	C8069	3.1	43.36	--	--	--	117.89	270.65	378.08	415.11	512.34
699-43-67B	C8386	0.1	67.7	--	--	--	88.31	255.64	364.94	394.54	495.47
699-43-69	C5573	1.6	39.56	--	96.03	104.93	109.94	240	364.1	400.2	500.2
699-44-64	A5188	8.94	70.07	--	--	--	--	270.07	317.27	334.4	441.37
699-44-67	C8068	10	69.27	--	108.13	--	110	224.33	340.1	366.97	470.63
699-44-70	A8712	2.5	24.27	--	78.9	--	97.7	--	--	--	520.1

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
699-45-67B	C8717	4.9	49.8	--	74.35	--	85.91	194.83	315.11	370.18	445.18
699-45-69C	C5574	7.2	68.5	--	102.56	--	109.58	214.6	335.43	365.06	453.96
699-46-68	C8067	4.74	33	--	79.3	--	119.1	193.17	304.77	355.7	433.47
699-48-77A	A8772	0.69	--	--	22.32	26.81	67.51	80.9	--	395.36	453.3
699-48-77C	A8774	1.1	17.04	--	20.22	25.31	61.56	81.96	--	340.44	431.47
699-49-69	C8786	2.26	82.05	--	140.39	--	143.3	146.73	--	318.5	409.7
699-49-79	A5221	--	19.11	--	--	--	89.09	116.5	--	--	--
699-49-85A	A8797	1.05	41.96	--	--	--	--	--	477.21	510.31	610.22
699-49-85B	A8798	0.64	43.88	--	--	--	--	--	478.68	511.17	609.21
699-50-74	C4697	6.96	46.02	--	106.75	111.74	112.46	122.15	--	262.26	--
699-50-85S	A9728	1.23	49.8	--	70.63	71.99	117.11	211.29	476.12	531.47	594.51
699-51-75Q	A9731	1.6	49.96	--	128	128.58	129.16	129.56	--	264.53	380.35
699-55-70P	A9740	1.84	--	--	--	--	--	47.67	168.61	179.43	204.27
699-55-76P	A9742	1.28	144.02	--	144.02	144.39	144.76	145.11	145.48	146.7	222.14
C3102	C3102	1.47	34.83	--	90.83	98.57	114.46	121.88	--	--	--
C3808	C3808	2.66	44.76	--	122.42	141.09	149.39	155.88	--	--	--
C3830	C3830	1.19	51.57	--	100.81	--	--	--	--	--	--
C3832	C3832	1.2	44.72	--	102.17	110.66	--	--	--	--	--
C4129	C4129	0.94	35.76	--	63.27	72.67	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
C4175	C4175	7.1	30.82	--	88.1	97.48	114.52	120.07	--	--	--
C4557	C4557	11.5	65.34	--	136.89	150.02	159.39	181.34	--	--	--
C4738	C4738	10.77	39.41	--	96.78	106.59	119.9	--	--	--	--
C6174	C6174	0.82	56.33	--	--	--	--	--	--	--	--
C6913	C6913	2.74	49.71	--	--	--	--	--	--	--	--
C6917	C6917	2.7	44.93	--	94.36	--	--	--	--	--	--
C6927	C6927	1.1	47.4	--	90.47	102.06	--	--	--	--	--
C6931	C6931	2.63	--	--	86.9	94.16	--	--	--	--	--
C6933	C6933	3.97	--	--	87.77	93.74	--	--	--	--	--
C6935	C6935	1.93	35.04	--	--	96.87	--	--	--	--	--
C6943	C6943	2.34	--	--	88	95.6	--	--	--	--	--
C9492	C9492	12.24	39	--	82.26	97.52	--	--	--	--	--

Table A-4. GeoContacts Depths for the 200 East Area

Well Name	Well ID	HF1 Depth (ft)	HF2 Depth (ft)	HF3 Depth (ft)	Cold Creek Unit Depth (ft)	CCUc Depth (ft)	Rtf Depth (ft)	Rwie Depth (ft)	Rlm Depth (ft)	Rwia Depth (ft)	Basalt Depth (ft)
C9499	C9499	1.12	37.44	--	96.8	101.87	--	--	--	--	--
C9505	C9505	10.18	--	--	99.31	--	--	--	--	--	--
C9506	C9506	8.66	47.19	--	85.76	93.1	--	--	--	--	--
C9507	C9507	1.43	47.36	--	94.57	101.44	109.58	116.97	--	--	--

Note: Blank cells indicated no information.

CCUc = Cold Creek Unit calcic geosol

HF1 = Hanford formation unit 1

HF2 = Hanford formation unit 2

HF3 = Hanford formation unit 3

ID = identification

Rlm = Ringold Formation lower mud unit

Rtf = Ringold Formation member of the Taylor Flat

Rwia = Ringold Formation member of Wooded Island unit A

Rwie = Ringold Formation member of Wooded Island unit E

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Appendix B

Geologic Log Profiles

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Table B-2. 200 West Graphic Log Profiles B-381

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B1 Introduction

This appendix contains graphic geologic log profiles that illustrate the geologic unit contacts selected for some of the boreholes used to develop the CPVZ GFM. The graphic logs for the 200 East Area are presented first, followed by the graphic logs for the 200 West Area.

B1.1 200 East Geologic Log Profiles

Figures for the 200 East Area geologic log profiles are provided on the following pages, using Table B-1 as a key.

Table B-1. 200 East Geologic Log Profiles

Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number
A4726	B-5	A4761	B-35	A4826	B-65	A4873	B-95
A4727	B-6	A4762	B-36	A4828	B-66	A4875	B-96
A4728	B-7	A4763	B-37	A4829	B-67	A4876	B-97
A4730	B-8	A4764	B-38	A4830	B-68	A4877	B-98
A4731	B-9	A4765	B-39	A4831	B-69	A4878	B-99
A4732	B-10	A4766	B-40	A4832	B-70	A4879	B-100
A4733	B-11	A4767	B-41	A4833	B-71	A4880	B-101
A4734	B-12	A4768	B-42	A4834	B-72	A4881	B-102
A4735	B-13	A4771	B-43	A4835	B-73	A4882	B-103
A4736	B-14	A4773	B-44	A4836	B-74	A4883	B-104
A4737	B-15	A4778	B-45	A4839	B-75	A4884	B-105
A4738	B-16	A4783	B-46	A4841	B-76	A4885	B-106
A4739	B-17	A4784	B-47	A4842	B-77	A4886	B-107
A4740	B-18	A4785	B-48	A4843	B-78	A5127	B-108
A4741	B-19	A4786	B-49	A4846	B-79	A5132	B-109
A4742	B-20	A4787	B-50	A4848	B-80	A5133	B-110
A4743	B-21	A4788	B-51	A4849	B-81	A5134	B-111
A4744	B-22	A4789	B-52	A4850	B-82	A5135	B-112
A4745	B-23	A4790	B-53	A4851	B-83	A5136	B-113
A4746	B-24	A4791	B-54	A4852	B-84	A5137	B-114
A4748	B-25	A4793	B-55	A4854	B-85	A5144	B-115
A4749	B-26	A4795	B-56	A4855	B-86	A5146	B-116
A4750	B-27	A4796	B-57	A4858	B-87	A5150	B-117
A4751	B-28	A4797	B-58	A4859	B-88	A5155	B-118
A4752	B-29	A4800	B-59	A4860	B-89	A5156	B-119
A4753	B-30	A4804	B-60	A4863	B-90	A5161	B-120
A4755	B-31	A4821	B-61	A4865	B-91	A5162	B-121
A4756	B-32	A4822	B-62	A4870	B-92	A5164	B-122
A4757	B-33	A4823	B-63	A4871	B-93	A5165	B-123
A4759	B-34	A4824	B-64	A4872	B-94	A5166	B-124

Table B-2. 200 East Geologic Log Profiles

Profile Number	Page Number
A5169	B-125
A5170	B-126
A5171	B-127
A5173	B-128
A5176	B-129
A5177	B-130
A5180	B-131
A5186	B-132
A5187	B-133
A5195	B-134
A5200	B-135
A5201	B-136
A5212	B-137
A5218	B-138
A5224	B-139
A5225	B-140
A5226	B-141
A5227	B-142
A5230	B-143
A5234	B-144
A5235	B-145
A5236	B-146
A5237	B-147
A5244	B-148
A5250	B-149
A5251	B-150
A5252	B-151
A5253	B-152
A5255	B-153
A5256	B-154
A5259	B-155
A5264	B-156
A5265	B-157
A5269	B-158
A5277	B-159
A5433	B-160
A5849	B-161
A5850	B-162

Profile Number	Page Number
A5855	B-163
A5856	B-164
A5857	B-165
A5860	B-166
A5862	B-167
A5863	B-168
A5864	B-169
A5865	B-170
A5867	B-171
A5868	B-172
A5878	B-173
A5879	B-174
A5881	B-175
A5883	B-176
A5886	B-177
A5887	B-178
A5888	B-179
A5889	B-180
A5896	B-181
A5897	B-182
A5898	B-183
A5899	B-184
A5901	B-185
A5902	B-186
A5903	B-187
A5904	B-188
A5908	B-189
A5909	B-190
A5910	B-191
A5911	B-192
A5912	B-193
A5913	B-194
A5914	B-195
A5915	B-196
A5916	B-197
A5917	B-198
A6021	B-199
A6024	B-200

Profile Number	Page Number
A6028	B-201
A6029	B-202
A6030	B-203
A6031	B-204
A6032	B-205
A6033	B-206
A6034	B-207
A6035	B-208
A6037	B-209
A6039	B-210
A6041	B-211
A6042	B-212
A6043	B-213
A6044	B-214
A6045	B-215
A6047	B-216
A6536	B-217
A6596	B-218
A6597	B-219
A6599	B-220
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A6641	B-222
A6642	B-223
A6643	B-224
A6670	B-225
A6671	B-226
A6672	B-227
A6673	B-228
A6674	B-229
A6675	B-230
A6784	B-231
A6785	B-232
A6786	B-233
A6787	B-234
A6788	B-235
A6789	B-236
A6791	B-237
A6795	B-238

Profile Number	Page Number
A6796	B-239
A6797	B-240
A6798	B-241
a6846	B-242
A6853	B-243
A6854	B-244
A6858	B-245
A6866	B-246
A6867	B-247
A6868	B-248
A6883	B-249
A7092	B-250
A7098	B-251
A7100	B-252
A8499	B-253
A8500	B-254
A8501	B-255
A8506	B-256
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A8517	B-258
A8531	B-259
A8539	B-260
A8556	B-261
A8557	B-262
A8558	B-263
A8571	B-264
A8572	B-265
A8573	B-266
A8670	B-267
A8695	B-268
A8749	B-269
A8752	B-270
A8768	B-271
A8769	B-272
A8812	B-273
A8842	B-274
A8865	B-275
A8867	B-276

Table B-3. 200 East Geologic Log Profiles

Profile Number	Page Number
A8891	B-277
A8896	B-278
A8897	B-279
A8898	B-280
A8900	B-281
A8901	B-282
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A8907	B-284
A8908	B-285
A8909	B-286
A8910	B-287
A8912	B-288
A8913	B-289
A9486	B-290
B2822	B-291
B8079	B-292
B8554	B-293
B8695	B-294
B8758	B-295
B8826	B-296
C3104	B-297
C3177	B-298
C3245	B-299
C3246	B-300
C3247	B-301
C3390	B-302
C3826	B-303
C3827	B-304
C3828	B-305
C3926	B-306
C4106	B-307
C4122	B-308
C4123	B-309
C4124	B-310
C4125	B-311
C4127	B-312
C4160	B-313
C4190	B-314

Profile Number	Page Number
C4191	B-315
C4257	B-316
C4259	B-317
C4260	B-318
C4261	B-319
C4304	B-320
C4545	B-321
C4560	B-322
C4562	B-323
C4647	B-324
C4648	B-325
C4665	B-326
C4882	B-327
C4993	B-328
C4996	B-329
C4997	B-330
C4998	B-331
C5195	B-332
C5196	B-333
C5197	B-334
C5301	B-335
C5515	B-336
C5852	B-337
C5853	B-338
C5856	B-339
C5857	B-340
C5858	B-341
C5860	B-342
C5861	B-343
C5862	B-344
C5924	B-345
C5925	B-346
C5941	B-347
C5989	B-348
C6455	B-349
C6542	B-350
C6552	B-351
C6756	B-352

Profile Number	Page Number
C6826	B-353
C6911	B-354
C7514	B-355
C7515	B-356
C7564	B-357
C7565	B-358
C7566	B-359
C7570	B-360
C8204	B-361
C8242	B-362
C8706	B-363
C8914	B-364
C8916	B-365
C8922	B-366
C8923	B-367
C8924	B-368
C9417	B-369
C9447	B-370
C9448	B-371
C9449	B-372
C9487	B-373
C9488	B-374
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CA Control Well 2	B-379

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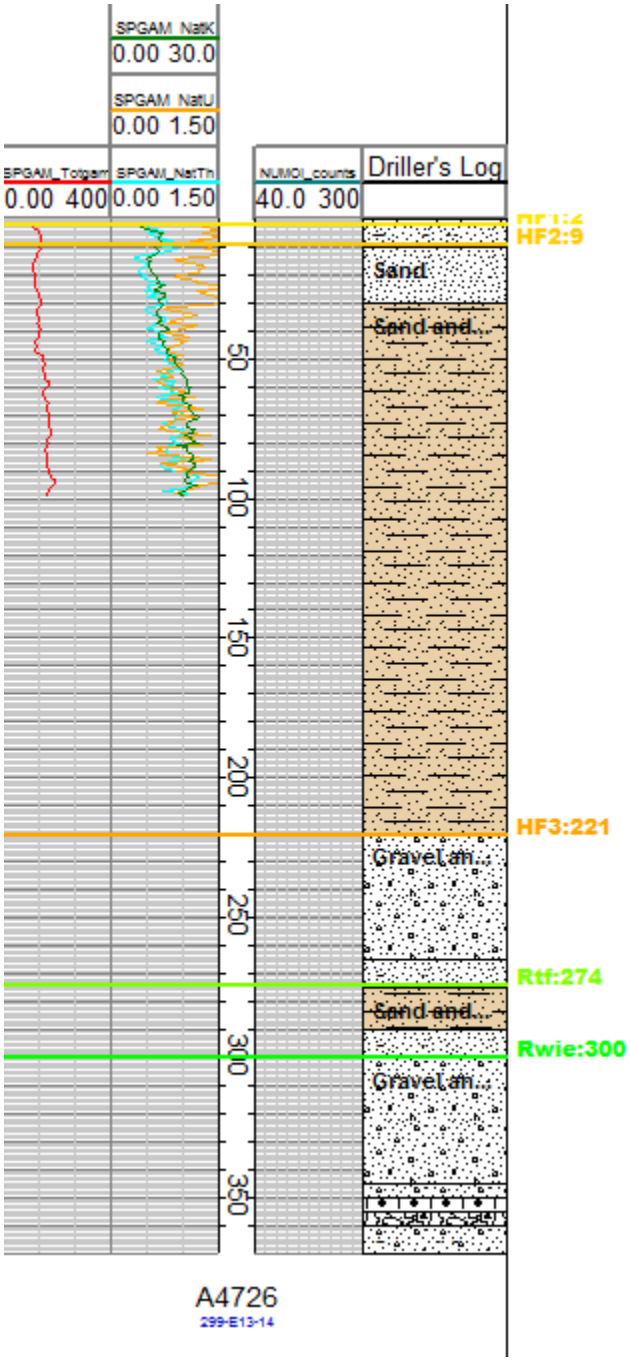
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HF2:9
Sand
Sand and...
50
100
150
200
HF3:221
Gravel an...
250
Rtf:274
Sand and...
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Rwie:300
Gravel an...
350
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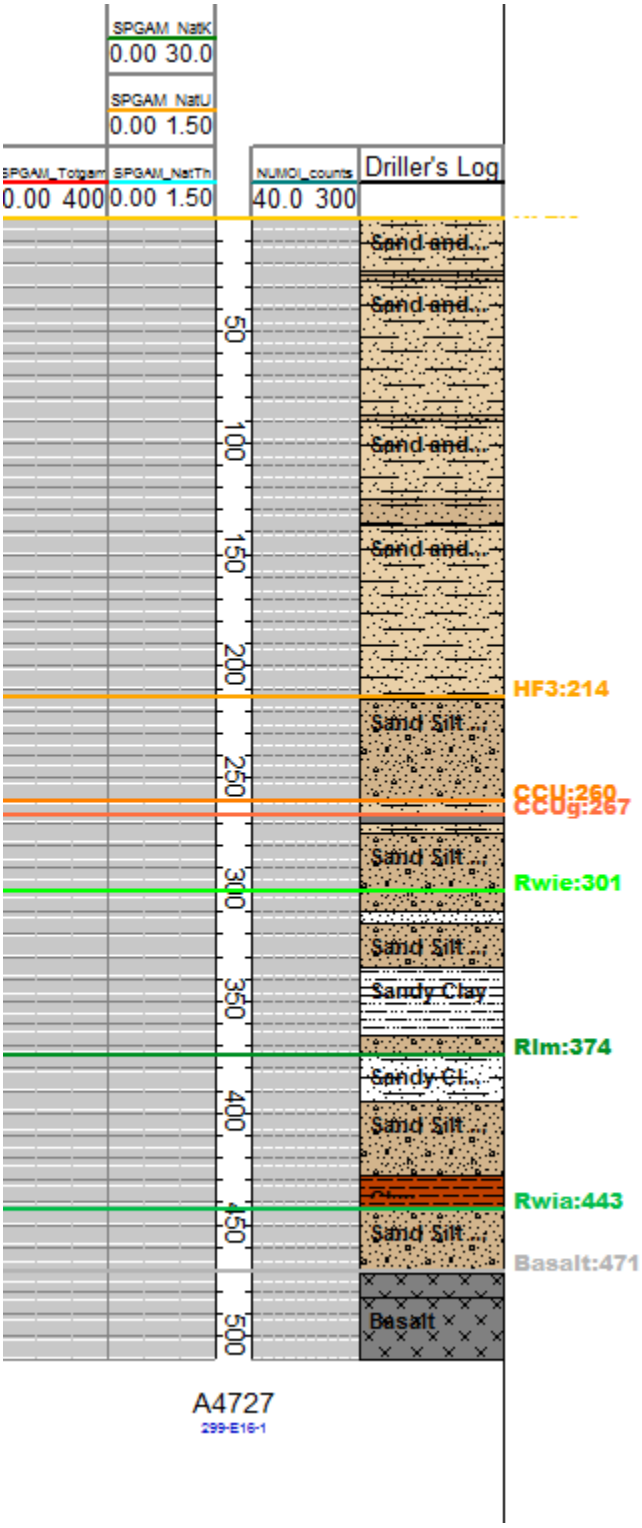
299-E13-14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Driller's Log
50
100
150
200
250
300
350
400
450
500
Sand and...
Sand and...
Sand and...
Sand and...
HF3:214
Sand Silt ...
CCU:260
CCUg:267
Sand Silt ...
Rwie:301
Sand Silt ...
Sandy Clay
Rlm:374
Sandy Cl...
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Rwia:443
Sand Silt ...
Basalt:471
Basalt
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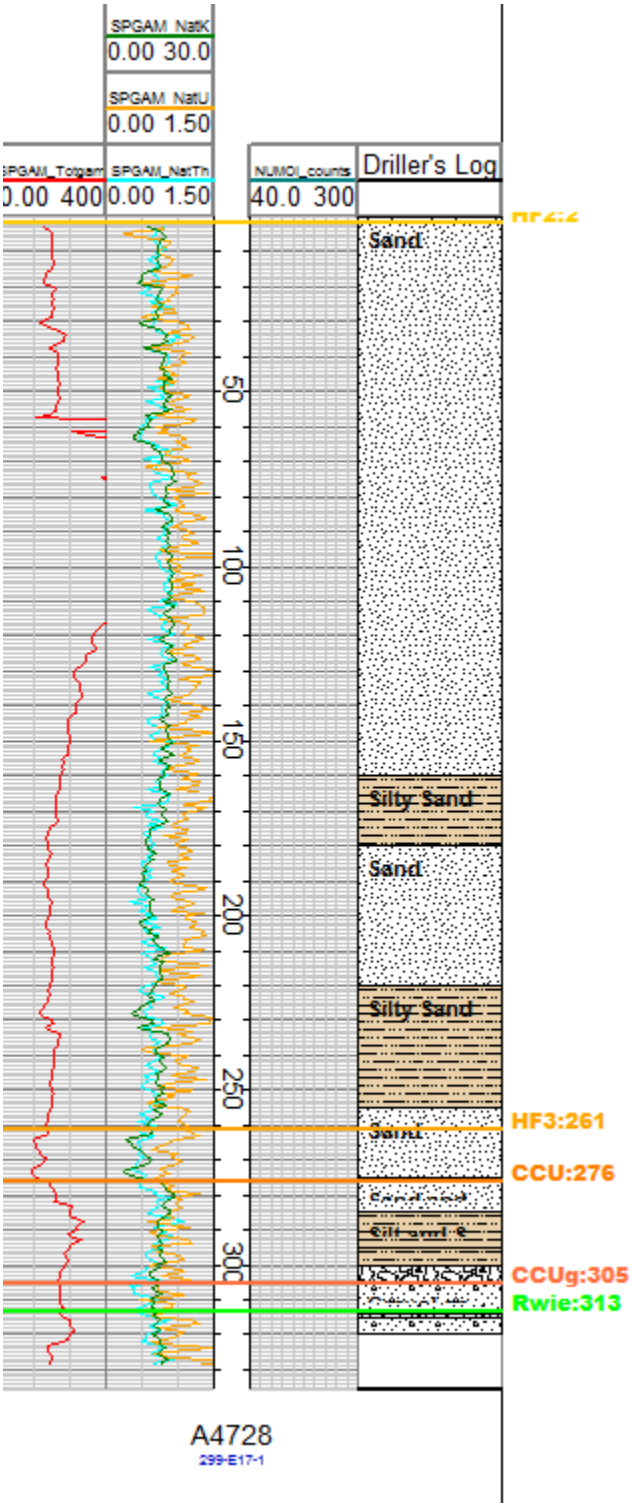
299-E16-1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Driller's Log
Sand
Silty Sand
Sand
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CCU:276
CCUg:305
Rwie:313
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100
150
200
250
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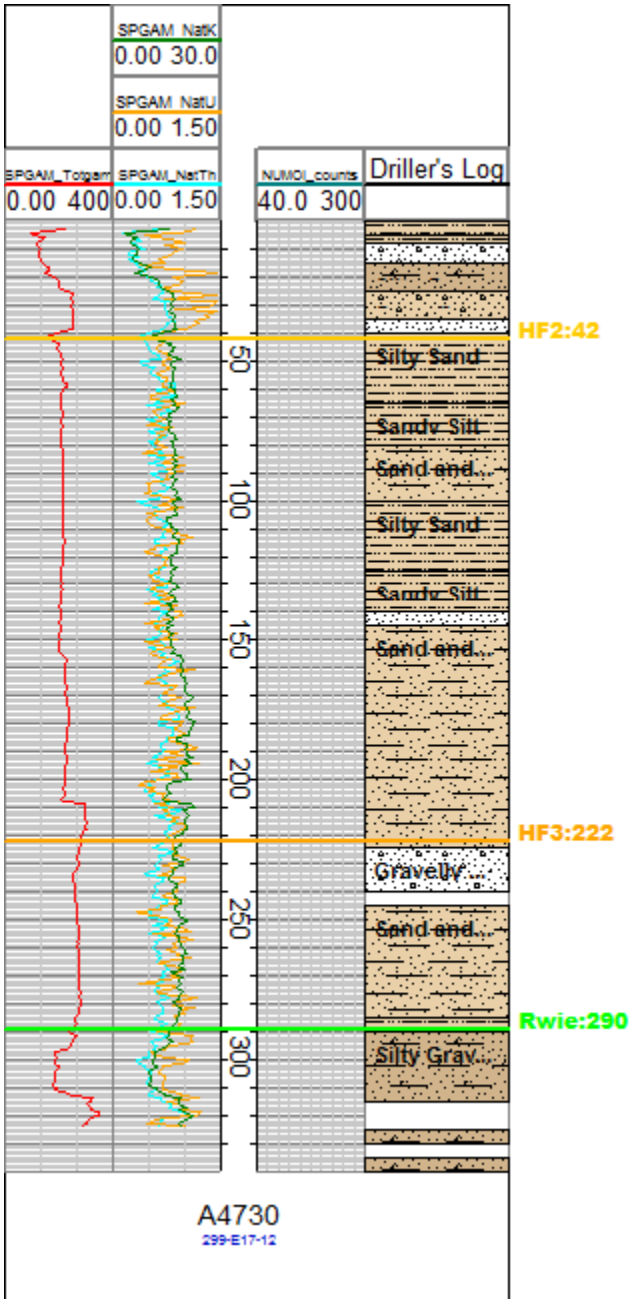
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HF2:42
Silty Sand
Sandy Silt
Sand and...
Silty Sand
Sandy Silt
Sand and...
HF3:222
Gravelly...
Sand and...
Rwie:290
Silty Grav...
50
100
150
200
250
300
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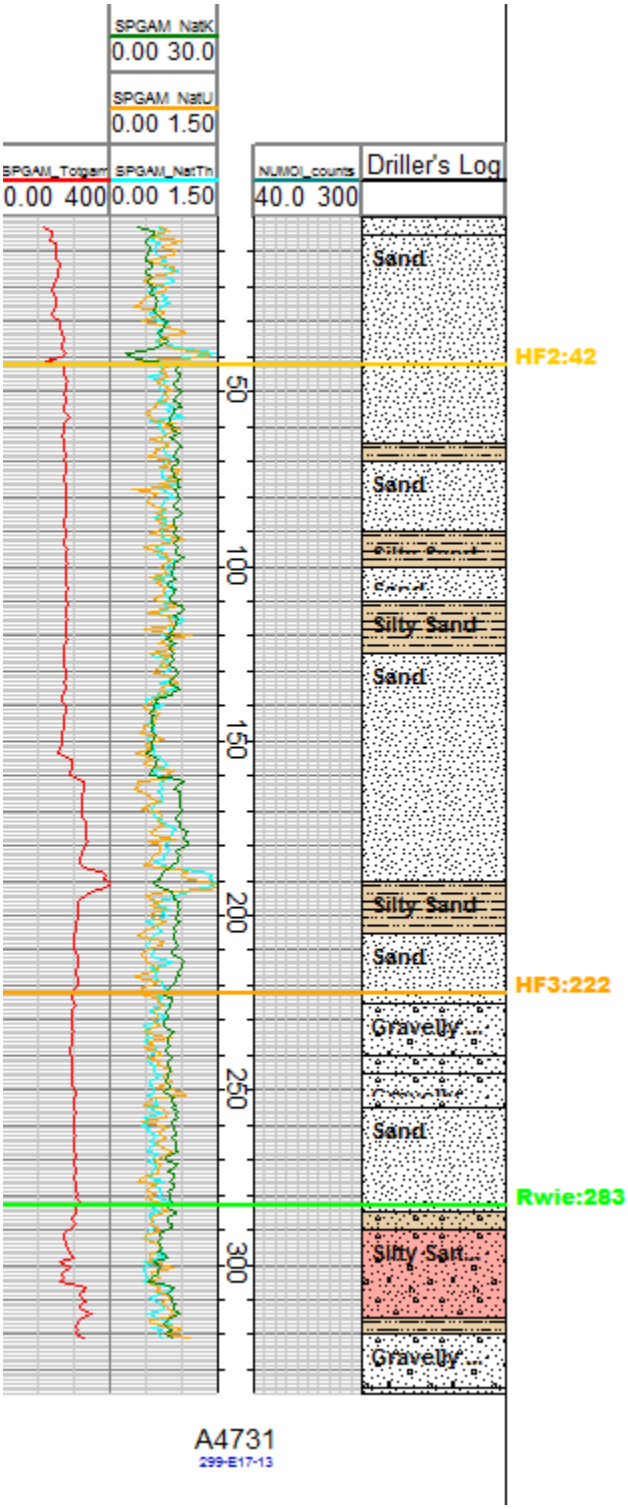
299-E17-12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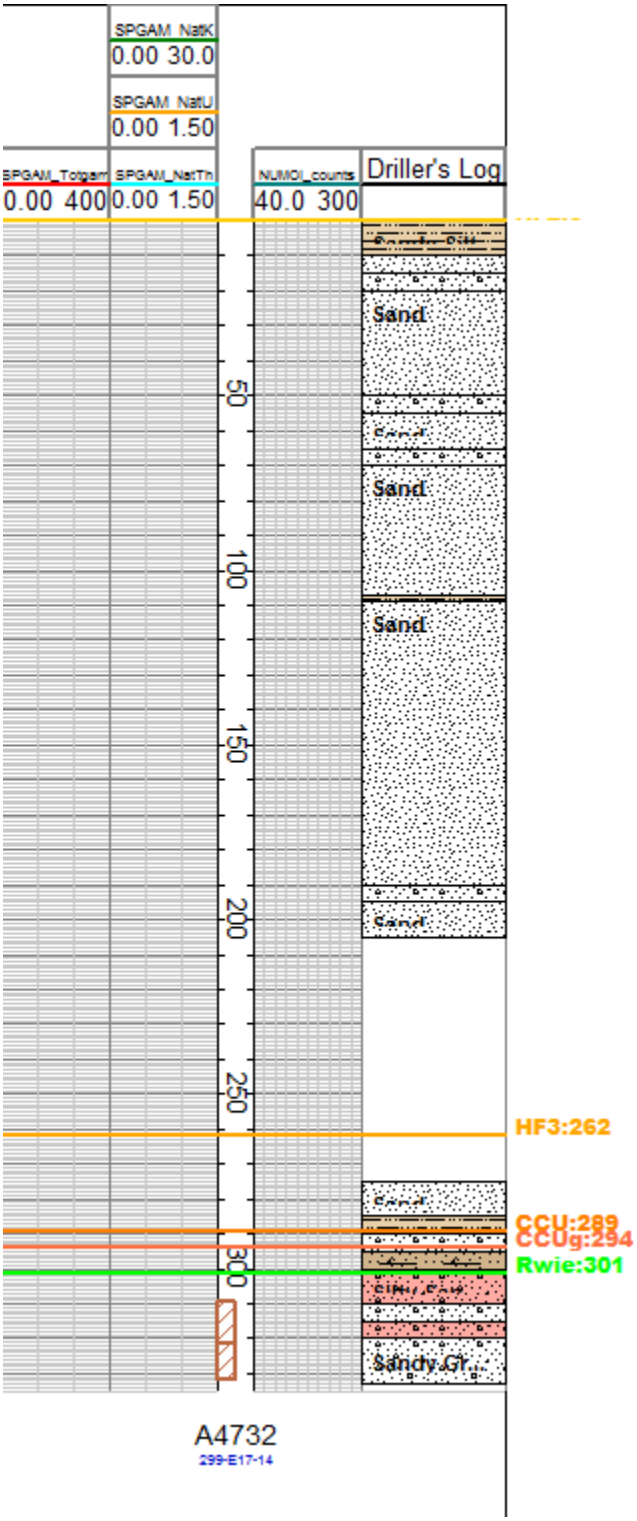
Driller's Log
Sand
HF2:42
Sand
Silty Sand
Sand
Silty Sand
Sand
HF3:222
Gravelly ...
Sand
Rwie:283
Silty Sand...
Gravelly ...
50
100
150
200
250
300
A4731
299-E17-13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SPGAM_Totgam
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SPGAM_NatTh
0.00 1.50
NUMOI_counts
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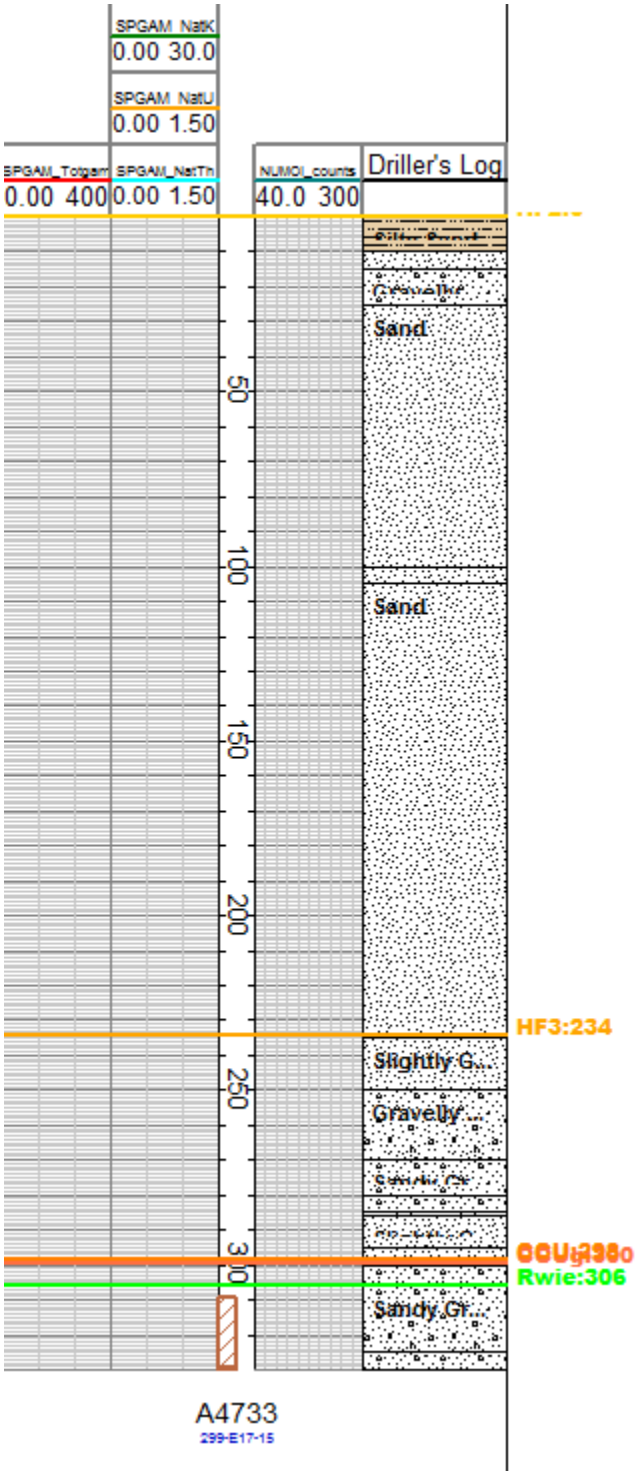
Driller's Log
Sand
Sand
Sand
Sand
Sandy Gr...
50
100
150
200
250
300
HF3:262
CCU:289
CCUg:294
Rwie:301
A4732
299-E17-14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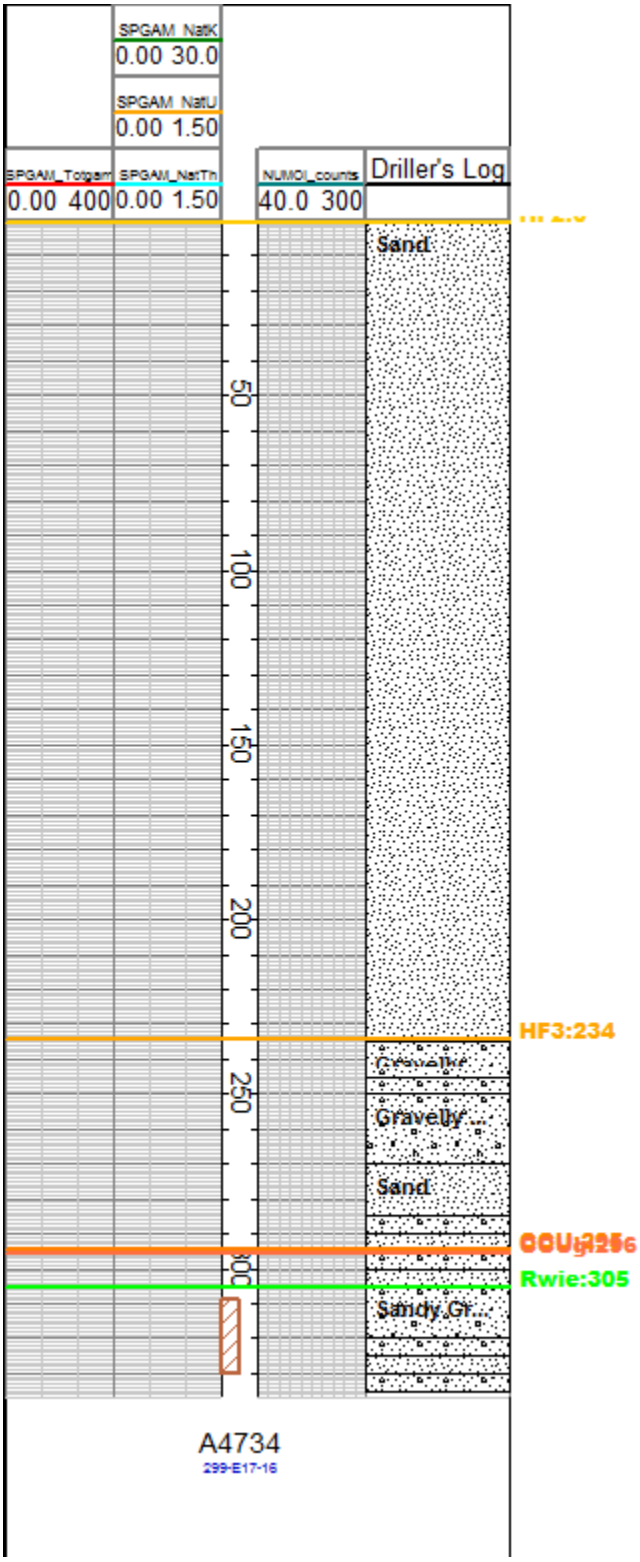
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
HF3:234
Slightly G...
Gravelly ...
Rwie:306
Sandy Gr...
50
100
150
200
250
300
A4733
299-E17-15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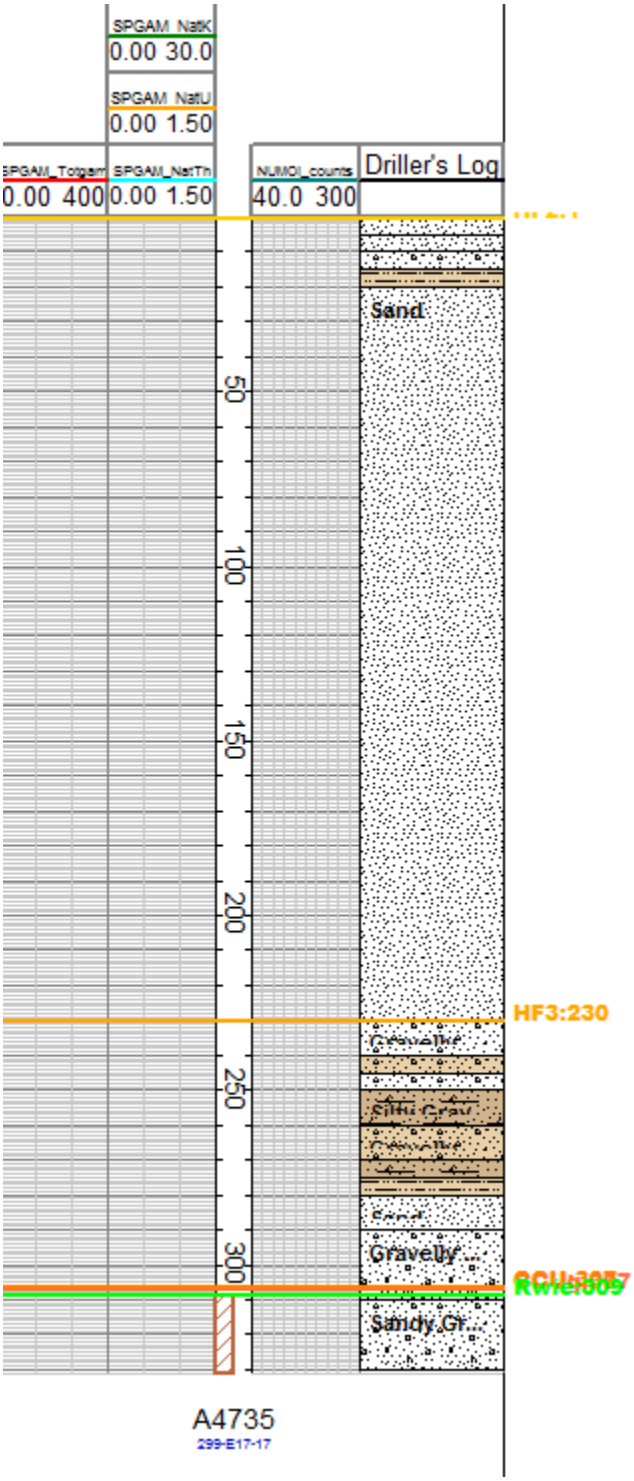
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
50
100
150
200
HF3:234
250
Gravelly ...
Sand
300
Rwie:305
Sandy Gr...
A4734
299-E17-16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SPGAM_NatTh
0.00 1.50
NUMOI_counts
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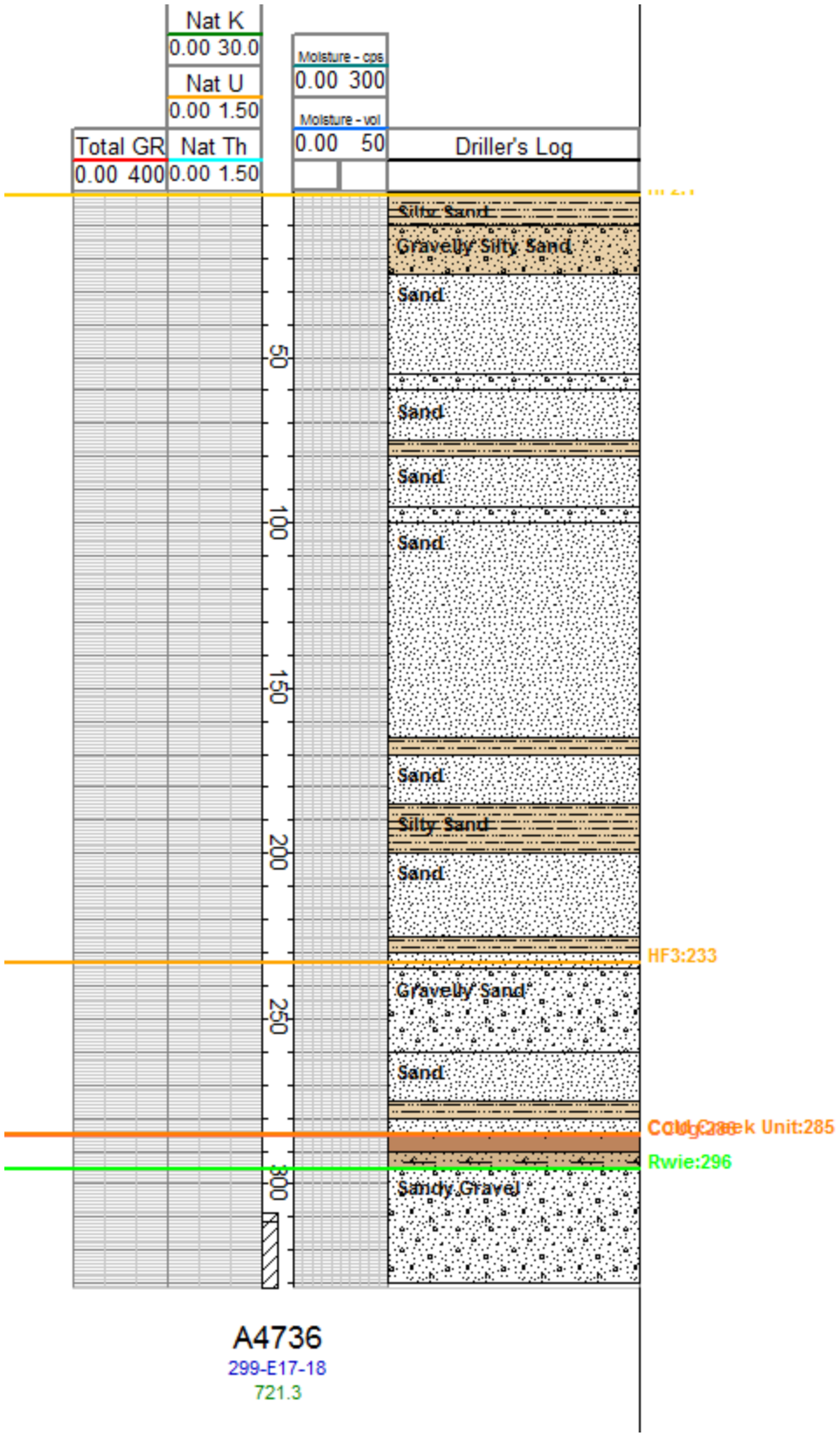
Driller's Log
Sand
50
100
150
200
250
300
HF3:230
Gravelly...
Sandy Gr...
Rwiel009
A4735
299-E17-17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Total GR
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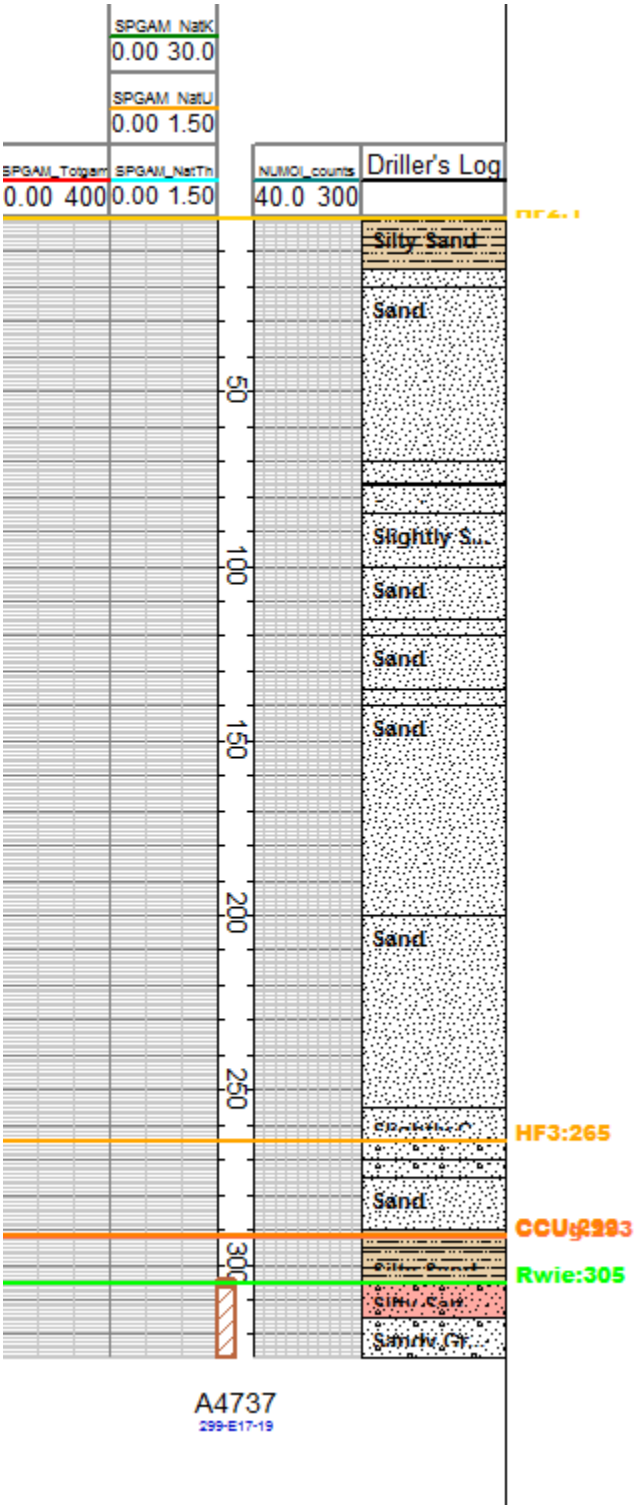
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Silty Sand
Gravelly Silty Sand
Sand
Sand
Sand
Sand
Sand
Silty Sand
Sand
HF3:233
Gravelly Sand
Sand
Rwie:296
Sandy Gravel
50
100
150
200
250
300
A4736
299-E17-18
721.3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SPGAM_NatTh
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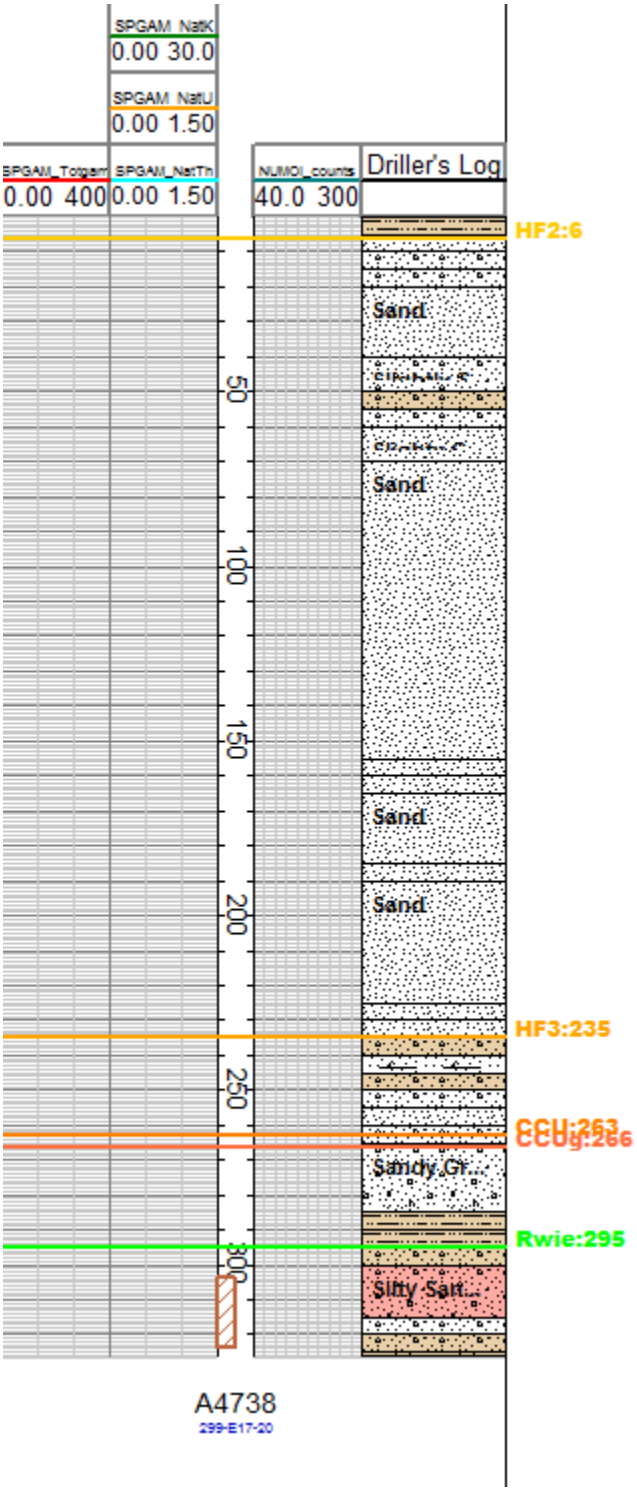
Driller's Log
Silty Sand
Sand
Slightly S...
Sand
Sand
Sand
Sand
Sand
HF3:265
Sand
Rwie:305
50
100
150
200
250
A4737
299-E17-19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SPGAM_Totgam
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SPGAM_NatTh
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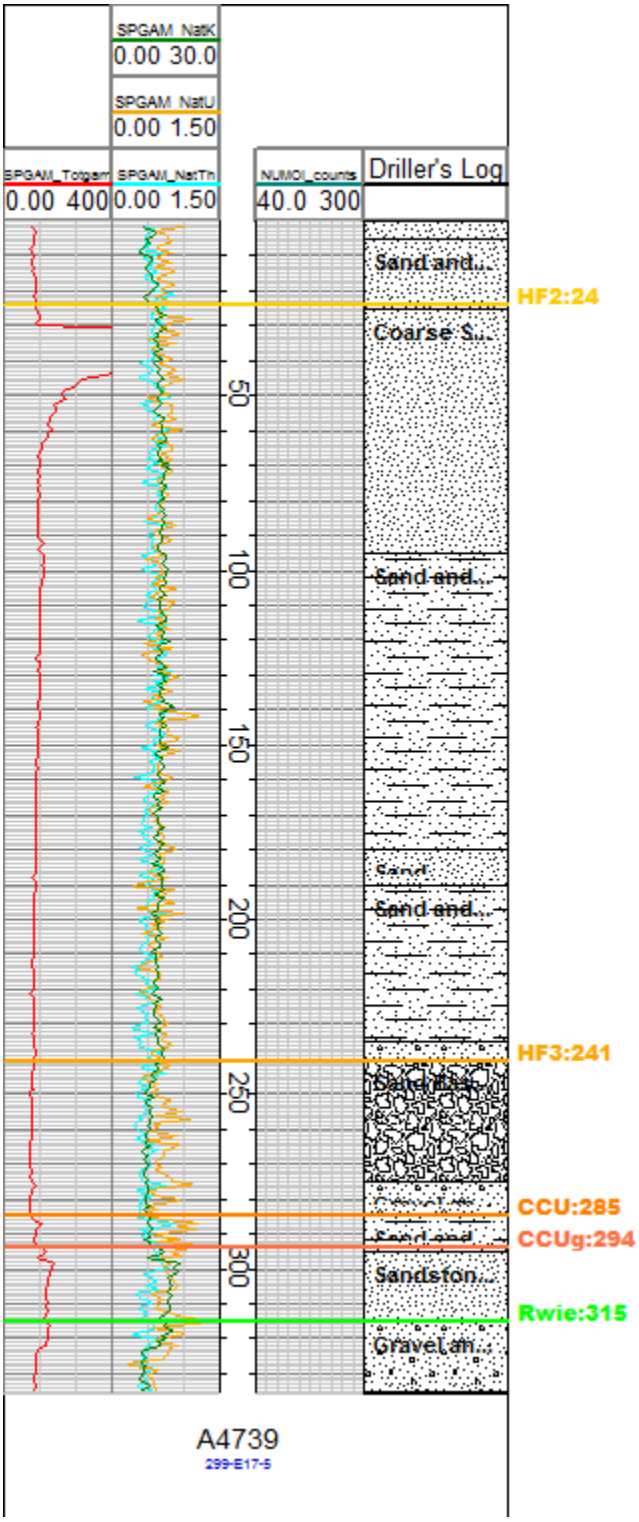
NUMOI_counts
40.0 300
Driller's Log
HF2:6
Sand
Sand
Sand
Sand
HF3:235
CCU:263
CCUg:266
Sandy Gr...
Rwie:295
Silty Sant...
50
100
150
200
250
300
A4738
299-E17-20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SPGAM_NatTh
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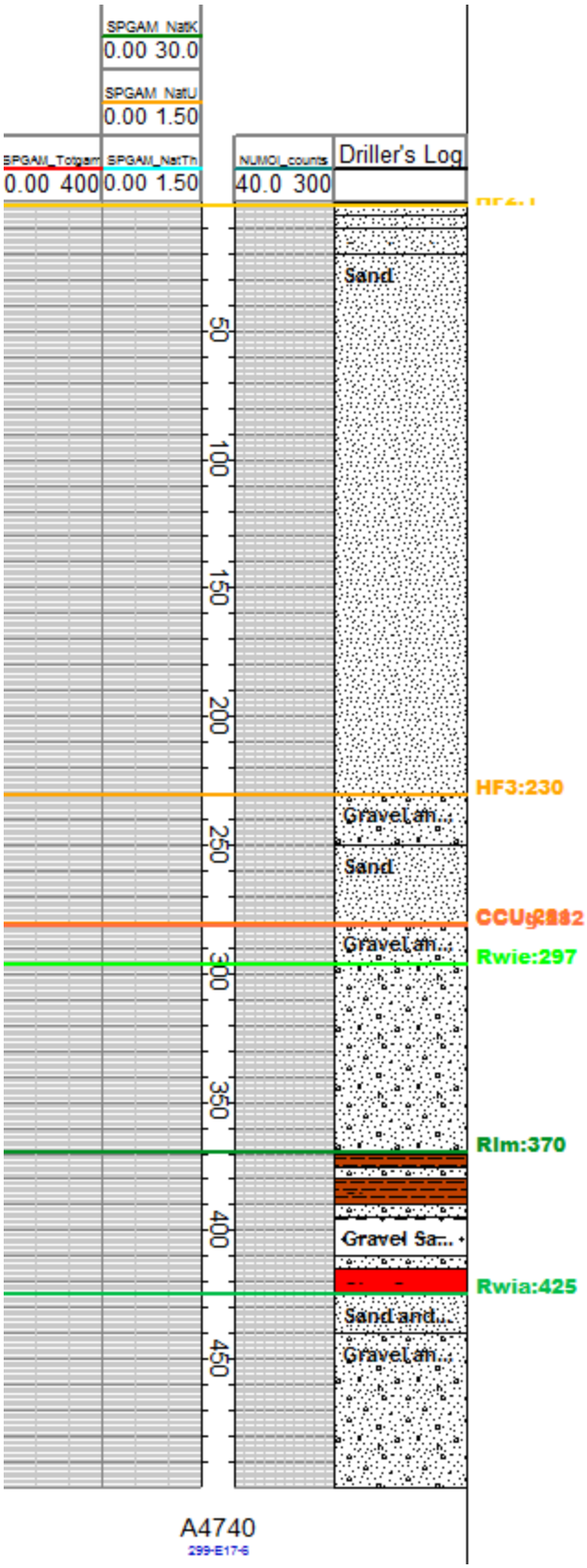
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:24
Coarse S...
Sand and...
Sand and...
HF3:241
CCU:285
CCUg:294
Sandston...
Rwie:315
Gravel an...
50
100
150
200
250
300
A4739
299-E17-5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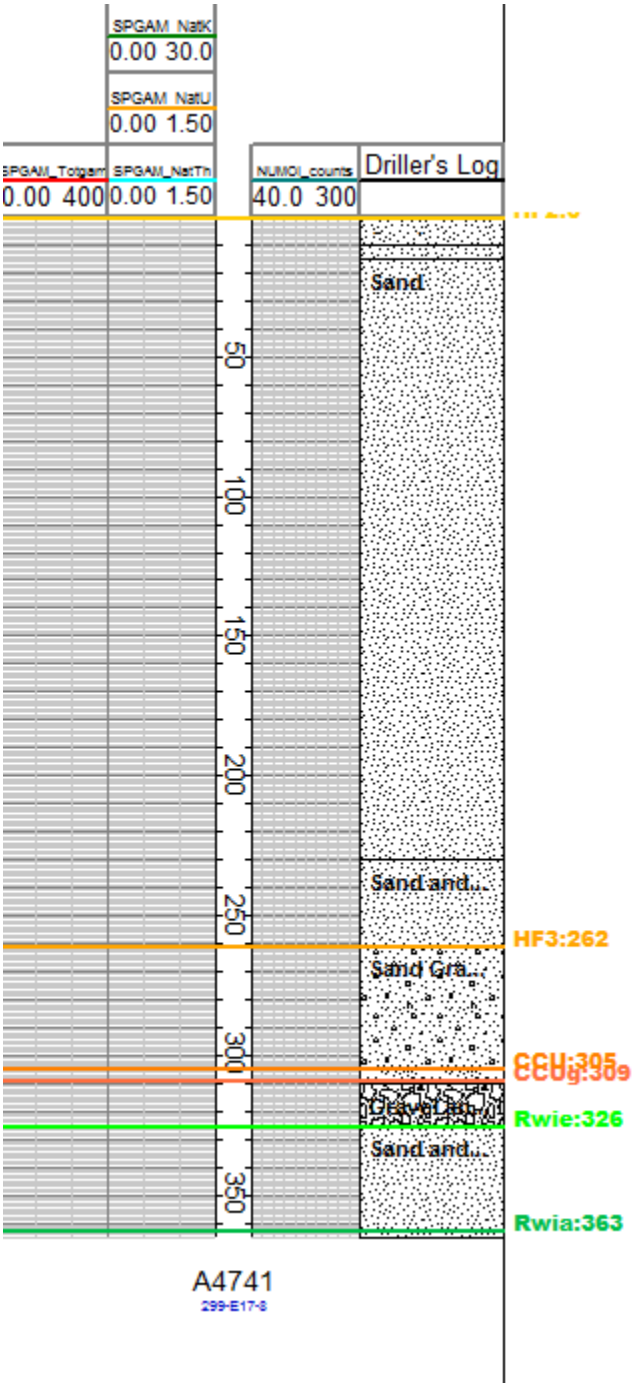
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
300
350
400
450
Sand
HF3:230
Gravel an...
Sand
CCUg:282
Gravel an...
Rwie:297
Rlm:370
Gravel Sa...
Rwia:425
Sand and...
Gravel an...
A4740
299-E17-6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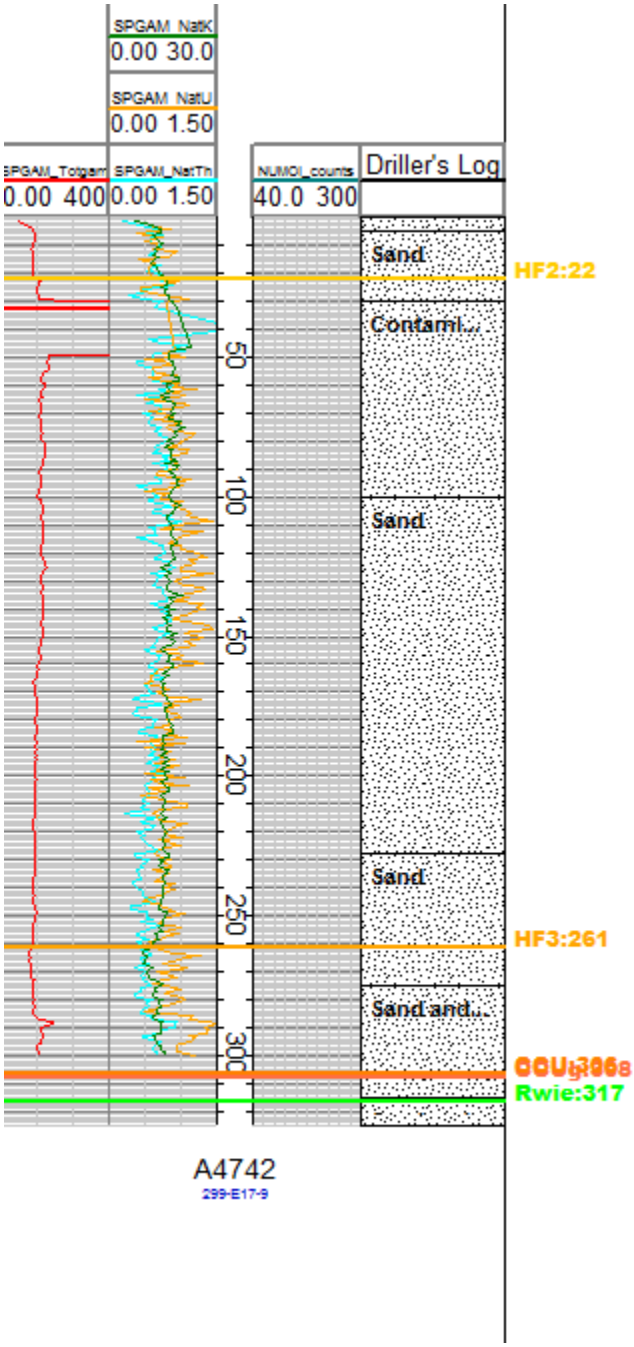
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand and...
Sand Gra...
Gravel Lay...
Sand and...
HF3:262
CCU:305
CCUg:309
Rwie:326
Rwia:363
50
100
150
200
250
300
350
A4741
299-E17-8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NUMOI_counts
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Driller's Log
Sand
HF2:22
Contami...
Sand
Sand
HF3:261
Sand and...
Rwie:317
50
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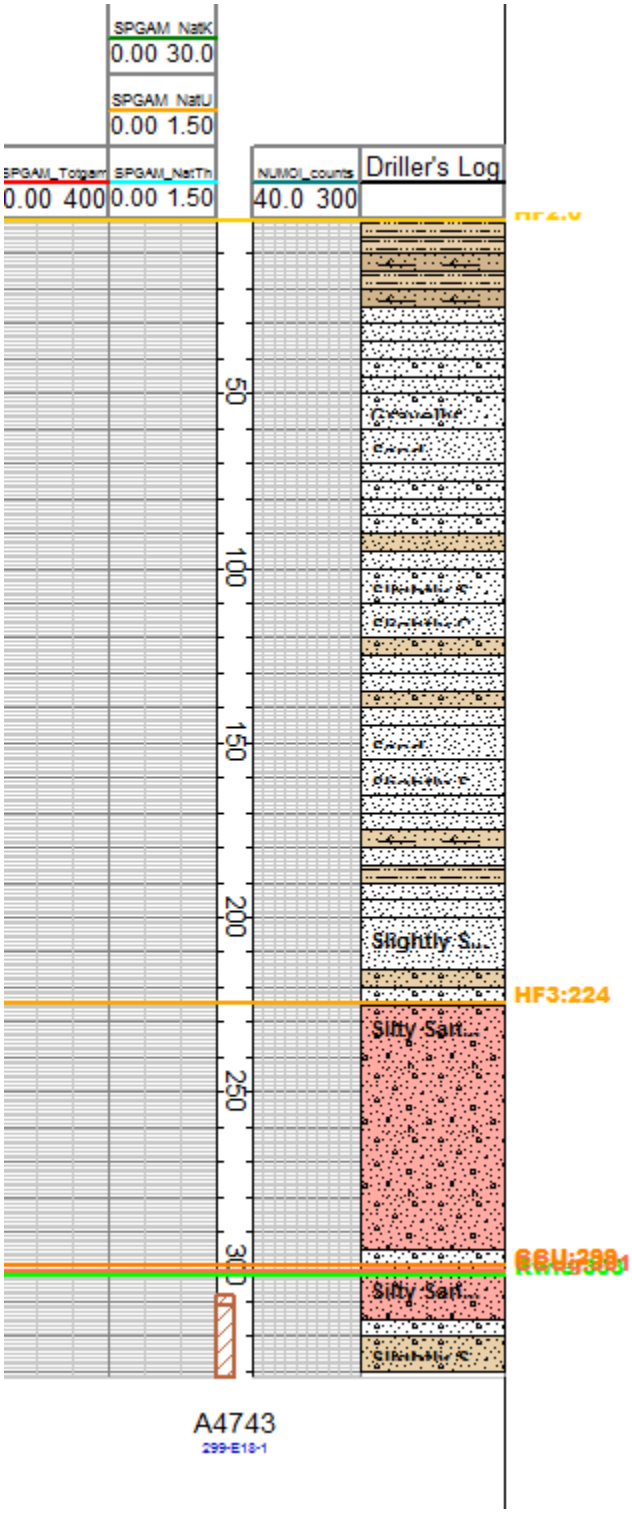
250
300
A4742
299-E17-9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SPGAM_NatTh
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NUMOI_counts
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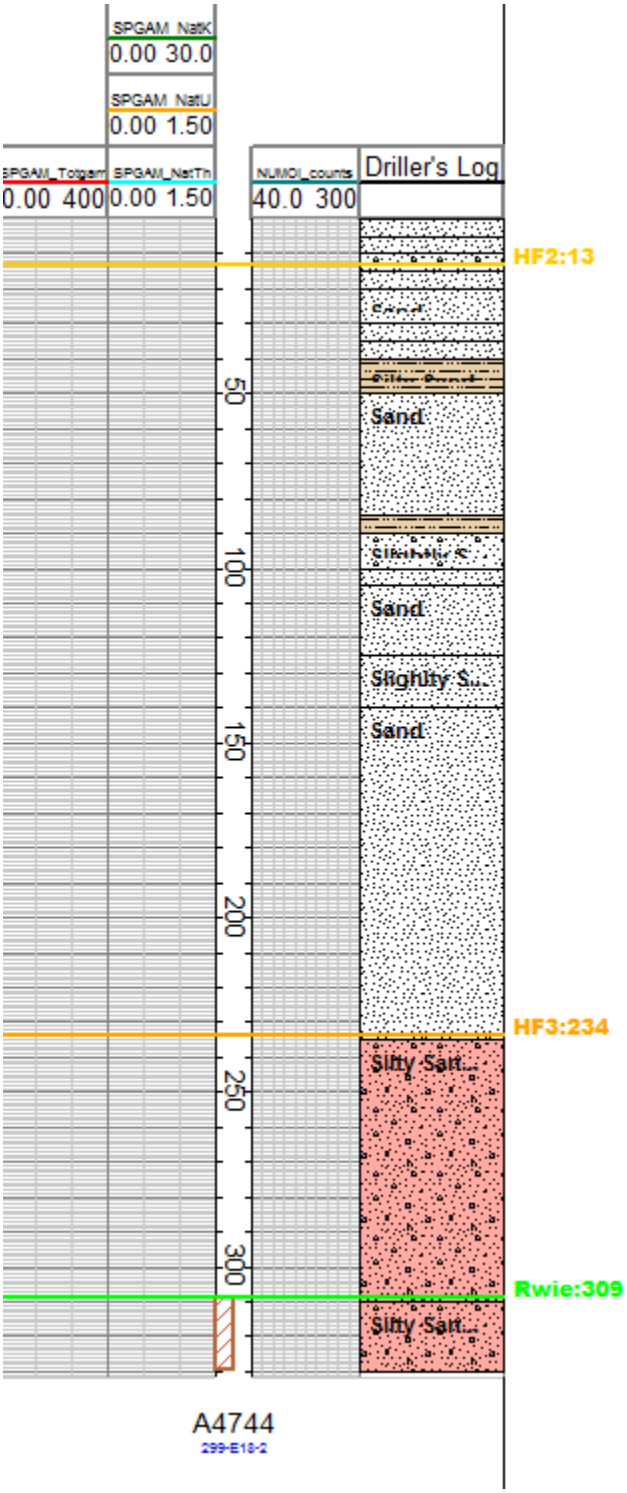
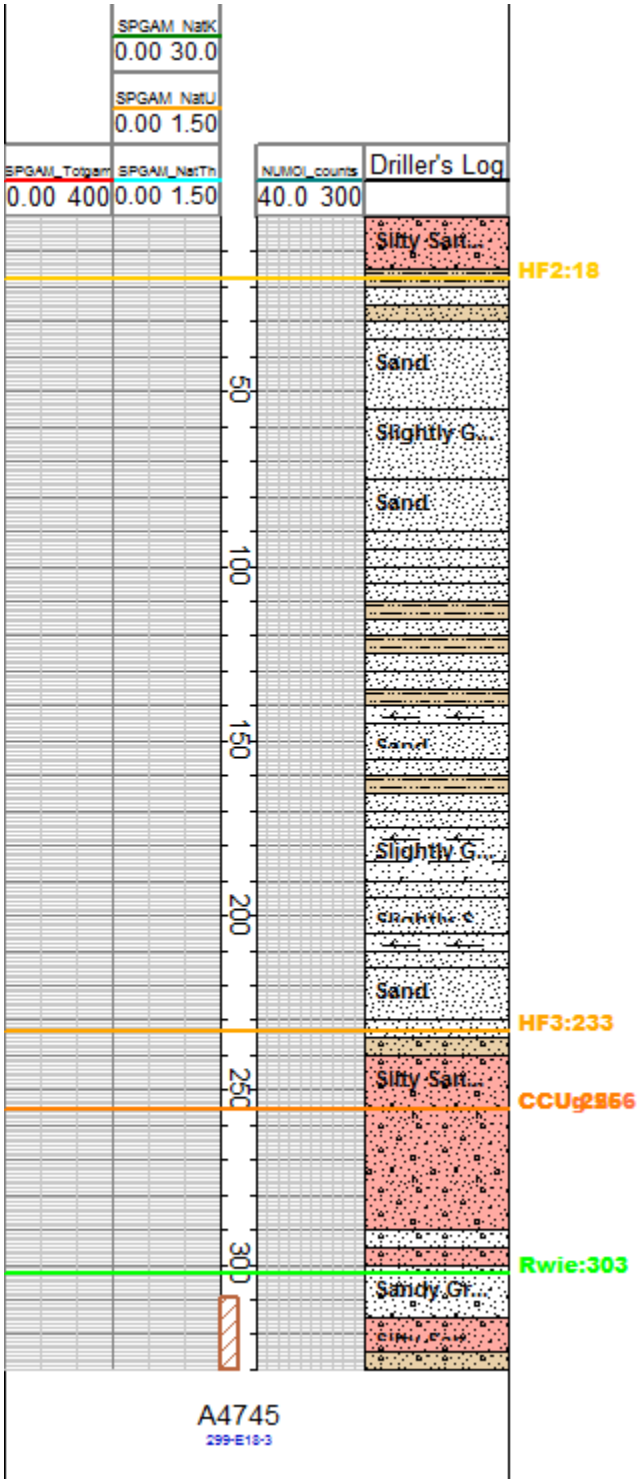
Driller's Log
50
100
150
200
250
300
Slightly S...
HF3:224
Silty Sand...
Silty Sand...
A4743
299-E18-1


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:13
Sand
Sand
Sand
Slightly S...
Sand
HF3:234
Silty Sant...
Rwie:309
Silty Sant...
50
100
150
200
250
300
A4744
299-E18-2


SPGAM_NatK
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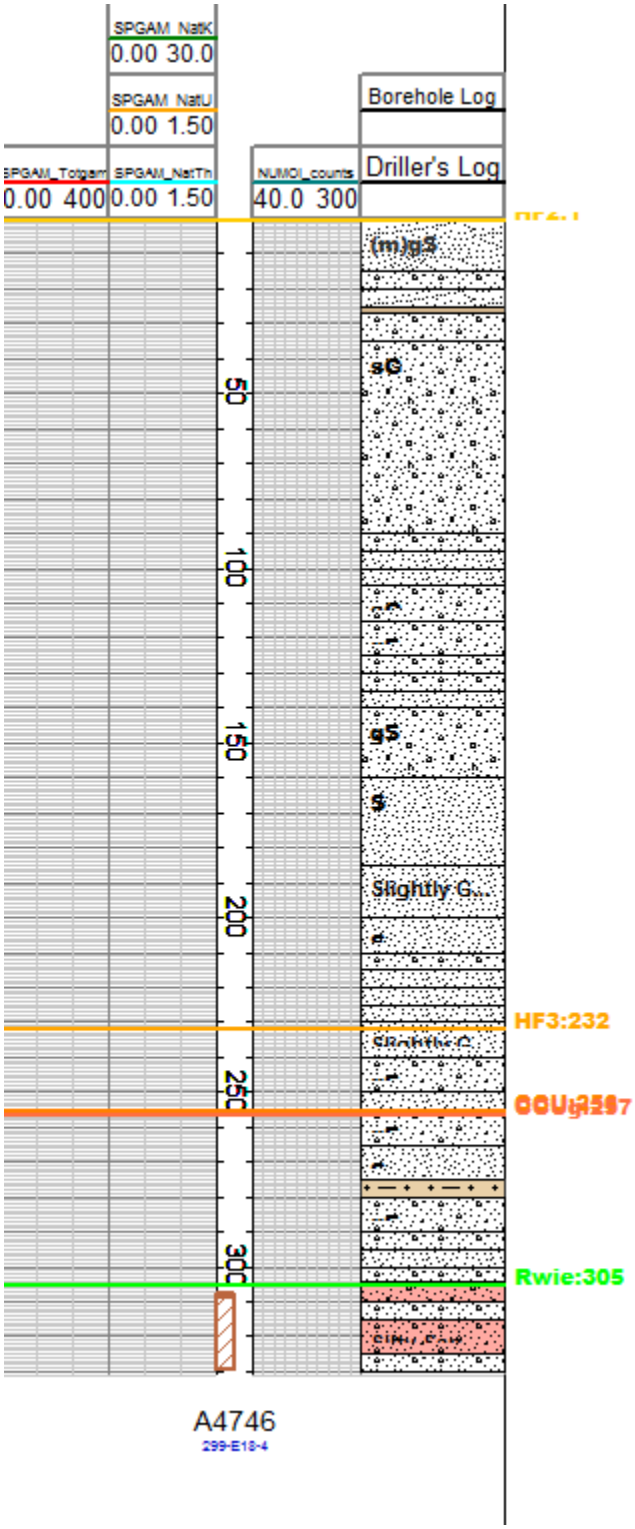
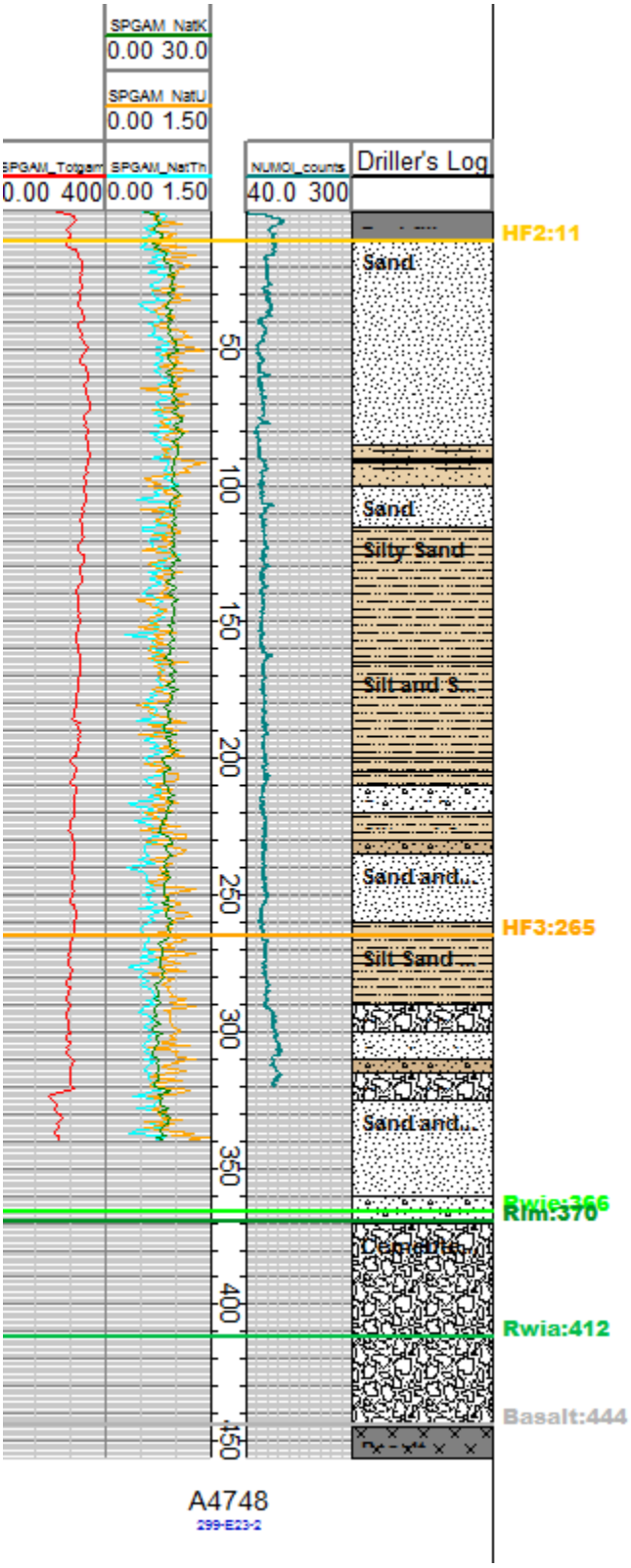
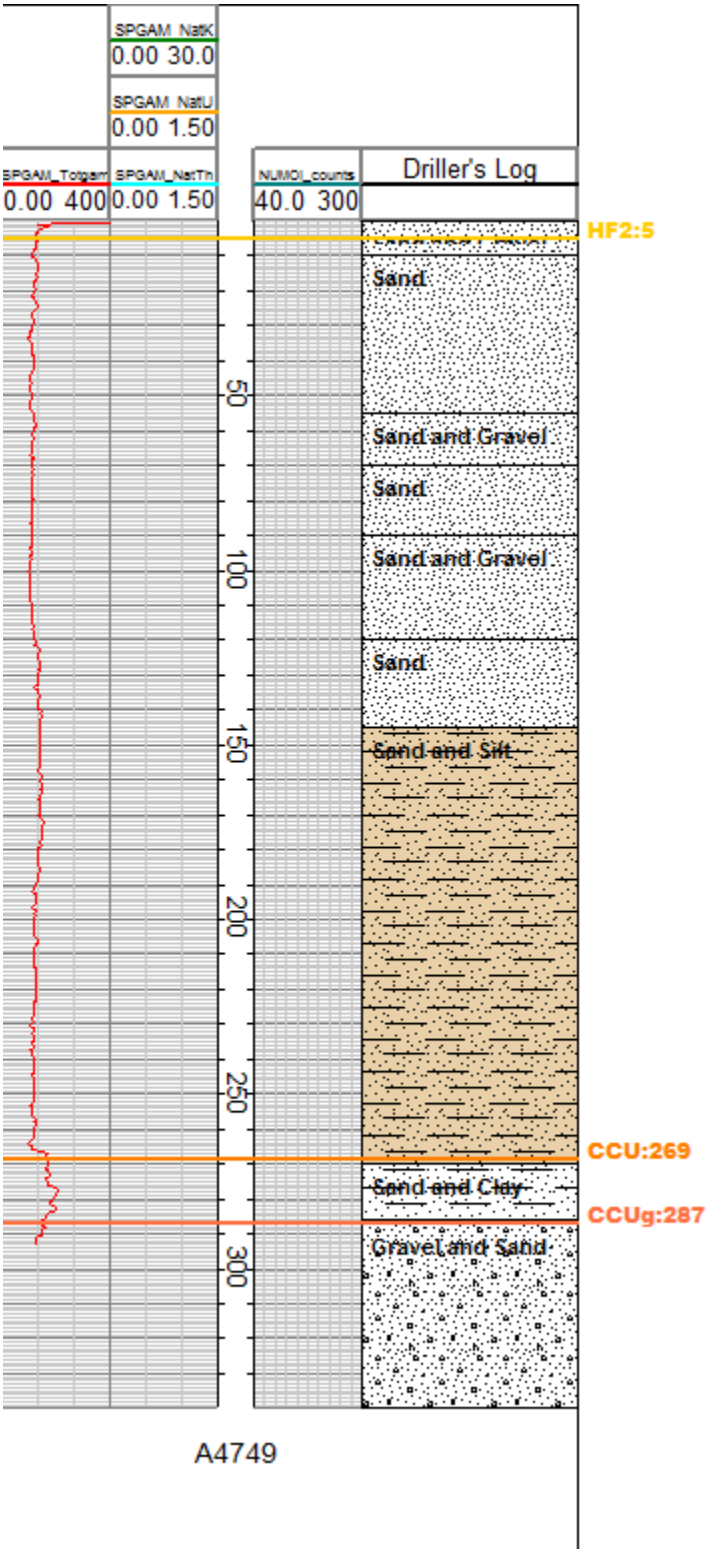
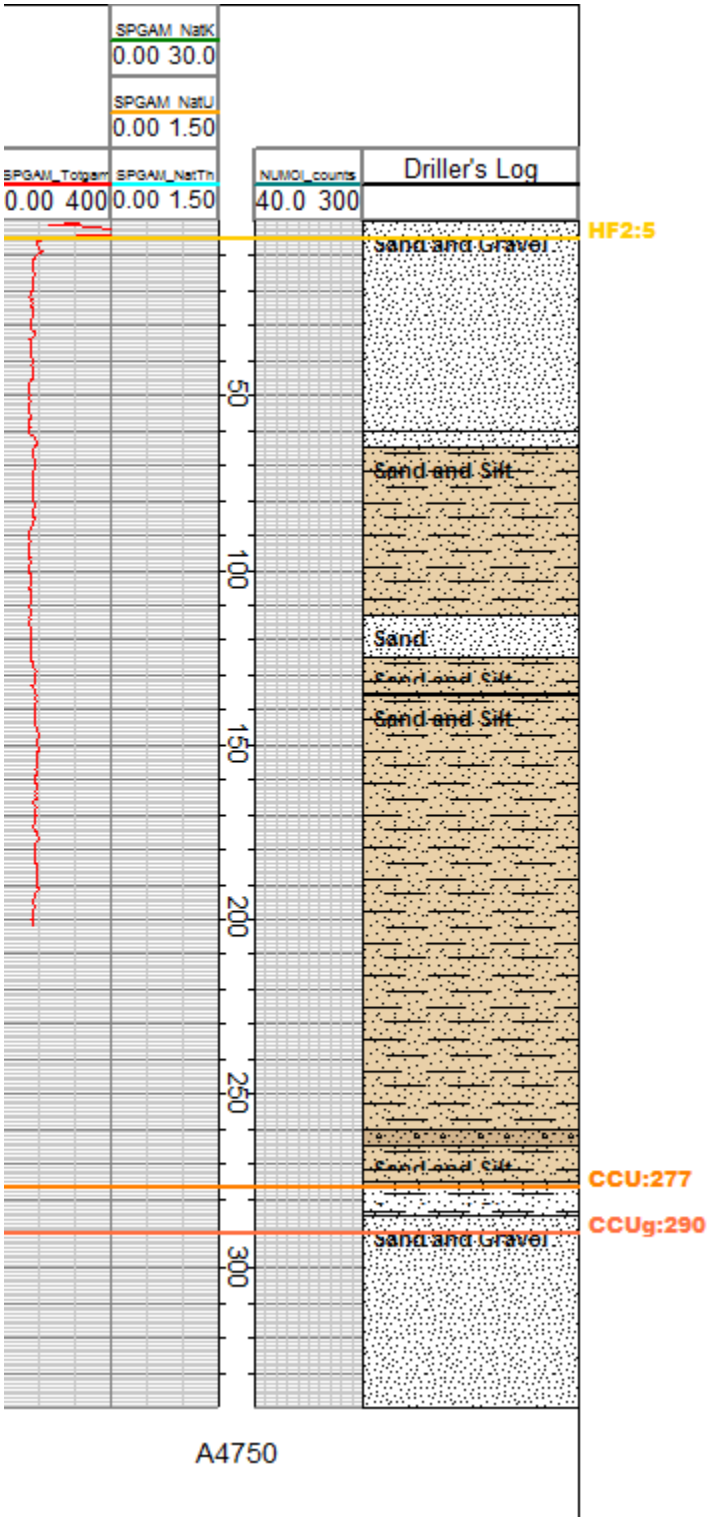
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sart...
HF2:18
Sand
Slightly G...
Sand
Sand
Slightly G...
Sand
HF3:233
Silty Sart...
CCUg2866
Rwie:303
Sandy Gr...
50
100
150
200
250
300
A4745
299-E18-3

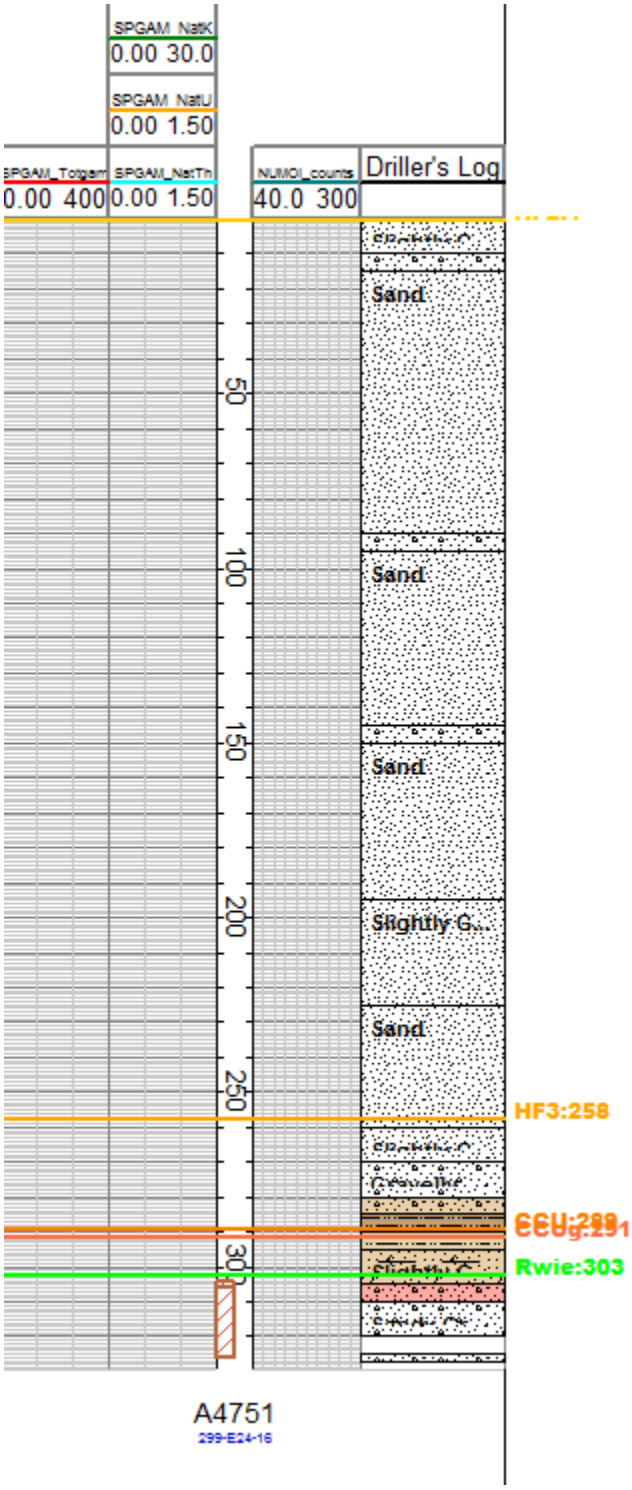

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
Borehole Log
Driller's Log
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
(m)gS
sG
gS
S
Slightly G...
50
100
150
200
250
300
HF3:232
Rwie:305
A4746
299-E18-4


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:11
Sand
Sand
Silty Sand
Silt and S...
Sand and...
HF3:265
Silt Sand
Sand and...
Rwie:366
Rim:370
Rwia:412
Basalt:444
50
100
150
200
250
300
350
400
450
A4748
299-E23-2


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Sand
Sand and Gravel
Sand
Sand and Gravel
Sand
Sand and Silt
CCU:269
Sand and Clay
CCUg:287
Gravel and Sand
50
100
150
200
250
300

A4749


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Sand and Gravel
Sand and Silt
Sand
Sand and Silt
Sand and Silt
CCU:277
CCUg:290
Sand and Gravel
50
100
150
200
250
300
A4750


SPGAM_NatK
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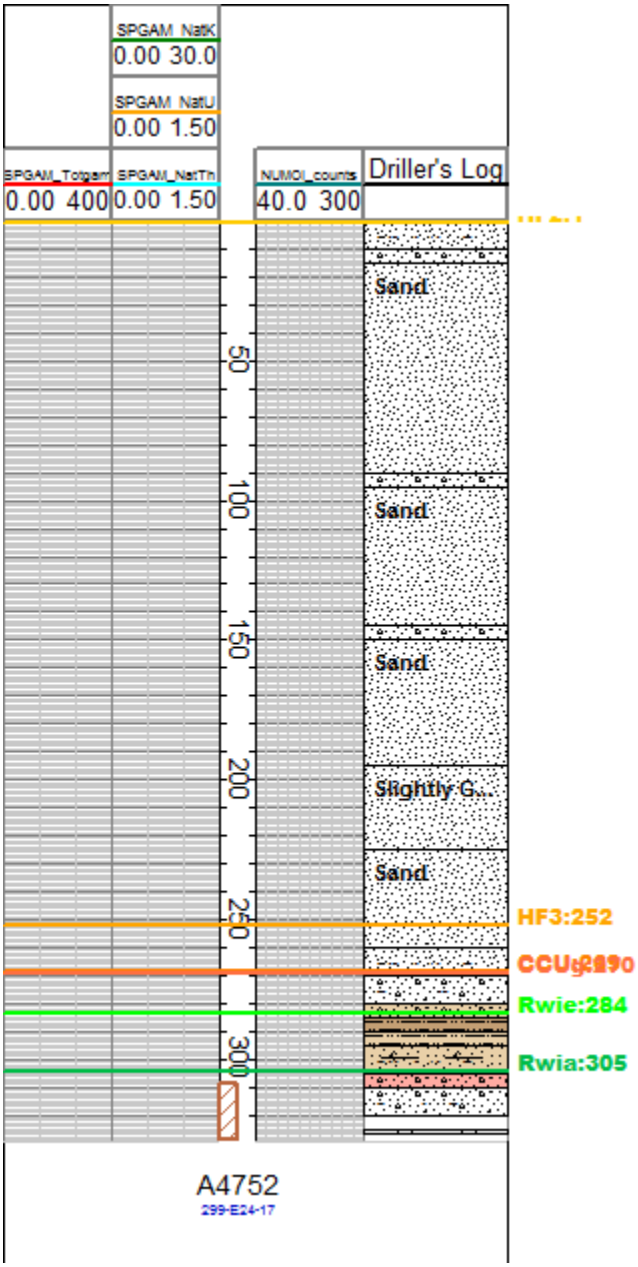
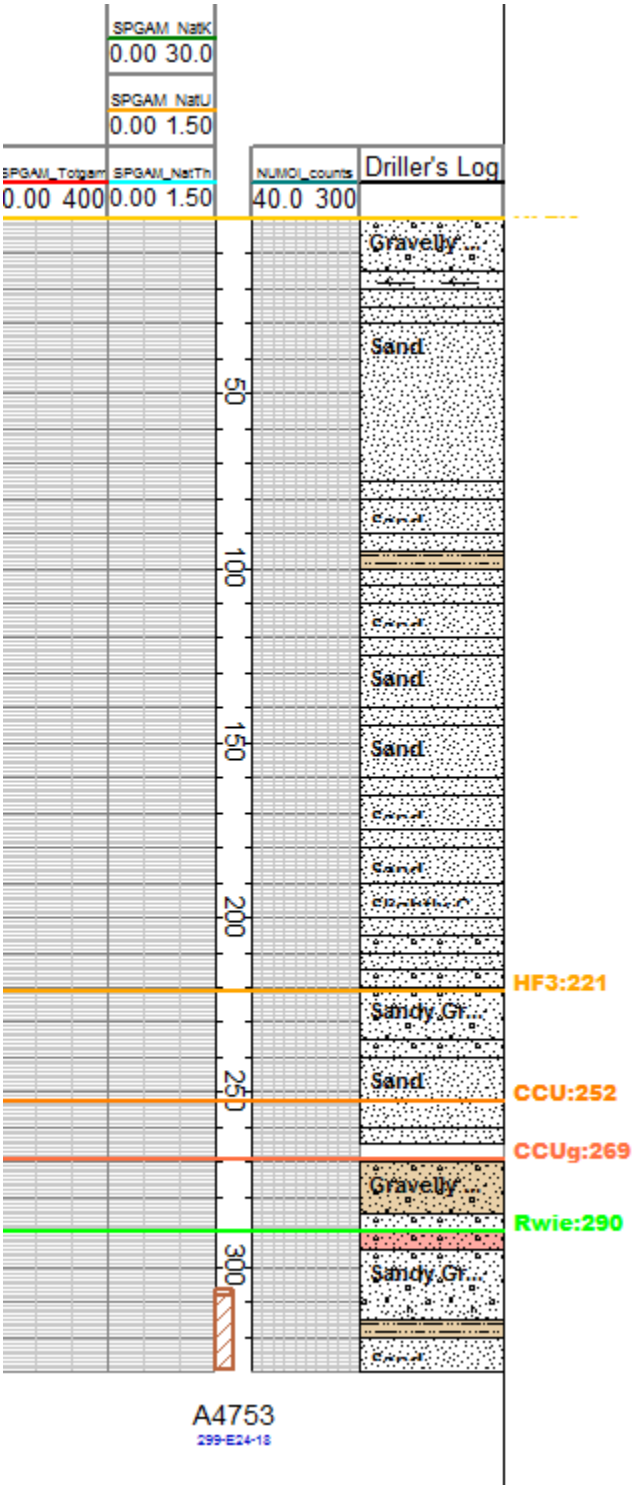
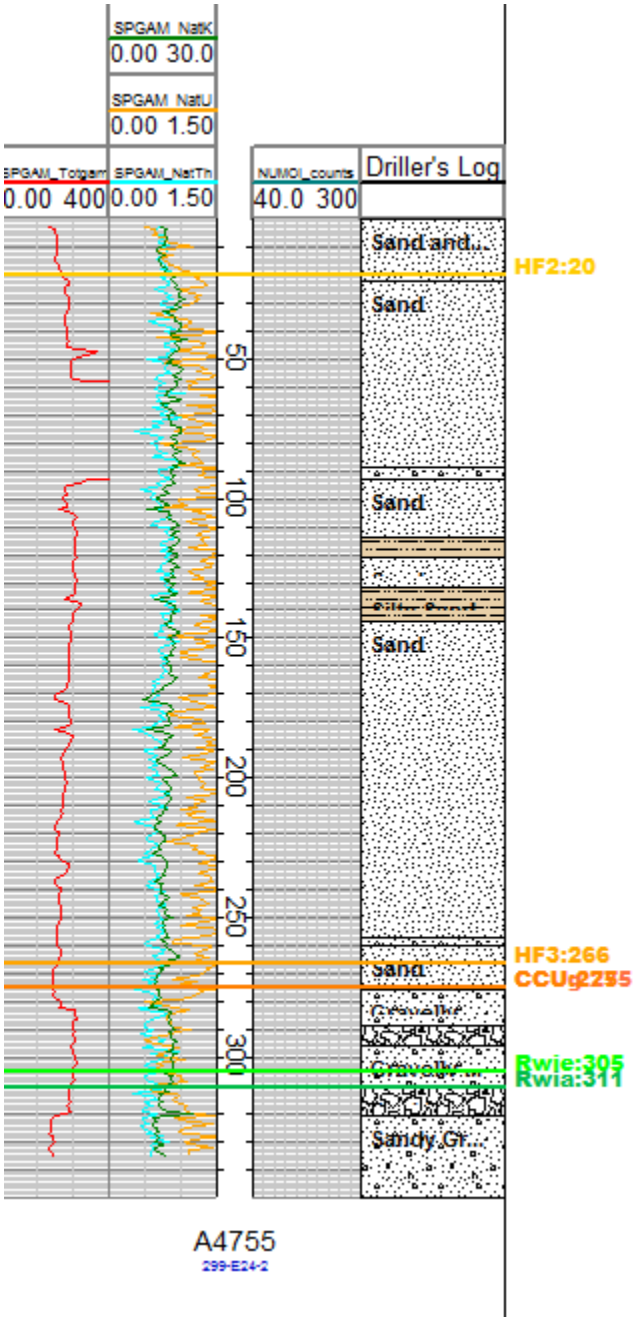
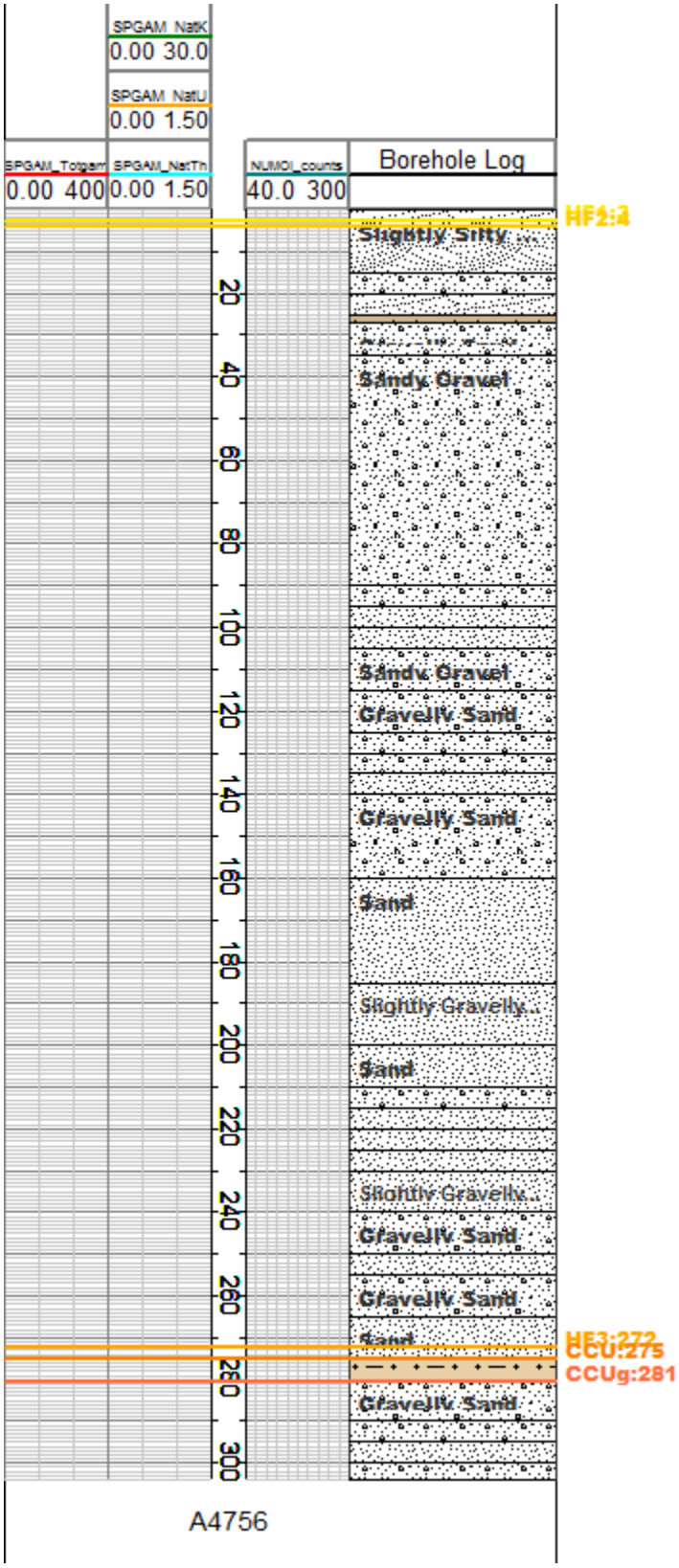
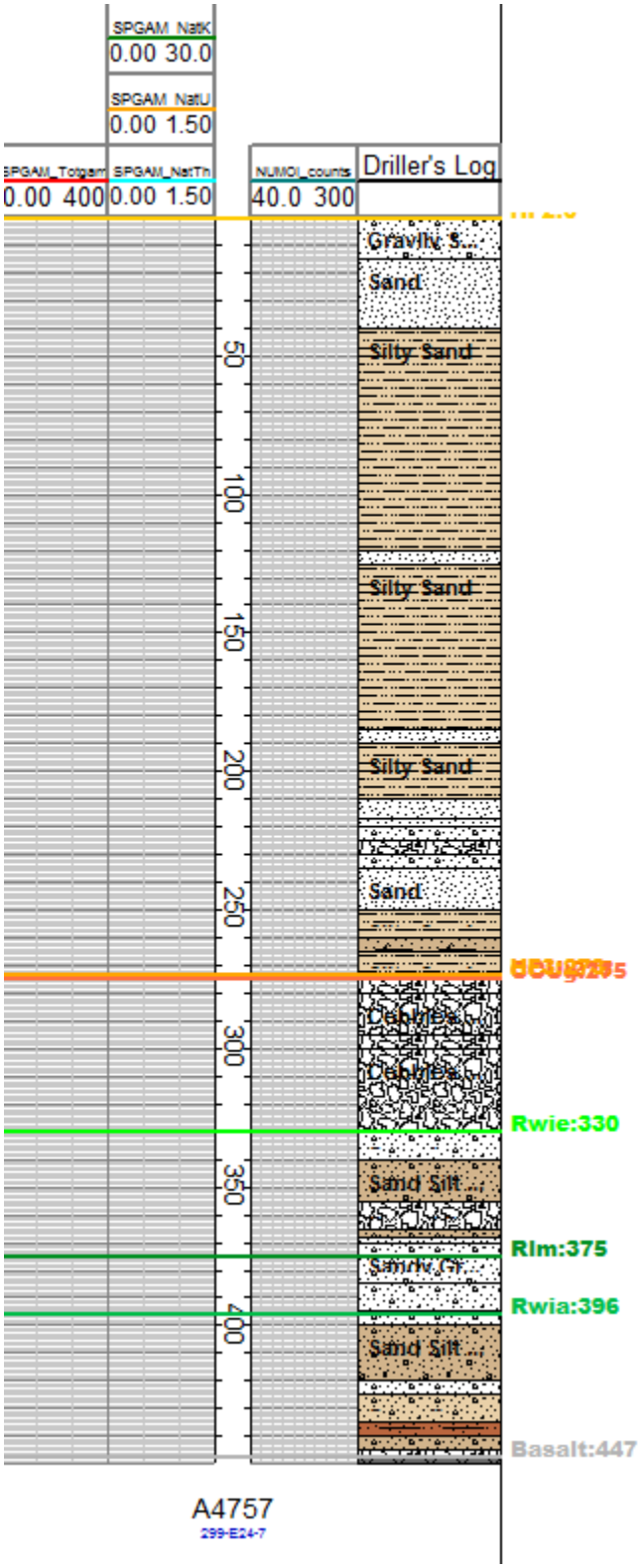
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
Sand
Slightly G...
Sand
HF3:258
Gravelly
CCU:289
Rwie:303
50
100
150
200
250
300
A4751
299-E24-16

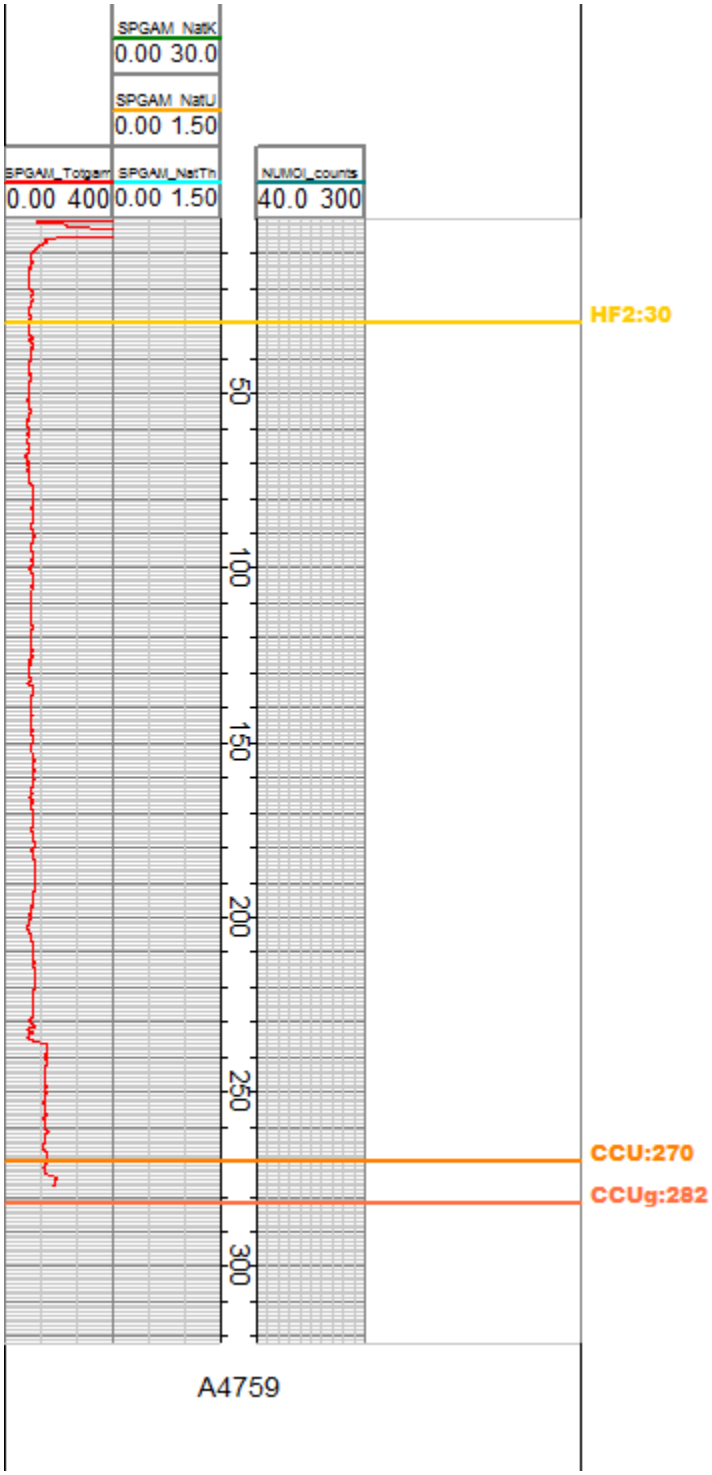

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
Sand
Slightly G...
Sand
50
100
150
200
250
300
HF3:252
Rwie:284
Rwia:305
A4752
299-E24-17

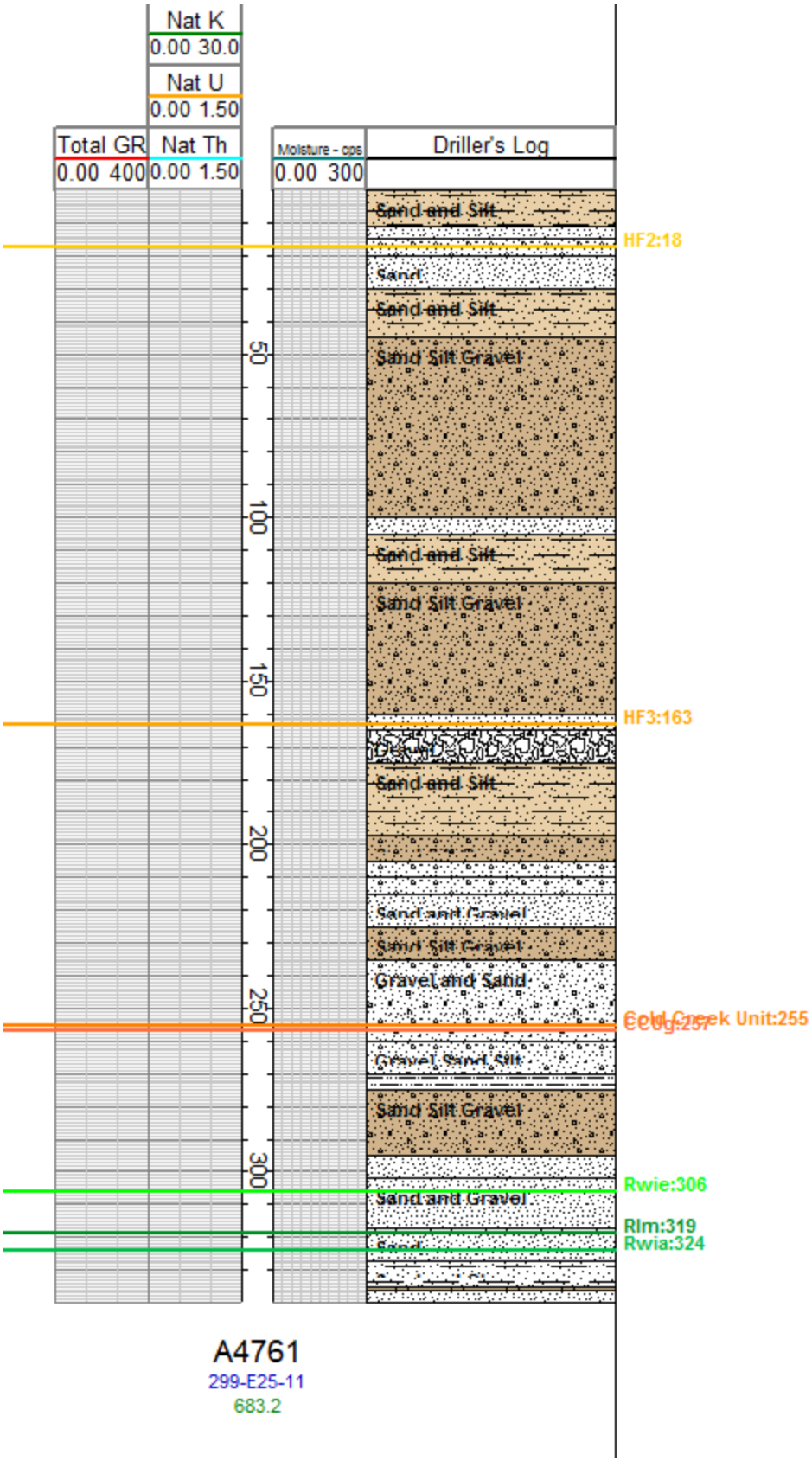

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Gravelly ...
Sand
Sand
Sand
Sand
Sandy Gr...
Sand
Gravelly ...
Sandy Gr...
50
100
150
200
250
300
HF3:221
CCU:252
CCUg:269
Rwie:290
A4753
299-E24-18

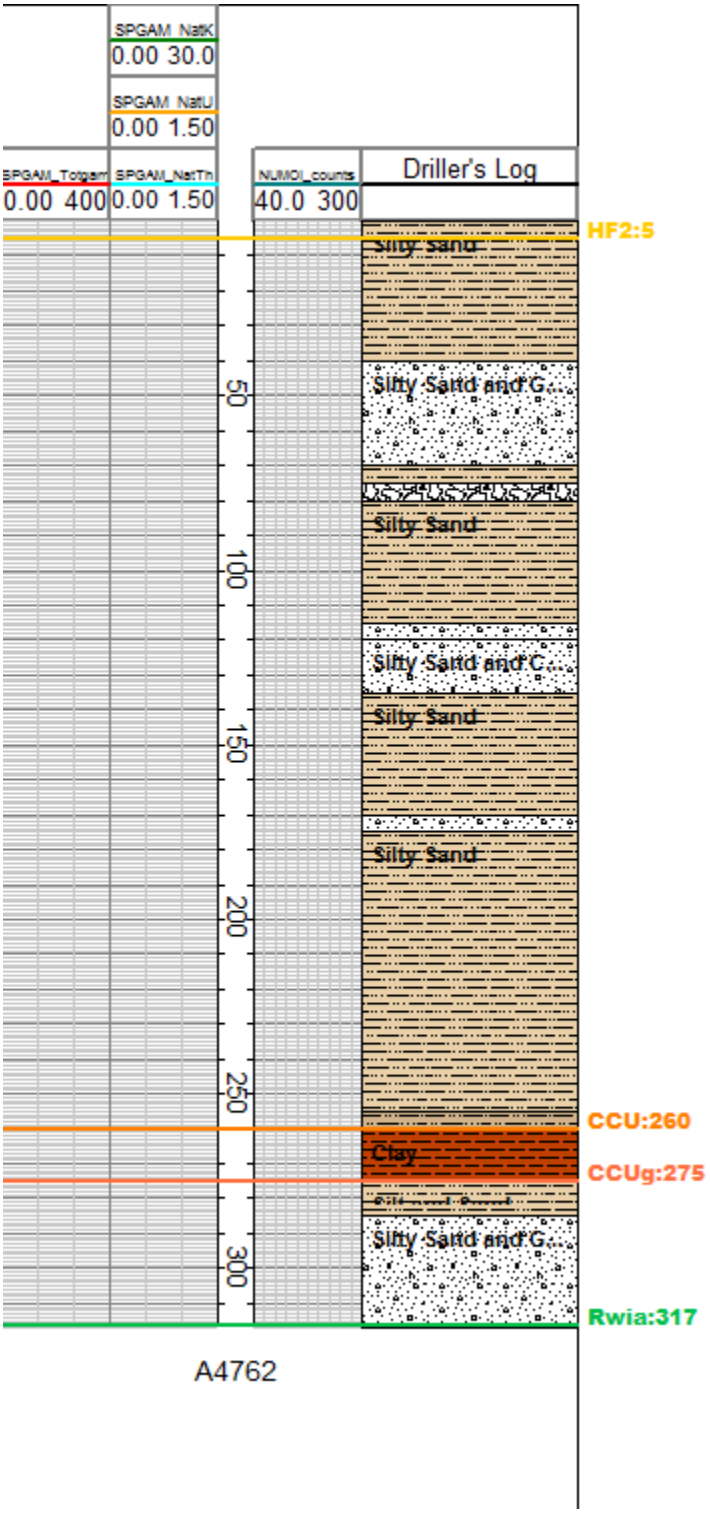

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:20
Sand
Sand
Sand
HF3:266
Sand
CCUg2255
Gravelly
Rwie:305
Gravelly
Rwia:311
Sandy Gr...
50
100
150
200
250
300
A4755
299-E24-2

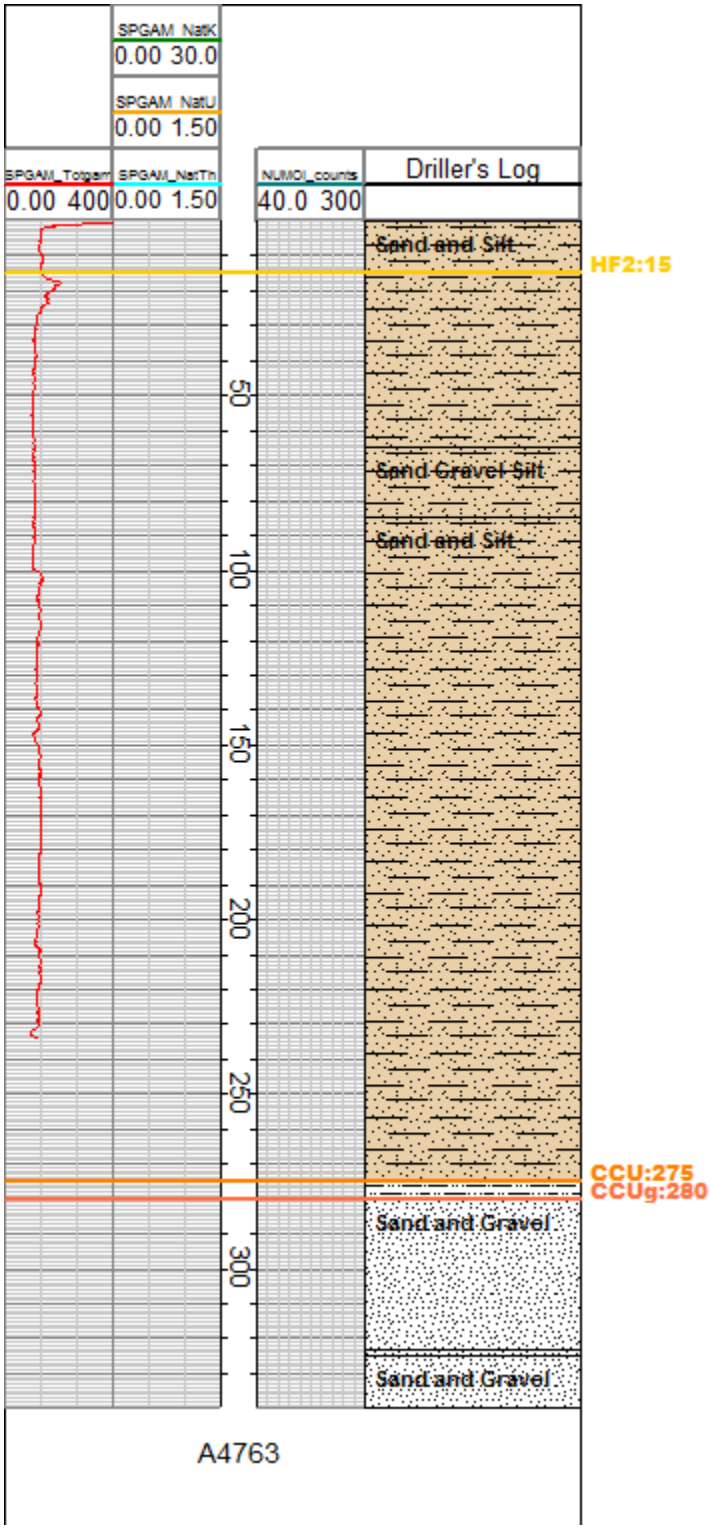

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:4
Slightly Silty ...
Sandy Gravel
Sandy Gravel
Gravelly Sand
Gravelly Sand
Sand
Slightly Gravelly...
Sand
Slightly Gravelly...
Gravelly Sand
Gravelly Sand
Sand
HF3:272
CCU:275
CCUg:281
Gravelly Sand
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
A4756

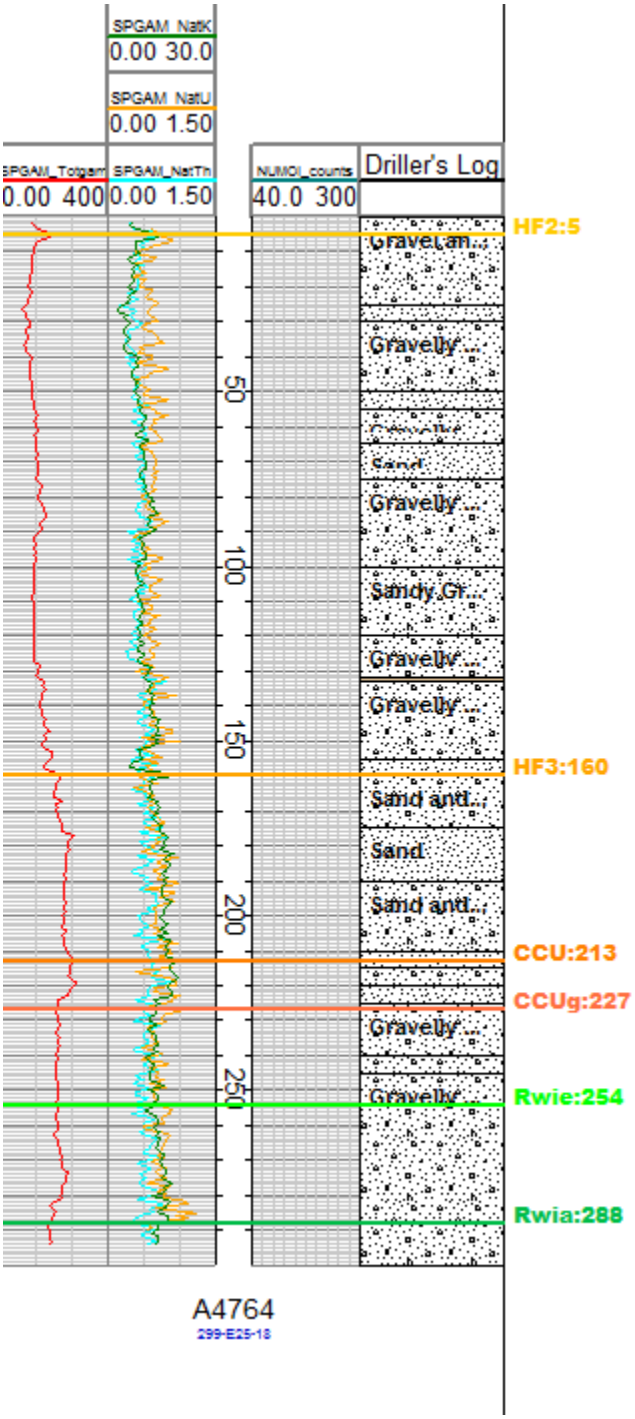

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Gravlly S...
Sand
Silty Sand
Silty Sand
Silty Sand
Sand
Cobbles
Cobbles
Sand Silt ...
Sandy Gr...
Sand Silt ...
Rwie:330
Rlm:375
Rwia:396
Basalt:447
50
100
150
200
250
300
350
400
A4757
299-E24-7

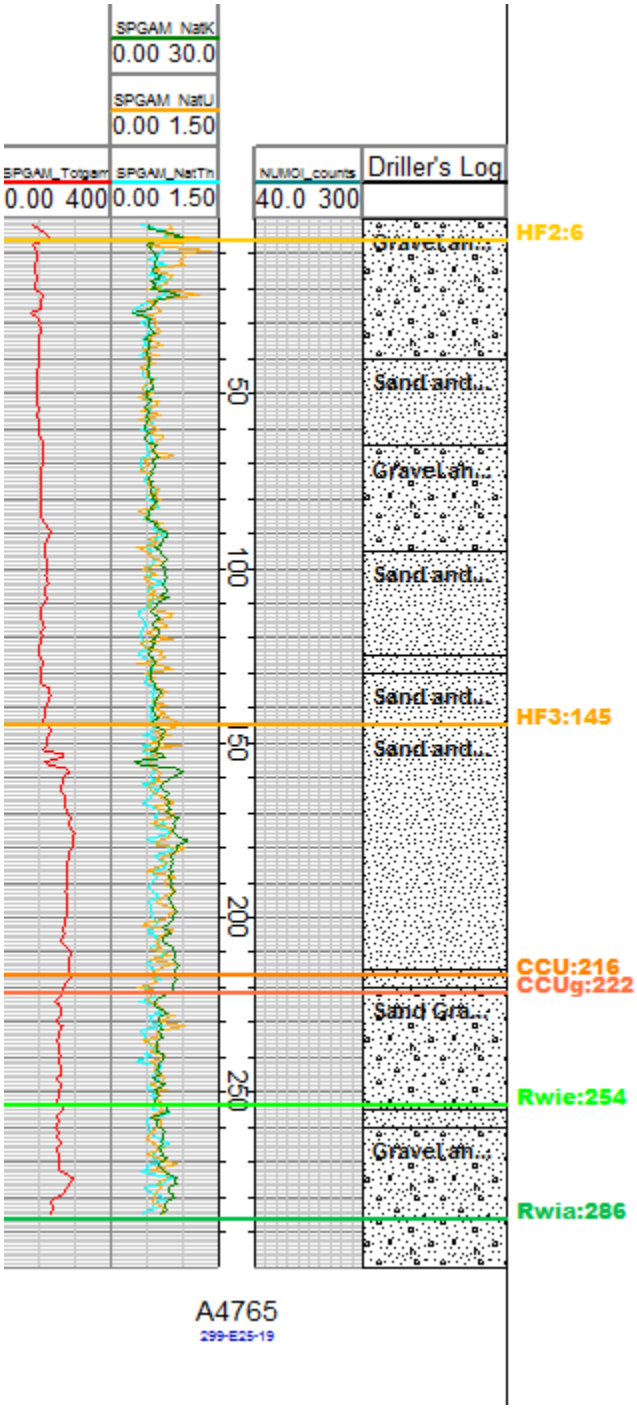

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
HF2:30
50
100
150
200
250
CCU:270
CCUg:282
300
A4759

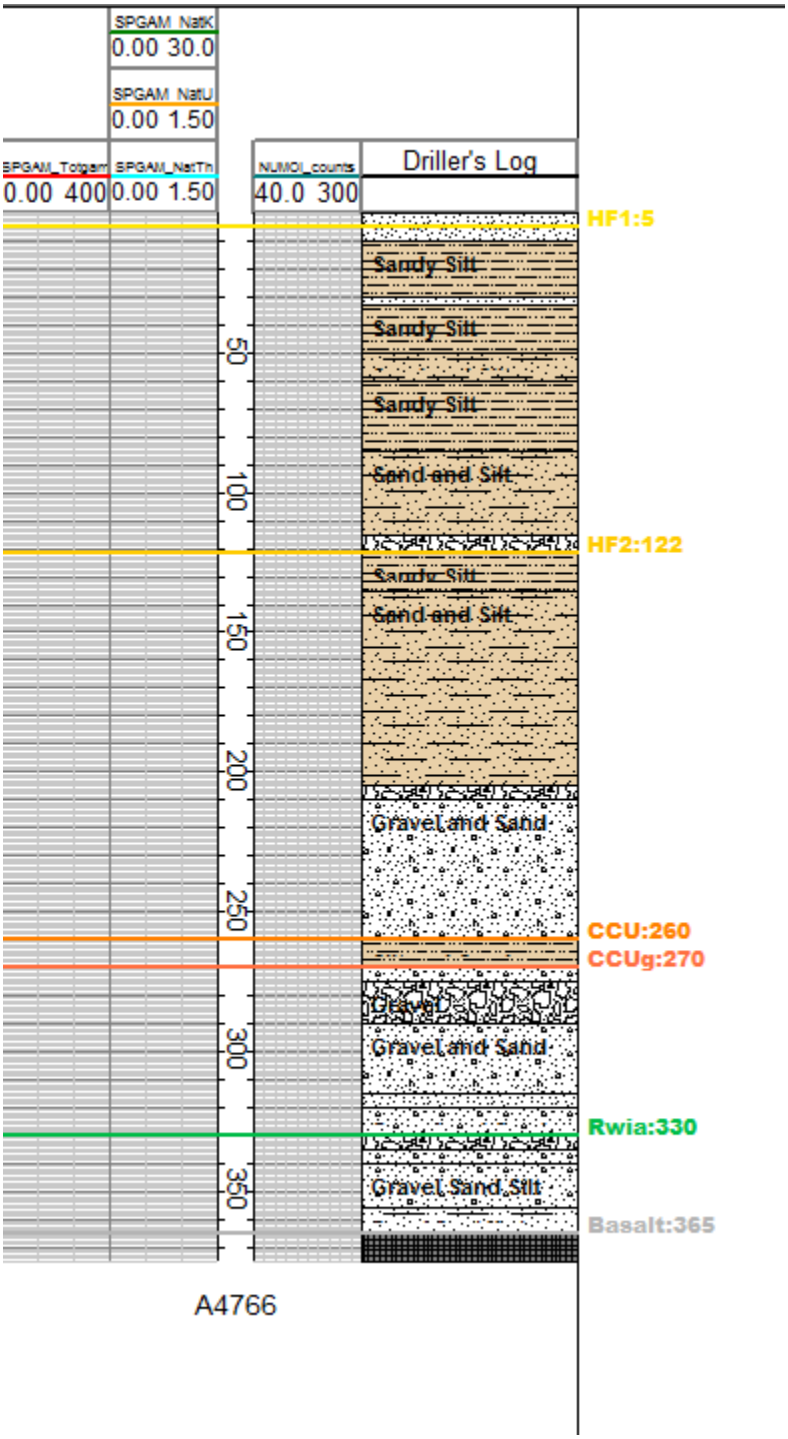

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Silt
HF2:18
Sand
Sand and Silt
Sand Silt Gravel
50
100
Sand and Silt
Sand Silt Gravel
150
HF3:163
Gravel
Sand and Silt
200
Sand and Gravel
Sand Silt Gravel
Gravel and Sand
250
Cold Creek Unit:255
Ccug:257
Gravel Sand Silt
Sand Silt Gravel
300
Rwie:306
Sand and Gravel
Rlm:319
Rwia:324
Sand
A4761
299-E25-11
683.2


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Silty Sand
Silty Sand and G...
Silty Sand
Silty Sand and G...
Silty Sand
Silty Sand
50
100
150
200
250
300
CCU:260
Clay
CCUg:275
Silty Sand and G...
Rwia:317
A4762

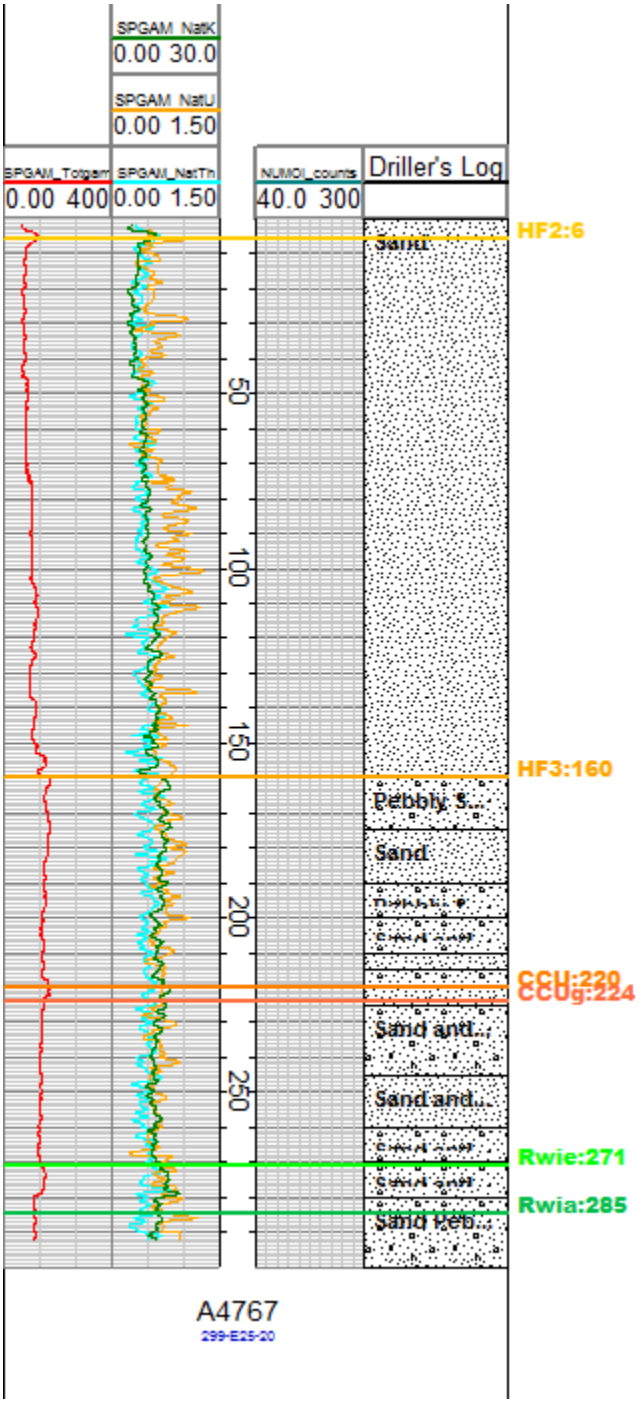

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and Silt
HF2:15
Sand Gravel Silt
Sand and Silt
50
100
150
200
250
300
CCU:275
CCUg:280
Sand and Gravel
Sand and Gravel
A4763

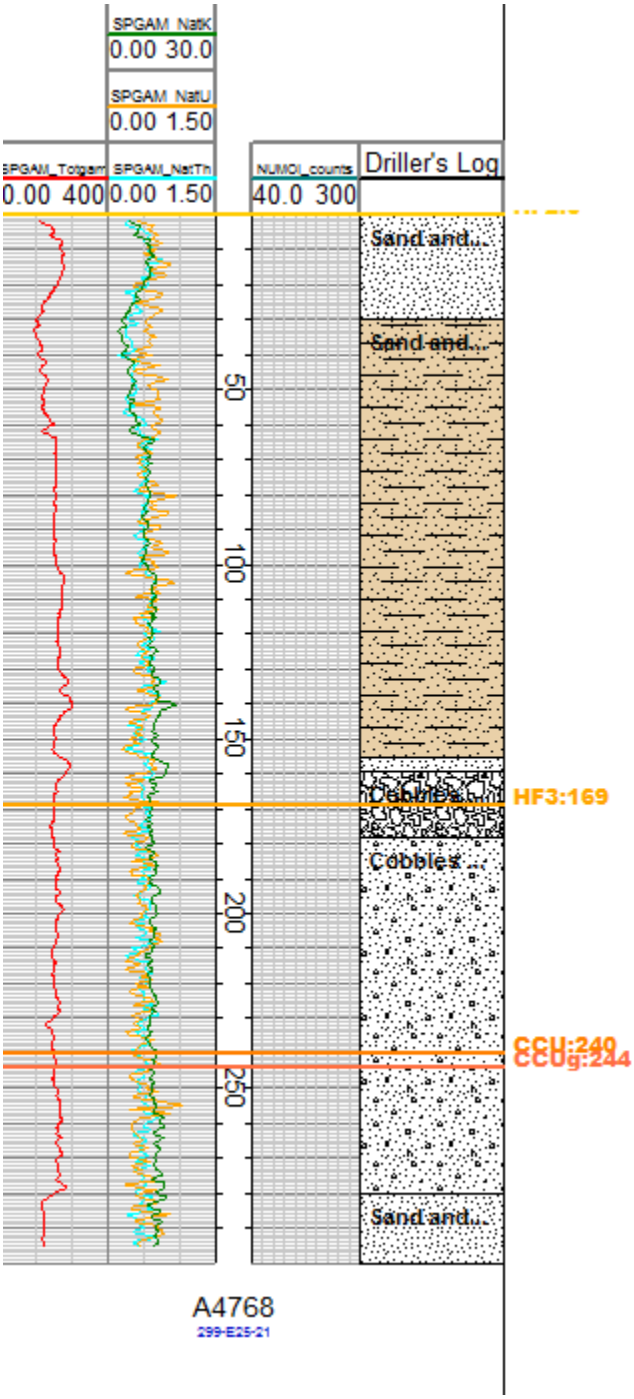

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Gravelly ...
Gravelly ...
Sand
Gravelly ...
Sandy Gr...
Gravelly ...
Gravelly ...
HF3:160
Sand and...
Sand
Sand and...
CCU:213
CCUg:227
Gravelly ...
Gravelly ...
Rwie:254
Rwia:288
50
100
150
200
250
A4764
299-E25-18

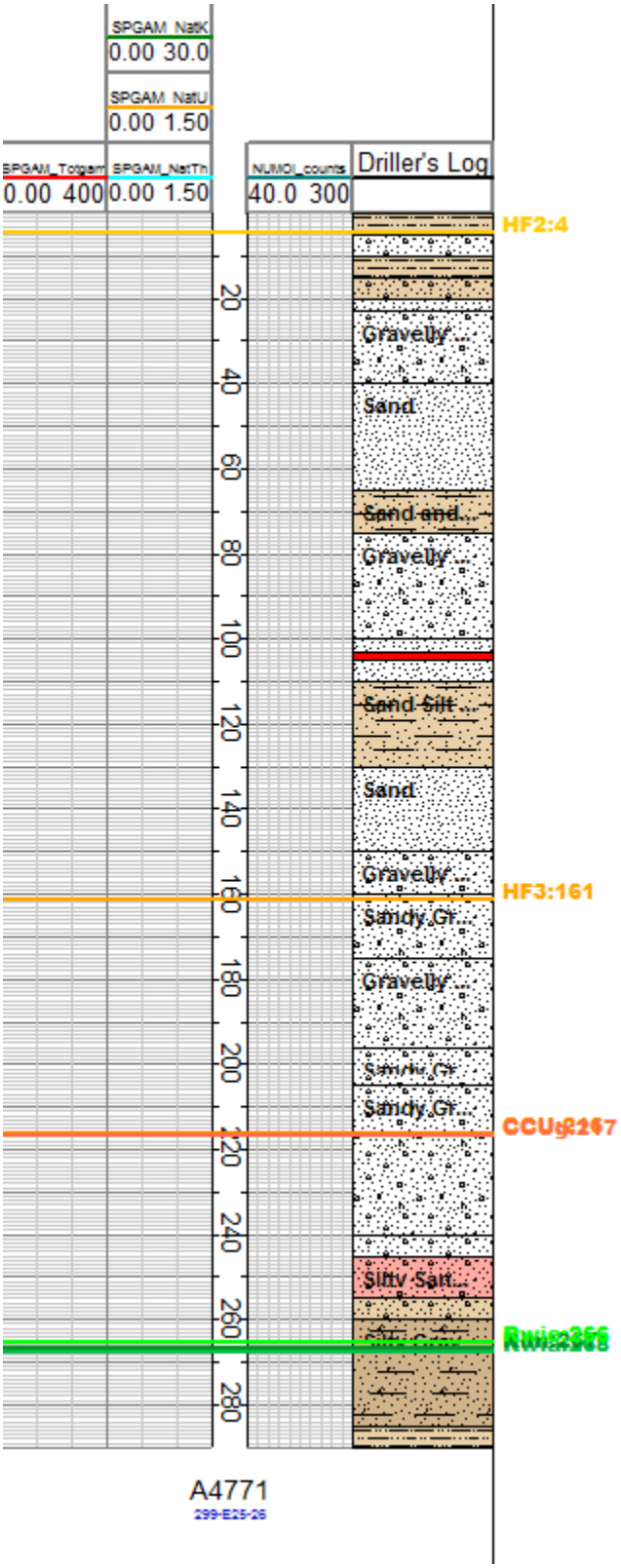

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:6
Sand and...
GraveLah...
Sand and...
Sand and...
HF3:145
Sand and...
CCU:216
CCUg:222
Sand Gra...
Rwie:254
GraveLah...
Rwia:286
50
100
150
200
250
A4765
299-E25-19

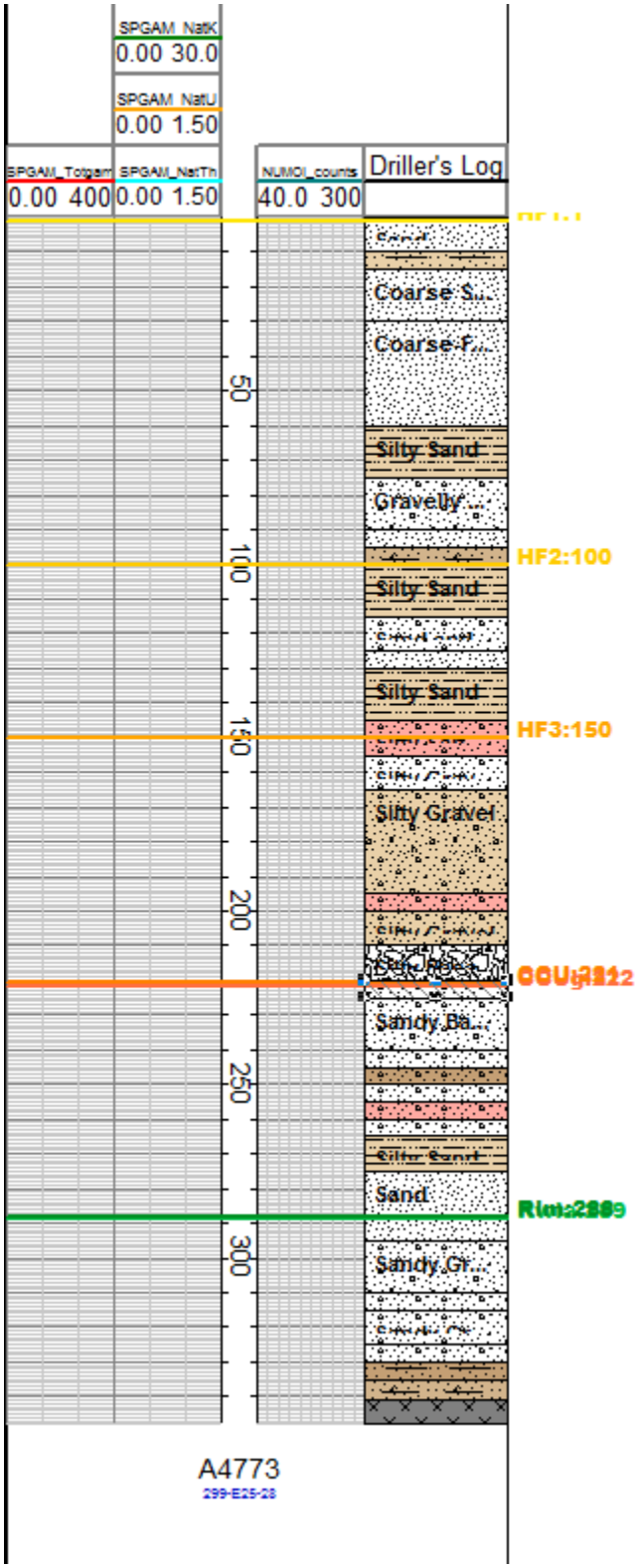

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:5
Sandy Silt
Sandy Silt
Sandy Silt
Sand and Silt
HF2:122
Sandy Silt
Sand and Silt
Gravel and Sand
CCU:260
CCUg:270
Gravel and Sand
Rwia:330
Gravel, Sand, Silt
Basalt:365
50
100
150
200
250
300
350

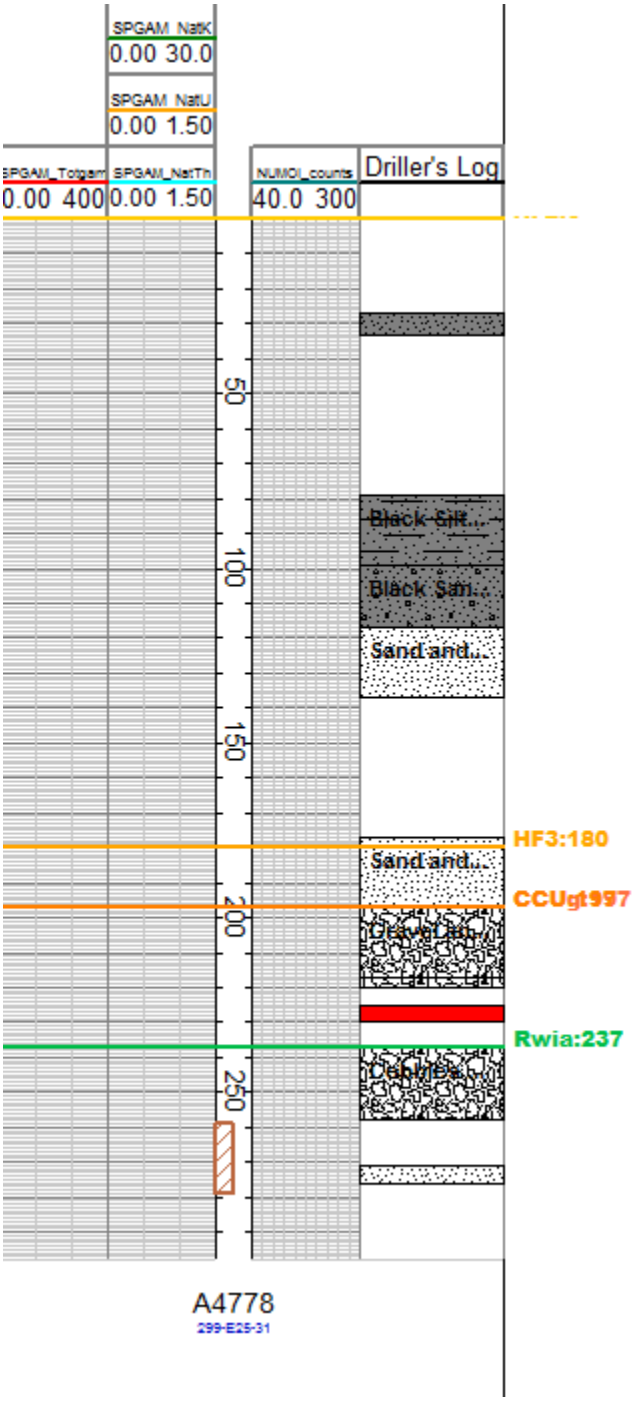
A4766

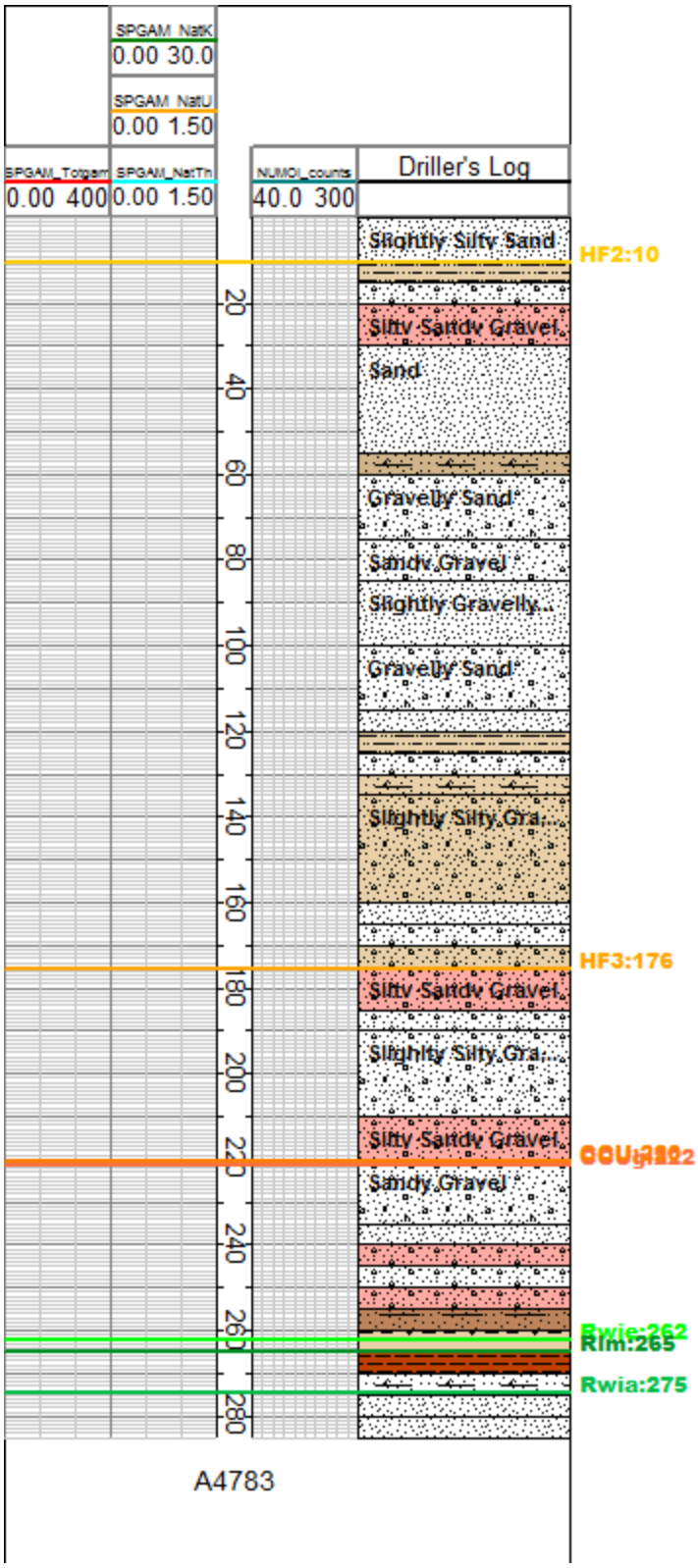

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
HF2:6
HF3:160
Pebbly S...
Sand
CCU:220
CCUg:224
Sand and...
Sand and...
Rwie:271
Rwia:285
Sand Peb...
A4767
299-E25-20

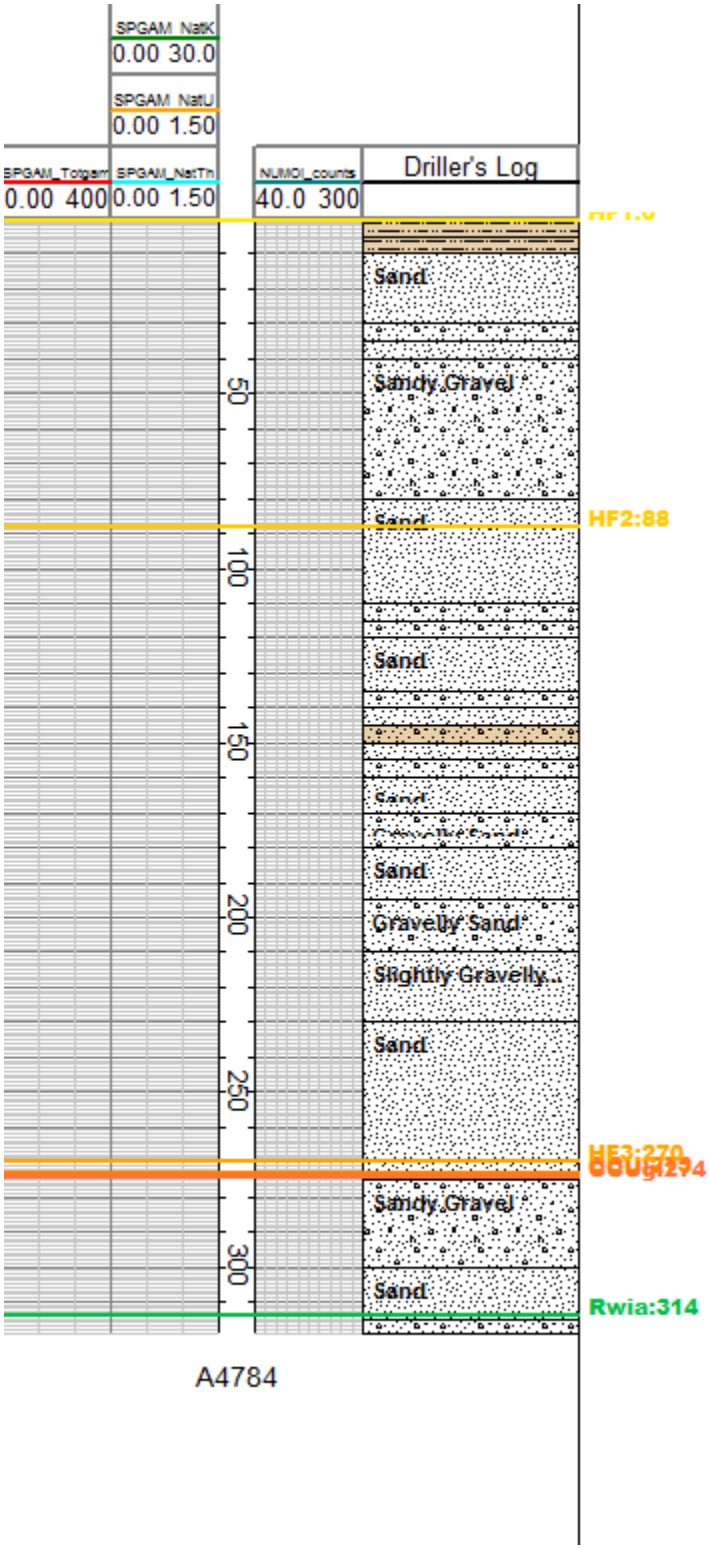

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
Sand and...
50
100
150
Cobbles ...
HF3:169
Cobbles ...
200
CCU:249
CCUg:244
250
Sand and...
A4768
299-E25-21


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:4
Gravelly ...
Sand
Sand and...
Gravelly ...
Sand Silt ...
Sand
Gravelly ...
HF3:161
Sandy Gr...
Gravelly ...
Sandy Gr...
Sandy Gr...
Silty Sand...
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A4771
299-E25-26

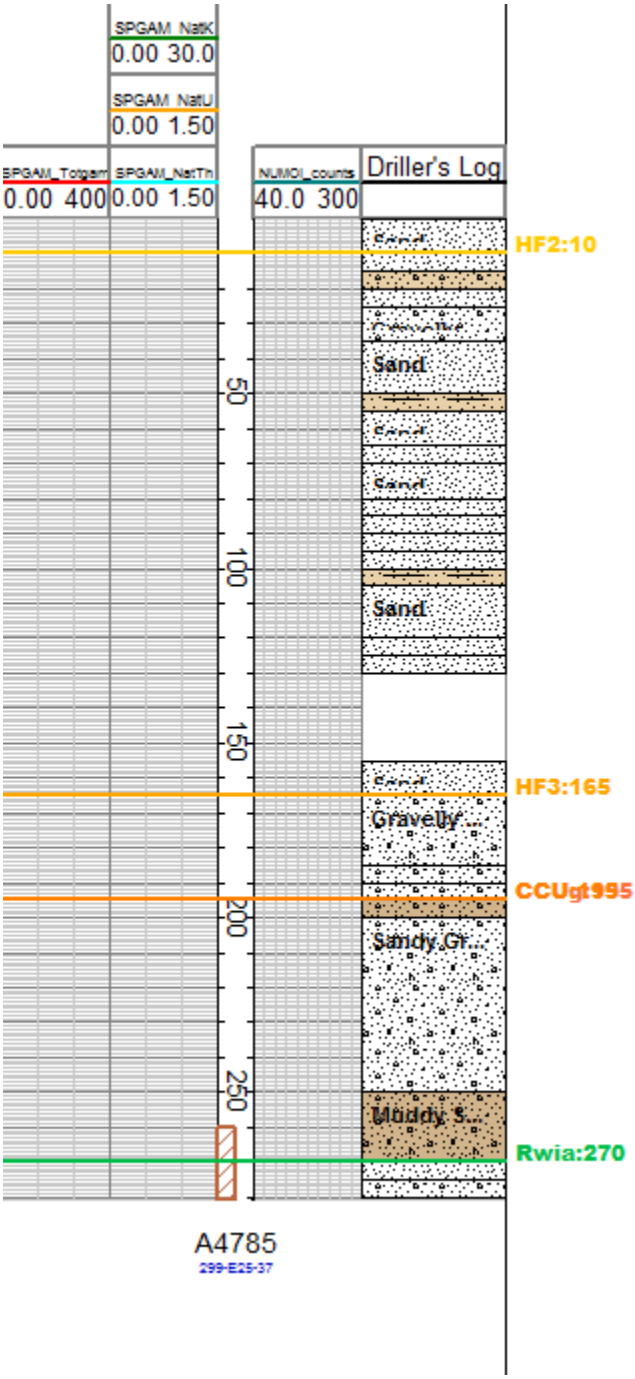

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Coarse S...
Coarse F...
Silty Sand
Gravelly ...
HF2:100
Silty Sand
Silty Sand
HF3:150
Silty Gravel
Sandy Ba...
Sand
Sandy Gr...
50
100
150
200
250
300
A4773
299-E25-28


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
Black Silt...
Black San...
Sand and...
HF3:180
Sand and...
CCUgt997
Rwia:237
A4778
299-E25-31


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Slightly Silty Sand
HF2:10
Silty Sandy Gravel
Sand
Gravelly Sand
Sandy Gravel
Slightly Gravelly...
Gravelly Sand
Slightly Silty Gra...
HF3:176
Silty Sandy Gravel
Slightly Silty Gra...
Silty Sandy Gravel
Sandy Gravel
Rwie:262
Rim:265
Rwia:275
20
40
60
80
100
120
140
160
180
200
240
260
280
A4783


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sandy Gravel
HF2:88
Sand
Sand
Gravelly Sand
Slightly Gravelly...
Sand
HF3:270
Sandy Gravel
Sand
Rwia:314
50
100
150
200
250
300

A4784


SPGAM_NatK
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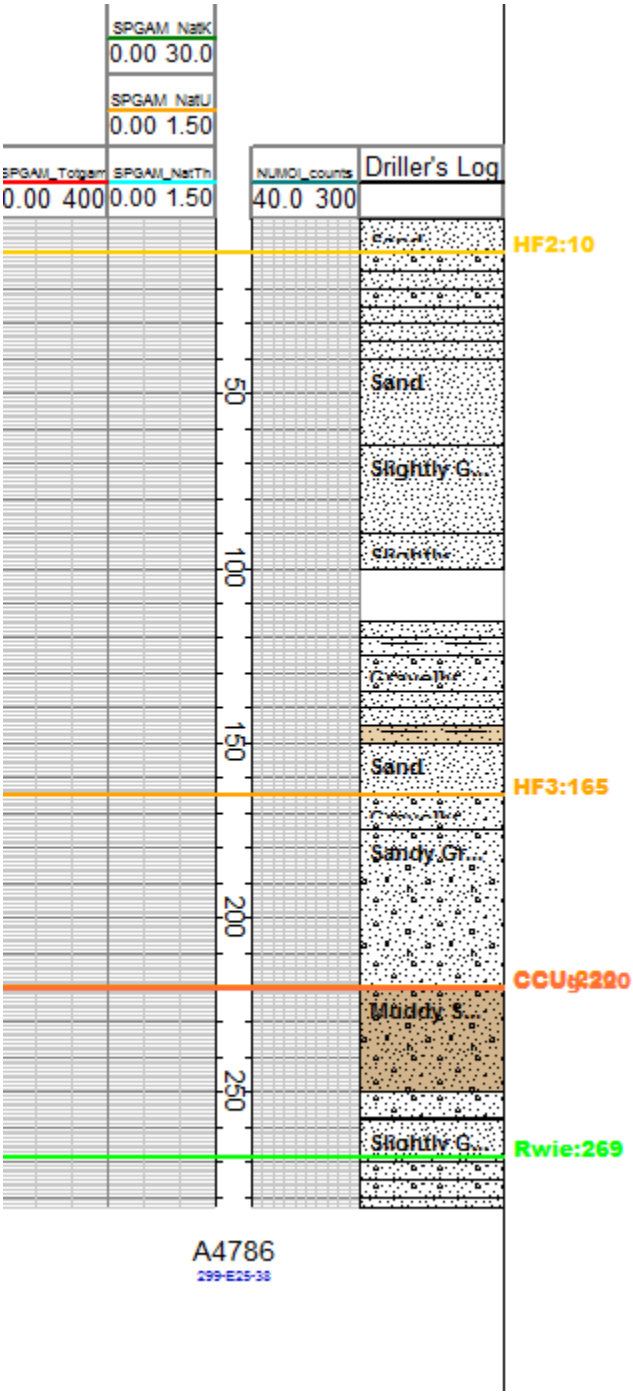
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:10
Sand
50
100
Sand
150
HF3:165
Gravelly ...
CCUgt995
200
Sandy Gr...
250
Muddy S...
Rwia:270
A4785
299-E25-37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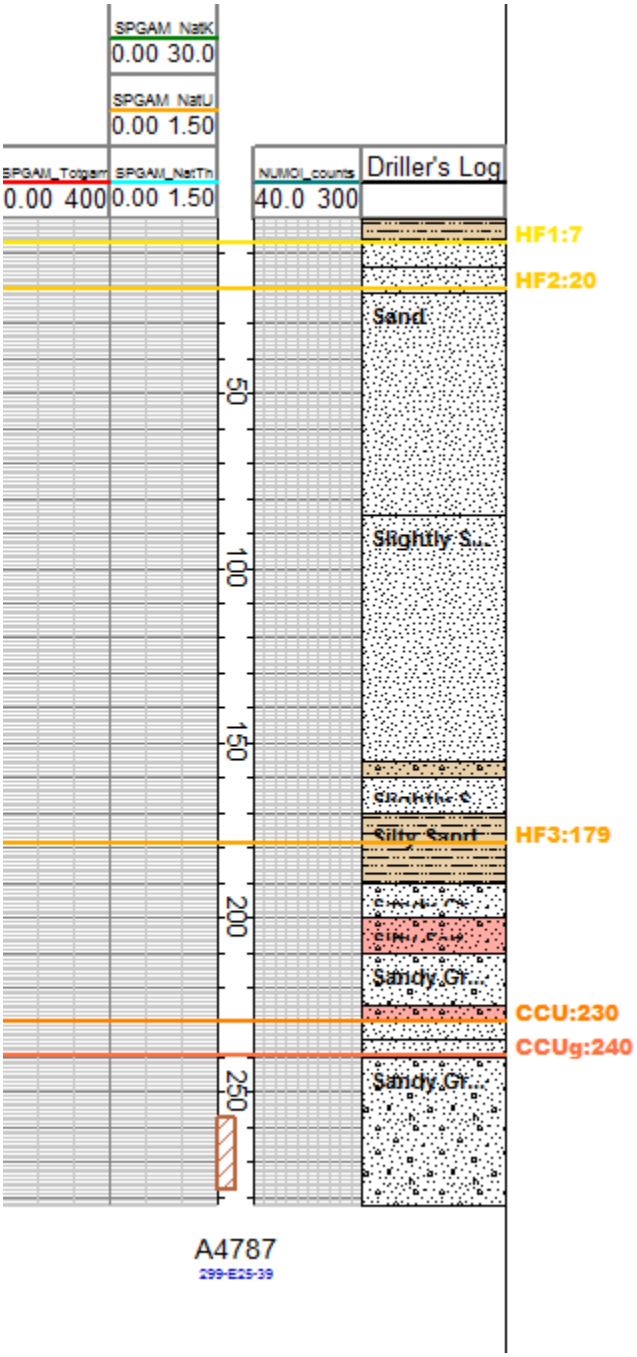
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:10
Sand
Slightly G...
50
100
150
Sand
HF3:165
Sandy Gr...
200
CCU:220
Muddy S...
250
Slightly G...
Rwie:269
A4786
299-E25-38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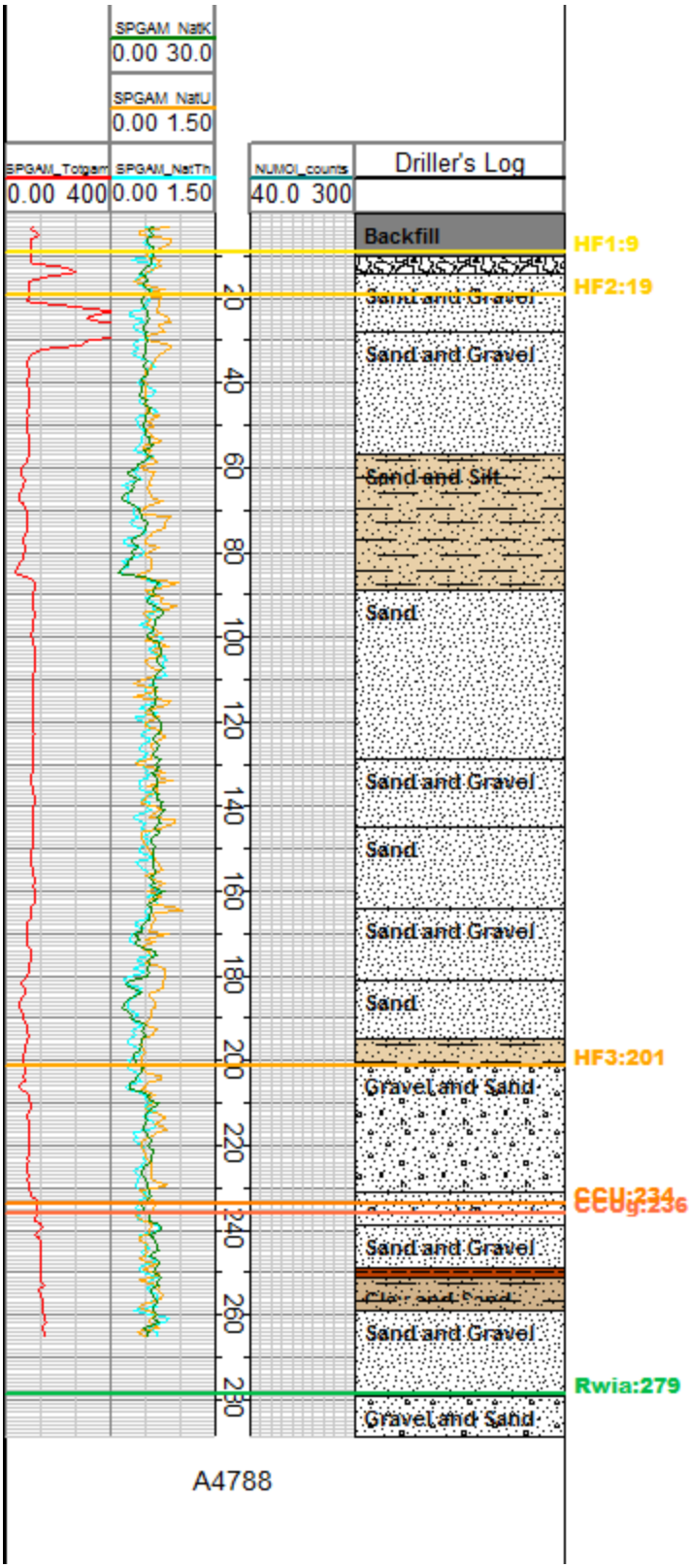
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:7
HF2:20
Sand
50
Slightly S...
100
150
Silty Sand
HF3:179
200
Sandy Gr...
CCU:230
CCUg:240
250
Sandy Gr...
A4787
299-E25-39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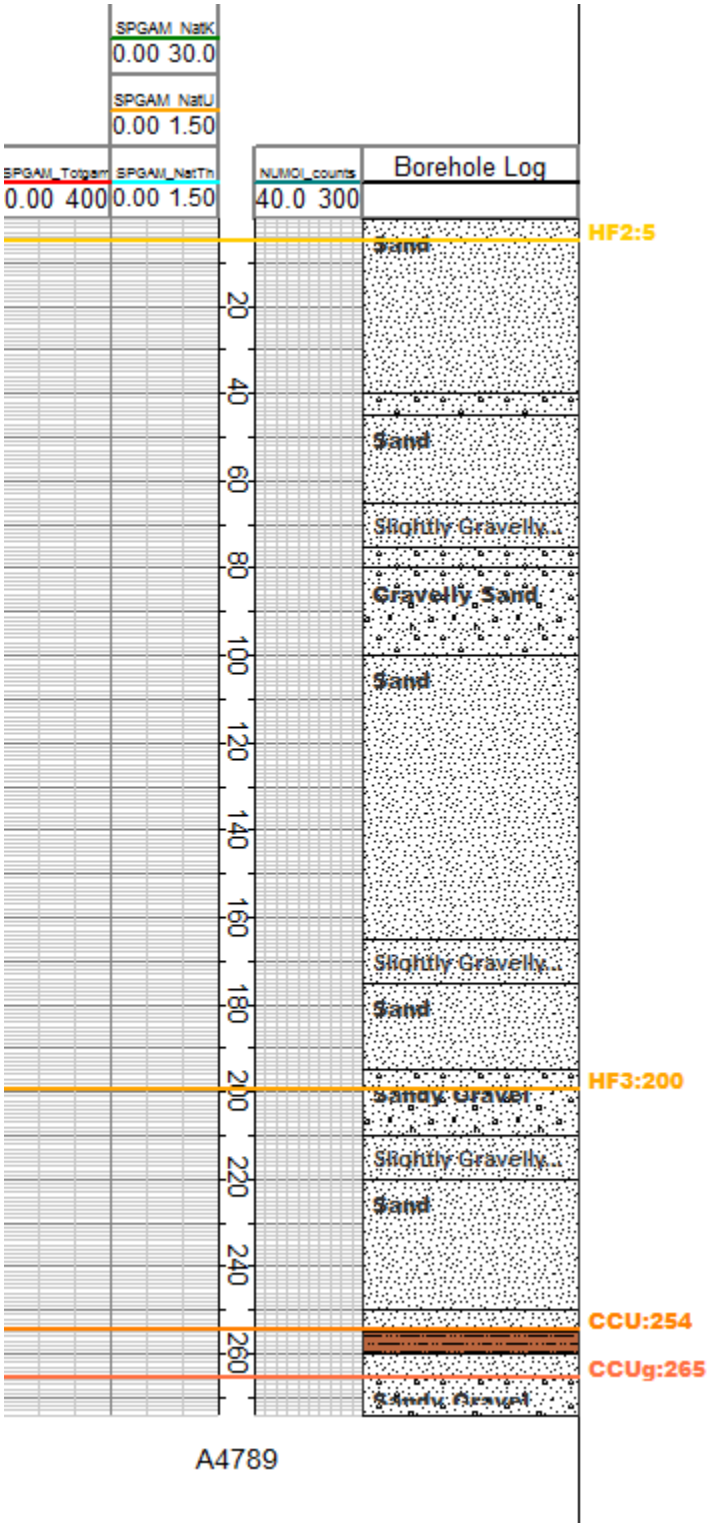
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Backfill
HF1:9
HF2:19
Sand and Gravel
Sand and Silt
Sand
Sand and Gravel
Sand
Sand and Gravel
Sand
HF3:201
Gravel and Sand
CCU:234
CCU:236
Sand and Gravel
Sand and Gravel
Rwia:279
Gravel and Sand
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A4788


SPGAM_NatK
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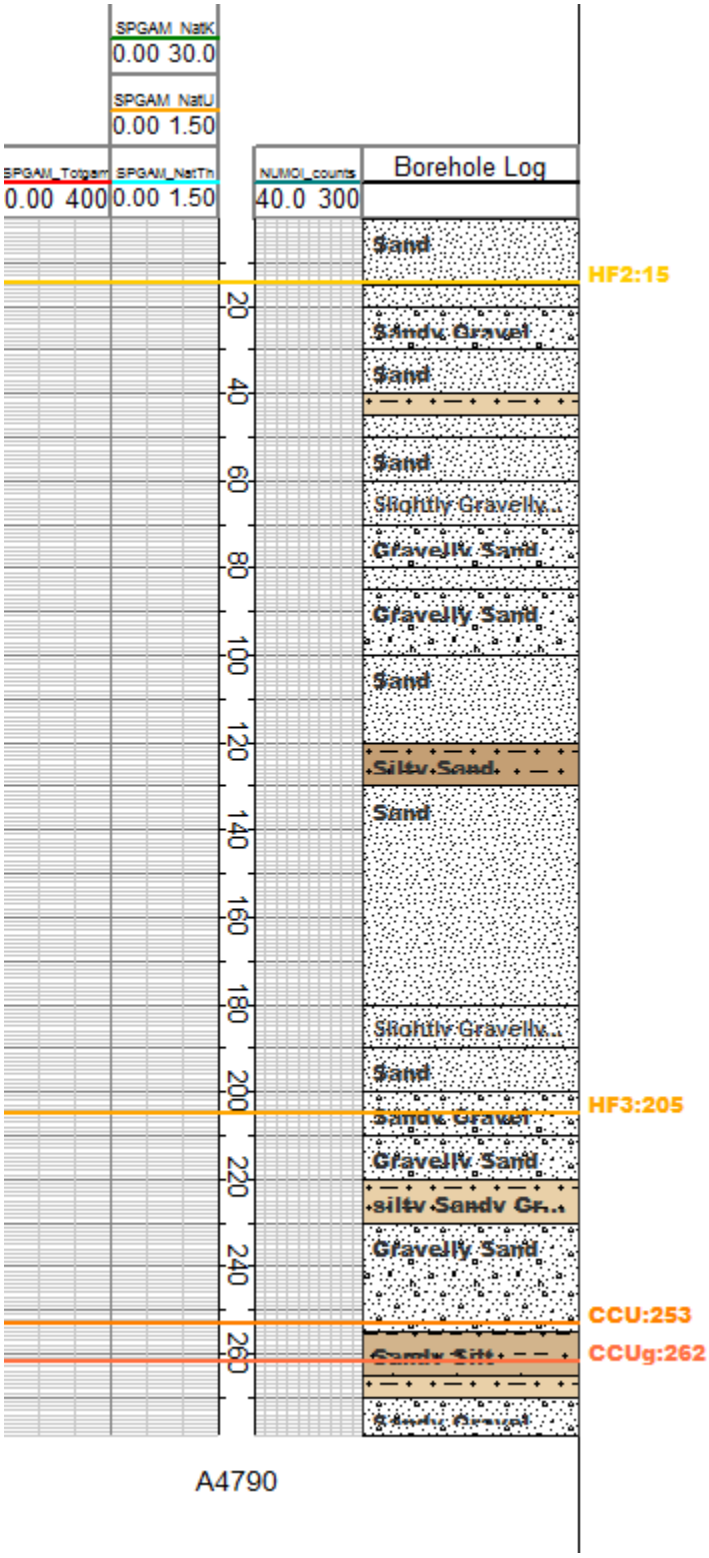
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 300
Borehole Log
HF2:5
Sand
Slightly Gravelly...
Gravelly Sand
Sand
Slightly Gravelly...
Sand
HF3:200
Sandy Gravel
Slightly Gravelly...
Sand
CCU:254
CCUg:265
Sandy Gravel
20
40
60
80
100
120
140
160
180
200
220
240
260
A4789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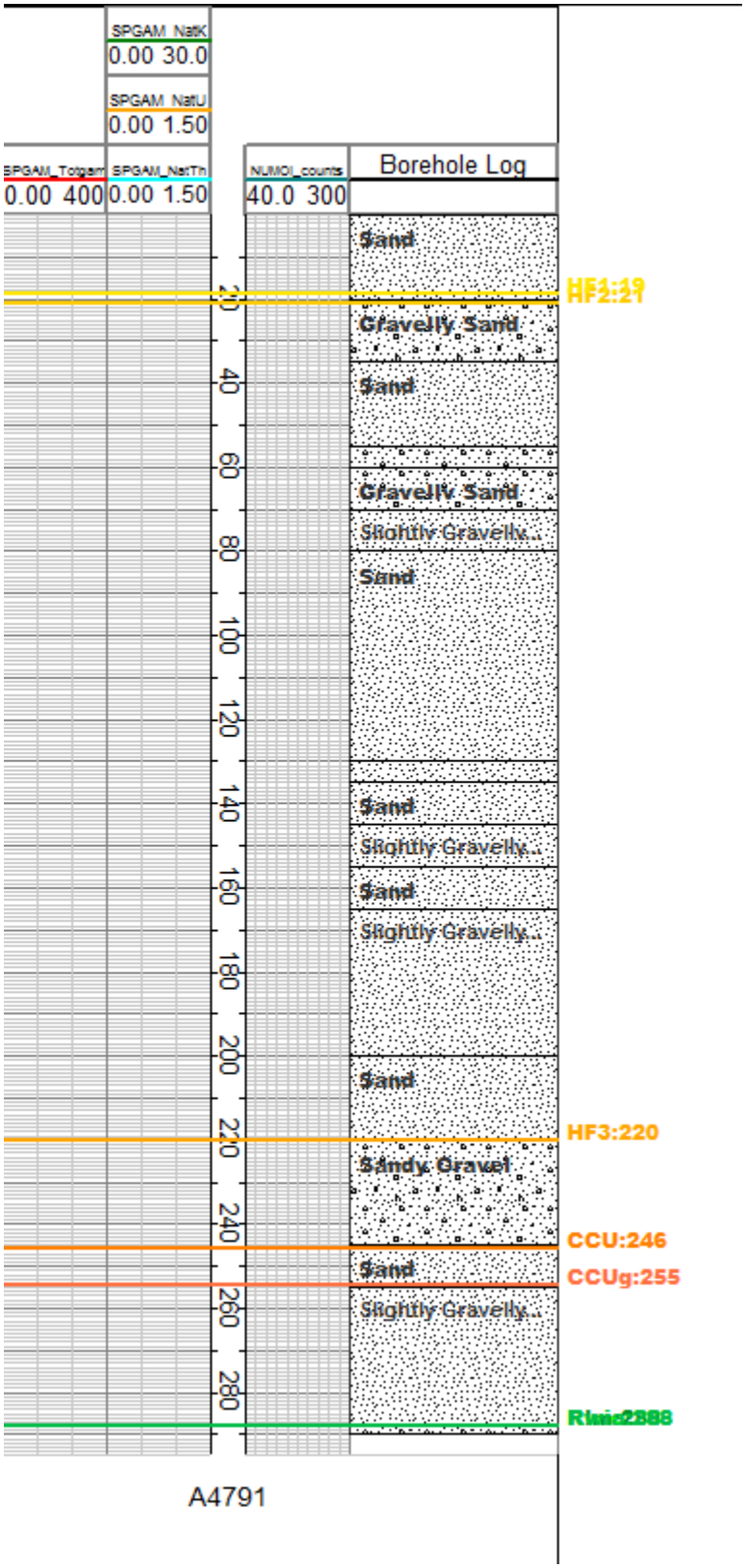
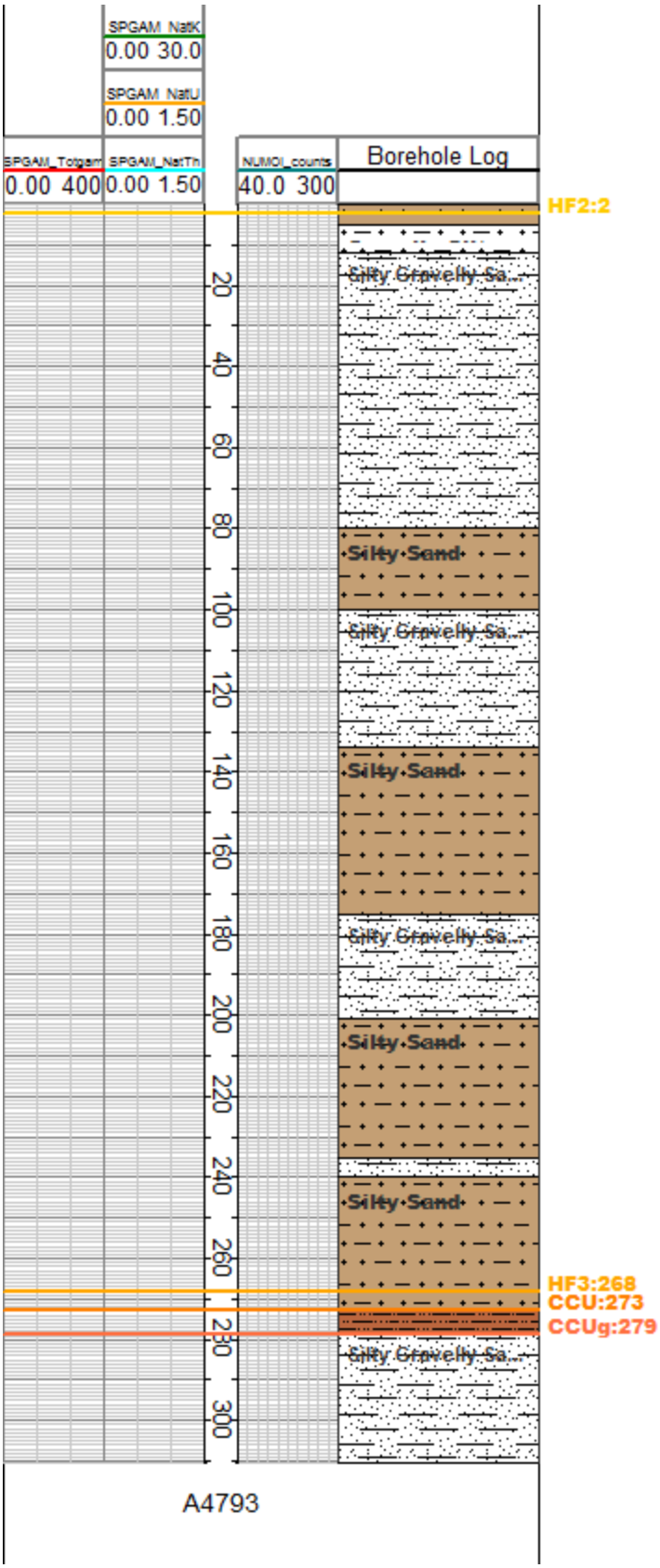
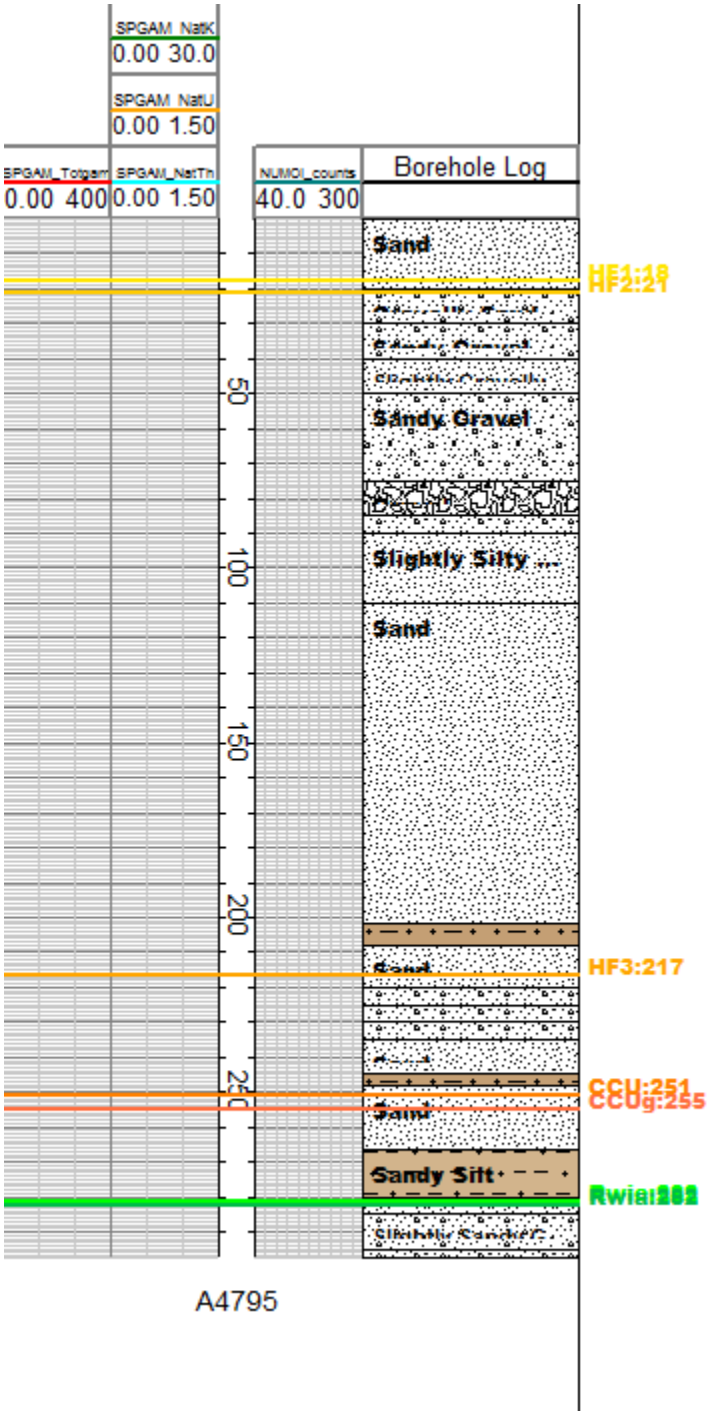
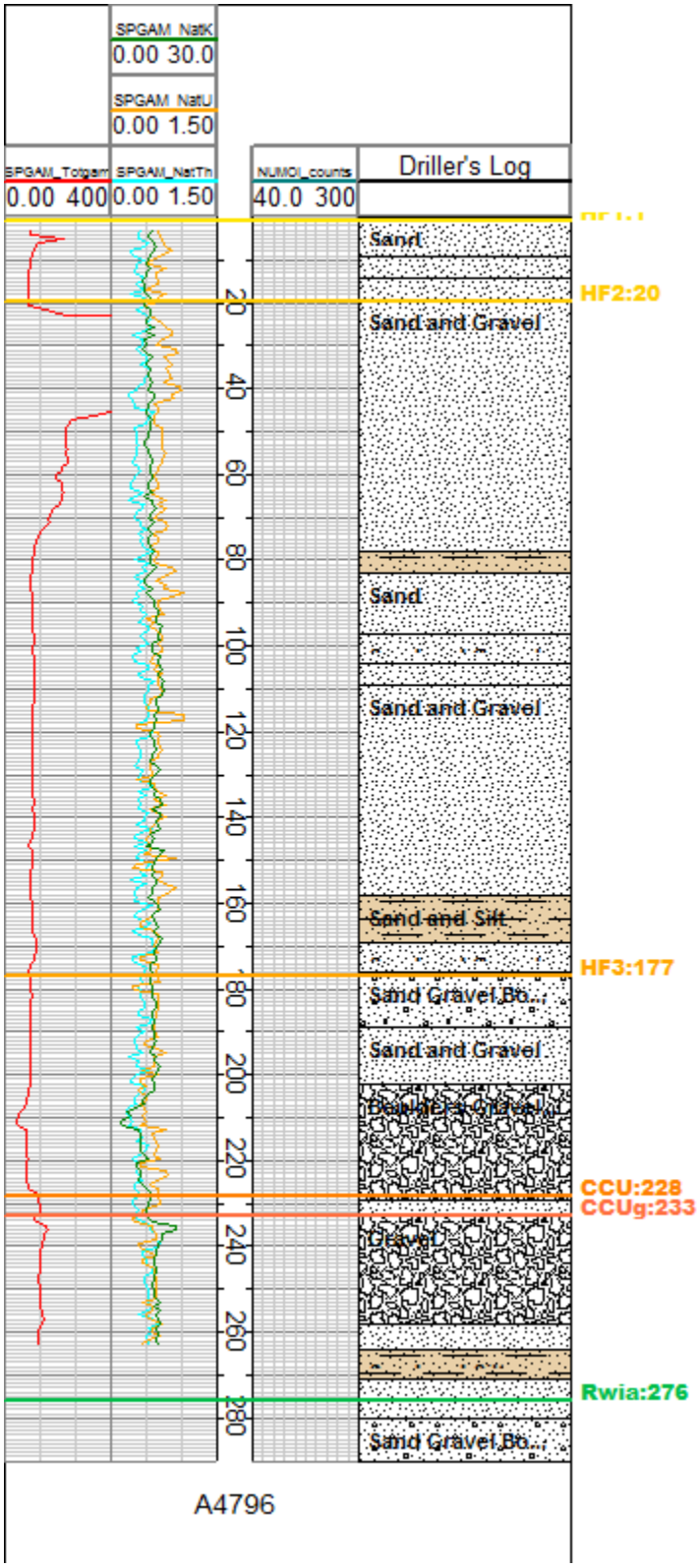
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sand
HF2:15
Sandy Gravel
Sand
Sand
Slightly Gravelly...
Gravelly Sand
Gravelly Sand
Sand
Silty Sand
Sand
Slightly Gravelly...
Sand
HF3:205
Sandy Gravel
Gravelly Sand
silty Sandy Gr...
Gravelly Sand
CCU:253
CCUg:262
Sandy Silt
Sandy Gravel
20
40
60
80
100
120
140
160
180
200
220
240
260
A4790

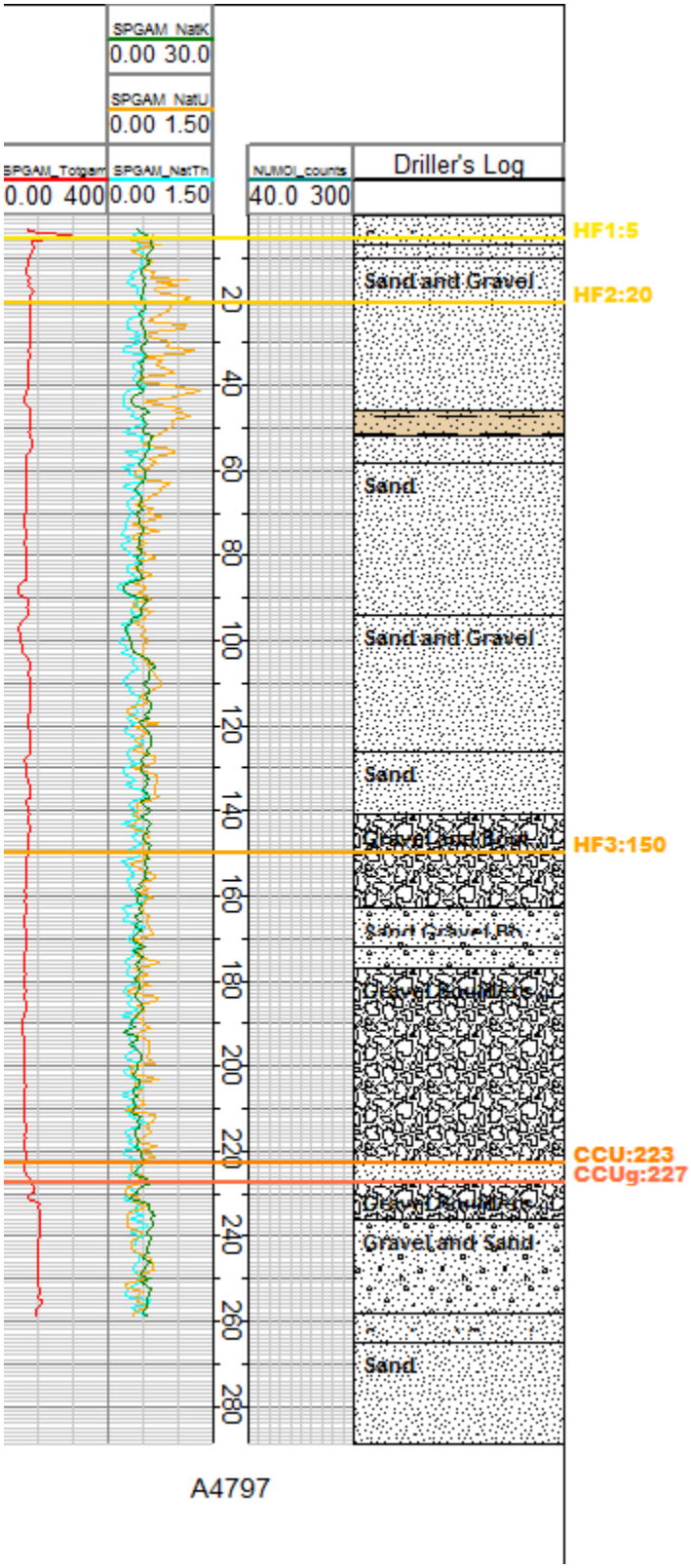

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sand
Gravelly Sand
Sand
Gravelly Sand
Slightly Gravelly...
Sand
Sand
Slightly Gravelly...
Sand
Slightly Gravelly...
Sand
Sandy Gravel
Sand
Slightly Gravelly...
HF2:21
HF3:220
CCU:246
CCUg:255
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A4791


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:2
Silty Gravelly Sa...
Silty Sand
HF3:268
CCU:273
CCUg:279
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
A4793

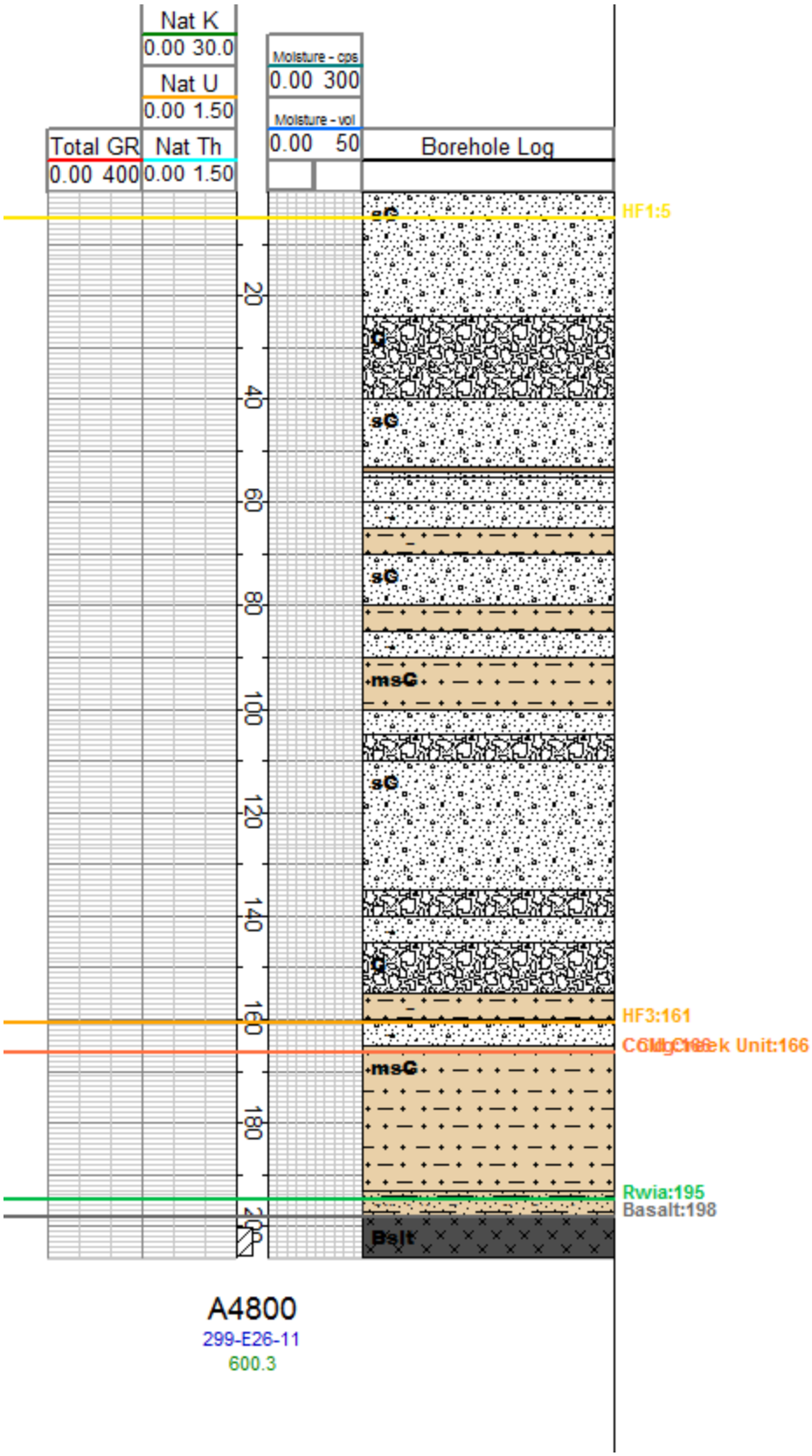

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sand
HF1:18
HF2:21
Sandy Gravel
Slightly Silty ...
Sand
HF3:217
CCU:251
CCUg:255
Sandy Silt
Rwia:282
50
100
150
200
250

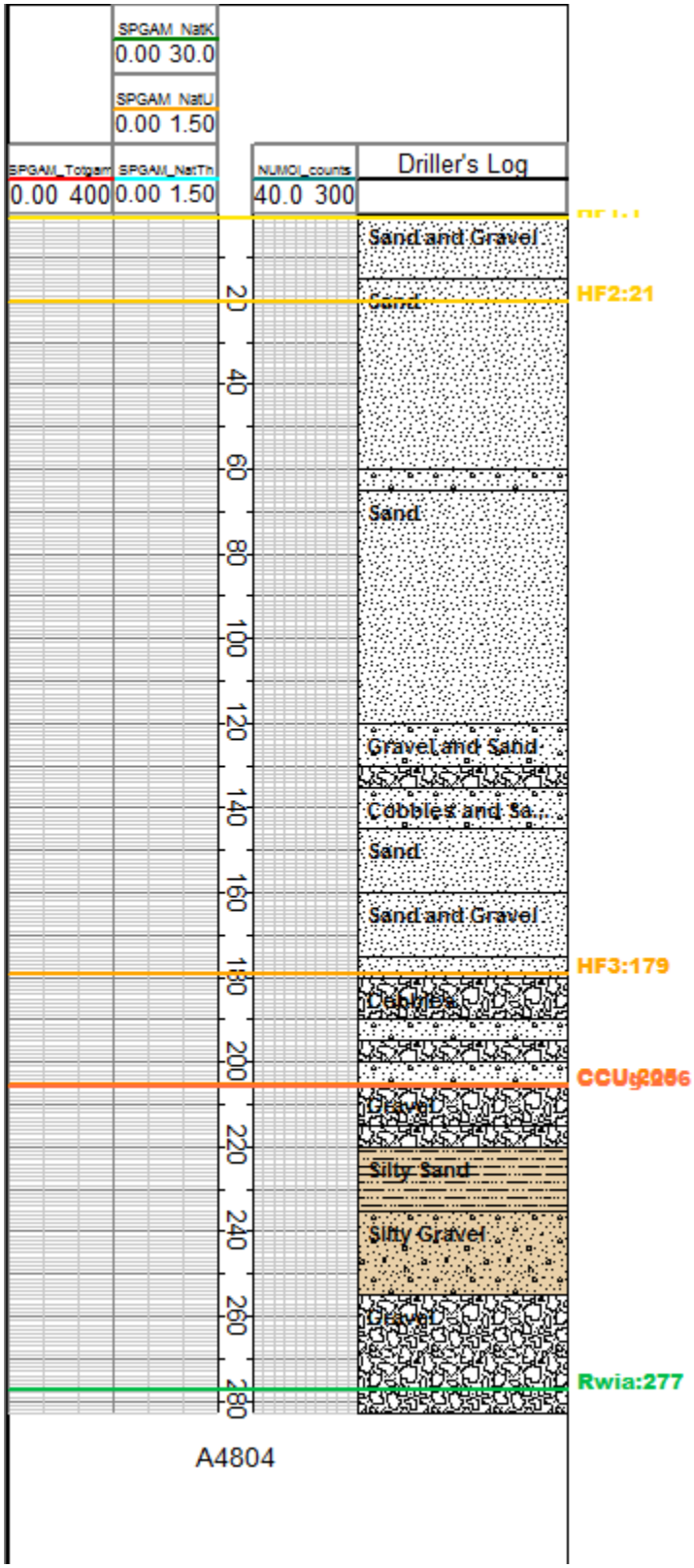
A4795

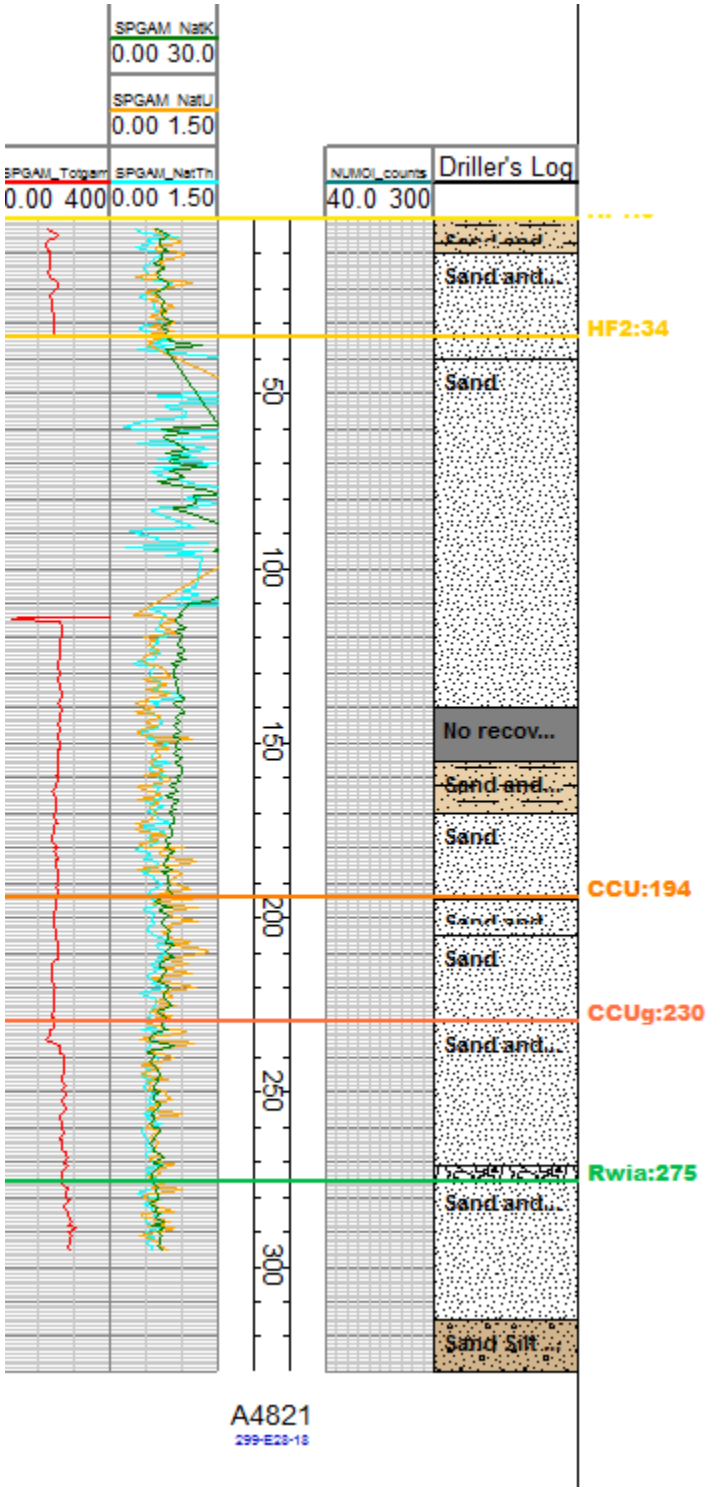

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
HF2:20
Sand and Gravel
Sand
Sand and Gravel
Sand and Silt
HF3:177
Sand Gravel Bo...
Sand and Gravel
Boulders Gravel
CCU:228
CCUg:233
Gravel
Rwia:276
Sand Gravel Bo...
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A4796

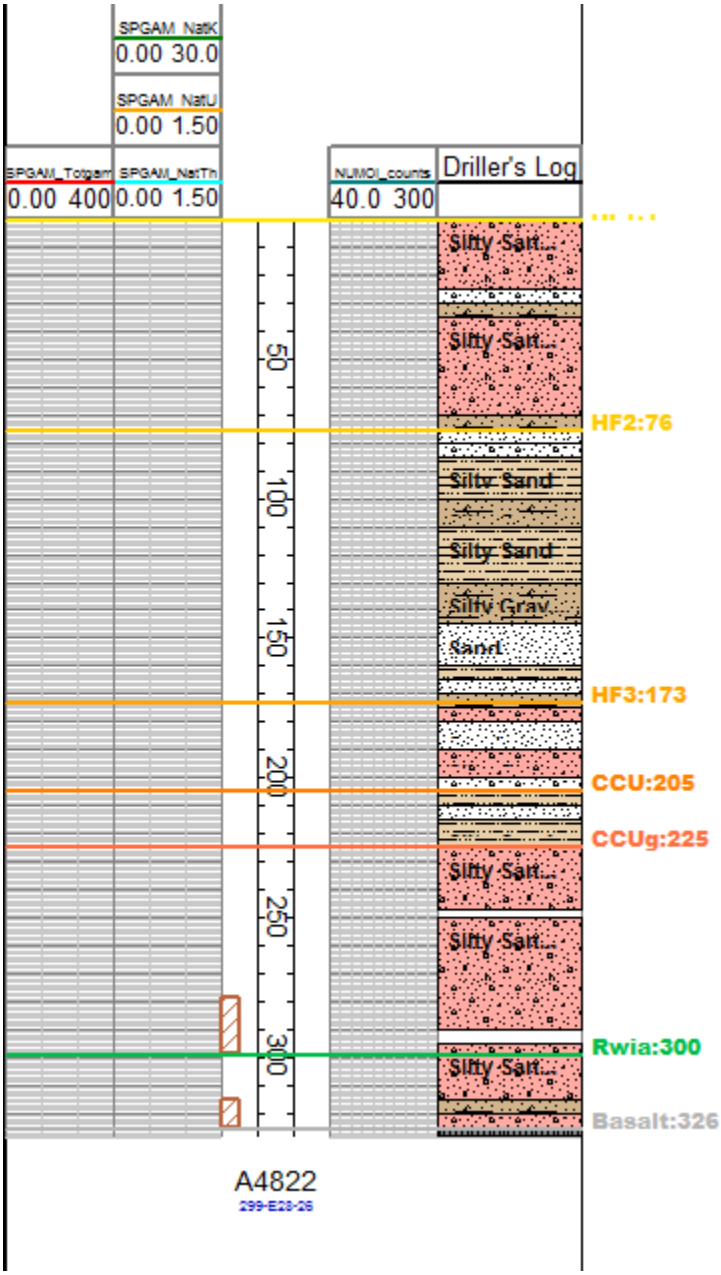

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:5
Sand and Gravel
HF2:20
Sand
Sand and Gravel
Sand
HF3:150
CCU:223
CCUg:227
Gravel and Sand
Sand
20
40
60
80
100
120
140
160
180
200
220
240
260
280

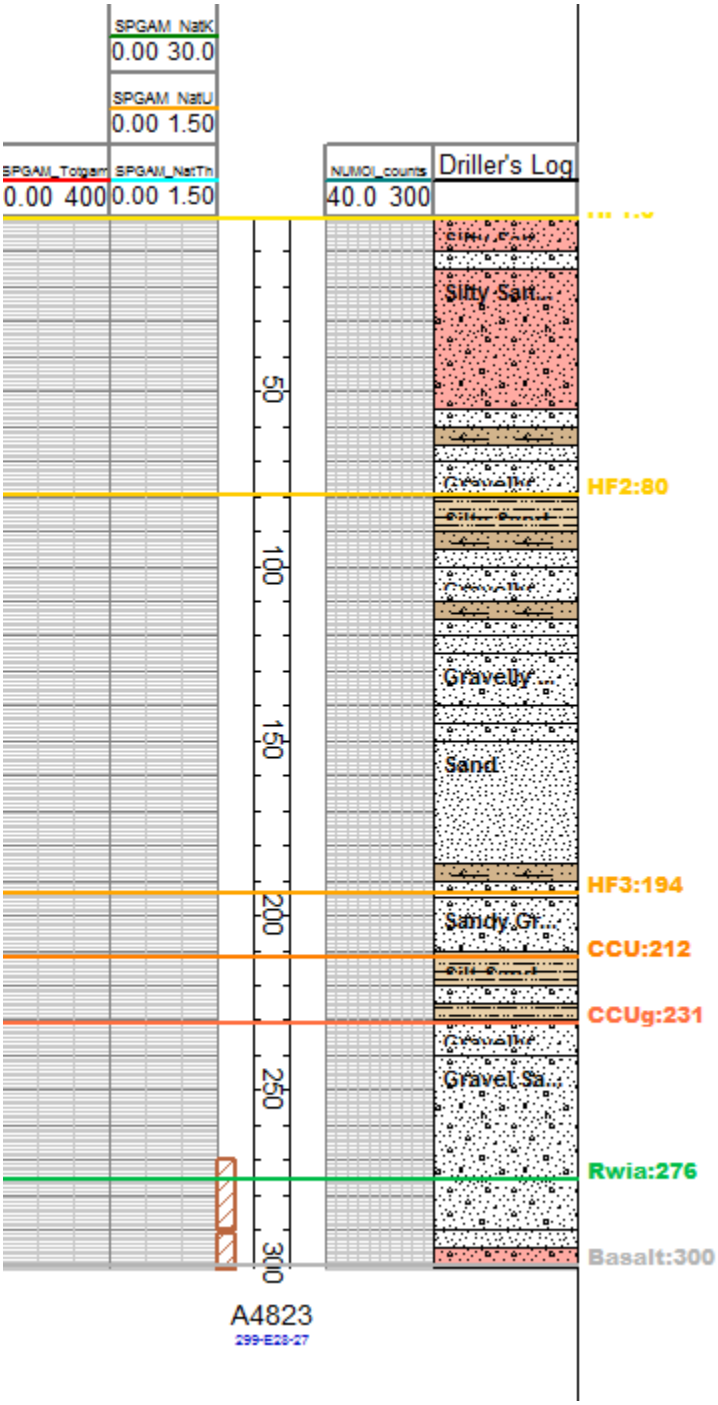
A4797

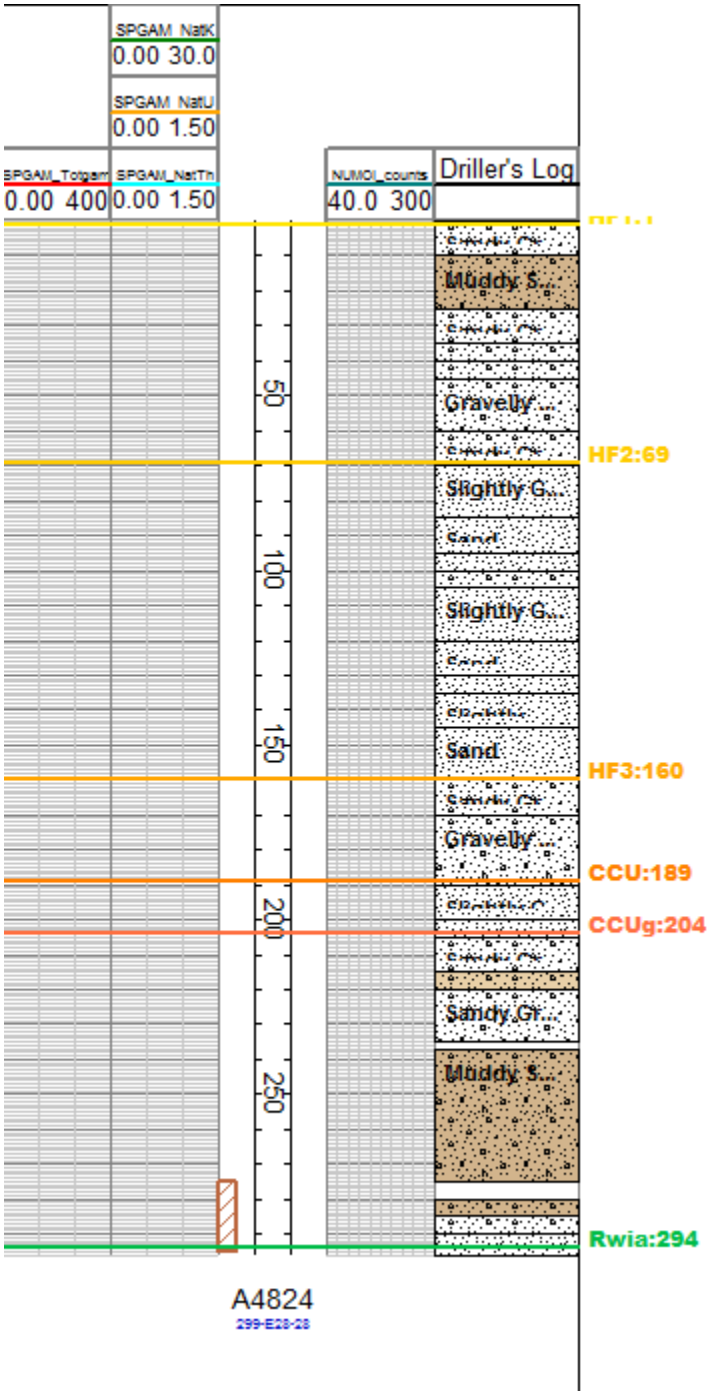

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:5
sG
G
sG
sG
msG
sG
G
HF3:161
msG
Rwia:195
Basalt:198
Basalt
20
40
60
80
100
120
140
160
180
200
A4800
299-E26-11
600.3


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and Gravel
HF2:21
Sand
Gravel and Sand
Cobbles and Sa...
Sand
Sand and Gravel
HF3:179
Cobbles
Gravel
Silty Sand
Silty Gravel
Gravel
Rwia:277
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A4804


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:34
Sand
50
100
150
No recov...
Sand and...
Sand
CCU:194
200
Sand
CCUg:230
Sand and...
250
Rwia:275
Sand and...
300
Sand Silt ...
A4821
299-E28-18


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
300
Silty Salt...
Silty Sand
Silty Grav...
Sand
HF2:76
HF3:173
CCU:205
CCUg:225
Rwia:300
Basalt:326
A4822
299-E28-26


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sant...
Gravelly ...
Sand
Sandy Gr...
Gravel Sa...
HF2:80
HF3:194
CCU:212
CCUg:231
Rwia:276
Basalt:300
50
100
150
200
250
300
A4823
299-E28-27


SPGAM_NatK
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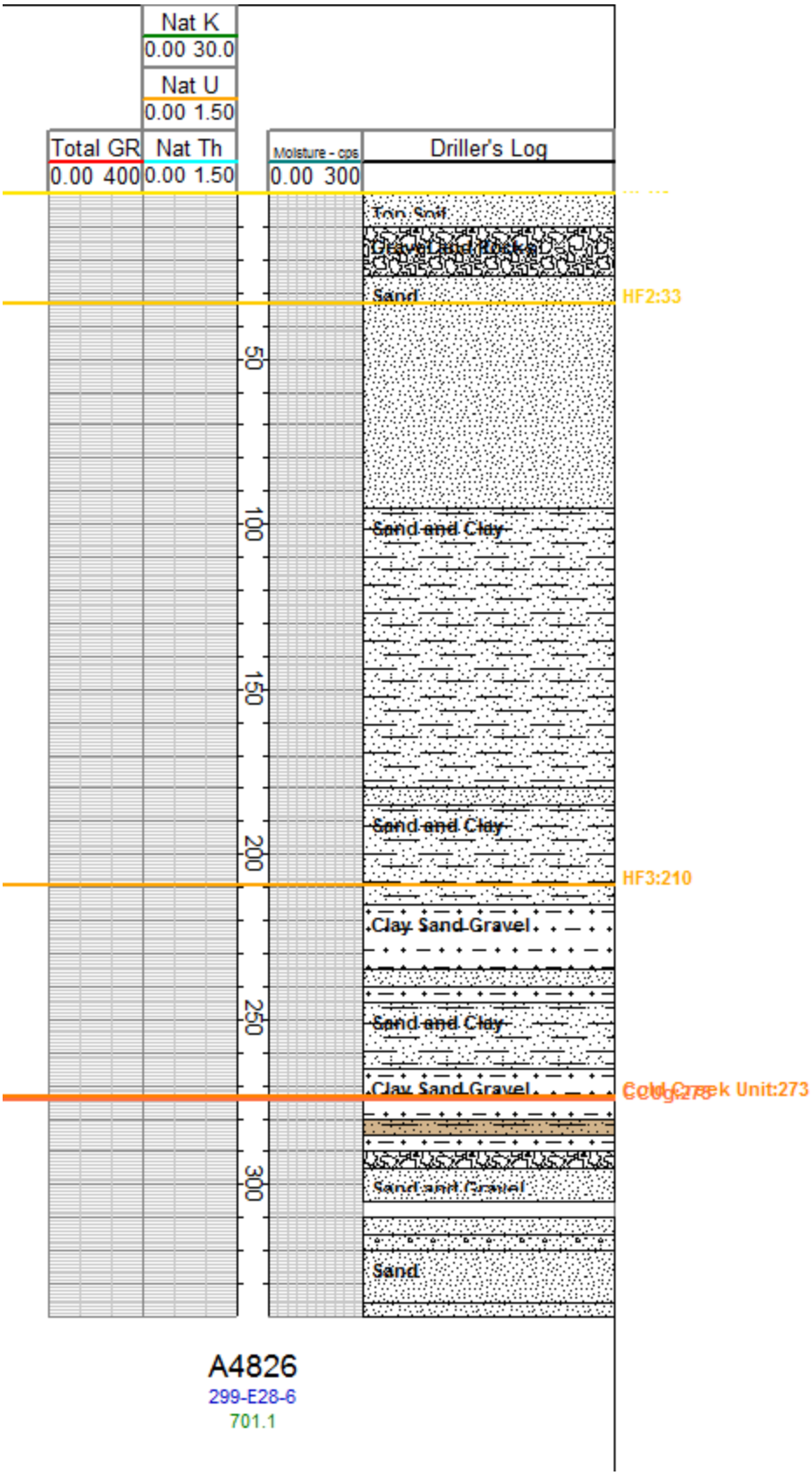
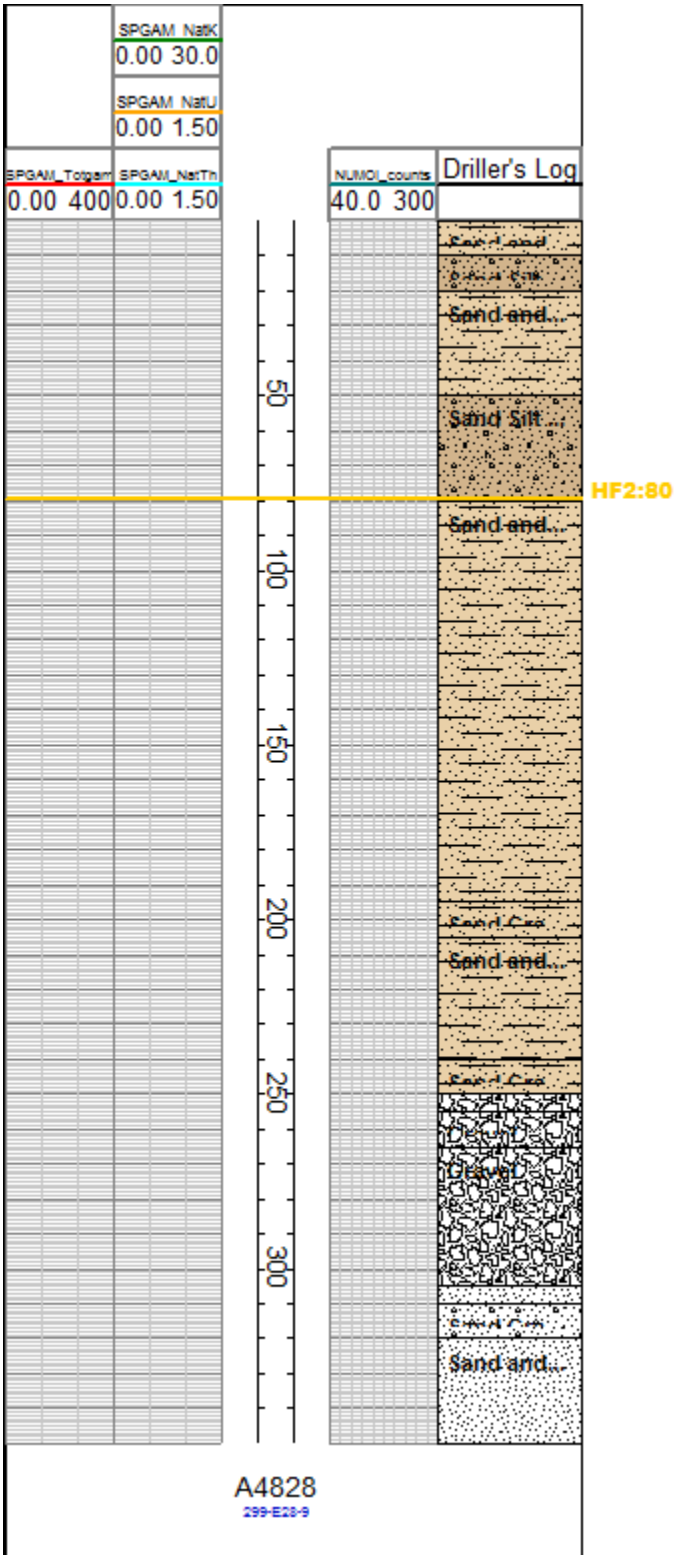
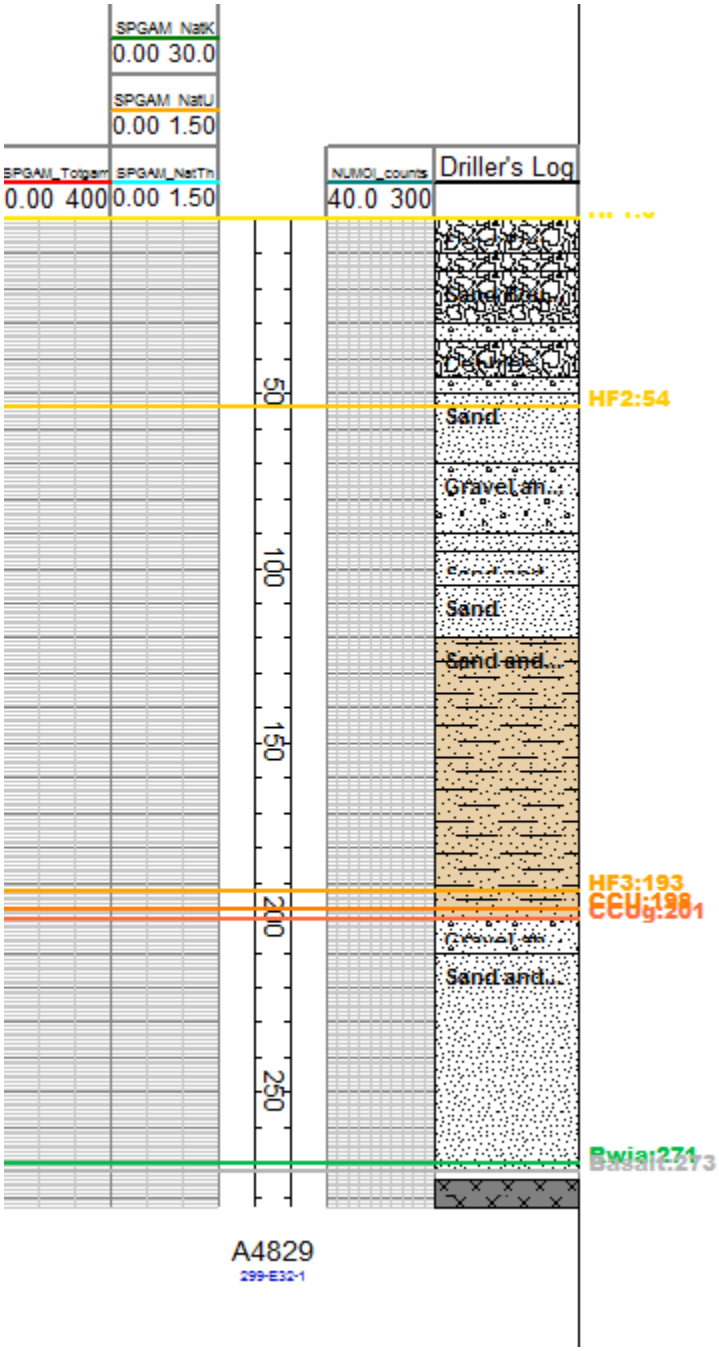
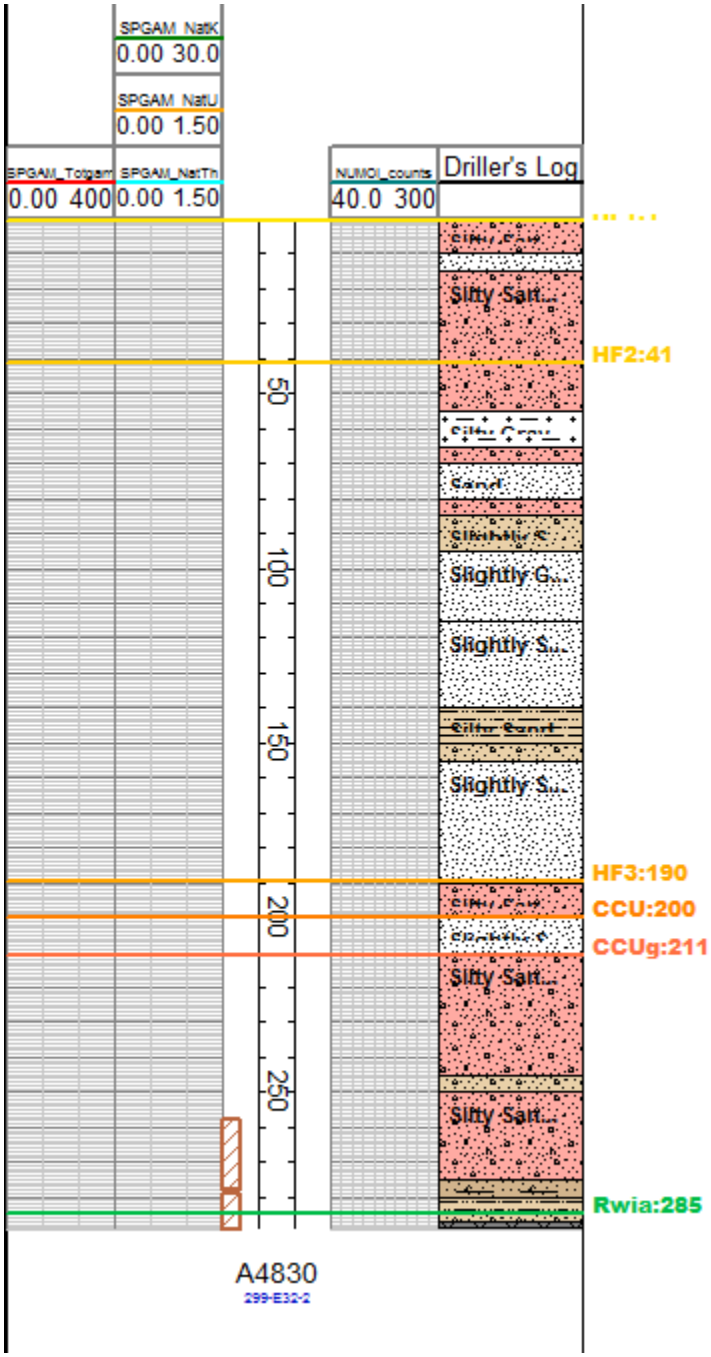
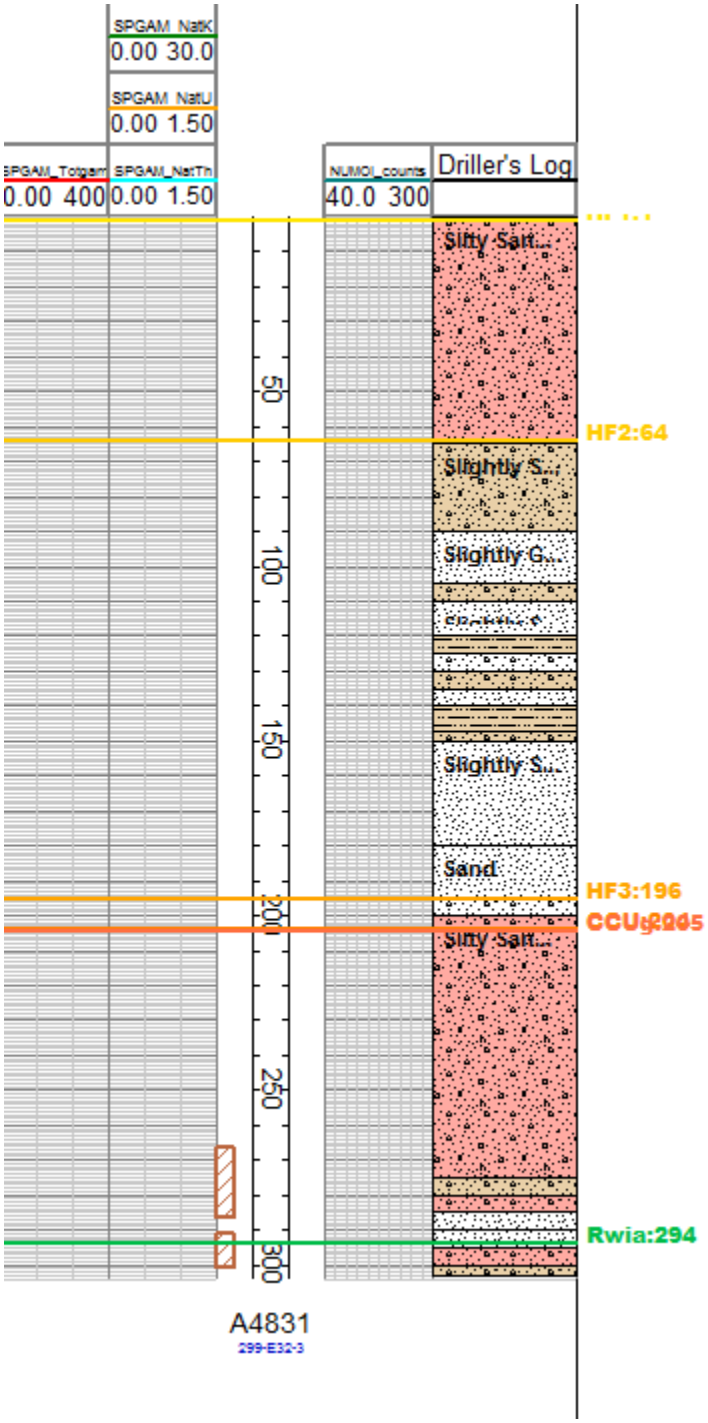
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Muddy S...
Gravelly ...
HF2:69
Slightly G...
Sand
Slightly G...
Sand
HF3:160
Gravelly ...
CCU:189
CCUg:204
Sandy Gr...
Muddy S...
Rwia:294
50
100
150
200
250
A4824
299-E28-28

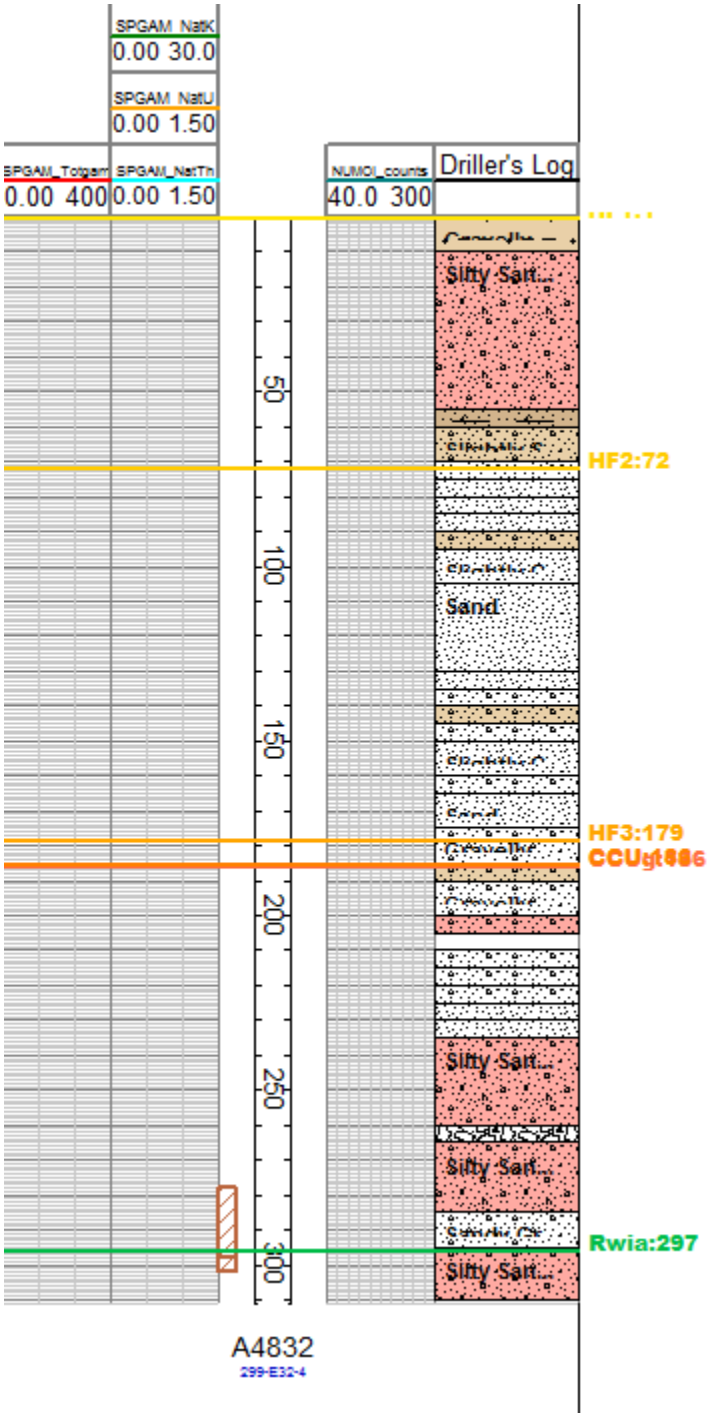

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Top Soil
Gravel and Rocks
Sand
HF2:33
50
100
Sand and Clay
150
Sand and Clay
200
HF3:210
Clay Sand Gravel
250
Sand and Clay
Clay Sand Gravel
Cold Creek Unit:273
300
Sand and Gravel
Sand
A4826
299-E28-6
701.1

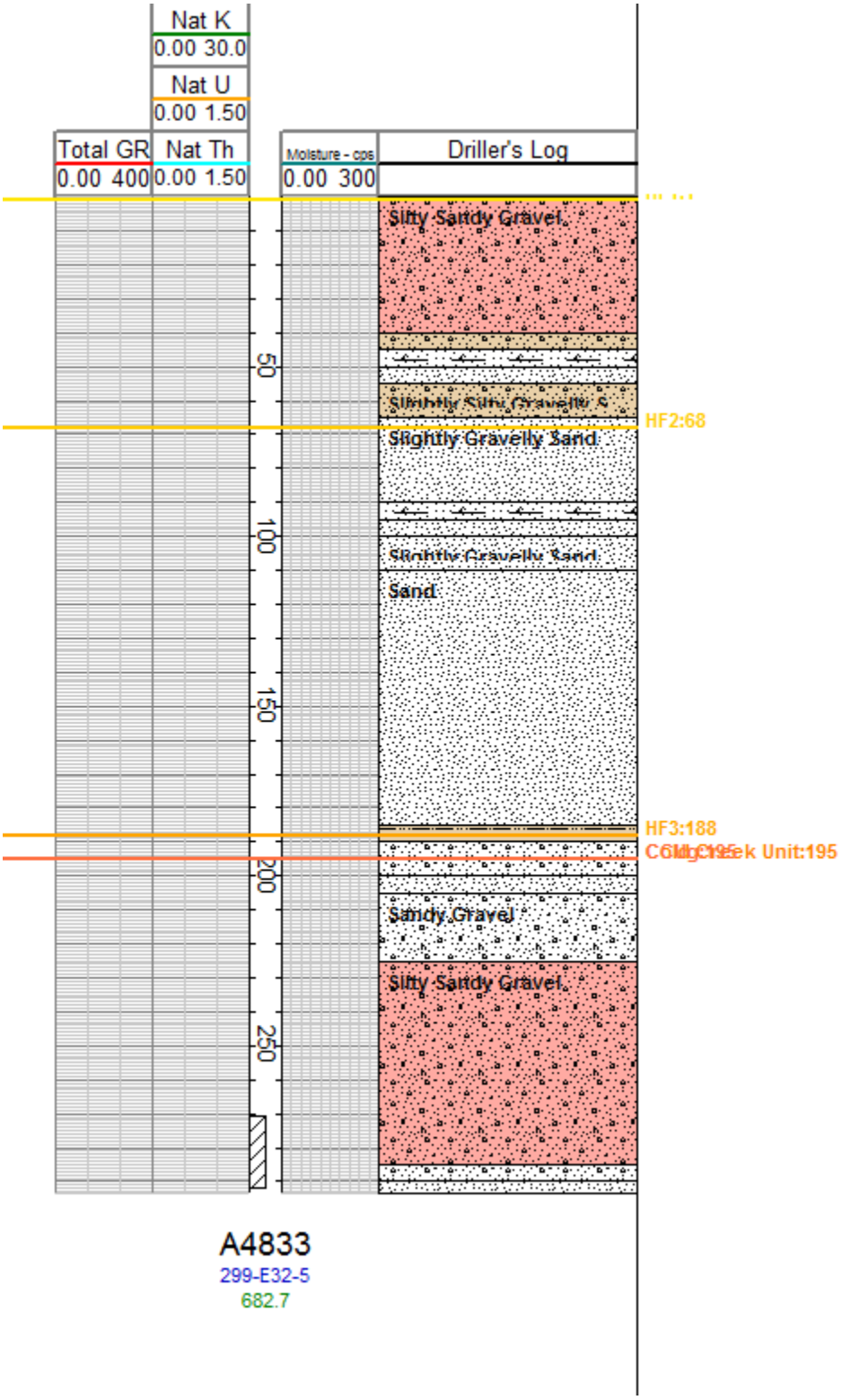

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
Sand Silt ...
HF2:80
Sand and...
Sand and...
Gravel
Sand and...
50
100
150
200
250
300
A4828
299-E28-9

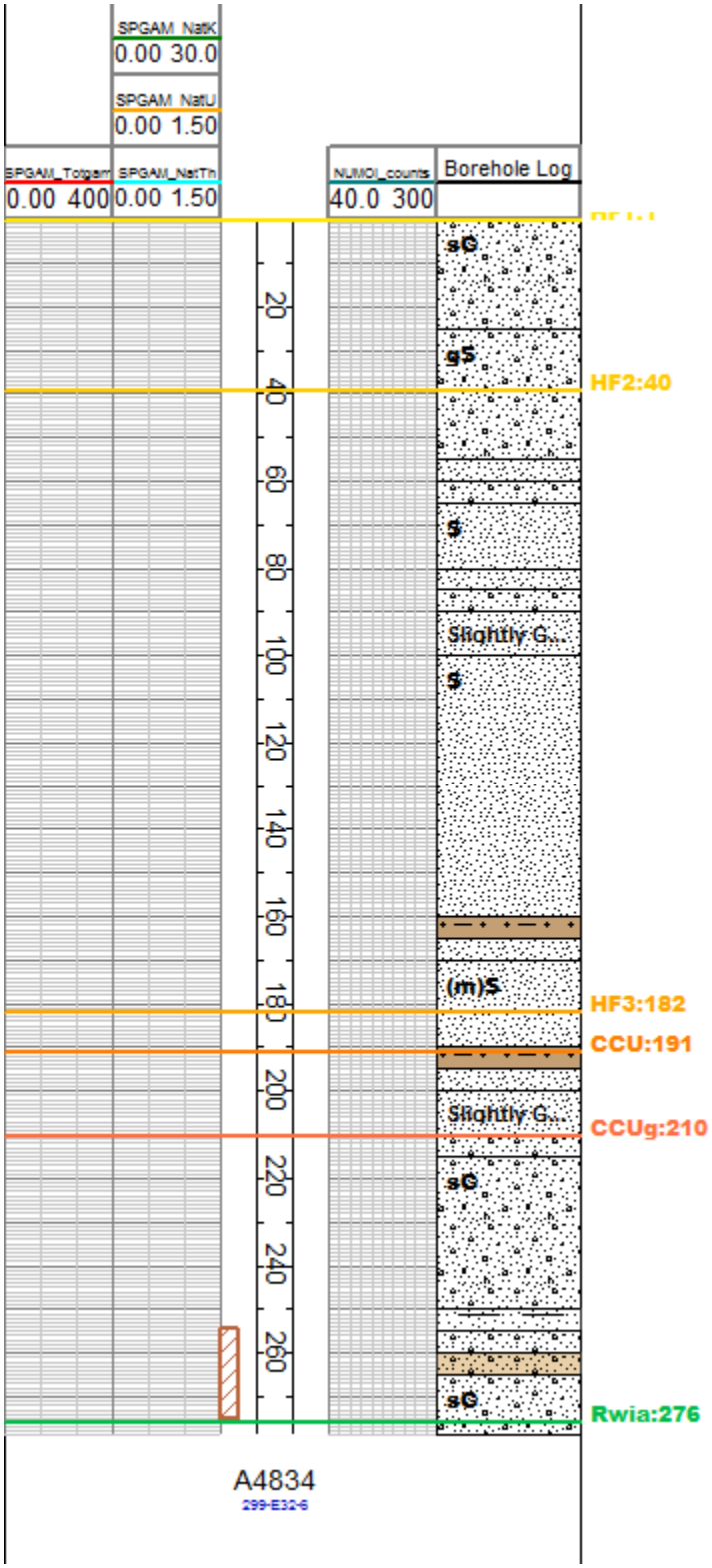

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
HF2:54
Sand
Gravel,an...
Sand
Sand and...
HF3:193
CCU:198
CCUg:201
Sand and...
Bwia:271
Basalt:273
A4829
299-E32-1

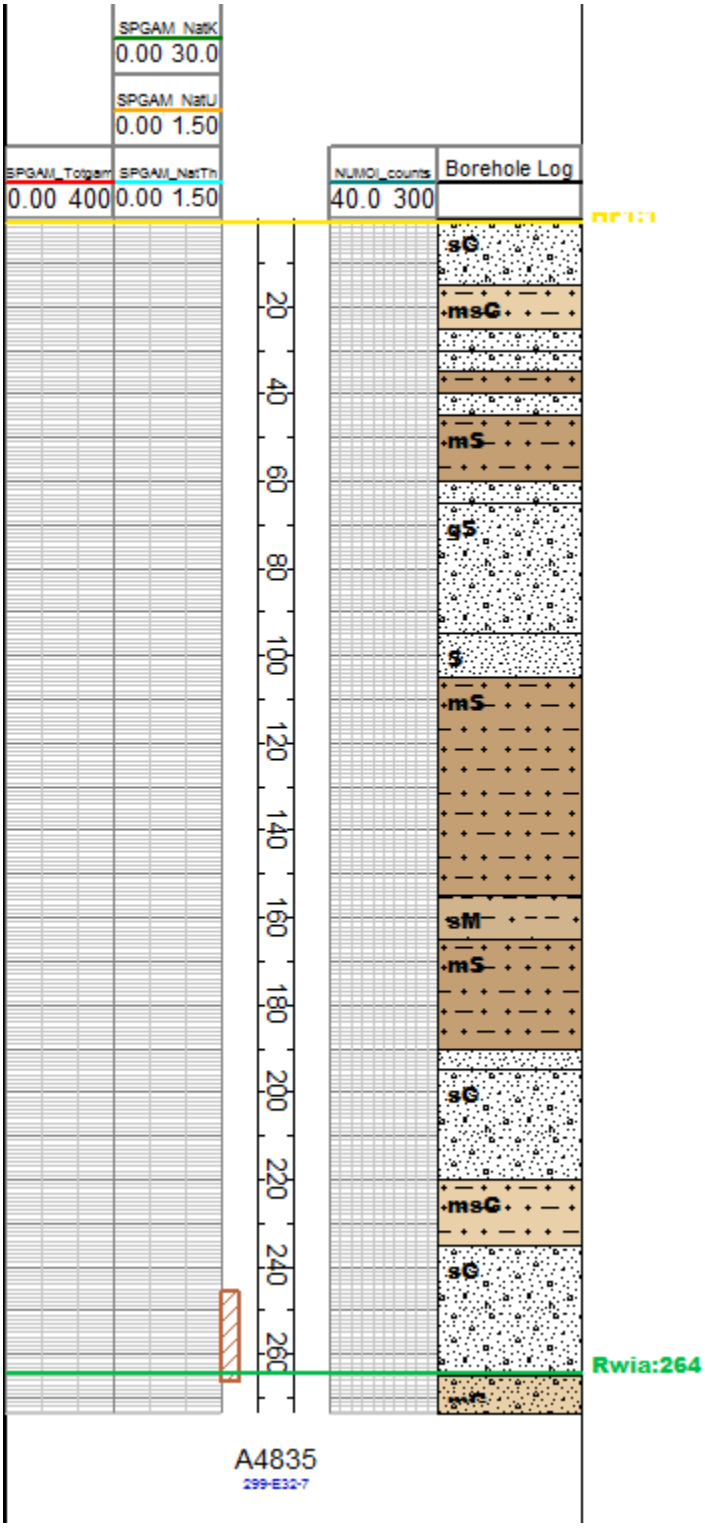

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sant...
HF2:41
50
100
Slightly G...
Slightly S...
150
Slightly S...
HF3:190
CCU:200
200
CCUg:211
Silty Sant...
250
Silty Sant...
Rwia:285
A4830
299-E32-2

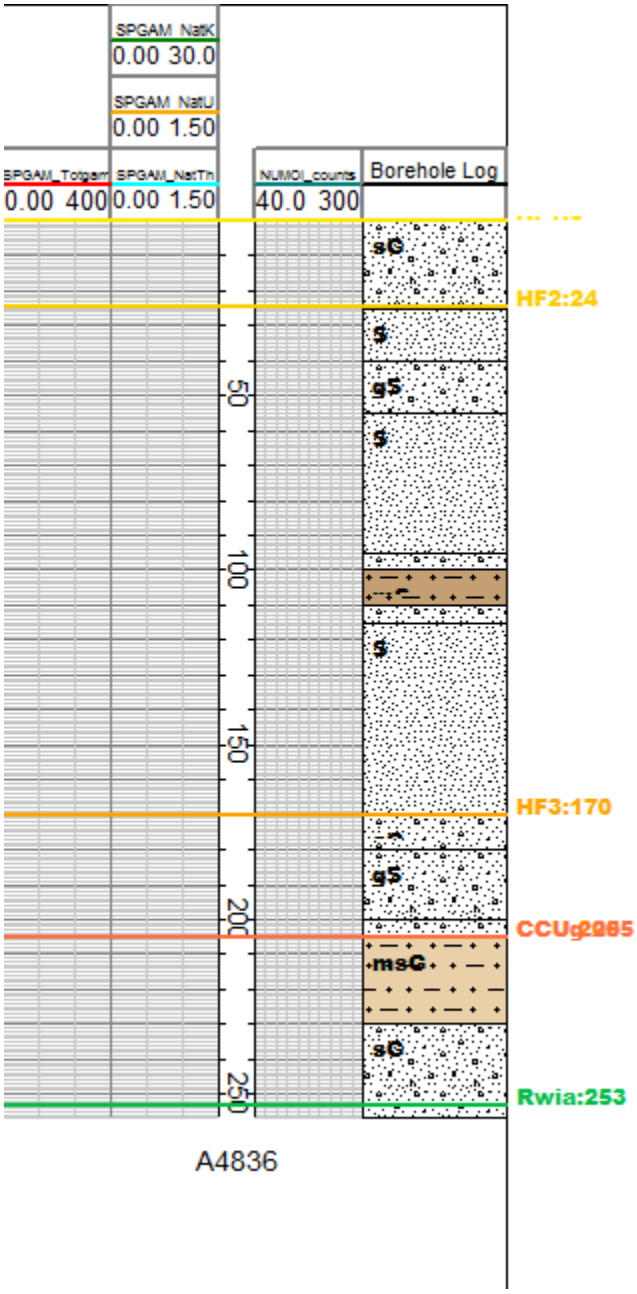

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand...
HF2:64
Slightly S...
Slightly G...
Slightly S...
Sand
HF3:196
CCU:205
Silty Sand...
Rwia:294
50
100
150
200
250
300
A4831
299-E32-3

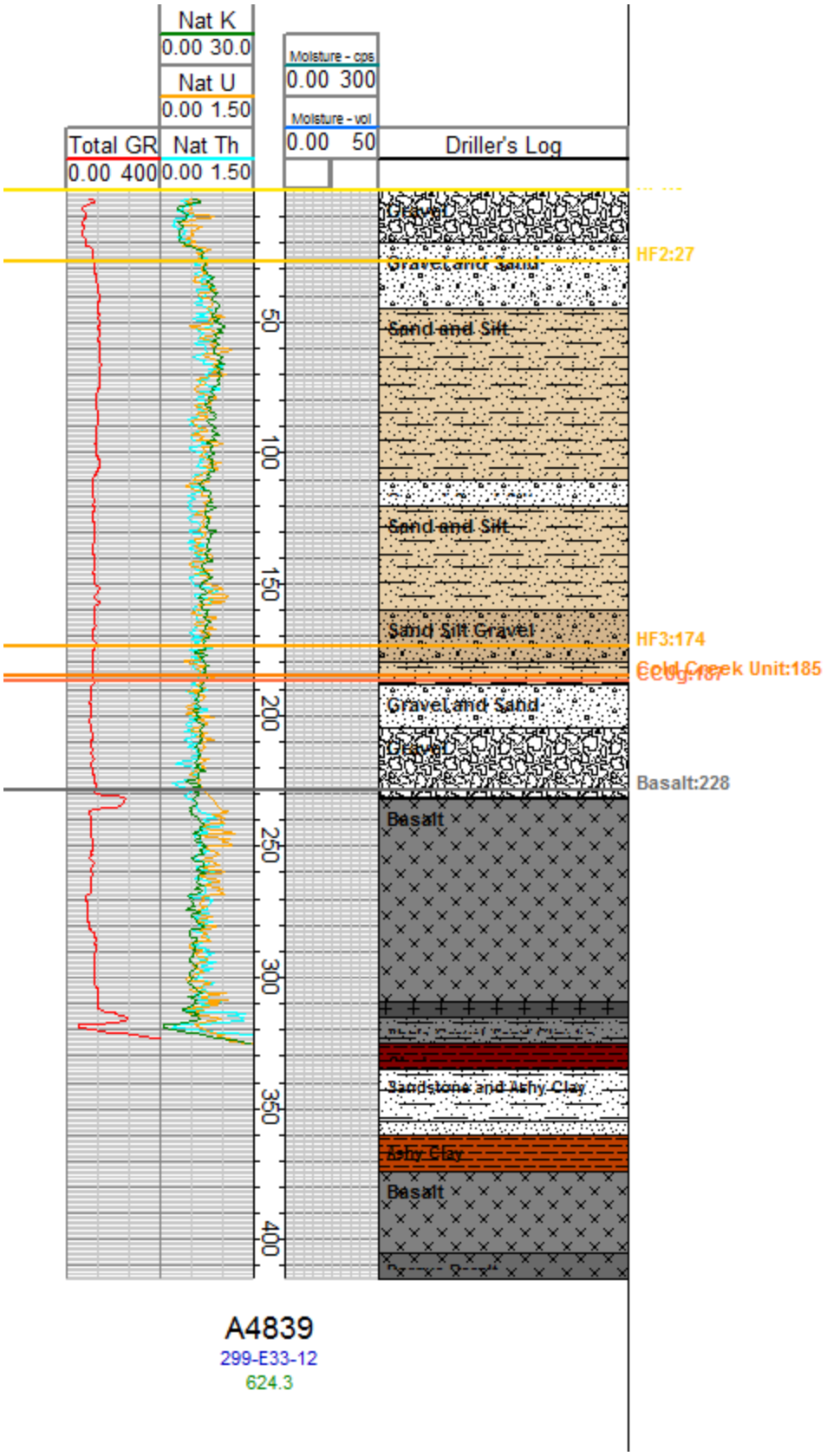

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sant...
HF2:72
Sand
HF3:179
CCUgt886
Silty Sant...
Silty Sant...
Rwia:297
Silty Sant...
50
100
150
200
250
300
A4832
299-E32-4

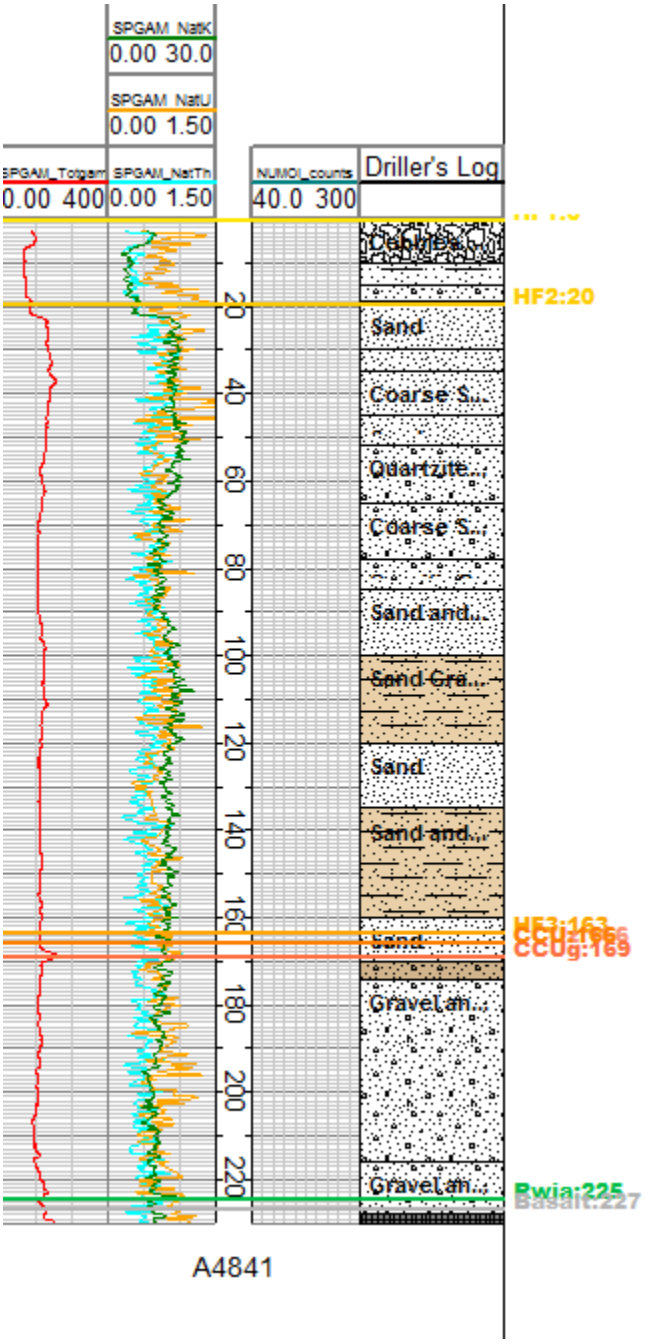

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silty Sandy Gravel
Slightly Gravelly Sand
Sand
Sandy Gravel
Silty Sandy Gravel
50
100
150
200
250
HF2:68
HF3:188
Unit:195
A4833
299-E32-5
682.7


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
sG
gS
HF2:40
S
Slightly G...
S
(m)S
HF3:182
CCU:191
Slightly G...
CCUg:210
sG
sG
Rwia:276
20
40
60
80
100
120
140
160
180
200
220
240
260
A4834
299-E32-6

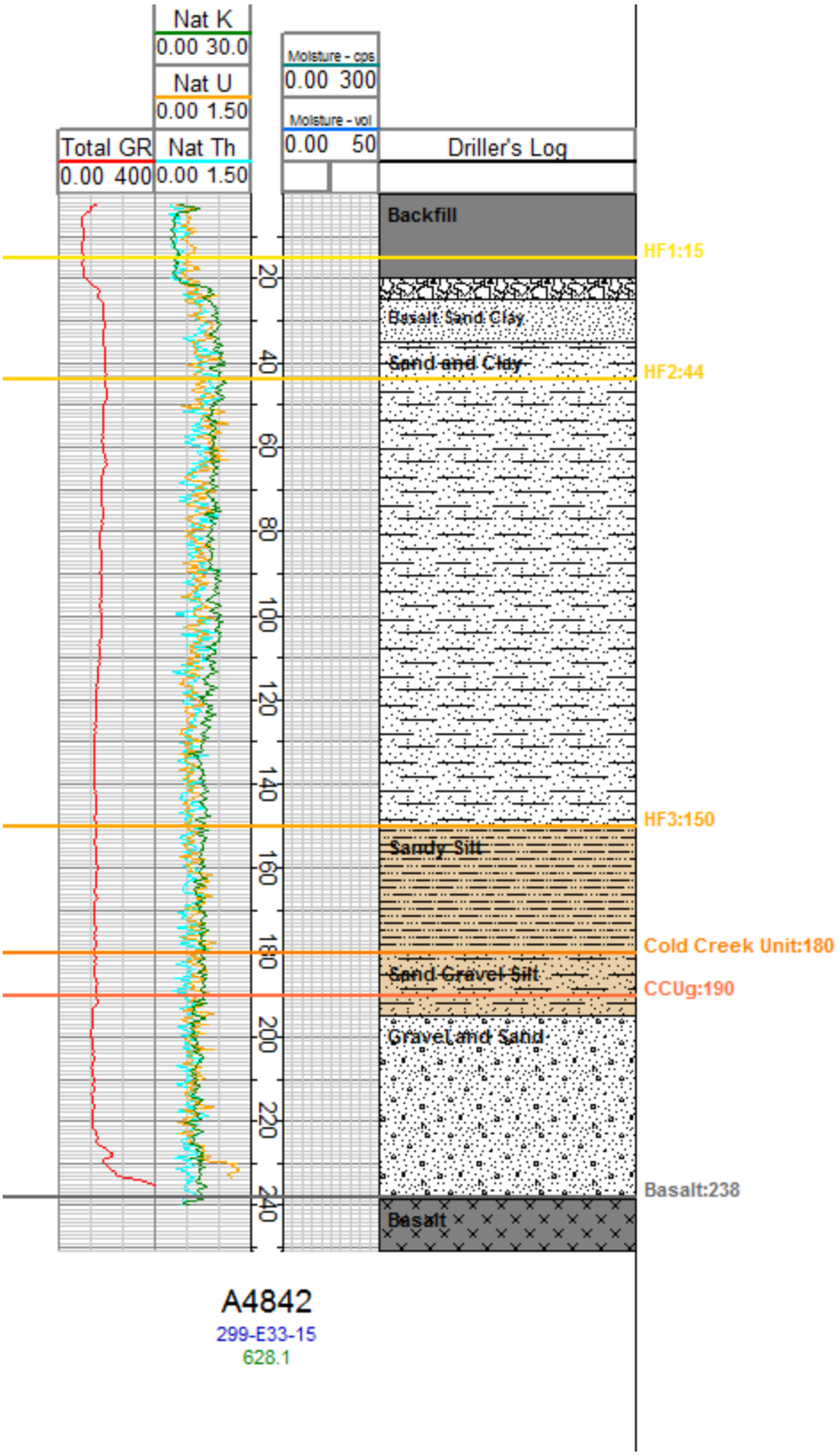

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
sG
msG
mS
gS
S
mS
sM
mS
sG
msG
sG
Rwia:264
20
40
60
80
100
120
140
160
180
200
220
240
260
A4835
299-E32-7

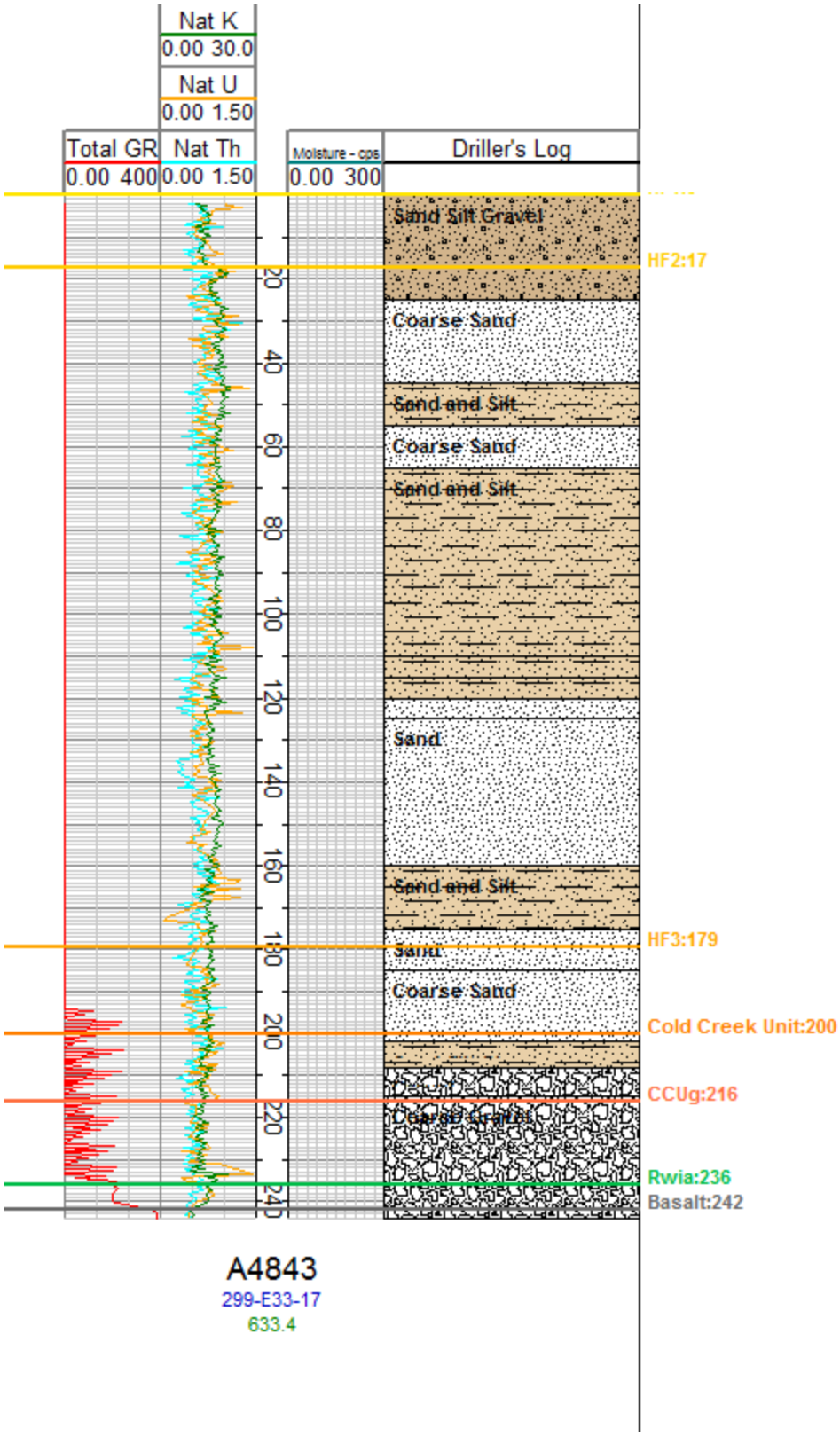

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:24
HF3:170
CCUg:285
Rwia:253
50
100
150
200
250
A4836

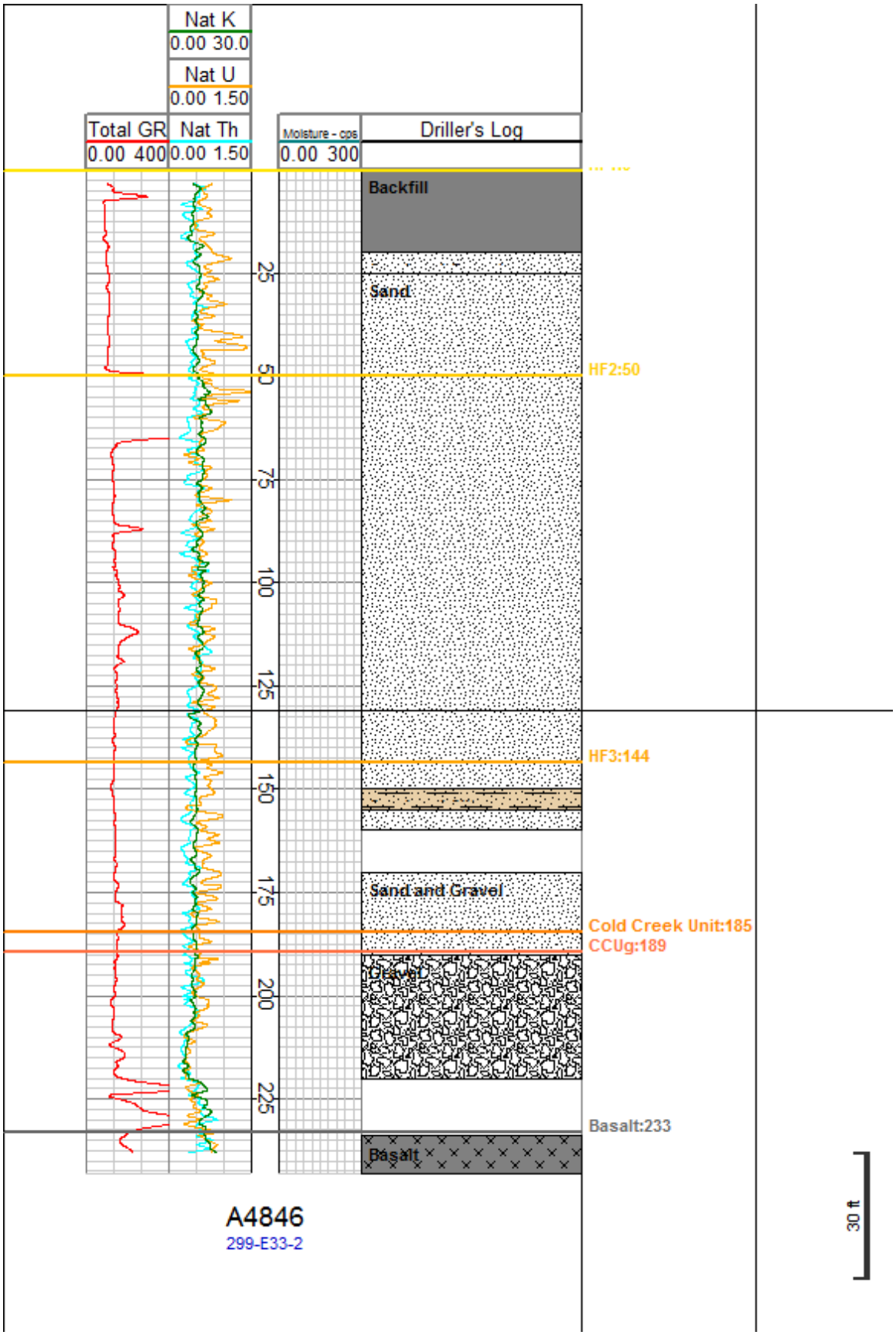

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
50
100
150
200
250
300
350
400
Gravel
Gravel and Sand
Sand and Silt
Sand and Silt
Sand Silt Gravel
Gravel and Sand
Gravel
Basalt
Sandstone and Ashy Clay
Ashy Clay
Basalt
HF2:27
HF3:174
Cold Creek Unit:185
Basalt:228
A4839
299-E33-12
624.3

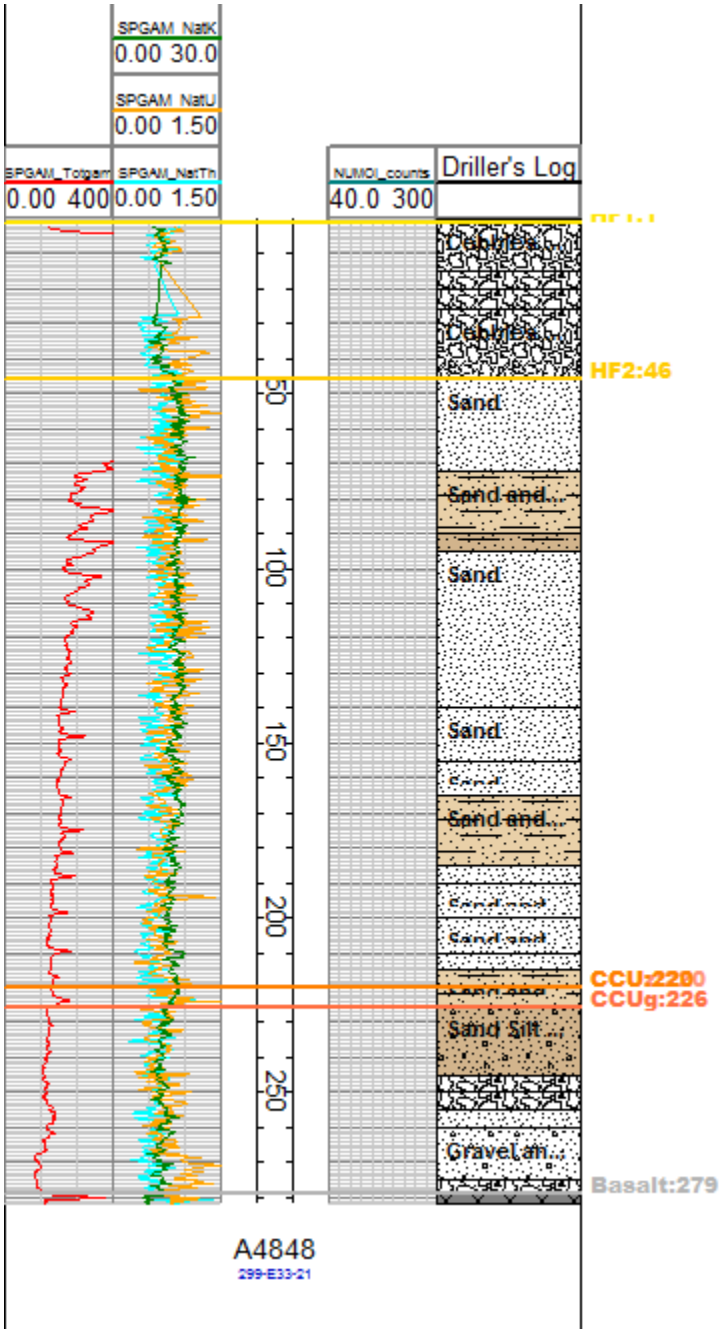

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:20
Sand
Coarse S...
Quartzite...
Coarse S...
Sand and...
Sand Gra...
Sand
Sand and...
Sand
CCUg:169
Gravel,an...
Gravel,an...
Pwia:225
Basalt:227
20
40
60
80
100
120
140
160
180
200
220

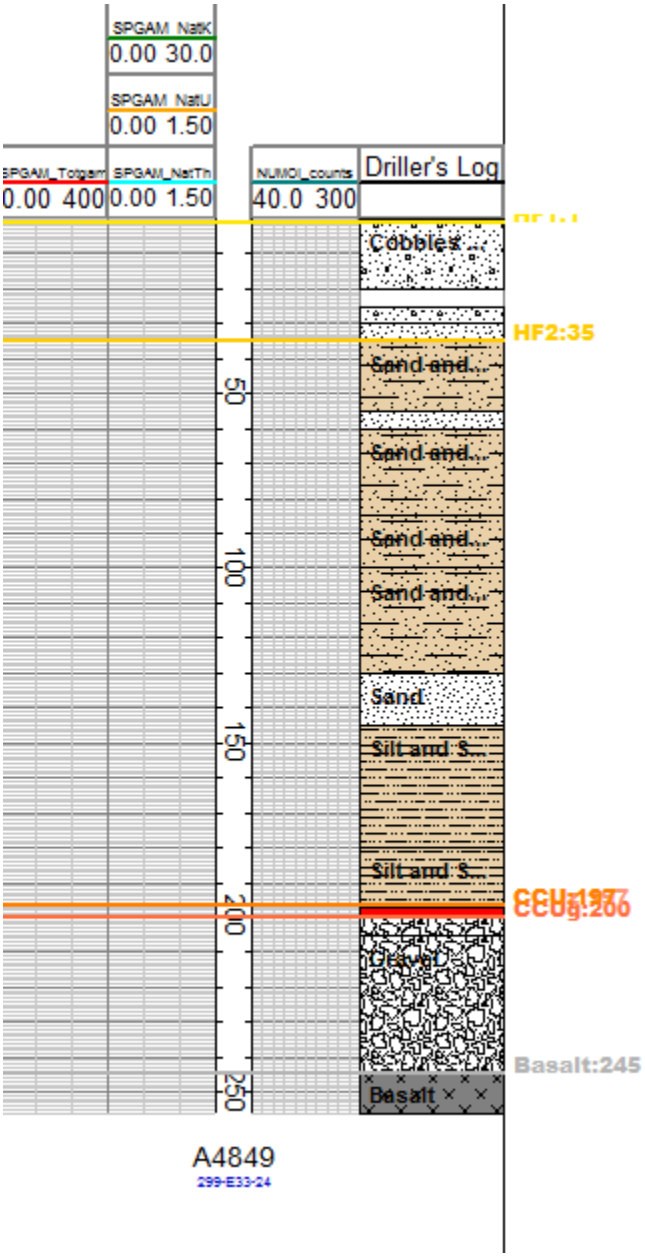
A4841

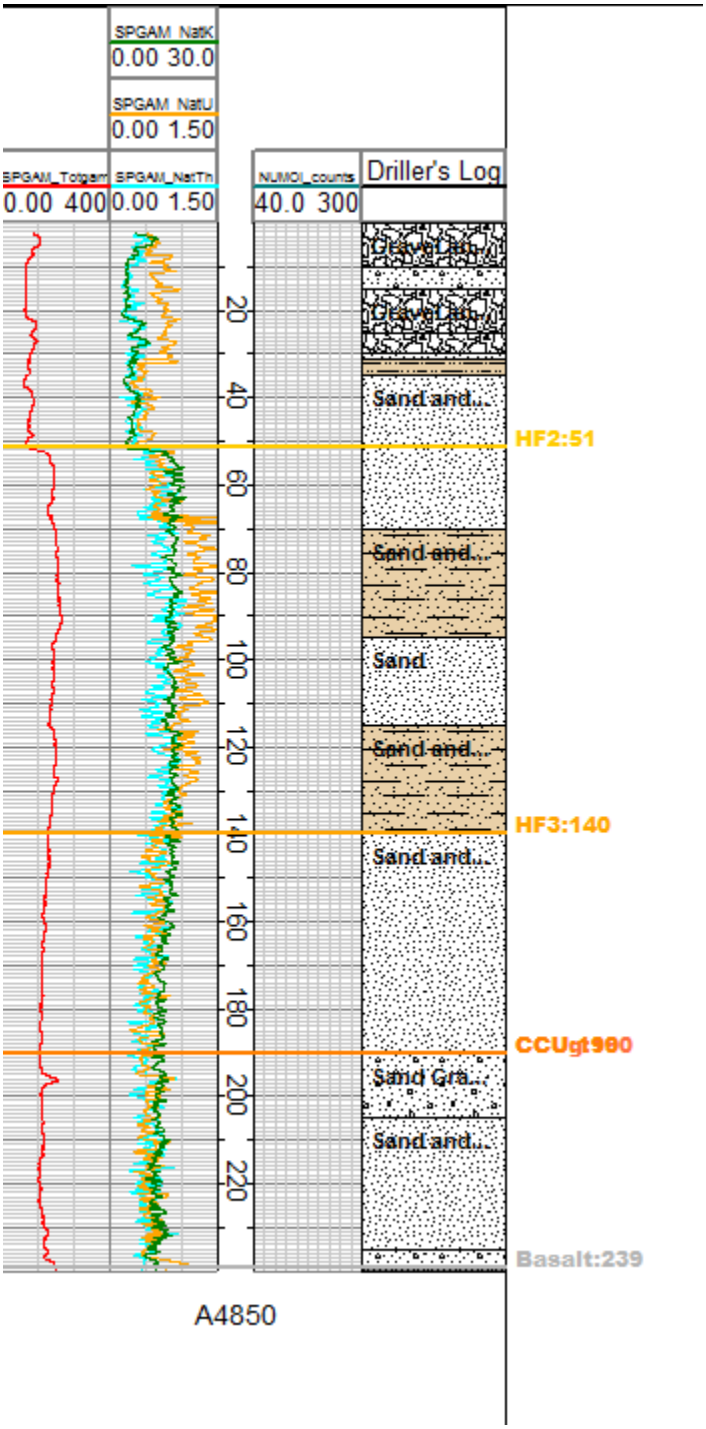

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Backfill
HF1:15
Basalt Sand Clay
Sand and Clay
HF2:44
HF3:150
Sandy Silt
Cold Creek Unit:180
Sand Gravel Silt
CCUg:190
Gravel and Sand
Basalt:238
Basalt
20
40
60
80
100
120
140
160
180
200
220
240
A4842
299-E33-15
628.1

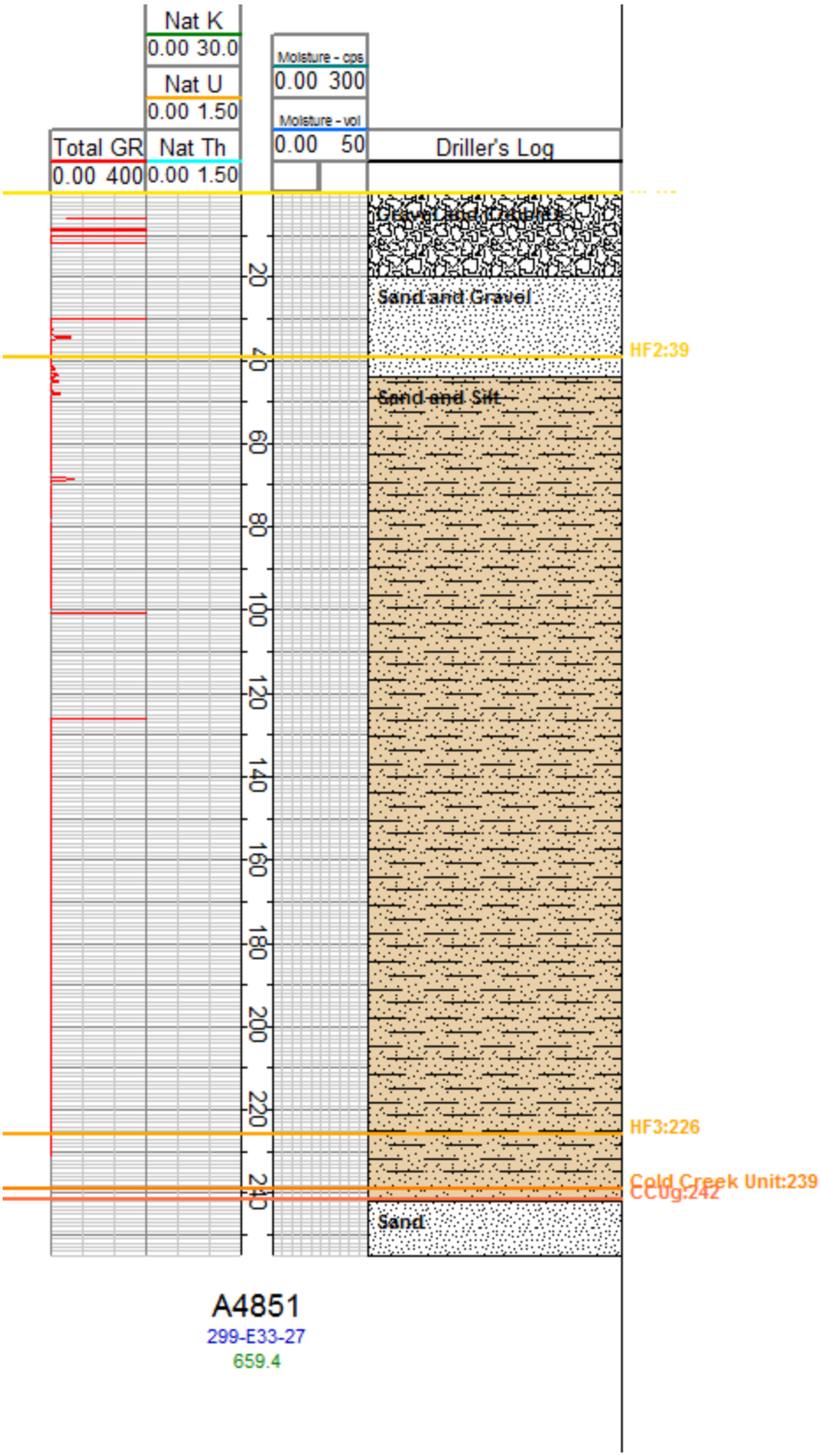

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand Silt Gravel
HF2:17
Coarse Sand
Sand and Silt
Coarse Sand
Sand and Silt
Sand
Sand and Silt
HF3:179
Sand
Coarse Sand
Cold Creek Unit:200
CCUg:216
Coarse Gravel
Rwia:236
Basalt:242
20
40
60
80
100
120
140
160
180
200
220
240
A4843
299-E33-17
633.4

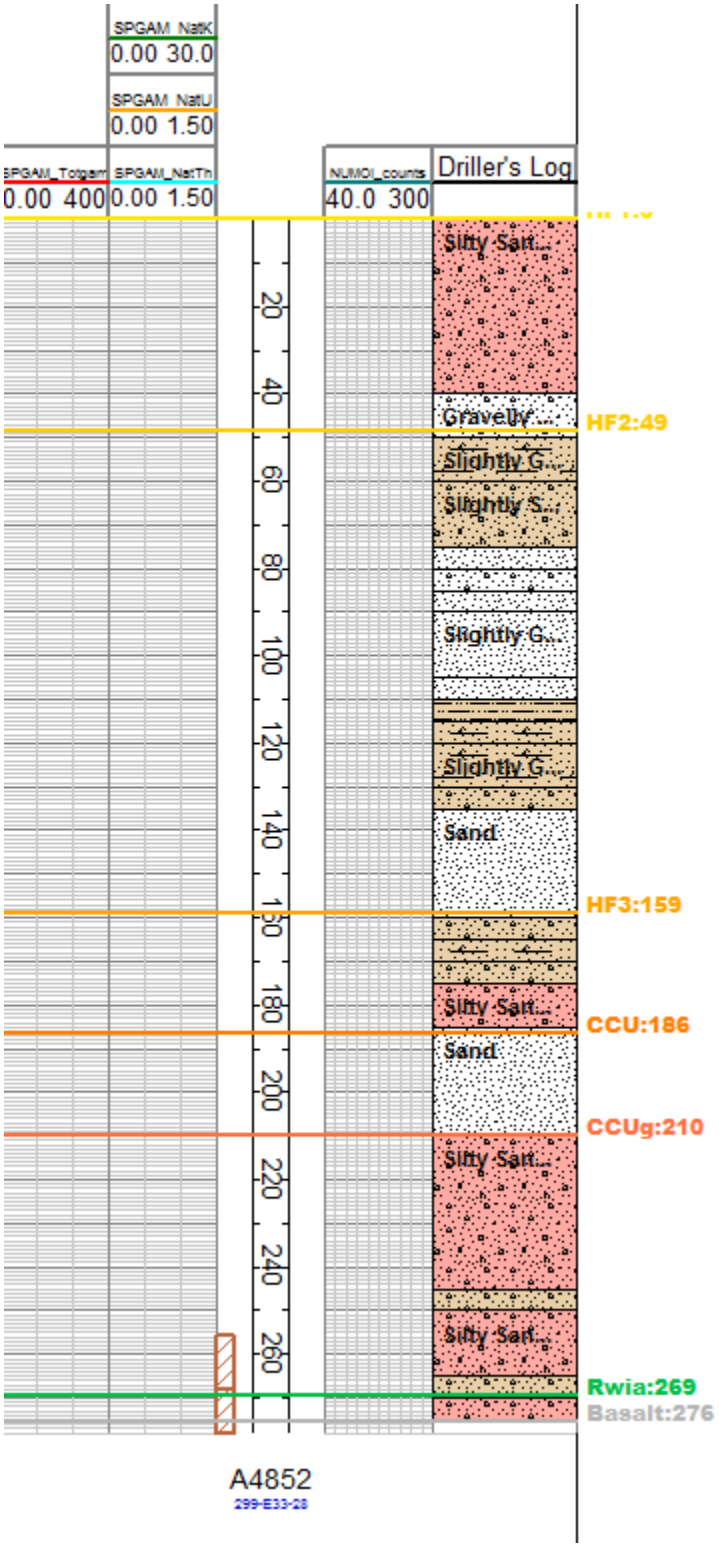

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Sand
HF2:50
HF3:144
Sand and Gravel
Cold Creek Unit:185
CCUg:189
Gravel
Basalt:233
Basalt
25
50
75
100
125
150
175
200
225
A4846
299-E33-2
30 ft

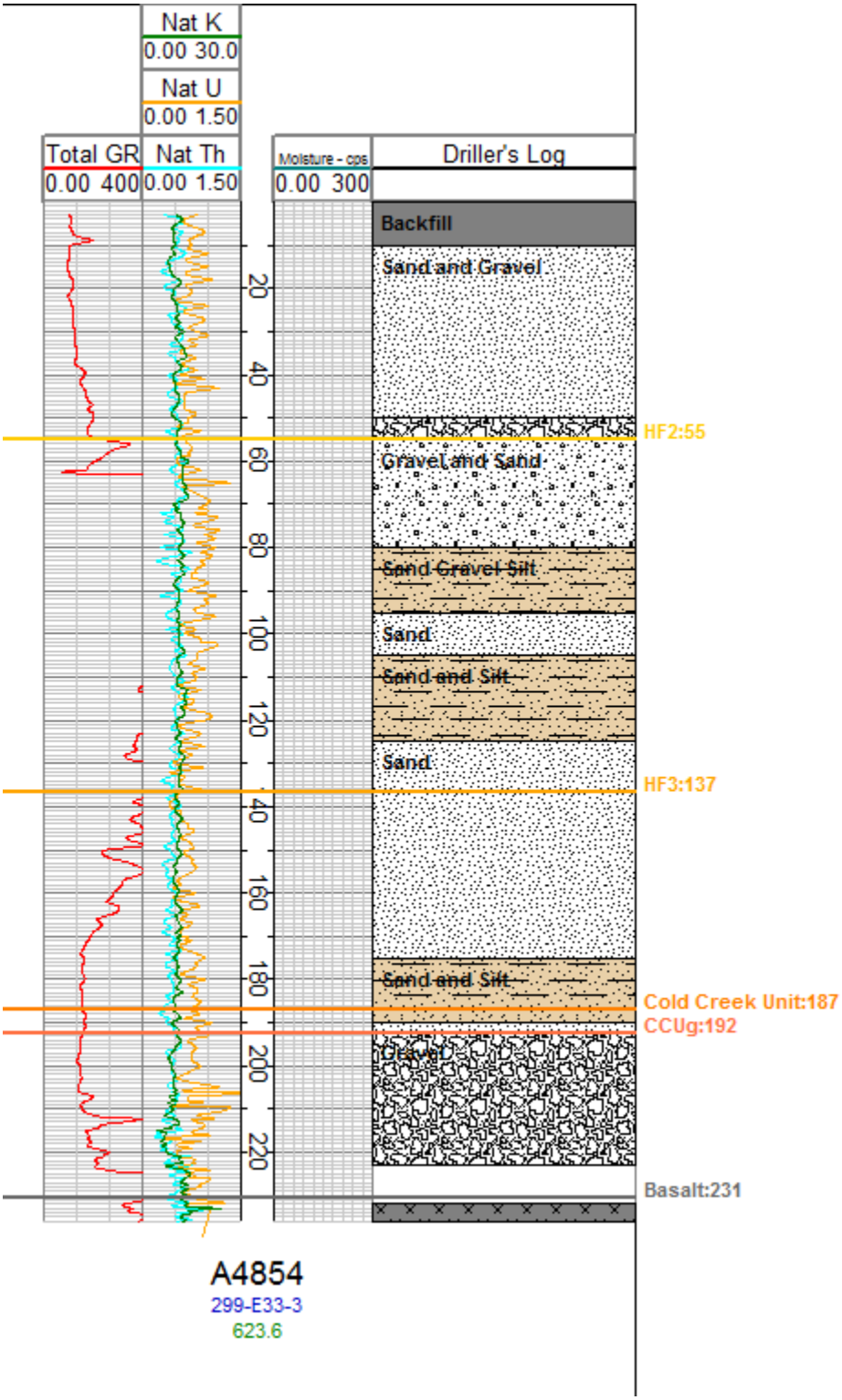

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:46
Sand
Sand and...
Sand
Sand
Sand and...
CCUz:220
CCUg:226
Sand Silt...
Gravel an...
Basalt:279
50
100
150
200
250
A4848
299-E33-21

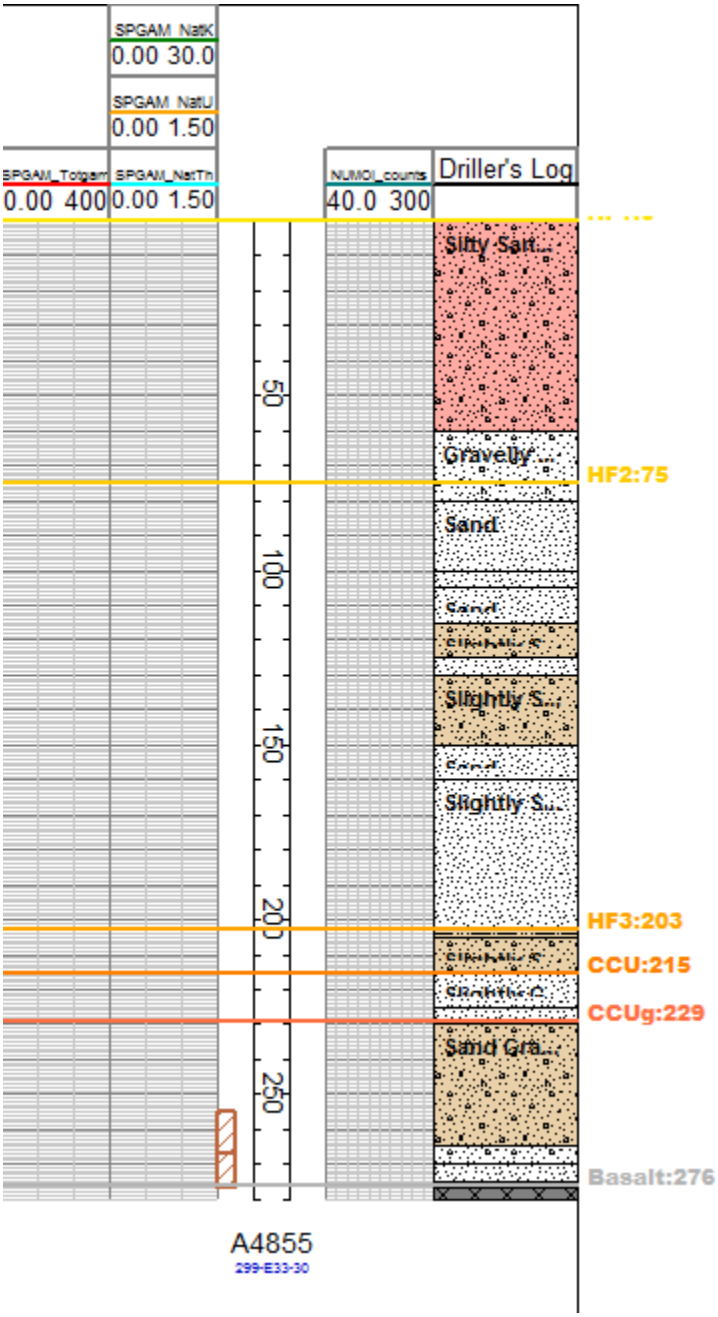

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Cobbles
HF2:35
Sand and...
Sand and...
Sand and...
Sand and...
Sand
Silt and S...
Silt and S...
CCU:197
CCUg:200
Gravel
Basalt:245
Basalt
50
100
150
200
250
A4849
299-E33-24

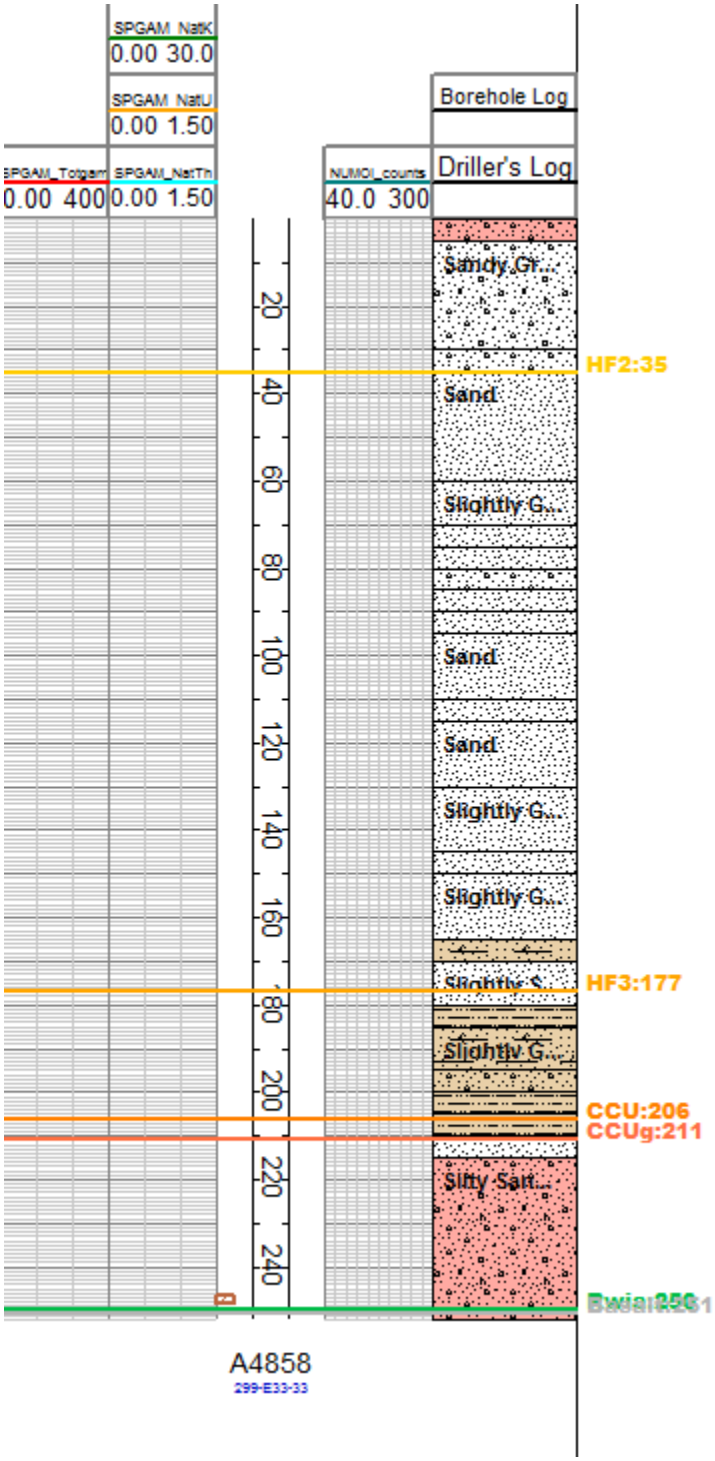

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
140
160
180
200
220
Sand and...
HF2:51
Sand and...
Sand
Sand and...
HF3:140
Sand and...
CCUgt900
Sand Gra...
Sand and...
Basalt:239
A4850

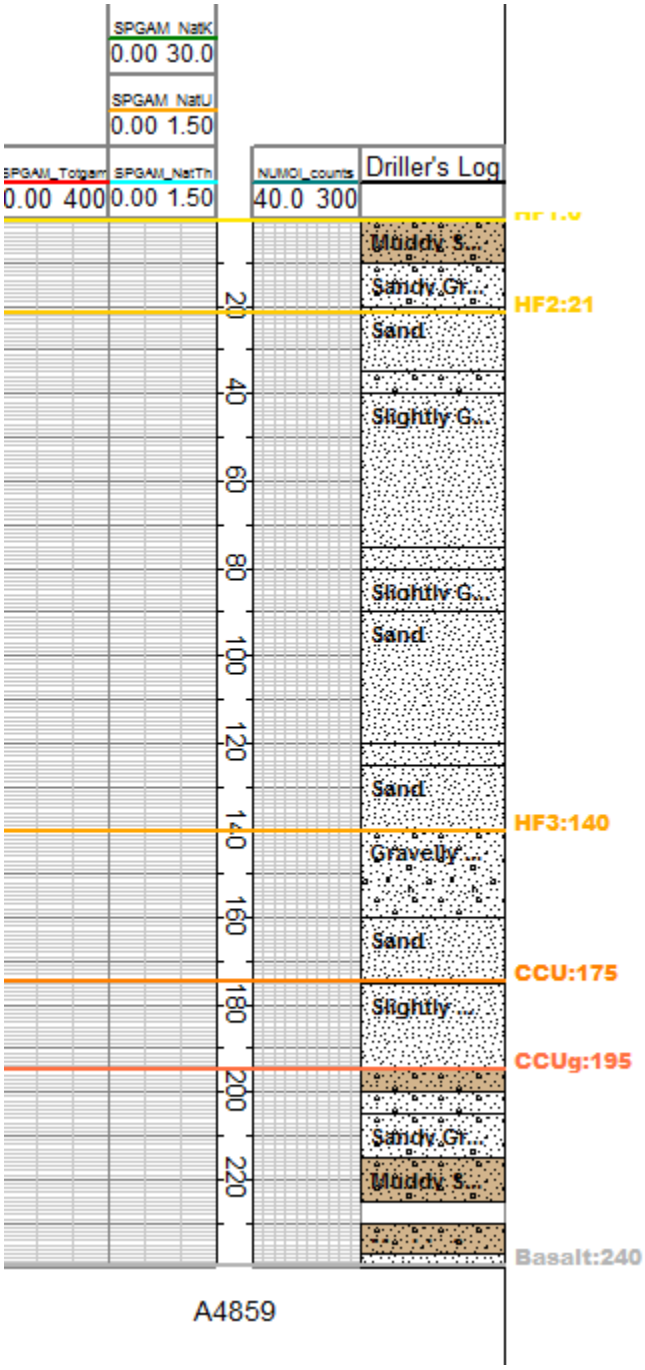

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Gravel and Cobbles
Sand and Gravel
HF2:39
Sand and Silt
HF3:226
Cold Creek Unit:239
CCUg:242
Sand
20
40
60
80
100
120
140
160
180
200
220
240
A4851
299-E33-27
659.4

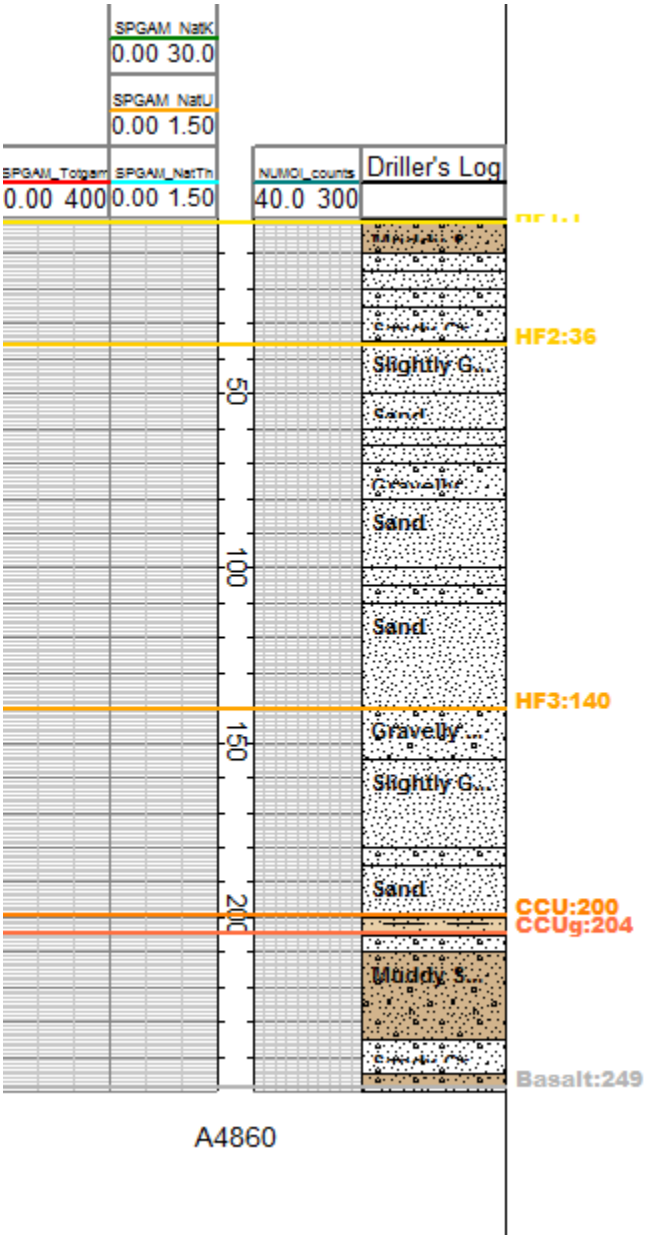

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand
Gravelly
Slightly G
Slightly S
Slightly G
Slightly G
Sand
Silty Sand
Sand
Silty Sand
Silty Sand
HF2:49
HF3:159
CCU:186
CCUg:210
Rwia:269
Basalt:276
20
40
60
80
100
120
140
150
180
200
220
240
260
A4852
299-E33-28

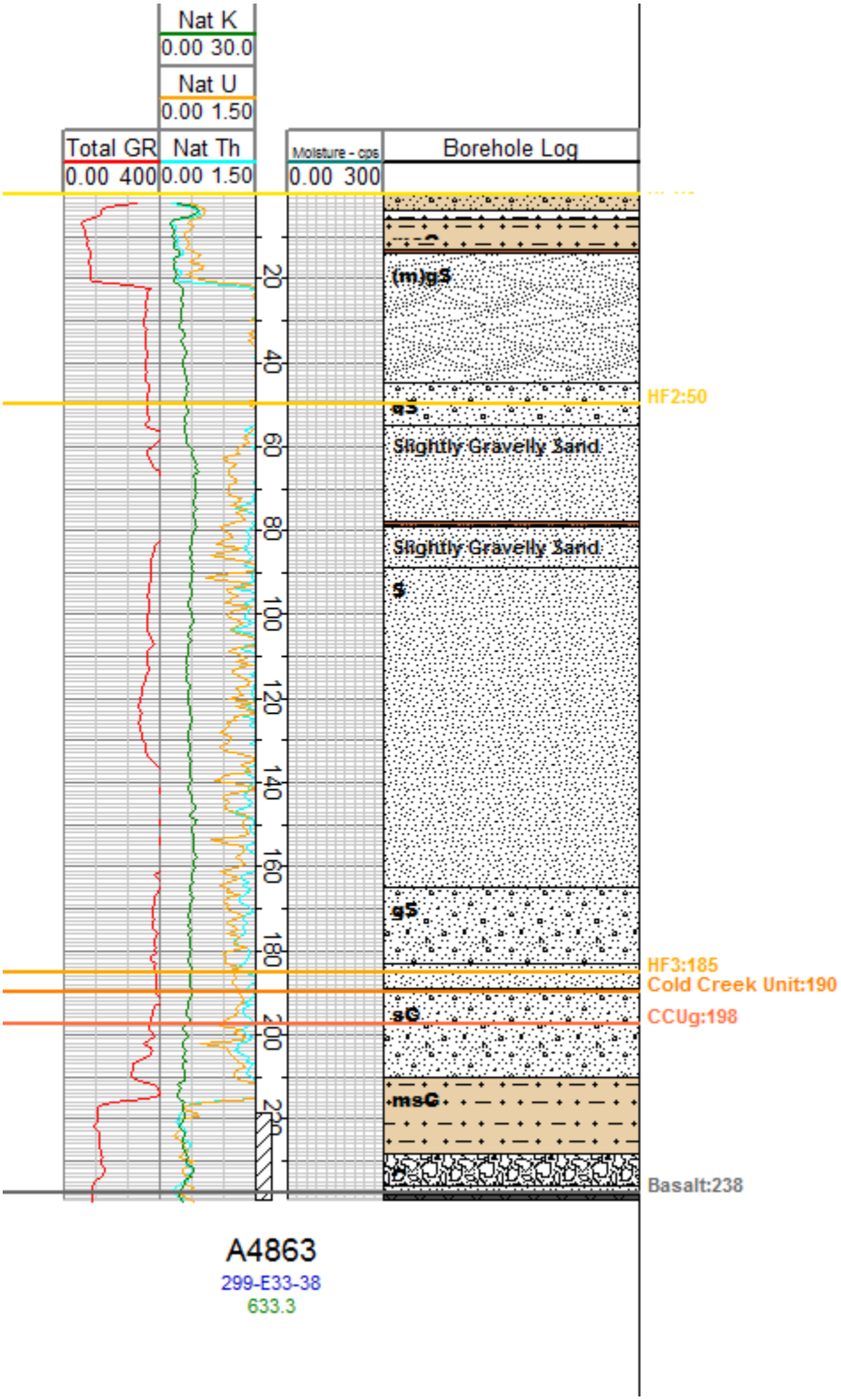

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Sand and Gravel
HF2:55
Gravel and Sand
Sand Gravel Silt
Sand
Sand and Silt
Sand
HF3:137
Sand and Silt
Cold Creek Unit:187
CCUg:192
Gravel
Basalt:231
20
40
60
80
100
120
140
160
180
200
220
A4854
299-E33-3
623.6

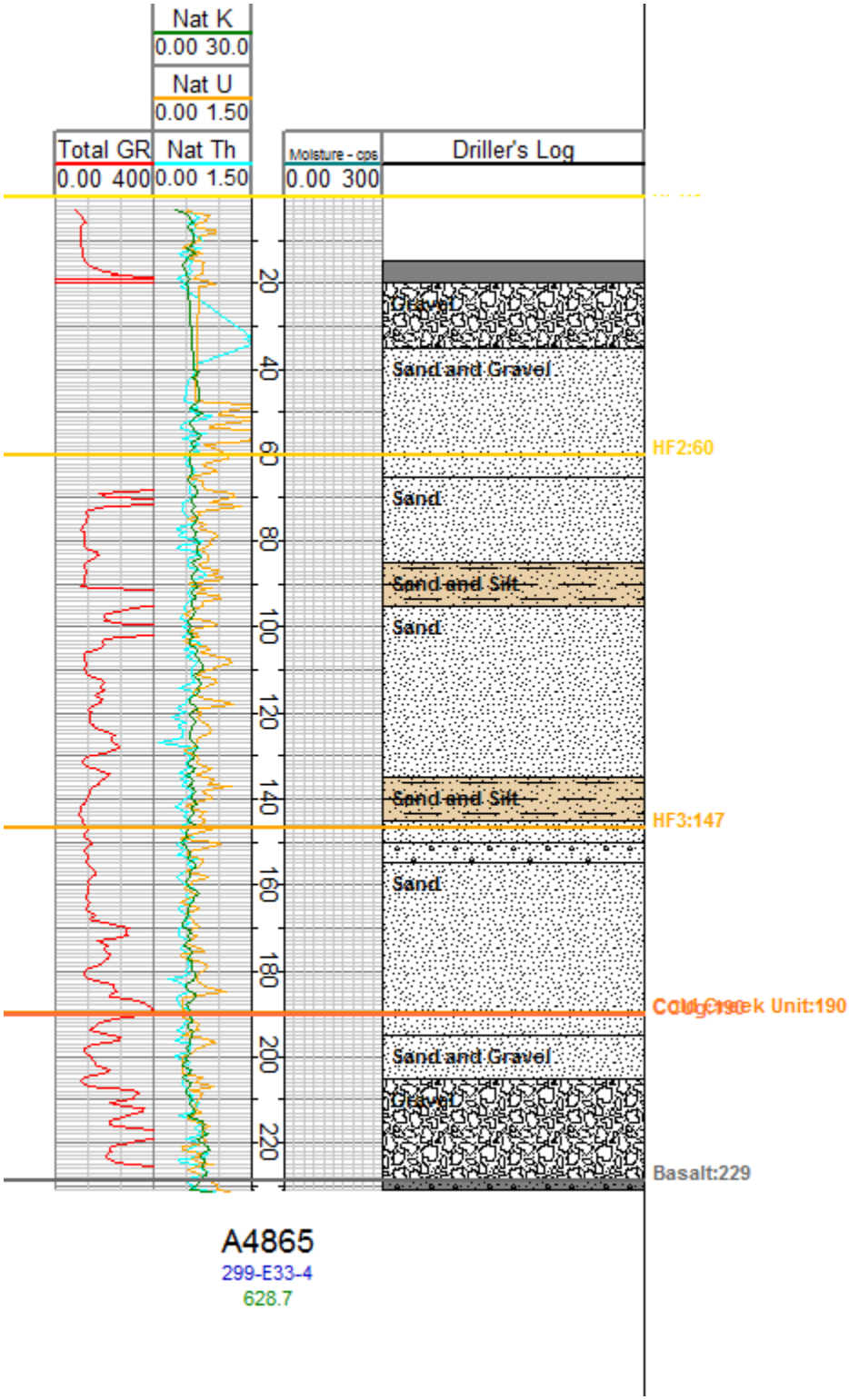

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
Silty San...
Gravelly ...
HF2:75
Sand
Sand
Slightly S...
Slightly S...
HF3:203
CCU:215
CCUg:229
Sand Gra...
Basalt:276
A4855
299-E33-30

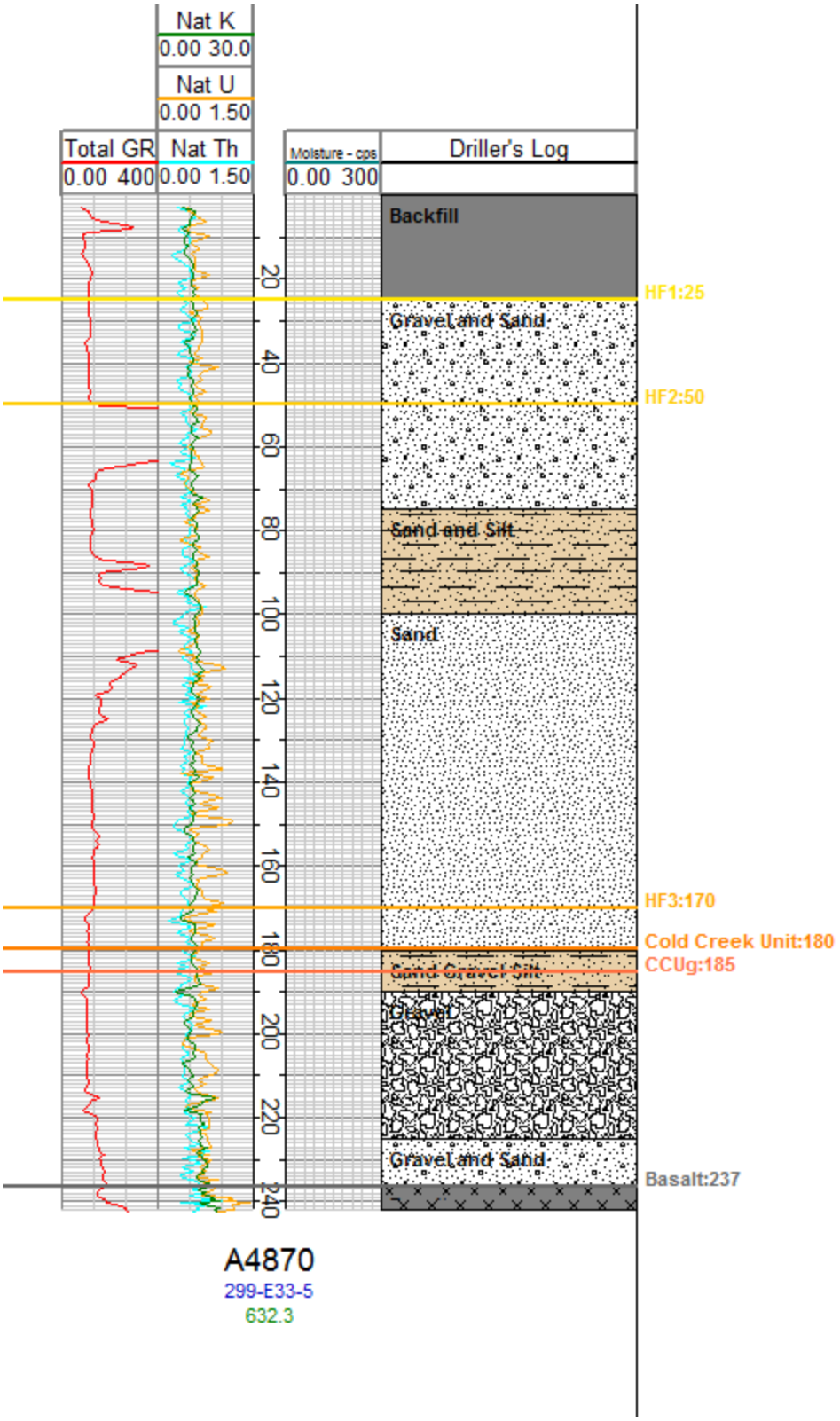

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Driller's Log
Sandy Gr...
HF2:35
Sand
Slightly G...
Sand
Sand
Slightly G...
Slightly G...
HF3:177
Slightly G...
CCU:206
CCUg:211
Silty San...
20
40
60
80
100
120
140
160
180
200
220
240
A4858
299-E33-33

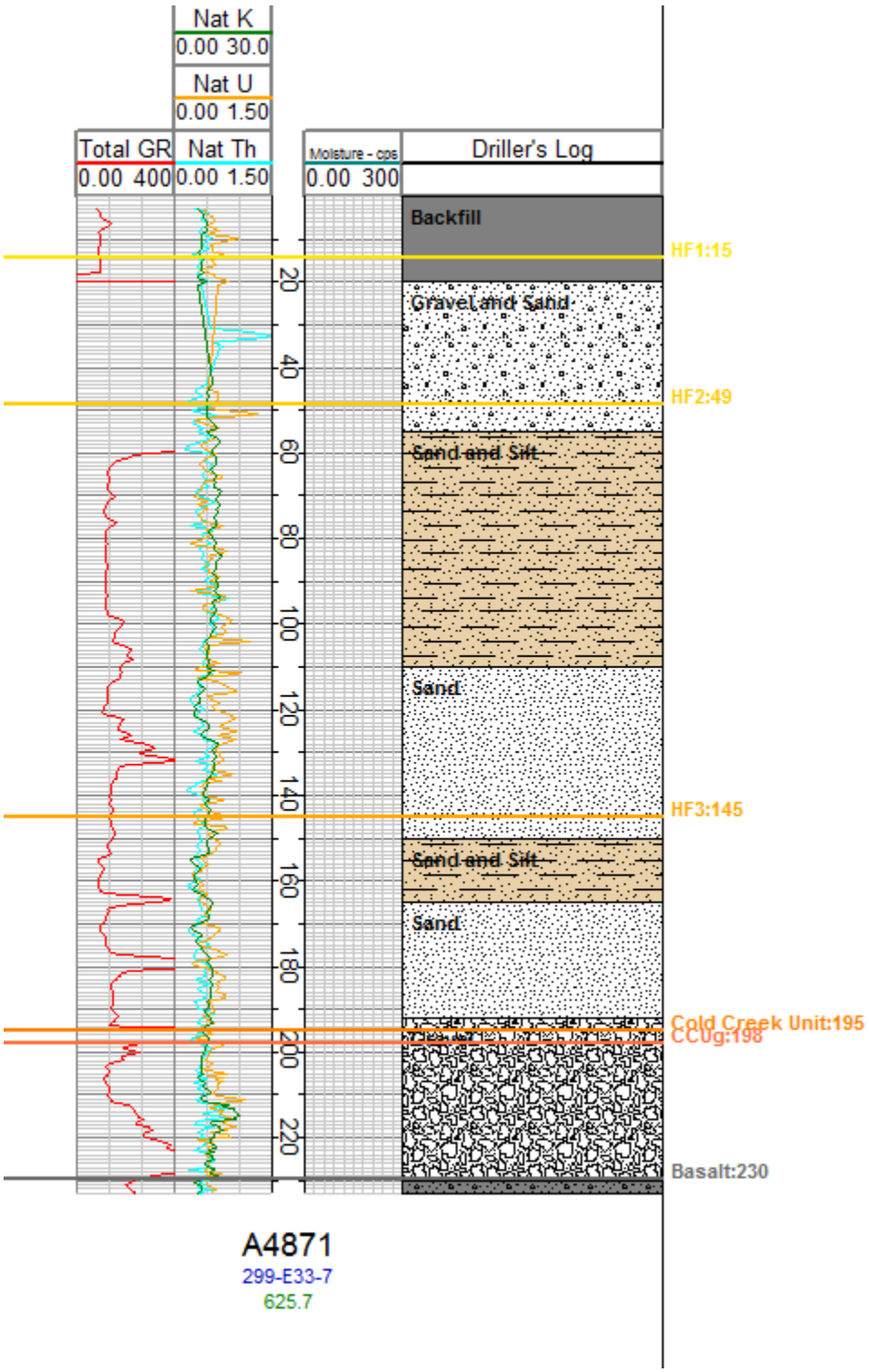

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Muddy S...
Sandy Gr...
HF2:21
Sand
Slightly G...
Slightly G...
Sand
Sand
HF3:140
Gravelly ...
Sand
CCU:175
Slightly ...
CCUg:195
Sandy Gr...
Muddy S...
Basalt:240
20
40
60
80
100
120
140
160
180
200
220
A4859

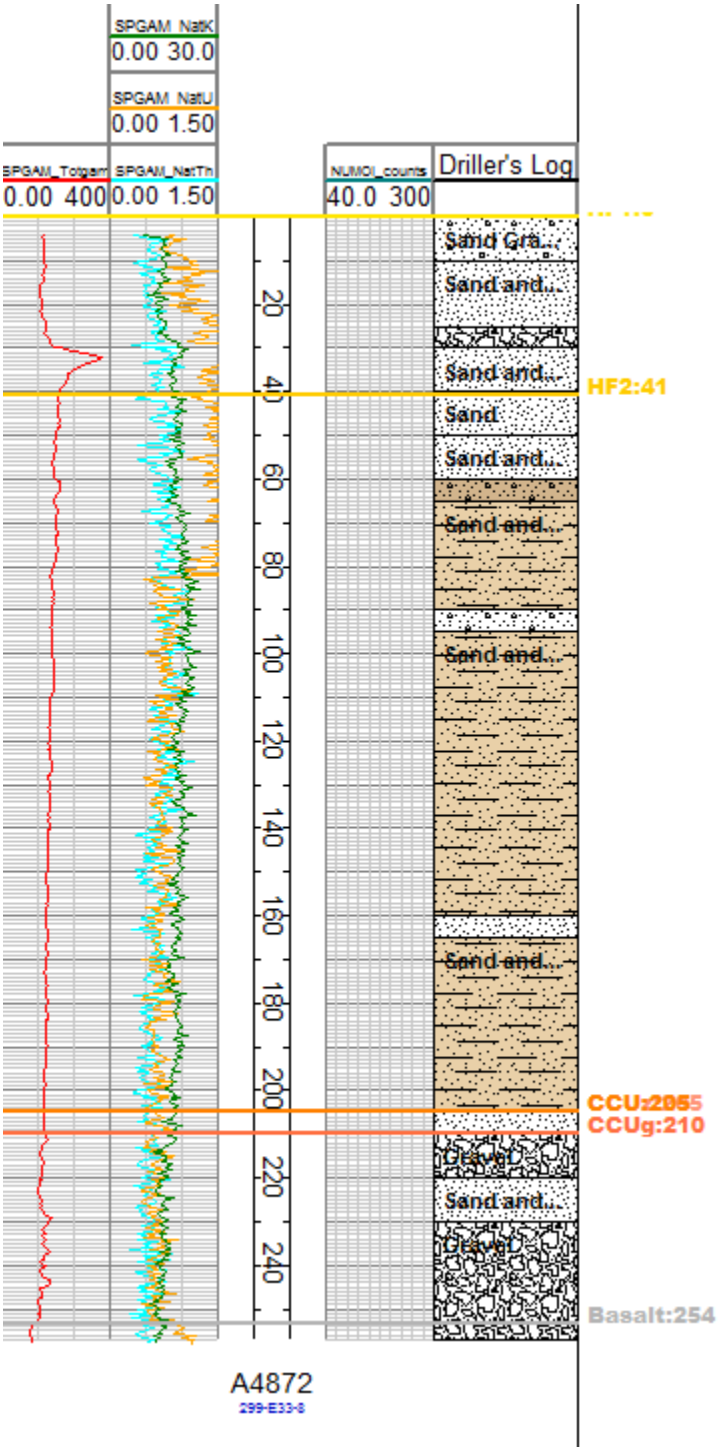

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:36
Slightly G...
Sand
Sand
HF3:140
Gravelly ...
Slightly G...
Sand
CCU:200
CCUg:204
Muddy S...
Basalt:249
50
100
150
200
A4860

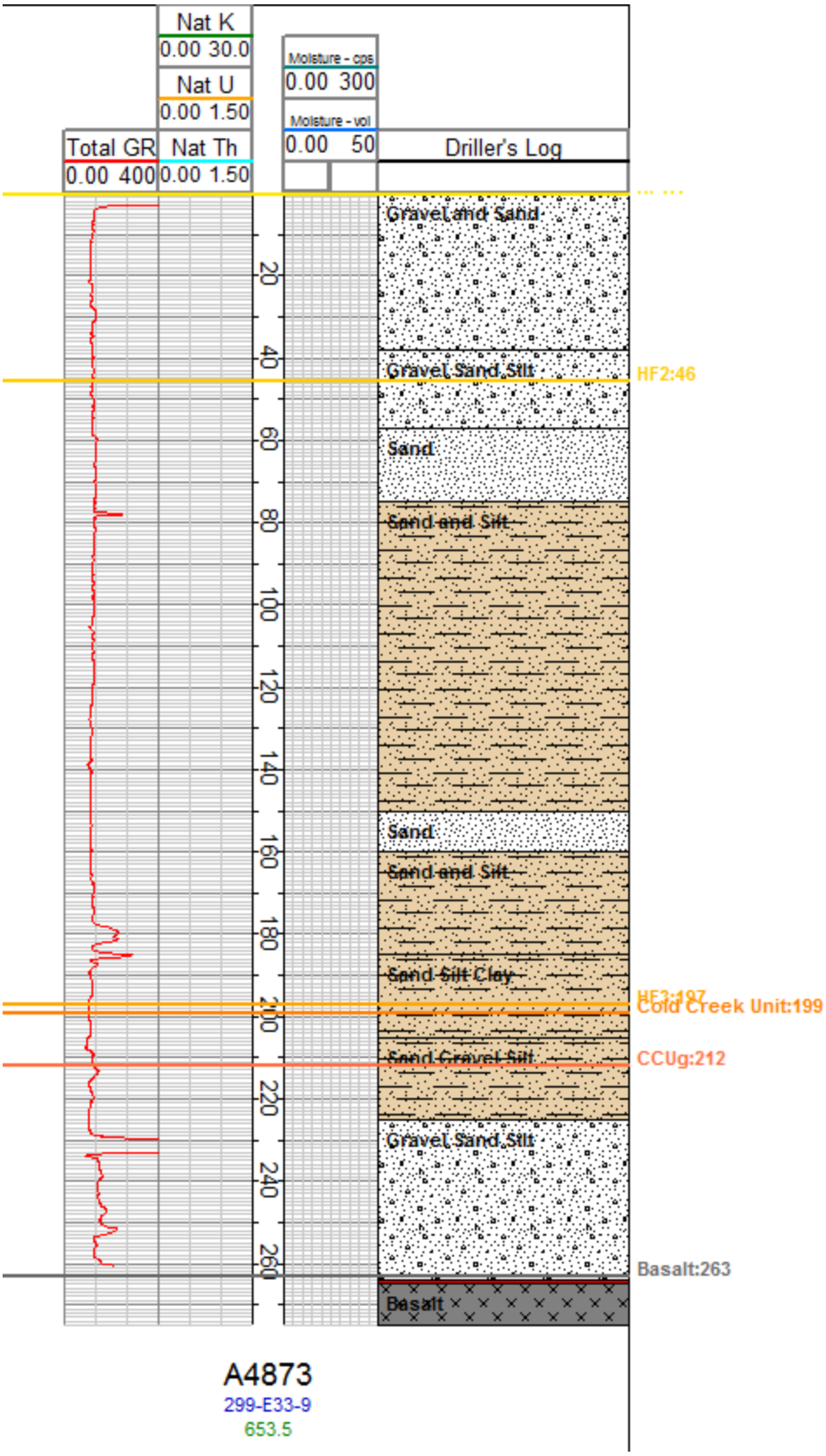

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
20
40
60
80
100
120
140
160
180
200
220
(m)gS
gS
Slightly Gravelly Sand
Slightly Gravelly Sand
S
gS
sG
msG
HF2:50
HF3:185
Cold Creek Unit:190
CCUg:198
Basalt:238
A4863
299-E33-38
633.3

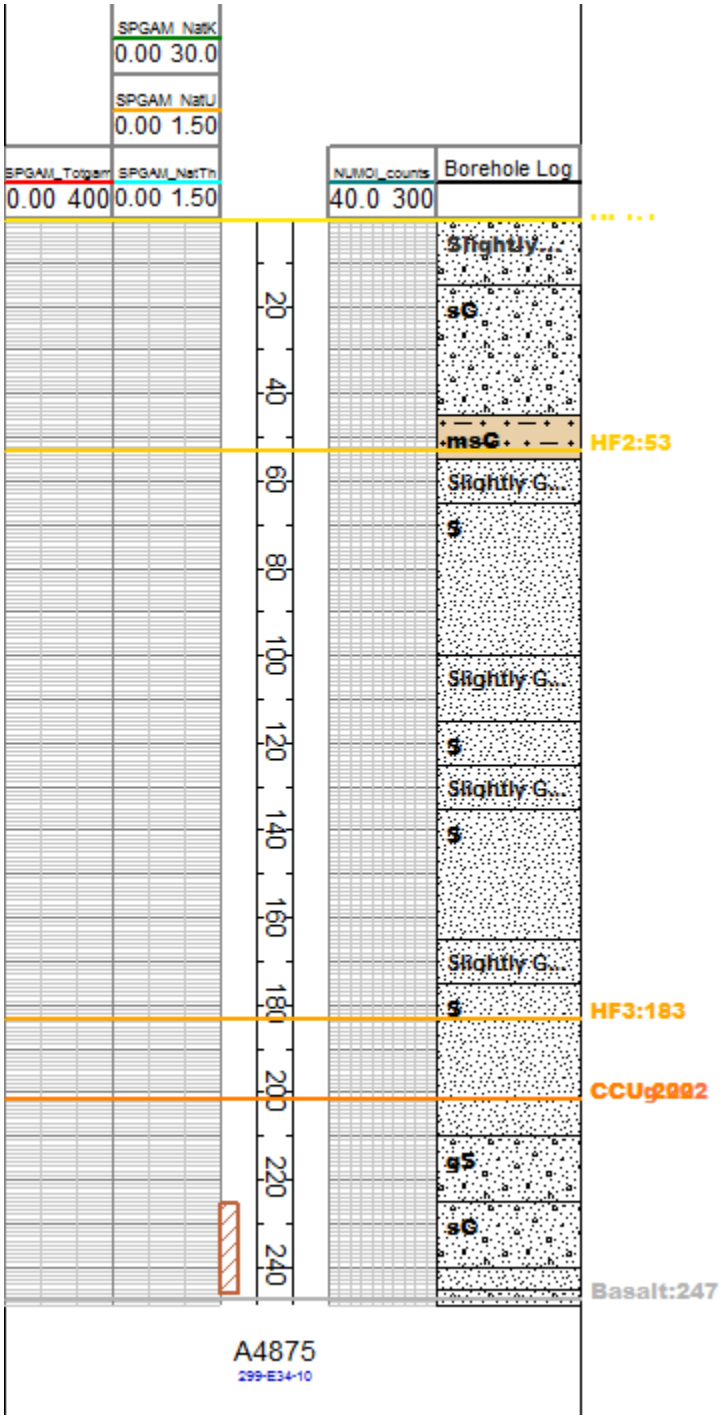

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
20
40
60
80
100
120
140
160
180
200
220
Gravel
Sand and Gravel
HF2:60
Sand
Sand and Silt
Sand
Sand and Silt
HF3:147
Sand
Cold Creek Unit:190
Sand and Gravel
Gravel
Basalt:229
A4865
299-E33-4
628.7

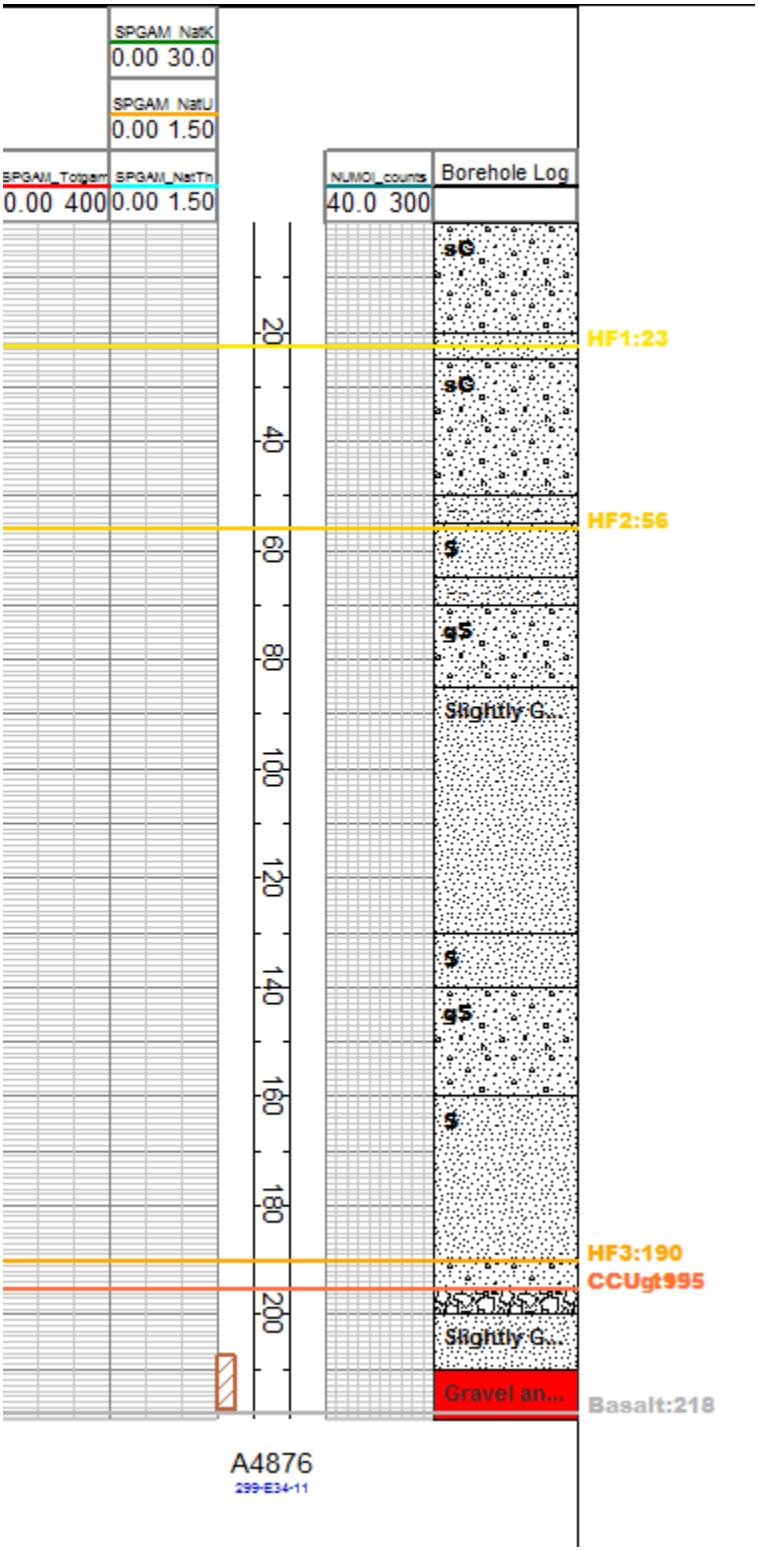

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
HF1:25
Gravel and Sand
HF2:50
Sand and Silt
Sand
HF3:170
Cold Creek Unit:180
CCUg:185
Sand Gravel Silt
Gravel
Gravel and Sand
Basalt:237
20
40
60
80
100
120
140
160
180
200
220
240
A4870
299-E33-5
632.3

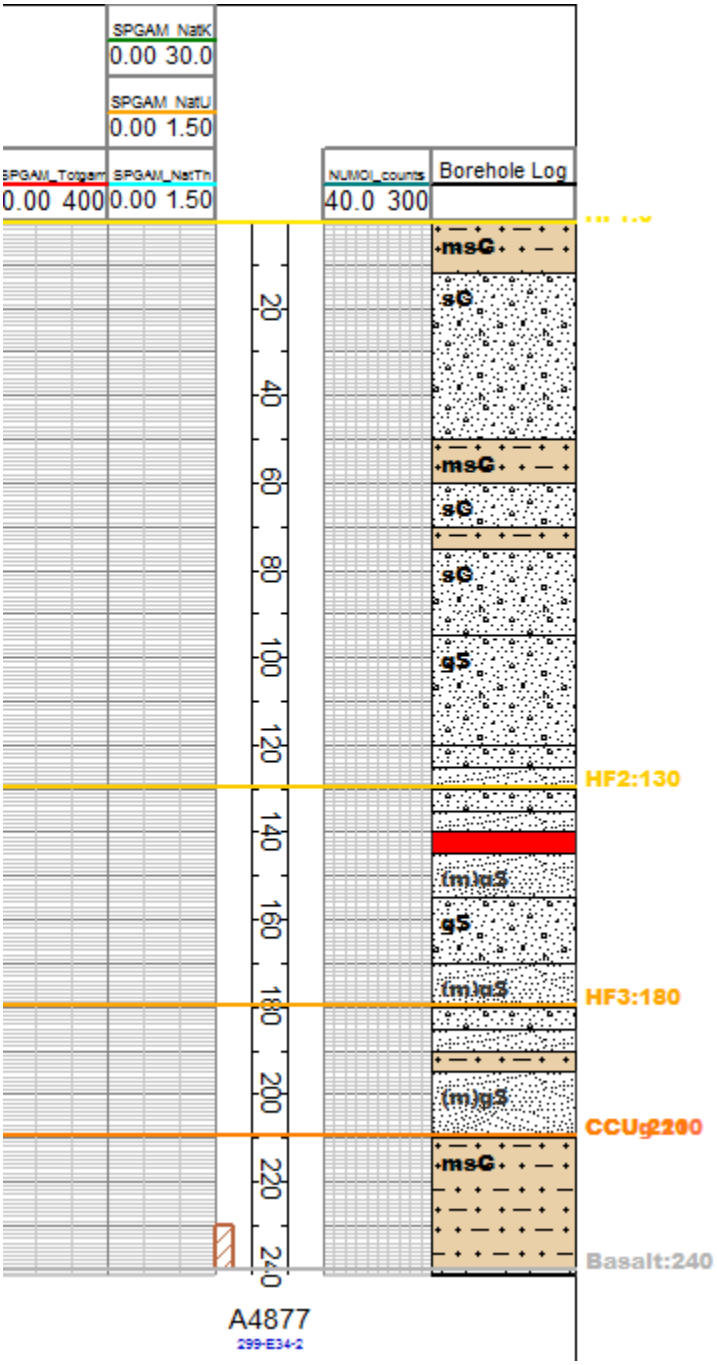

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
HF1:15
Gravel and Sand
HF2:49
Sand and Silt
Sand
HF3:145
Sand and Silt
Sand
Cold Creek Unit:195
CCUg:198
Basalt:230
20
40
60
80
100
120
140
160
180
200
220
A4871
299-E33-7
625.7

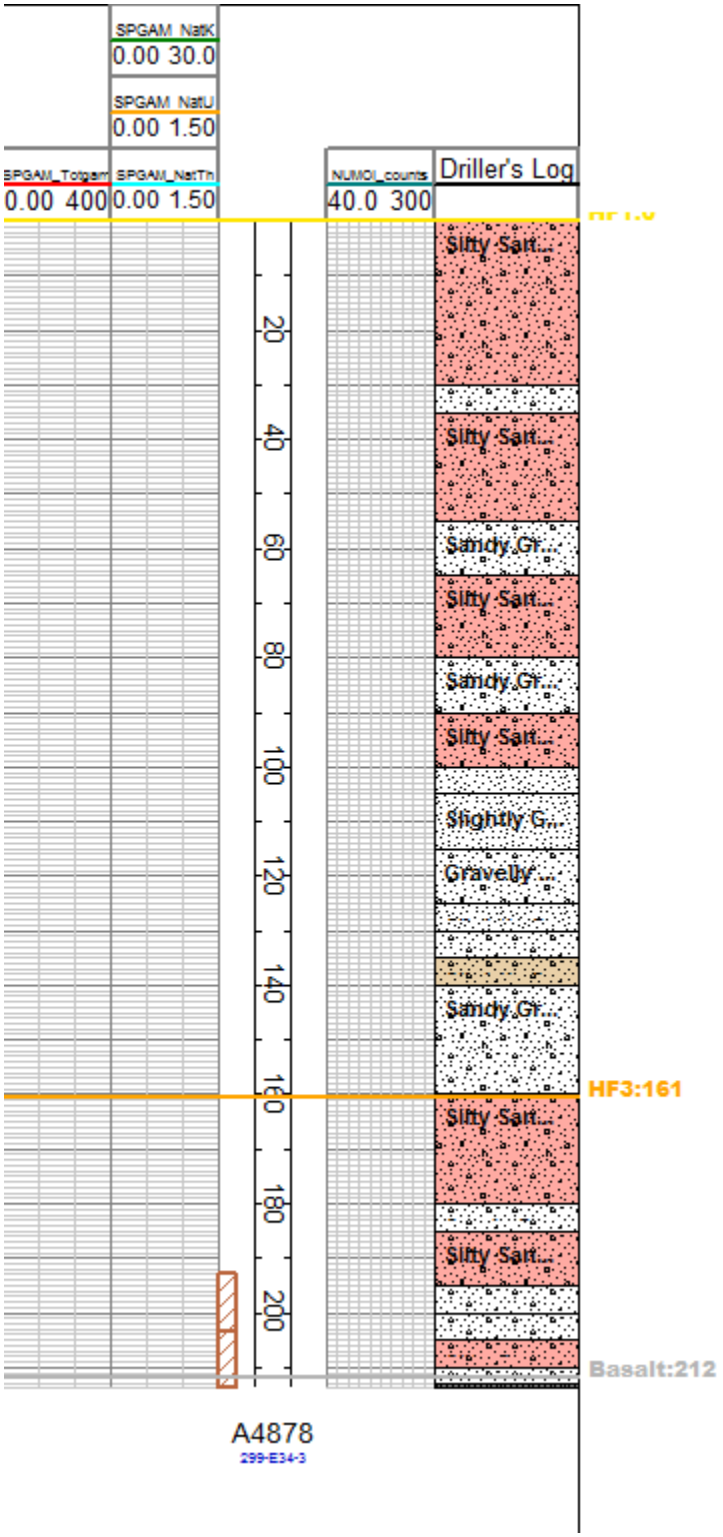

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand Gra...
Sand and...
Sand and...
HF2:41
Sand
Sand and...
Sand and...
Sand and...
Sand and...
CCUz:205
CCUg:210
Gravel
Sand and...
Gravel
Basalt:254
20
40
60
80
100
120
140
160
180
200
220
240
A4872
299-E33-8

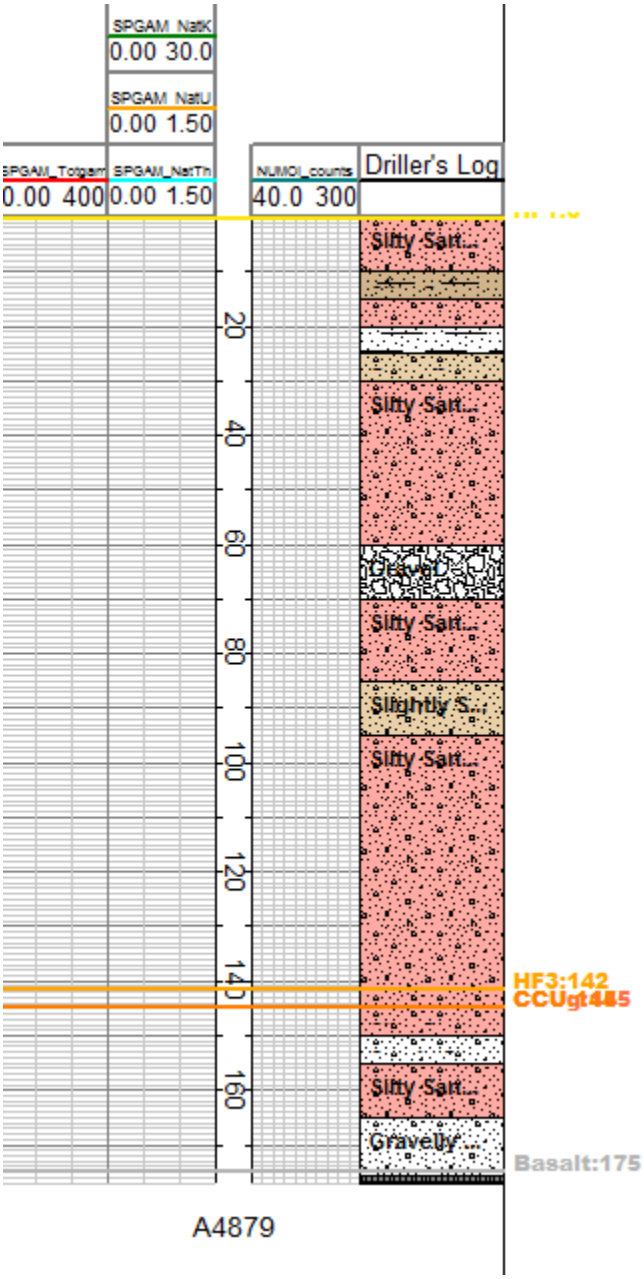

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
20
40
60
80
100
120
140
160
180
200
220
240
260
Gravel and Sand
Gravel Sand Silt
HF2:46
Sand
Sand and Silt
Sand
Sand and Silt
Sand Silt Clay
HF3:197
Cold Creek Unit:199
Sand Gravel Silt
CCUg:212
Gravel Sand Silt
Basalt:263
Basalt
A4873
299-E33-9
653.5

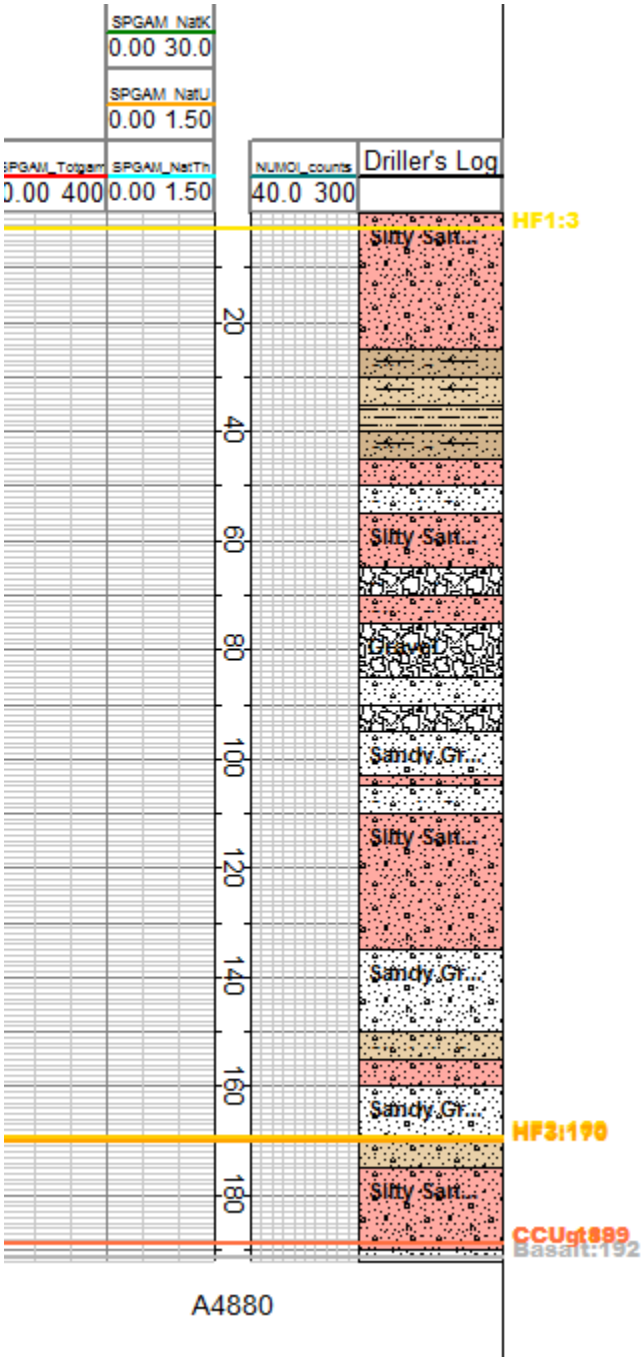

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Slightly...
sG
msG
HF2:53
Slightly G...
S
Slightly G...
S
Slightly G...
S
Slightly G...
S
HF3:183
CCUg2002
gS
sG
Basalt:247
20
40
60
80
100
120
140
160
180
200
220
240
A4875
299-E34-10

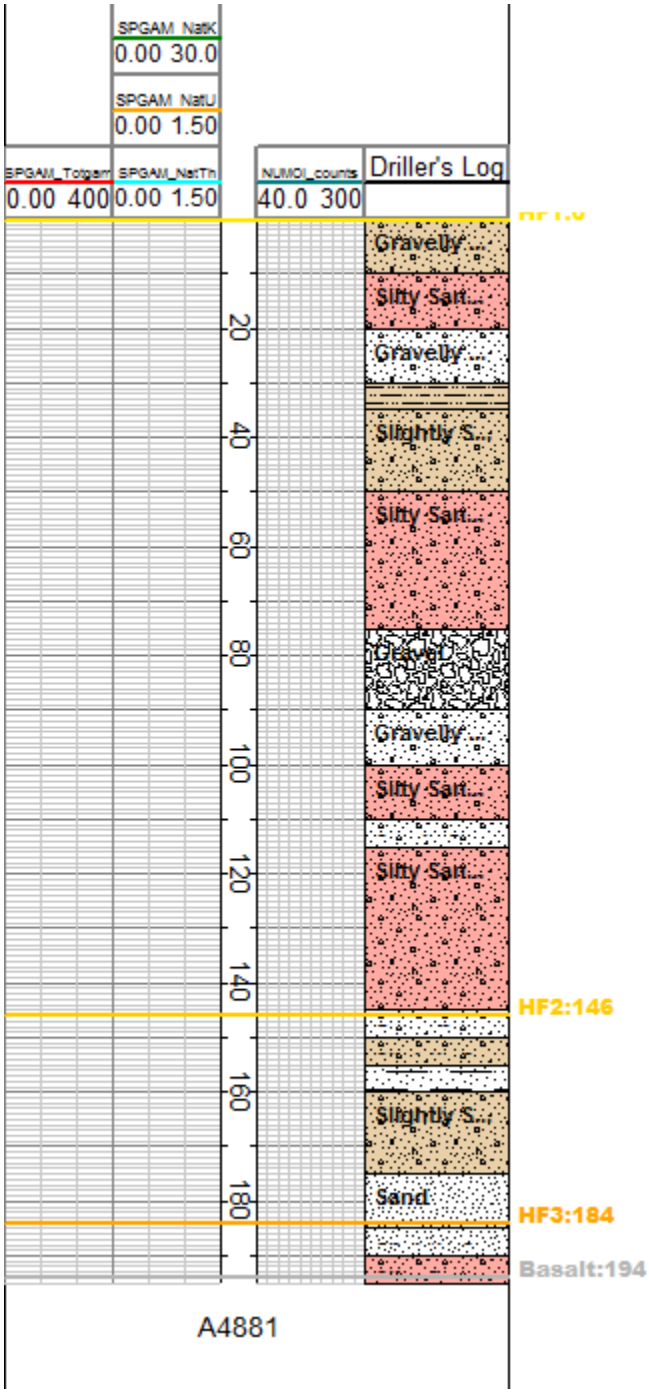

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
sG
HF1:23
sG
HF2:56
S
gS
Slightly G...
S
gS
S
HF3:190
CCUgt995
Slightly G...
Gravel an...
Basalt:218
20
40
60
80
100
120
140
160
180
200
A4876
299-E34-11

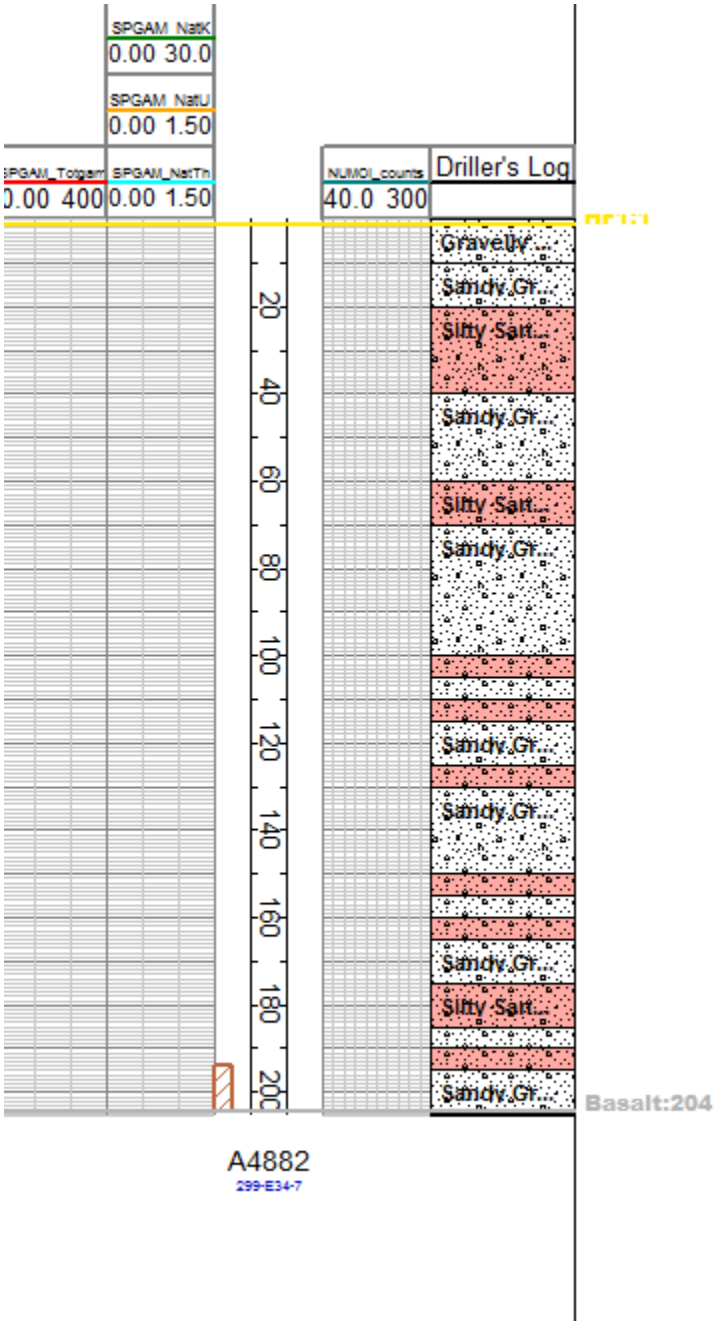

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
sG
msG
sG
sG
gS
HF2:130
(m)gS
gS
(m)gS
HF3:180
(m)gS
CCUg:200
msG
Basalt:240
20
40
60
80
100
120
140
160
180
200
220
240
A4877
299-E34-2

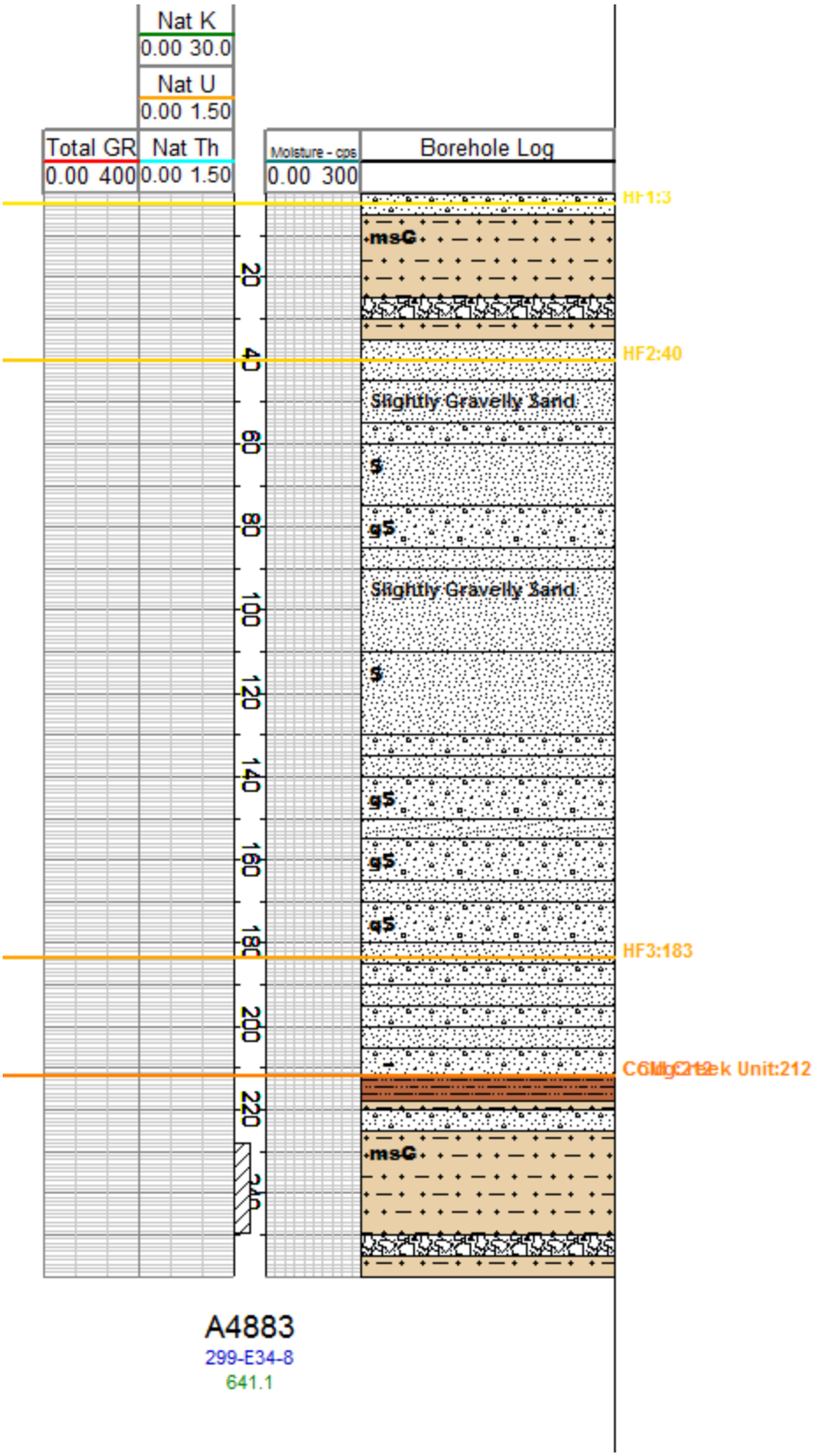

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sant...
Silty Sant...
Sandy Gr...
Silty Sant...
Sandy Gr...
Silty Sant...
Slightly G...
Gravelly ...
Sandy Gr...
HF3:161
Silty Sant...
Silty Sant...
Basalt:212
20
40
60
80
100
120
140
160
180
200
A4878
299-E34-3


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand...
Silty Sand...
Gravel
Silty Sand...
Slightly S...
Silty Sand...
HF3:142
CCUgt445
Silty Sand...
Gravelly...
Basalt:175
20
40
60
80
100
120
140
160
A4879

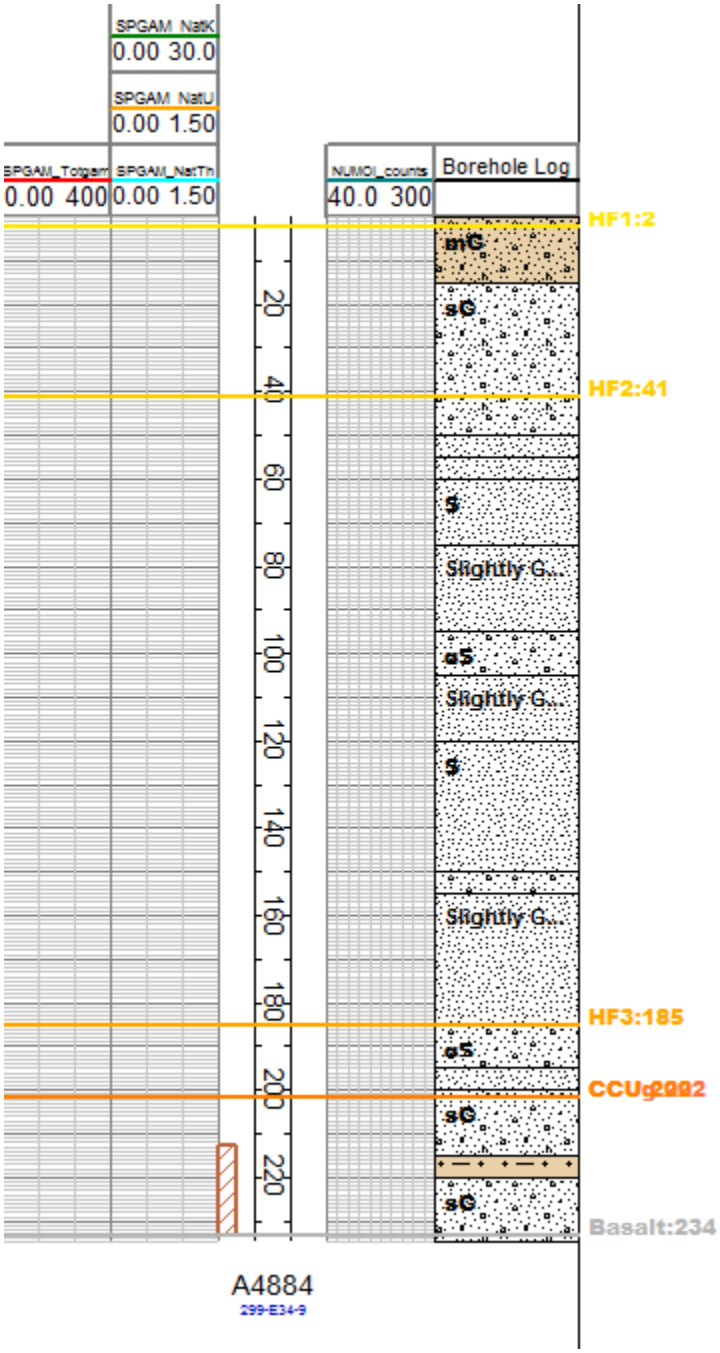

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:3
Silty Sant...
Silty Sant...
Gravel
Sandy Gr...
Silty Sant...
Sandy Gr...
Sandy Gr...
HF3:190
Silty Sant...
CCUgt889
Basalt:192
20
40
60
80
100
120
140
160
180
A4880

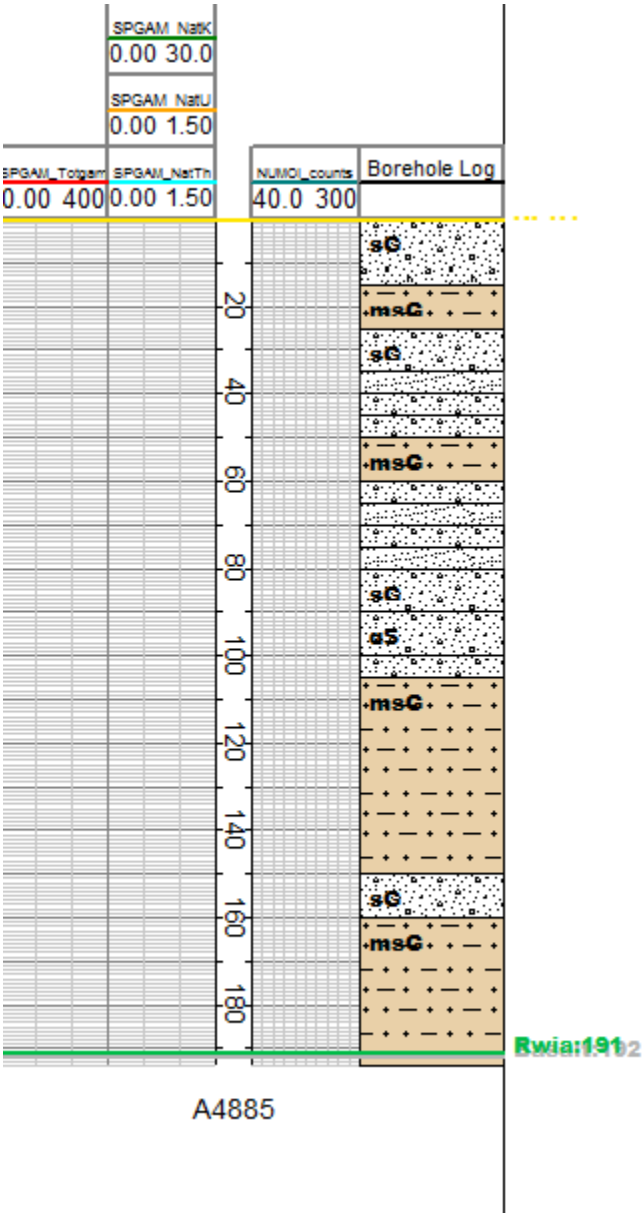

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
140
160
180
Gravelly ...
Silty Sant...
Gravelly ...
Slightly S...
Silty Sant...
Gravelly ...
Silty Sant...
Silty Sant...
Slightly S...
Sand
HF2:146
HF3:184
Basalt:194
A4881


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Gravelly...
Sandy Gr...
Silty Sant...
Sandy Gr...
Silty Sant...
Sandy Gr...
Sandy Gr...
Sandy Gr...
Sandy Gr...
Silty Sant...
Sandy Gr...
Basalt:204
20
40
60
80
100
120
140
160
180
200
A4882
299-E34-7

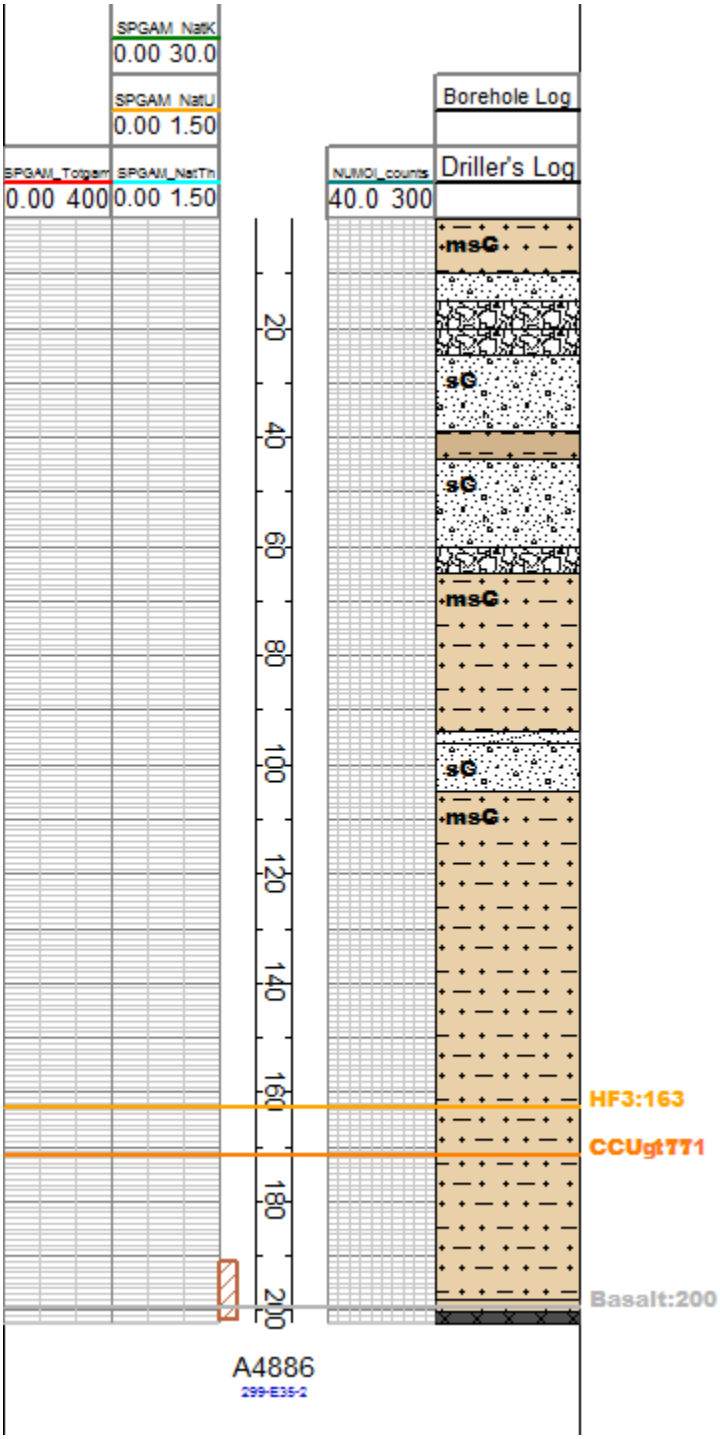


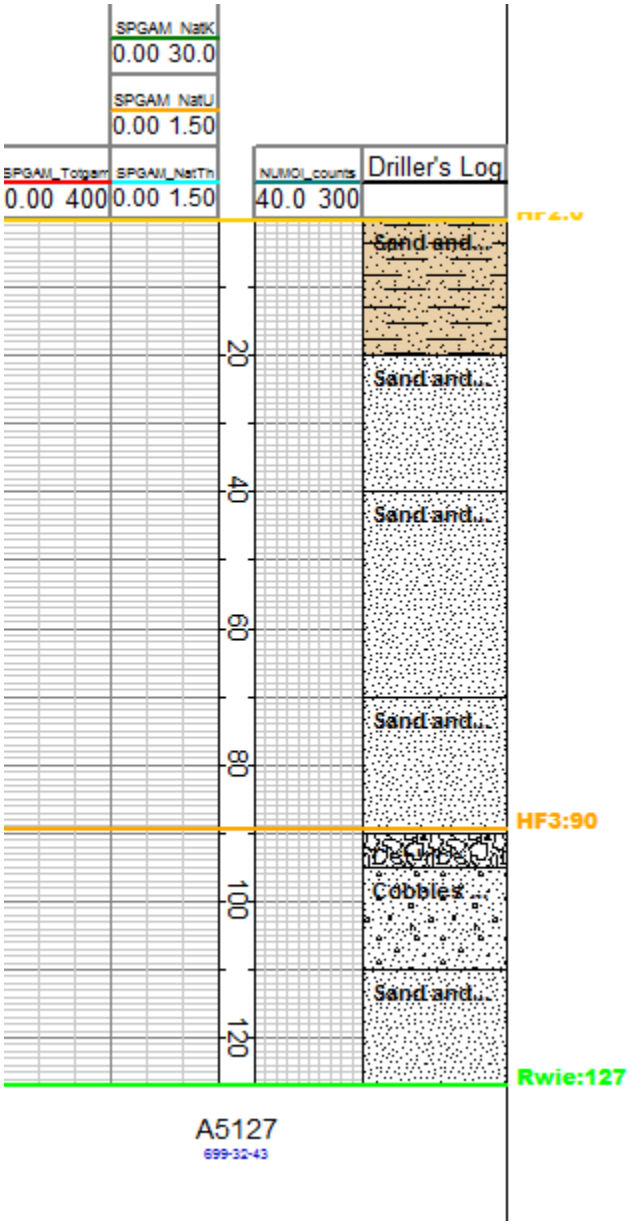
A4883
299-E34-8
641.1

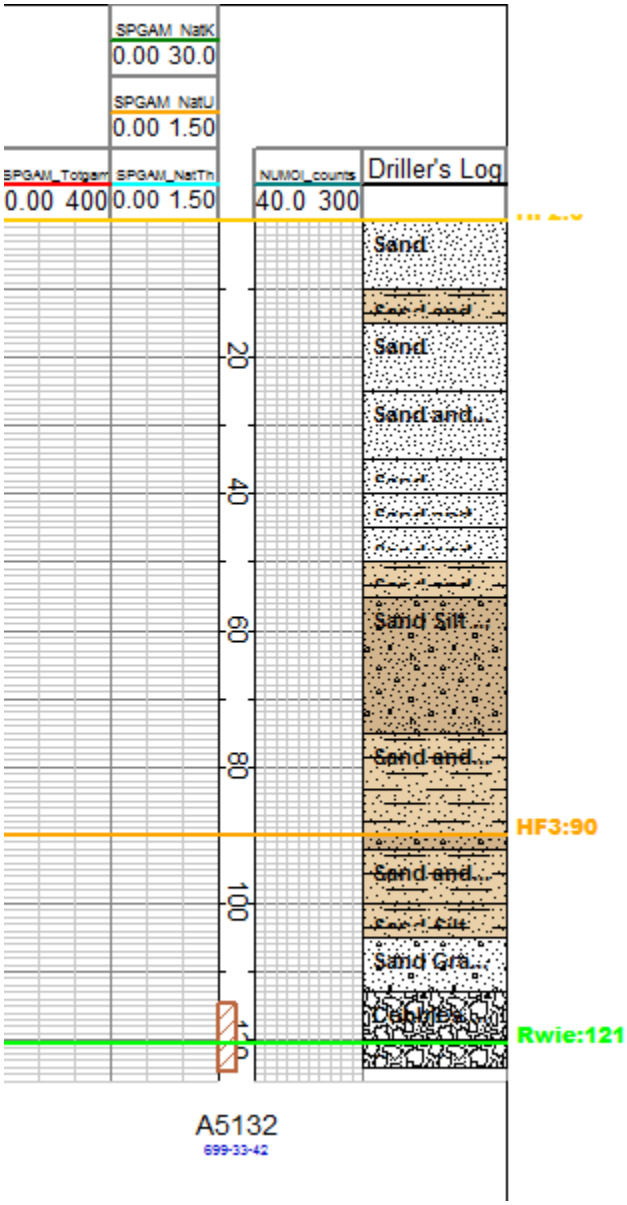

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:2
mG
sG
HF2:41
S
Slightly G...
aS
Slightly G...
S
Slightly G...
HF3:185
aS
CCUg2002
sG
sG
Basalt:234
20
40
60
80
100
120
140
160
180
200
220
A4884
299-E34-9

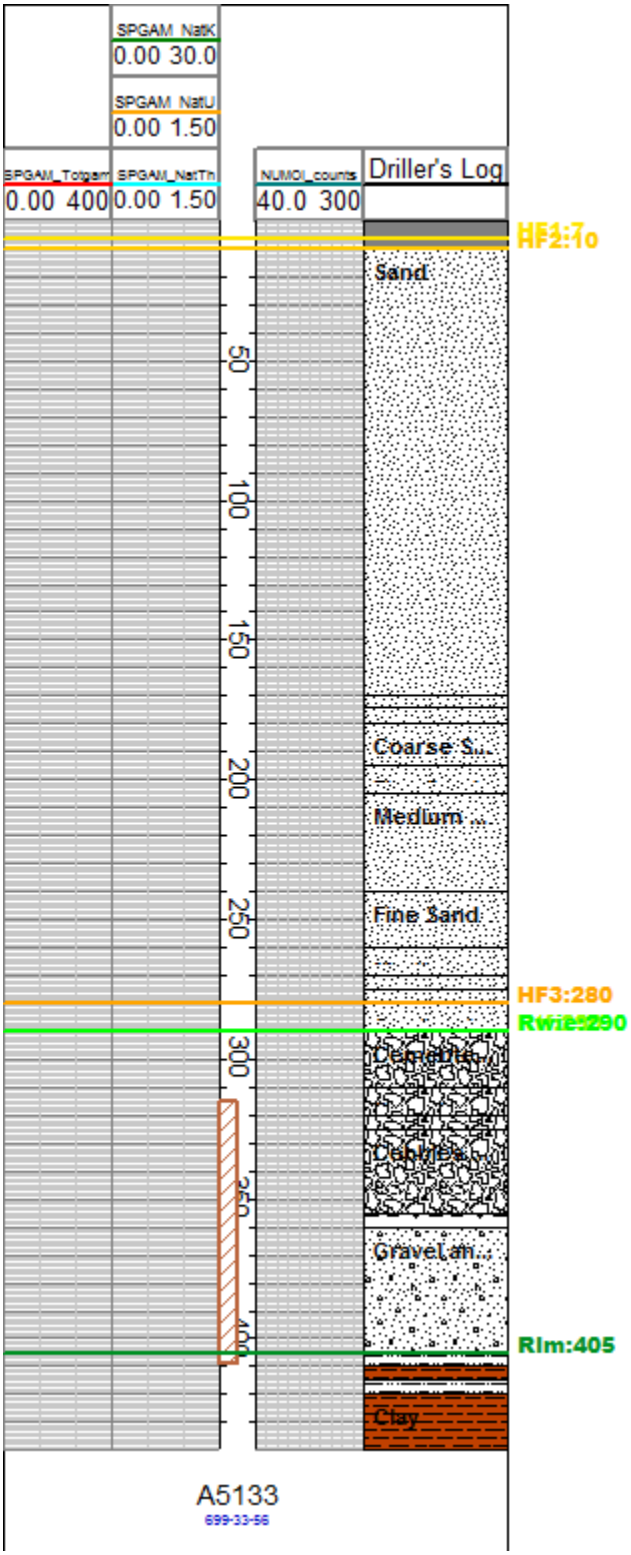

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
20
40
60
80
100
120
140
160
180
sG
msG
sG
msG
sG
sS
msG
sG
msG
Rwia:191

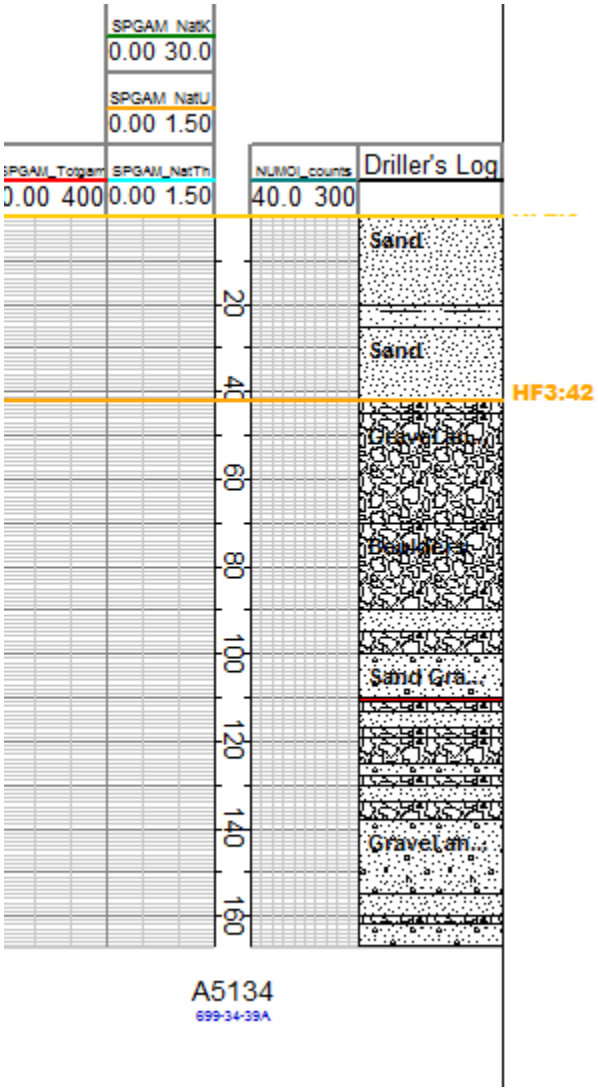
A4885

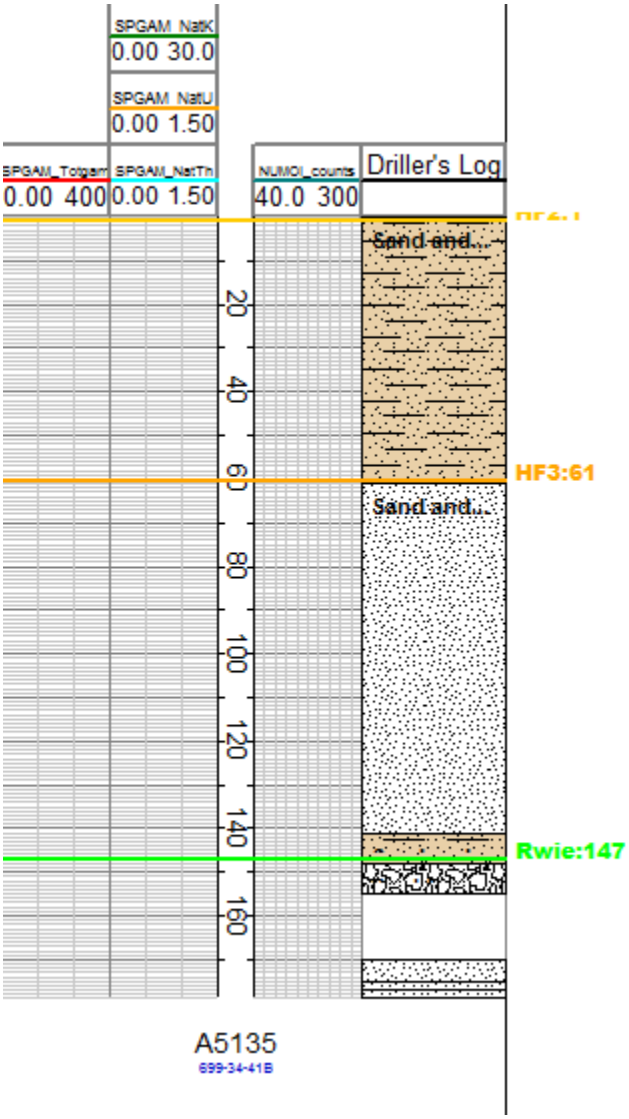

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Driller's Log
msG
sG
sG
msG
sG
msG
HF3:163
CCUgt771
Basalt:200
20
40
60
80
100
120
140
160
180
200
A4886
299-E35-2

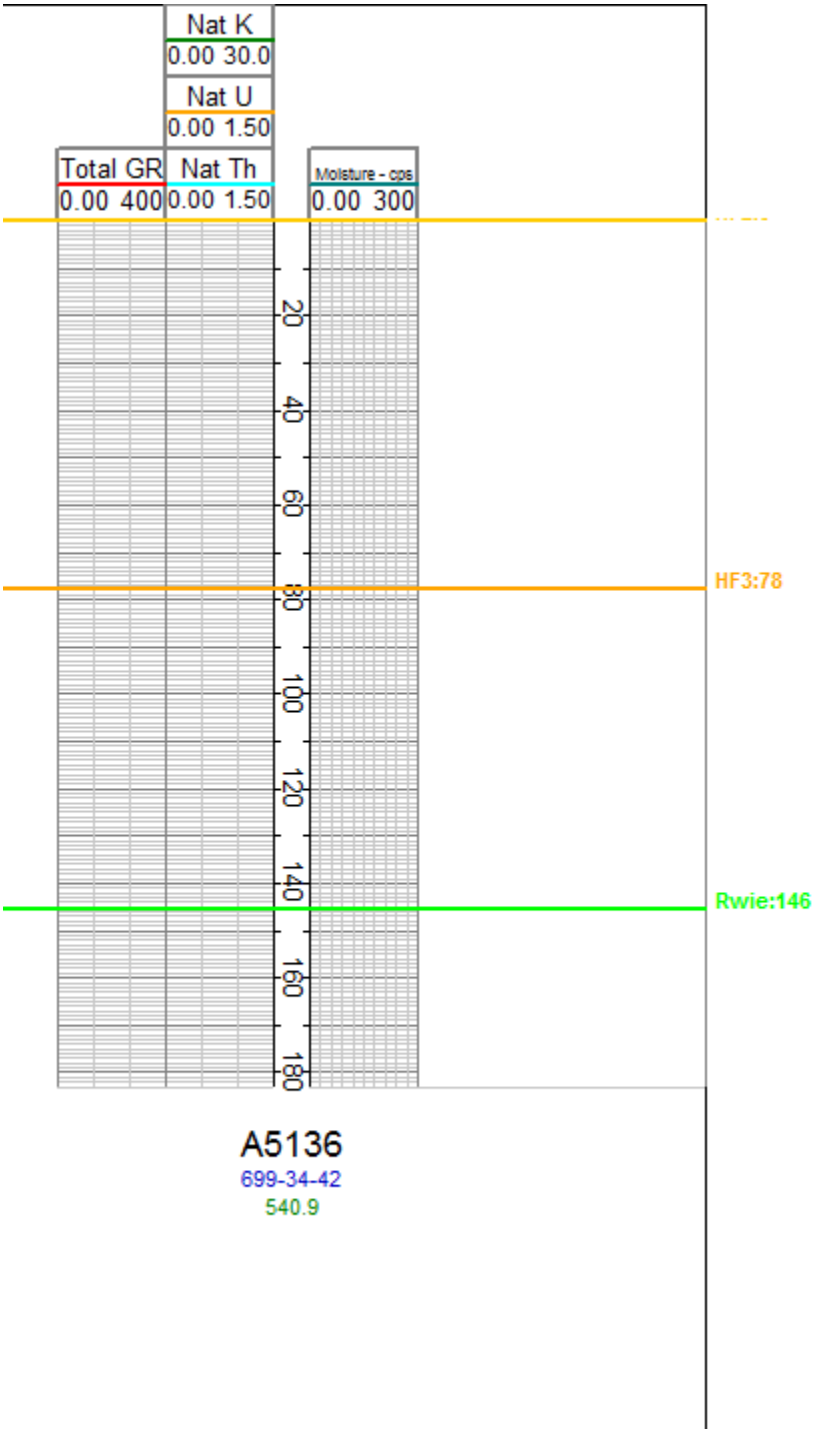

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
Sand and...
Sand and...
Sand and...
HF3:90
Cobbles ...
Sand and...
Rwie:127
20
40
60
80
100
120
A5127
699-32-43

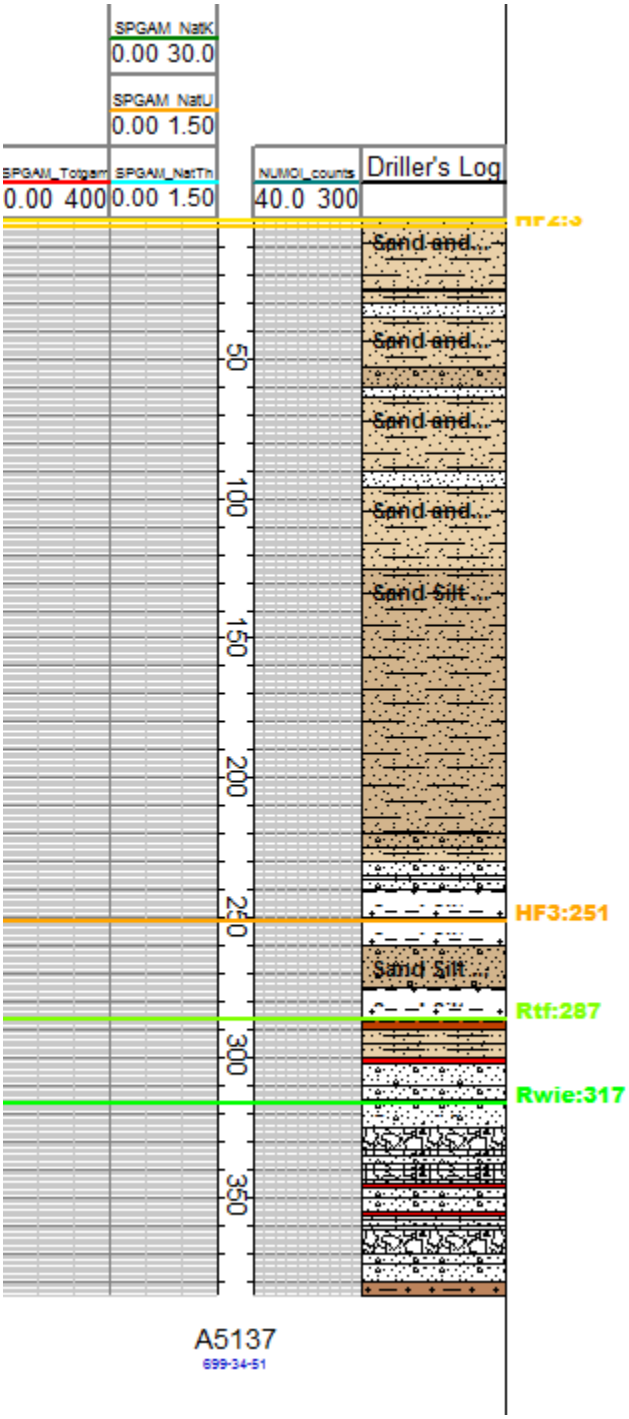

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
Sand and...
Sand Silt ...
Sand and...
HF3:90
Sand and...
Sand Gra...
Cobbles
Rwie:121
20
40
60
80
100
120
A5132
699-33-42

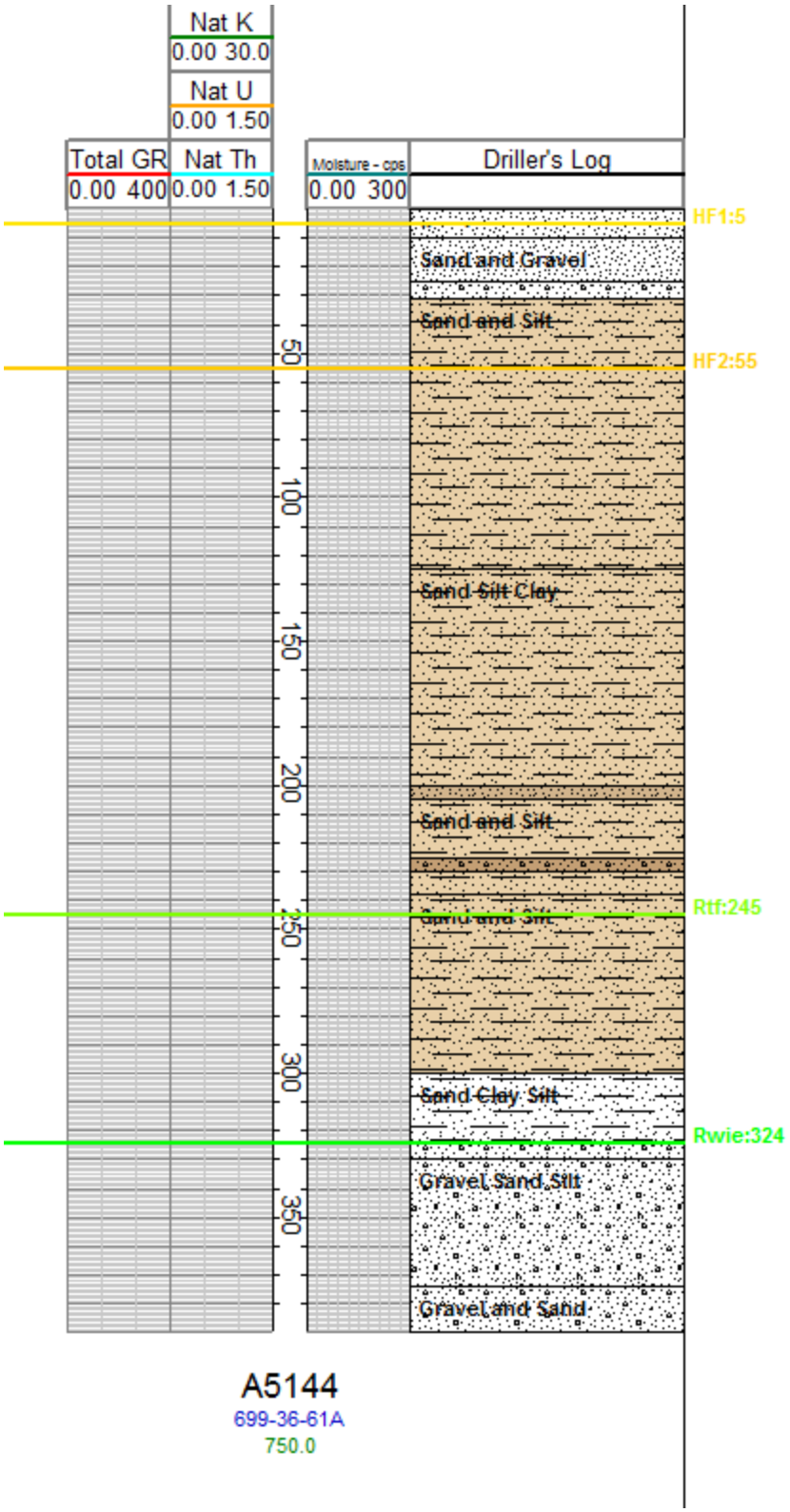

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:70
HF2:10
Sand
50
100
150
Coarse S...
200
Medium ...
250
Fine Sand
HF3:280
Rwie:290
300
Cemented
Cobbles
350
Gravel an...
400
Rim:405
Clay
A5133
699-33-56

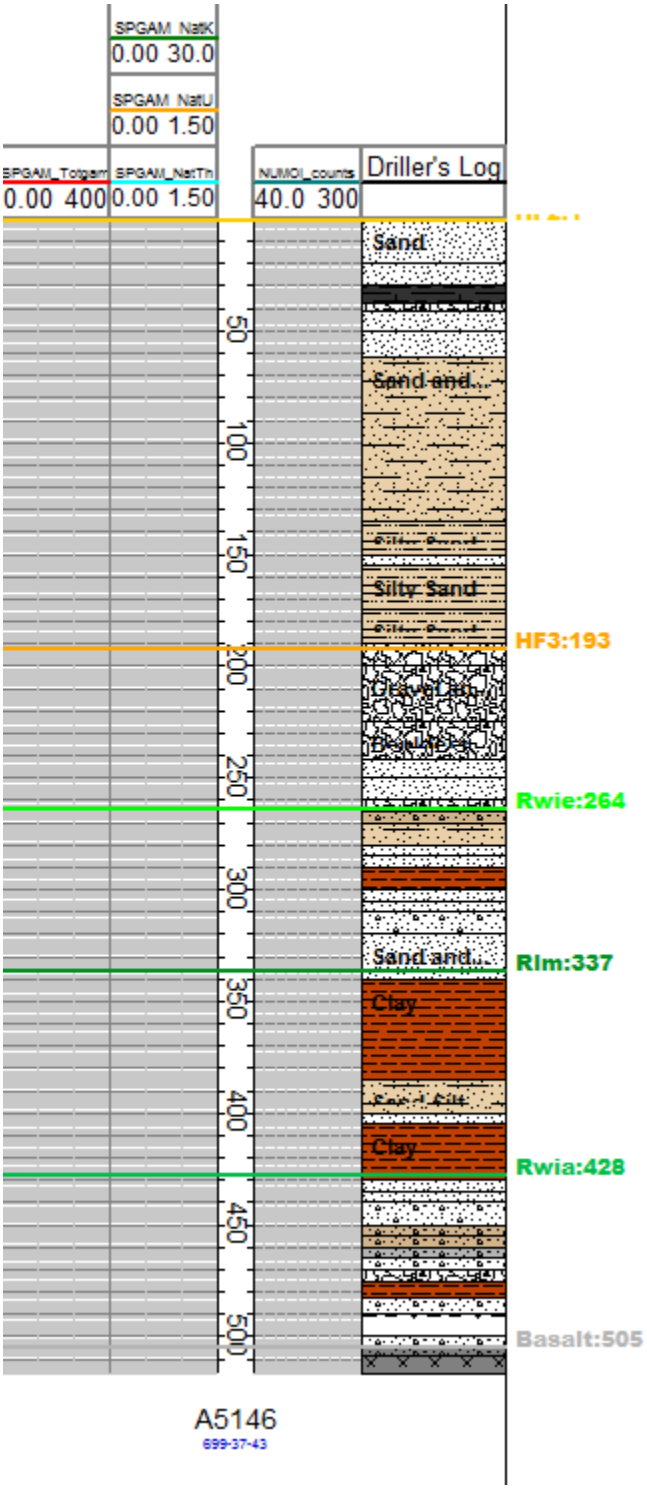

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
HF3:42
Sand Gra...
GravelLan...
20
40
60
80
100
120
140
160
A5134
699-34-39A

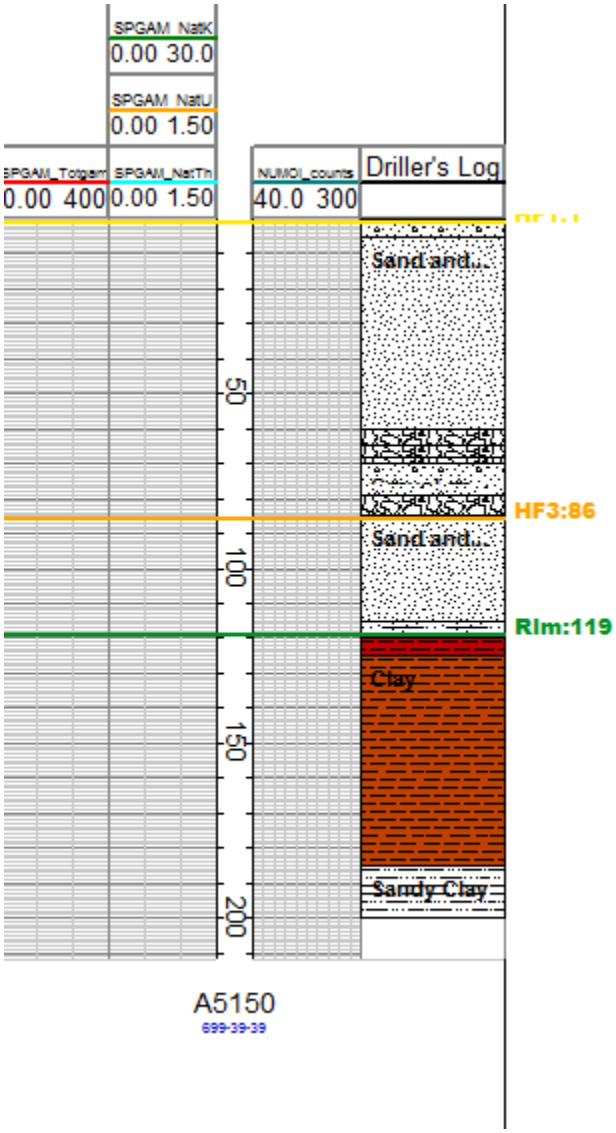

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF3:61
Sand and...
Rwie:147
20
40
60
80
100
120
140
160
A5135
699-34-41B

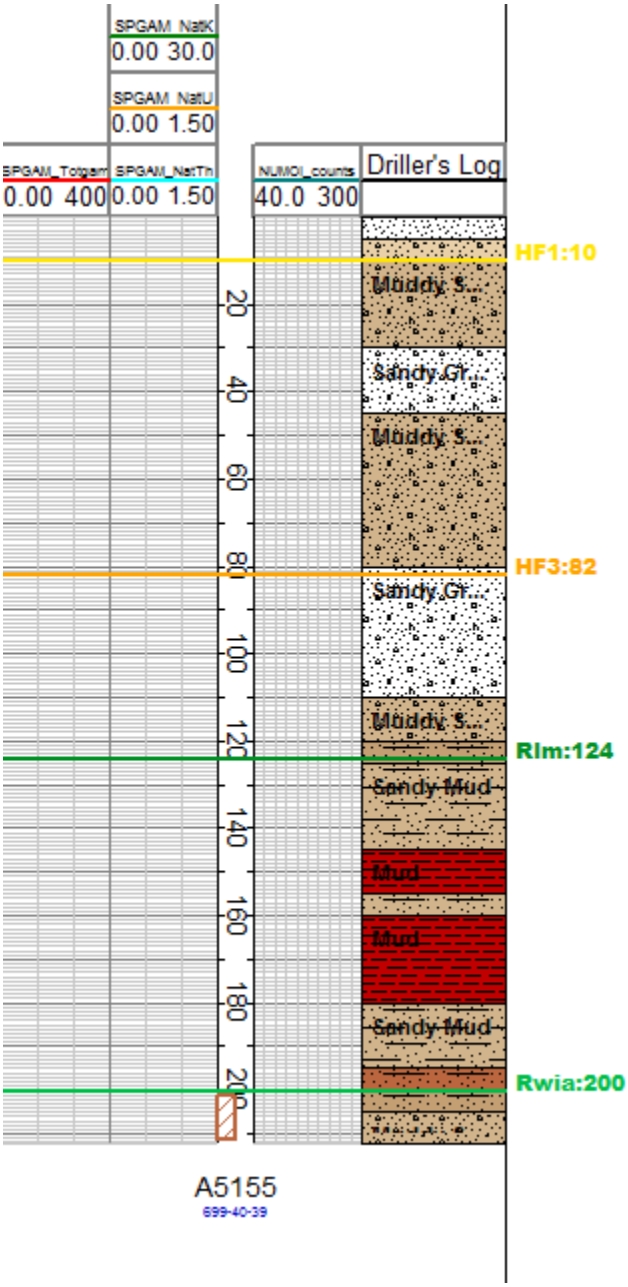

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
160
180
HF3:78
Rwie:146
A5136
699-34-42
540.9

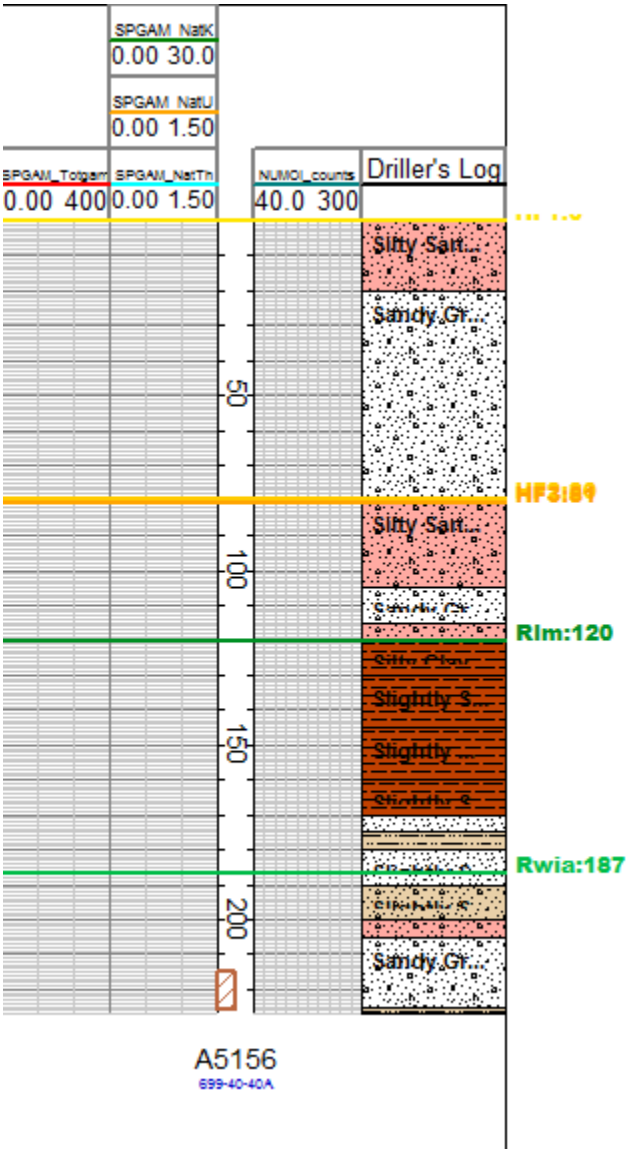

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 300
Driller's Log
Sand and...
Sand and...
Sand and...
Sand and...
Sand Silt ...
HF3:251
Sand Silt ...
Rtf:287
Rwie:317
50
100
150
200
250
300
350
A5137
699-34-51

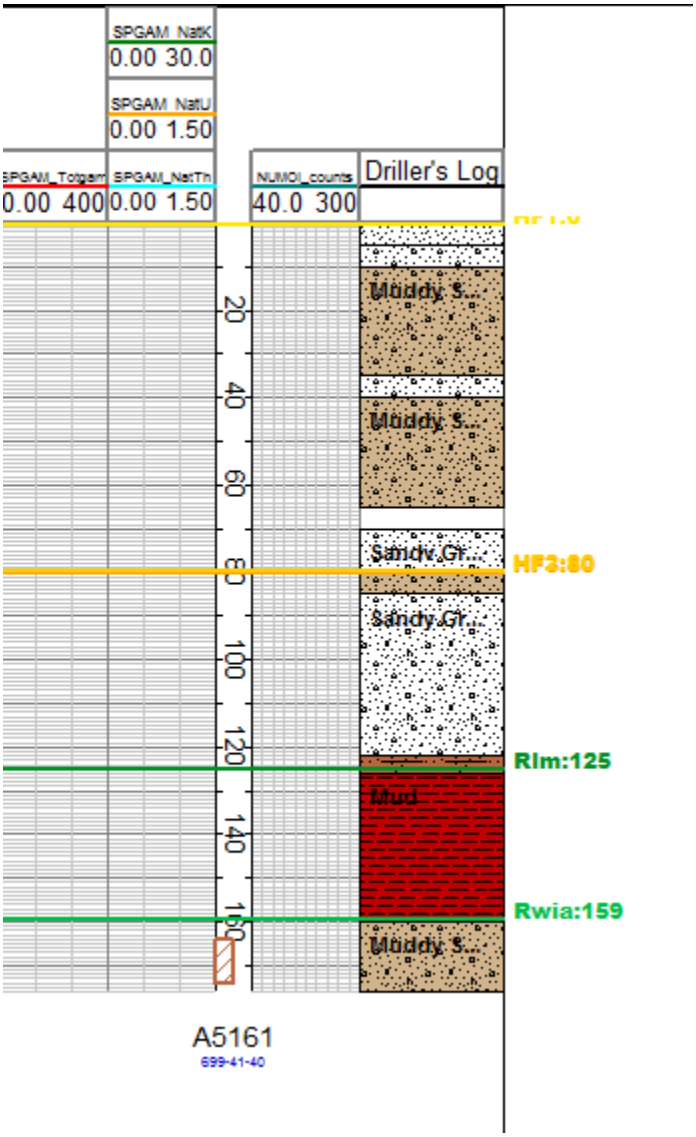

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:5
Sand and Gravel
Sand and Silt
HF2:55
Sand Silt Clay
Sand and Silt
Rtf:245
Sand and Silt
Sand Clay Silt
Rwie:324
Gravel Sand Silt
Gravel and Sand
50
100
150
200
250
300
350
A5144
699-36-61A
750.0

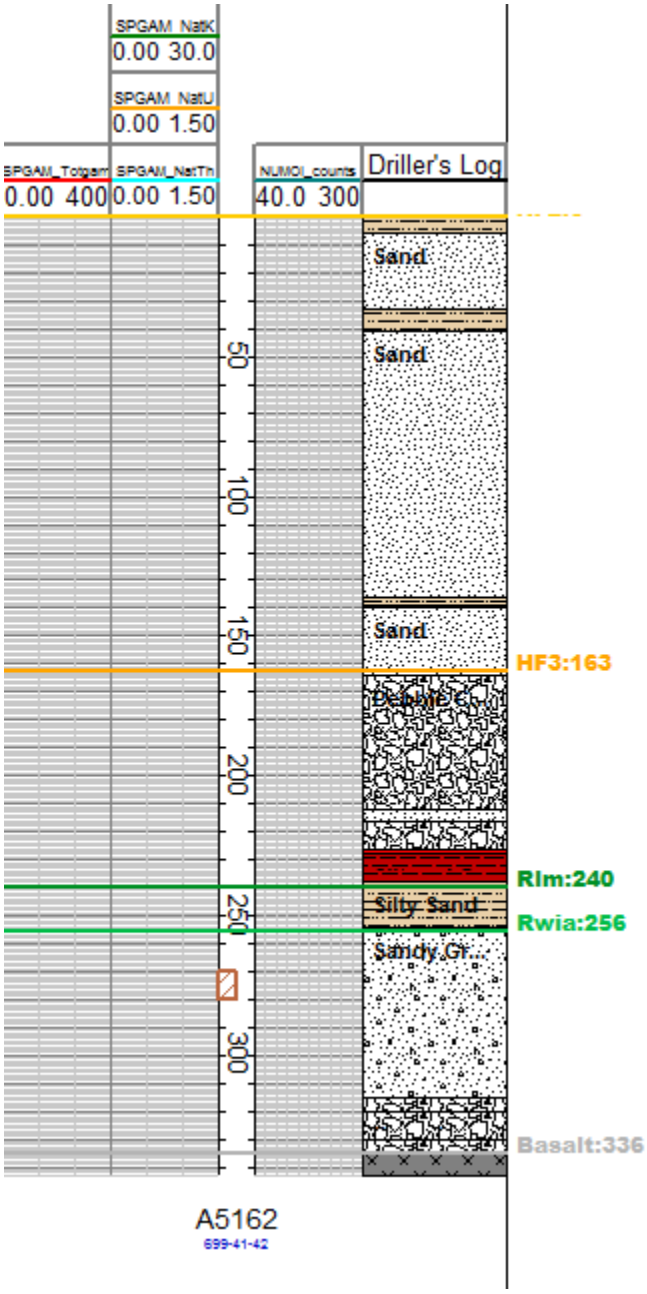

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand and...
Silty Sand
HF3:193
Rwie:264
Sand and...
Rlm:337
Clay
Clay
Rwia:428
Basalt:505
50
100
150
200
250
300
350
400
450
500
A5146
699-37-43

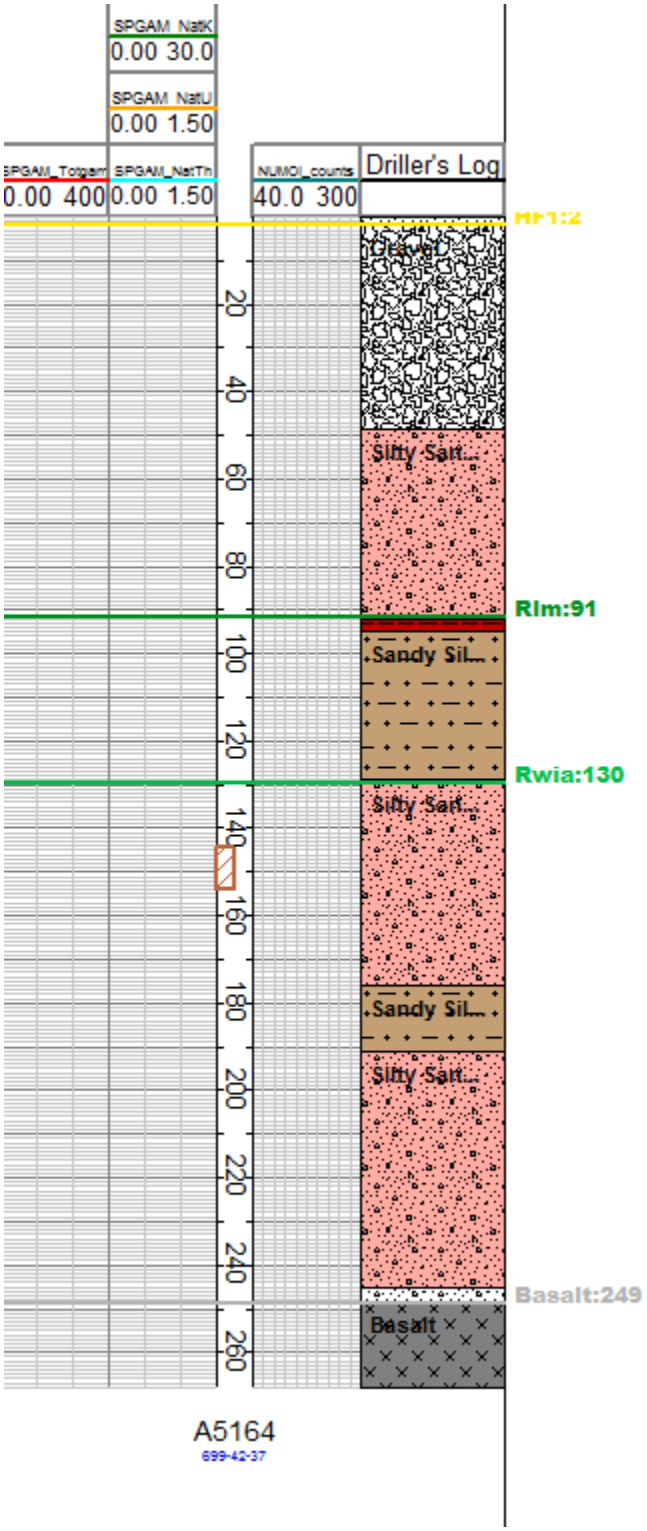

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF3:86
Sand and...
Rlm:119
Clay
Sandy Clay
50
100
150
200
A5150
699-39-39

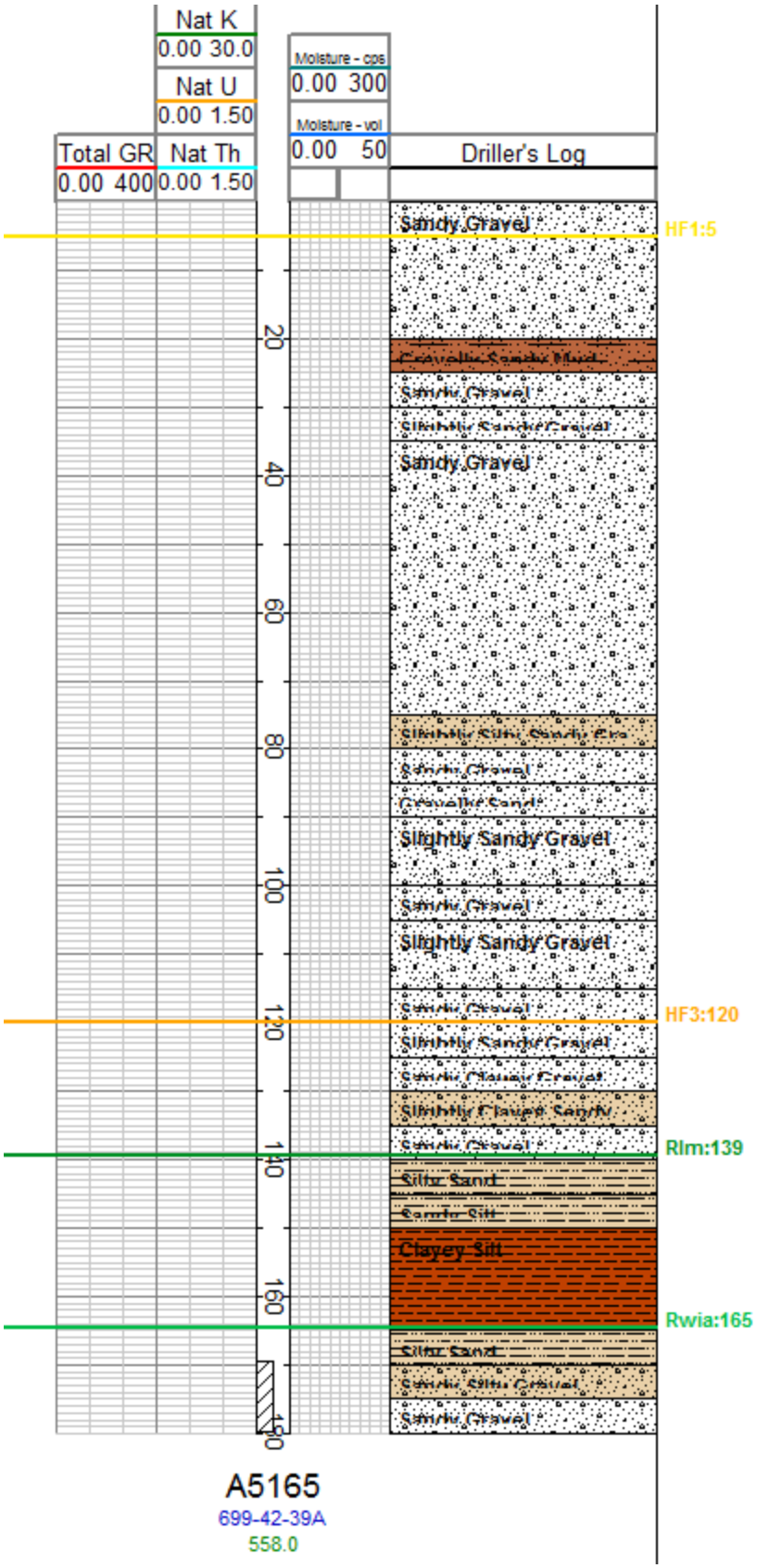

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:10
Muddy S...
Sandy Gr...
Muddy S...
HF3:82
Sandy Gr...
Muddy S...
Rlm:124
Sandy Mud
Mud
Mud
Sandy Mud
Rwia:200
20
40
60
80
100
120
140
160
180
200
A5155
699-40-39

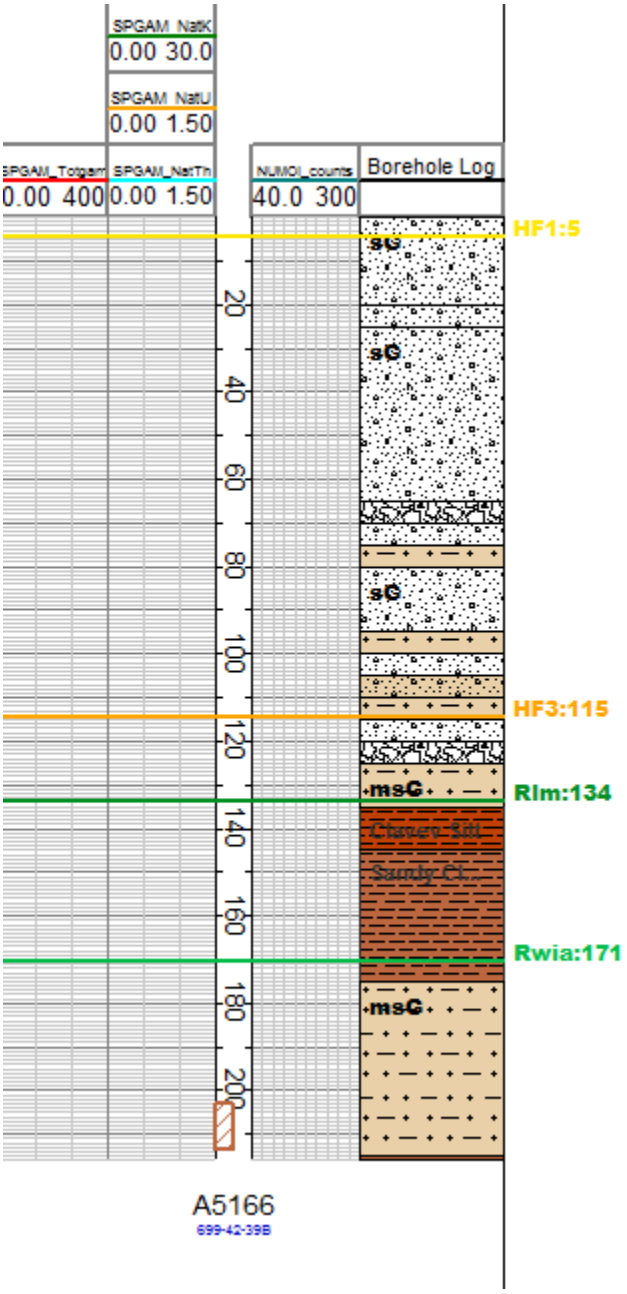

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand...
Sandy Gr...
Silty Sand...
Rlm:120
Slightly S...
Slightly ...
Rwia:187
Sandy Gr...
50
100
150
200
A5156
699-40-40A

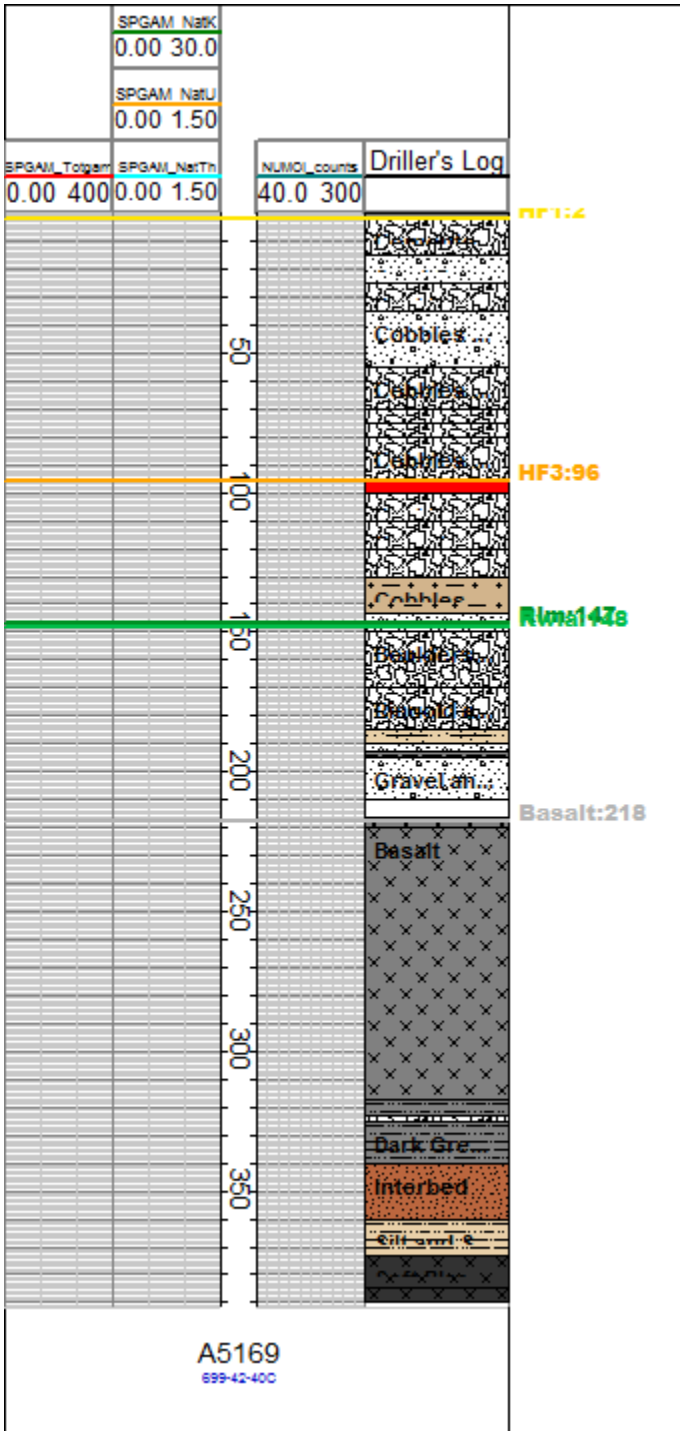

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
140
160
Muddy S...
Muddy S...
Sandy Gr...
Sandy Gr...
Mud
Muddy S...
HP3:80
Rlm:125
Rwia:159
A5161
699-41-40

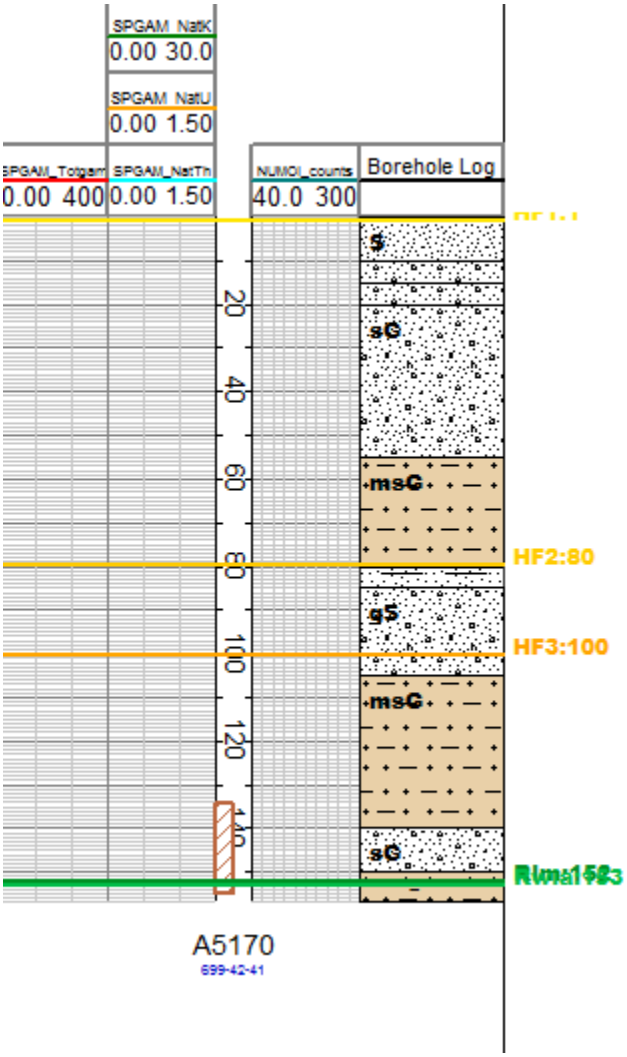

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
Sand
HF3:163
Pebble C...
Rlm:240
Silty Sand
Rwia:256
Sandy Gr...
Basalt:336
50
100
150
200
250
300
A5162
699-41-42

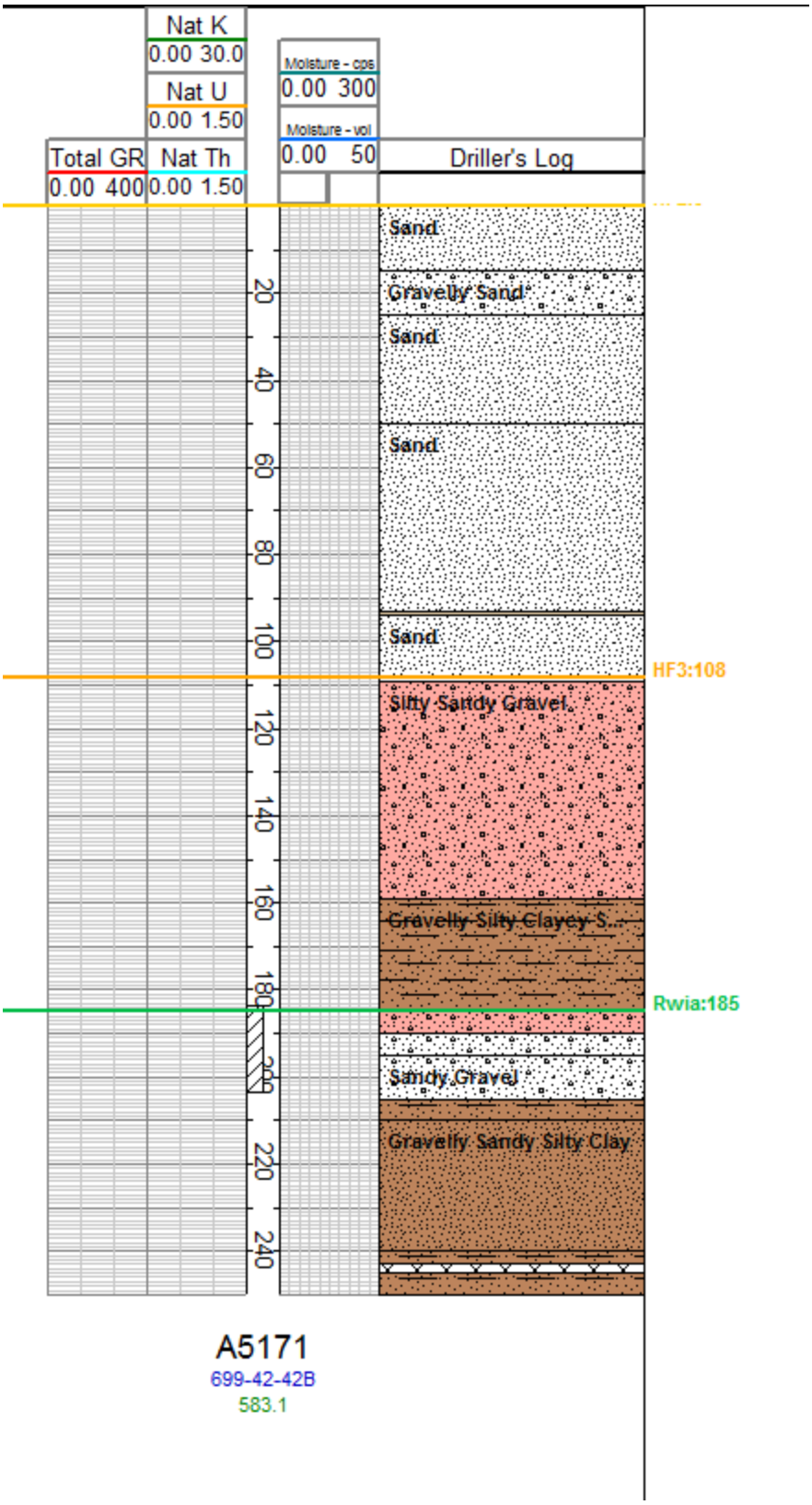

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Gravel
Silty Sand
Rlm:91
Sandy Sil...
Rwia:130
Silty Sand
Sandy Sil...
Silty Sand
Basalt:249
Basalt
20
40
60
80
100
120
140
160
180
200
220
240
260
A5164
699-42-37

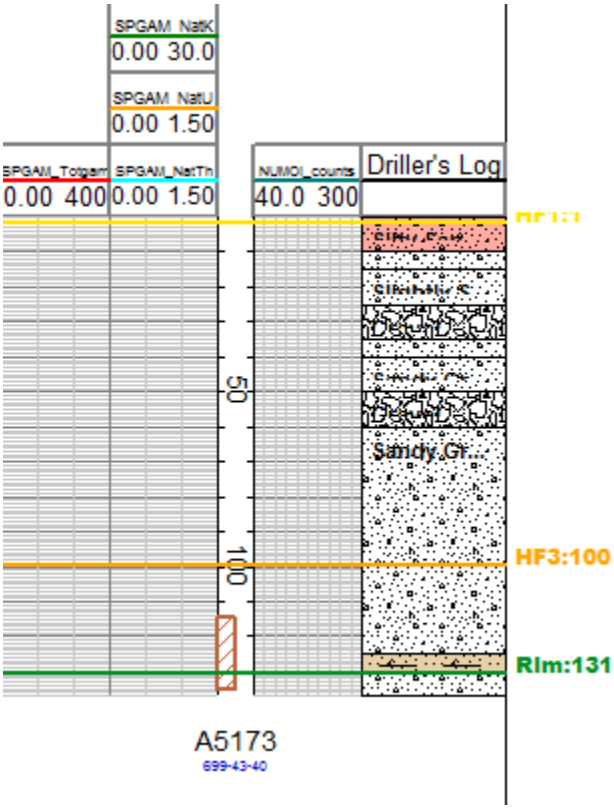

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Sandy Gravel
HF1:5
Sandy Gravel
Slightly Sandy Gravel
Slightly Sandy Gravel
HF3:120
Rlm:139
Silty Sand
Clayey Silt
Rwia:165
20
40
60
80
100
120
140
160
180
A5165
699-42-39A
558.0

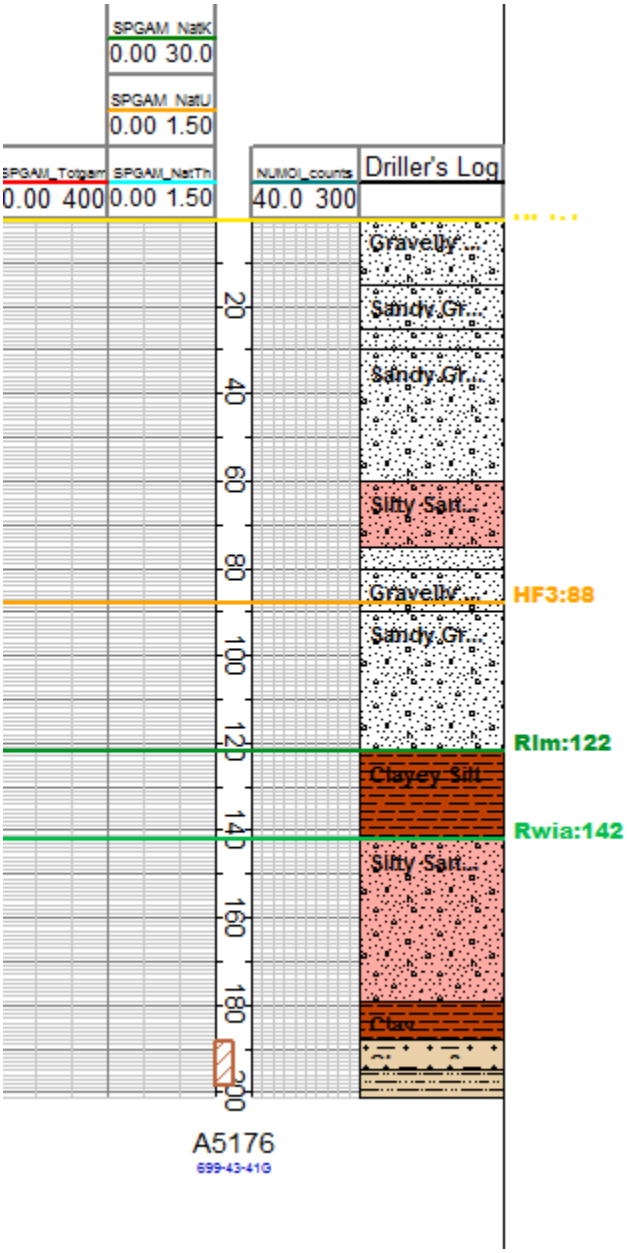

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:5
HF3:115
Rlm:134
Rwia:171
sG
msG
Clayey Silt
Sandy Cl
20
40
60
80
100
120
140
160
180
200
A5166
699-42-39B

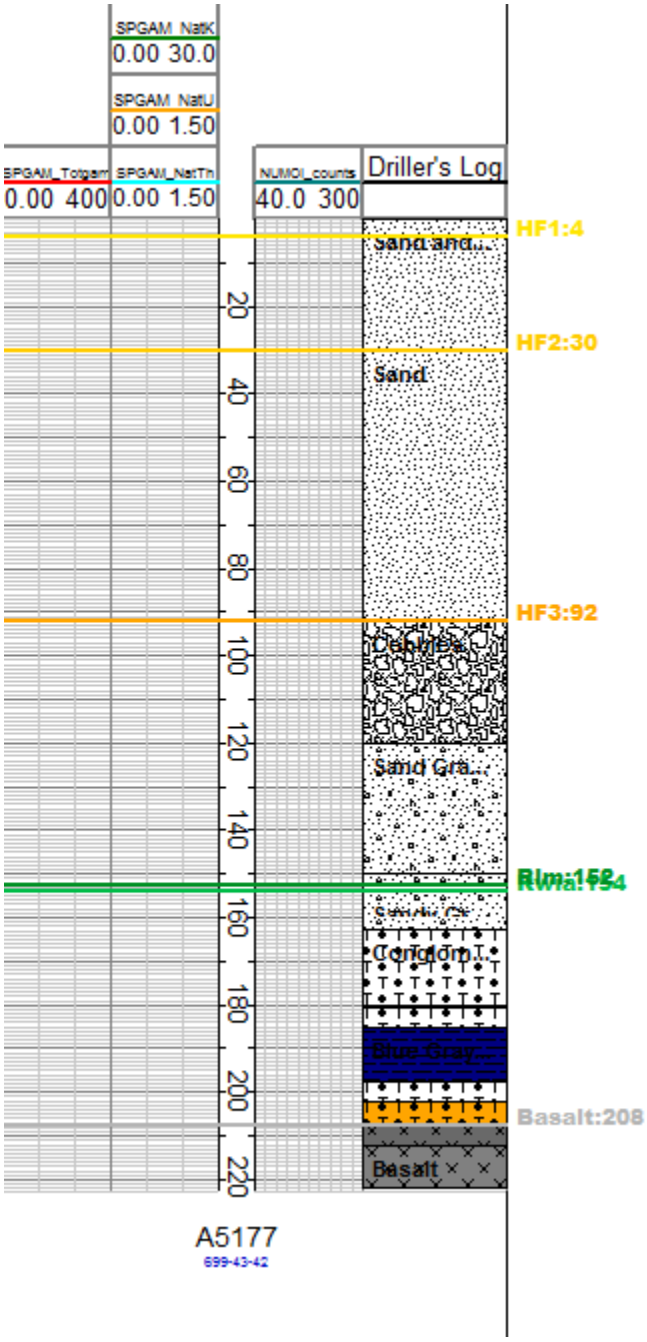

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Cobbles
HF3:96
Basalt:218
Basalt
Interbed
A5169
699-42-40C

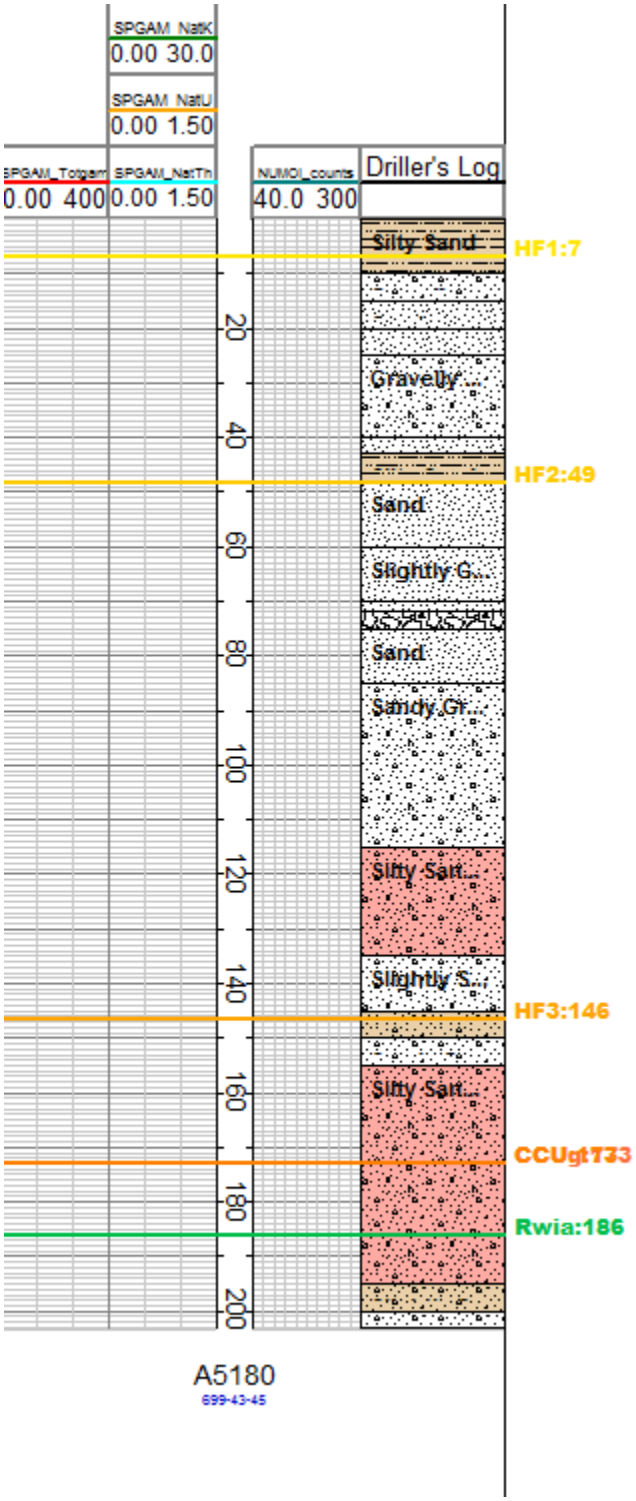

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
S
sG
msG
gS
msG
sG
HF2:80
HF3:100
20
40
60
80
100
120
140
A5170
699-42-41

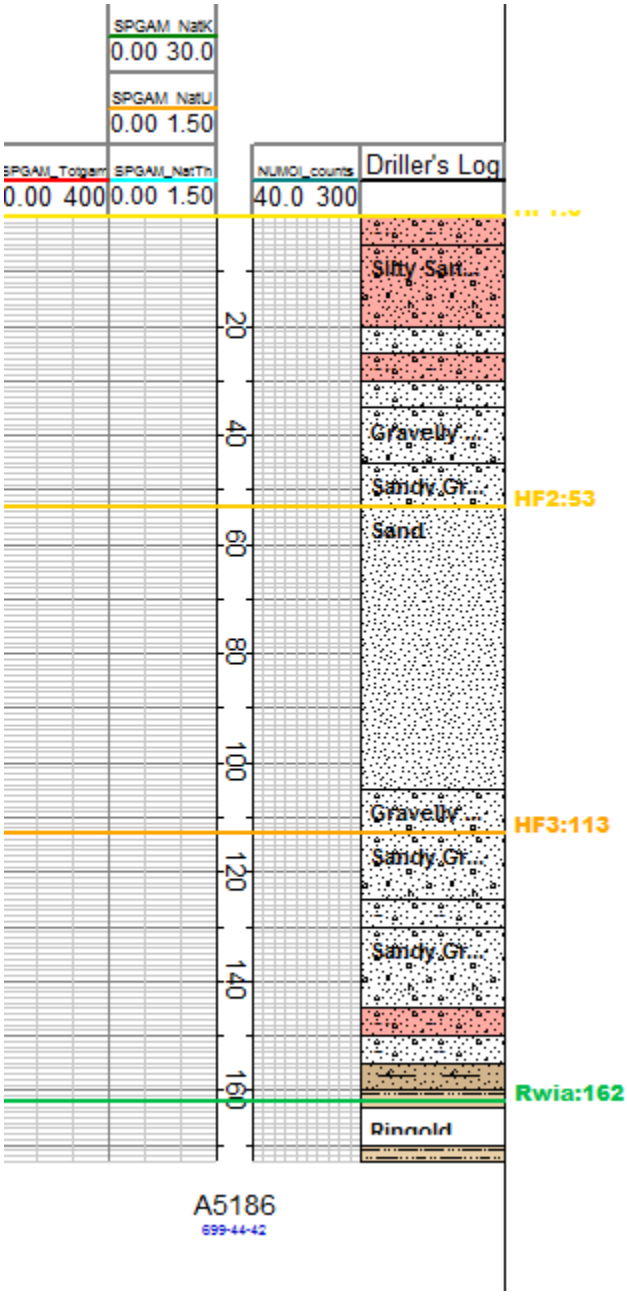

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
20
40
60
80
100
120
140
160
180
200
220
240
Sand
Gravelly Sand
Sand
Sand
Sand
HF3:108
Silty Sandy Gravel
Gravelly Silty Clayey S...
Rwia:185
Sandy Gravel
Gravelly Sandy Silty Clay
A5171
699-42-42B
583.1

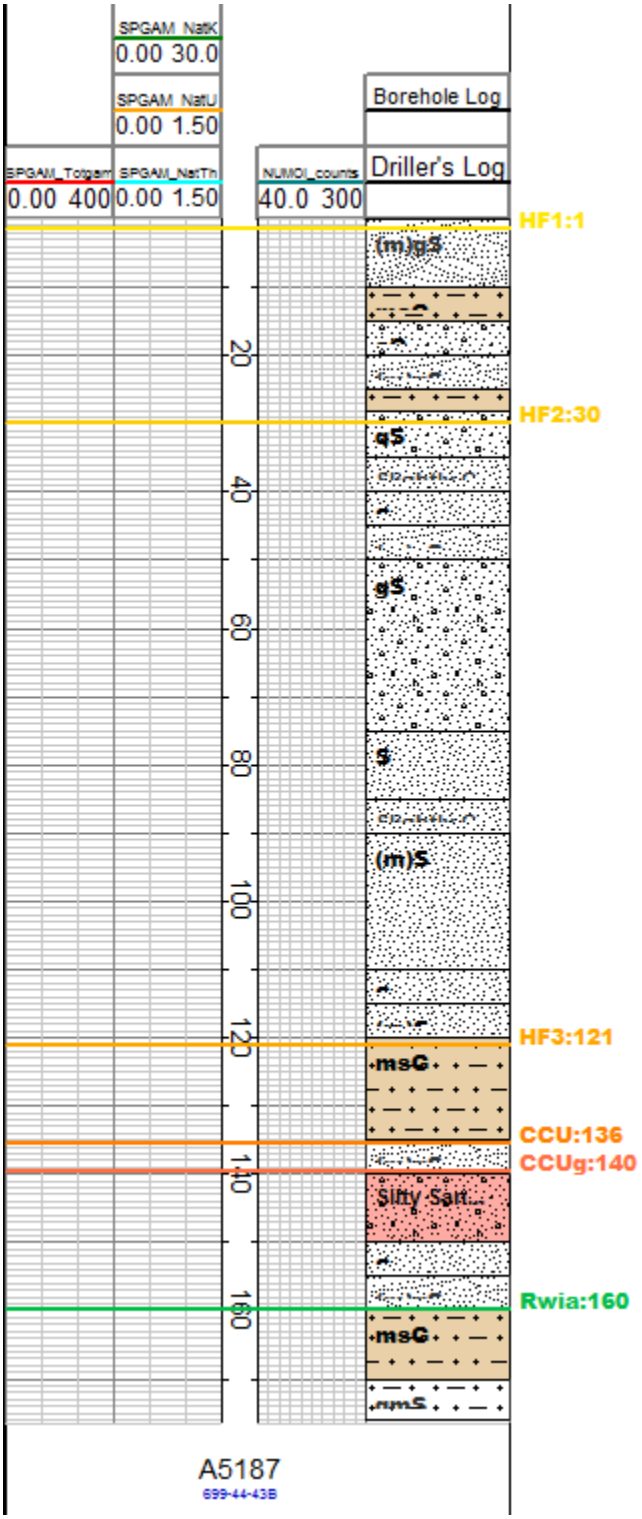

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
Sandy Gr...
HF3:100
Rlm:131
A5173
699-43-40

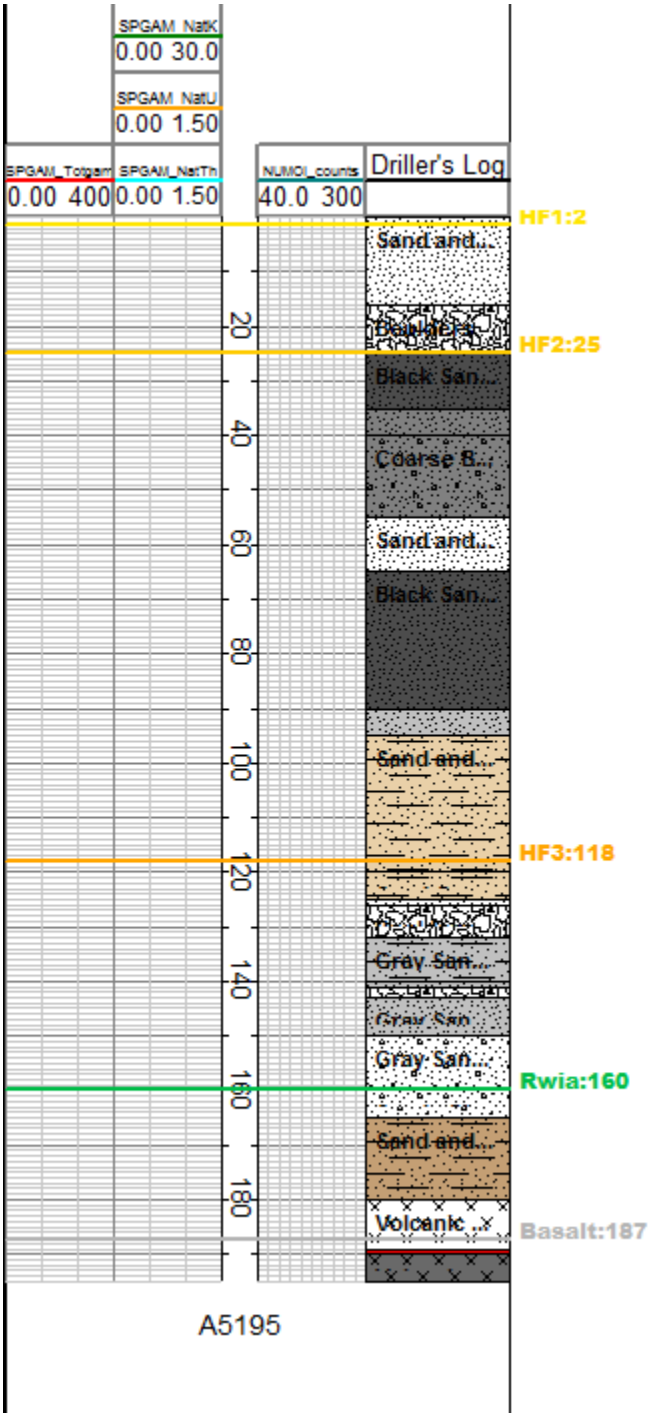

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Gravelly ...
Sandy Gr...
Sandy Gr...
Silty Sant...
Gravelly ...
Sandy Gr...
Clayey Silt
Silty Sant...
Clay
HF3:88
Rlm:122
Rwia:142
20
40
60
80
100
120
140
160
180
200
A5176
699-43-41G

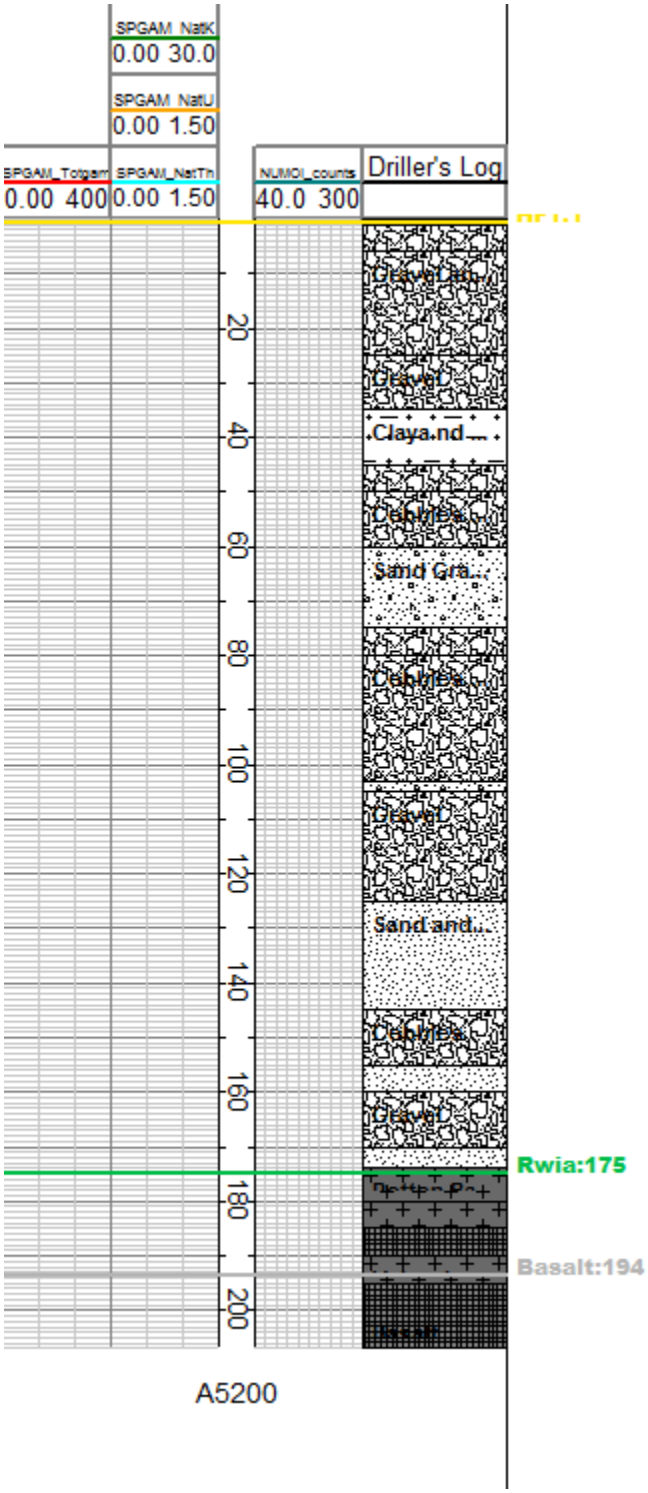

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:4
HF2:30
HF3:92
Sand
Cobbles
Sand Gra...
Blue Gray
Basalt:208
Basalt
20
40
60
80
100
120
140
160
180
200
220
A5177
699-43-42


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand
HF1:7
Gravelly ...
HF2:49
Sand
Slightly G...
Sand
Sandy Gr...
Silty Sand...
Slightly S...
HF3:146
Silty Sand...
CCUgt733
Rwia:186
20
40
60
80
100
120
140
160
180
200
A5180
699-43-45

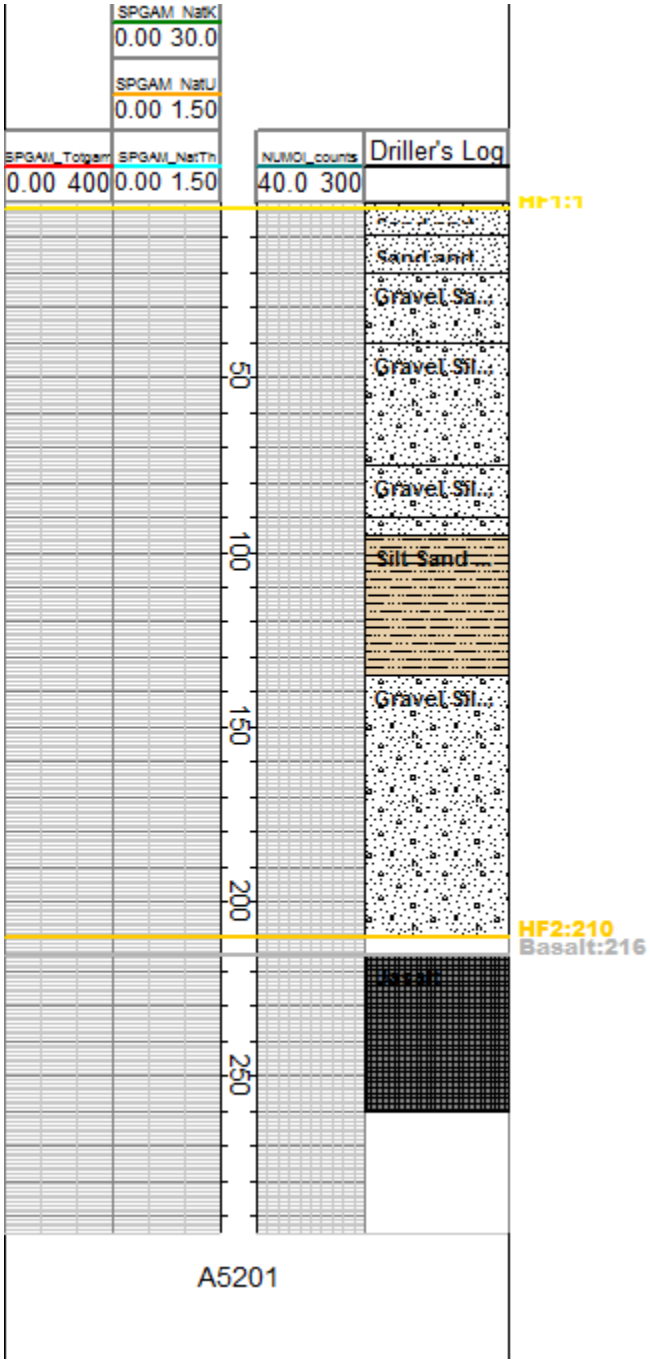

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sant...
Gravelly ...
Sandy Gr...
HF2:53
Sand
Gravelly ...
HF3:113
Sandy Gr...
Sandy Gr...
Rwia:162
Ringold
20
40
60
80
100
120
140
160
A5186
699-44-42

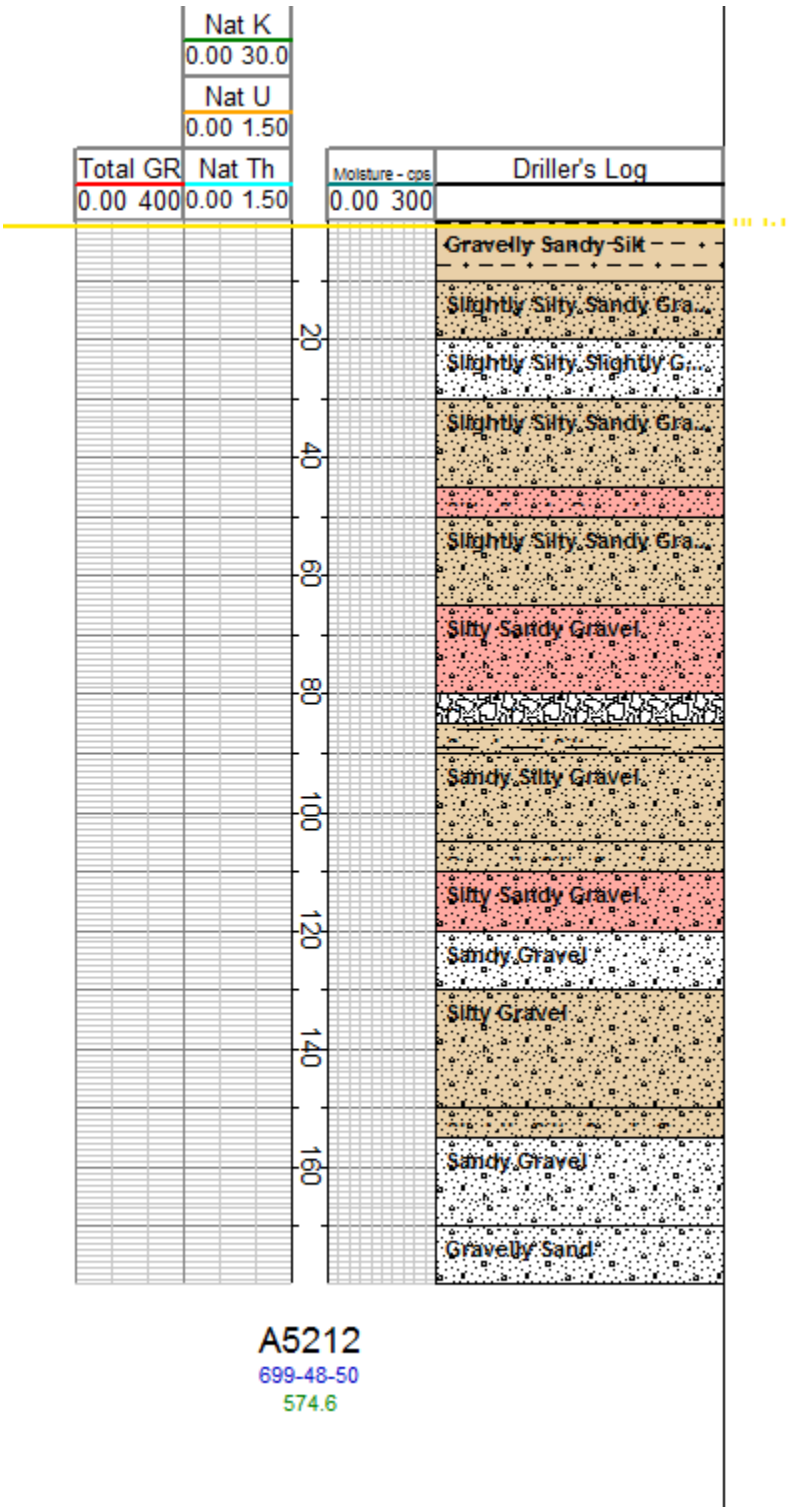

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Driller's Log
HF1:1
HF2:30
HF3:121
CCU:136
CCUg:140
Rwia:160
(m)gS
gS
S
(m)S
msG
Silty San...
msG
A5187
699-44-43B

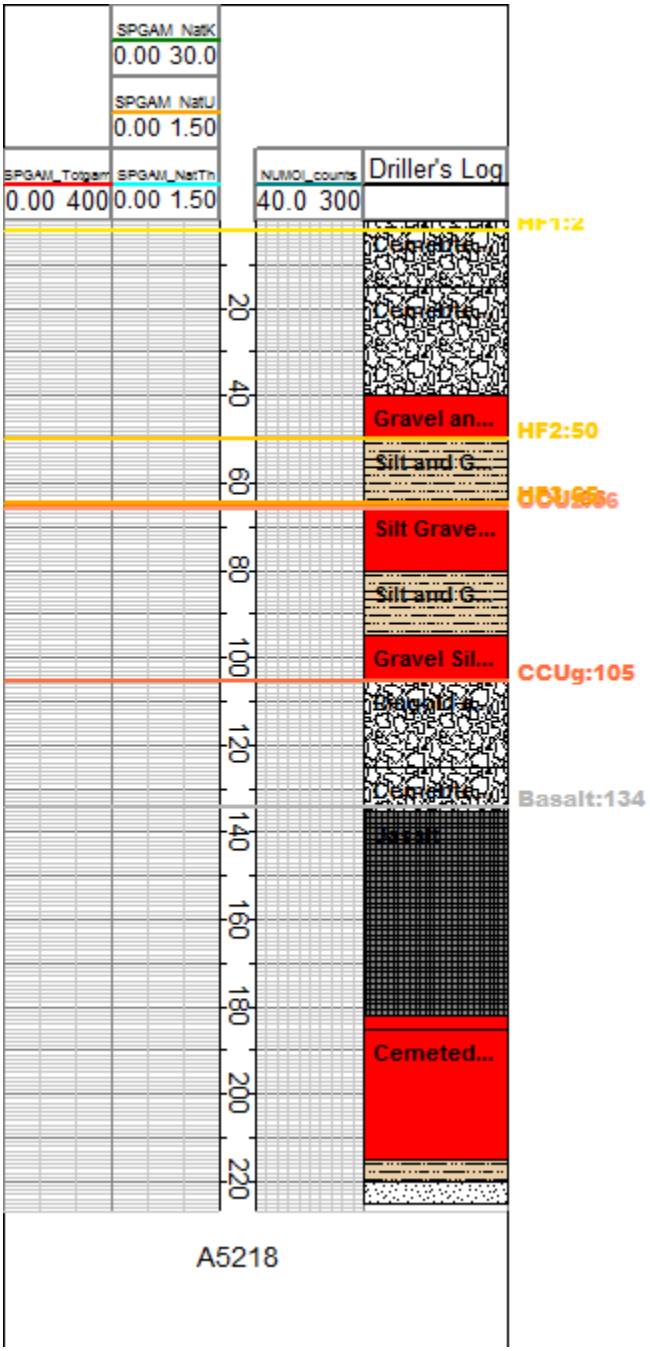

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:2
Sand and...
HF2:25
Black San...
Coarse B...
Sand and...
Black San...
Sand and...
HF3:118
Gray San...
Gray San...
Gray San...
Rwia:160
Sand and...
Volcanic ...
Basalt:187
20
40
60
80
100
120
140
160
180
A5195

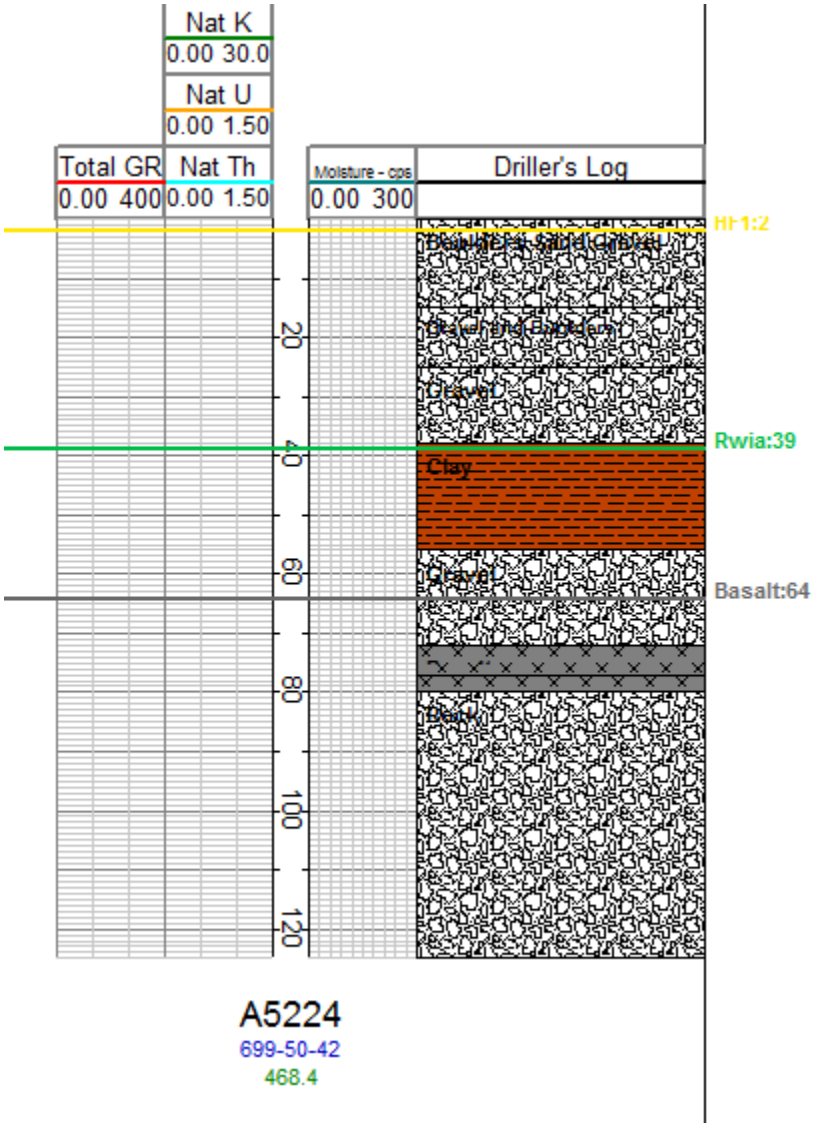

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
140
160
180
200
Claya.nd
Sand Gra...
Sand and...
Rwia:175
Basalt:194

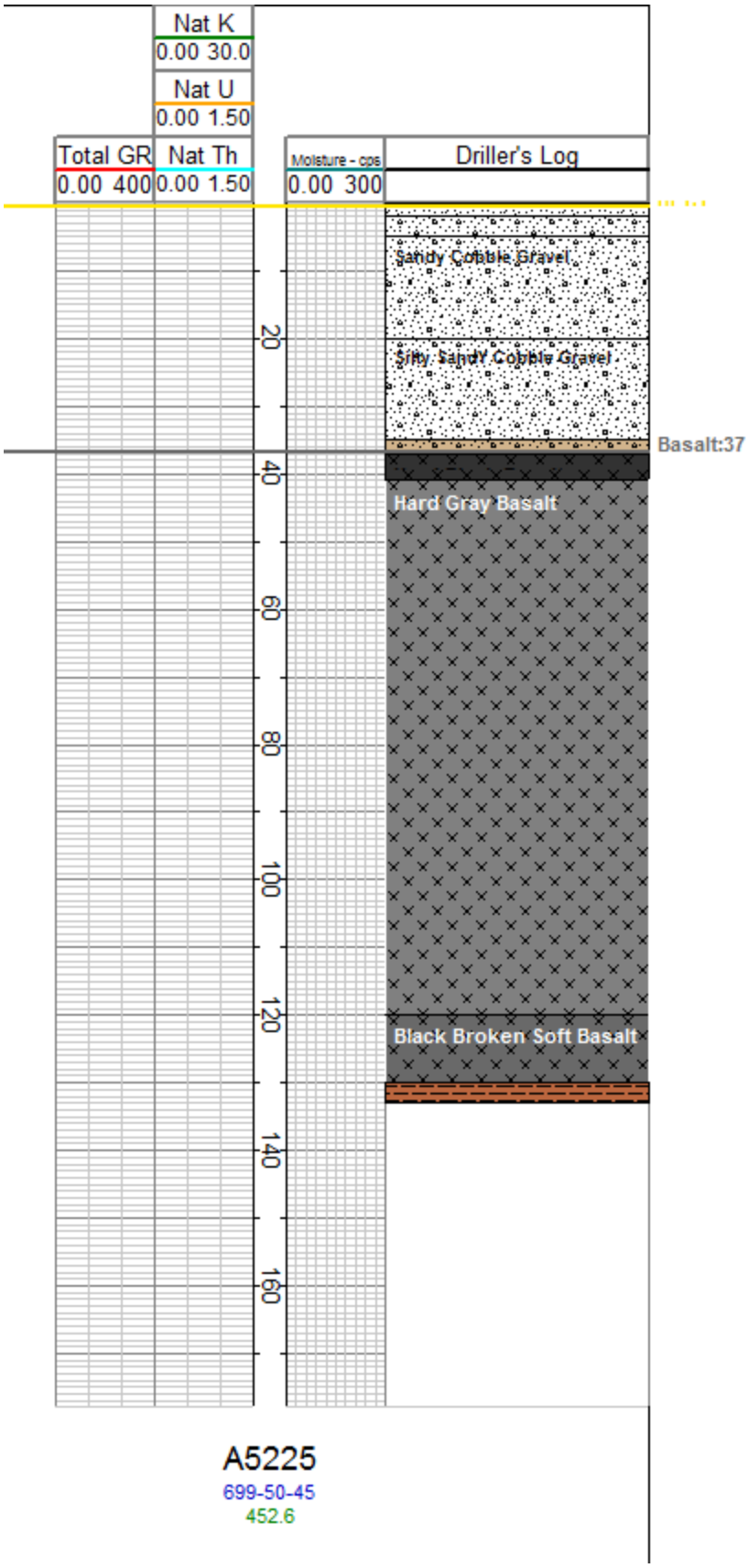
A5200

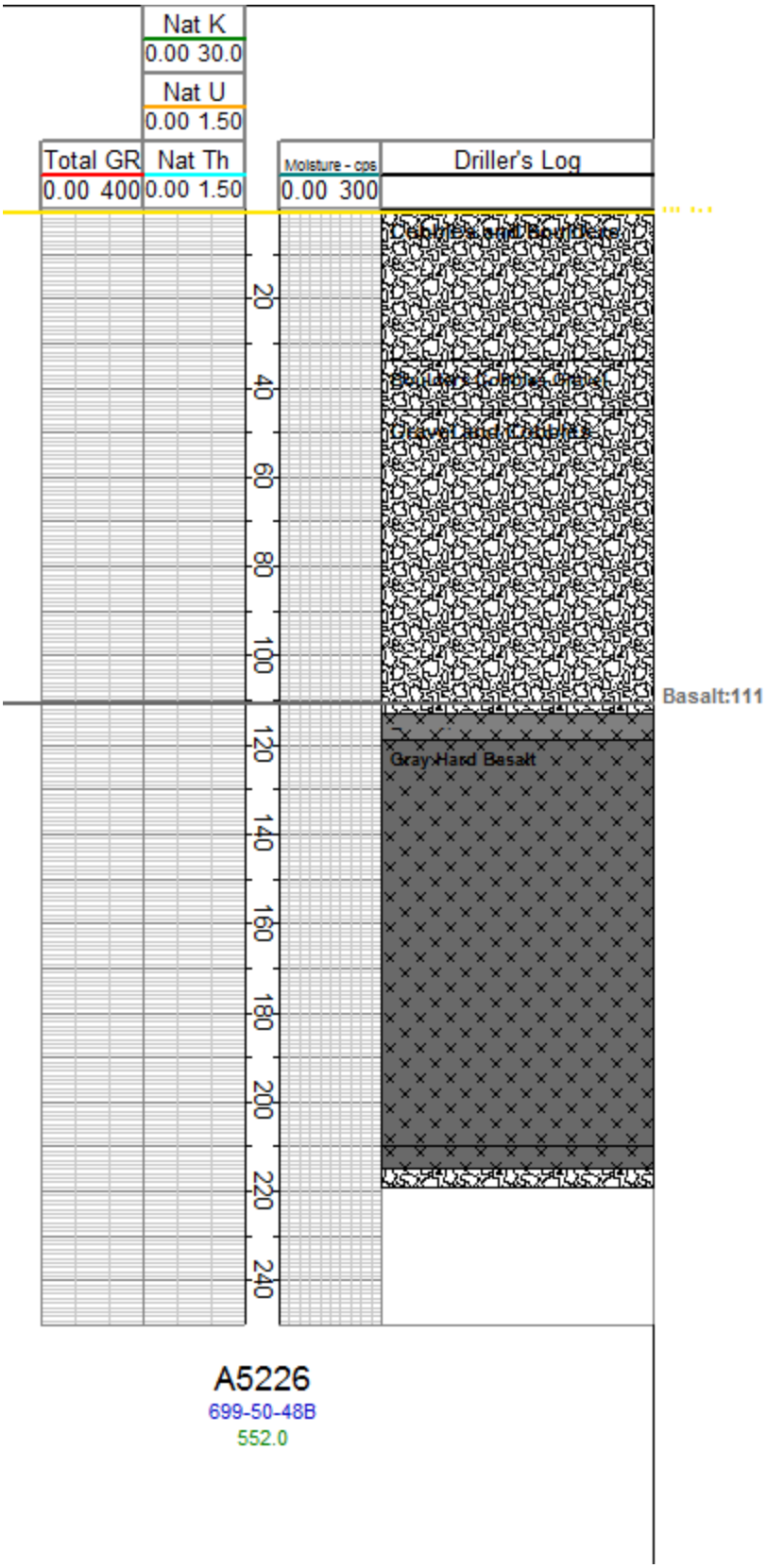

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and
Gravel Sa..
Gravel Sil..
Gravel Sil..
Silt Sand ..
Gravel Sil..
HF2:210
Basalt:216
50
100
150
200
250
A5201

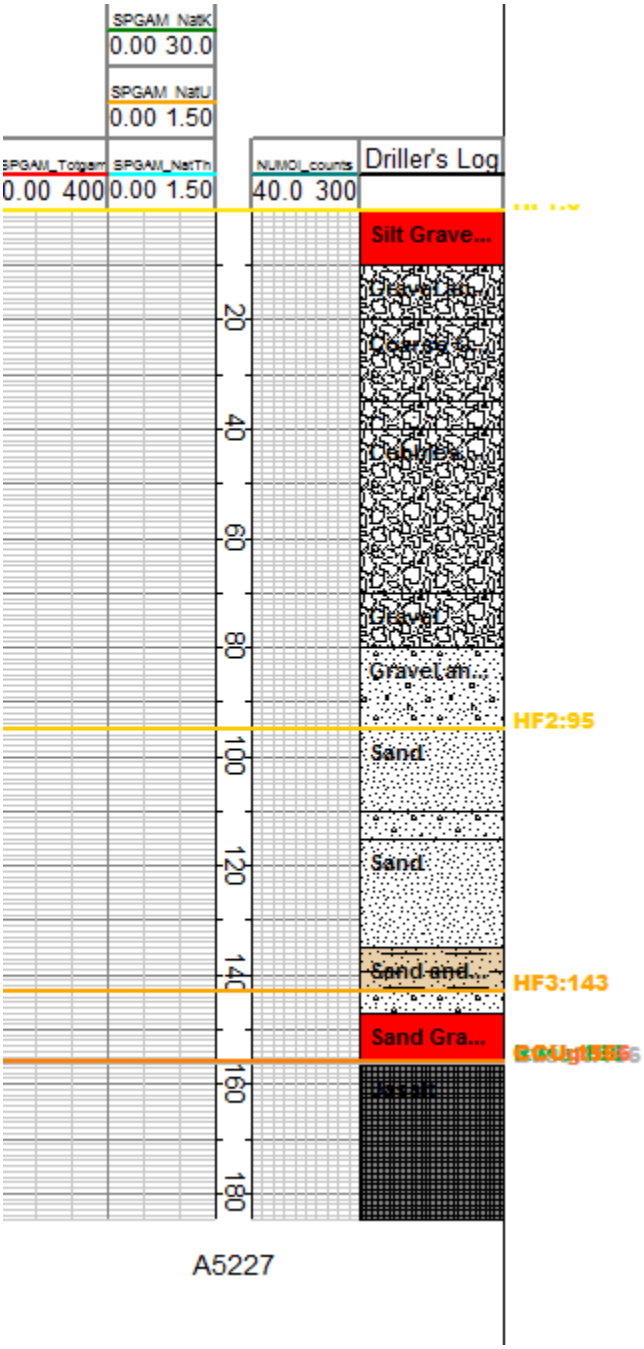

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravelly Sandy Silt
Slightly Silty Sandy Gra...
Slightly Silty Slightly G...
Slightly Silty Sandy Gra...
Slightly Silty Sandy Gra...
Silty Sandy Gravel
Sandy Silty Gravel
Silty Sandy Gravel
Sandy Gravel
Silty Gravel
Sandy Gravel
Gravelly Sand
20
40
60
80
100
120
140
160
A5212
699-48-50
574.6


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:2
Cemented...
Cemented...
Gravel an...
HF2:50
Silt and G...
Silt Grave...
Silt and G...
Gravel Sil...
CCUg:105
Cemented...
Cemented...
Basalt:134
Cemeted...
20
40
60
80
100
120
140
160
180
200
220
A5218

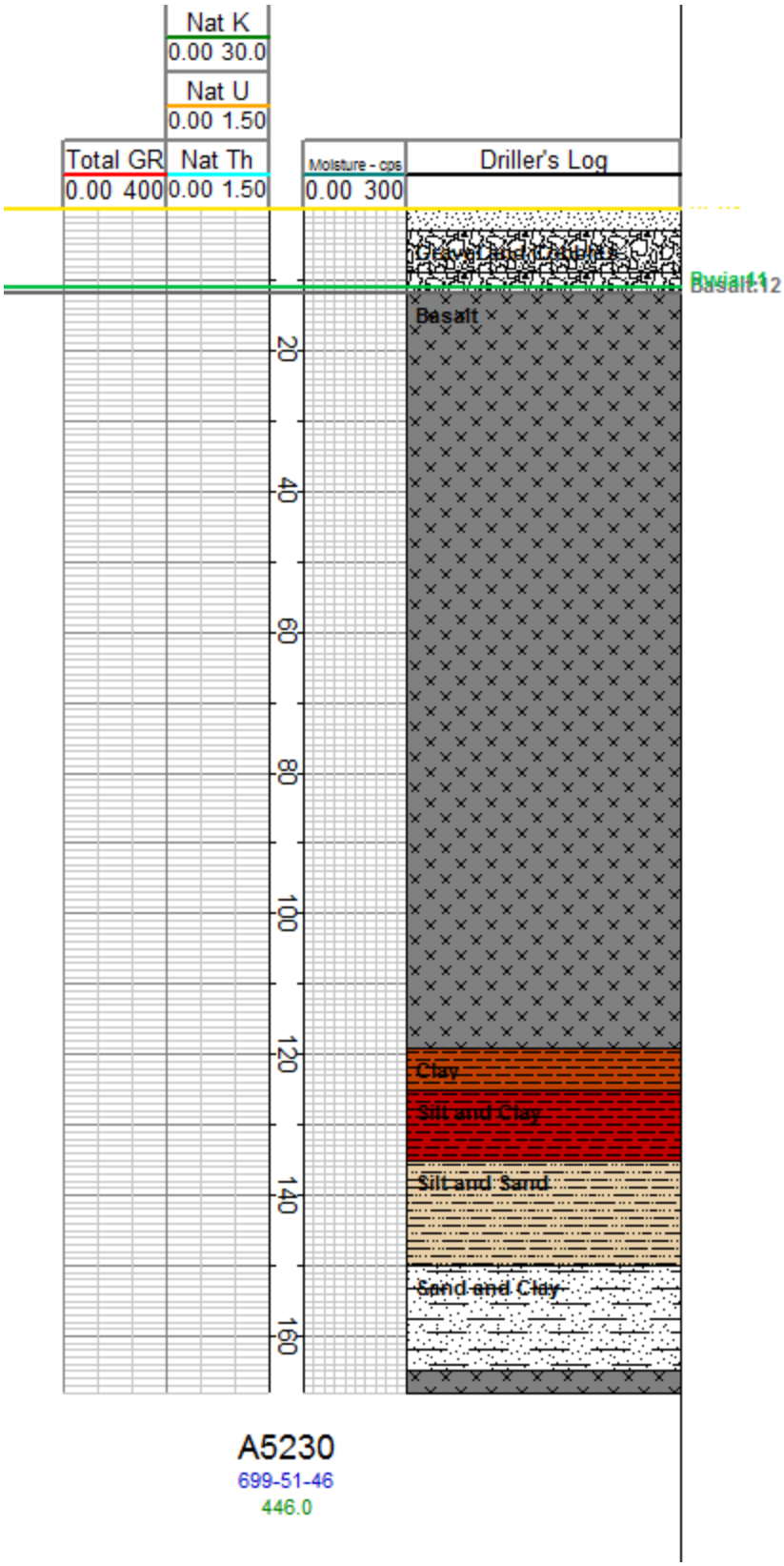

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:2
Rwia:39
Basalt:64
Clay
Gravel
20
40
60
80
100
120
A5224
699-50-42
468.4

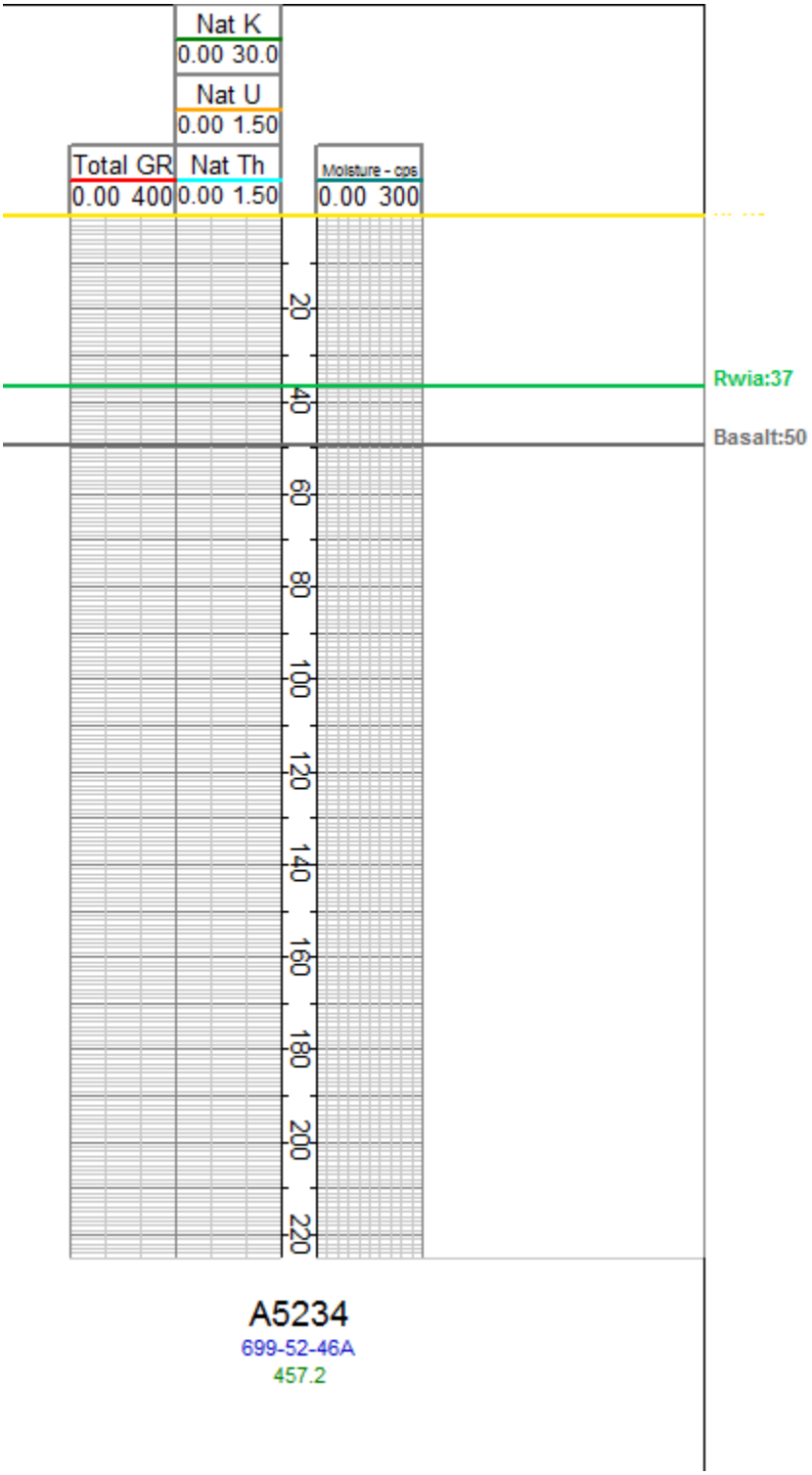

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sandy Cobble Gravel
Silty Sandy Cobble Gravel
Basalt:37
Hard Gray Basalt
Black Broken Soft Basalt
20
40
60
80
100
120
140
160
A5225
699-50-45
452.6

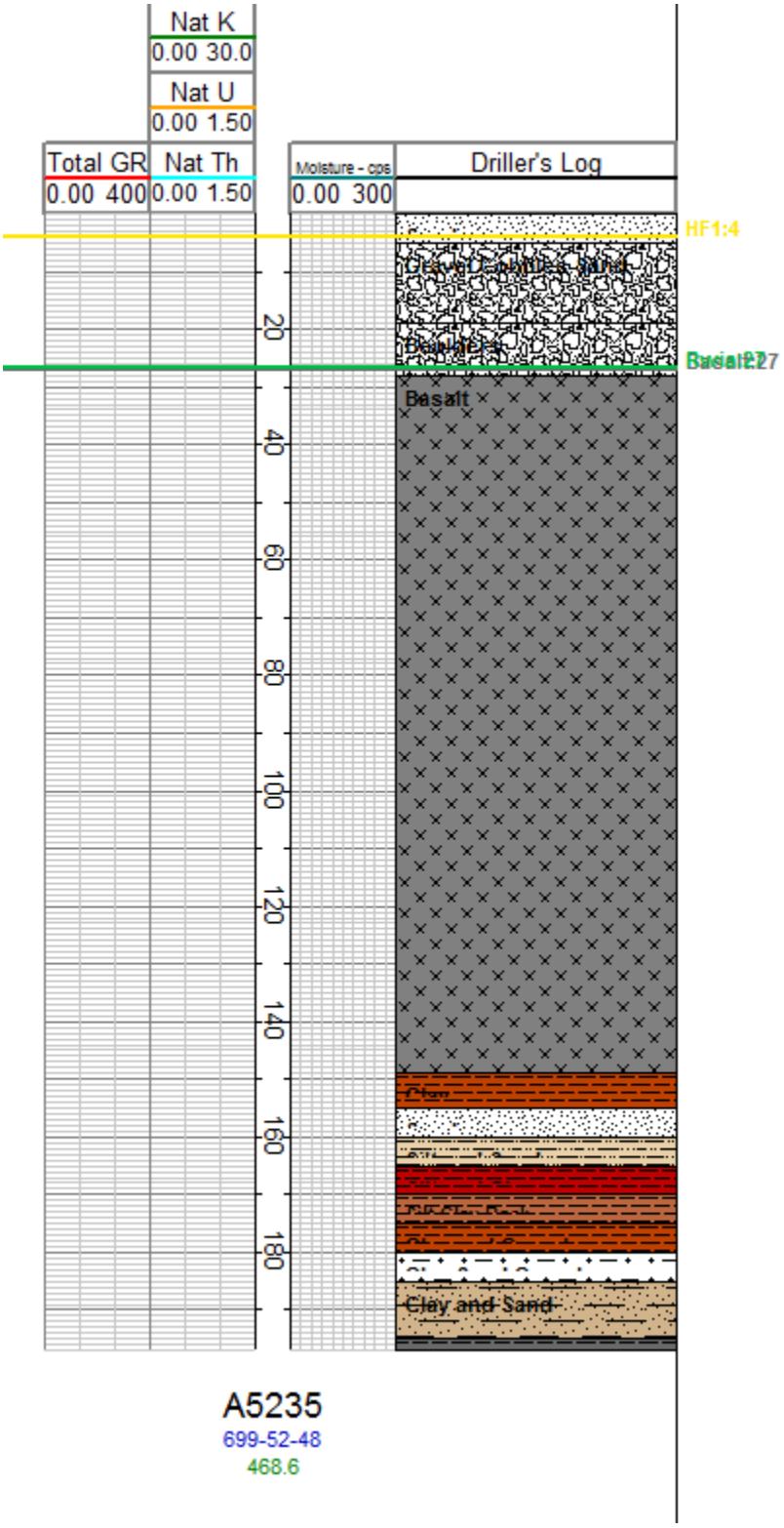

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
20
40
60
80
100
120
140
160
180
200
220
240
Basalt:111
Gray Hard Basalt
A5226
699-50-48B
552.0

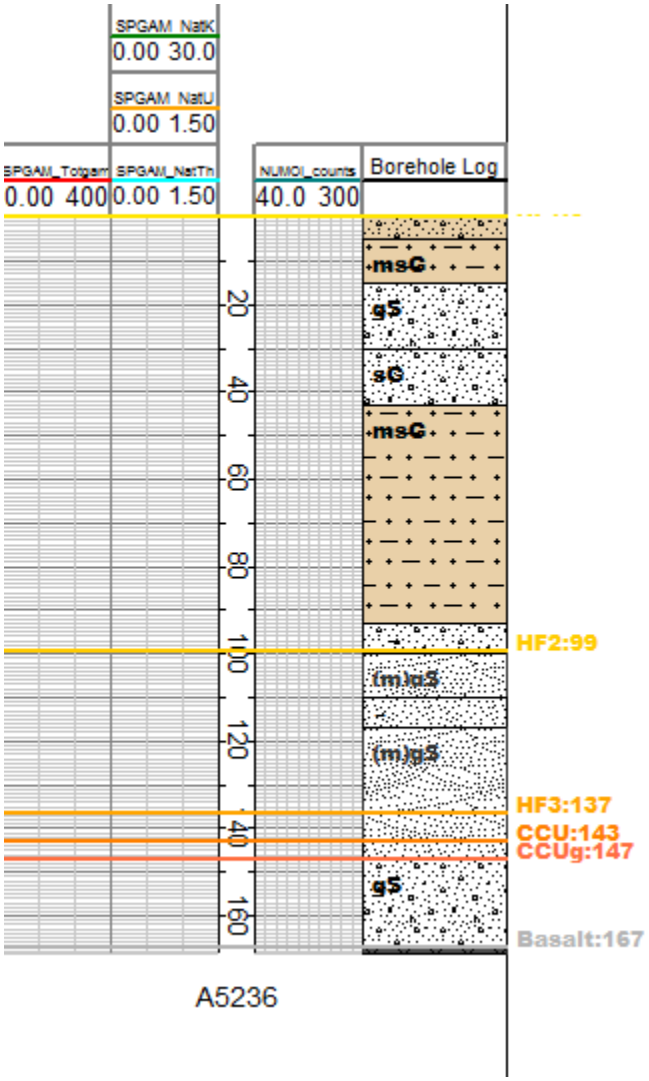

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silt Grave...
Gravel an...
Coarse G...
Cobbles...
Gravel C...
Gravel an...
HF2:95
Sand
Sand
Sand and...
HF3:143
Sand Gra...
20
40
60
80
100
120
140
160
180

A5227

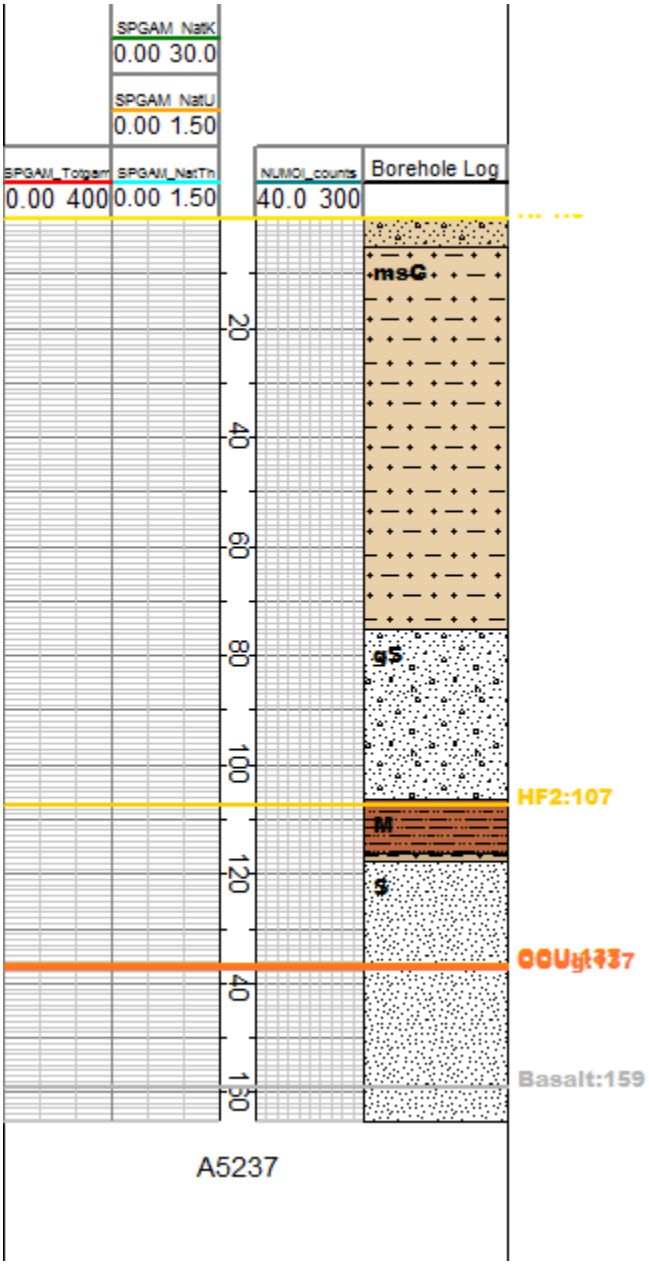

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravel and Cobbles
Basalt
Clay
Silt and Clay
Silt and Sand
Sand and Clay
20
40
60
80
100
120
140
160
A5230
699-51-46
446.0

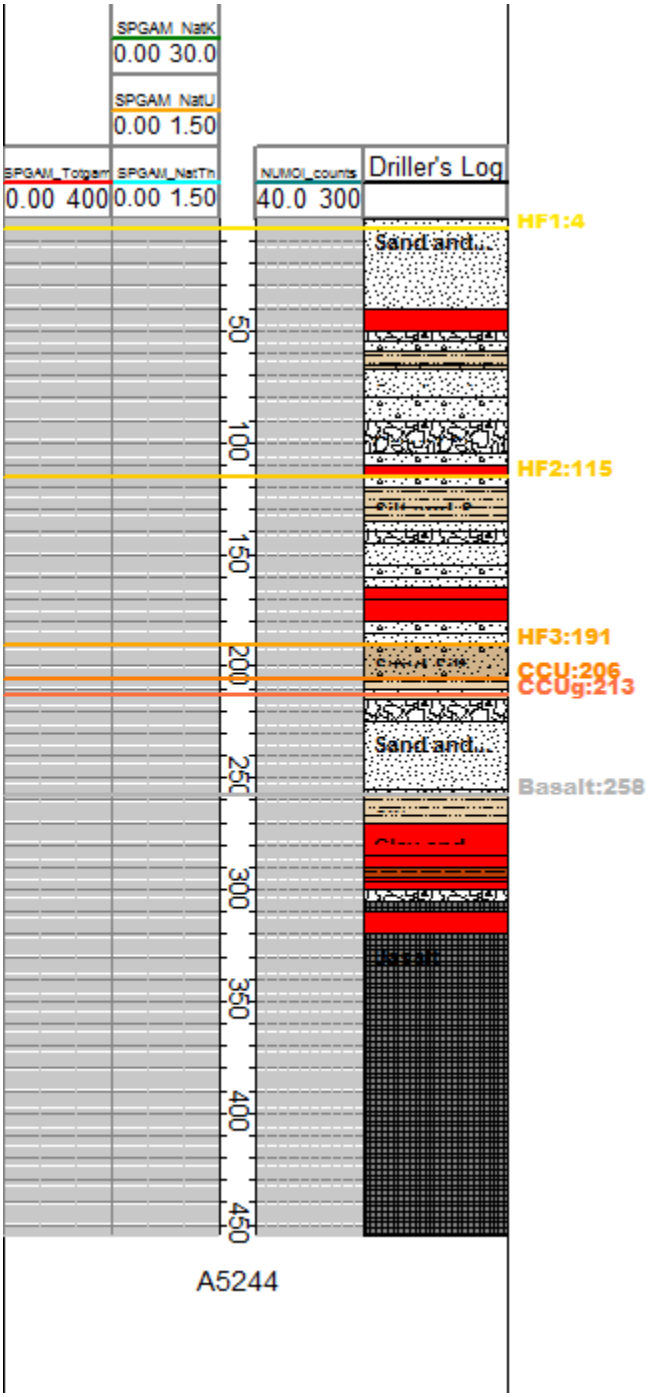

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
160
180
200
220
Rwia:37
Basalt:50
A5234
699-52-46A
457.2

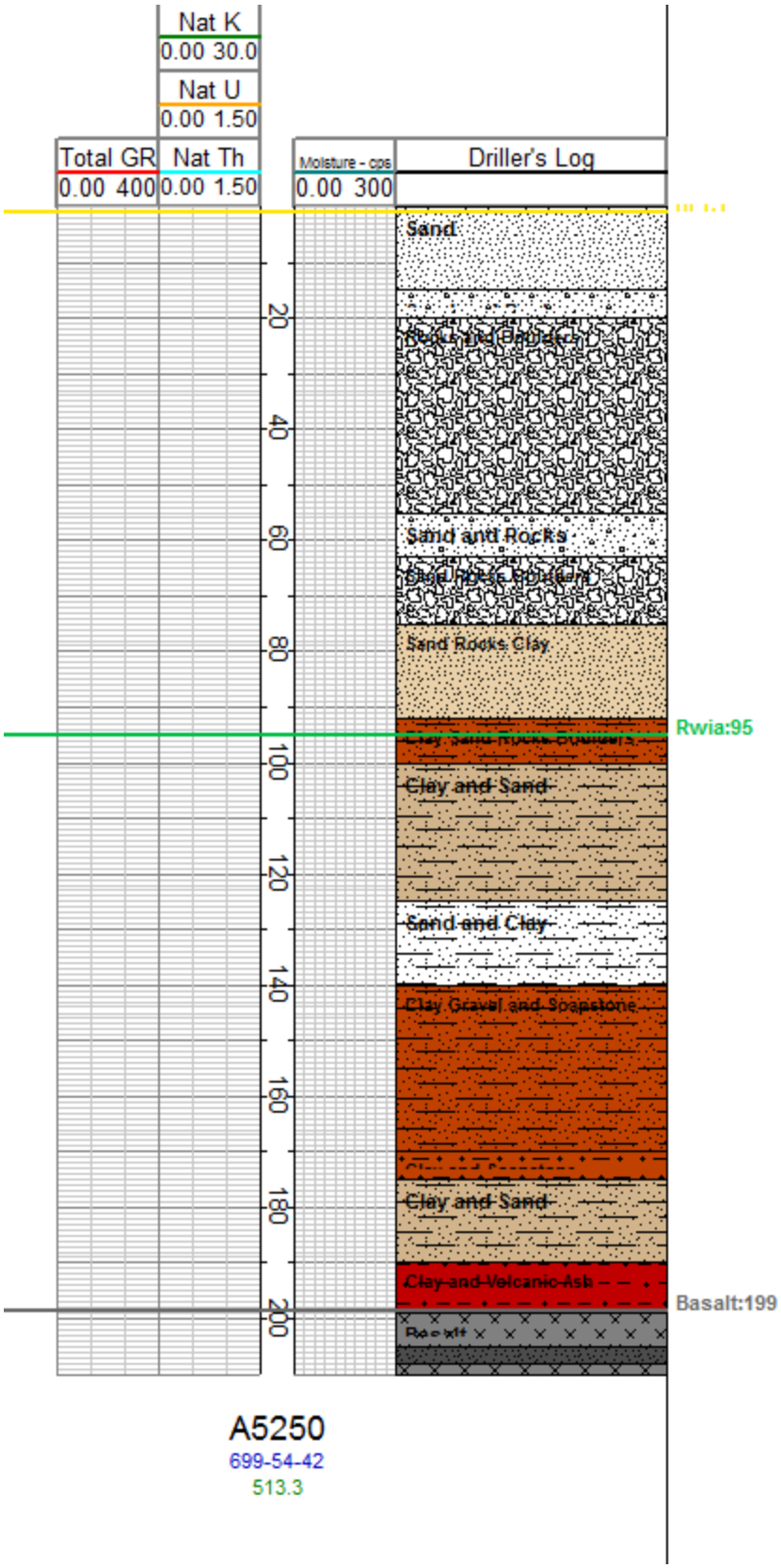

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:4
Gravel Cobbles Sand
Boulders
Basalt
Clay and Sand
20
40
60
80
100
120
140
160
180
A5235
699-52-48
468.6

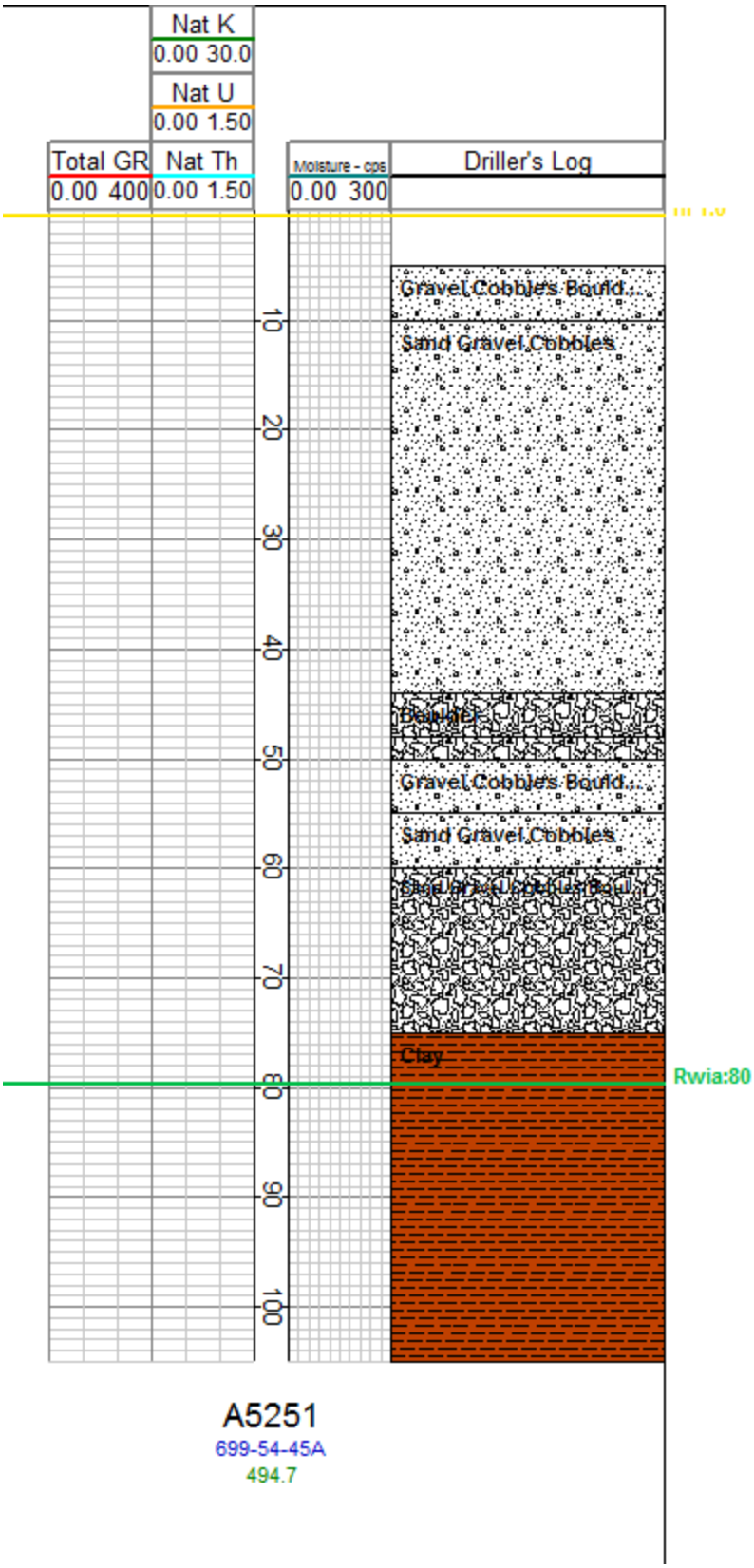

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
gS
sG
msG
HF2:99
(m)gS
(m)gS
HF3:137
CCU:143
CCUg:147
gS
Basalt:167
20
40
60
80
100
120
140
160

A5236

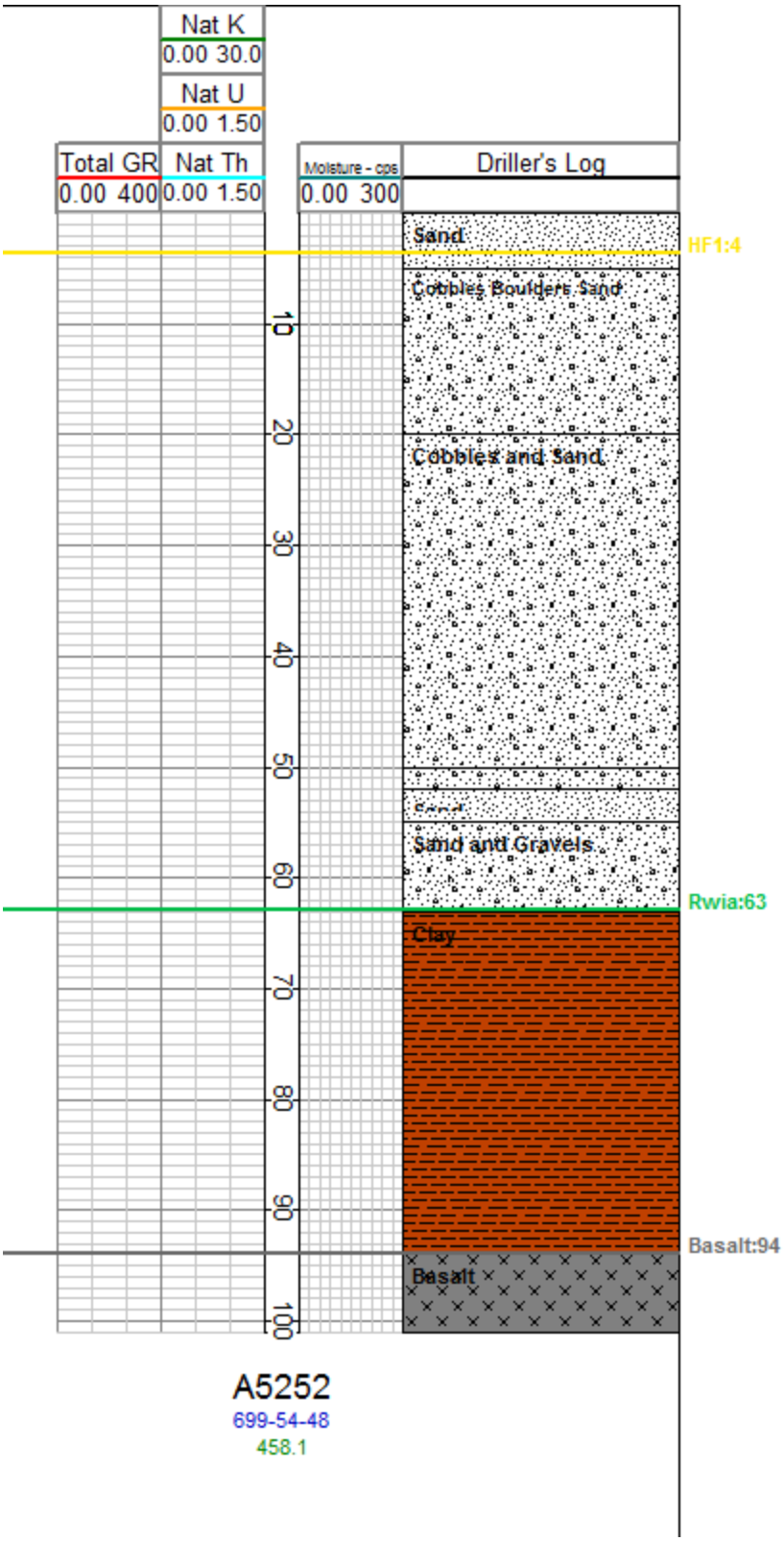

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
gS
HF2:107
M
S
Basalt:159
A5237

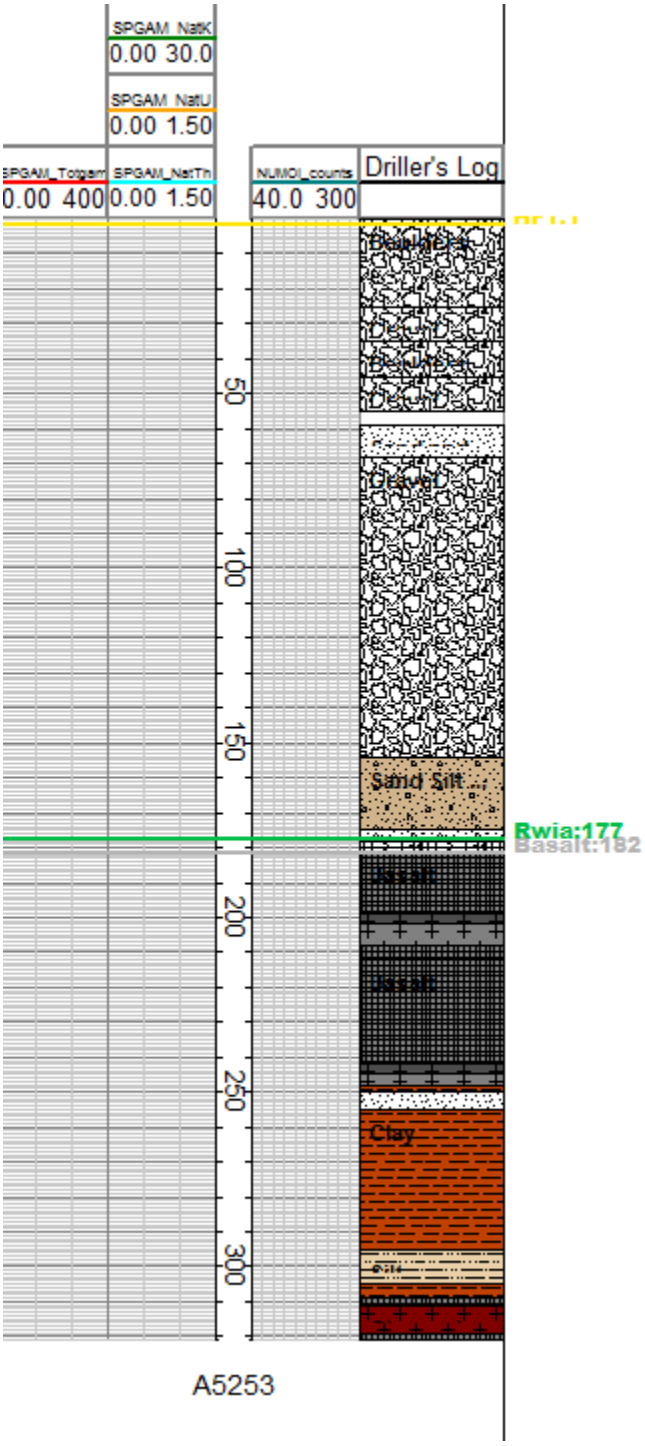

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:4
Sand and...
HF2:115
HF3:191
CCU:206
CCUg:213
Sand and...
Basalt:258
Basalt
50
100
150
200
250
300
350
400
450
A5244


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Sand and Rocks
Sand Rocks Clay
Rwia:95
Clay and Sand
Sand and Clay
Clay Gravel and Soapstone
Clay and Sand
Clay and Volcanic Ash
Basalt:199
20
40
60
80
100
120
140
160
180
200
A5250
699-54-42
513.3

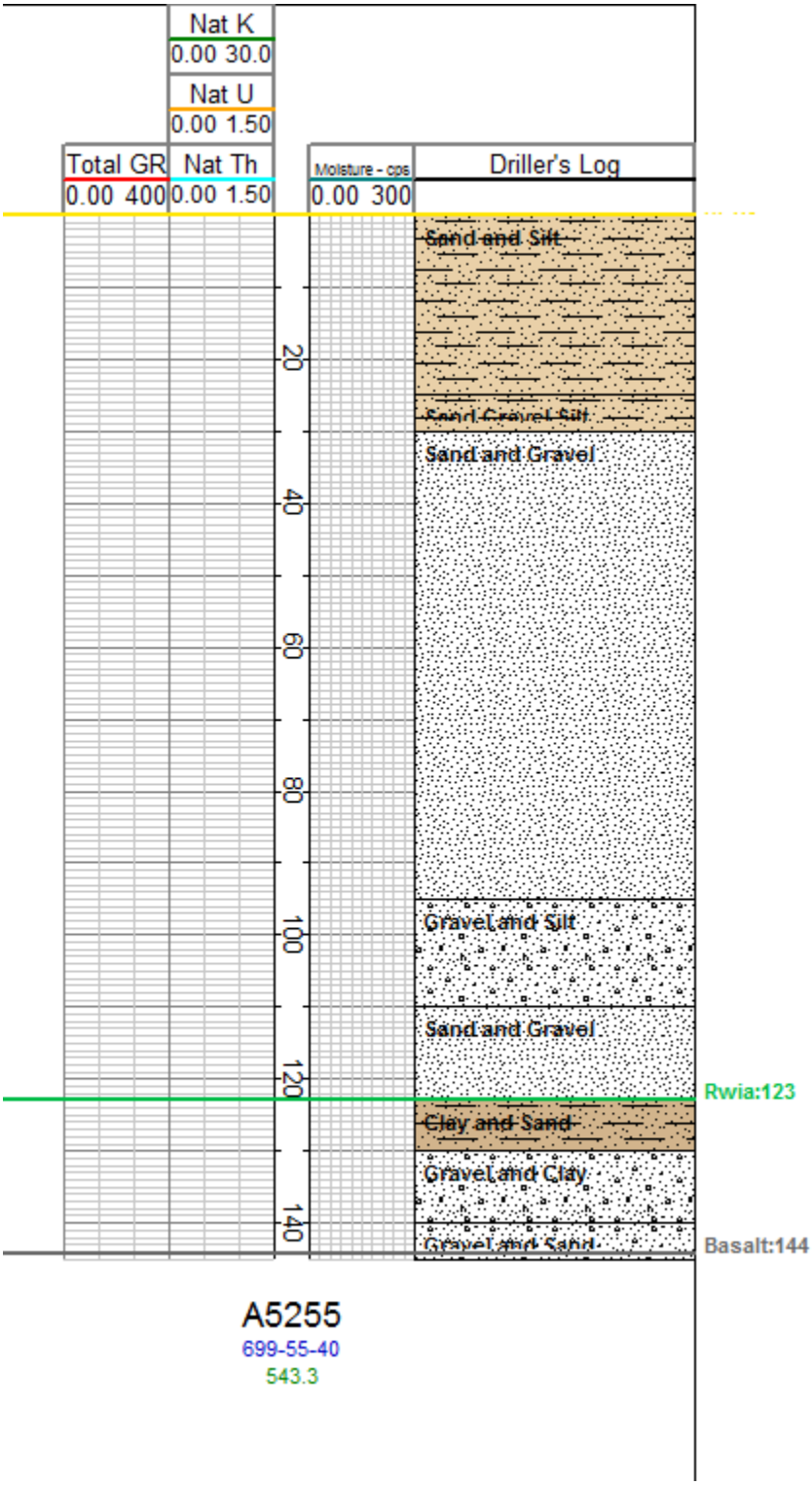


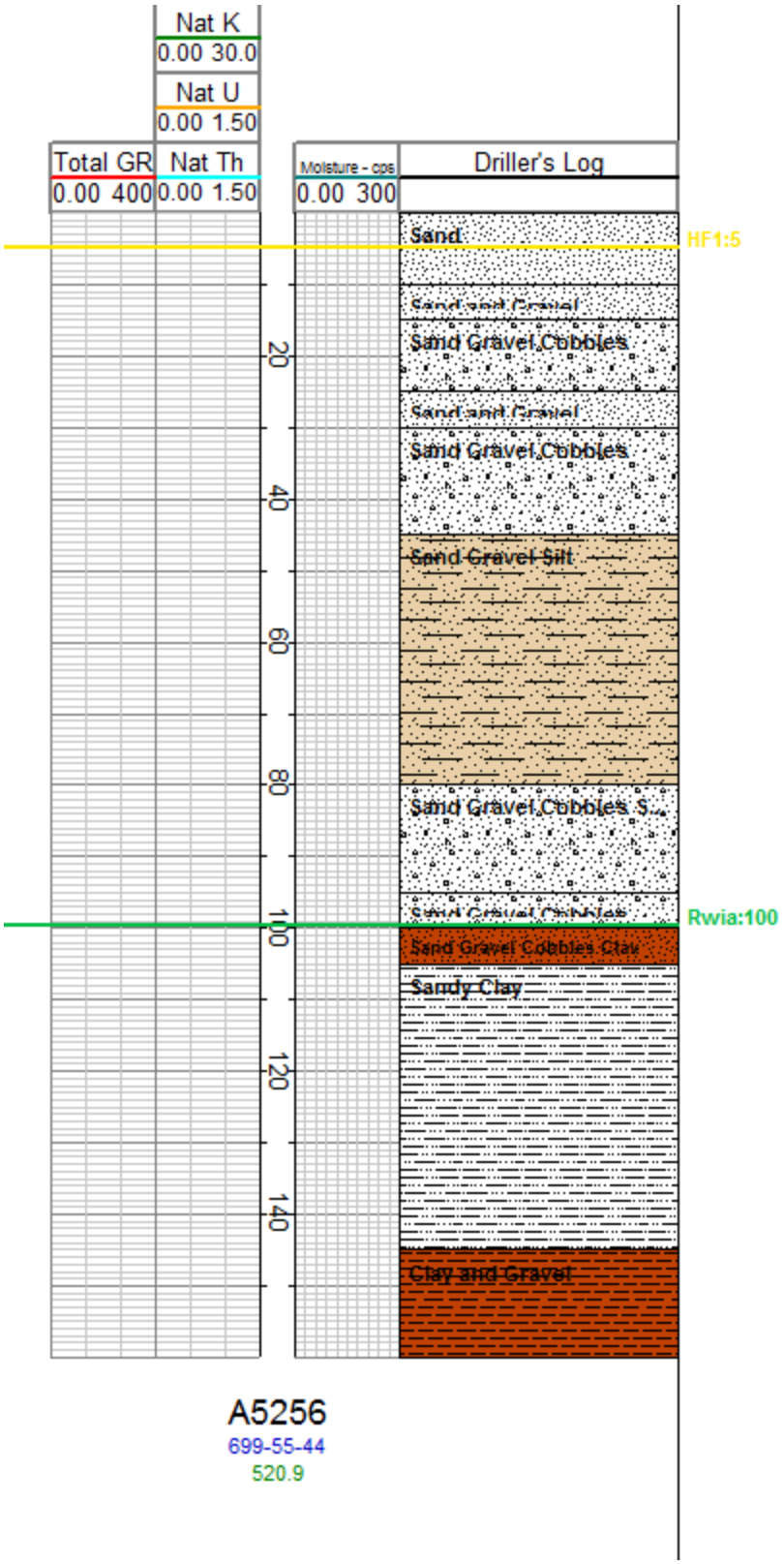
A5251
699-54-45A
494.7

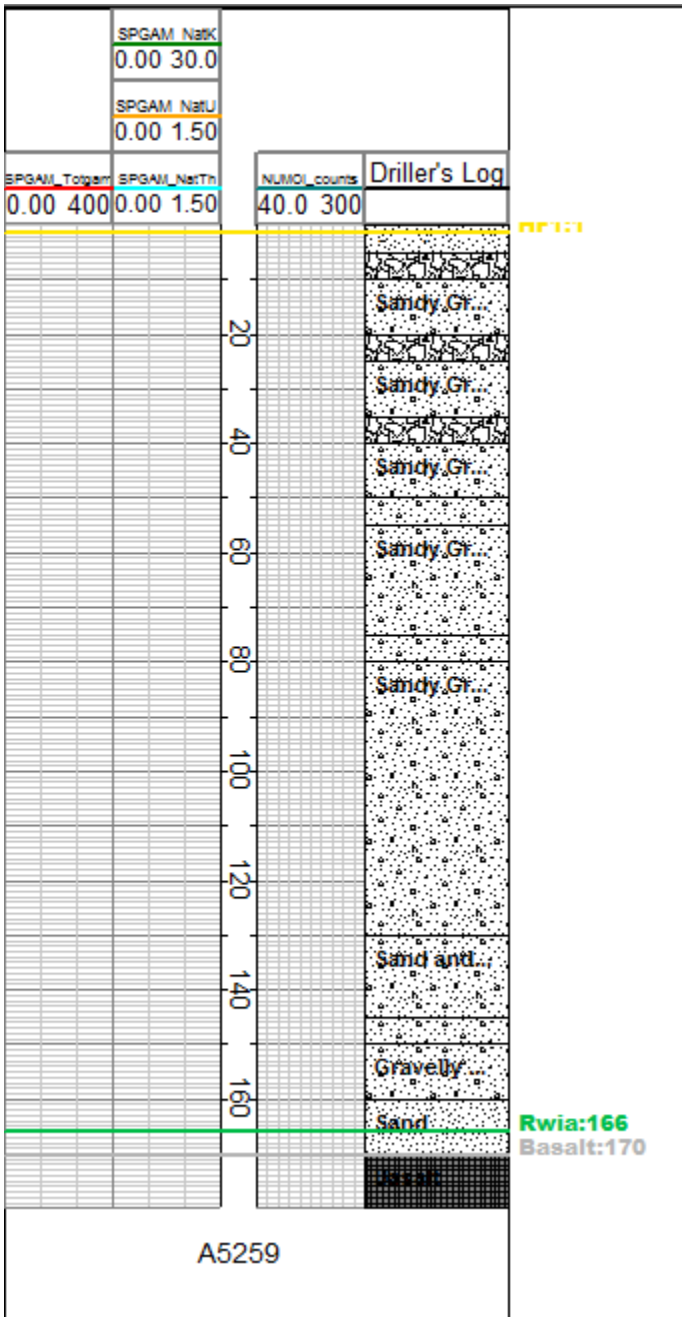

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF1:4
Cobbles Boulders Sand
Cobbles and Sand
Sand and Gravels
Rwia:63
Clay
Basalt:94
Basalt
10
20
30
40
50
60
70
80
90
100
A5252
699-54-48
458.1

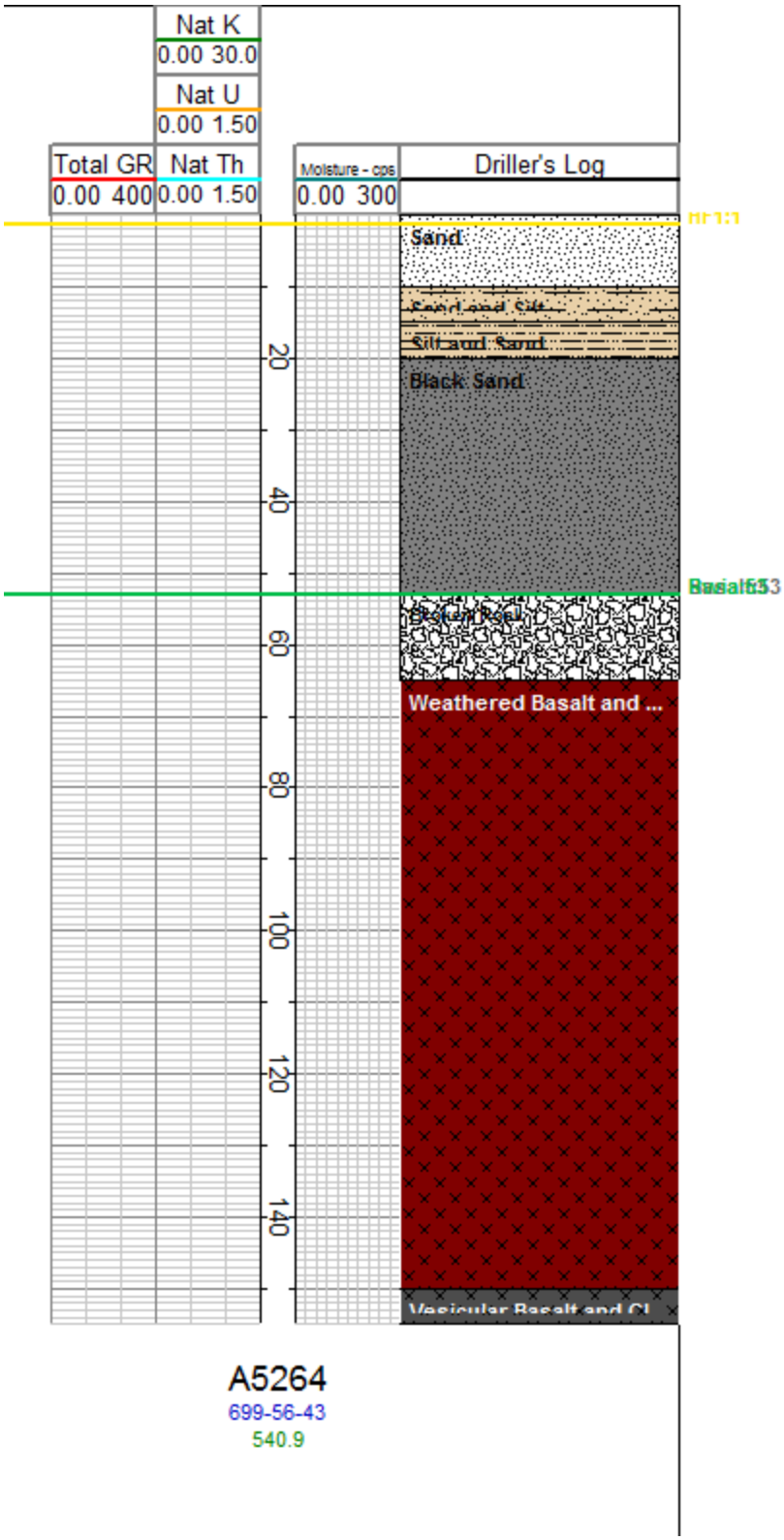

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
50
100
150
200
250
300
Gravel
Sand Silt
Rwia:177
Basalt:182
Basalt
Basalt
Clay
Silt

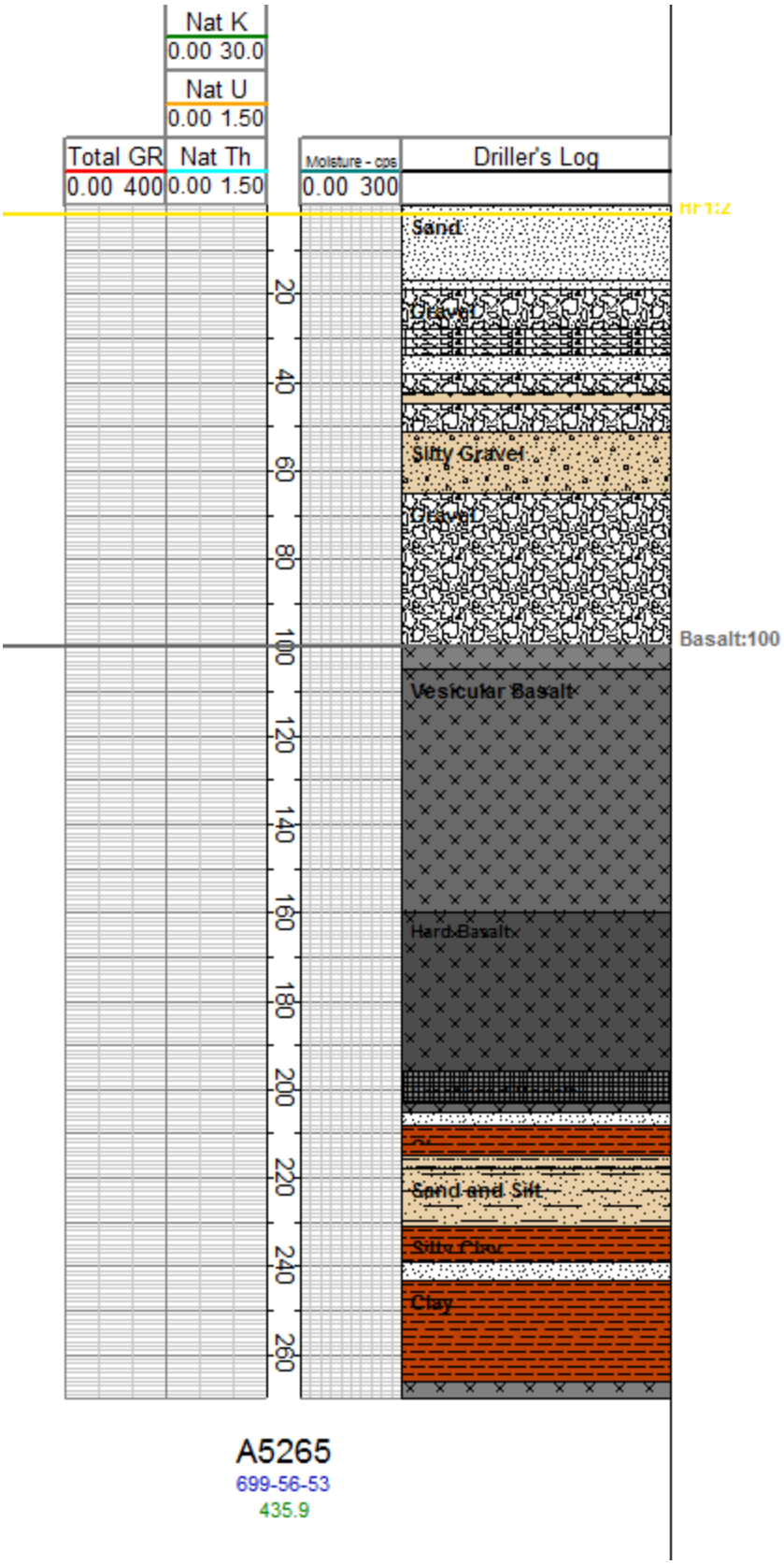
A5253

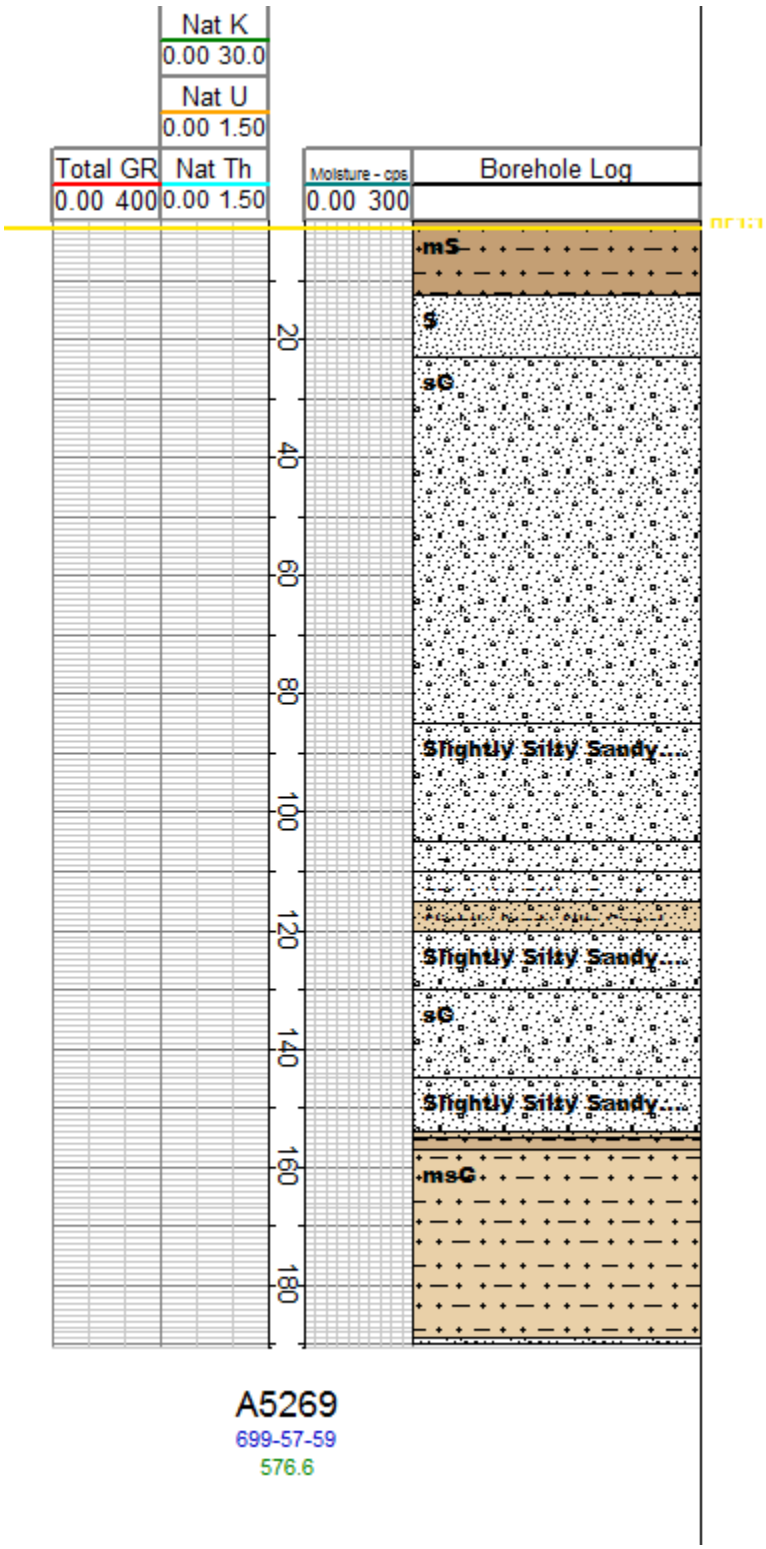

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Silt
Sand Gravel Silt
Sand and Gravel
Gravel and Silt
Sand and Gravel
Clay and Sand
Gravel and Clay
Gravel and Sand
20
40
60
80
100
120
140
Rwia:123
Basalt:144
A5255
699-55-40
543.3

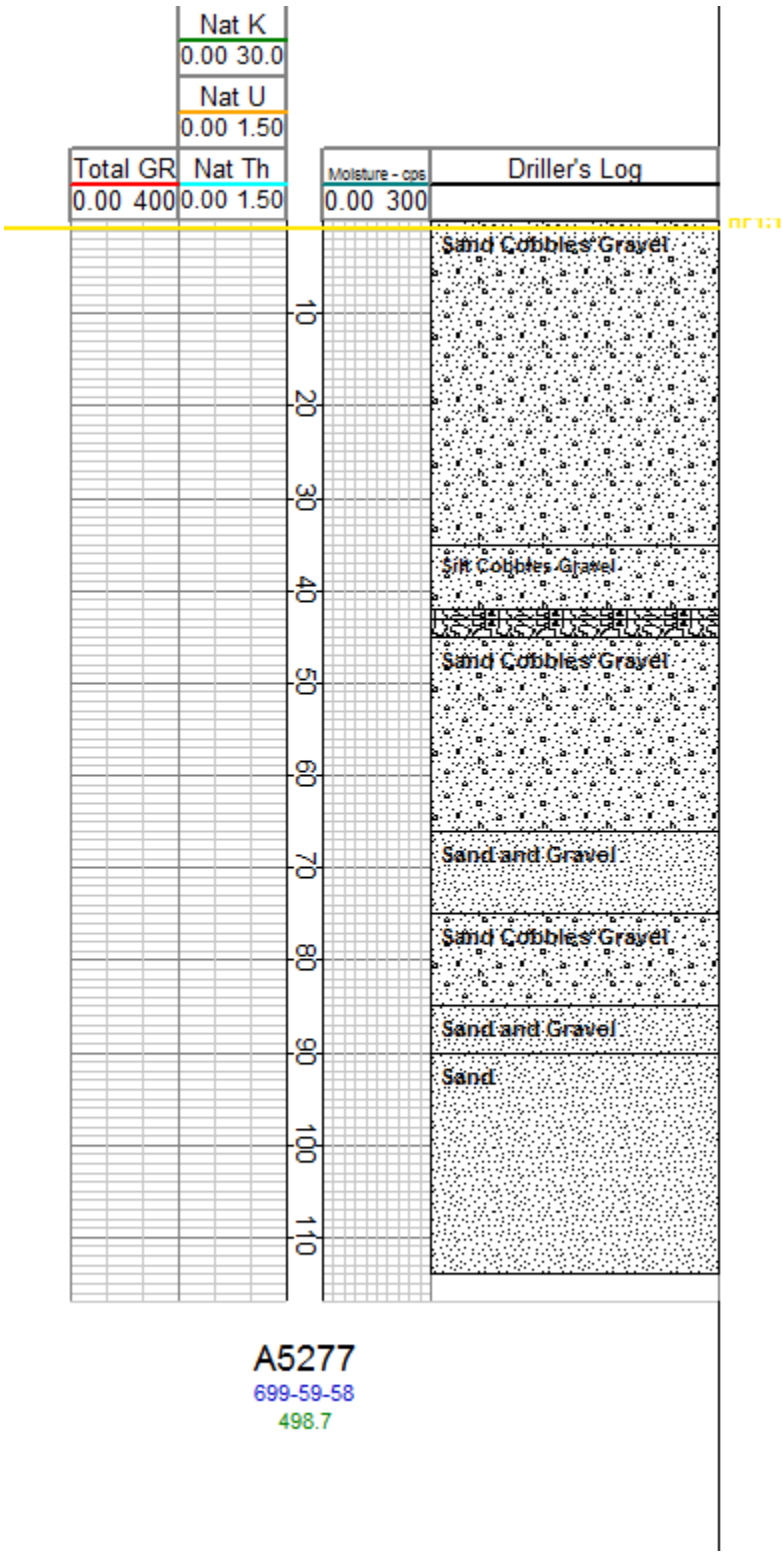

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF1:5
Sand and Gravel
Sand Gravel Cobbles
Sand and Gravel
Sand Gravel Cobbles
Sand Gravel Silt
Sand Gravel Cobbles S...
Sand Gravel Cobbles
Rwia:100
Sand Gravel Cobbles Clay
Sandy Clay
Clay and Gravel
20
40
60
80
100
120
140
A5256
699-55-44
520.9

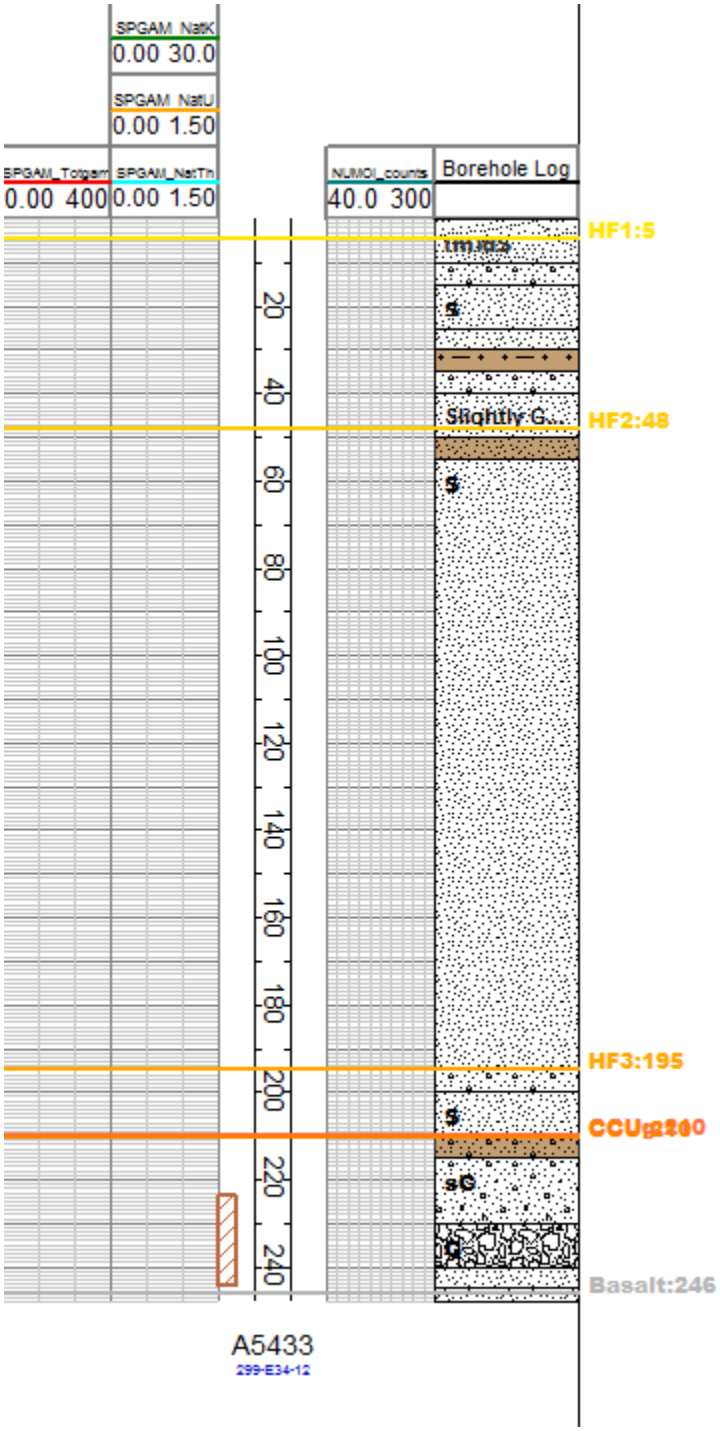

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
140
160
Sandy Gr...
Sandy Gr...
Sandy Gr...
Sandy Gr...
Sandy Gr...
Sand and...
Gravelly ...
Sand
Rwia:166
Basalt:170
A5259


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Silt and Sand
Black Sand
Weathered Basalt and ...
20
40
60
80
100
120
140
A5264
699-56-43
540.9


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Gravel
Silty Gravel
Gravel
Basalt:100
Vesicular Basalt
Hard Basalt
Sand and Silt
Silty Clay
Clay
20
40
60
80
100
120
140
160
180
200
220
240
260
A5265
699-56-53
435.9


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
mS
S
sG
Slightly Silty Sandy...
Slightly Silty Sandy...
sG
Slightly Silty Sandy...
msG
20
40
60
80
100
120
140
160
180
A5269
699-57-59
576.6


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand Cobbles Gravel
Silt Cobbles Gravel
Sand Cobbles Gravel
Sand and Gravel
Sand Cobbles Gravel
Sand and Gravel
Sand
10
20
30
40
50
60
70
80
90
100
110
A5277
699-59-58
498.7


SPGAM_NatK
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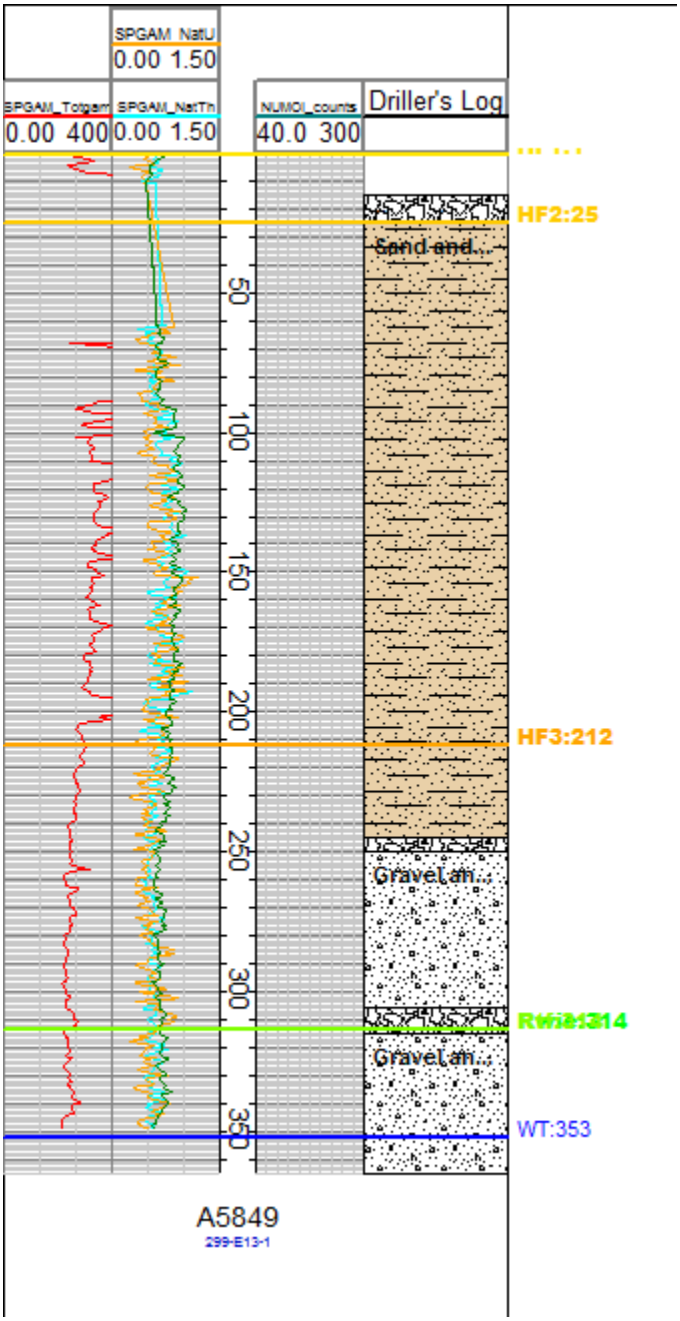
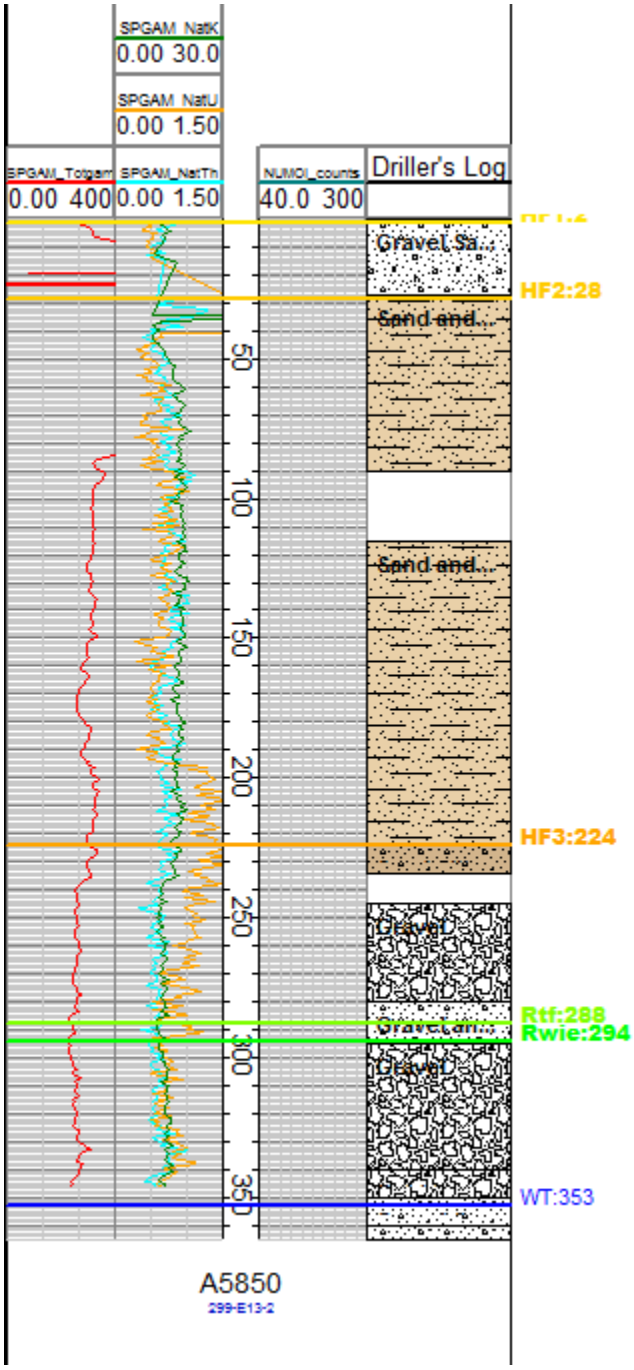
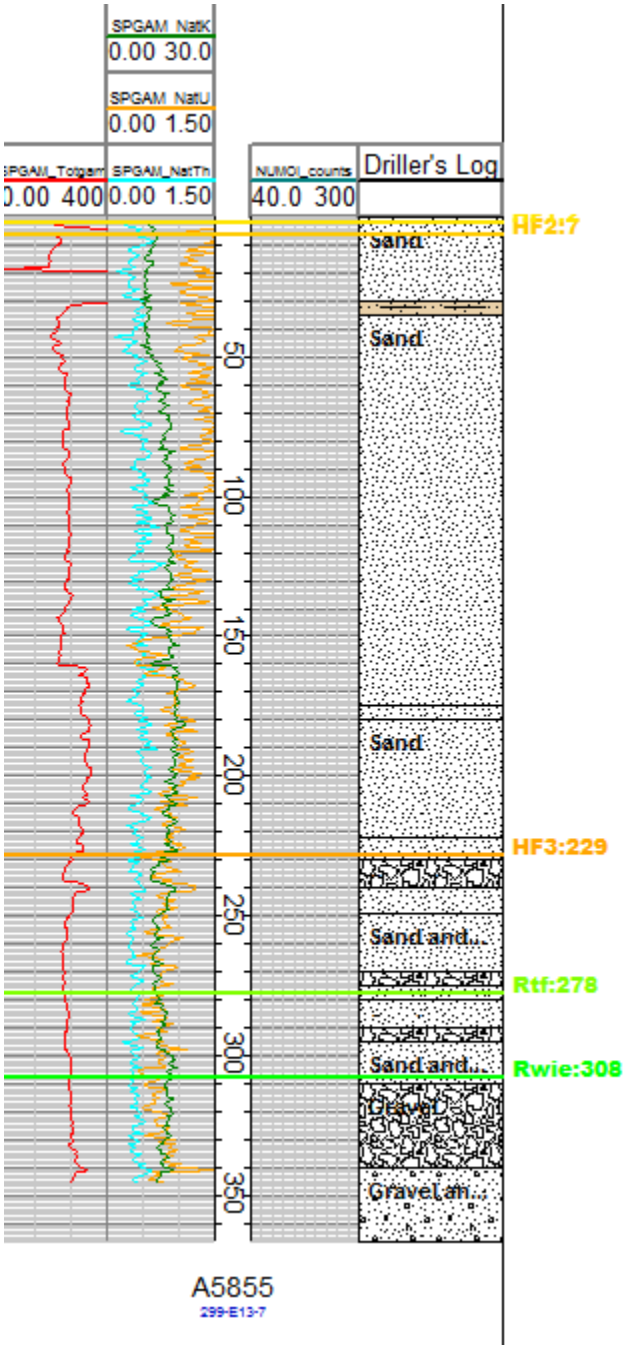
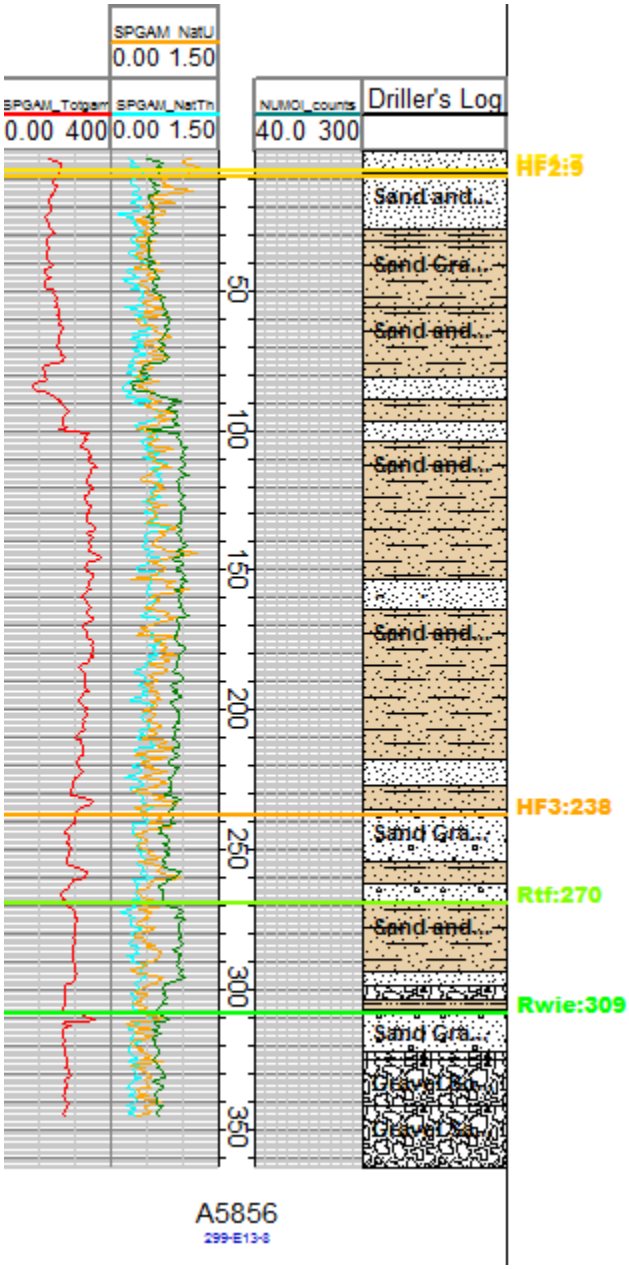
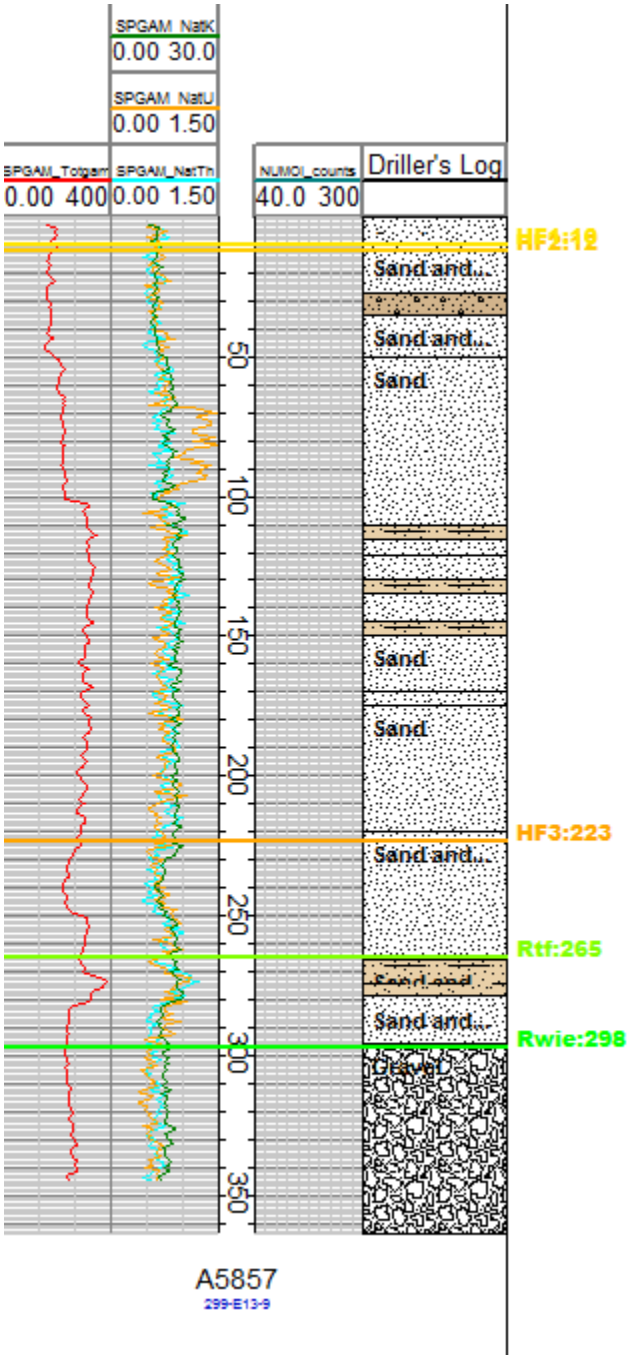
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:5
Slightly G...
HF2:48
HF3:195
CCU:210
Basalt:246
20
40
60
80
100
120
140
160
180
200
220
240
A5433
299-E34-12

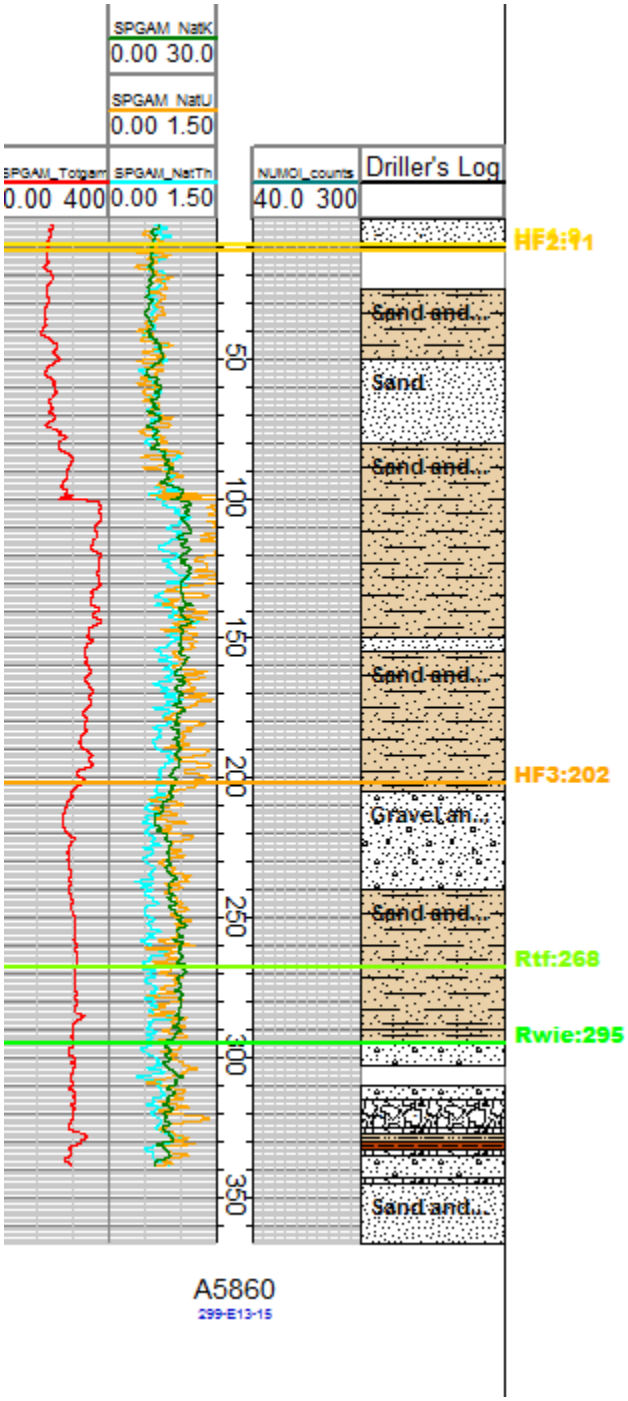

SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:25
Sand and...
HF3:212
Gravel,an...
Gravel,an...
WT:353
50
100
150
200
250
300
350
A5849
299-E13-1

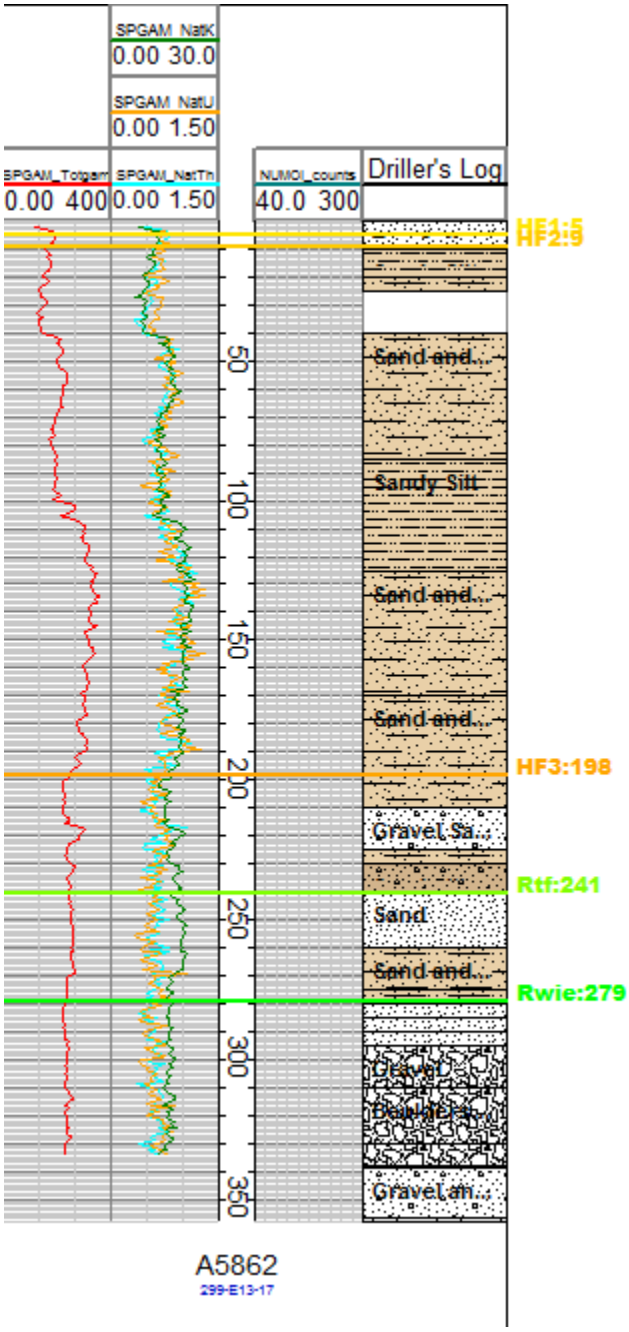

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Gravel Sa...
HF2:28
Sand and...
50
100
Sand and...
150
200
HF3:224
250
Gravel
Rtf:288
Rwie:294
300
Gravel
350
WT:353
A5850
299-E13-2

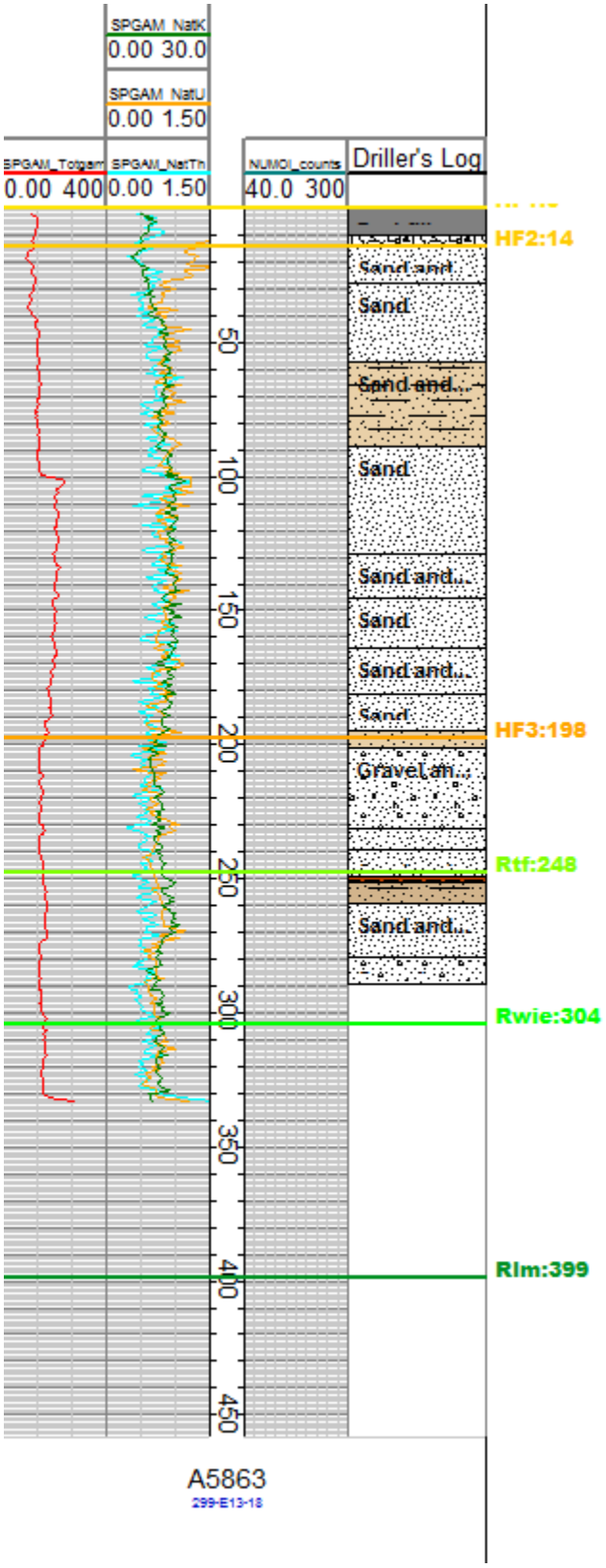

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:7
Sand
Sand
Sand
HF3:229
Sand and...
Rtf:278
Sand and...
Rwie:308
Gravel
Gravel an...
50
100
150
200
250
300
350
A5855
299-E13-7

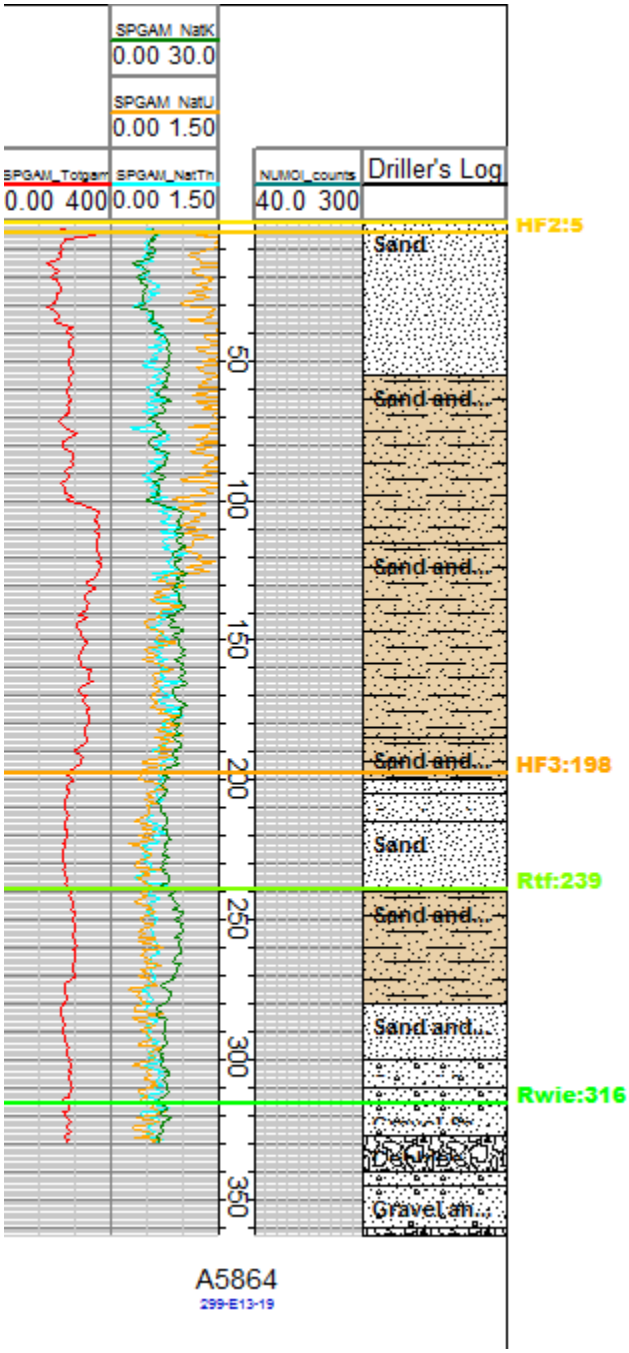

SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Sand and...
Sand Gra...
Sand and...
Sand and...
Sand and...
HF3:238
Sand Gra...
Rtf:270
Sand and...
Rwie:309
Sand Gra...
Gravel Sa...
Gravel Sa...
50
100
150
200
250
300
350
A5856
299-E13-8

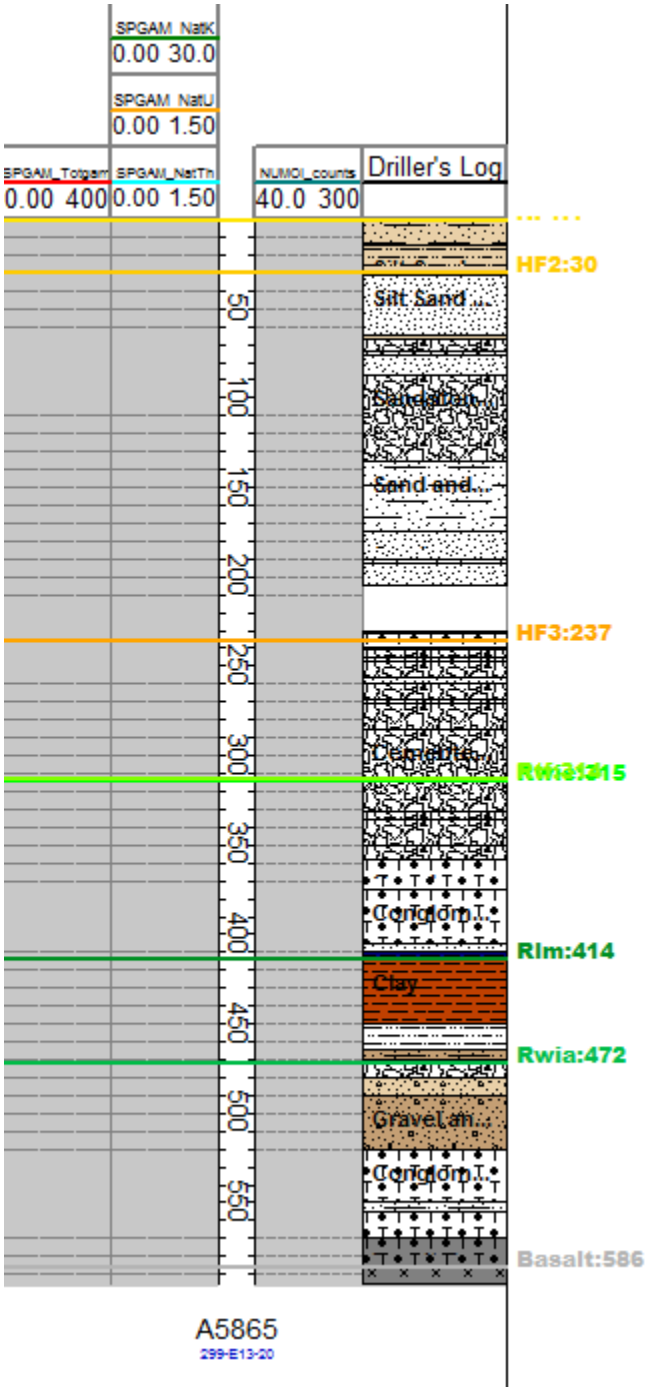

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:19
Sand and...
Sand and...
Sand
Sand
Sand
HF3:223
Sand and...
Rtf:265
Sand and...
Rwie:298
Gravel
50
100
150
200
250
300
350
A5857
299-E13-9

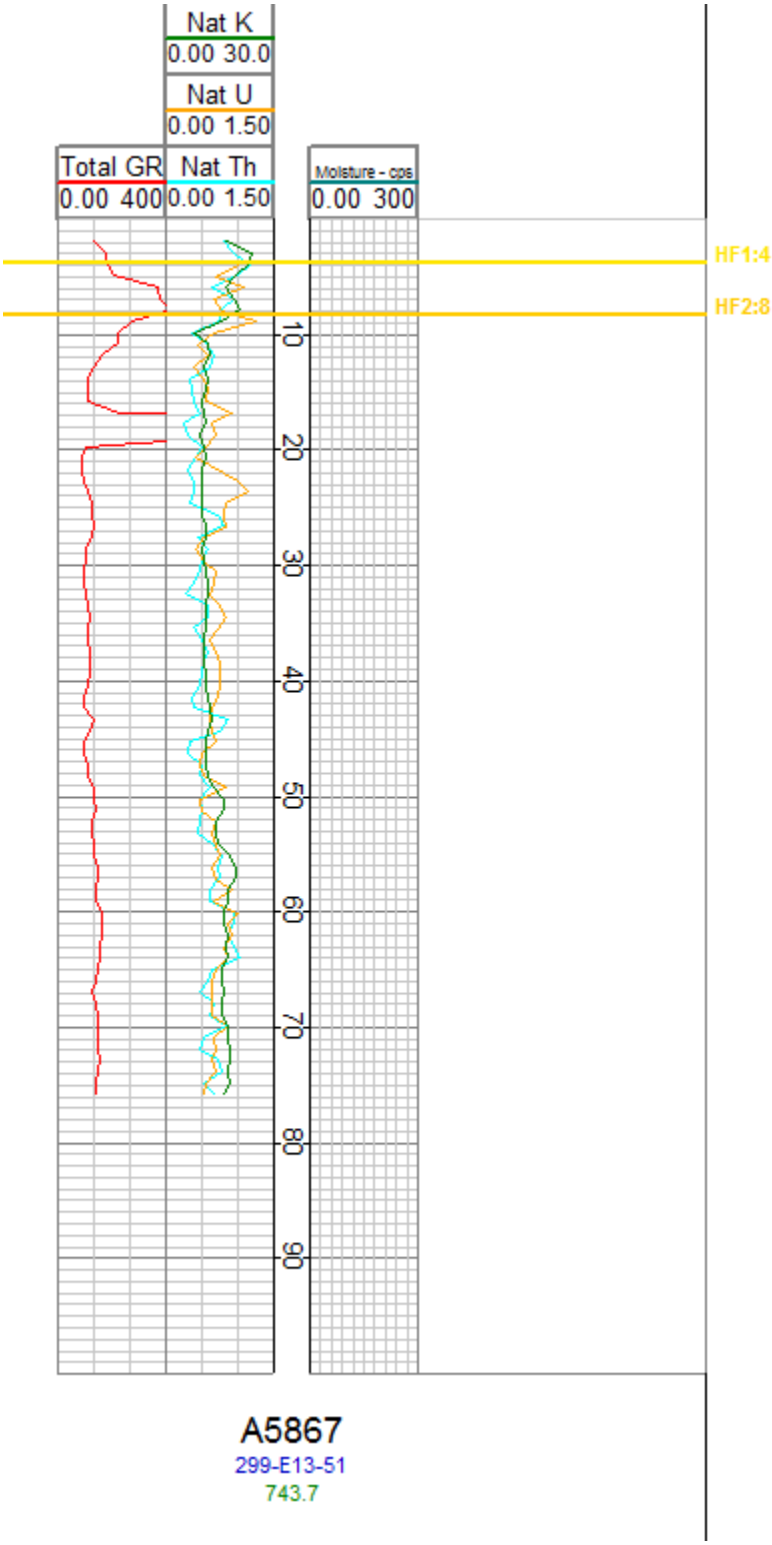

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 300
Driller's Log
HF2:91
Sand and...
Sand
Sand and...
Sand and...
HF3:202
Gravel an...
Sand and...
Rtf:268
Rwie:295
Sand and...
50
100
150
200
250
300
350
A5860
299-E13-15

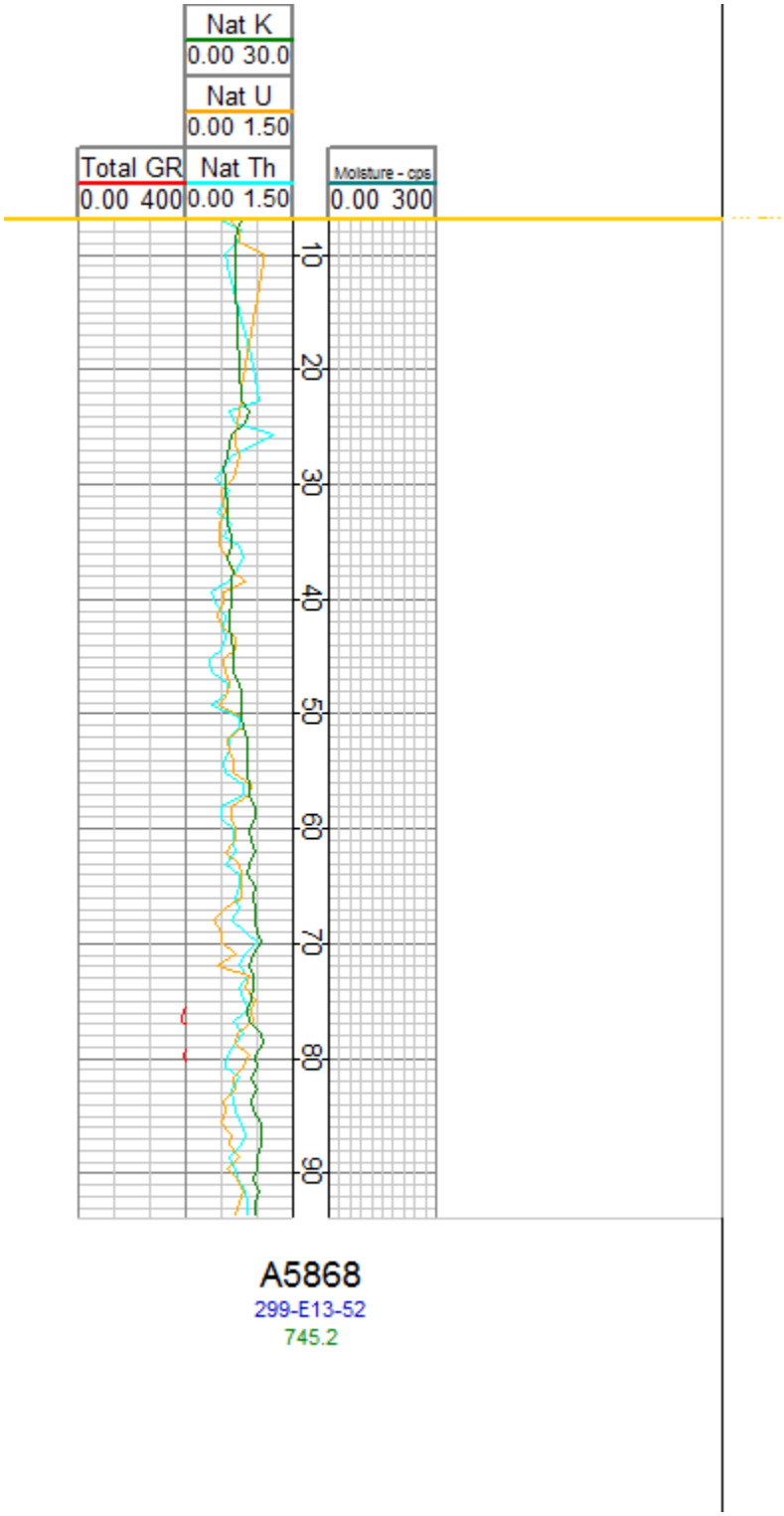

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:5
HF2:9
Sand and...
Sandy Silt
Sand and...
Sand and...
HF3:198
Gravel Sa...
Rtf:241
Sand
Sand and...
Rwie:279
Gravel
Gravel an...
50
100
150
200
250
300
350
A5862
299-E13-17

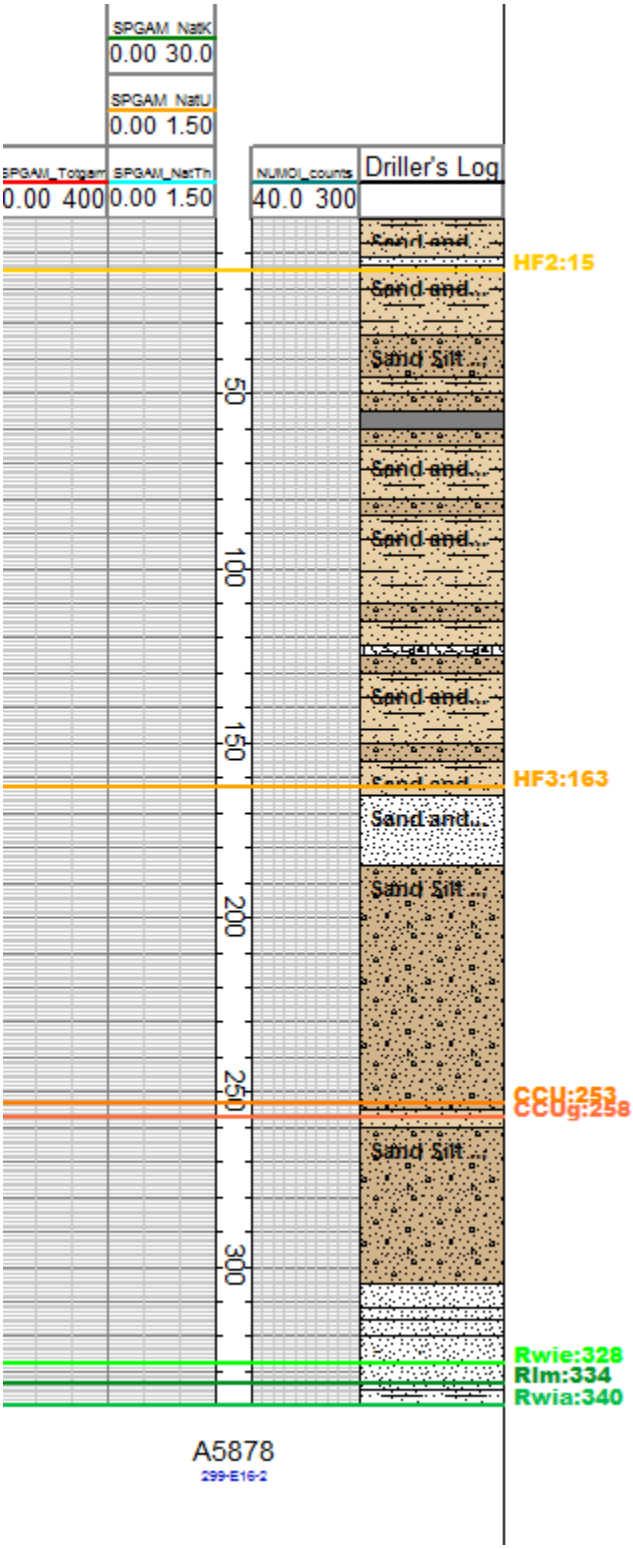

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:14
Sand and...
Sand
Sand and...
Sand
Sand and...
Sand
Sand and...
Sand
HF3:198
Gravel an...
Rtf:248
Sand and...
Rwie:304
Rlm:399
50
100
150
200
250
300
350
400
450
A5863
299-E13-18

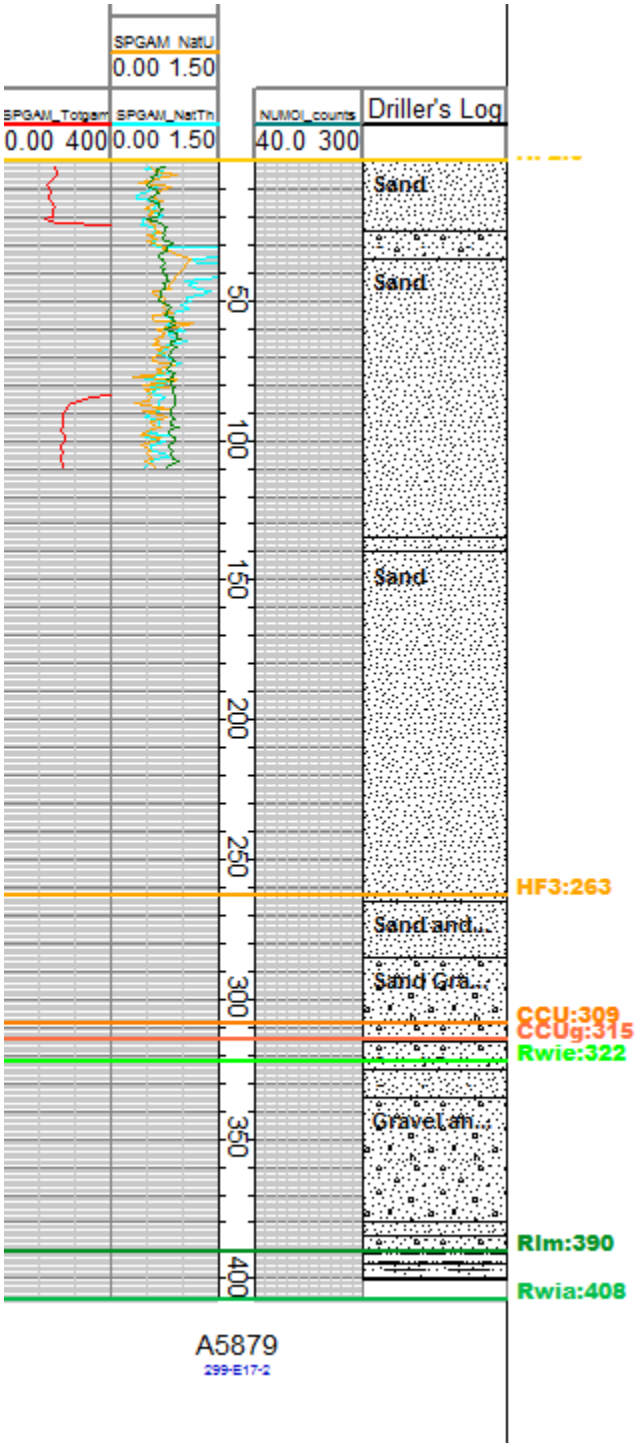

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Sand
Sand and...
HF3:198
Sand
Rtf:239
Sand and...
Sand and...
Rwie:316
Gravel,an...
50
100
150
200
250
300
350
A5864
299-E13-19

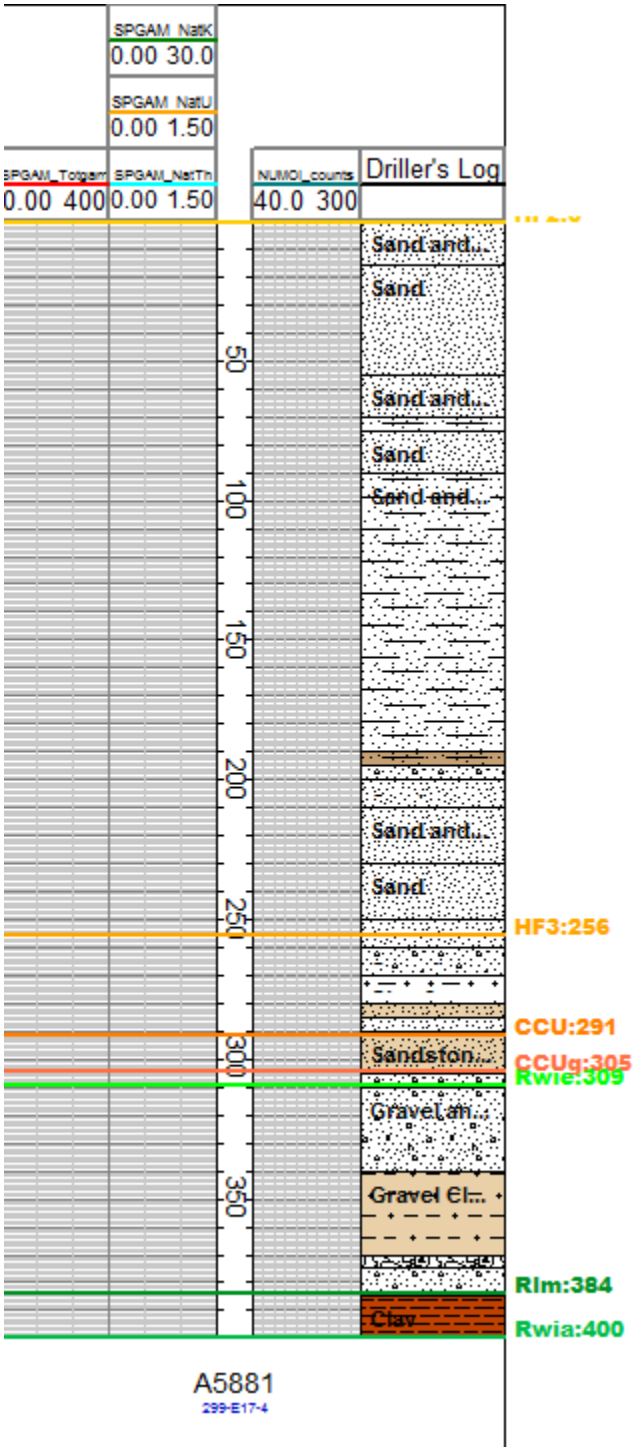

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:30
Silt Sand ...
Sand and...
Sand and...
HF3:237
Rwia:315
Rlm:414
Clay
Rwia:472
Gravel an...
Basalt:586
50
100
150
200
250
300
350
400
450
500
550
A5865
299-E13-20

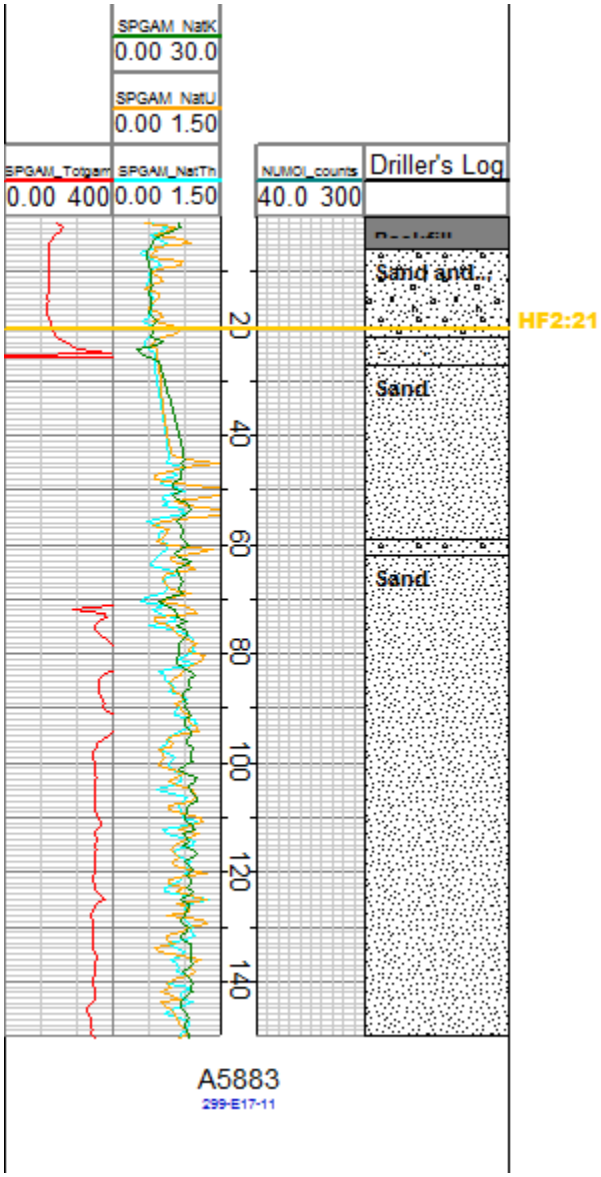

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:4
HF2:8
10
20
30
40
50
60
70
80
90
A5867
299-E13-51
743.7

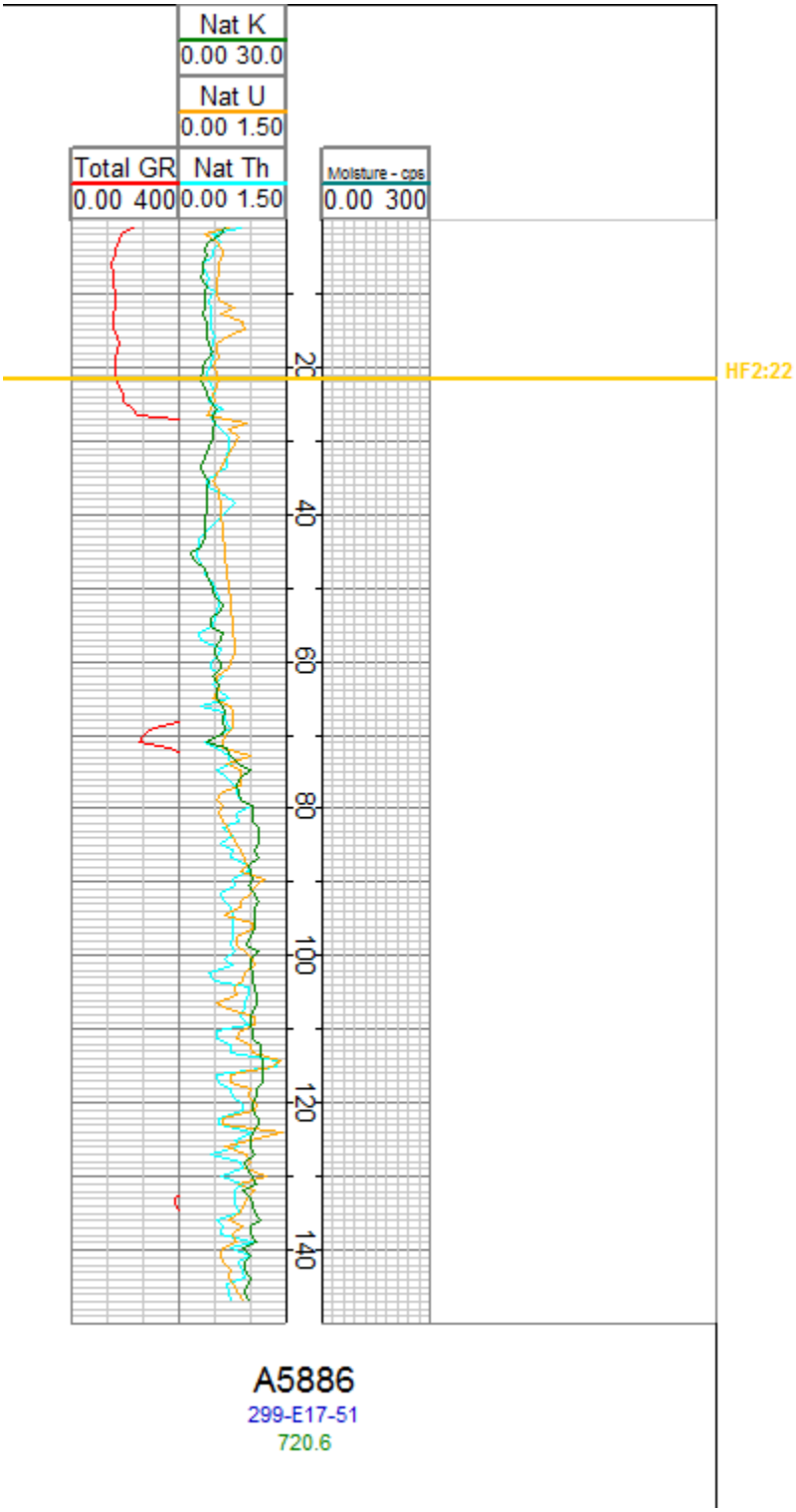

Total GR
0.00 400
Nat K
0.00 30.0
Nat U
0.00 1.50
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
80
90
A5868
299-E13-52
745.2

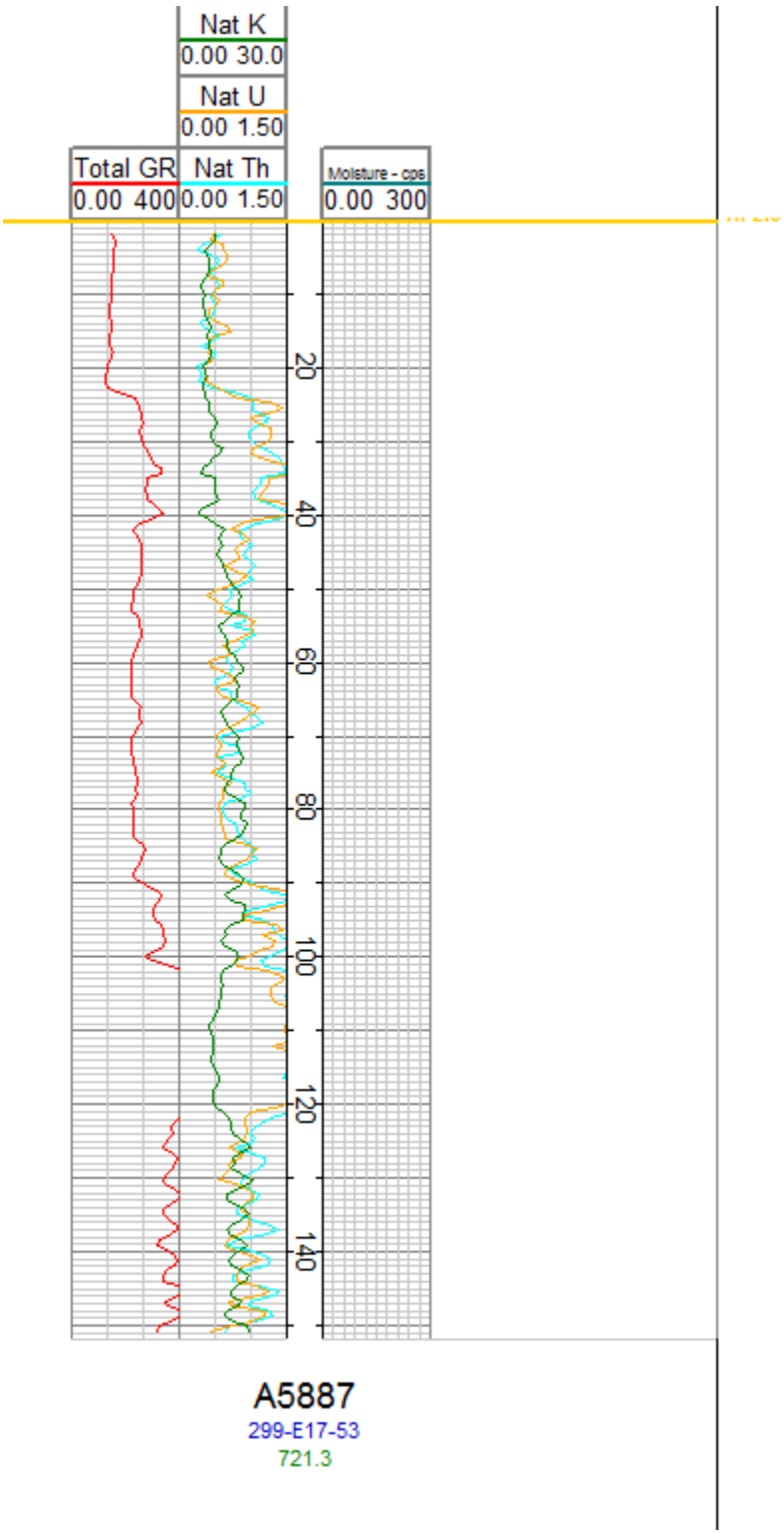

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
Sand and...
Sand Silt...
Sand and...
Sand and...
Sand and...
Sand and...
Sand Silt...
Sand Silt...
50
100
150
200
250
300
HF2:15
HF3:163
CCU:253
CCUg:258
Rwie:328
Rlm:334
Rwia:340
A5878
299-E16-2

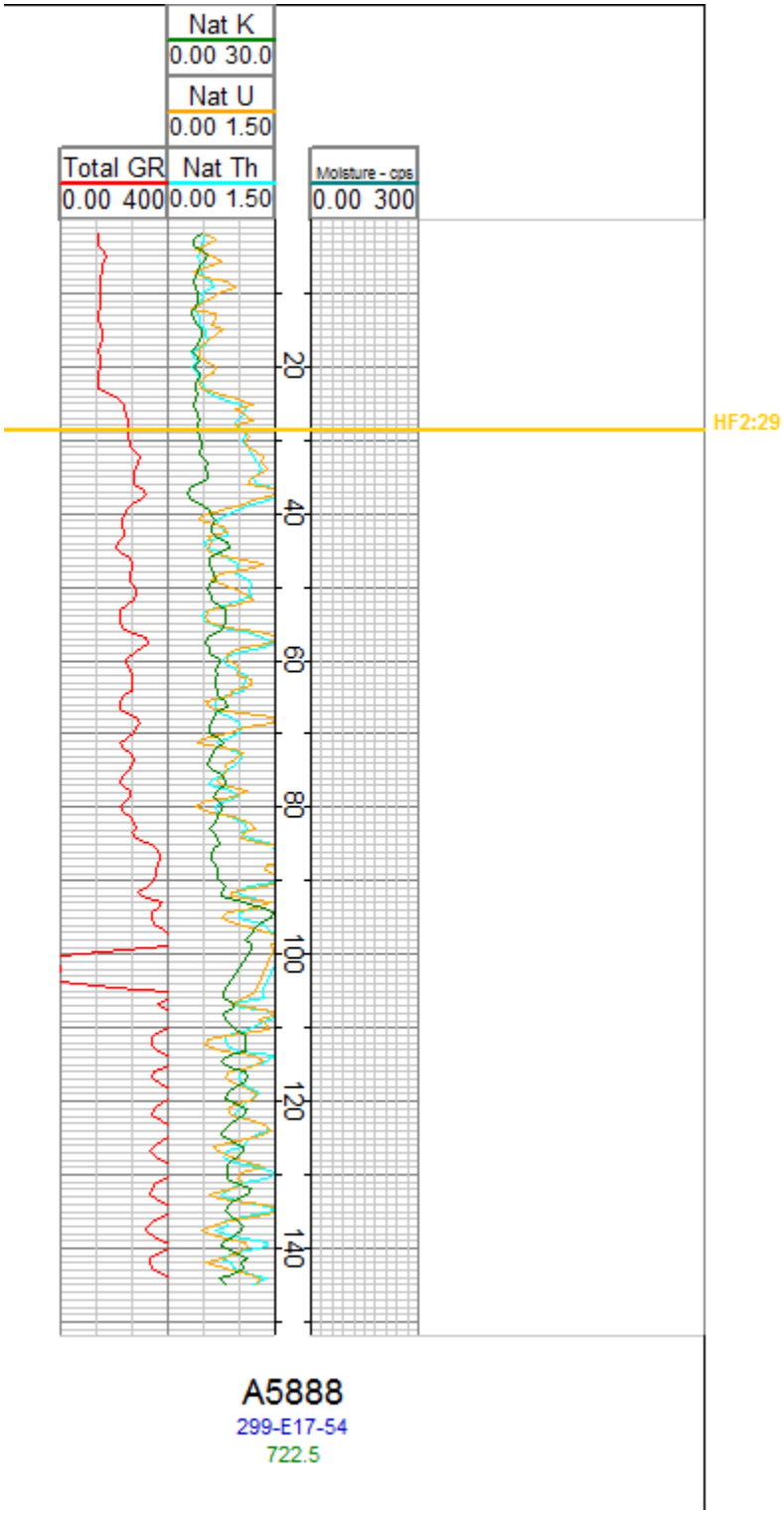

SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
Sand
HF3:263
Sand and...
Sand Gra...
CCU:309
CCUg:315
Rwie:322
Gravel an...
Rlm:390
Rwia:408
50
100
150
200
250
300
350
400
A5879
299-E17-2

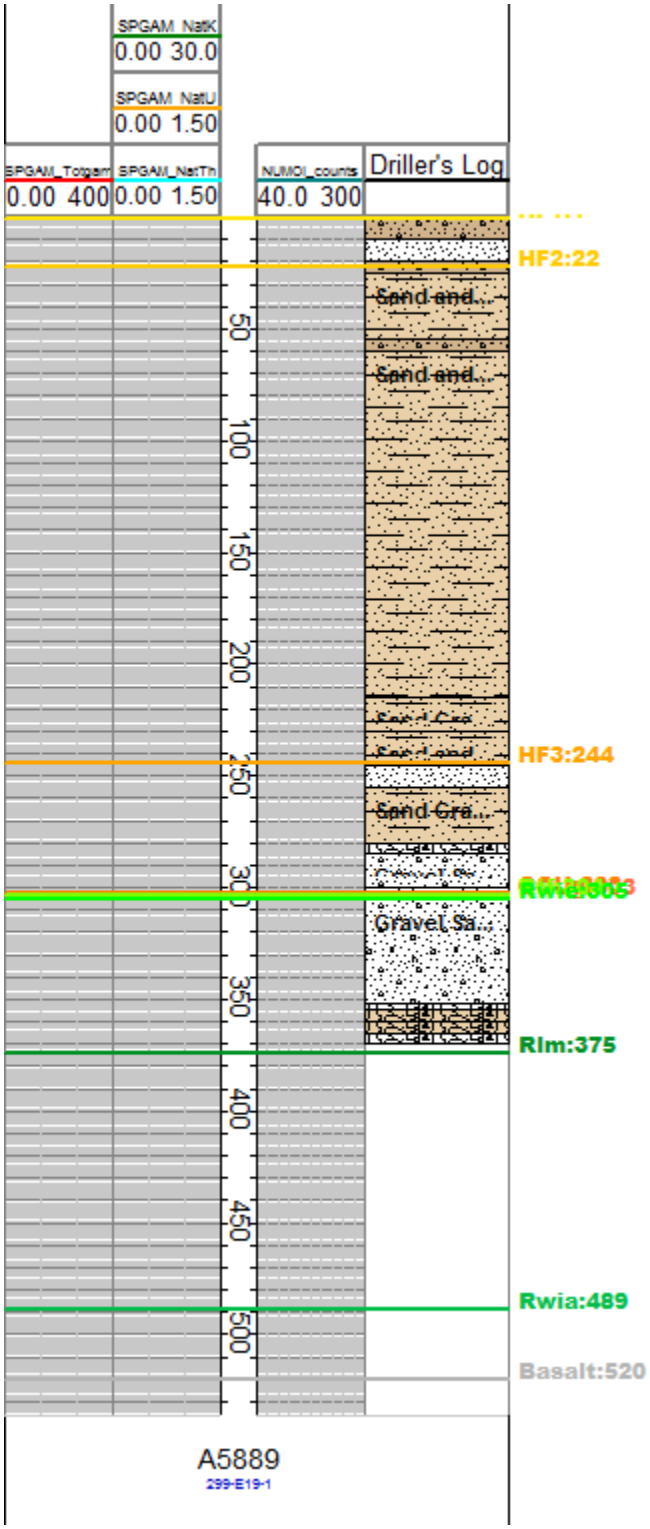

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
Sand
Sand and...
Sand
Sand and...
Sand and...
Sand
HF3:256
CCU:291
Sandston...
CCUg:305
Rwie:309
Gravel an...
Gravel Cl...
Rlm:384
Clay
Rwia:400
50
100
150
200
250
300
350
A5881
299-E17-4

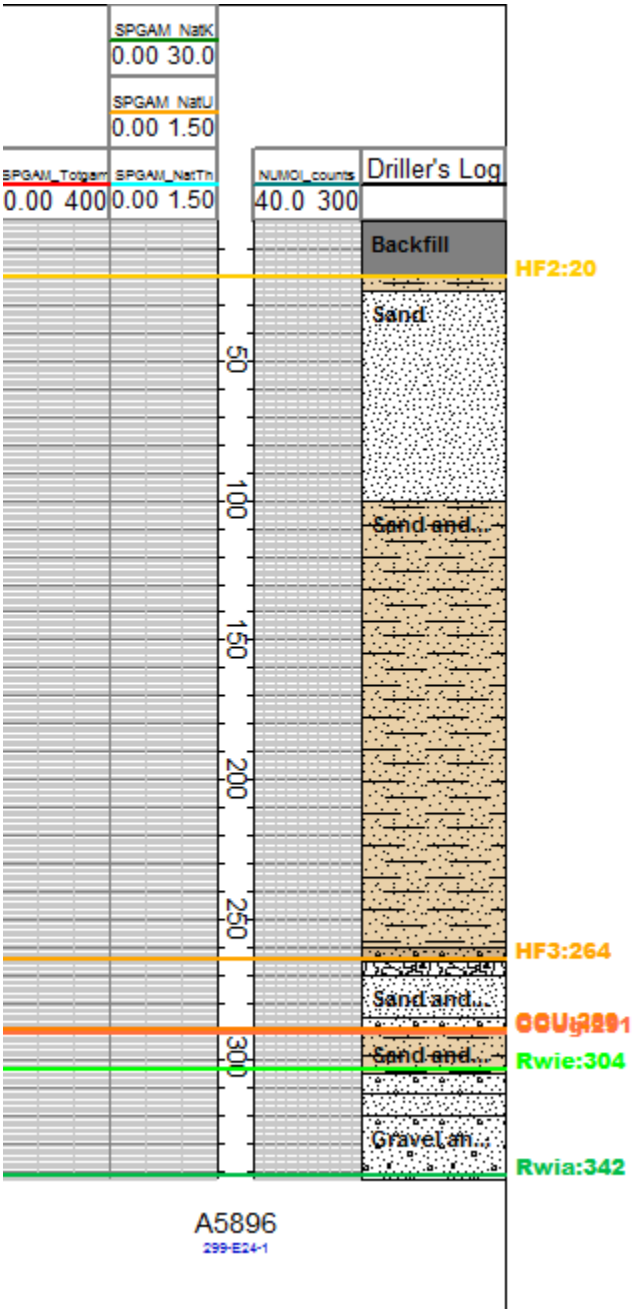

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:21
Sand
Sand
20
40
60
80
100
120
140
A5883
299-E17-11

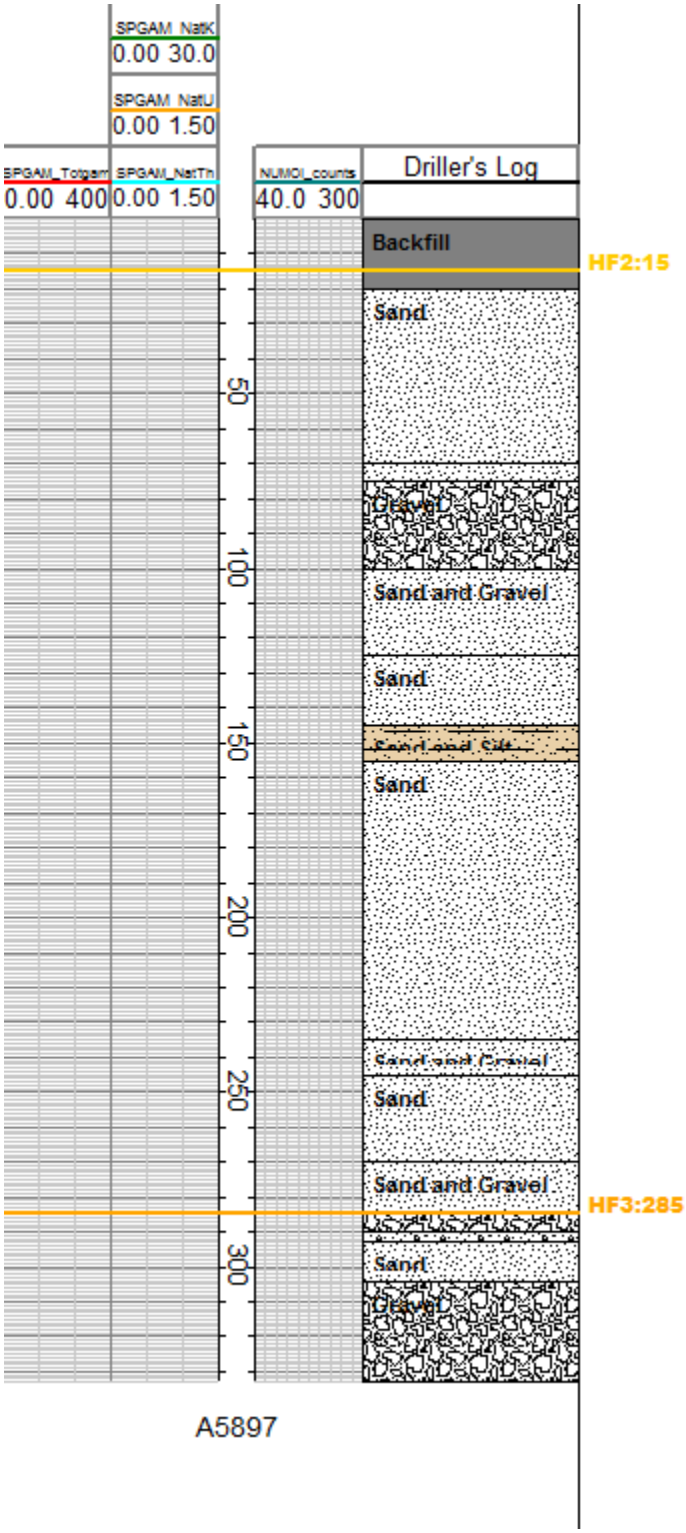

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:22
20
40
60
80
100
120
140
A5886
299-E17-51
720.6

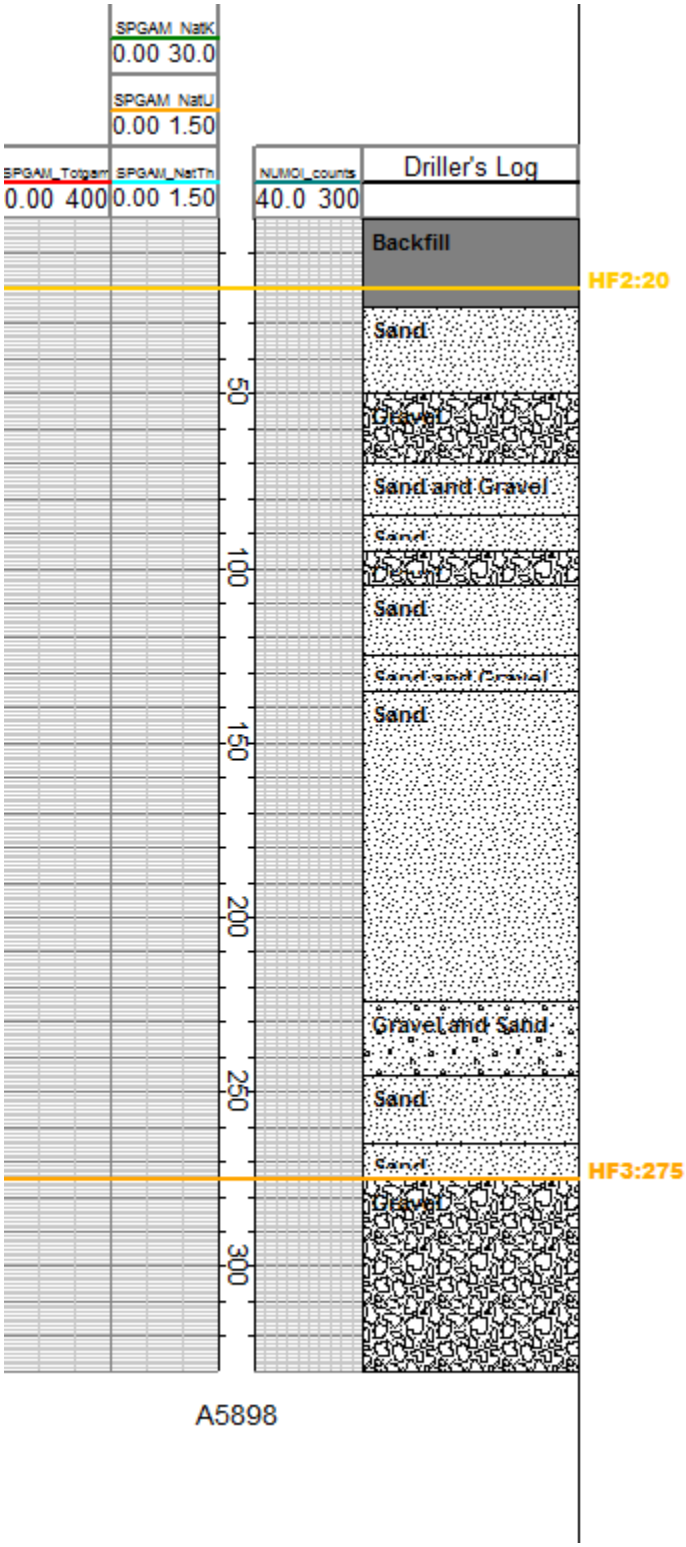

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
A5887
299-E17-53
721.3


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
HF2:29
A5888
299-E17-54
722.5

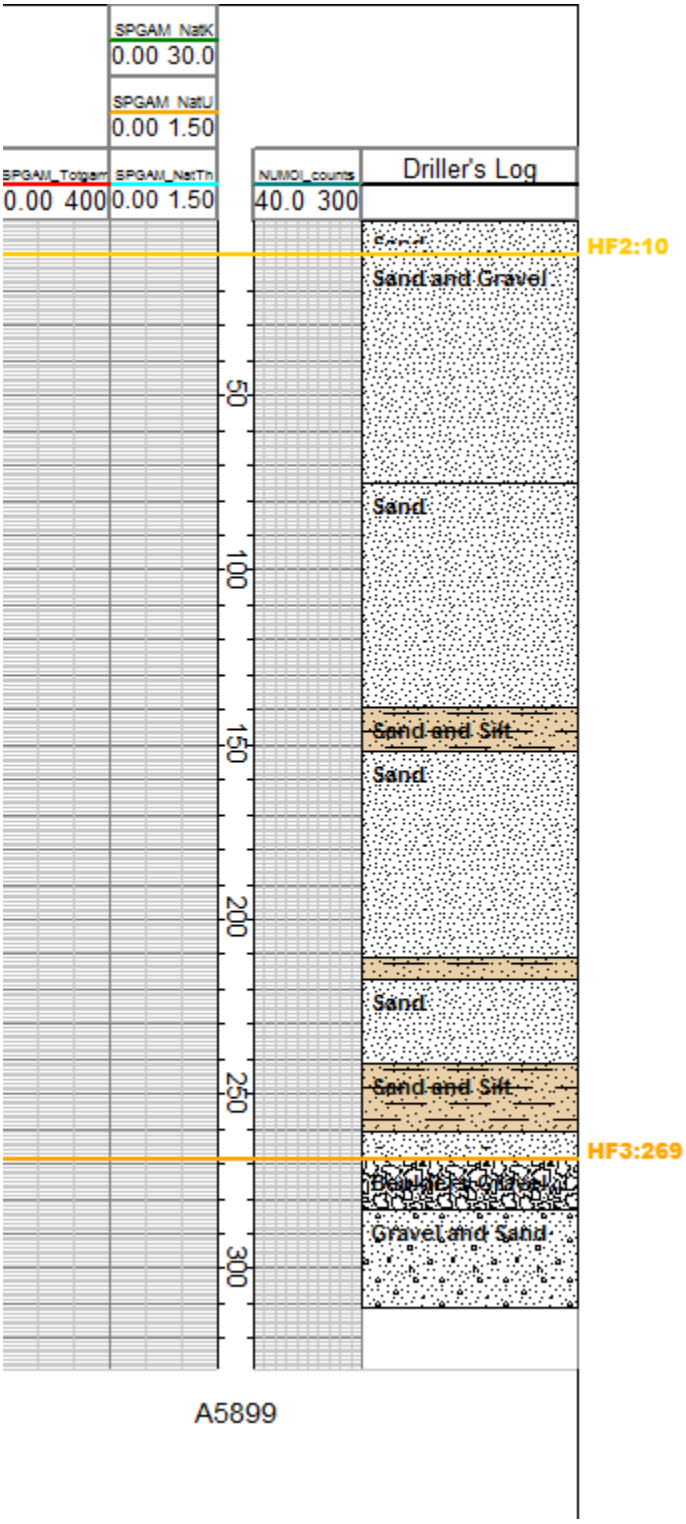

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:22
Sand and...
Sand and...
HF3:244
Sand Gra...
Rwia:305
Gravel Sa...
Rlm:375
Rwia:489
Basalt:520
50
100
150
200
250
300
350
400
450
500
A5889
299-E19-1

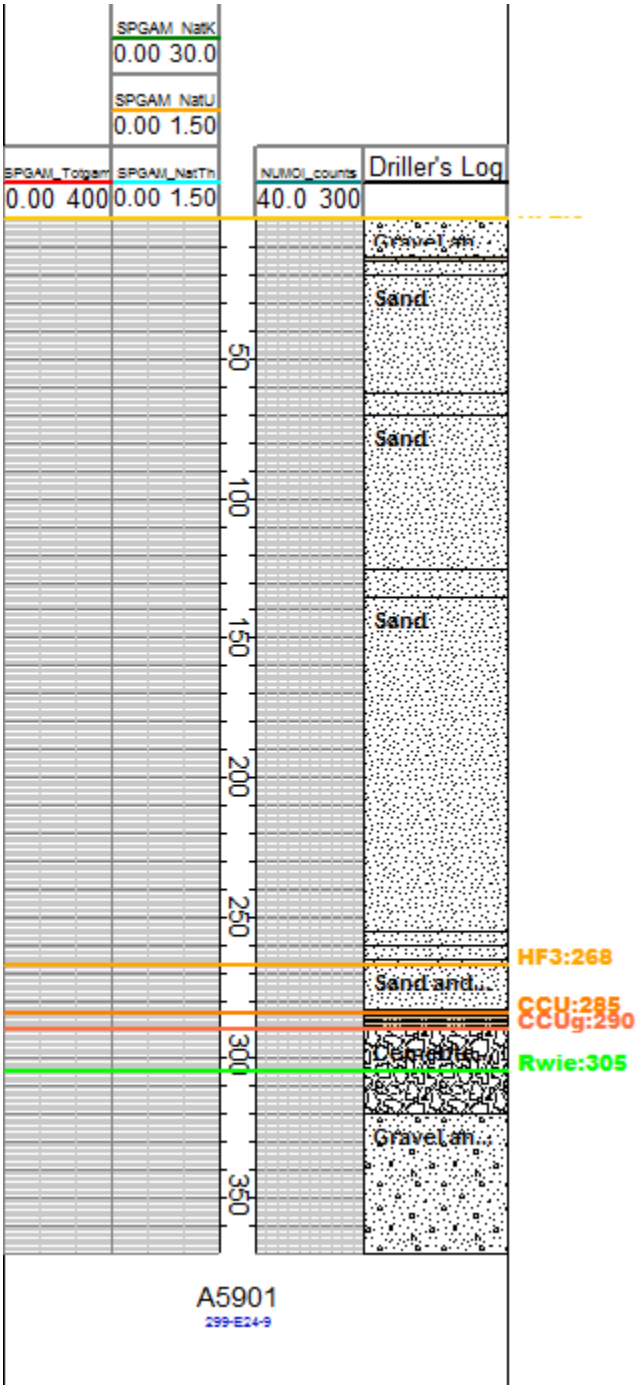

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Backfill
HF2:20
Sand
Sand and...
HF3:264
Sand and...
Sand and...
Rwie:304
Gravel an...
Rwia:342
50
100
150
200
250
300
A5896
299-E24-1

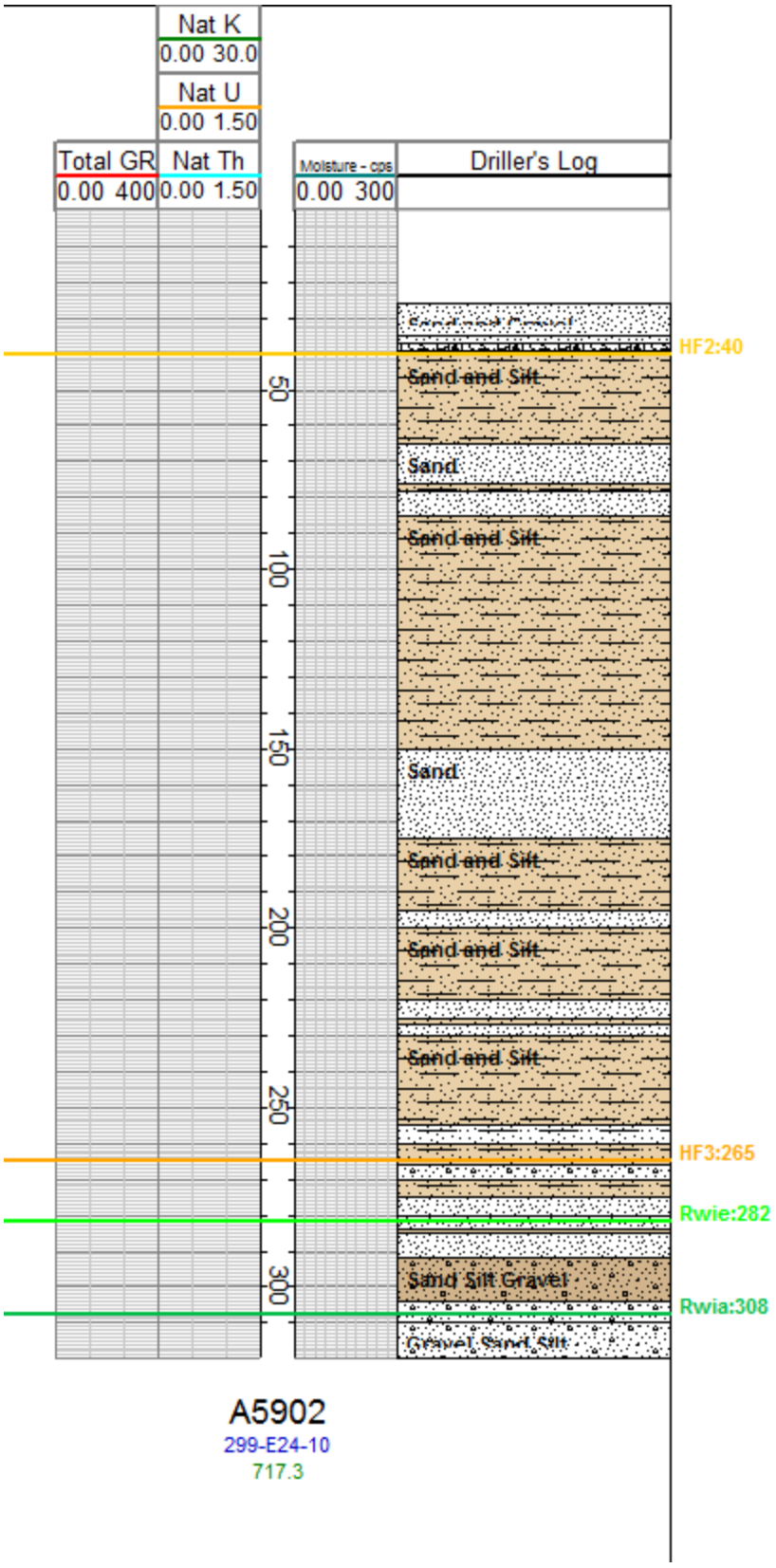

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Backfill
HF2:15
Sand
Gravel
Sand and Gravel
Sand
Sand
Sand and Gravel
Sand
Sand and Gravel
HF3:285
Sand
Gravel
50
100
150
200
250
300
A5897

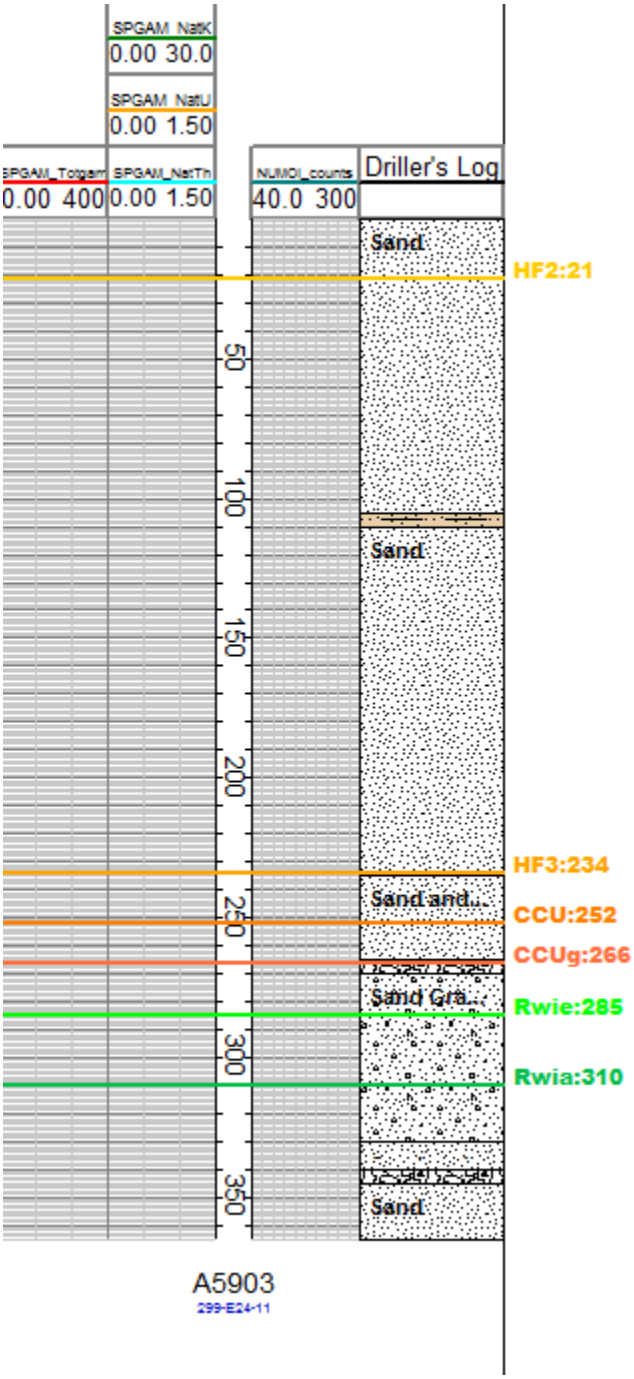

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Backfill
HF2:20
Sand
Gravel
Sand and Gravel
Sand
Gravel
Sand
Sand and Gravel
Sand
Gravel and Sand
Sand
Sand
HF3:275
Gravel
50
100
150
200
250
300

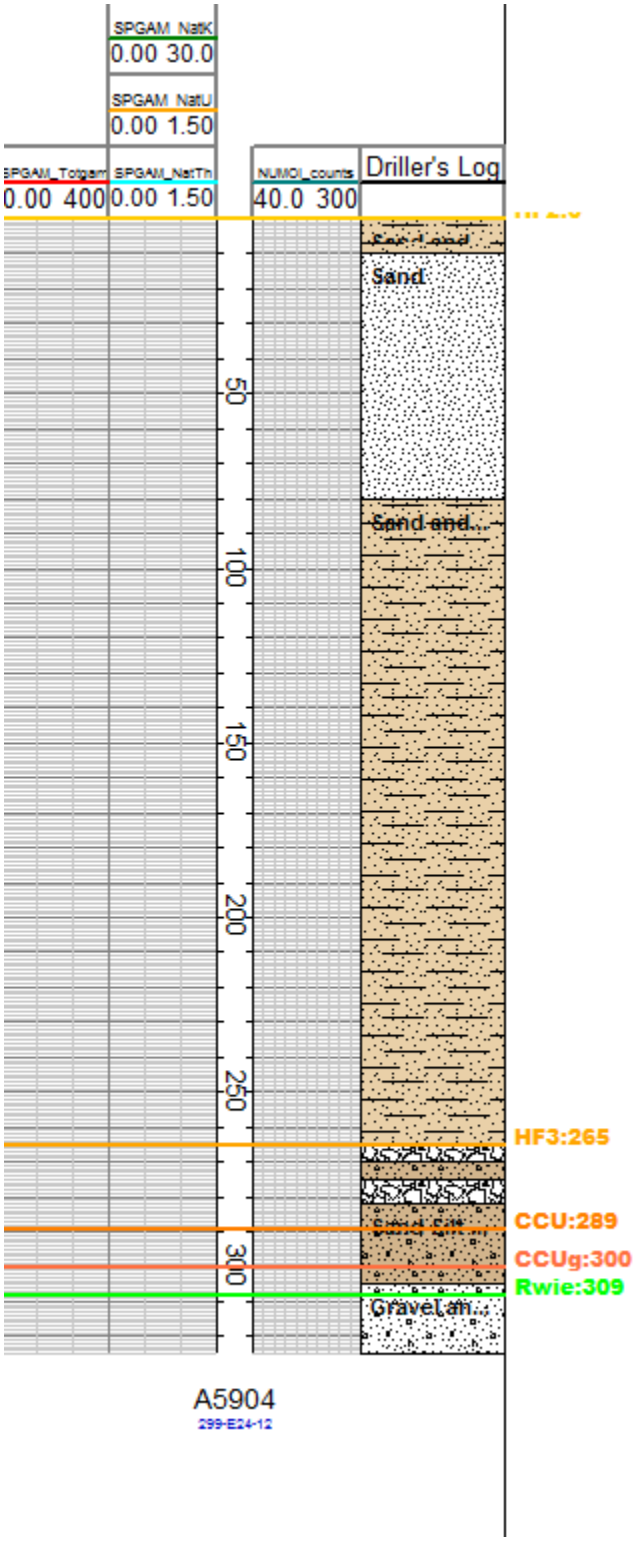
A5898

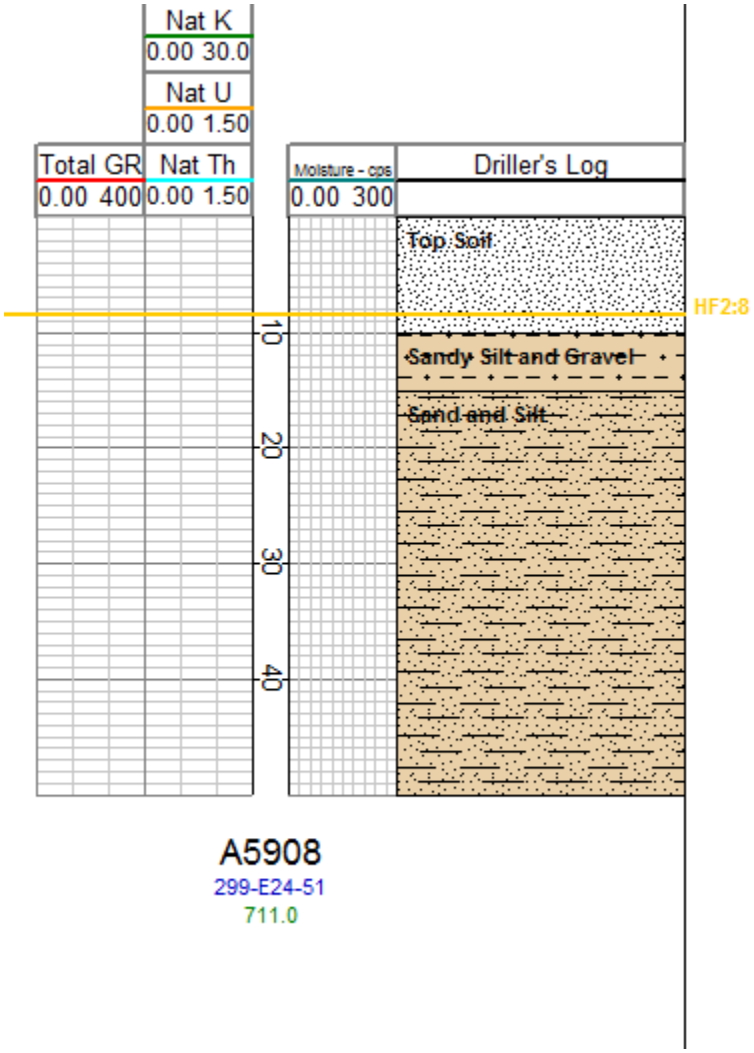

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:10
Sand and Gravel
Sand
Sand and Silt
Sand
Sand
Sand and Silt
HF3:269
Gravel and Sand
50
100
150
200
250
300
A5899

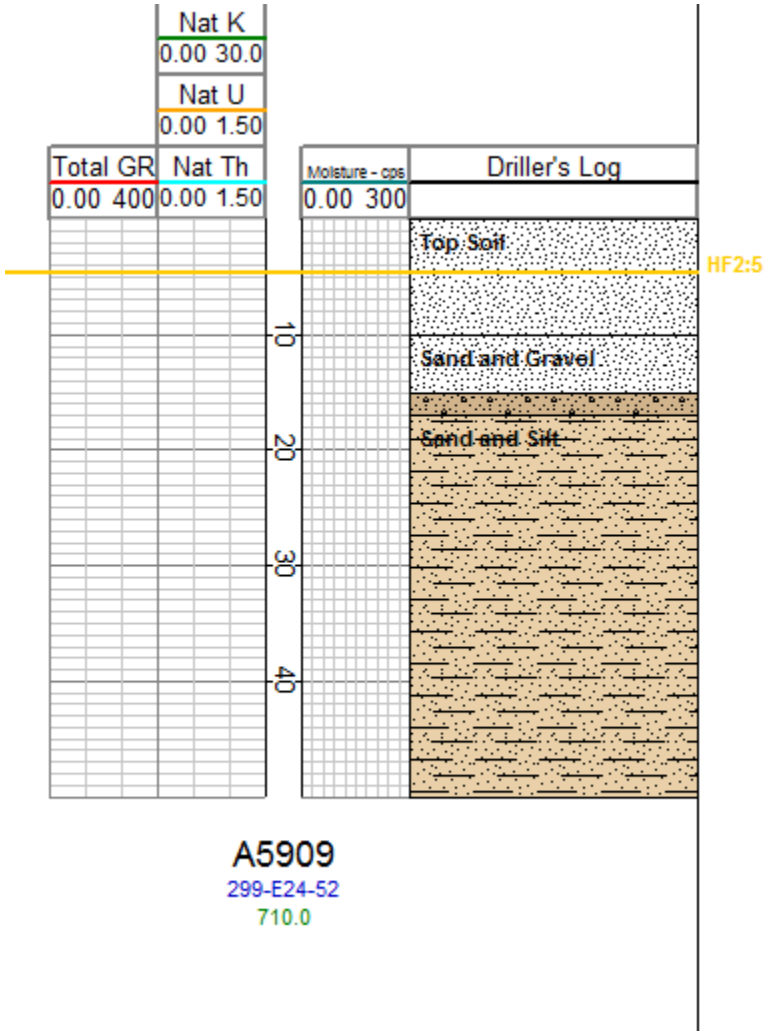

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 300
Driller's Log
Sand
Sand
Sand
Sand and...
Gravel an...
50
100
150
200
250
300
350
HF3:268
CCU:285
CCUg:290
Rwie:305
A5901
299-E24-9

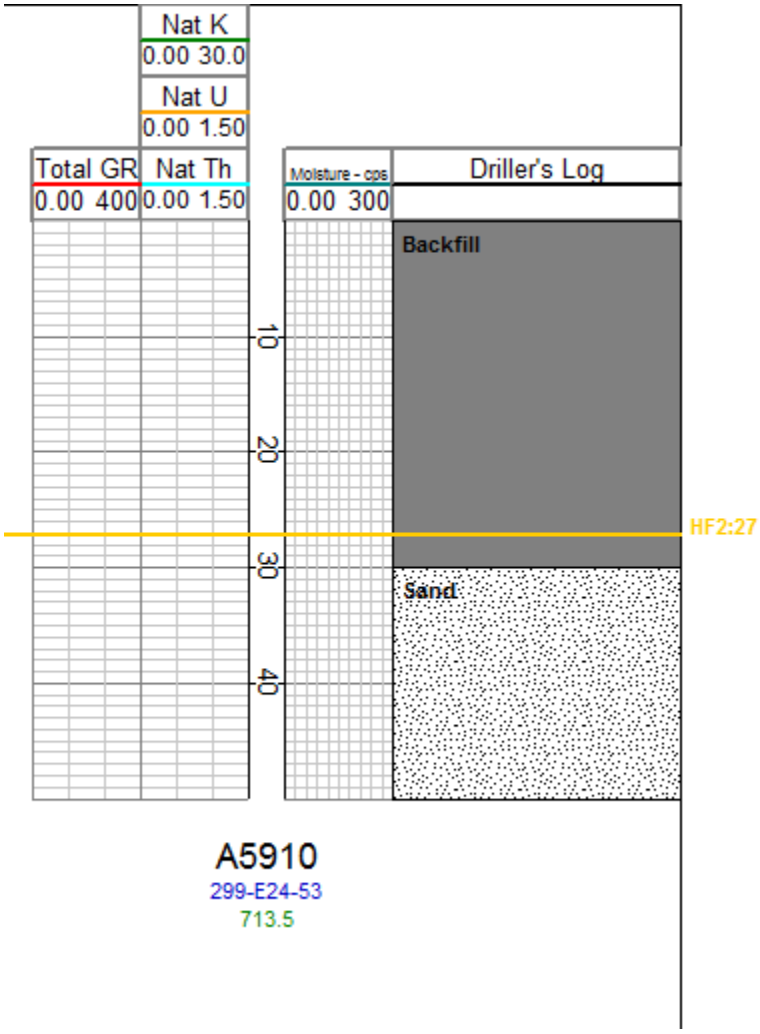

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:40
Sand and Silt
Sand
Sand and Silt
Sand
Sand and Silt
Sand and Silt
Sand and Silt
HF3:265
Rwie:282
Sand Silt Gravel
Rwia:308
Gravel Sand Silt
50
100
150
200
250
300
A5902
299-E24-10
717.3

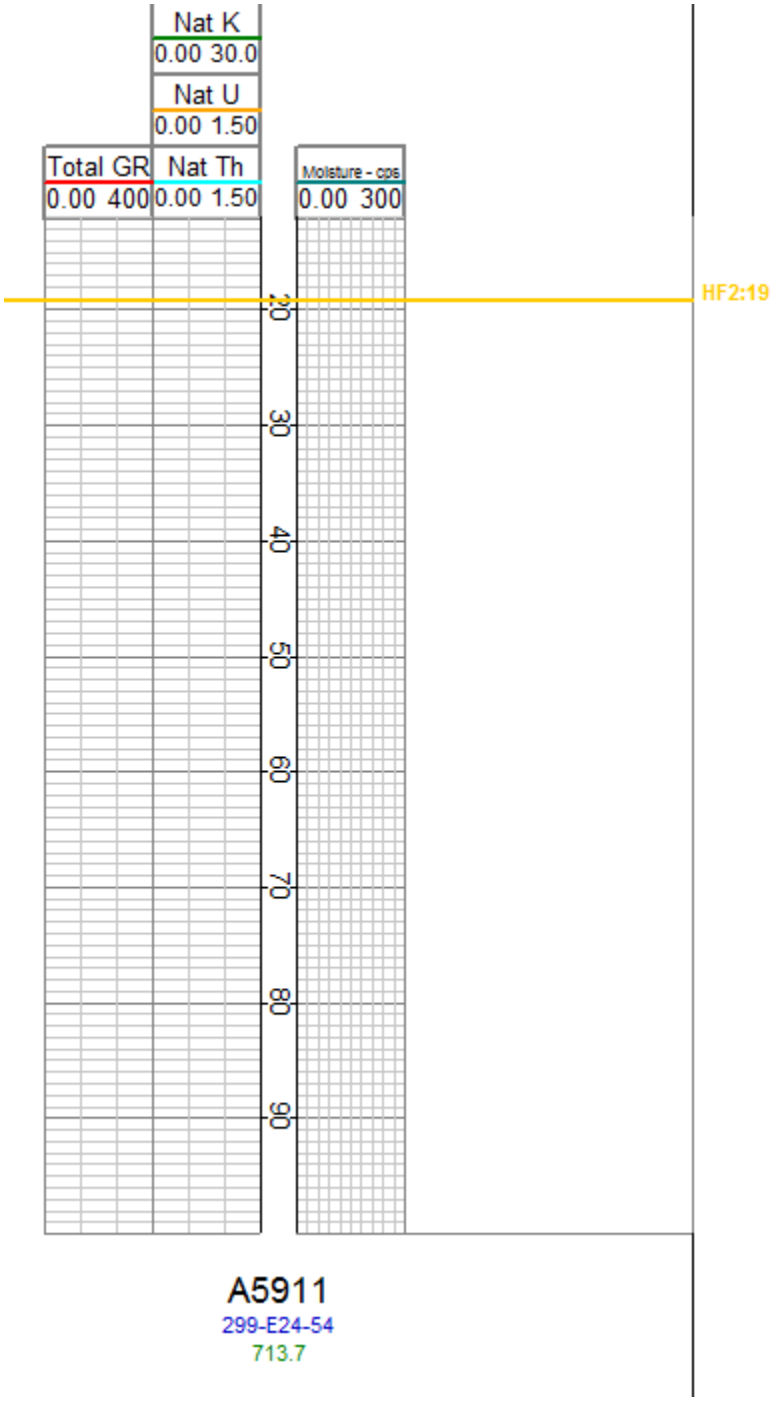

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
HF2:21
50
100
Sand
150
200
HF3:234
Sand and...
CCU:252
250
CCUg:266
Sand Gra...
Rwie:285
300
Rwia:310
350
Sand
A5903
299-E24-11

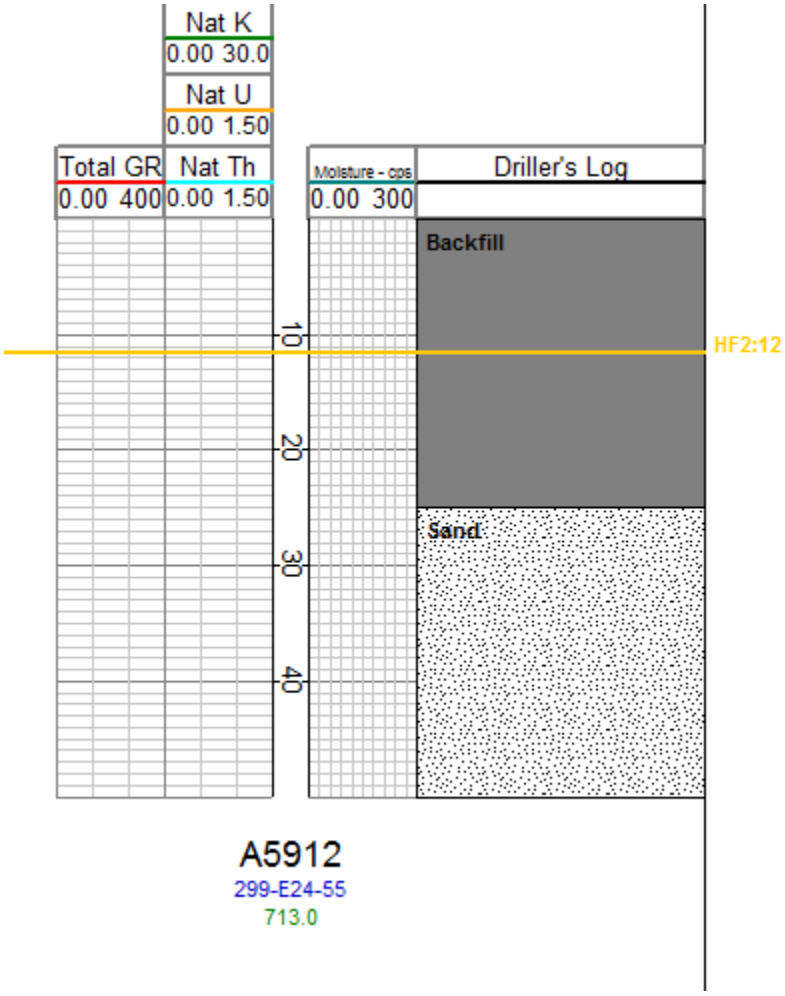

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand and...
50
100
150
200
250
300
HF3:265
CCU:289
CCUg:300
Rwie:309
Gravel an...
A5904
299-E24-12

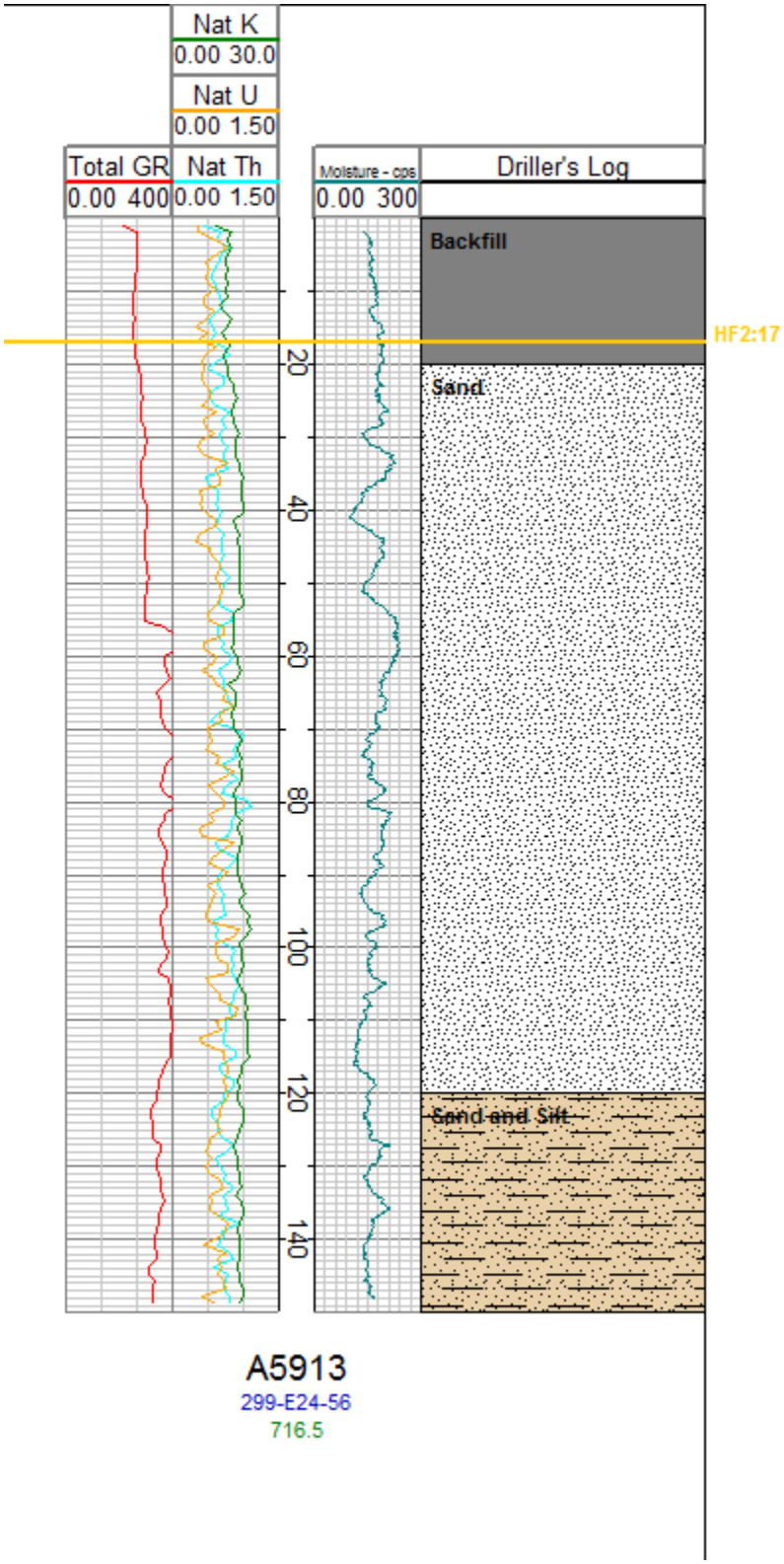

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Top Soil
HF2:8
Sandy Silt and Gravel
Sand and Silt
10
20
30
40
A5908
299-E24-51
711.0

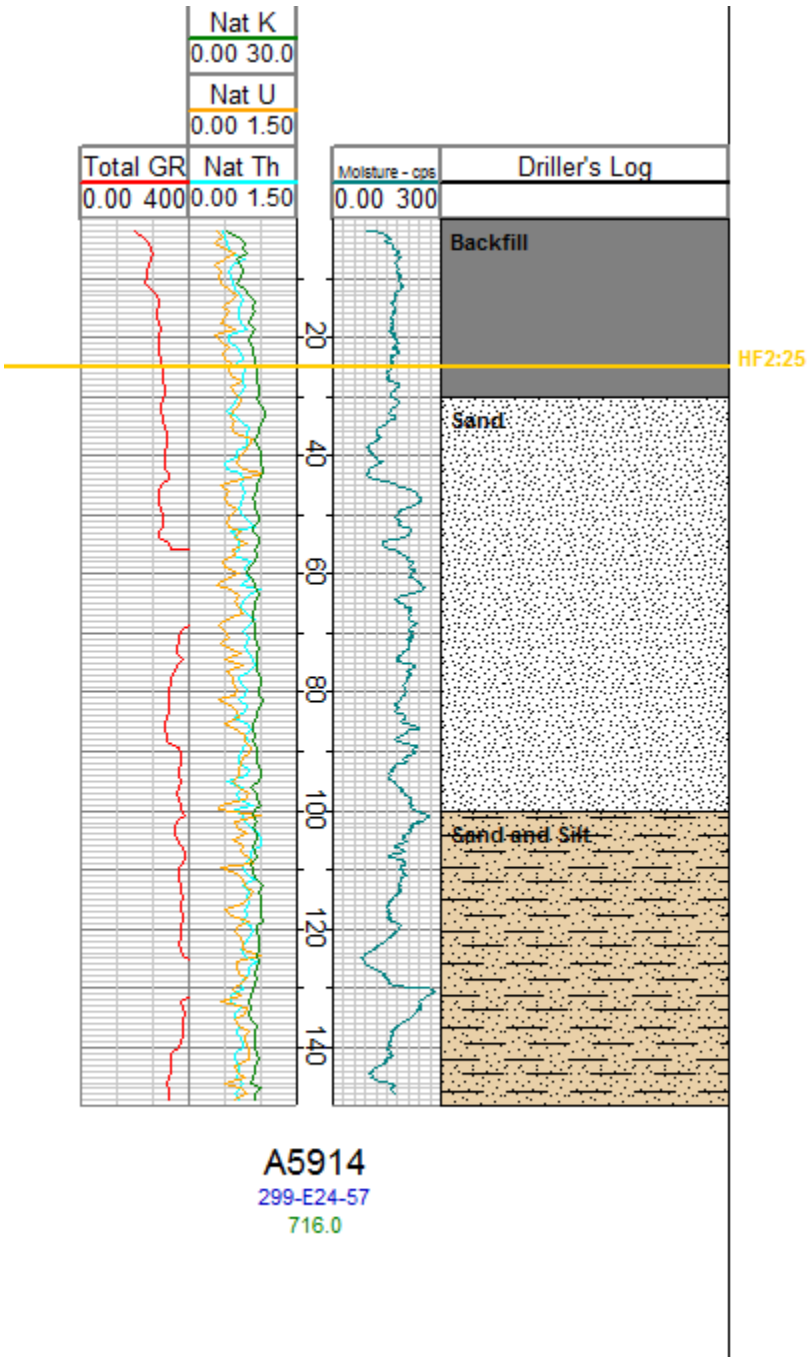

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Top Soil
HF2:5
Sand and Gravel
Sand and Silt
10
20
30
40
A5909
299-E24-52
710.0

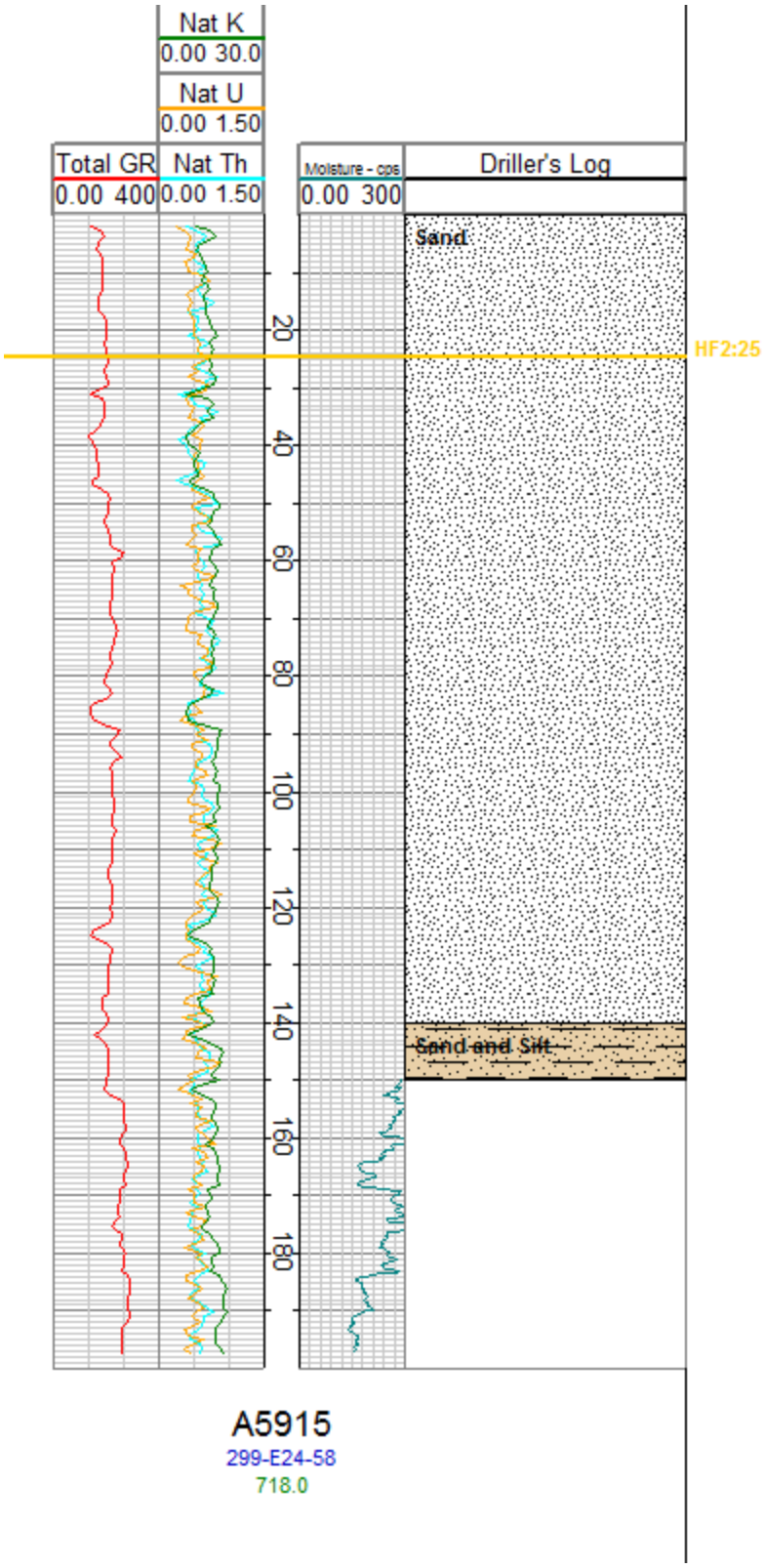

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Sand
HF2:27
10
20
30
40
A5910
299-E24-53
713.5

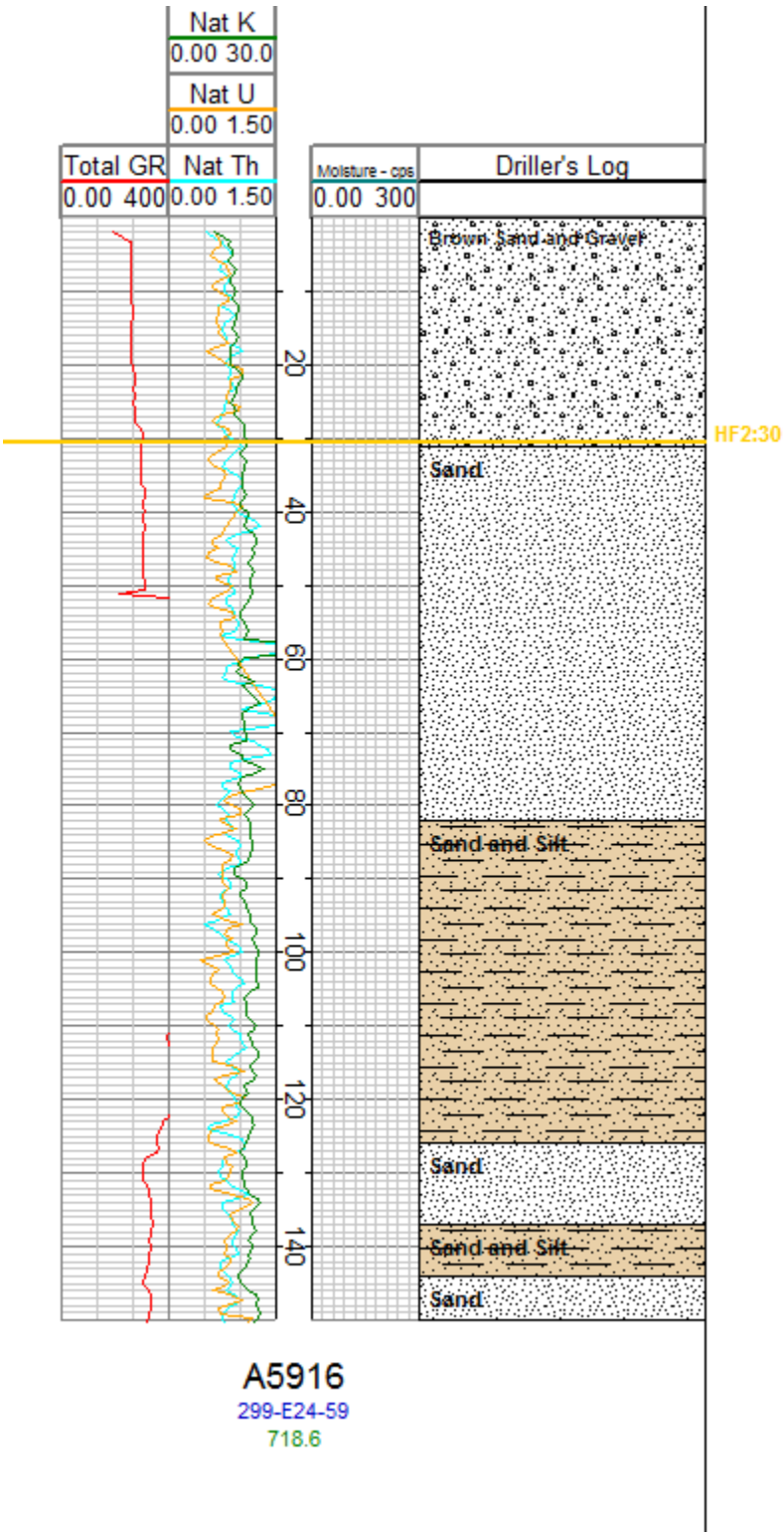

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:19
20
30
40
50
60
70
80
90
A5911
299-E24-54
713.7

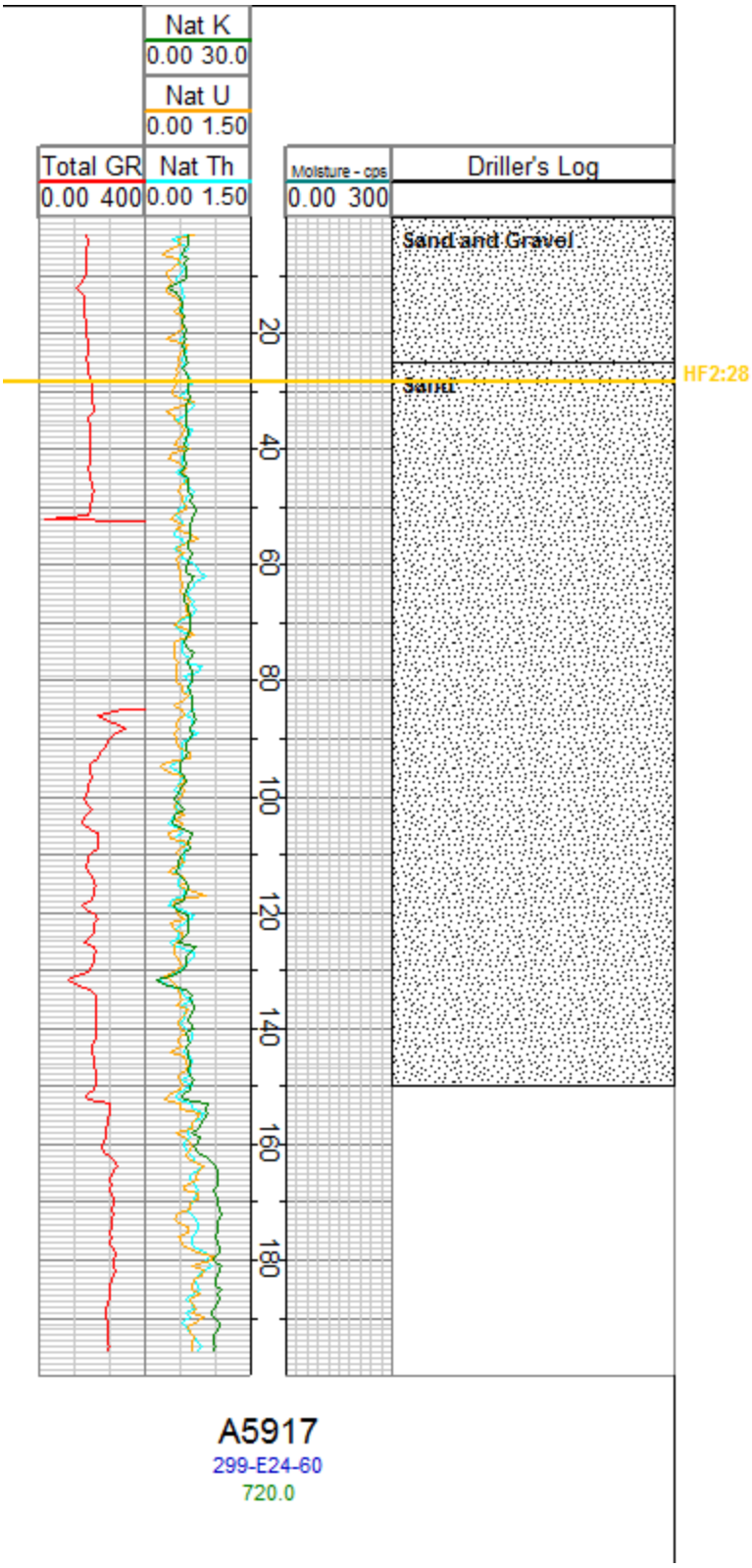

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Sand
HF2:12
10
20
30
40
A5912
299-E24-55
713.0

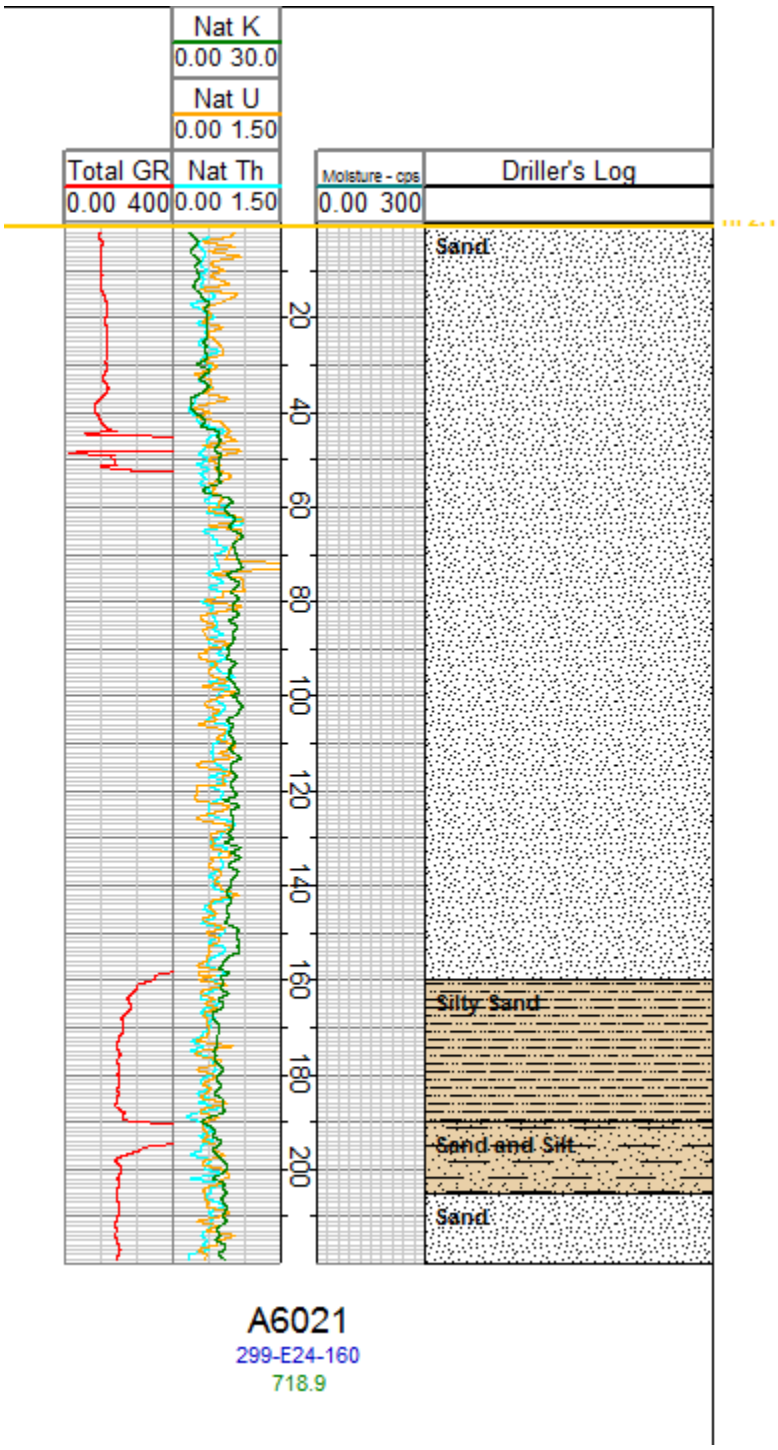

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
HF2:17
Sand
Sand and Silt
20
40
60
80
100
120
140
A5913
299-E24-56
716.5

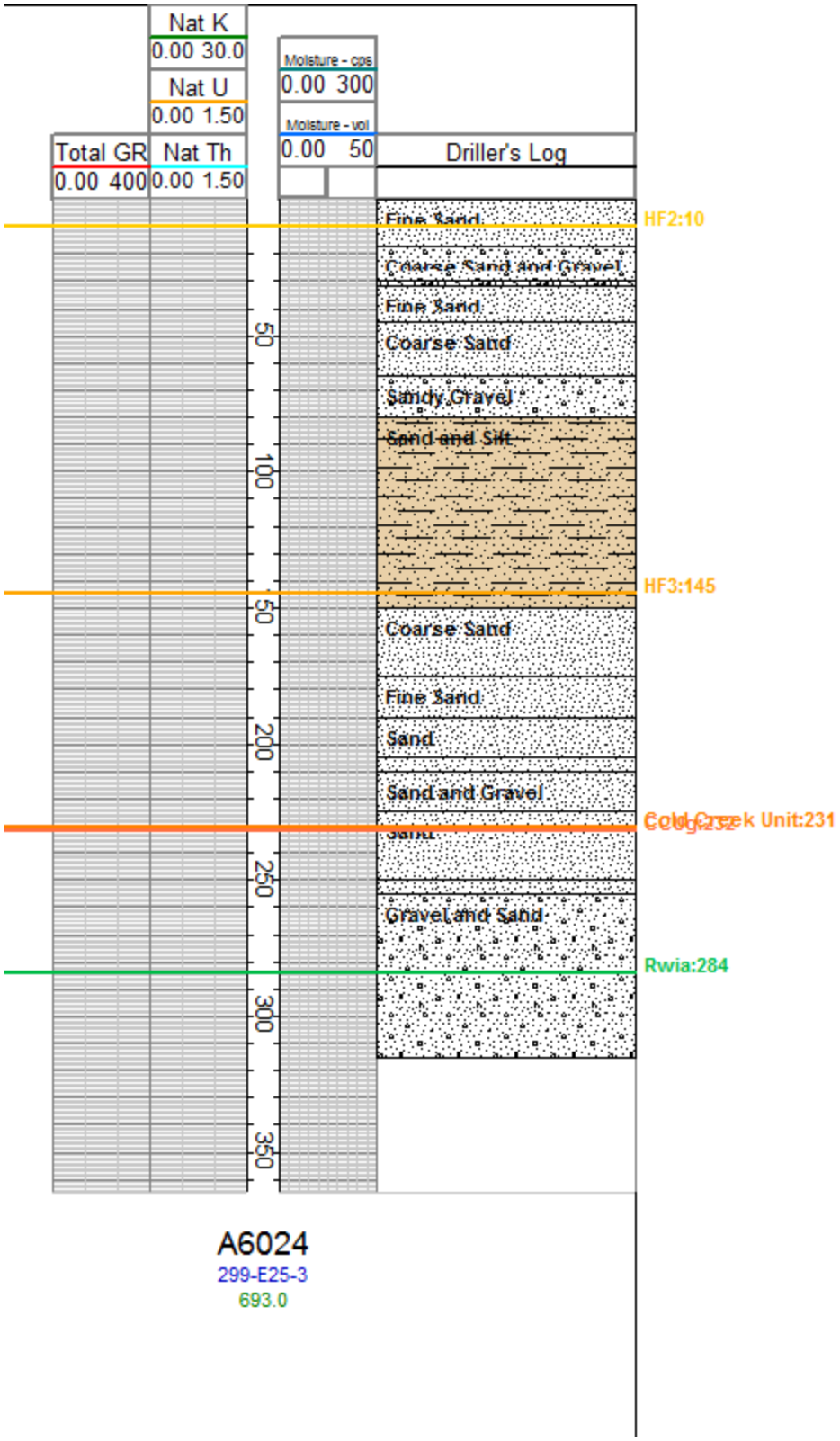

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
HF2:25
Sand
Sand and Silt
20
40
60
80
100
120
140
A5914
299-E24-57
716.0

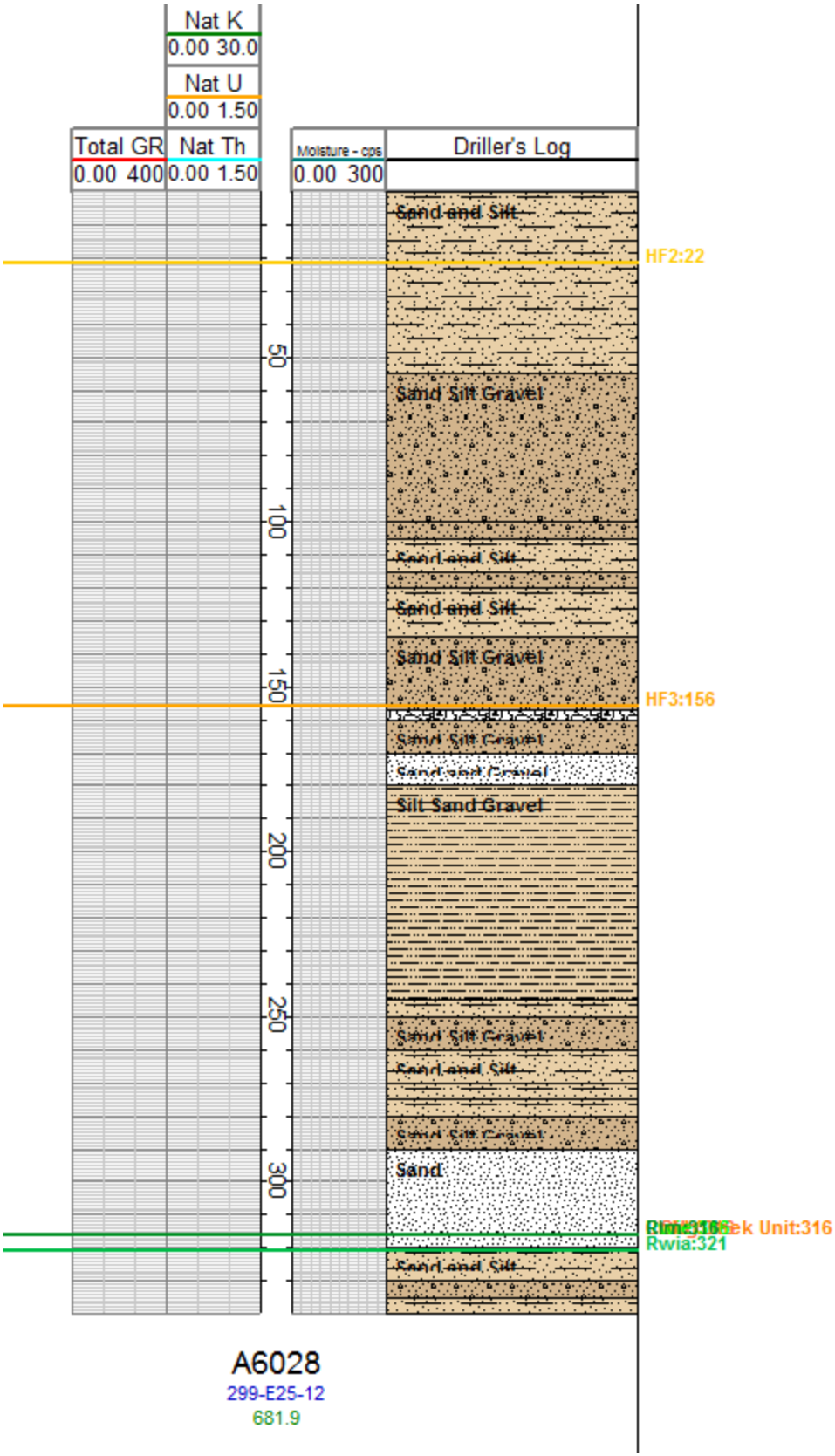

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF2:25
Sand and Silt
20
40
60
80
100
120
140
160
180
A5915
299-E24-58
718.0

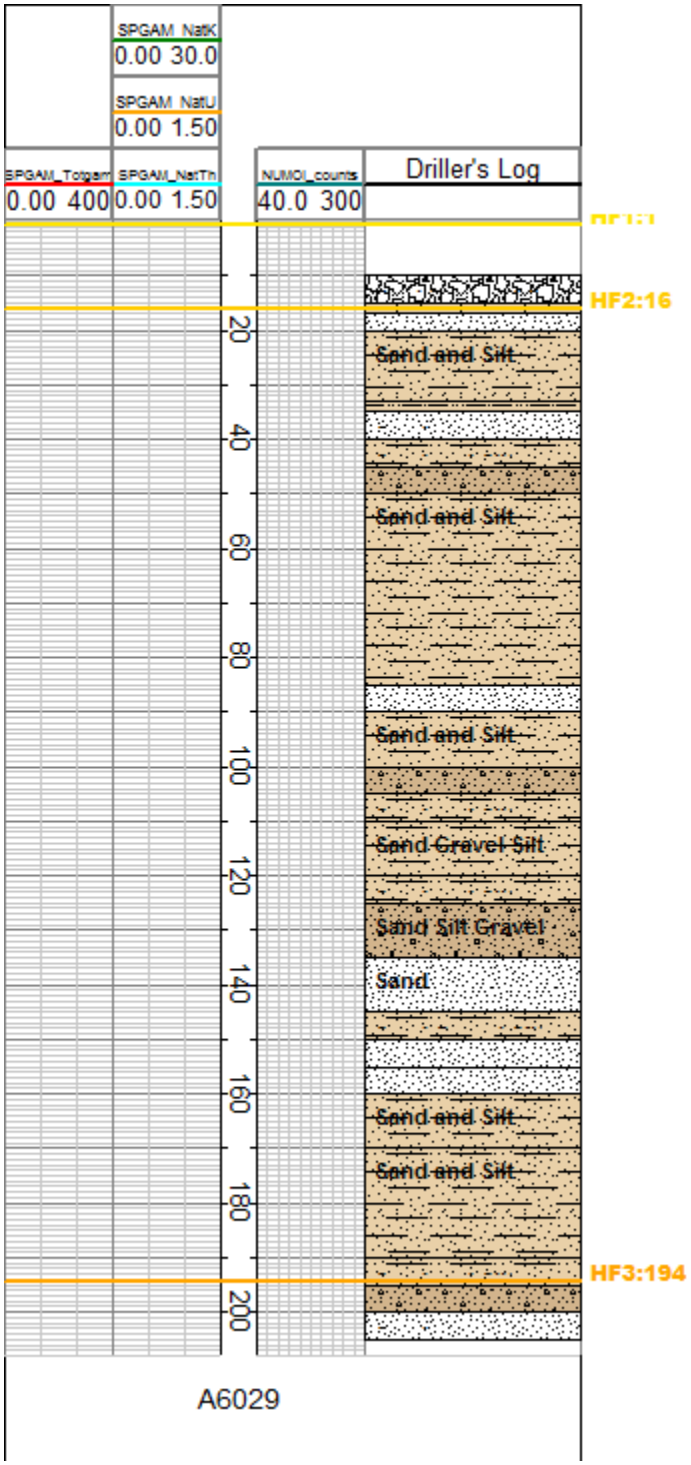

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Brown Sand and Gravel
HF2:30
Sand
Sand and Silt
Sand
Sand and Silt
Sand
20
40
60
80
100
120
140
A5916
299-E24-59
718.6

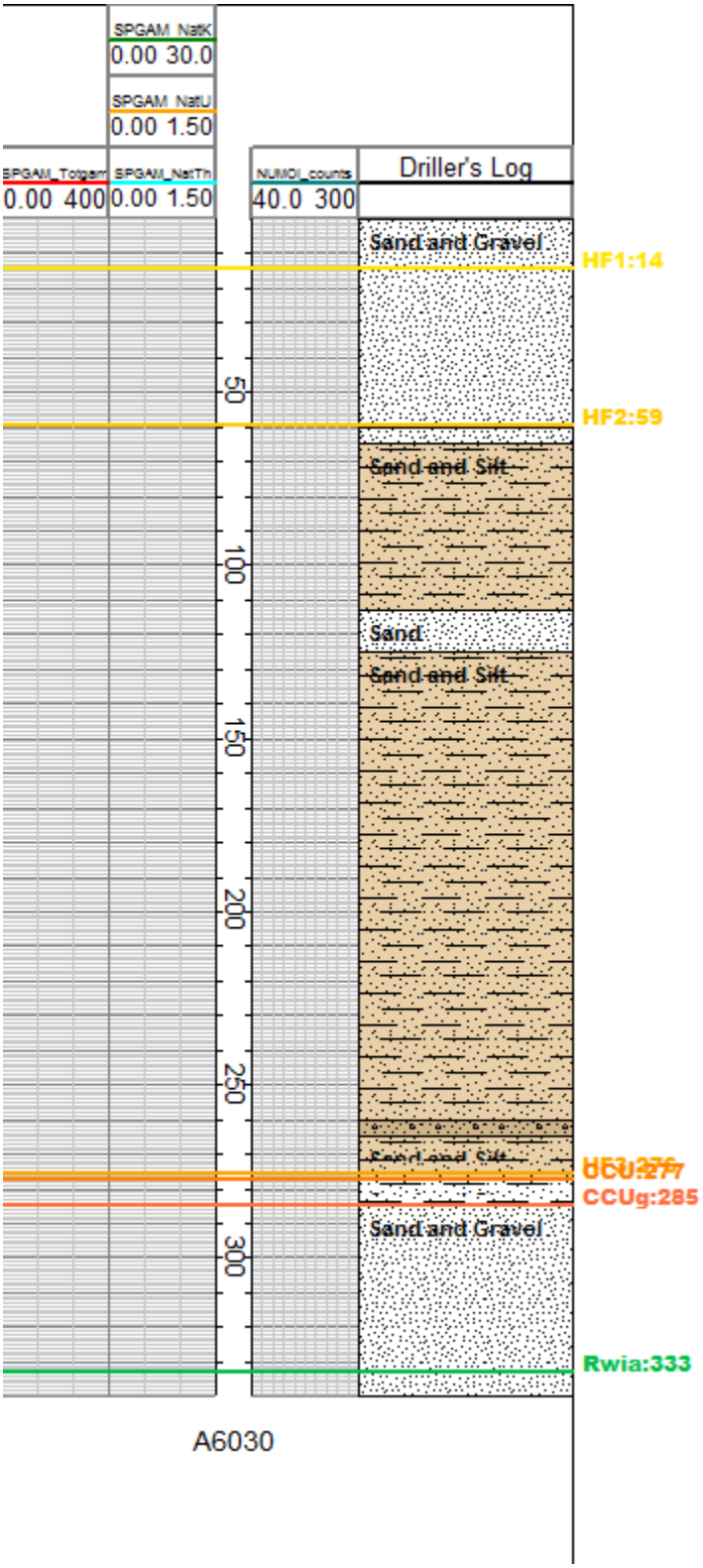

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Gravel
Sand
HF2:28
20
40
60
80
100
120
140
160
180
A5917
299-E24-60
720.0

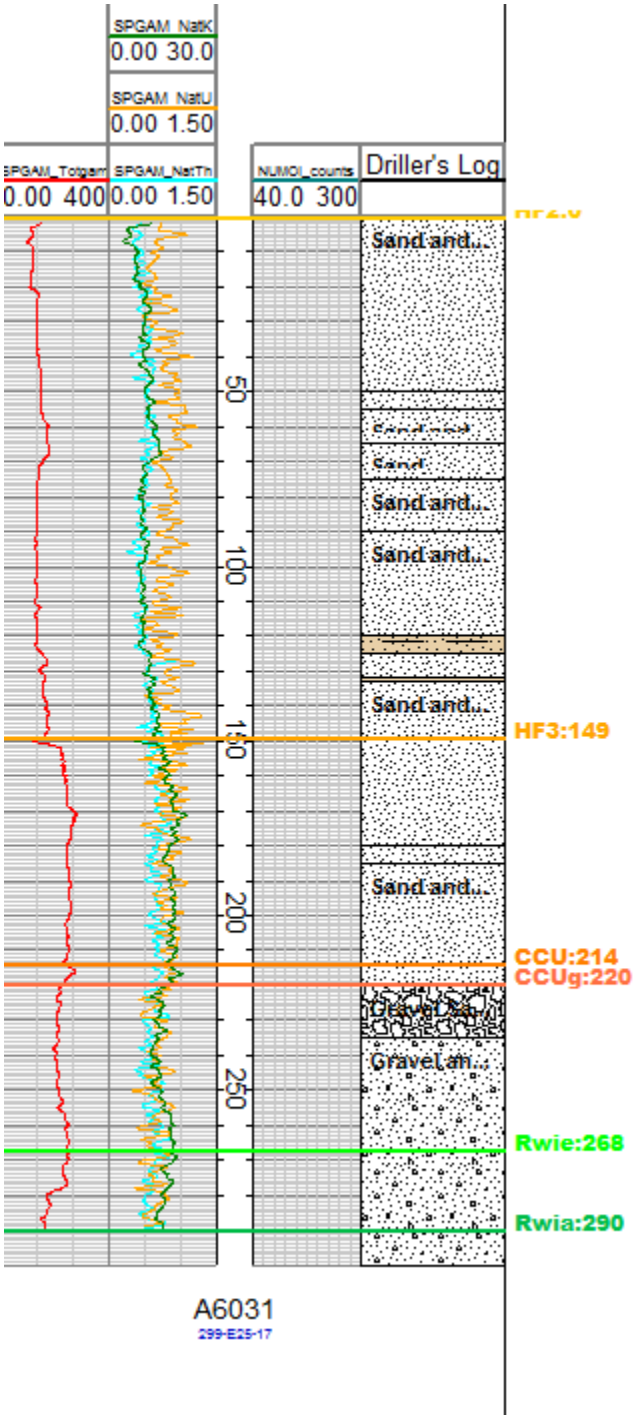

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
20
40
60
80
100
120
140
160
180
200
Sand
Silty Sand
Sand and Silt
Sand
A6021
299-E24-160
718.9

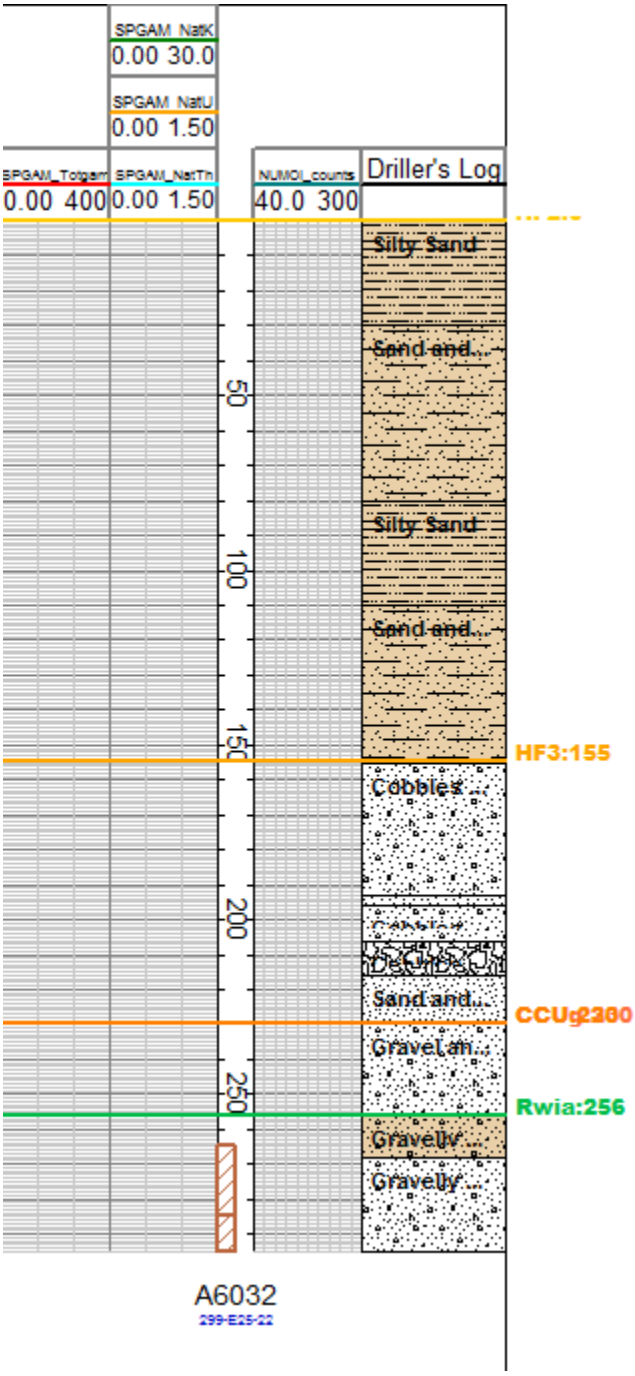

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Fine Sand
Coarse Sand and Gravel
Fine Sand
Coarse Sand
Sandy Gravel
Sand and Silt
Coarse Sand
Fine Sand
Sand
Sand and Gravel
Sand
Gravel and Sand
HF2:10
HF3:145
Cold Creek Unit:231
Rwia:284
50
100
150
200
250
300
350
A6024
299-E25-3
693.0

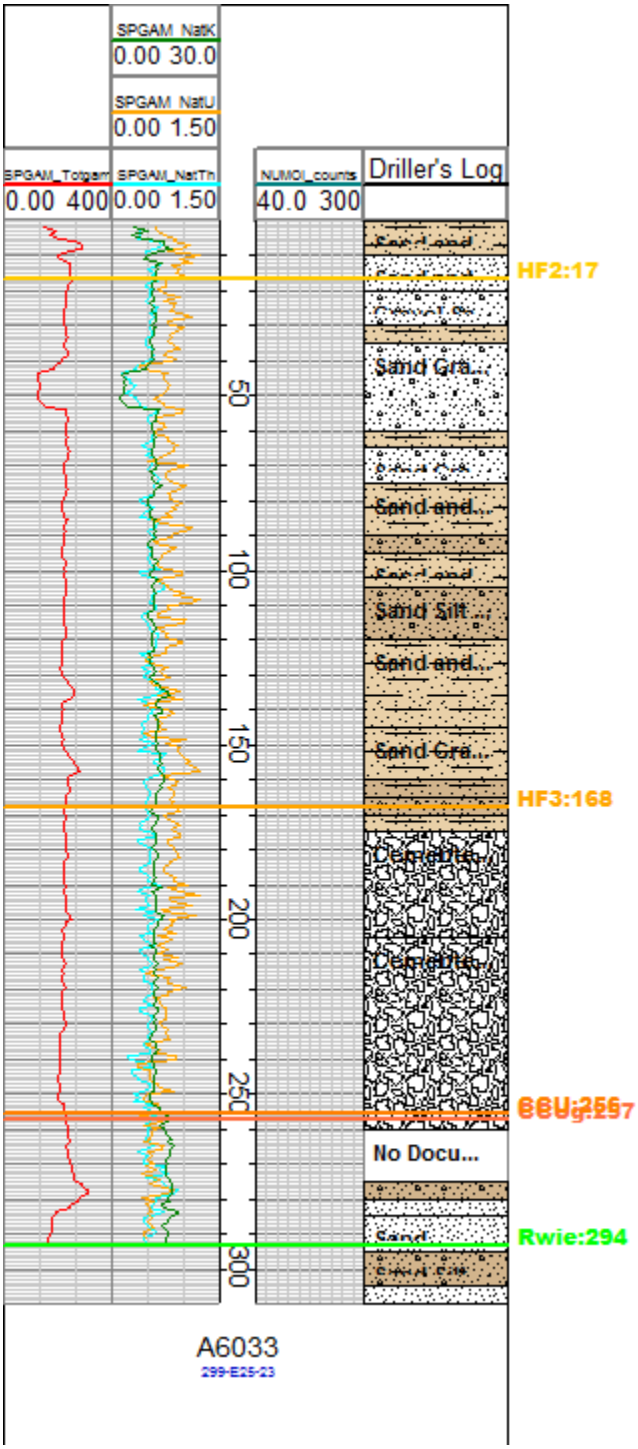

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Silt
HF2:22
Sand Silt Gravel
Sand and Silt
Sand and Silt
Sand Silt Gravel
HF3:156
Sand Silt Gravel
Sand and Gravel
Silt Sand Gravel
Sand Silt Gravel
Sand and Silt
Sand Silt Gravel
Sand
Rwia:321
Sand and Silt
50
100
150
200
250
300
A6028
299-E25-12
681.9

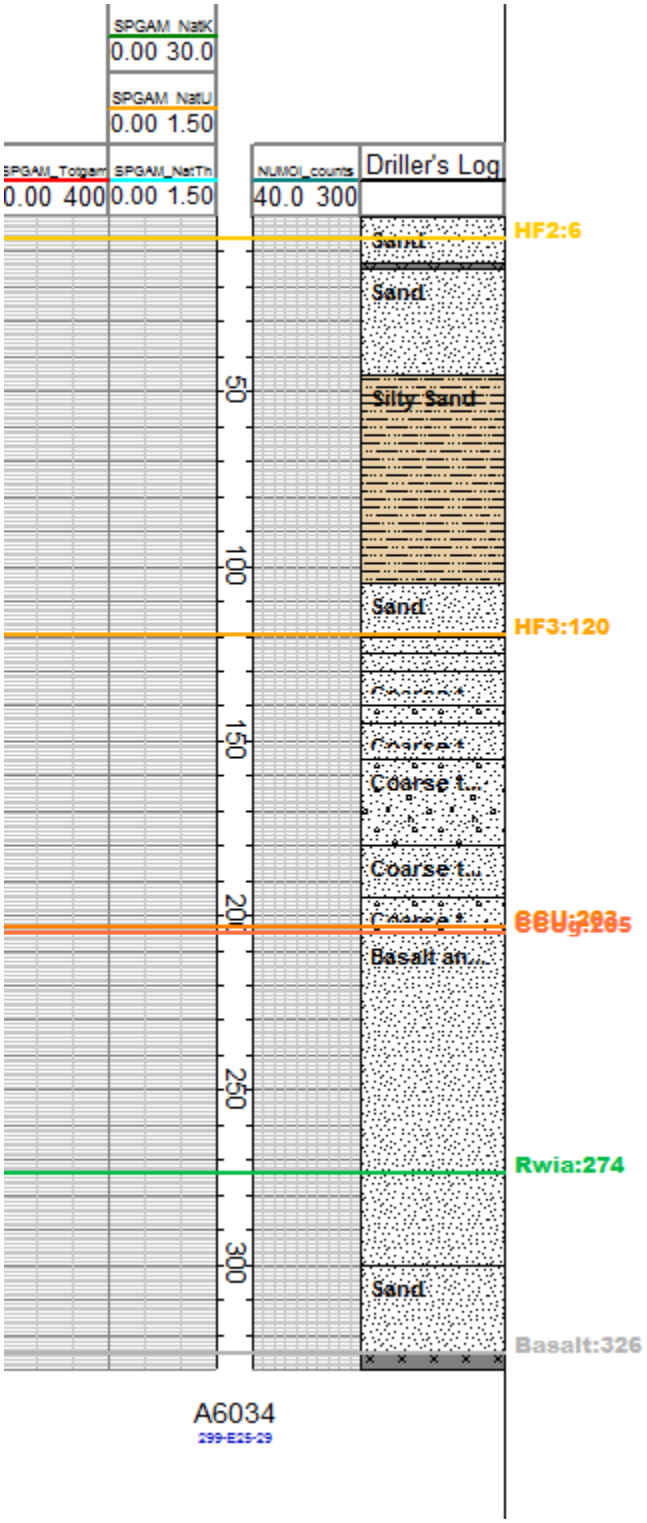

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:16
20
40
60
80
100
120
140
160
180
200
Sand and Silt
Sand and Silt
Sand and Silt
Sand Gravel Silt
Sand Silt Gravel
Sand
Sand and Silt
Sand and Silt
HF3:194
A6029

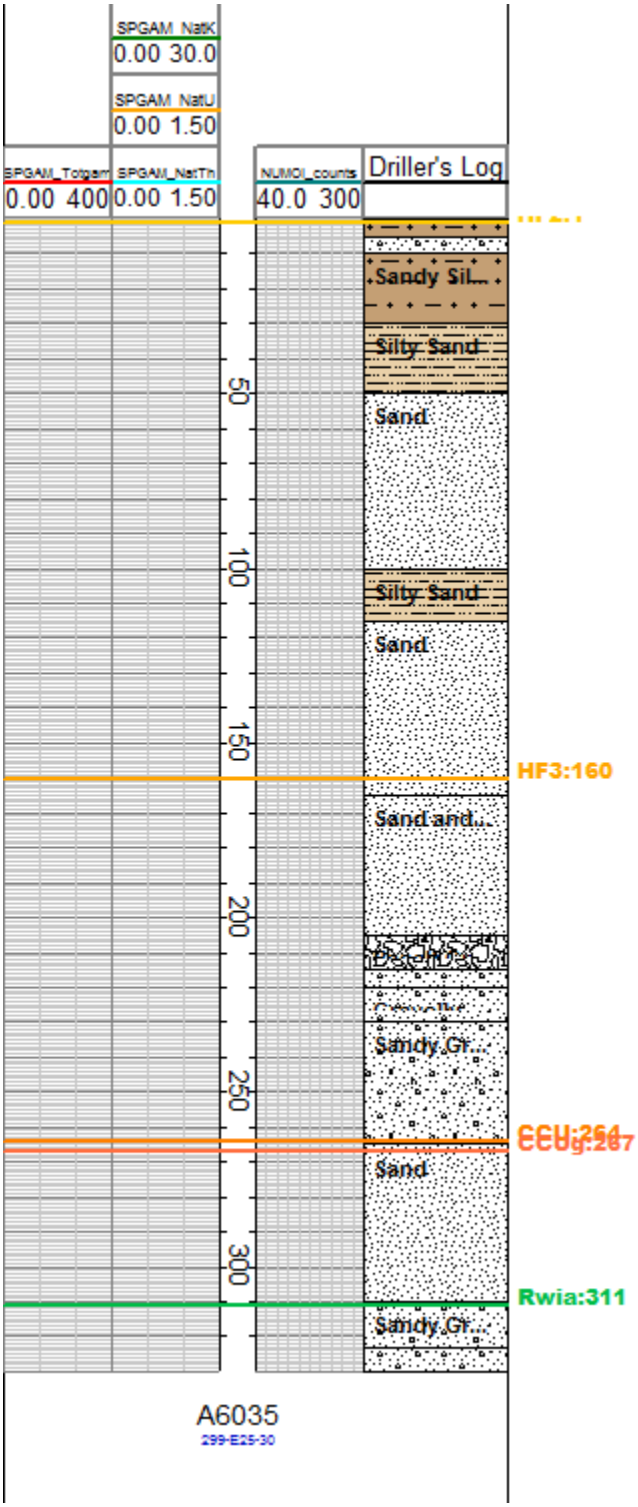

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and Gravel
HF1:14
HF2:59
Sand and Silt
Sand
Sand and Silt
Sand and Silt
CCUg:285
Sand and Gravel
Rwia:333
50
100
150
200
250
300
A6030

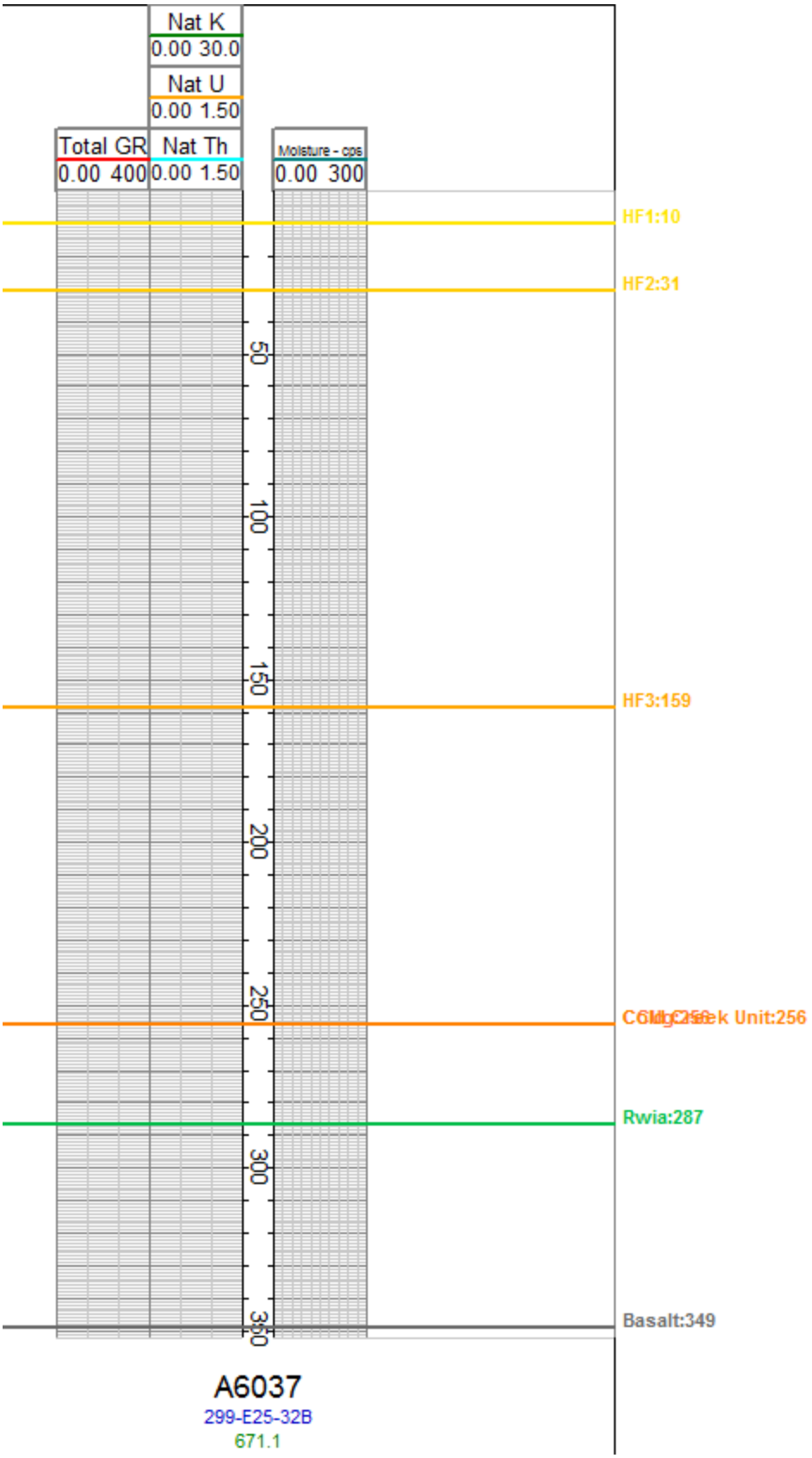

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
Sand and...
Sand and...
Sand and...
Sand and...
Gravel an...
50
100
150
200
250
HF3:149
CCU:214
CCUg:220
Rwie:268
Rwia:290
A6031
299-E25-17

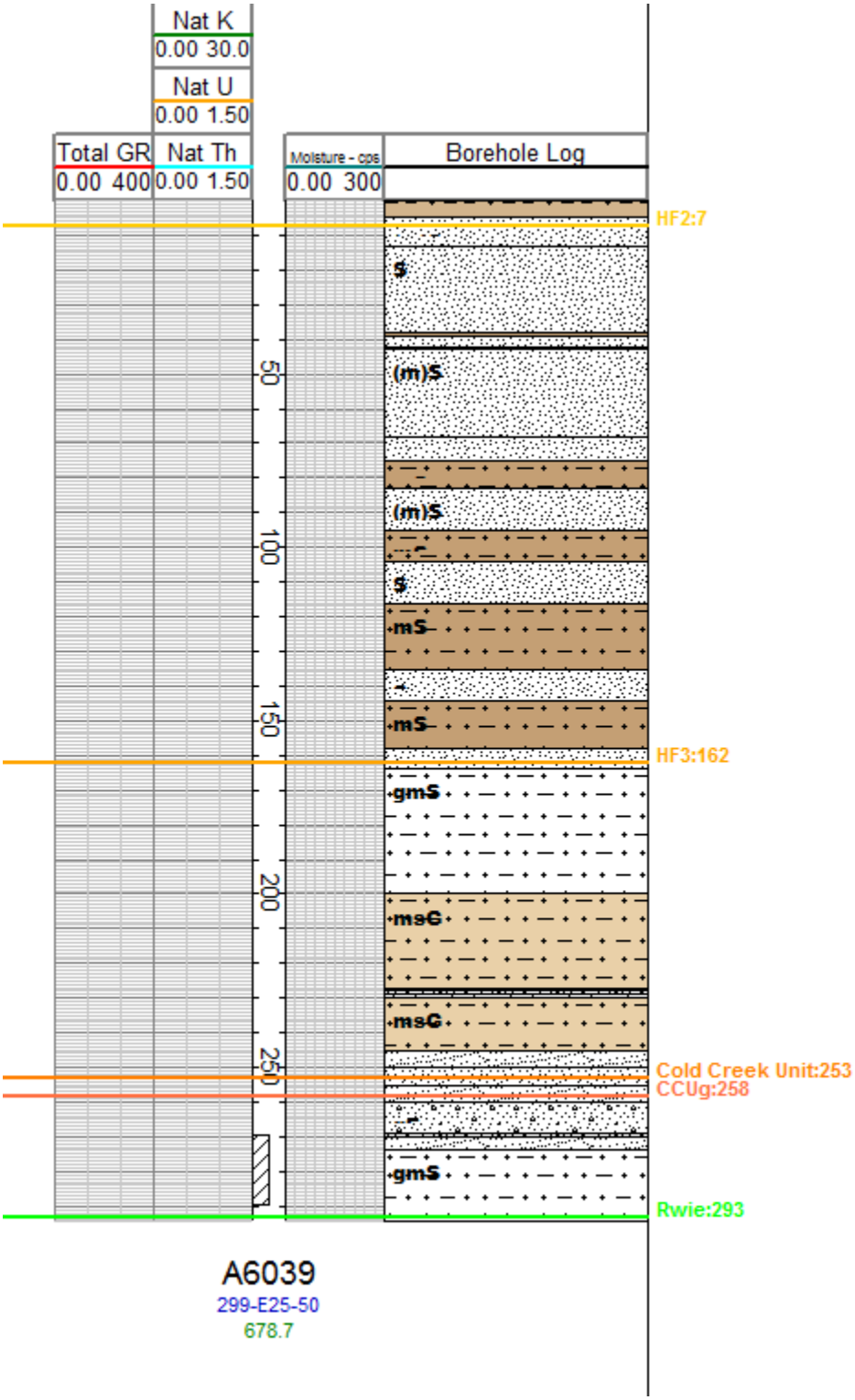

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand
Sand and...
Silty Sand
Sand and...
HF3:155
Cobbles ...
Sand and...
CCUg:200
Gravel an...
Rwia:256
Gravelly ...
Gravelly ...
50
100
150
200
250
A6032
299-E25-22

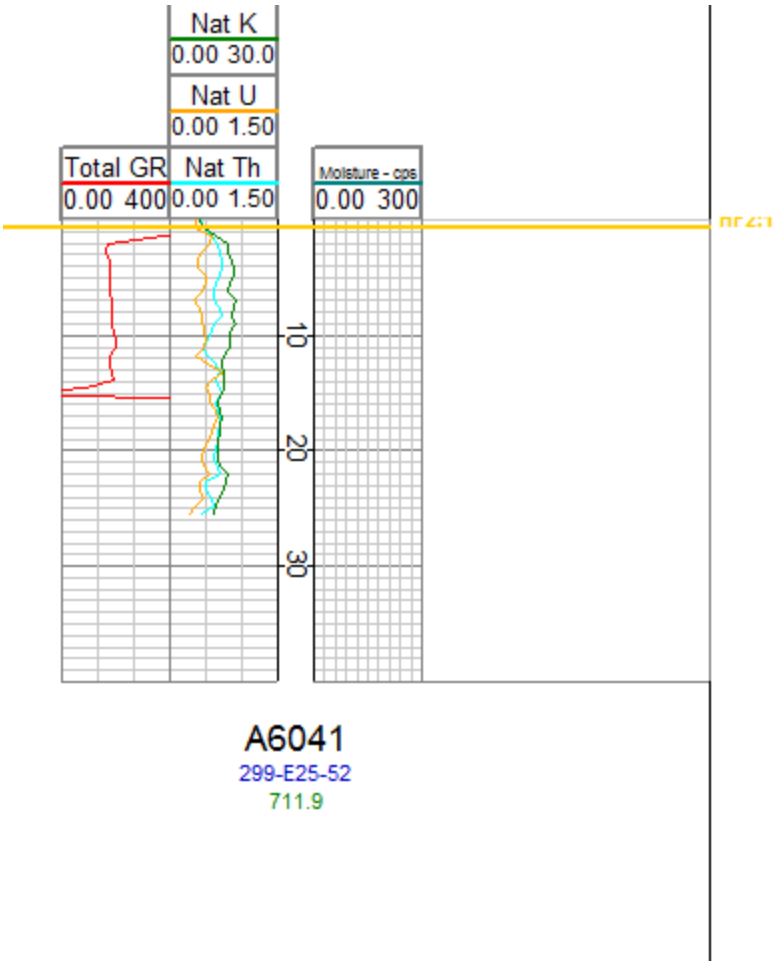

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:17
Sand Gra...
Sand and...
Sand Silt ...
Sand and...
Sand Gra...
HF3:168
Cemented...
Cemented...
BBU:256
No Docu...
Rwie:294
50
100
150
200
250
300
A6033
299-E25-23

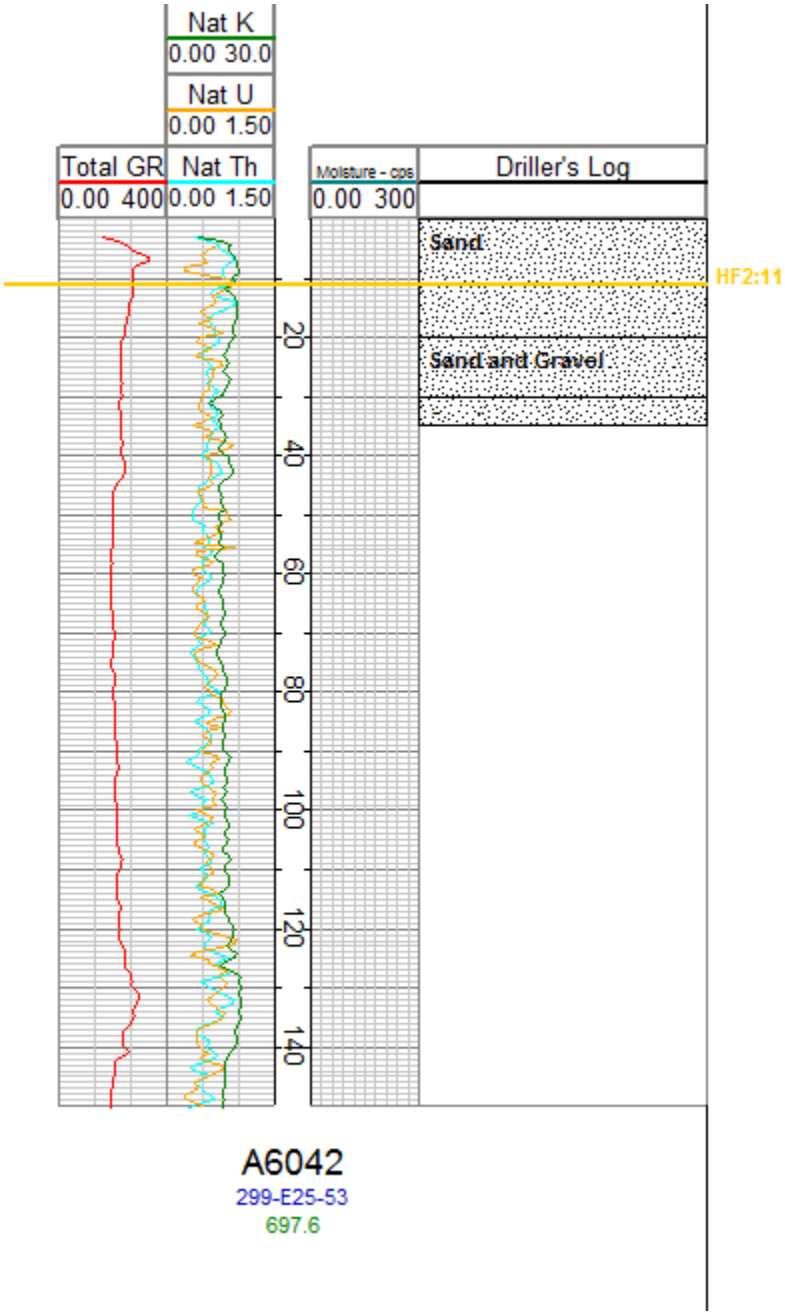

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:6
Sand
Silty Sand
Sand
HF3:120
Coarse t...
Coarse t...
Coarse t...
Basalt an...
Rwia:274
Sand
Basalt:326
50
100
150
200
250
300
A6034
299-E25-29

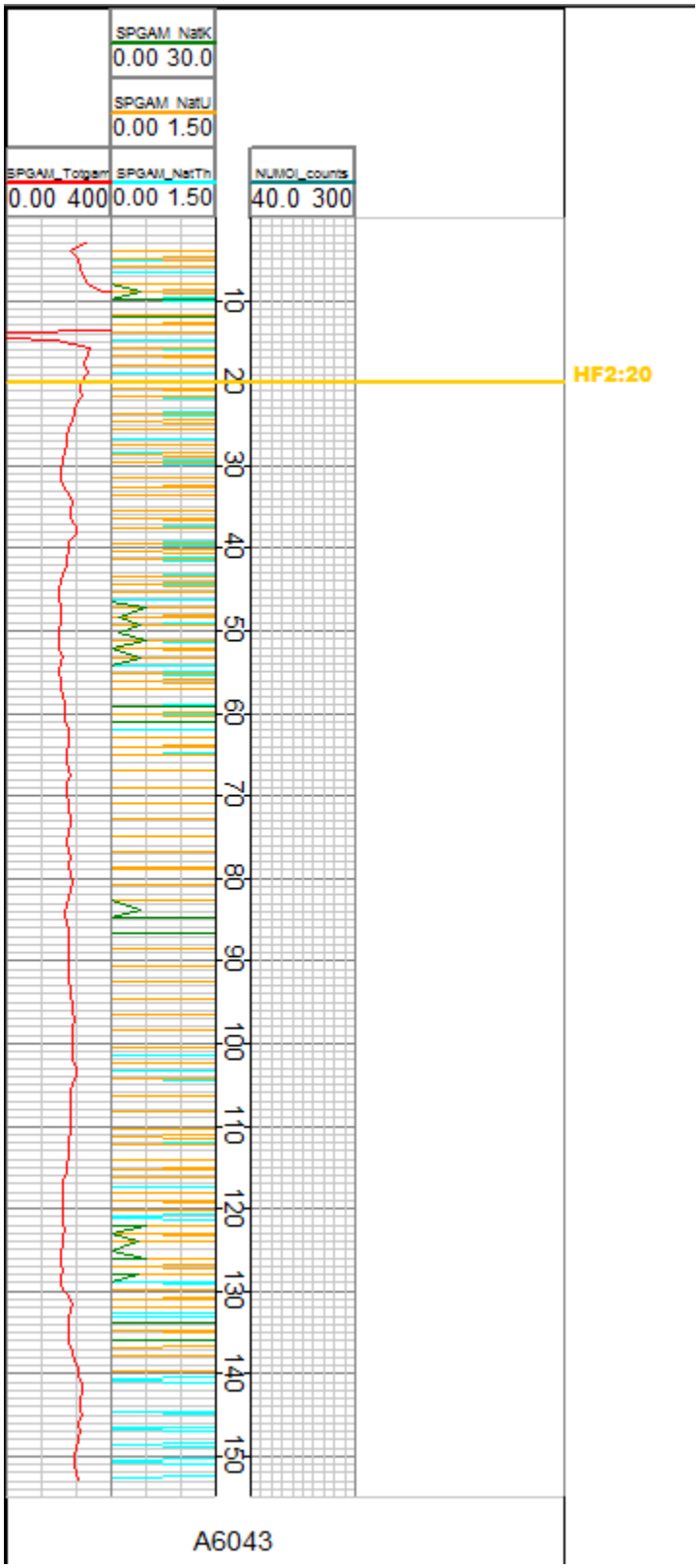

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sandy Sil...
Silty Sand
Sand
Silty Sand
Sand
HF3:160
Sand and...
Sandy Gr...
CCU:264
CCU:267
Sand
Rwia:311
Sandy Gr...
50
100
150
200
250
300
A6035
299-E25-30

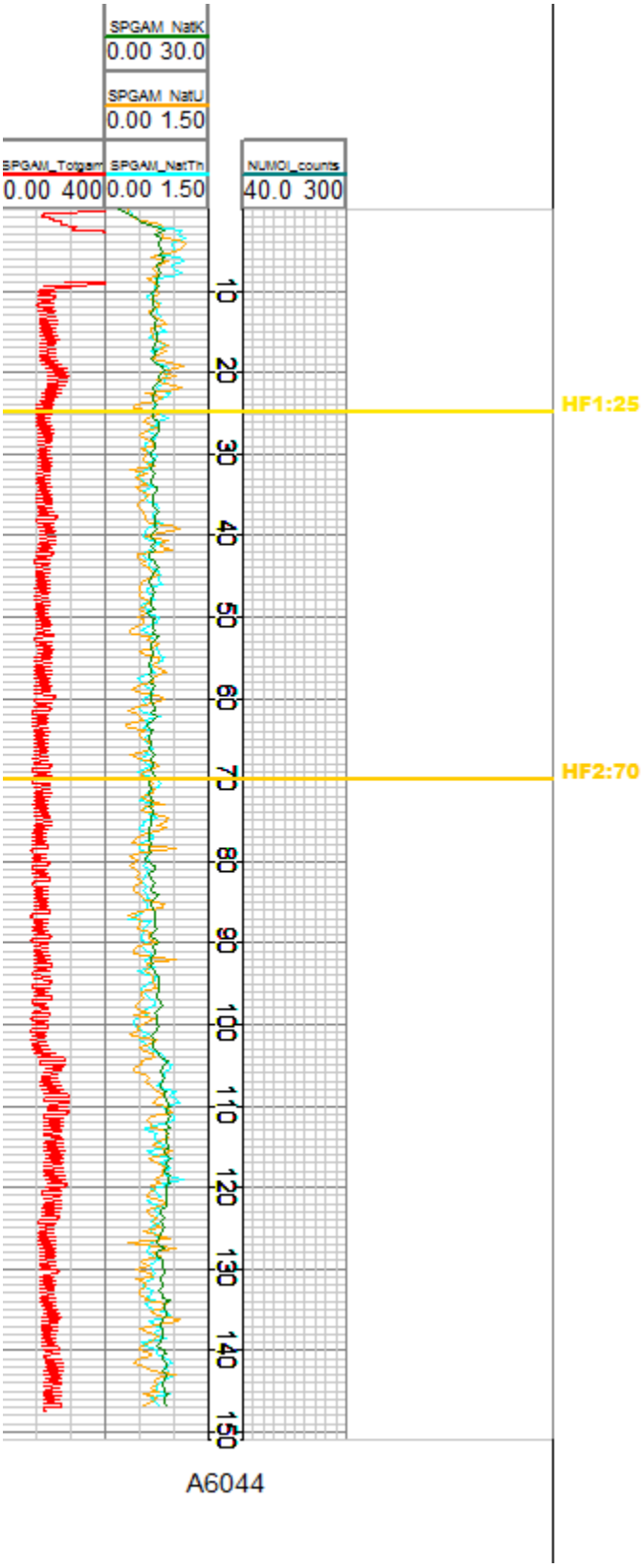

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:10
HF2:31
50
100
150
HF3:159
200
250
Coldwater Creek Unit:256
Rwia:287
300
350
Basalt:349
A6037
299-E25-32B
671.1


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:7
S
(m)S
(m)S
S
mS
mS
HF3:162
gmS
msG
msG
Cold Creek Unit:253
CCUg:258
gmS
Rwie:293
50
100
150
200
250
A6039
299-E25-50
678.7

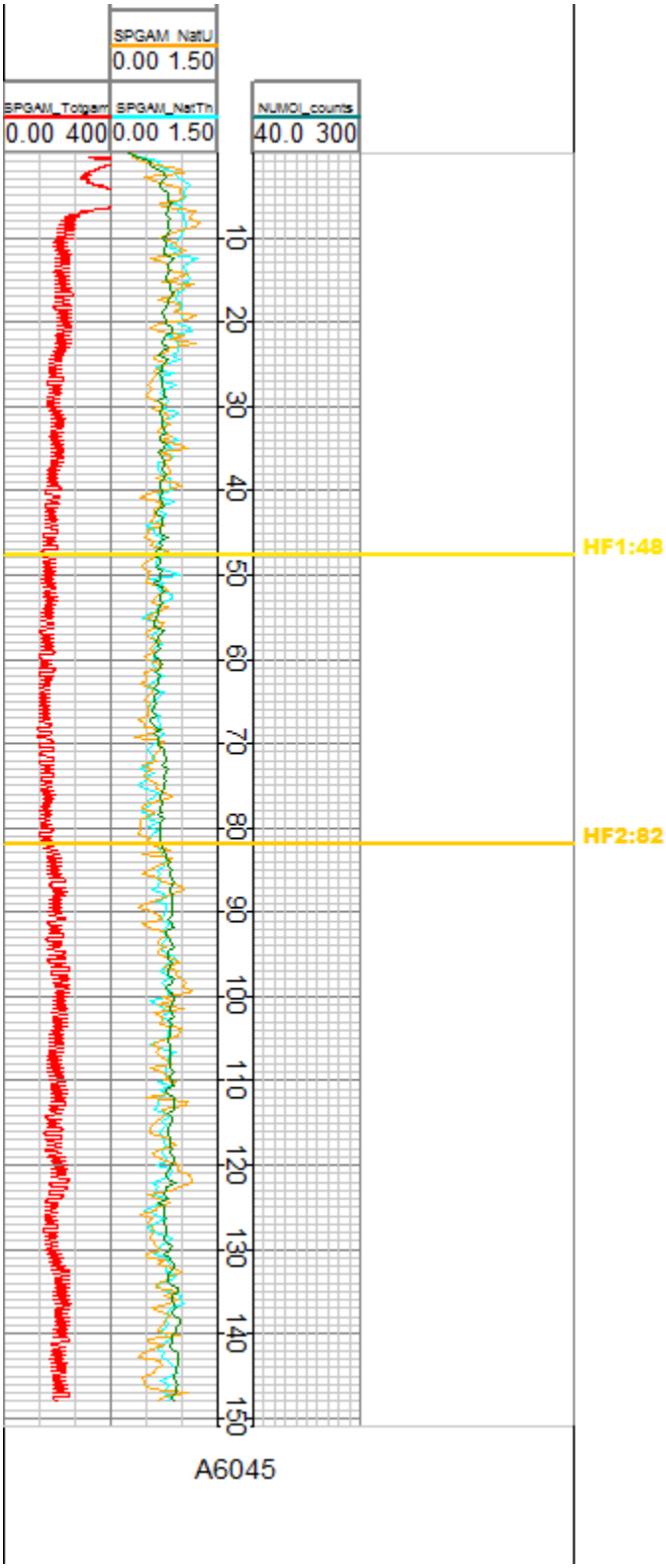

Total GR
0.00 400
Nat K
0.00 30.0
Nat U
0.00 1.50
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
A6041
299-E25-52
711.9

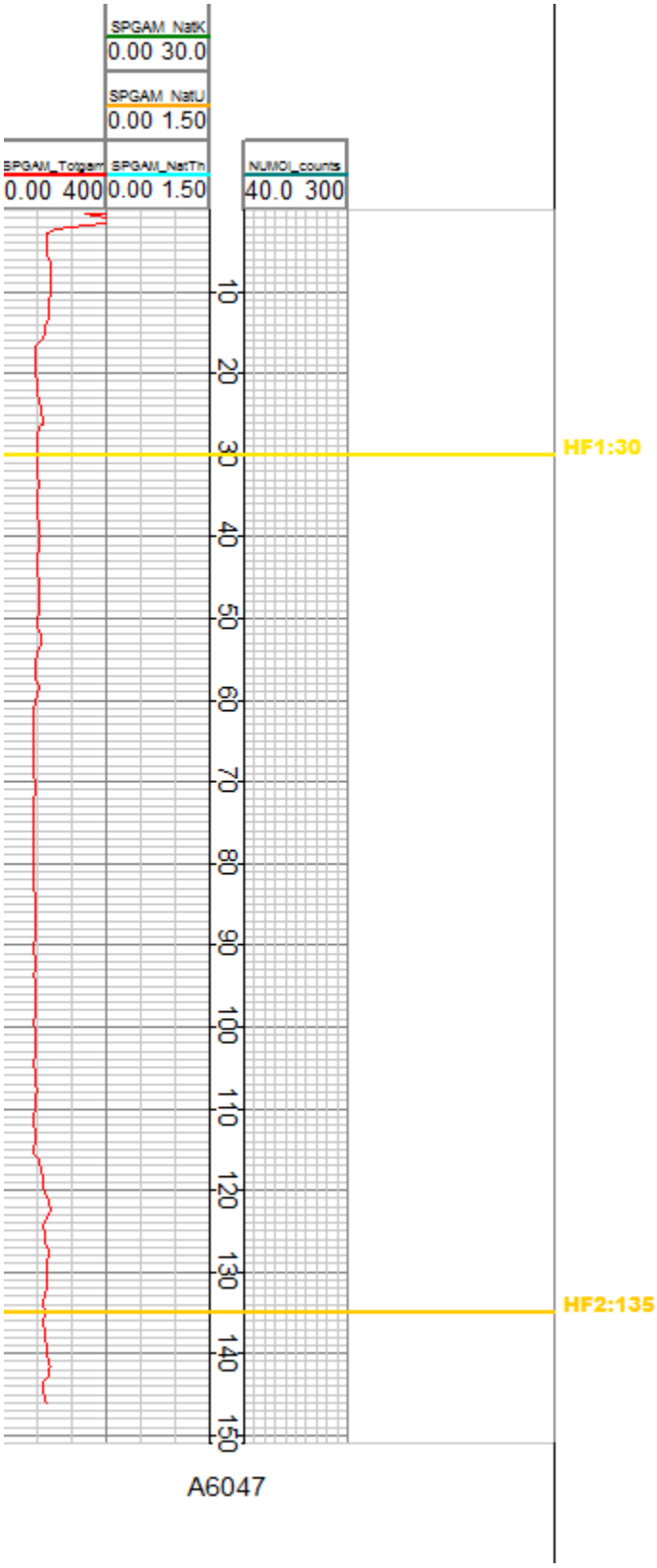

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF2:11
Sand and Gravel
20
40
60
80
100
120
140
A6042
299-E25-53
697.6

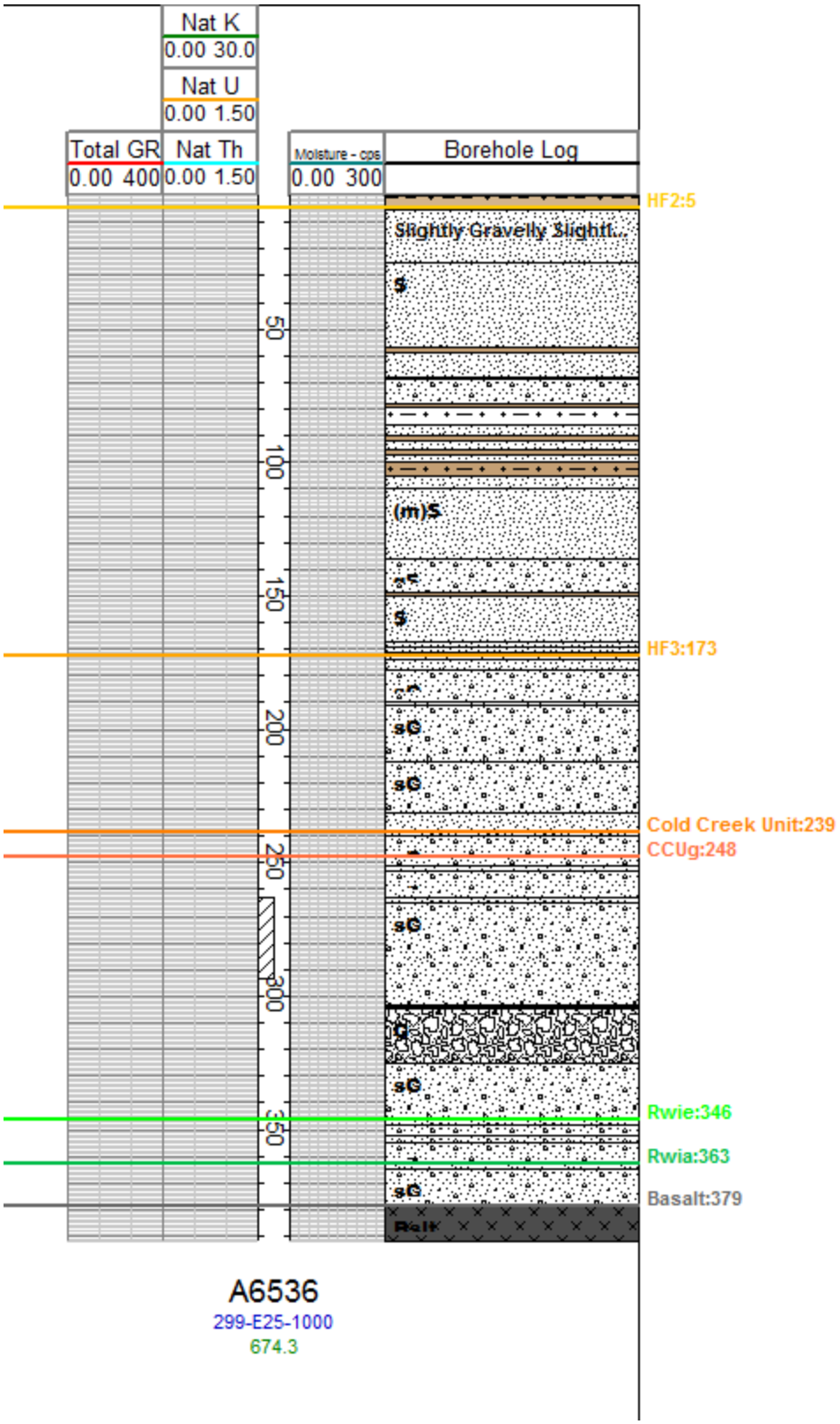

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
HF2:20
A6043

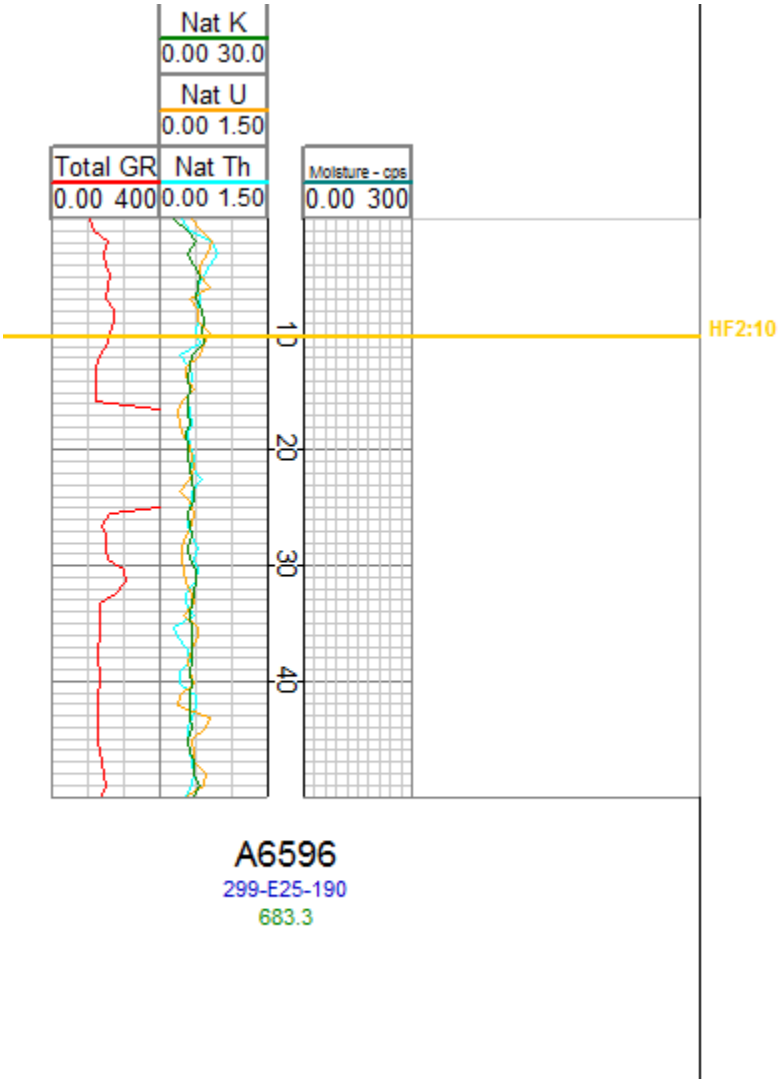

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
HF1:25
HF2:70

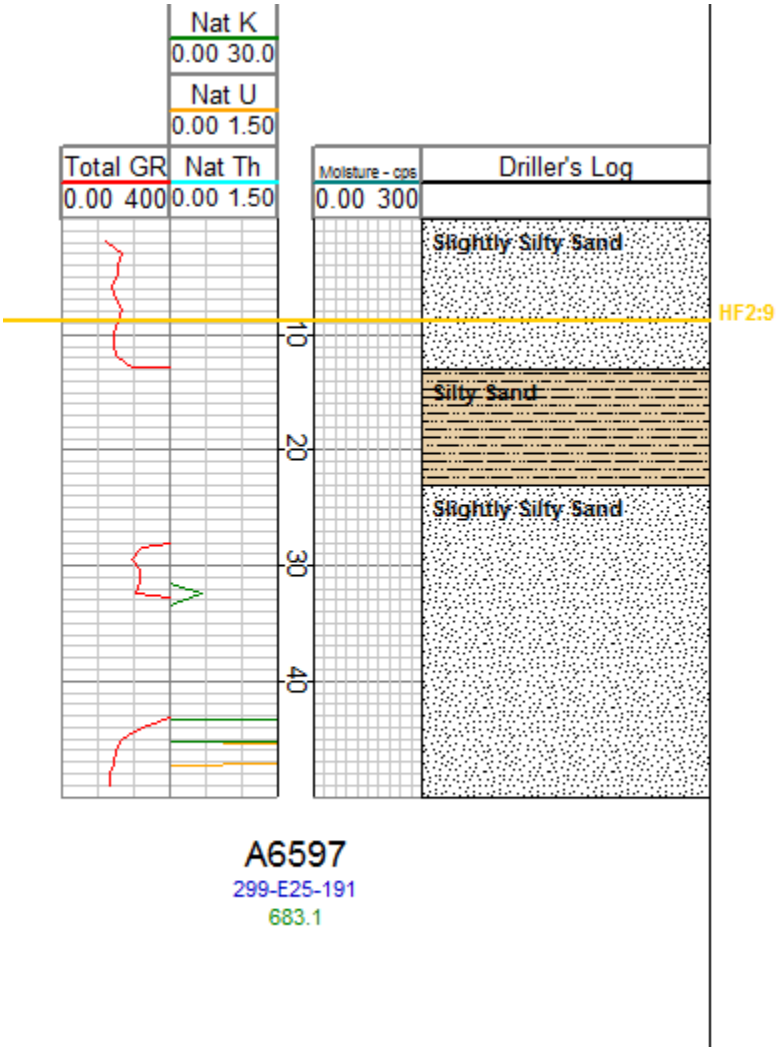
A6044

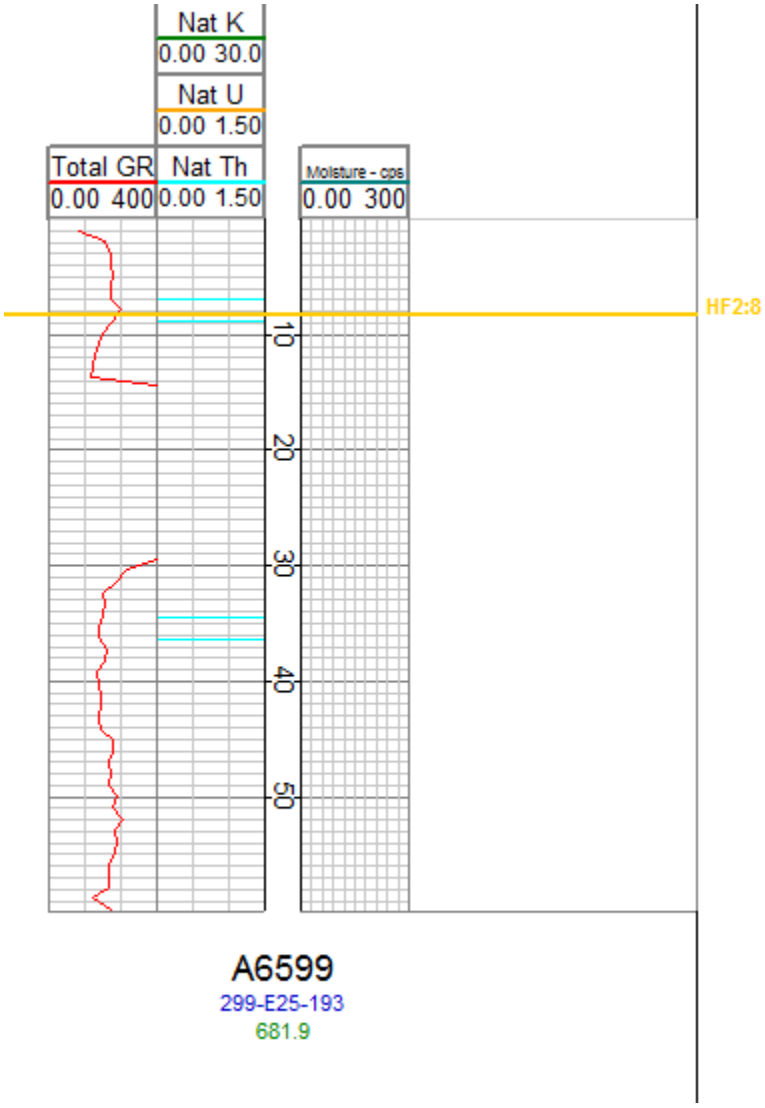

SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
HF1:48
HF2:82
A6045

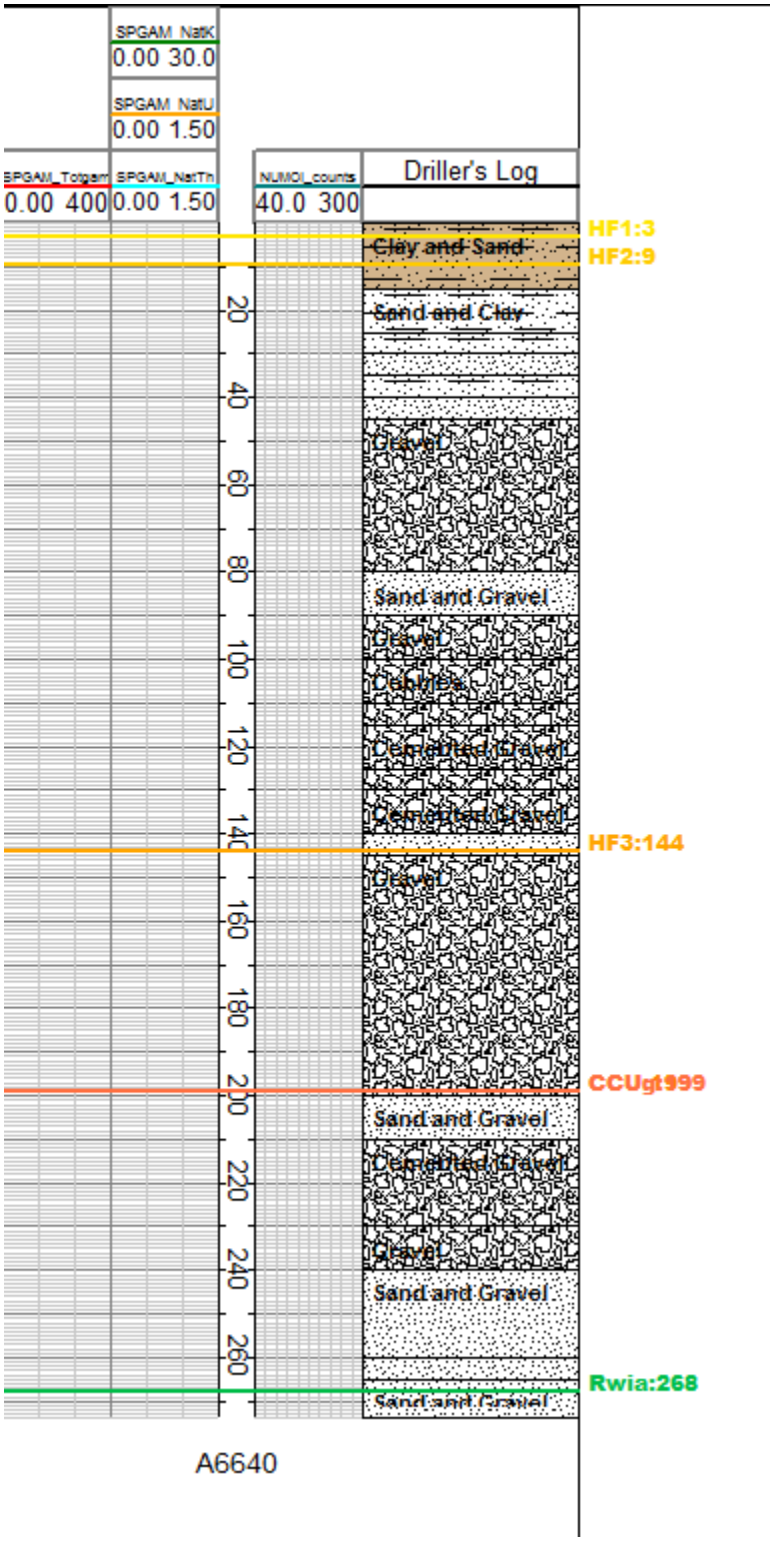

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 300
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
HF1:30
HF2:135
A6047

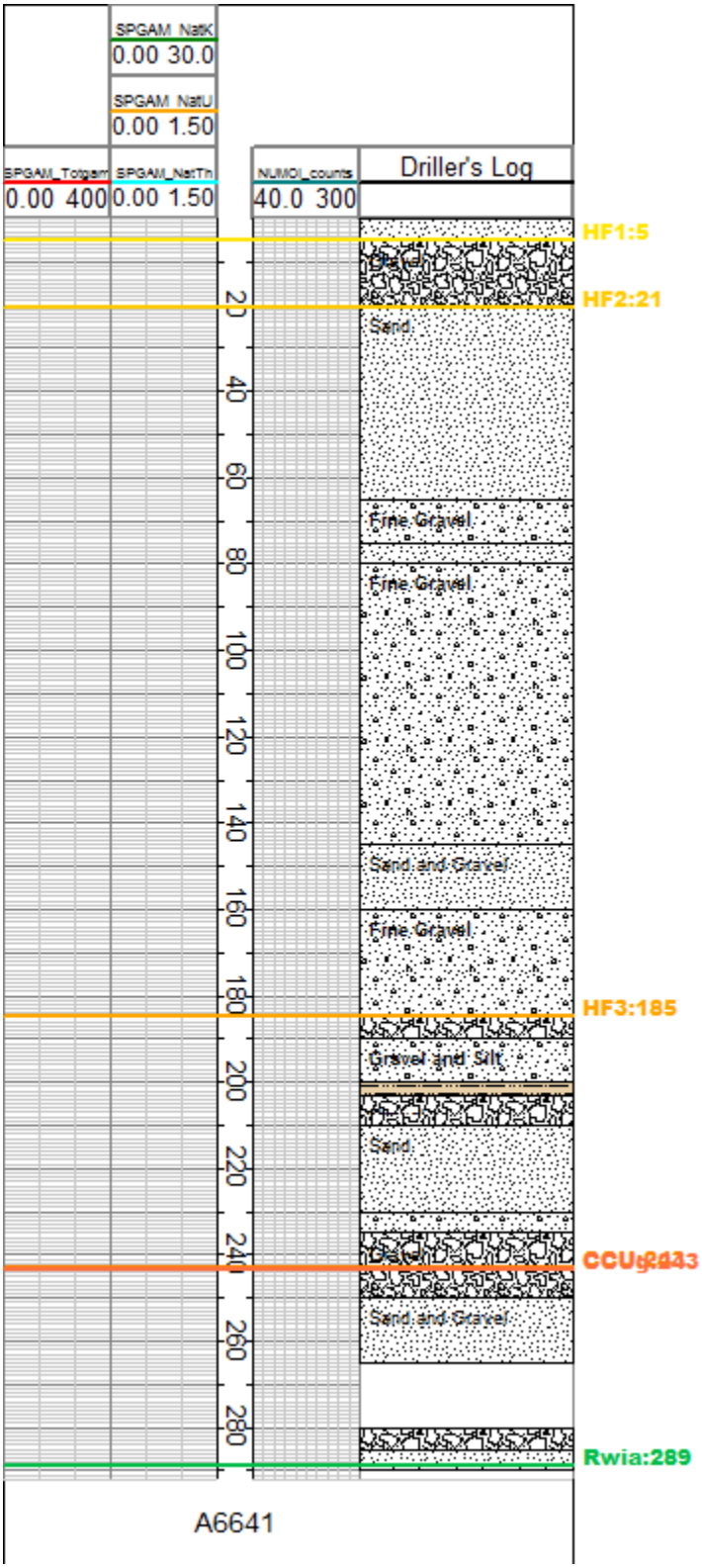

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:5
Slightly Gravelly Slightl...
S
(m)S
S
HF3:173
sG
sG
Cold Creek Unit:239
CCUg:248
sG
G
sG
Rwie:346
Rwia:363
sG
Basalt:379
Basalt
50
100
150
200
250
300
350
A6536
299-E25-1000
674.3

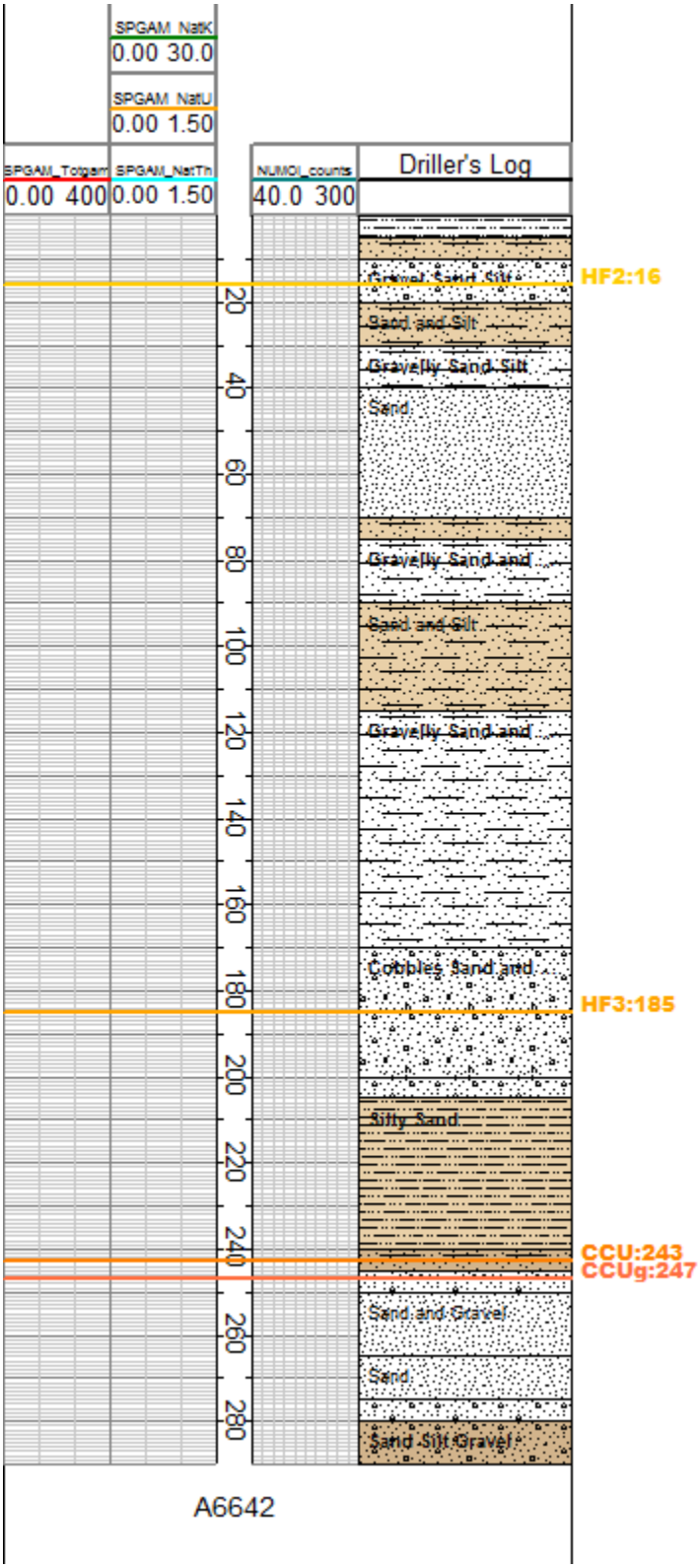

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
HF2:10
A6596
299-E25-190
683.3

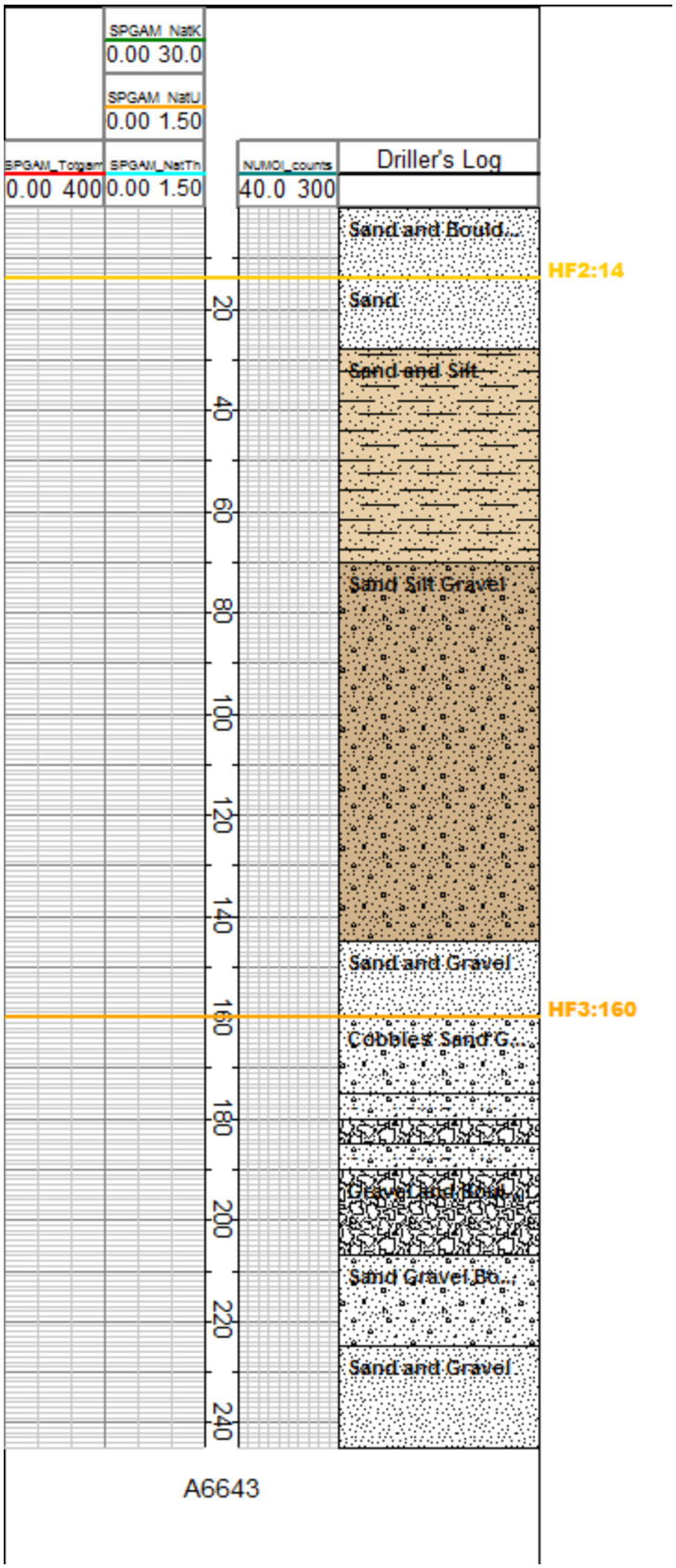

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Slightly Silty Sand
HF2:9
Silty Sand
Slightly Silty Sand
10
20
30
40
A6597
299-E25-191
683.1

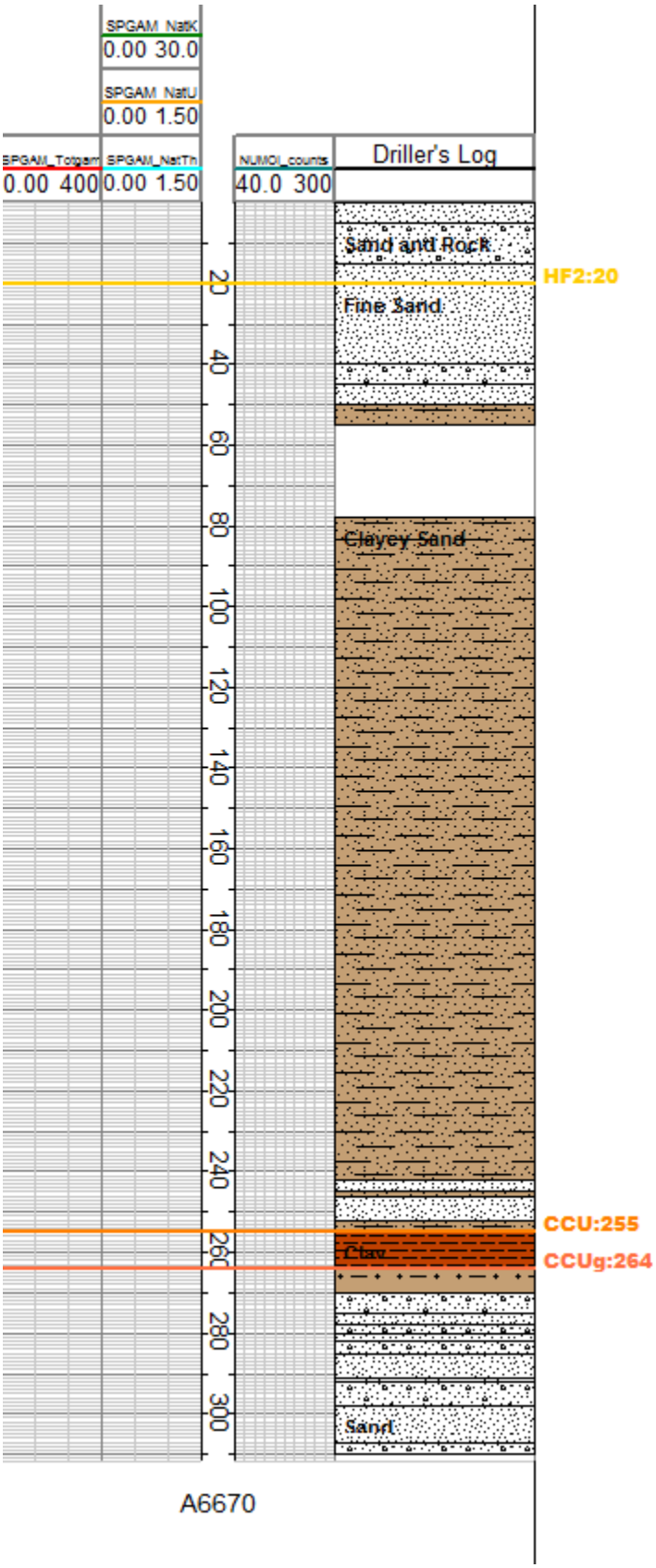

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:8
10
20
30
40
50
A6599
299-E25-193
681.9

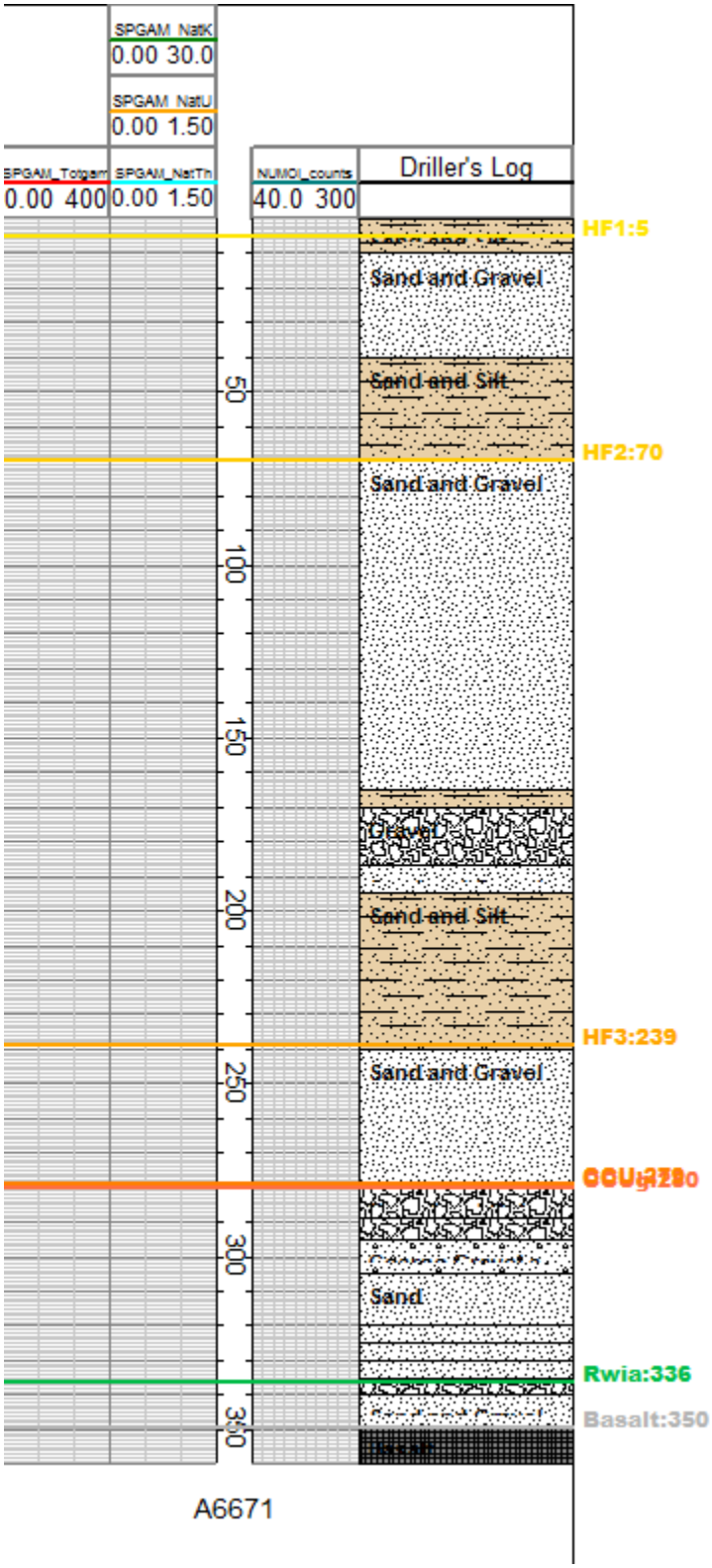

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:3
HF2:9
Clay and Sand
Sand and Clay
Gravel
Sand and Gravel
Gravel
Cobbles
Cemented Gravel
Cemented Gravel
HF3:144
Gravel
CCUgt999
Sand and Gravel
Cemented Gravel
Gravel
Sand and Gravel
Rwia:268
Sand and Gravel
20
40
60
80
100
120
140
160
180
200
220
240
260
A6640

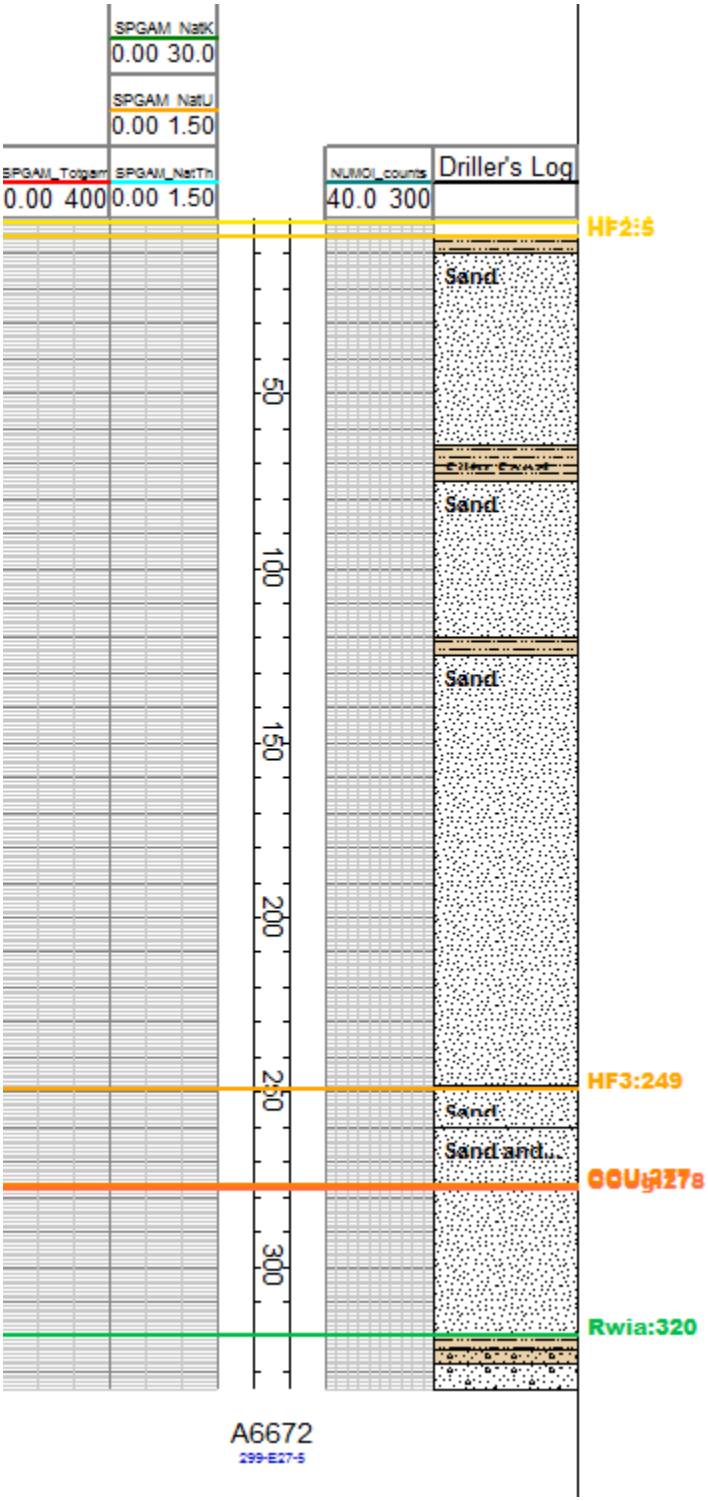

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:5
HF2:21
Sand
Fine Gravel
Fine Gravel
Sand and Gravel
Fine Gravel
HF3:185
Gravel and Silt
Sand
CCU:243
Sand and Gravel
Rwia:289
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A6641

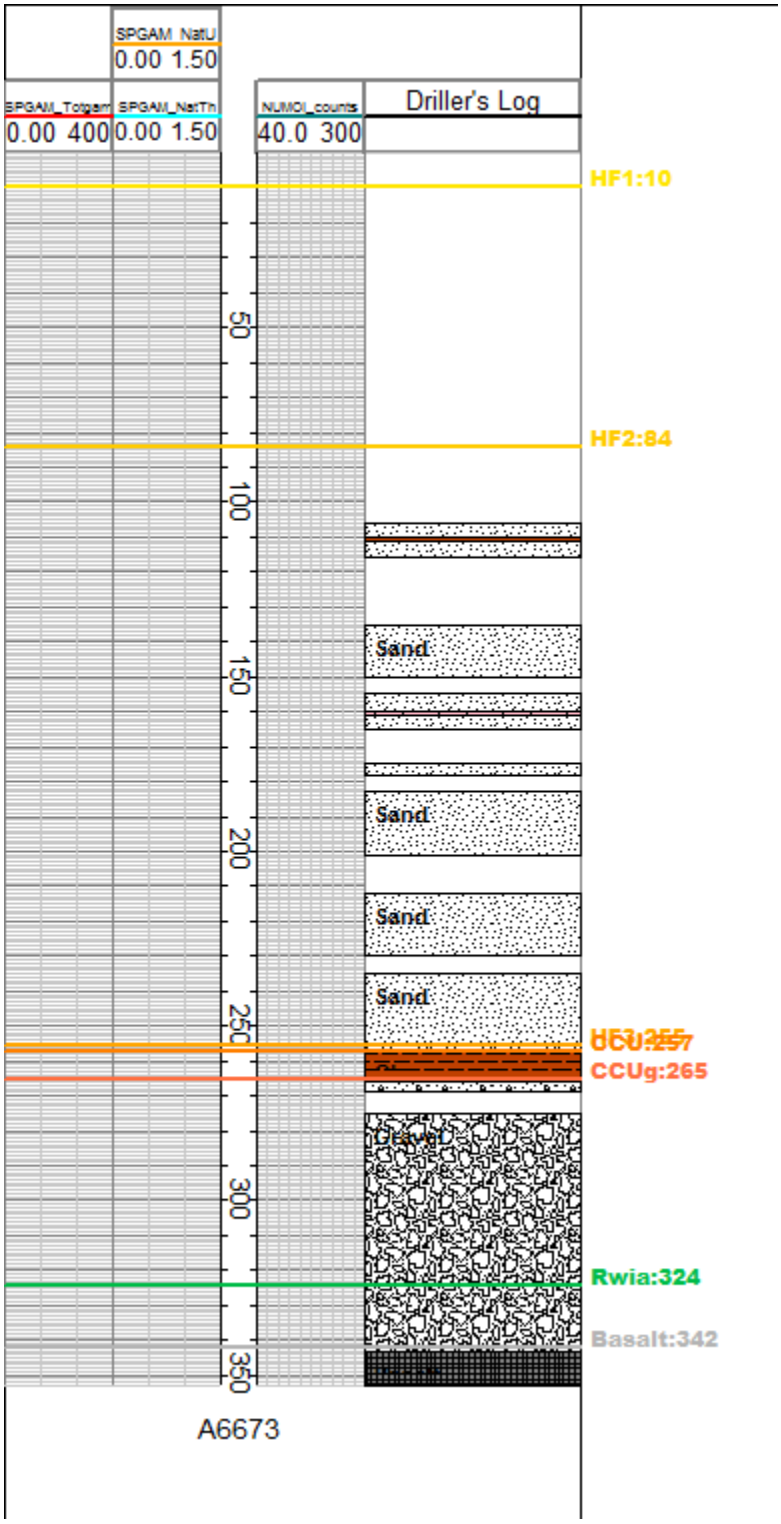

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:16
Gravel Sand Silt
Sand and Silt
Gravelly Sand Silt
Sand
Gravelly Sand and
Sand and Silt
Gravelly Sand and
Cobbles Sand and
HF3:185
Silty Sand
CCU:243
CCUg:247
Sand and Gravel
Sand
Sand Silt Gravel
20
40
60
80
100
120
140
160
180
200
220
240
260
280
A6642

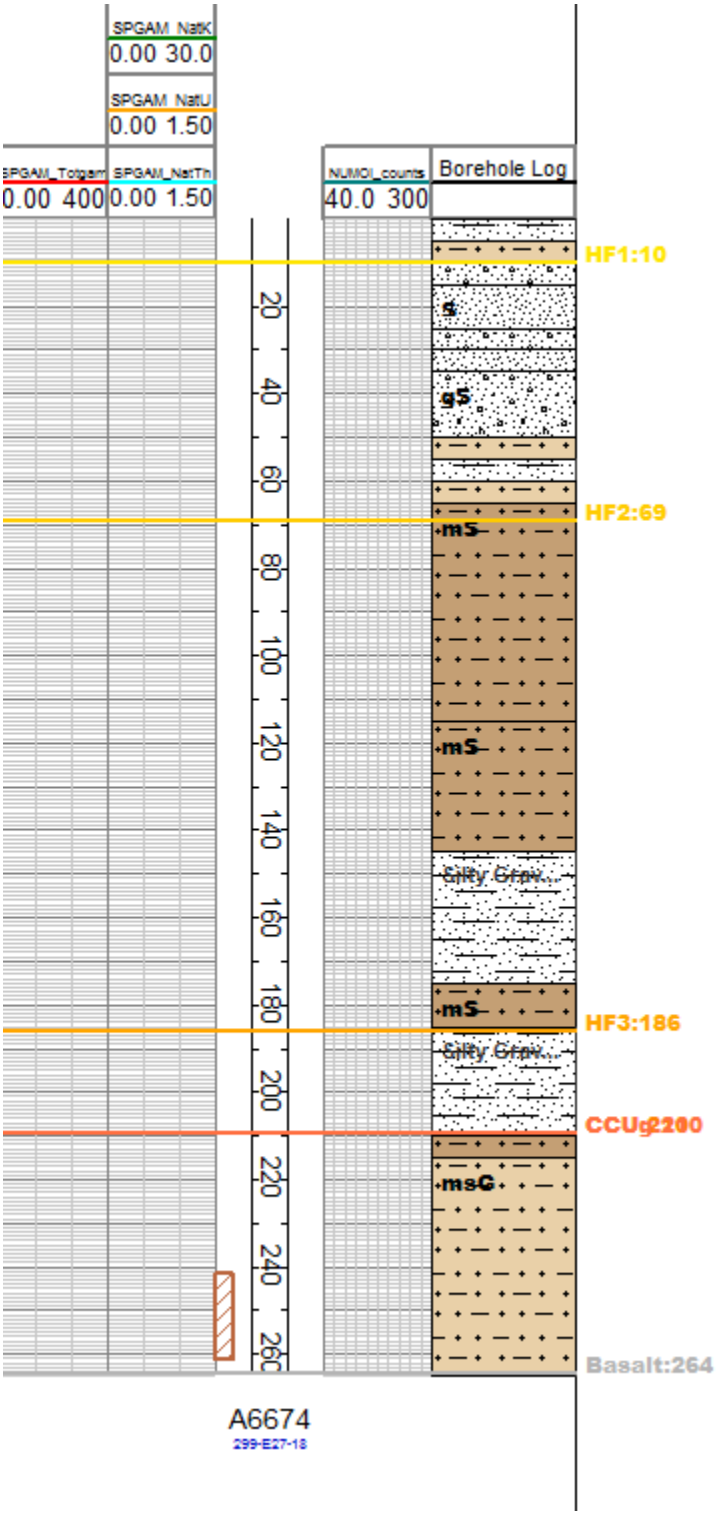

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and Bould...
HF2:14
Sand
Sand and Silt
Sand Silt Gravel
Sand and Gravel
HF3:160
Cobbles Sand G...
Gravel Sand Bou...
Sand Gravel Bo...
Sand and Gravel
20
40
60
80
100
120
140
160
180
200
220
240
A6643

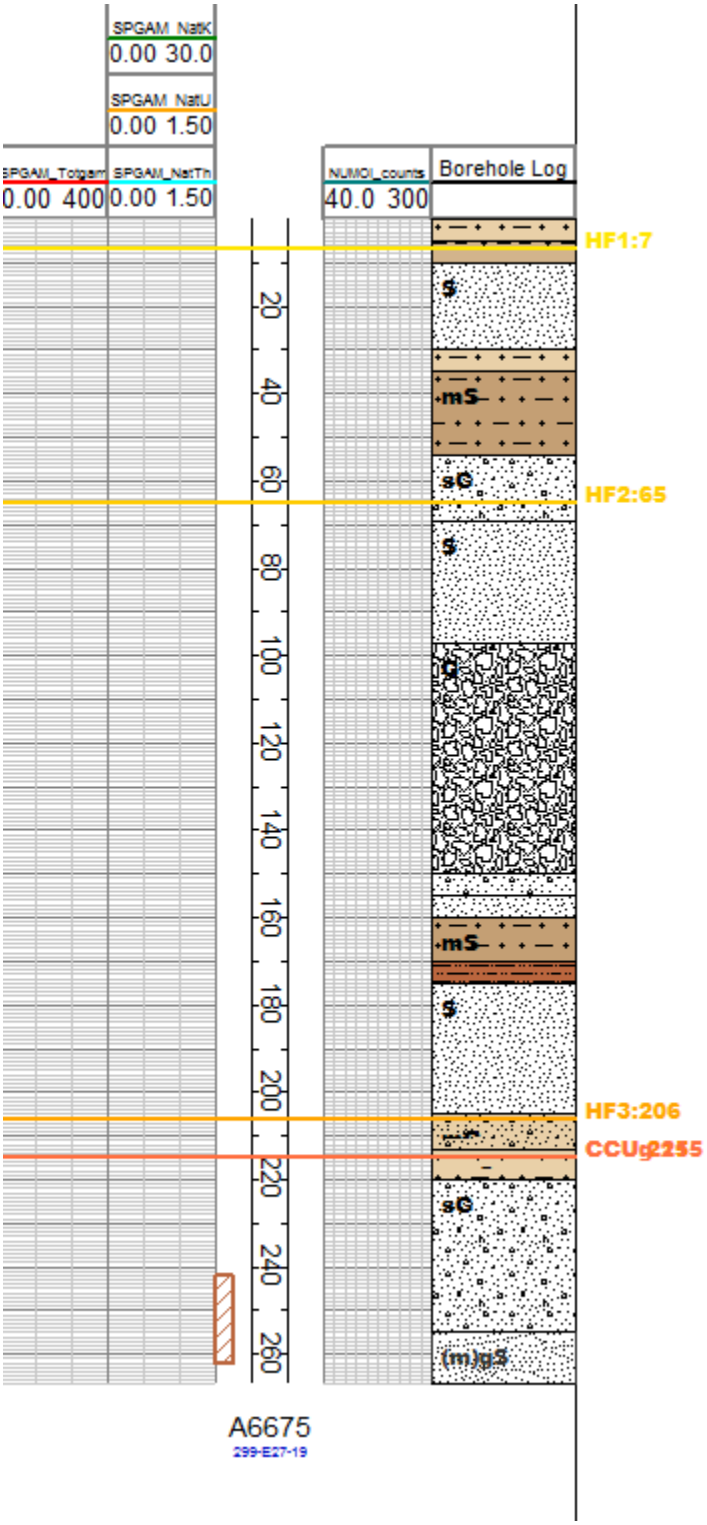

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and Rock
HF2:20
Fine Sand
Clayey Sand
CCU:255
Clay
CCUg:264
Sand
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
A6670

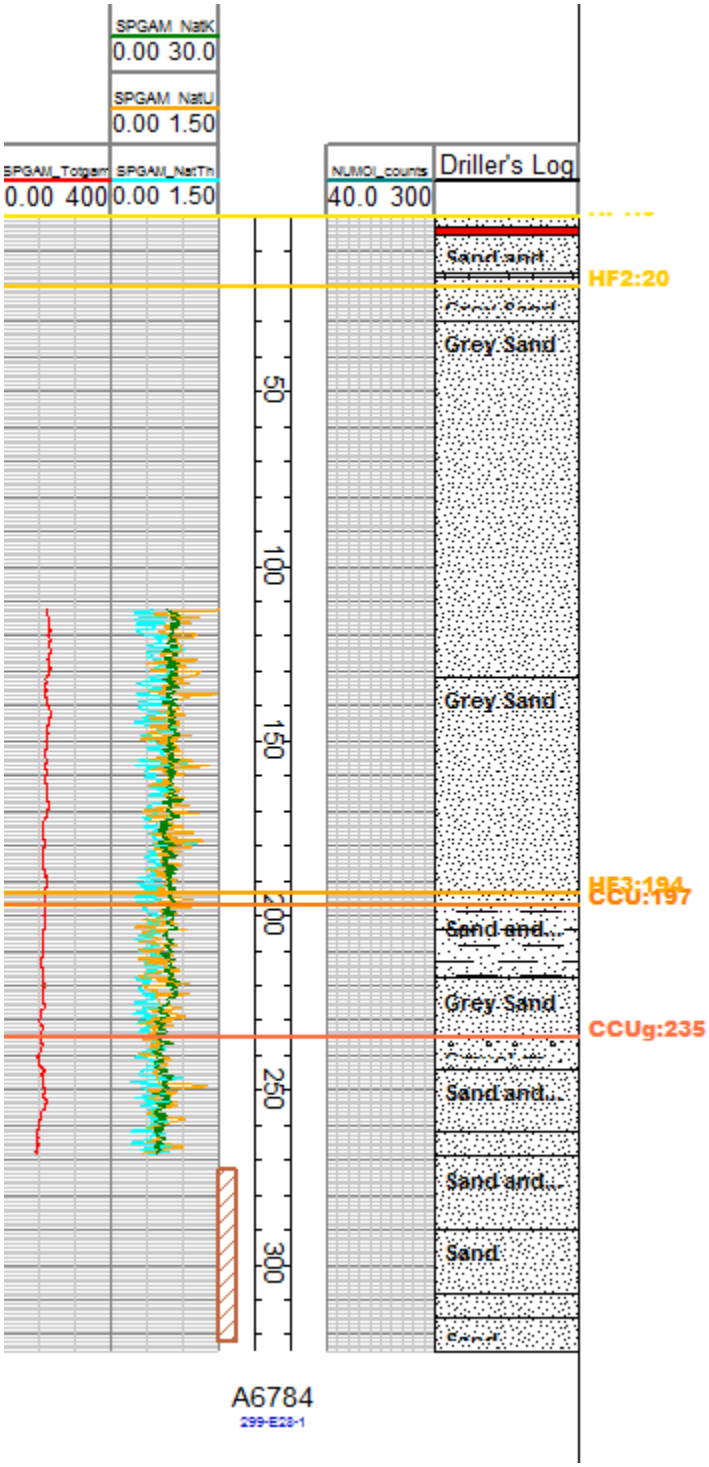

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:5
Sand and Gravel
Sand and Silt
HF2:70
Sand and Gravel
Gravel
Sand and Silt
HF3:239
Sand and Gravel
Sand
Rwia:336
Basalt:350
50
100
150
200
250
300
350
A6671

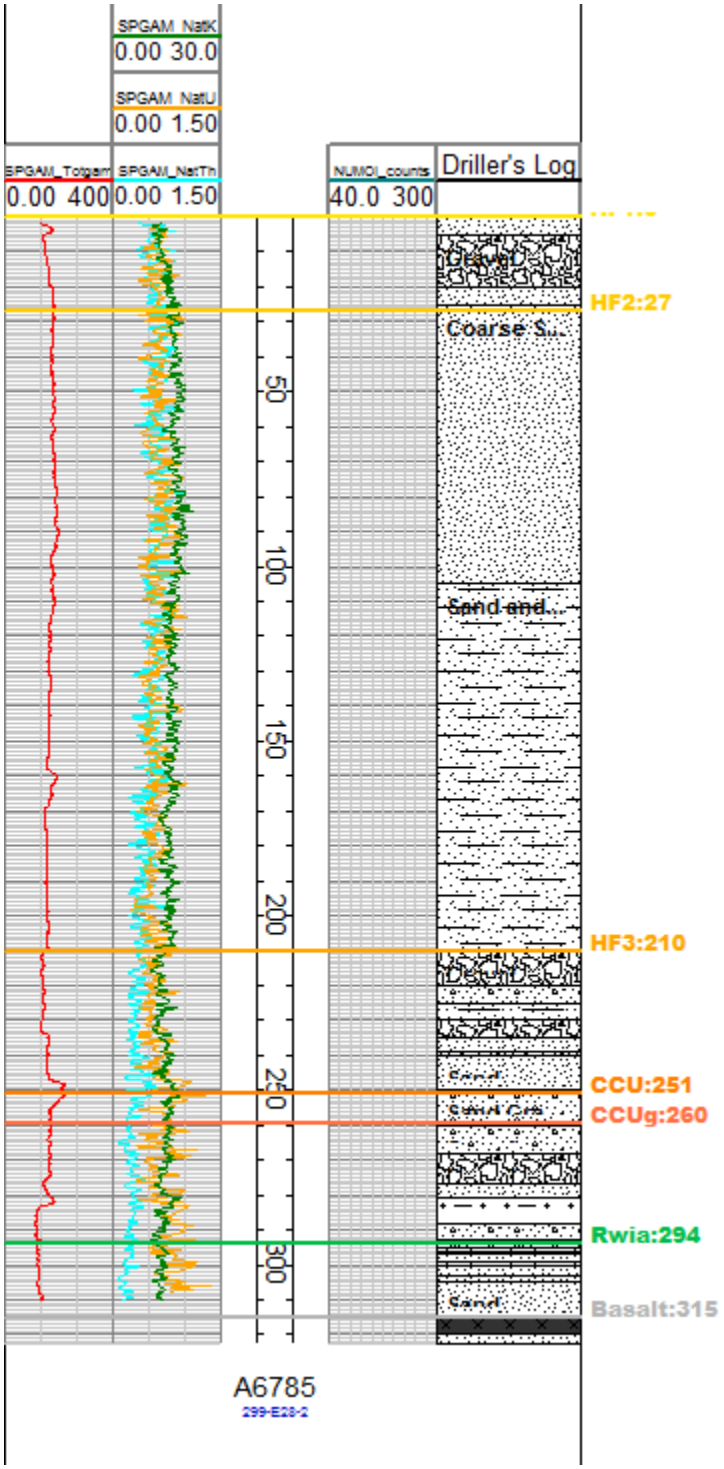

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Sand
Sand
Sand
HF3:249
Sand
Sand and...
Rwia:320
50
100
150
200
250
300
A6672
299-E27-5

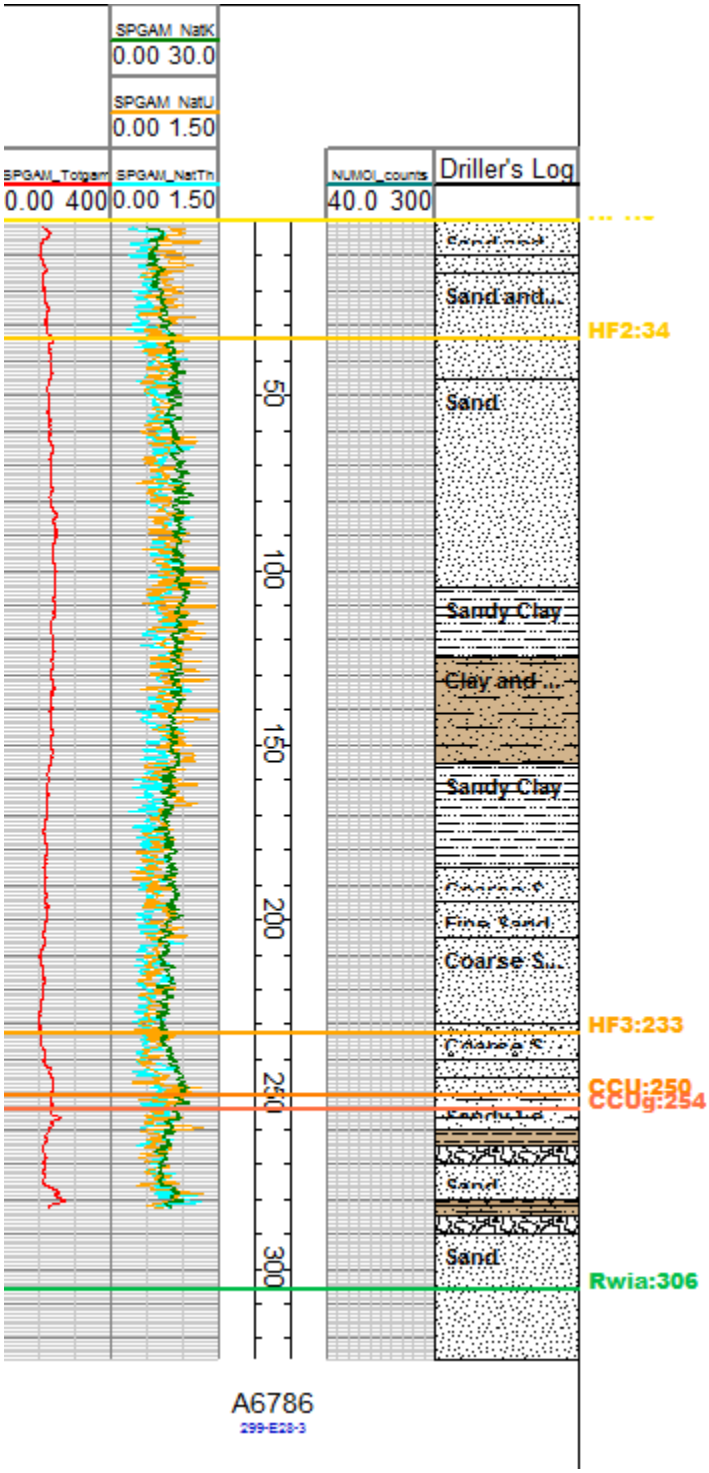

SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:10
HF2:84
Sand
Sand
Sand
Sand
CCUg:265
Gravel
Rwia:324
Basalt:342
50
100
150
200
250
300
350
A6673

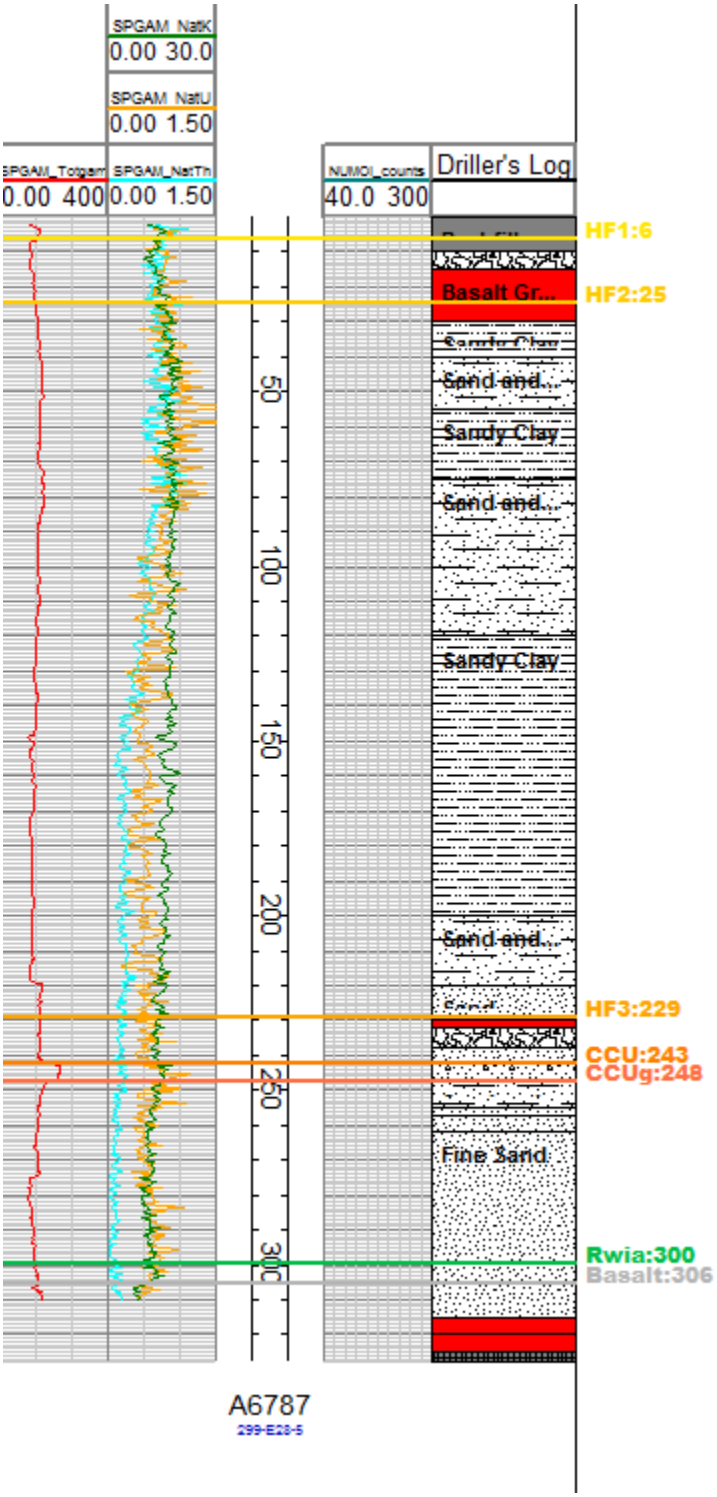

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:10
HF2:69
HF3:186
CCUg:200
Basalt:264
Silty Grav...
Silty Grav...
A6674
299-E27-18

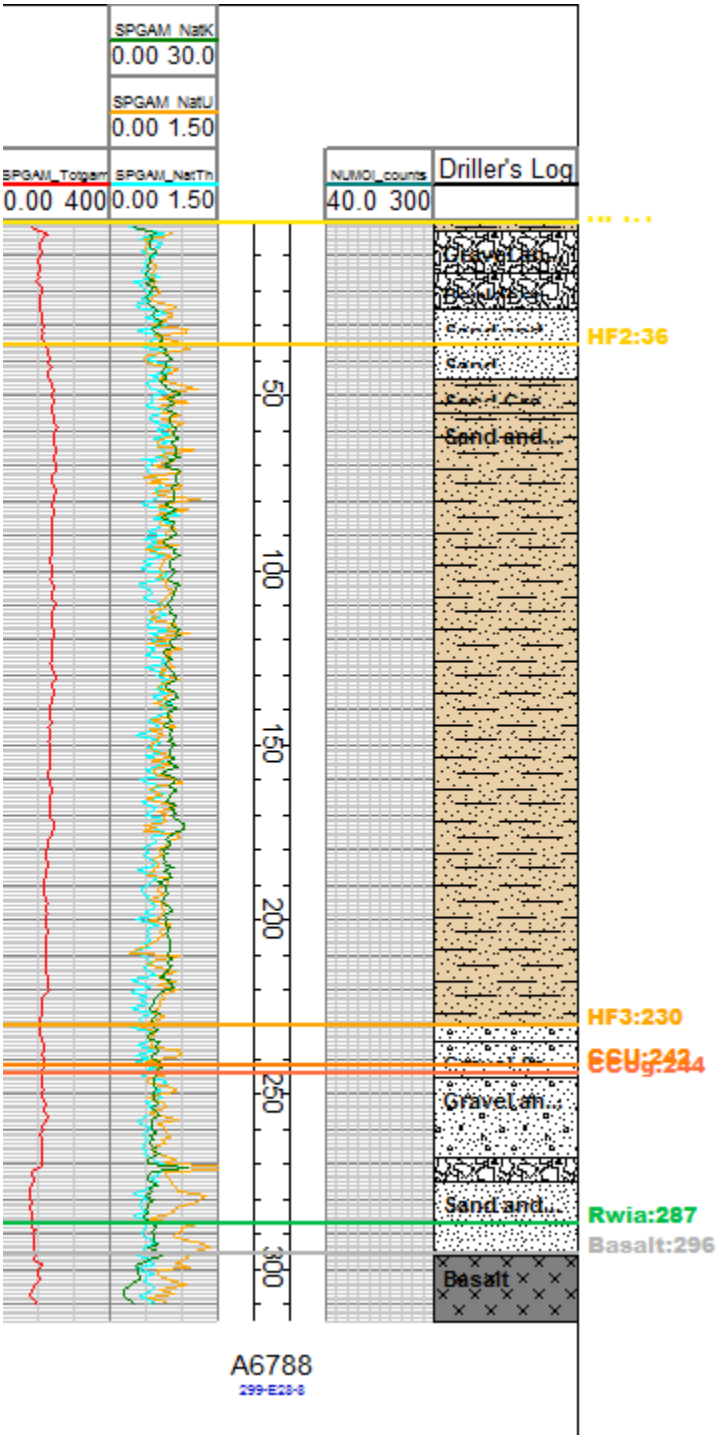

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:7
HF2:65
HF3:206
CCUg:255
S
mS
sG
G
(m)gS
20
40
60
80
100
120
140
160
180
200
220
240
260
A6675
299-E27-19

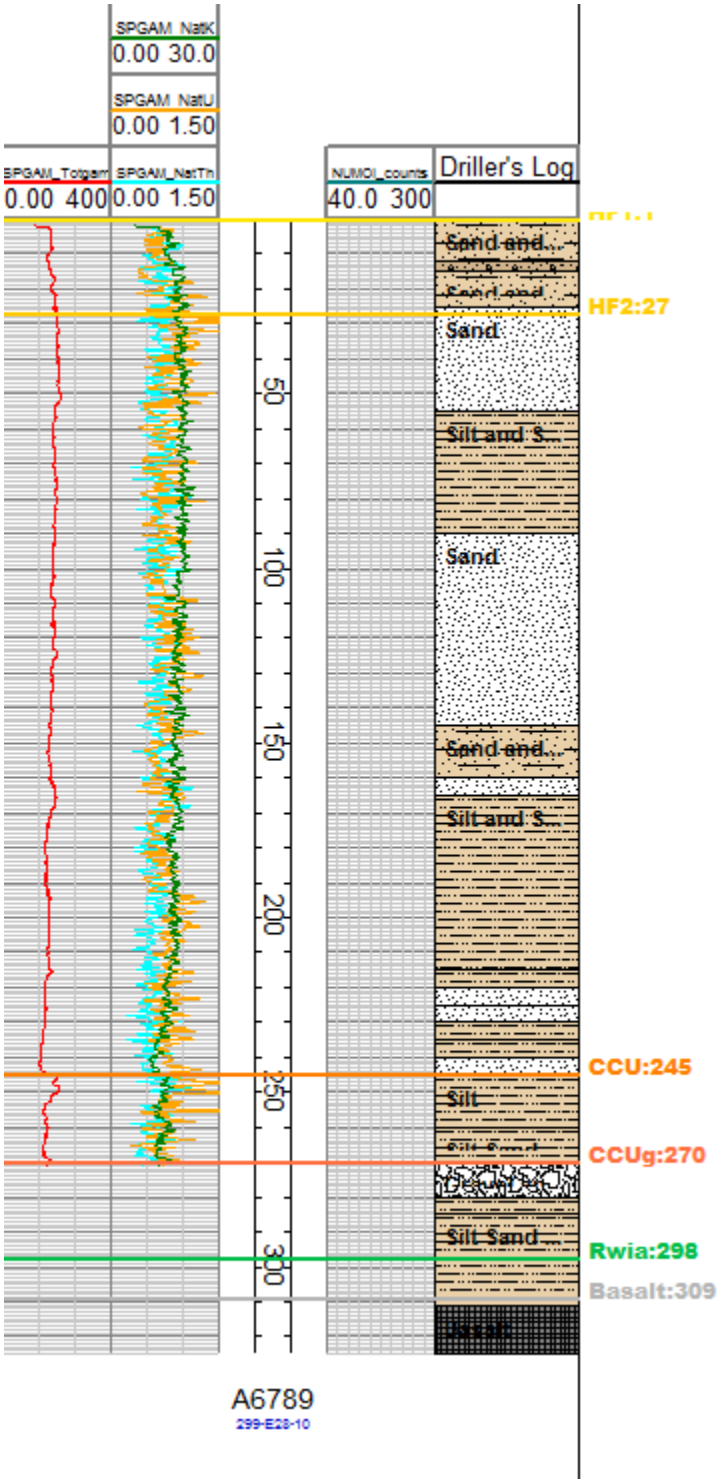

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:20
Grey Sand
Grey Sand
HF3:194
CCU:197
Sand and...
Grey Sand
CCUg:235
Sand and...
Sand and...
Sand
50
100
150
200
250
300
A6784
299-E28-1

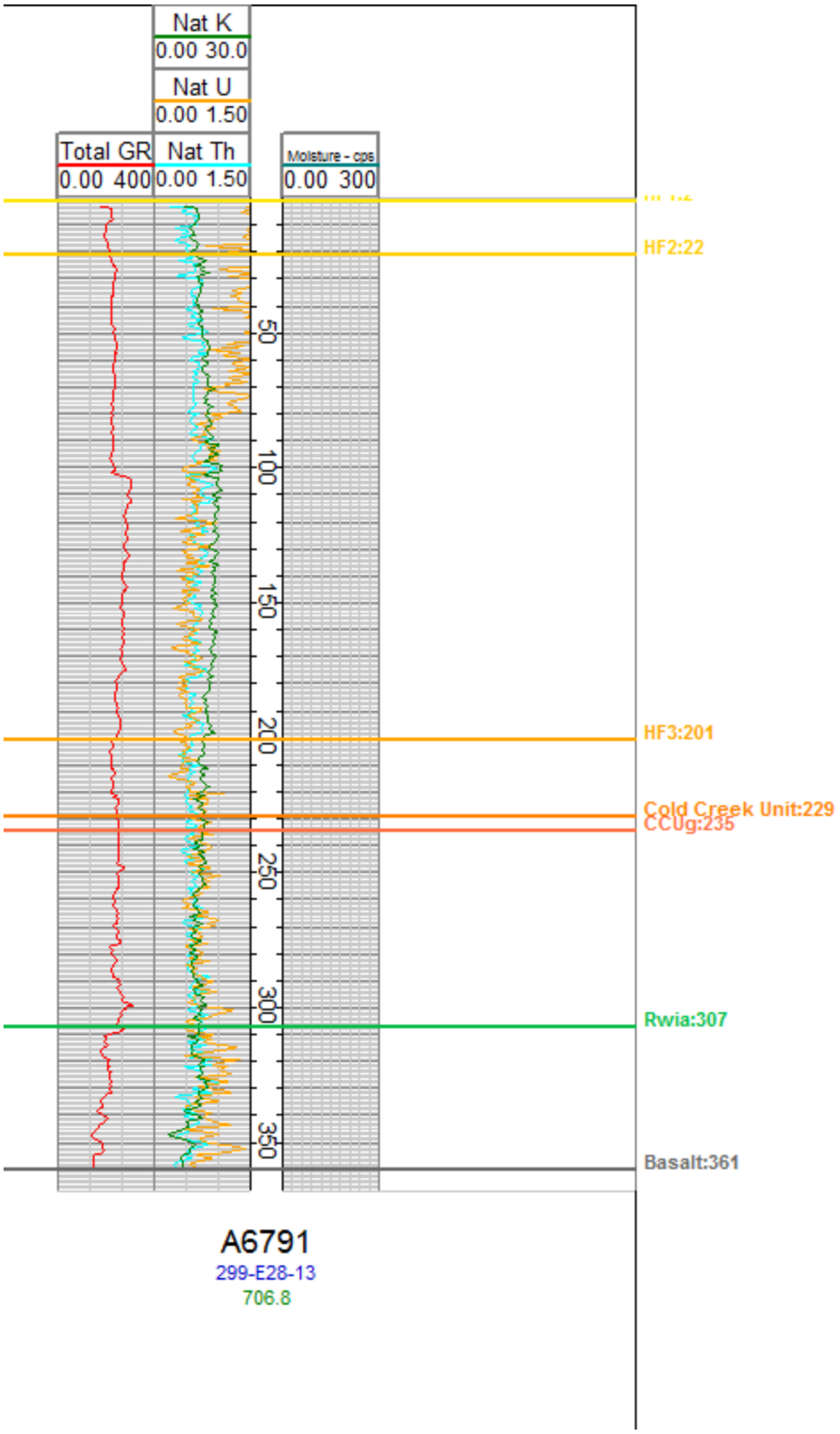

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:27
Coarse S...
Sand and...
HF3:210
CCU:251
CCUg:260
Rwia:294
Basalt:315
50
100
150
200
250
300
A6785

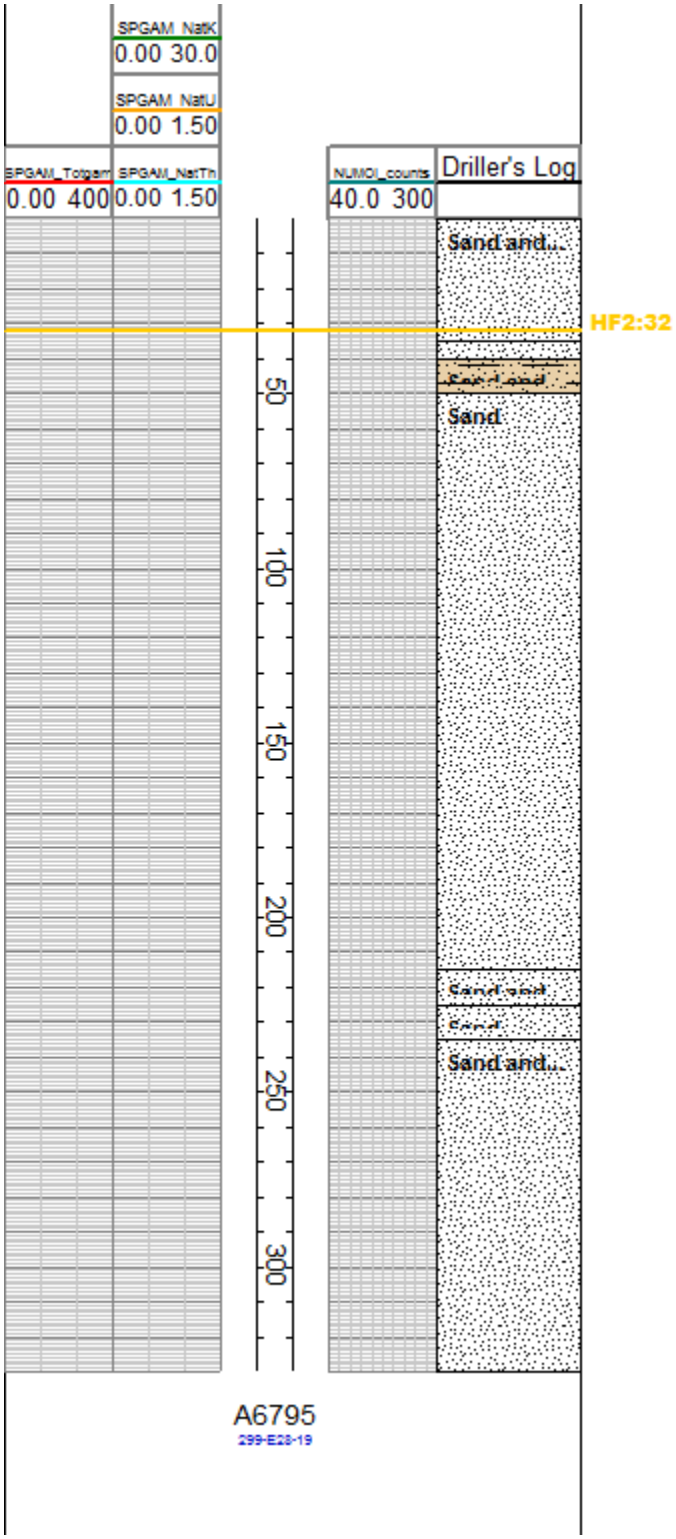

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:34
Sand
Sandy Clay
Clay and ...
Sandy Clay
Fine Sand
Coarse S...
HF3:233
CCU:250
CCUg:254
Sand
Sand
Rwia:306
50
100
150
200
250
300
A6786
299-E28-3

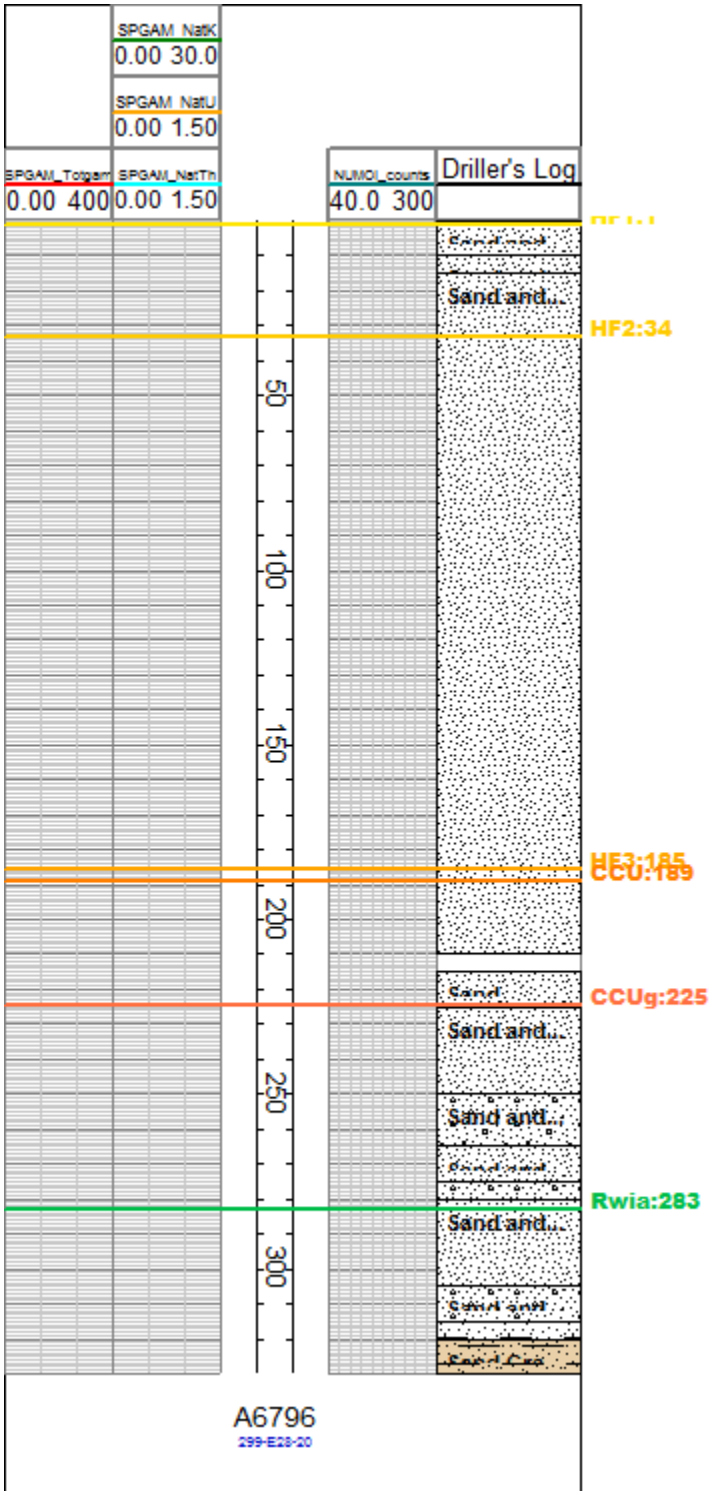

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:6
Basalt Gr...
HF2:25
Sand and...
Sandy Clay
Sand and...
Sandy Clay
Sand and...
HF3:229
CCU:243
CCUg:248
Fine Sand
Rwia:300
Basalt:306
50
100
150
200
250
300
A6787
299-E28-5

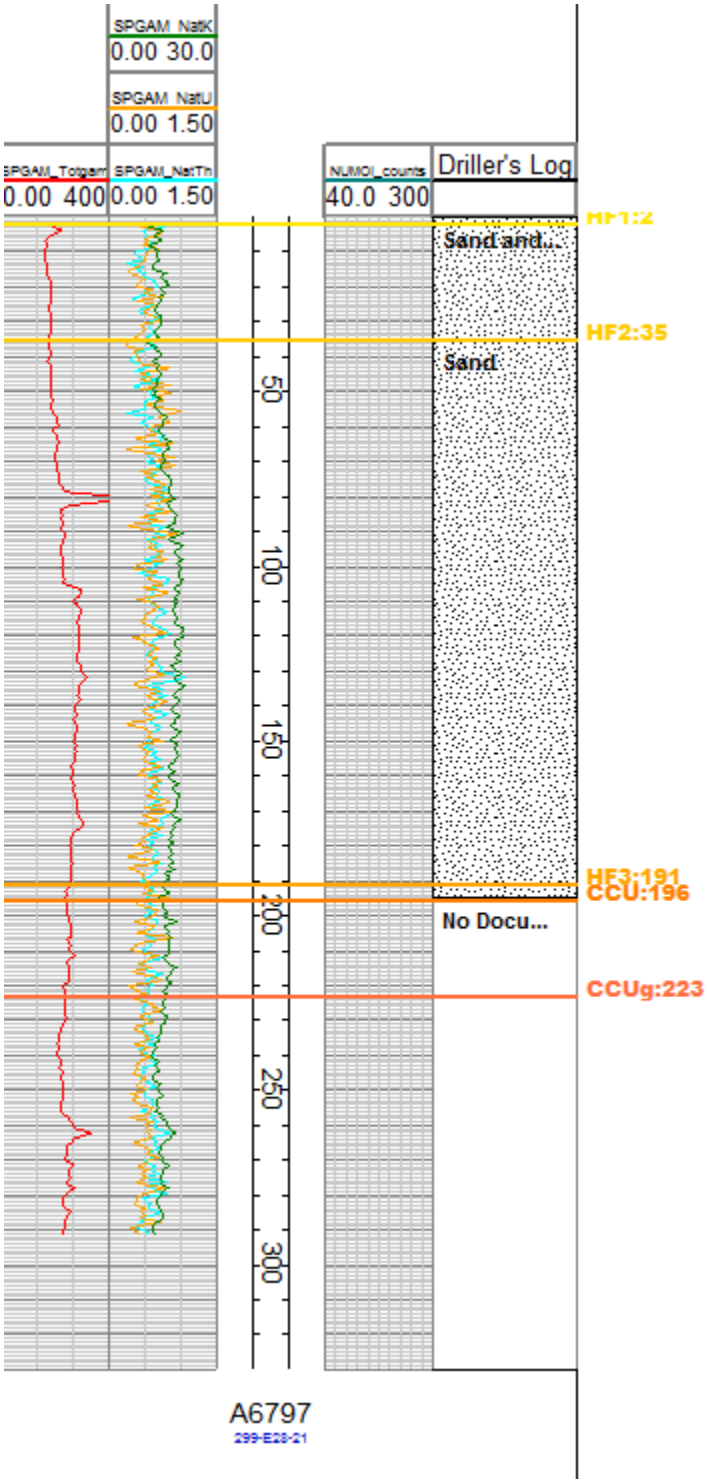

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:36
Sand and...
HF3:230
CCU:242
CCU:244
Gravel an...
Sand and...
Rwia:287
Basalt:296
Basalt
50
100
150
200
250
300
A6788

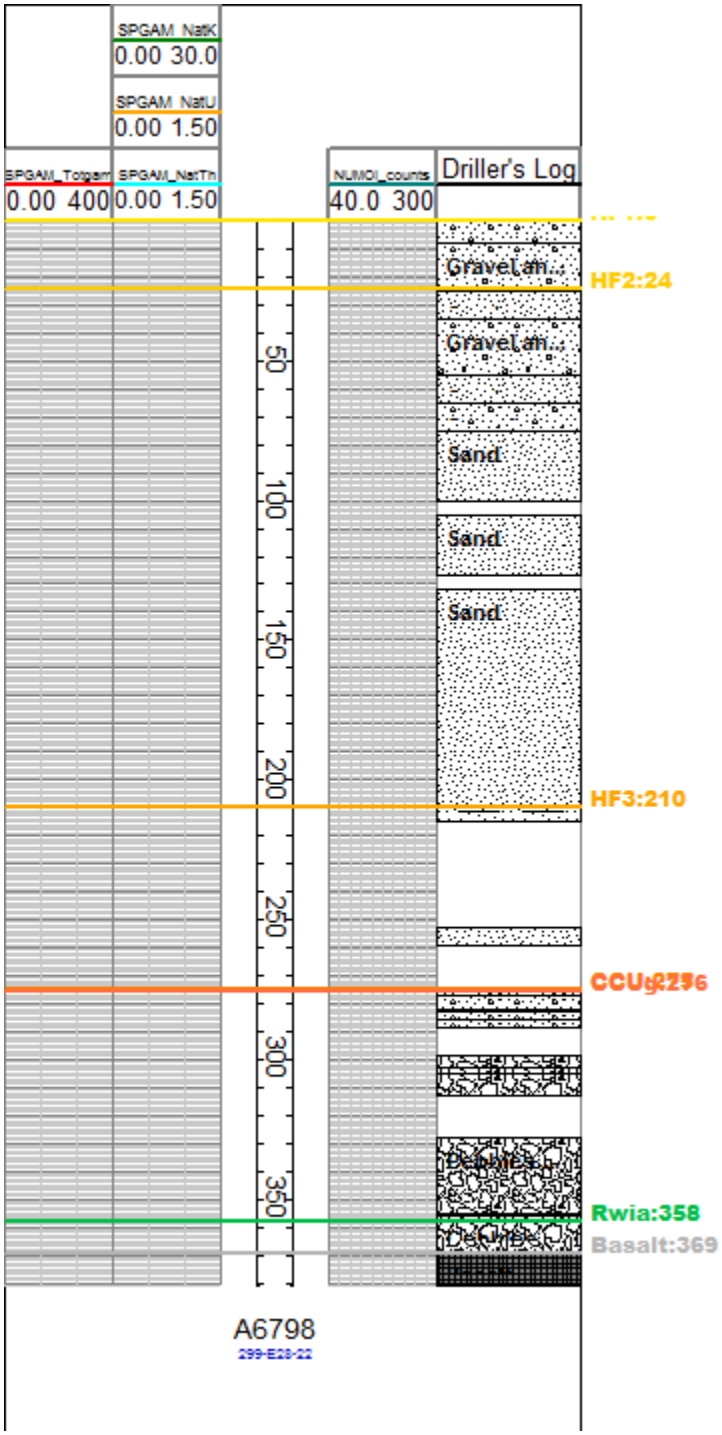

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and
HF2:27
Sand
Silt and S
Sand
Sand and
Silt and S
CCU:245
Silt
CCUg:270
Silt Sand
Rwia:298
Basalt:309
50
100
150
200
250
300
A6789
299-E28-10


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:22
50
100
150
200
HF3:201
Cold Creek Unit:229
CCUg:235
250
300
Rwia:307
350
Basalt:361
A6791
299-E28-13
706.8


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:32
Sand
Sand and...
50
100
150
200
250
300
A6795
299-E28-19


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:34
50
100
150
HE3:185
CCU:189
200
CCUg:225
Sand and...
250
Sand and...
Rwia:283
Sand and...
300
A6796
299-E28-20


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand and...
HF2:35
Sand
HF3:191
CCU:196
No Docu...
CCUg:223
50
100
150
200
250
300
A6797
299-E28-21


SPGAM_NatK
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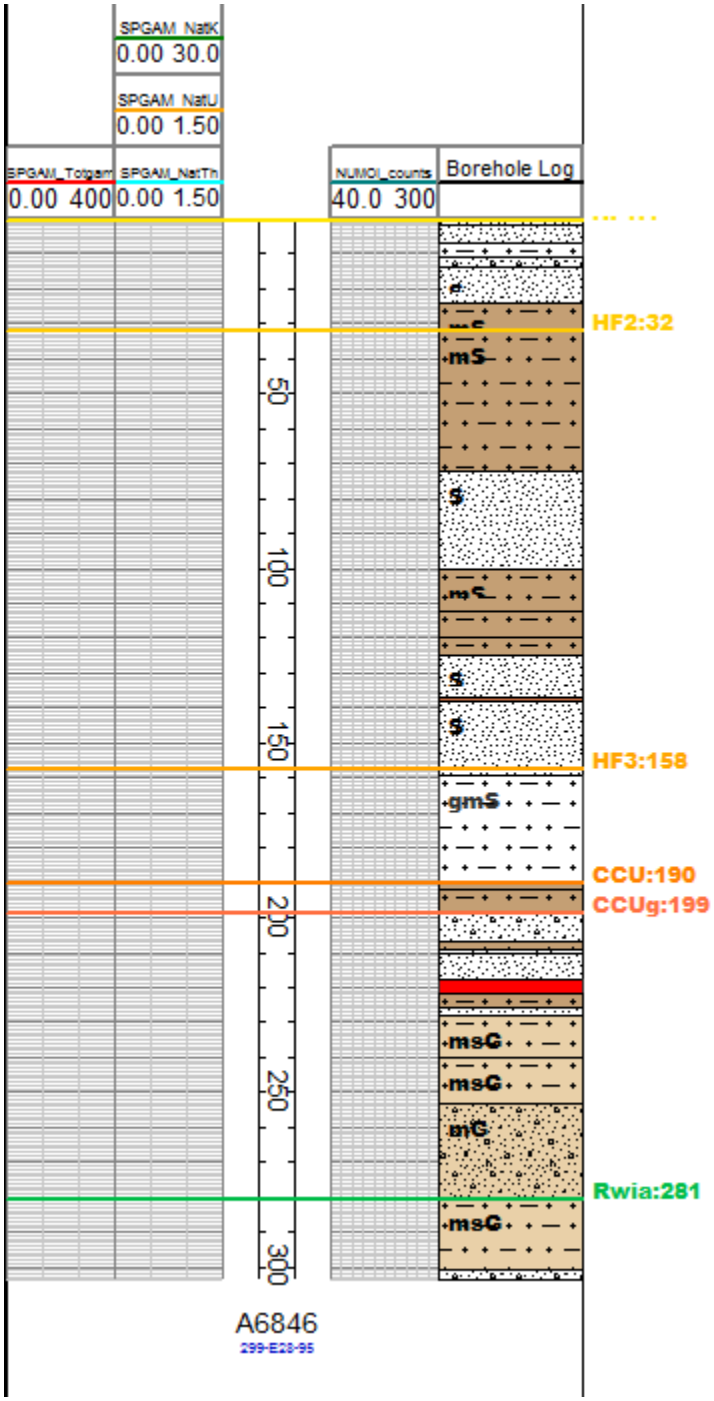
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
GravelLan...
HF2:24
GravelLan...
Sand
Sand
Sand
HF3:210
CCU:276
Debries...
Rwia:358
Basalt:369
50
100
150
200
250
300
350
A6798
299-E28-22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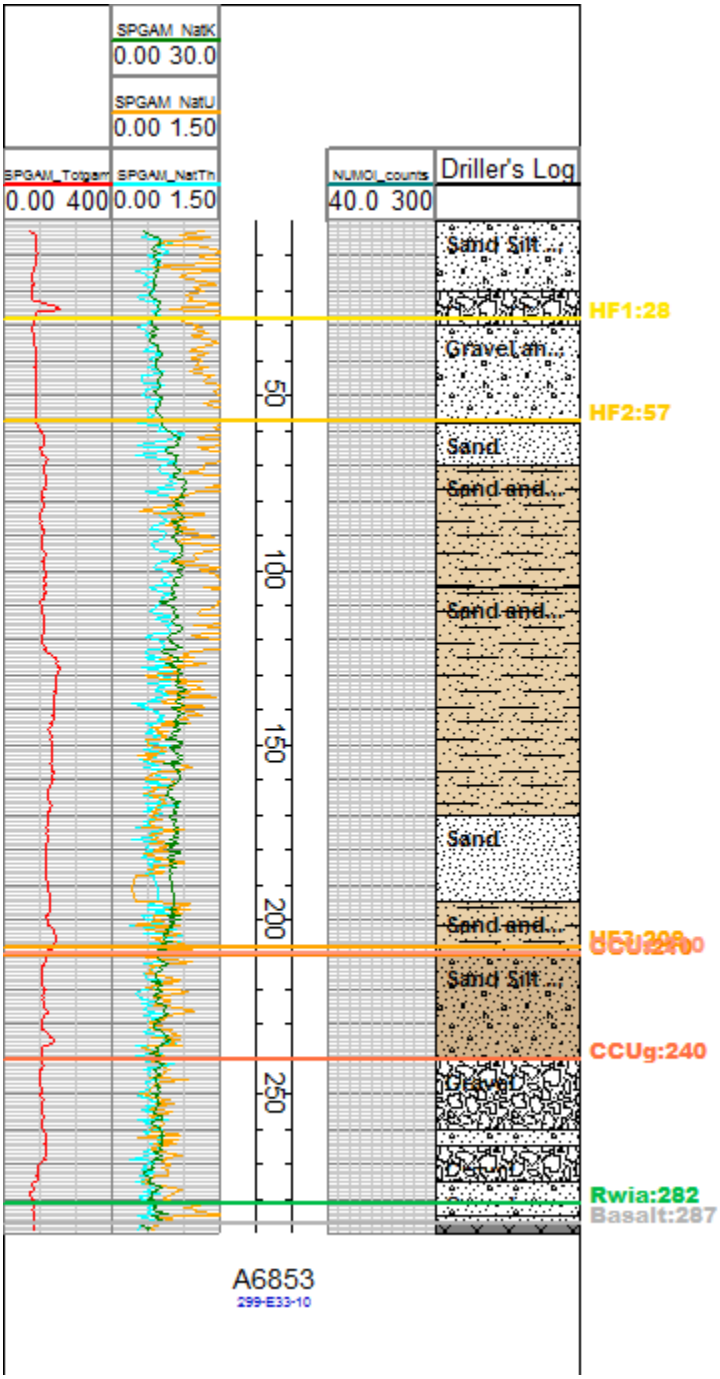
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:32
HF3:158
CCU:190
CCUg:199
Rwia:281
50
100
150
200
250
300
A6846
299-E28-95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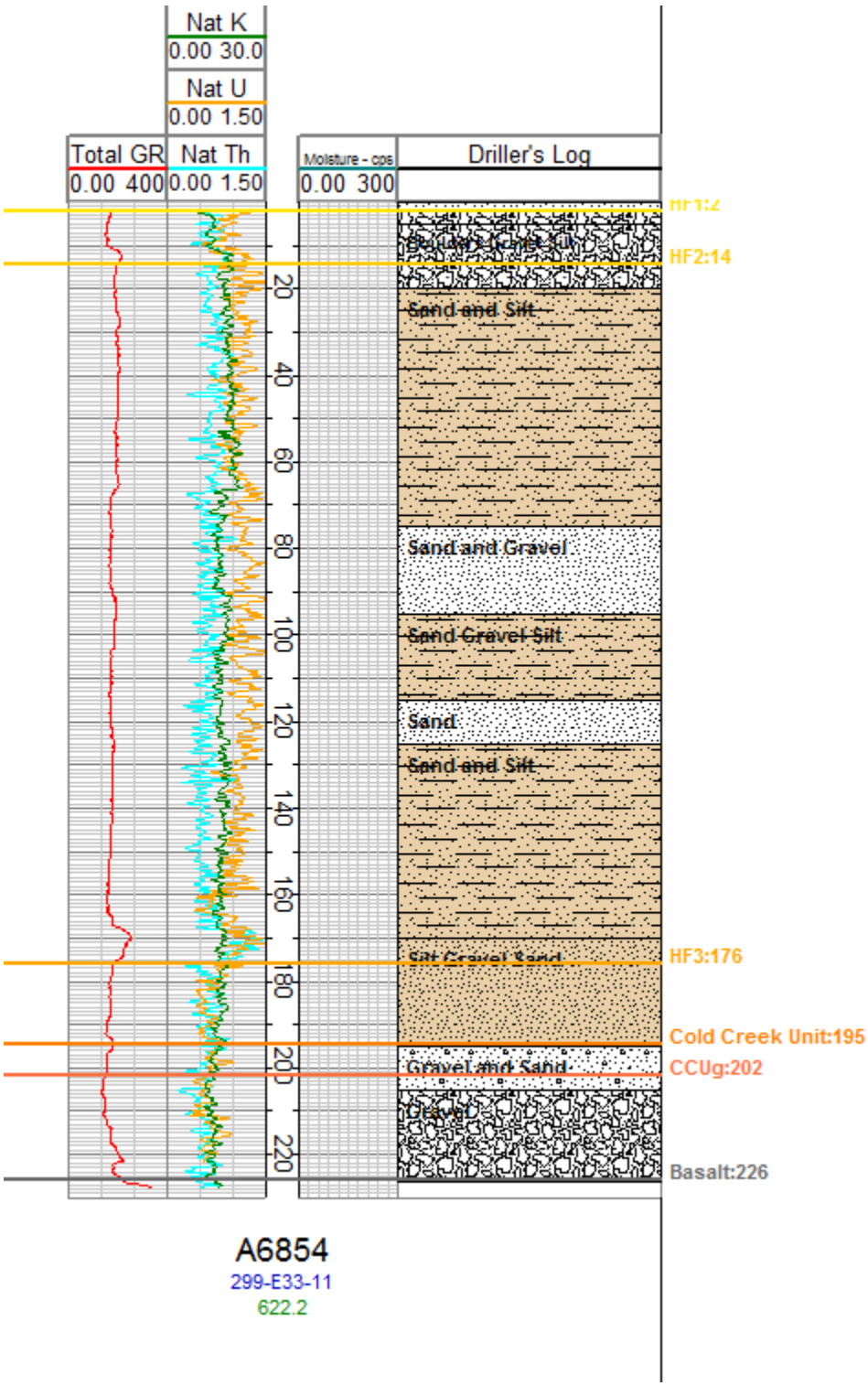
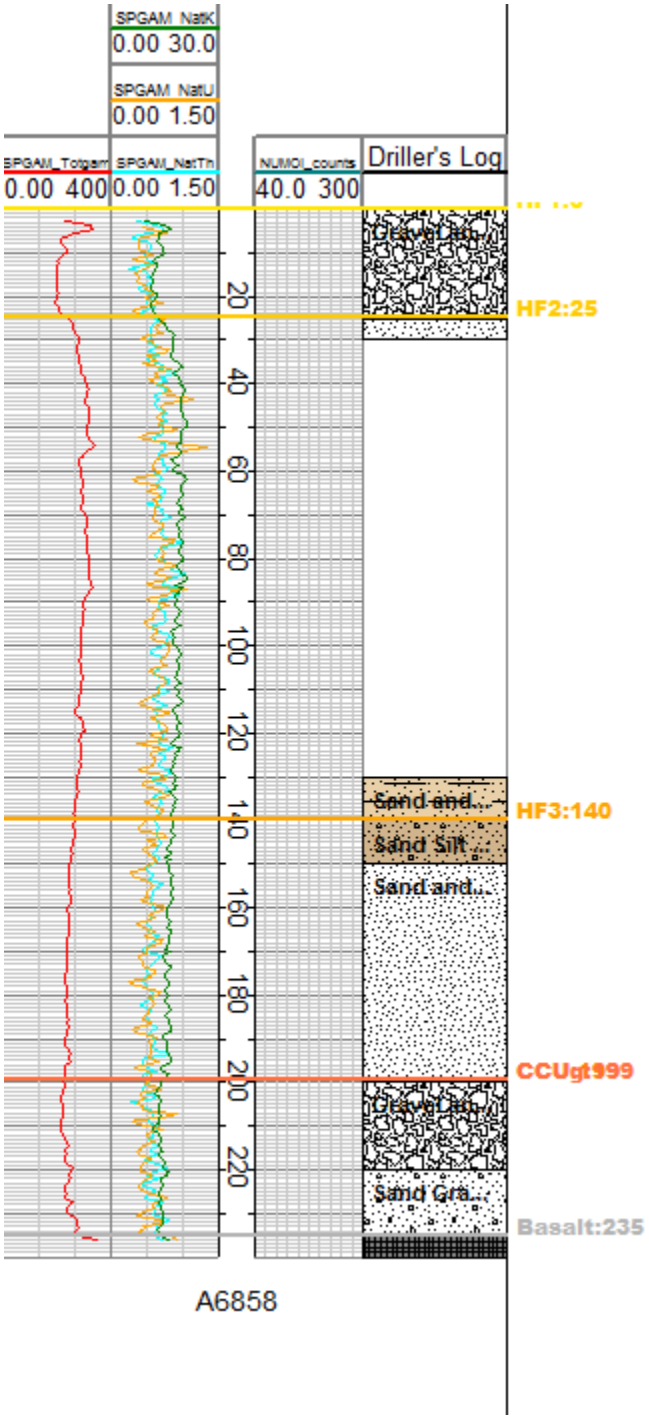
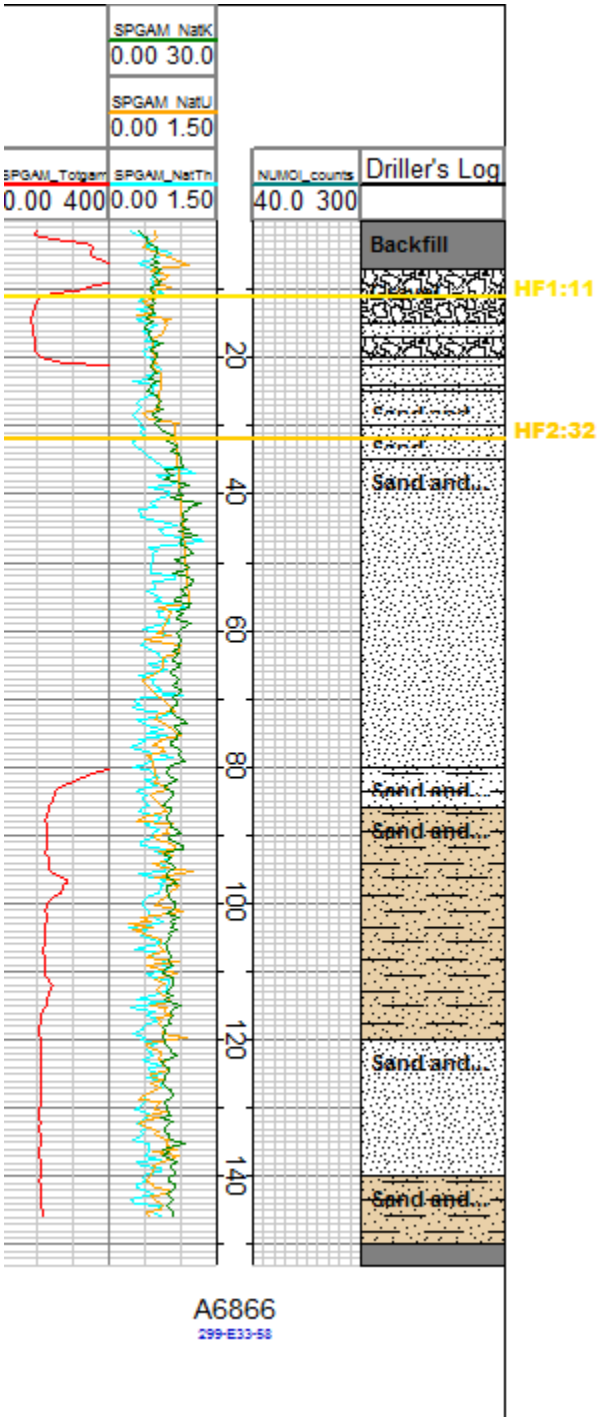
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand Silt ...
HF1:28
Gravel,sh...
HF2:57
Sand
Sand and...
Sand and...
Sand
Sand and...
Sand Silt ...
CCUg:240
Gravel
Rwia:282
Basalt:287
50
100
150
200
250
A6853
299-E33-10


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:14
Sand and Silt
Sand and Gravel
Sand Gravel Silt
Sand
Sand and Silt
HF3:176
Cold Creek Unit:195
CCUg:202
Gravel and Sand
Gravel
Basalt:226
20
40
60
80
100
120
140
160
180
200
220
A6854
299-E33-11
622.2


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
140
160
180
200
220
HF2:25
HF3:140
CCUgt999
Basalt:235
Sand and...
Sand Silt...
Sand and...
Sand Gra...

A6858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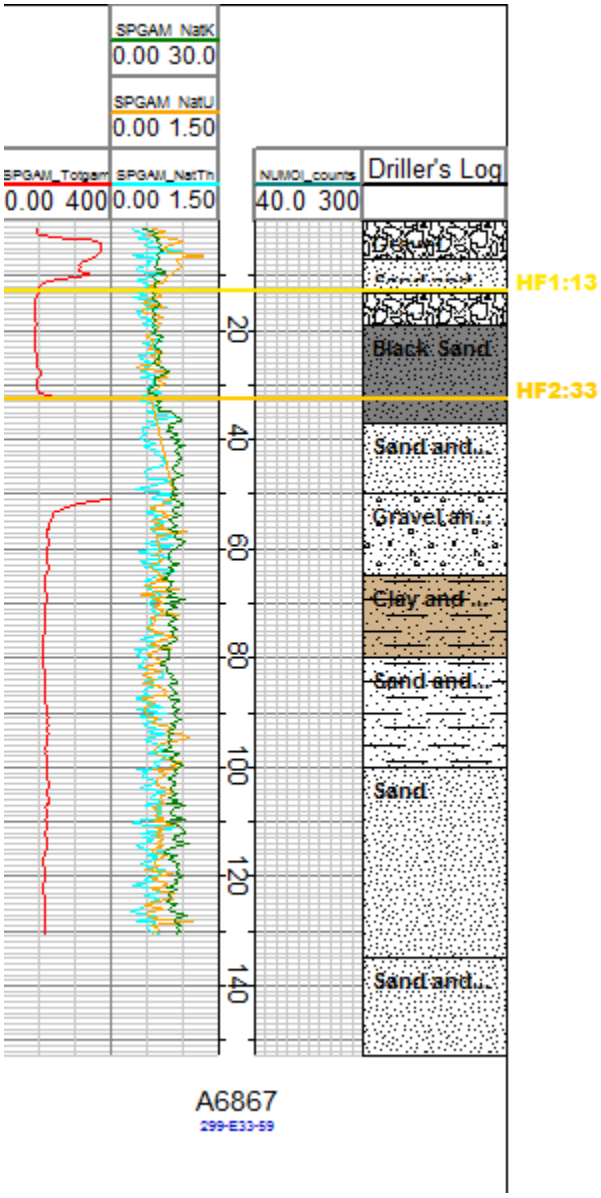
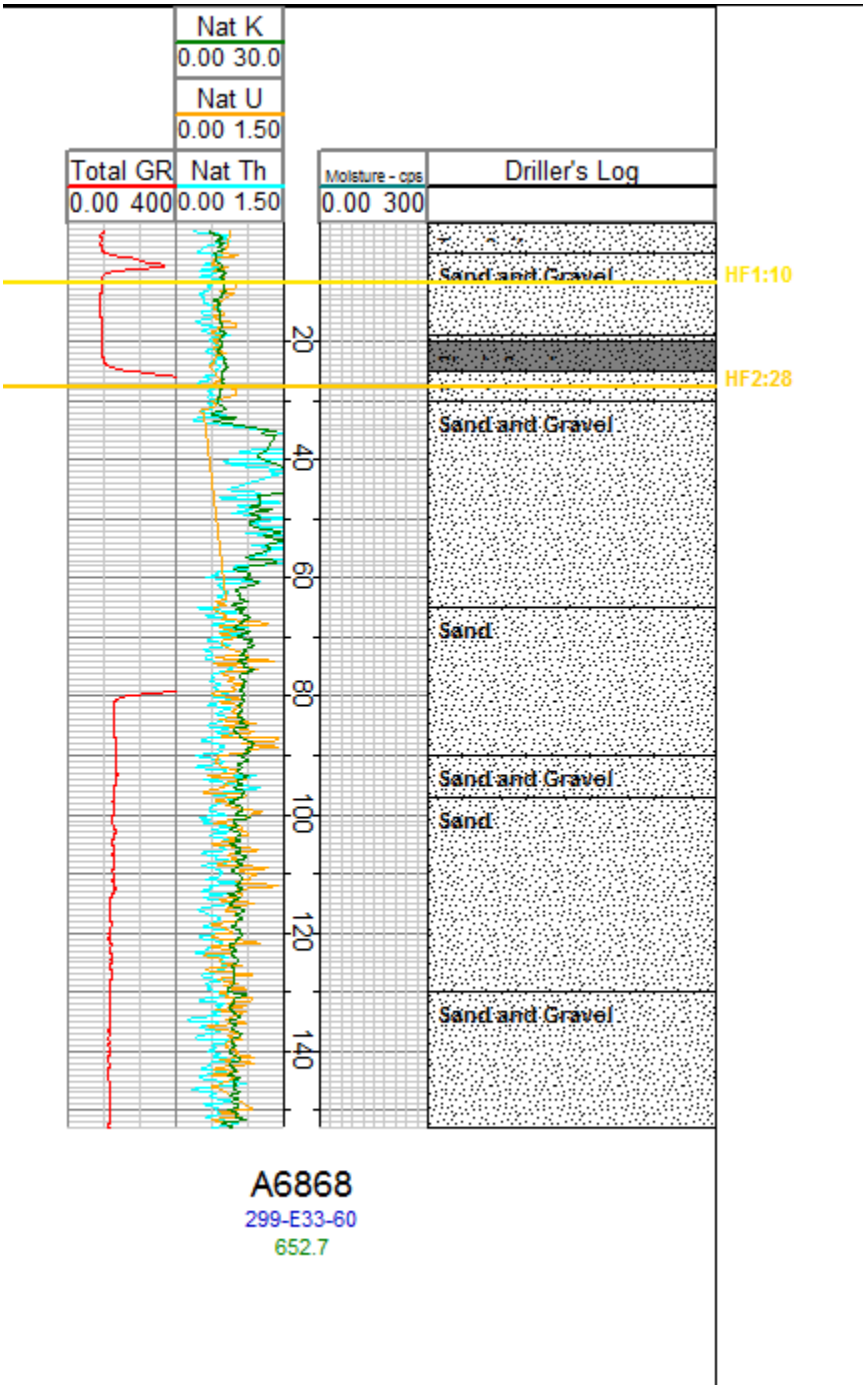
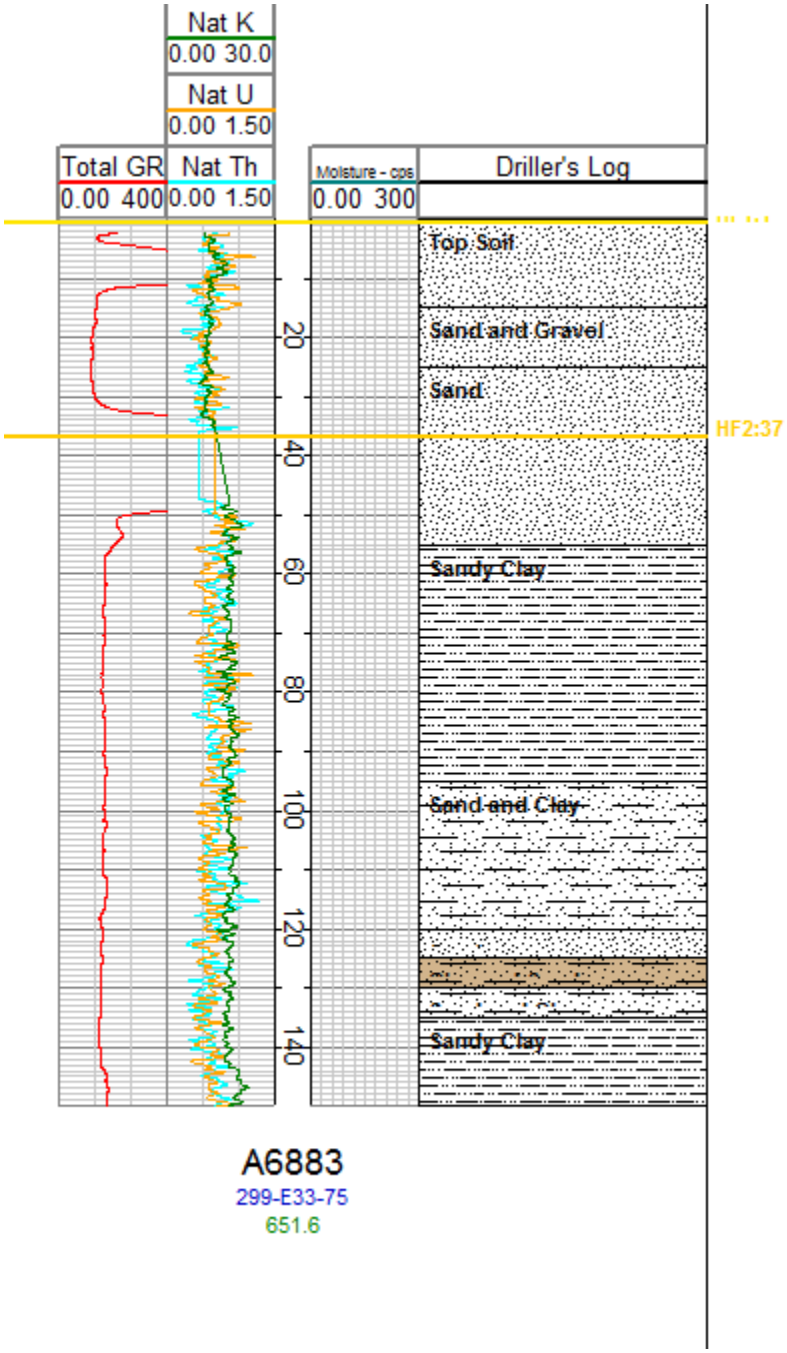
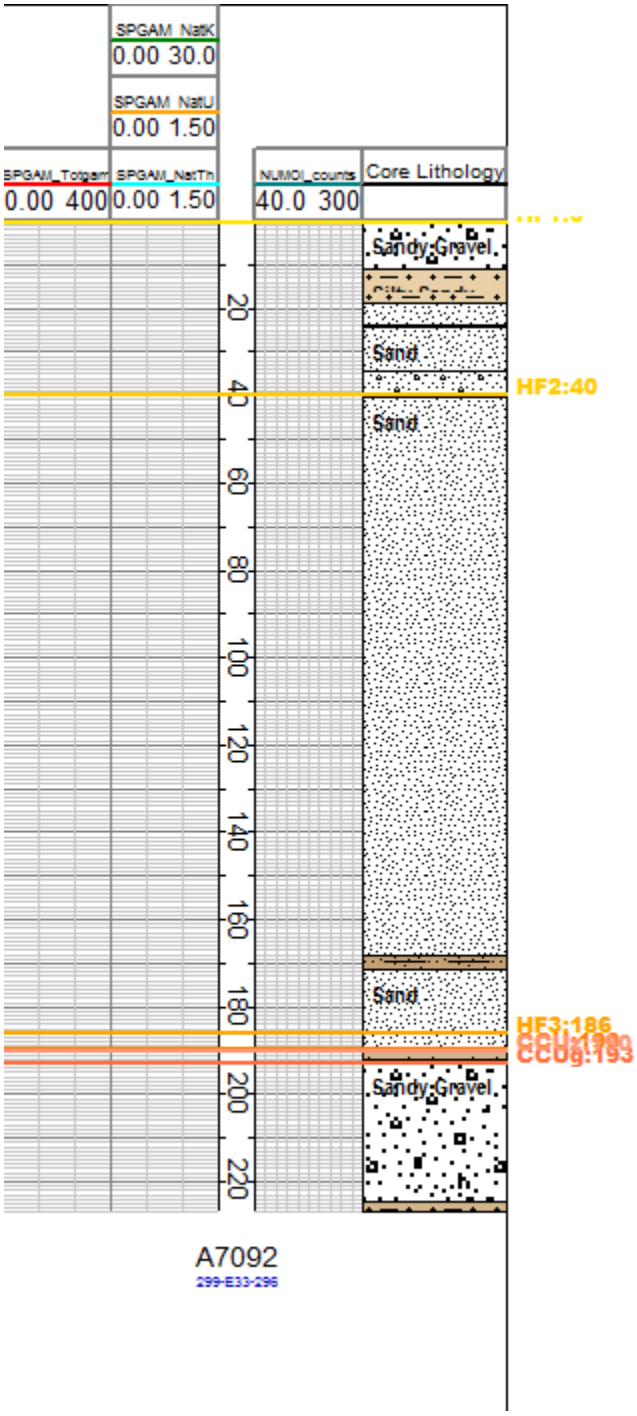
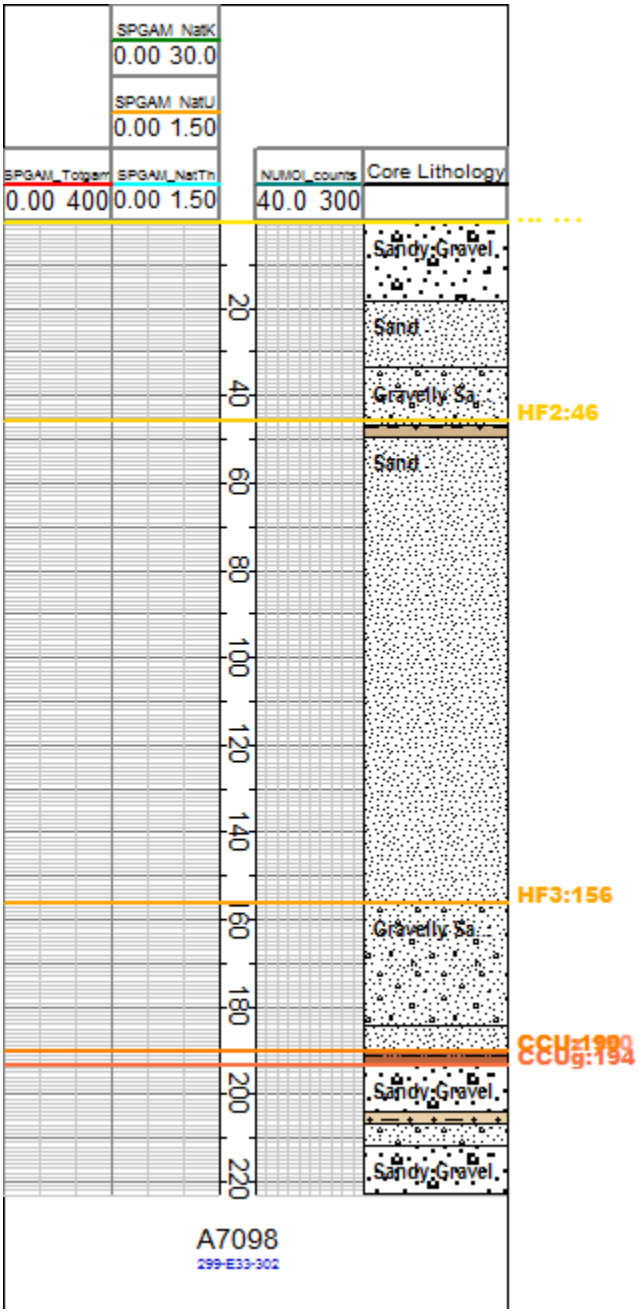
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Backfill
HF1:11
HF2:32
Sand and...
Sand and...
Sand and...
Sand and...
Sand and...
20
40
60
80
100
120
140
A6866
299-E33-58

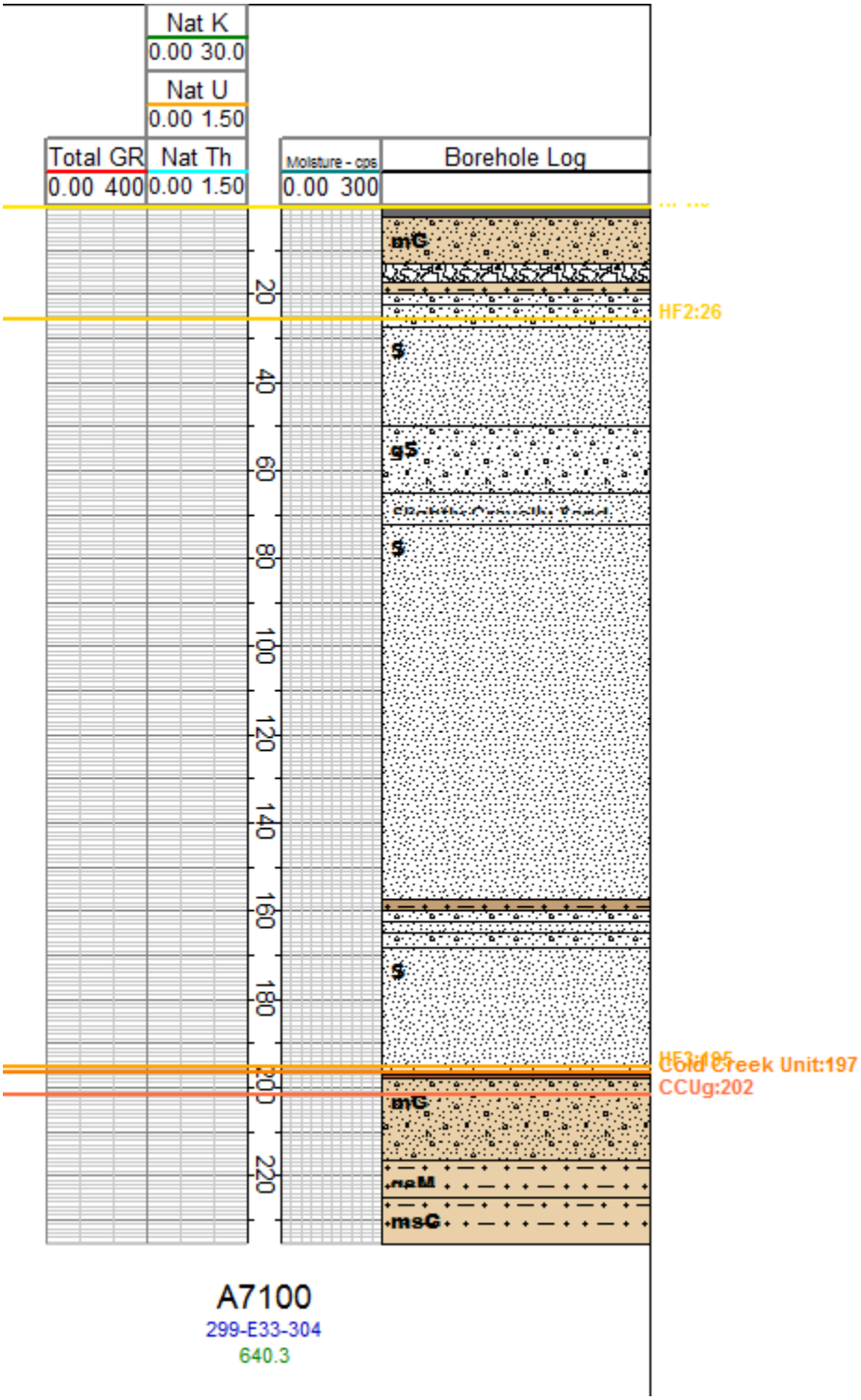

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:13
HF2:33
Black Sand
Sand and...
Gravel an...
Clay and...
Sand and...
Sand
Sand and...
20
40
60
80
100
120
140
A6867
299-E33-59

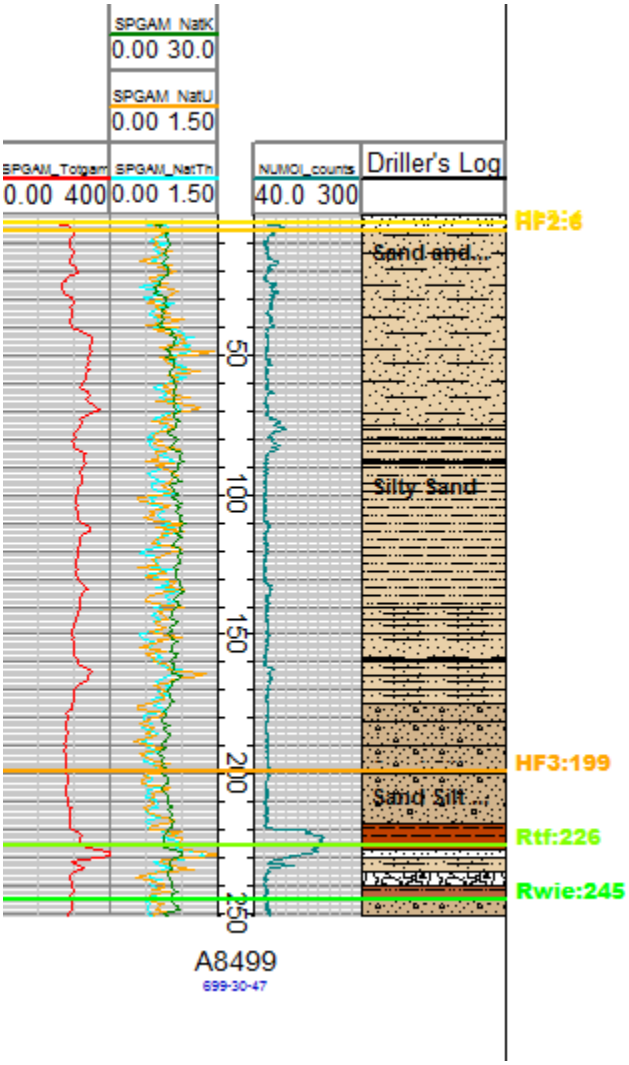

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:10
HF2:28
Sand and Gravel
Sand
Sand and Gravel
Sand
Sand and Gravel
20
40
60
80
100
120
140
A6868
299-E33-60
652.7

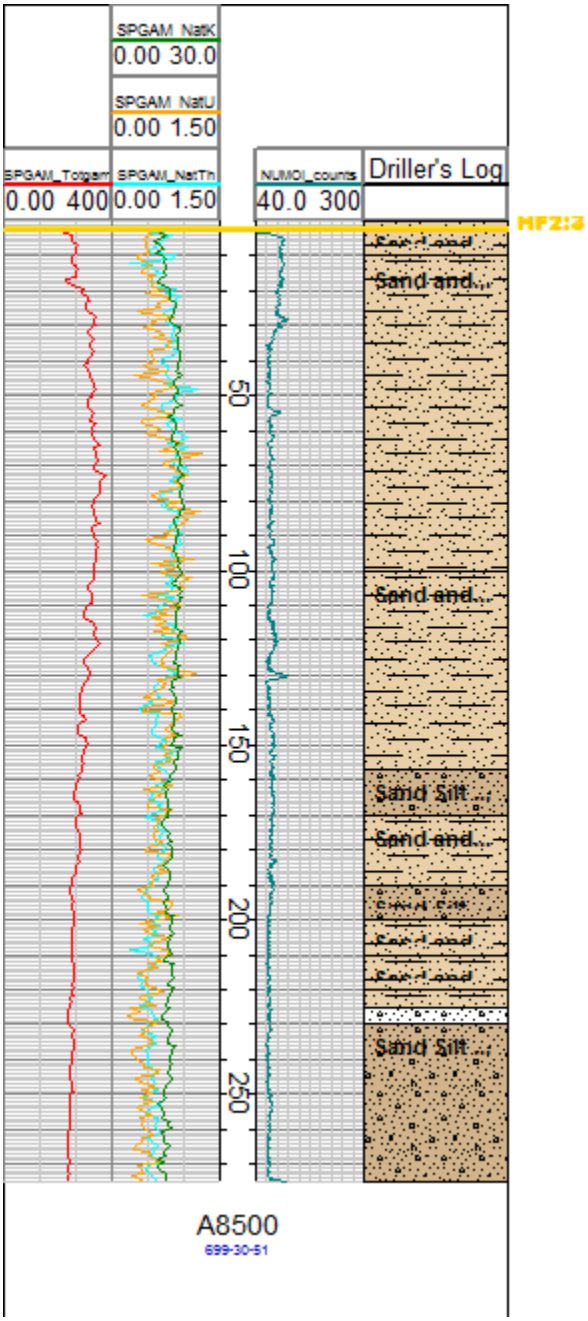

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Top Soil
Sand and Gravel
Sand
HF2:37
Sandy Clay
Sand and Clay
Sandy Clay
20
40
60
80
100
120
140
A6883
299-E33-75
651.6

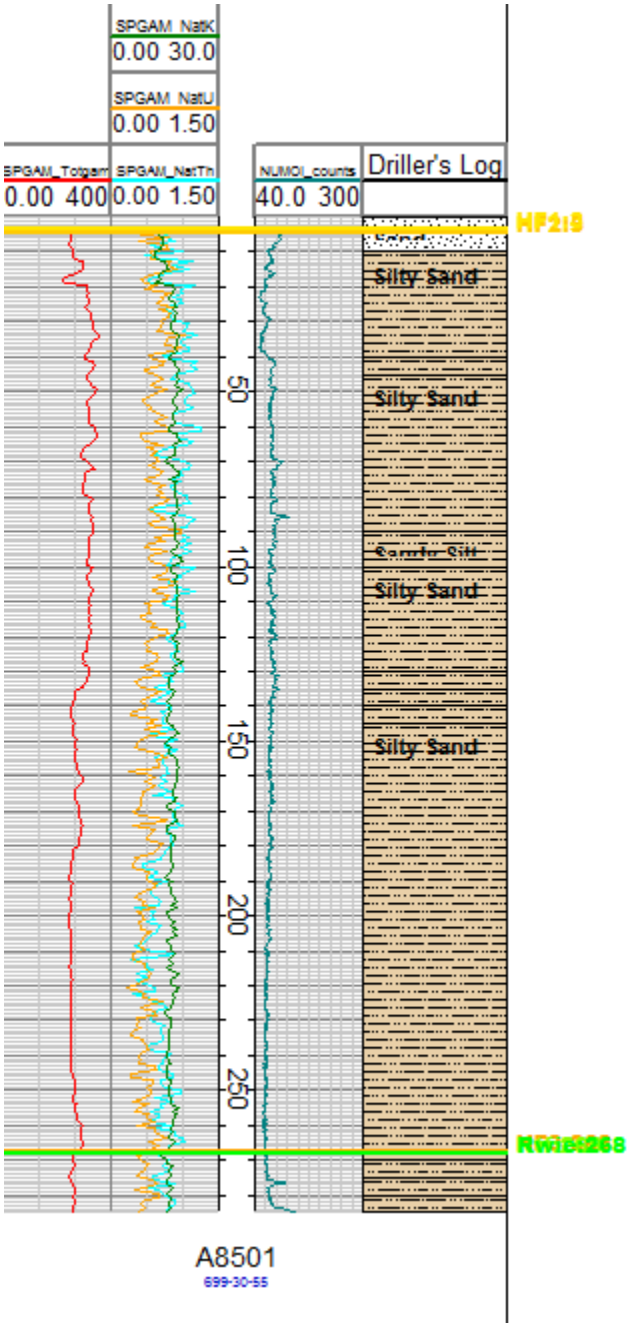

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Sandy Gravel
Sand
HF2:40
Sand
Sand
HF3:186
CCUg:193
Sandy Gravel
20
40
60
80
100
120
140
160
180
200
220
A7092
299-E33-296

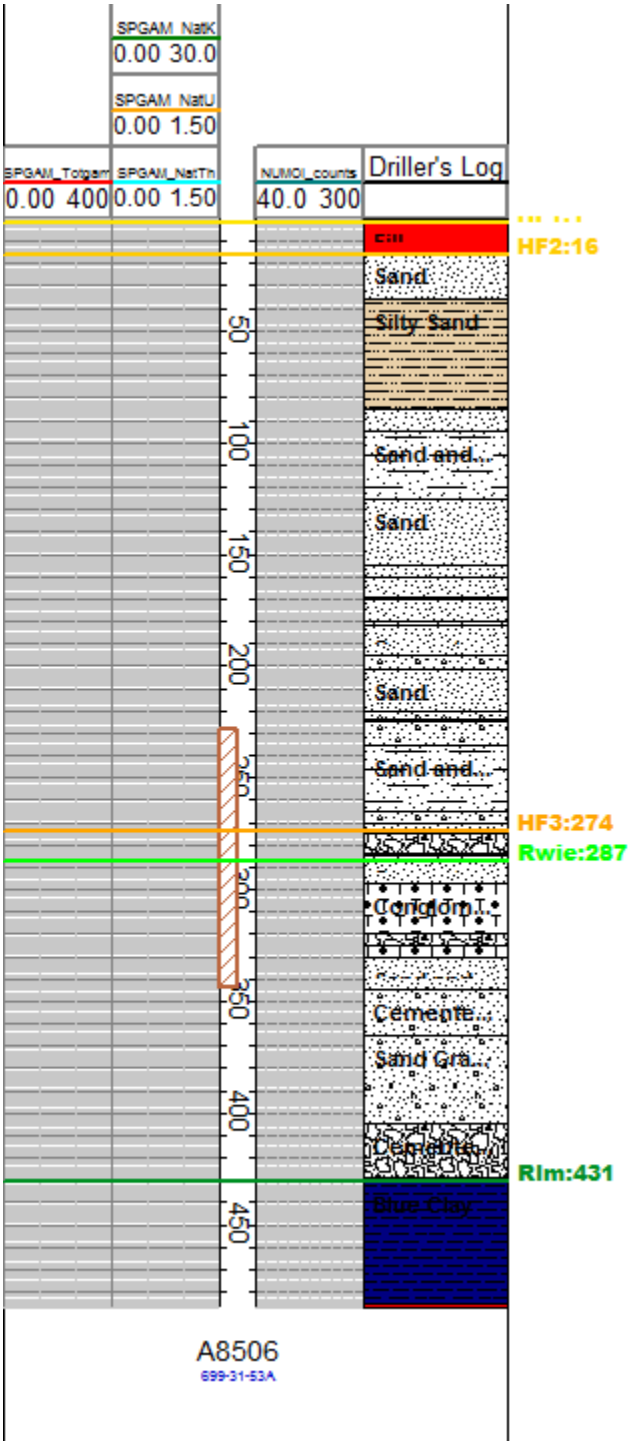

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Sandy Gravel
Sand
Gravelly Sa
HF2:46
Sand
HF3:156
Gravelly Sa
CCUg:194
Sandy Gravel
Sandy Gravel
20
40
60
80
100
120
140
160
180
200
220
A7098
299-E33-302

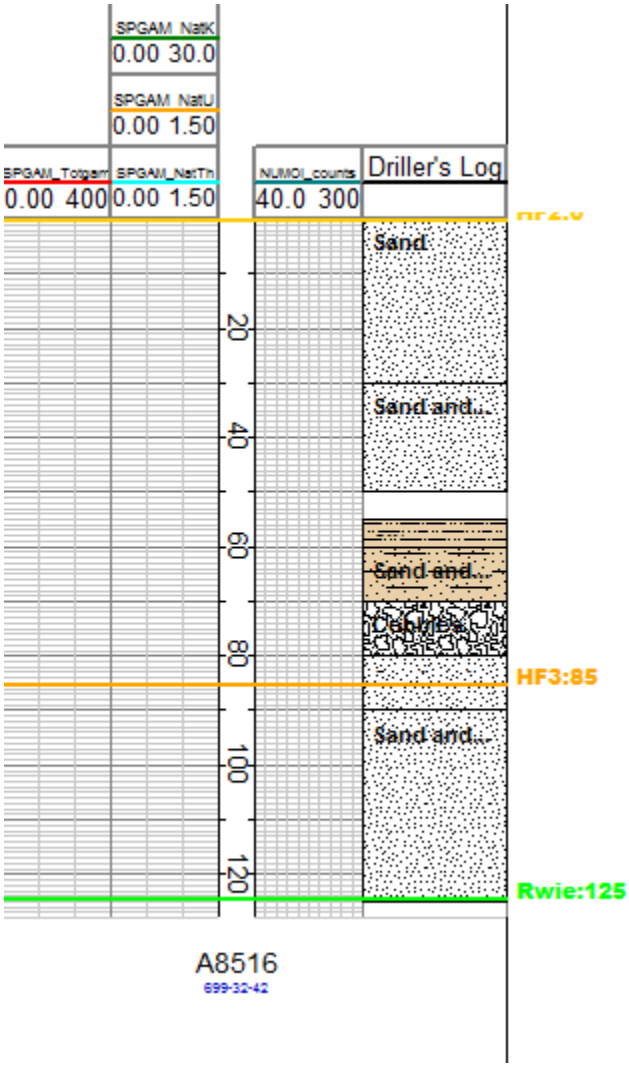

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
mG
HF2:26
S
gS
S
S
Cold Creek Unit:197
CCUg:202
mG
msM
msG
20
40
60
80
100
120
140
160
180
200
220
A7100
299-E33-304
640.3

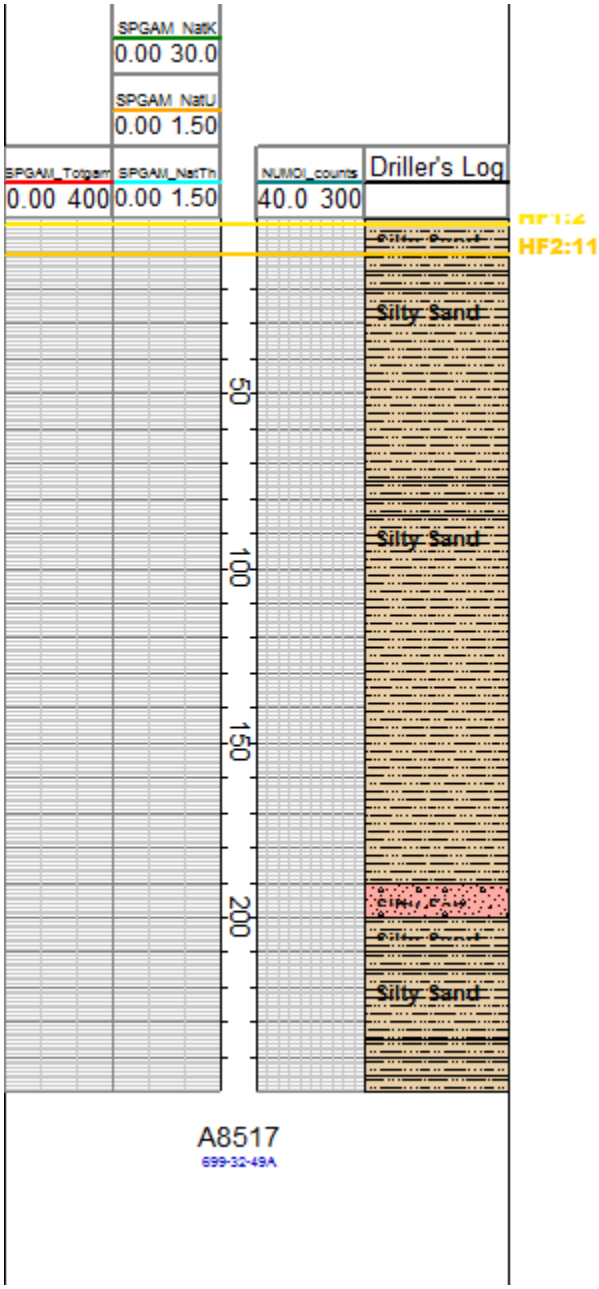

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:6
Sand and...
Silty Sand
HF3:199
Sand Silt ...
Rtf:226
Rwie:245
50
100
150
200
250
A8499
699-30-47

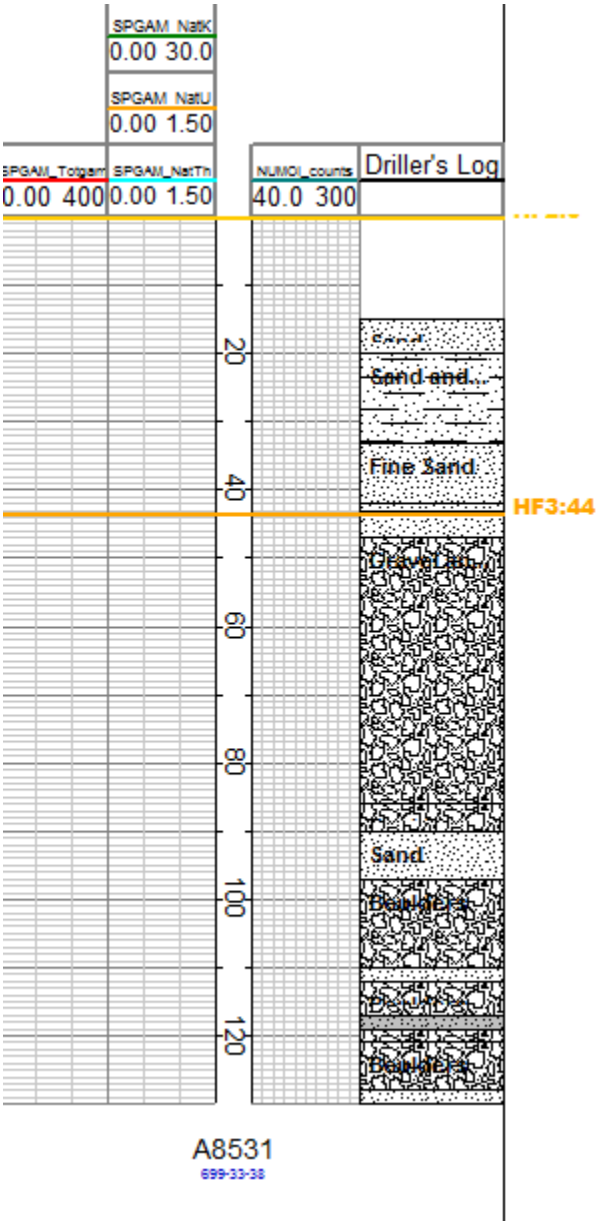

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
MFZ:3
Sand and...
Sand and...
Sand Silt ...
Sand and...
Sand Silt ...
50
100
150
200
250
A8500
699-30-51

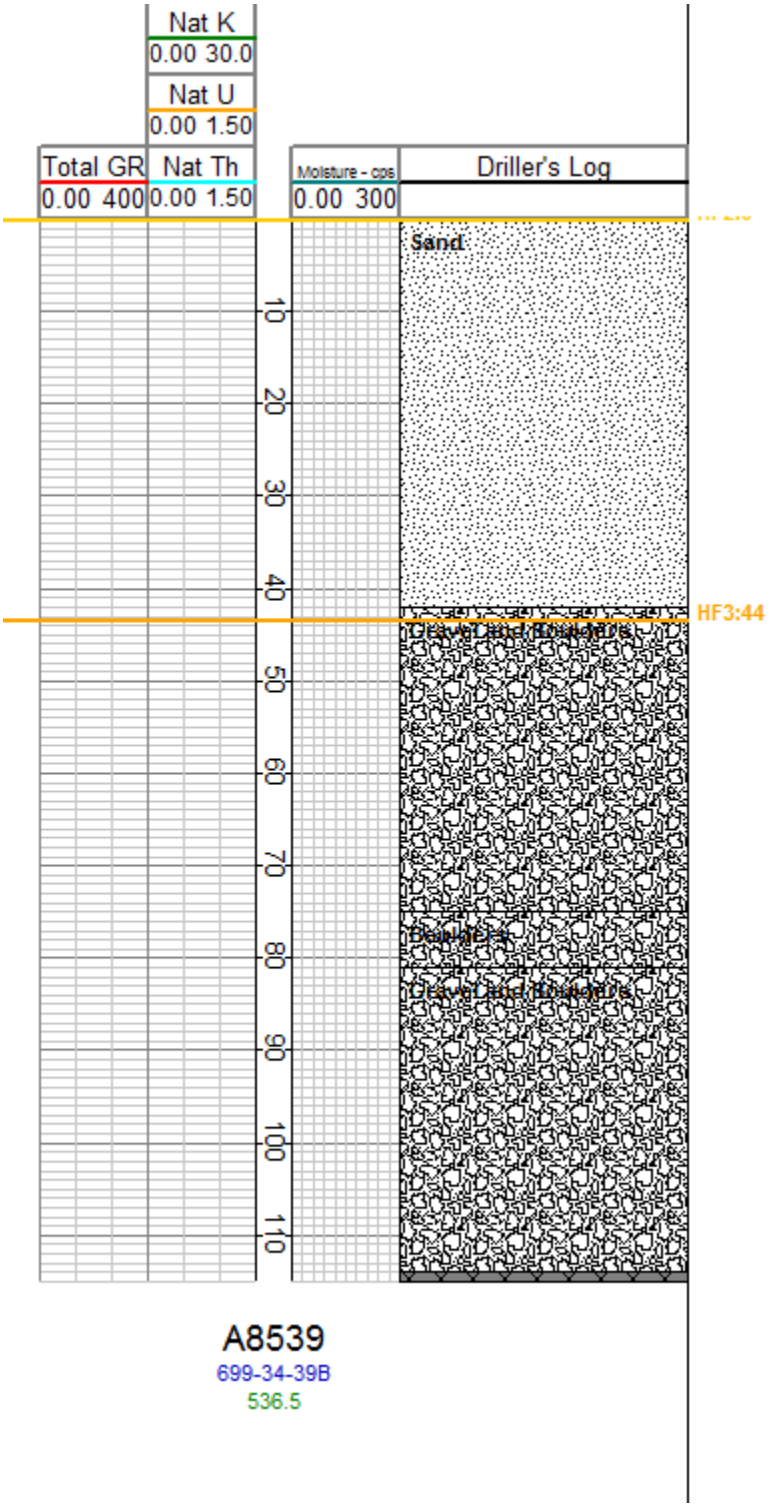

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Silty Sand
Silty Sand
Silty Sand
Silty Sand
50
100
150
200
250
A8501
699-30-55

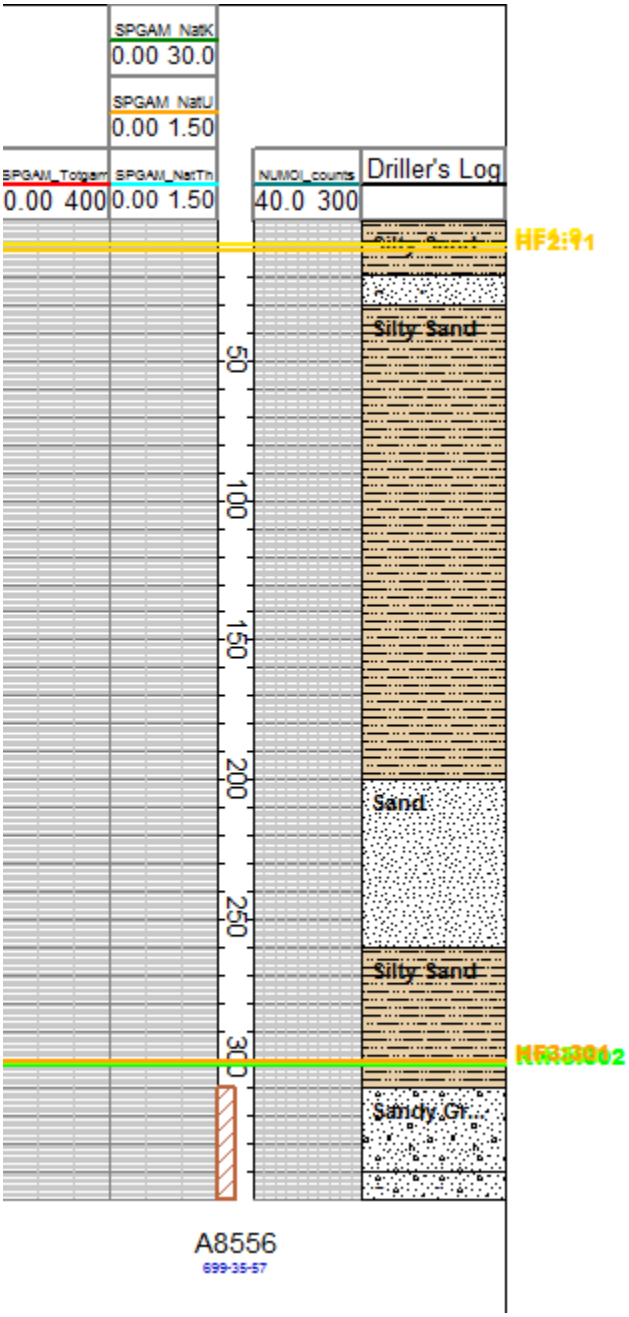

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:16
Sand
Silty Sand
Sand and...
Sand
Sand
Sand and...
HF3:274
Rwie:287
Cemente...
Sand Gra...
Cemente...
Rlm:431
Blue Clay
50
100
150
200
250
300
350
400
450
A8506
699-31-53A

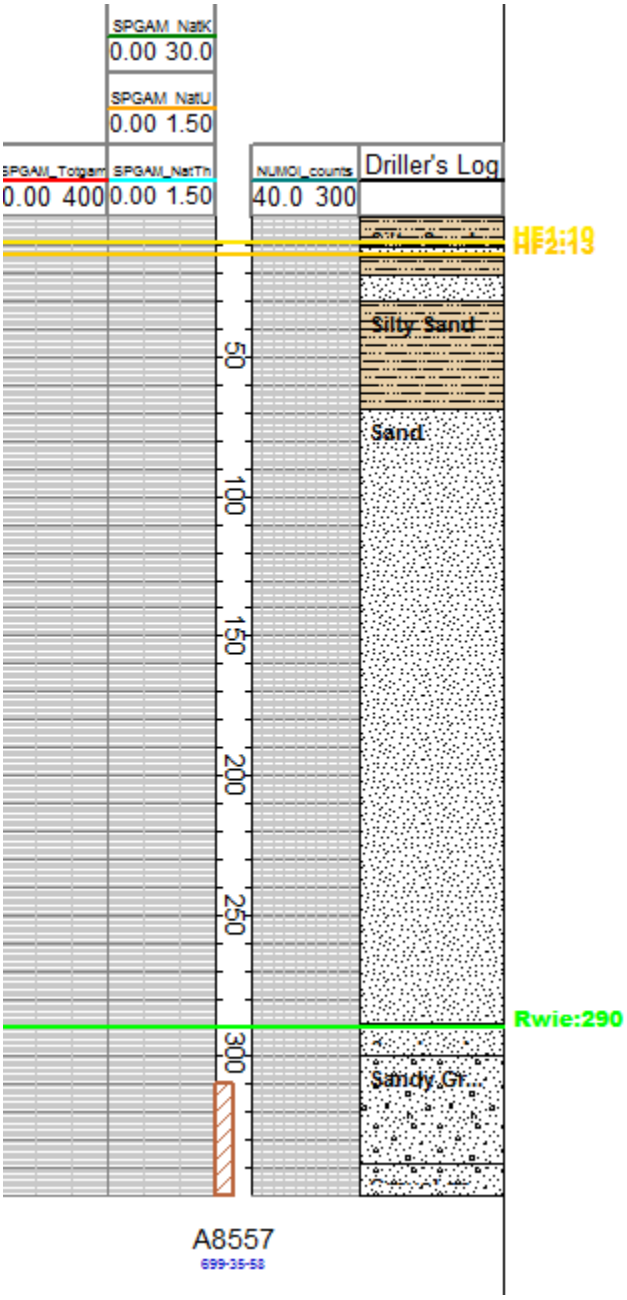

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand and...
Sand and...
Clay/Bo...
HF3:85
Sand and...
Rwie:125
20
40
60
80
100
120
A8516
699-32-42

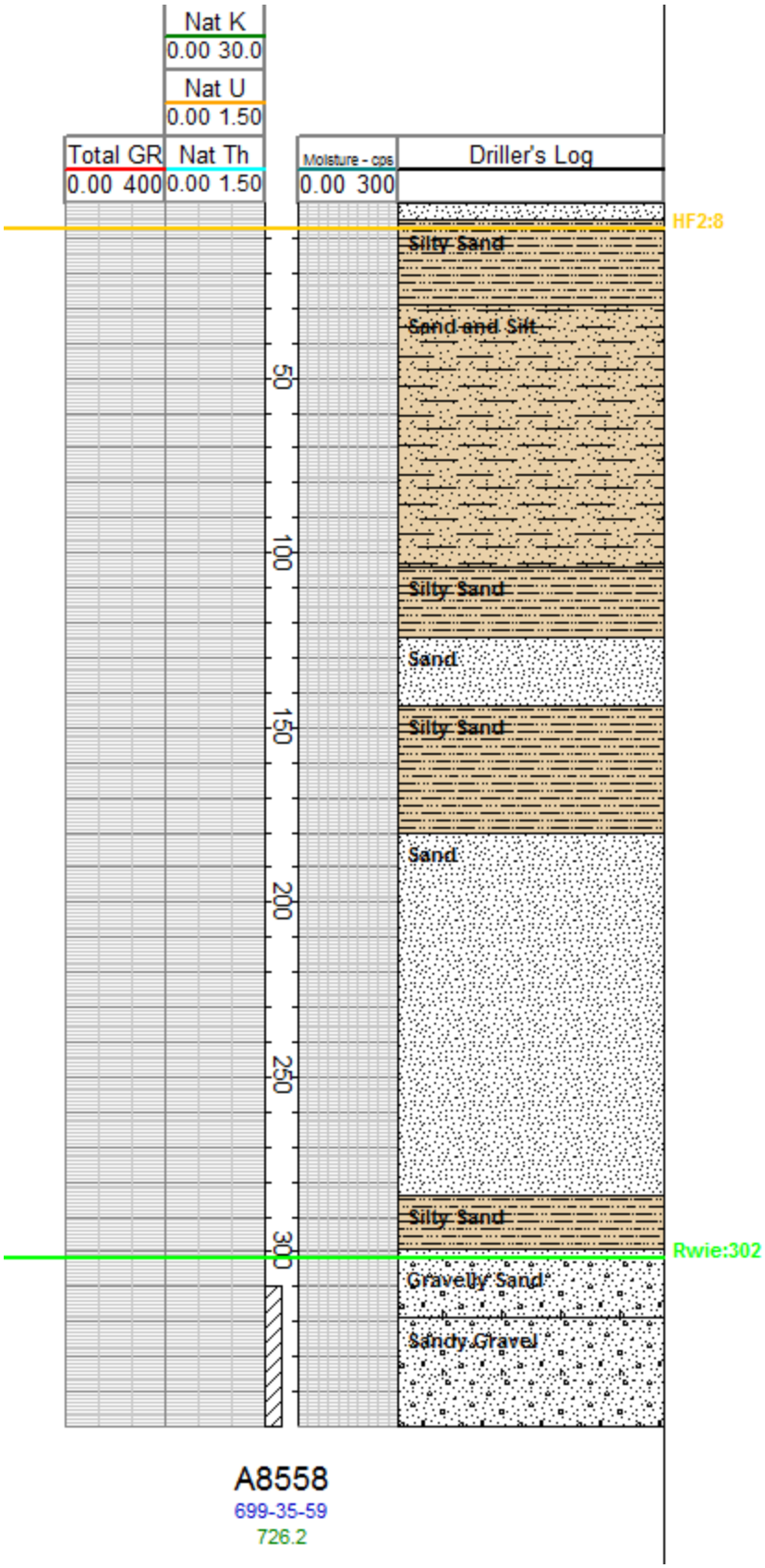

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:11
Silty Sand
Silty Sand
Silty Sand
50
100
150
200
A8517
699-32-49A

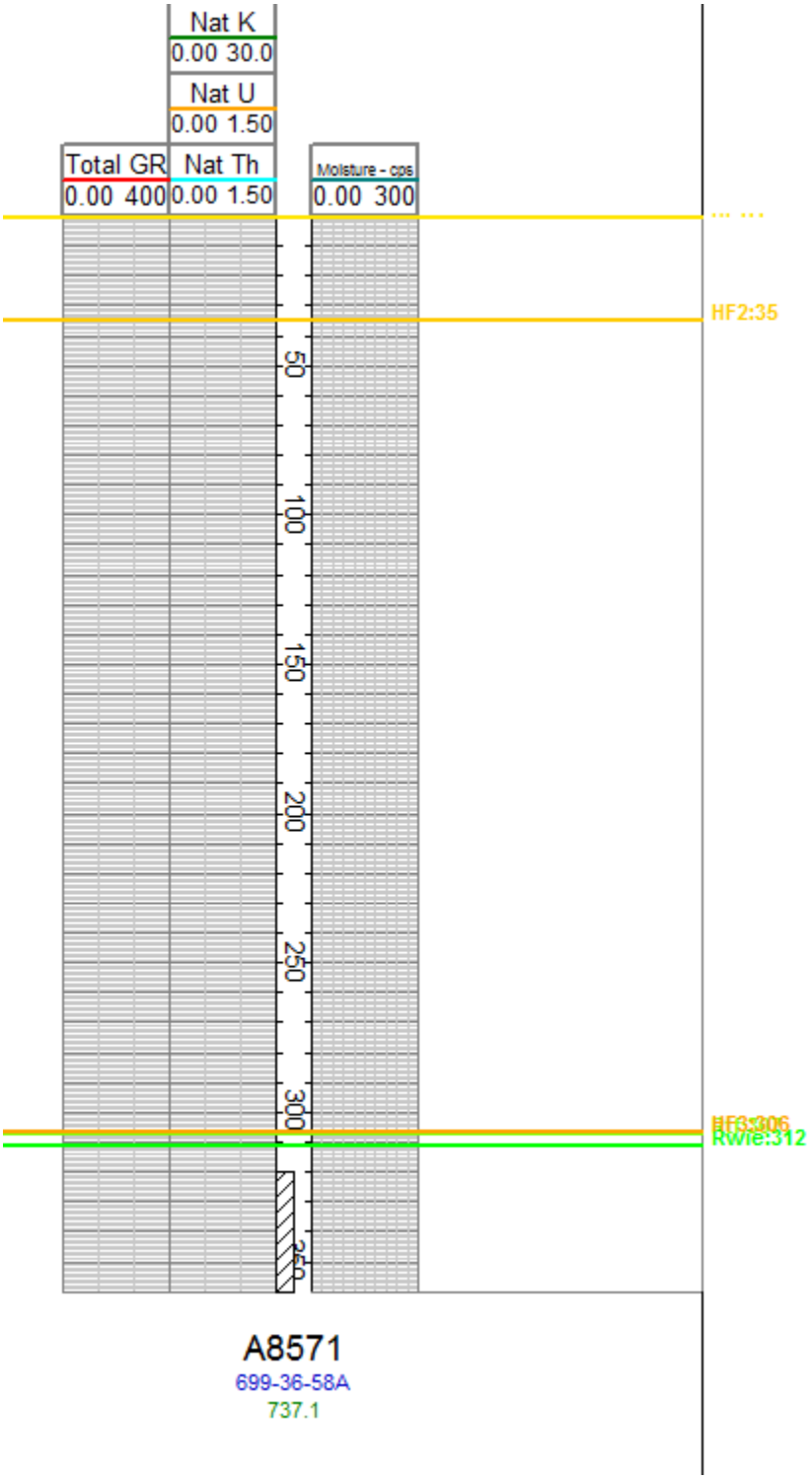

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
20
40
60
80
100
120
Sand and...
Fine Sand
HF3:44
Sand
A8531
699-33-38

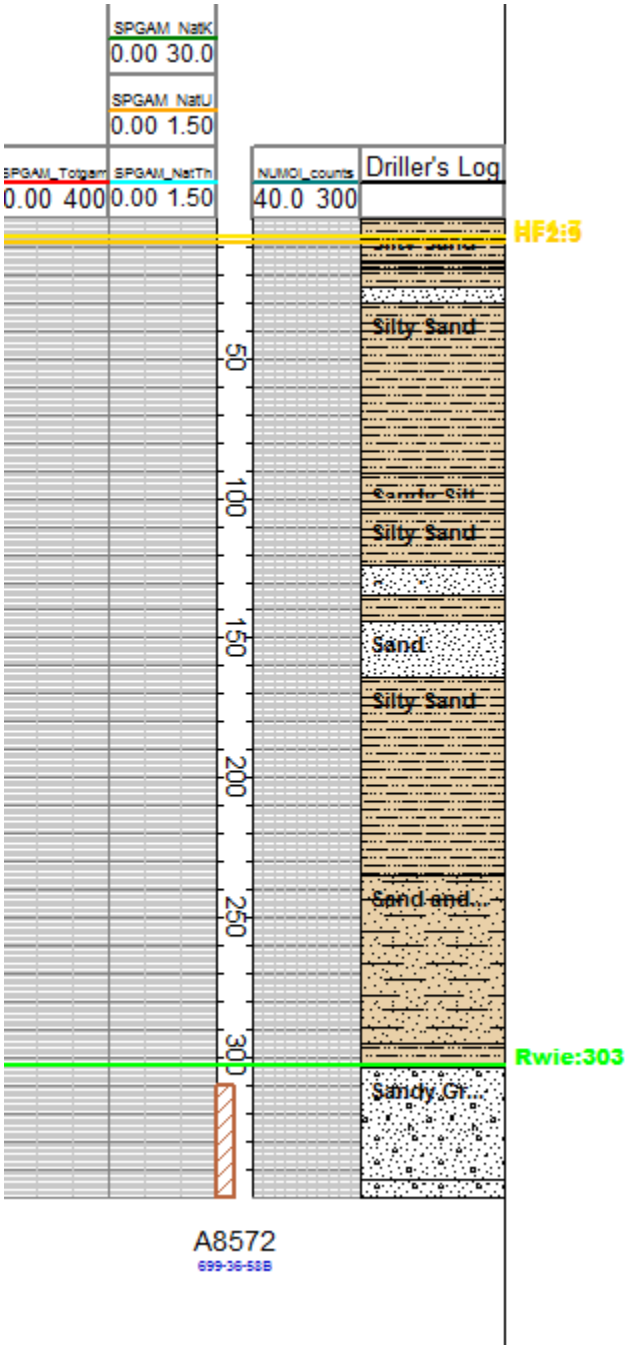

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF3:44
Gravel and Boulders
Boulders
Gravel and Boulders
10
20
30
40
50
60
70
80
90
100
110
A8539
699-34-39B
536.5

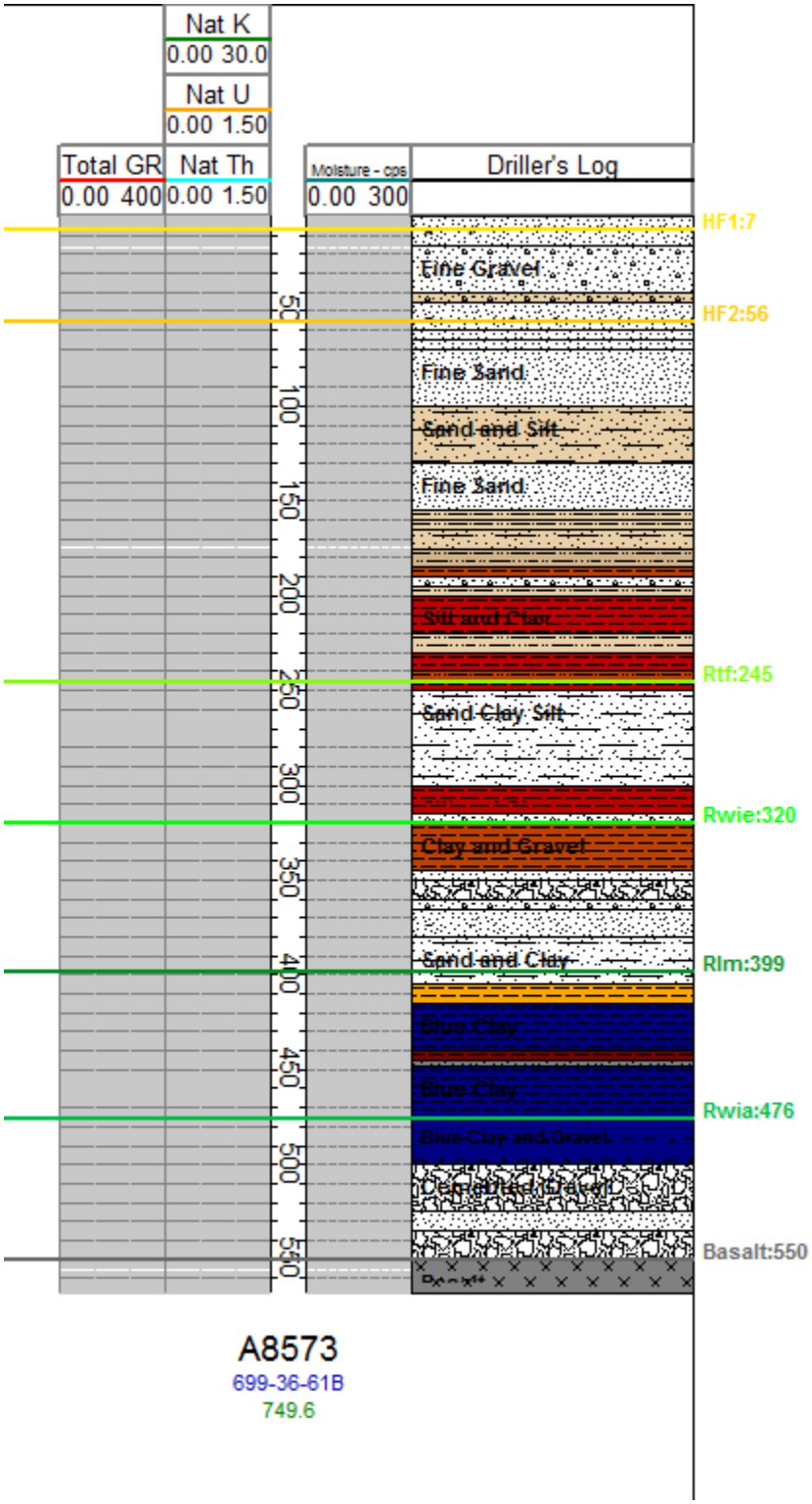

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:91
Silty Sand
50
100
150
200
Sand
250
Silty Sand
300
Sandy Gr...
A8556
699-35-57

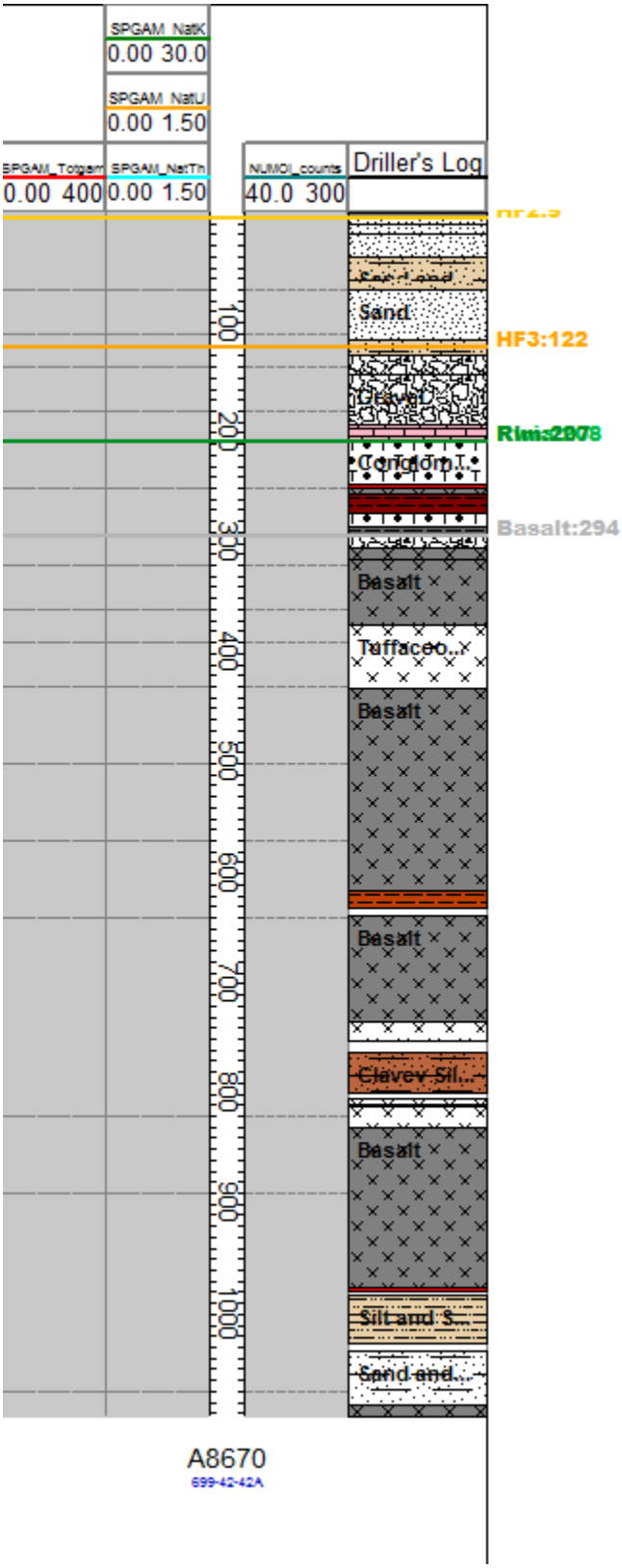

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:19
HF2:13
Silty Sand
Sand
Rwie:290
Sandy Gr...
50
100
150
200
250
300
A8557
699-35-58

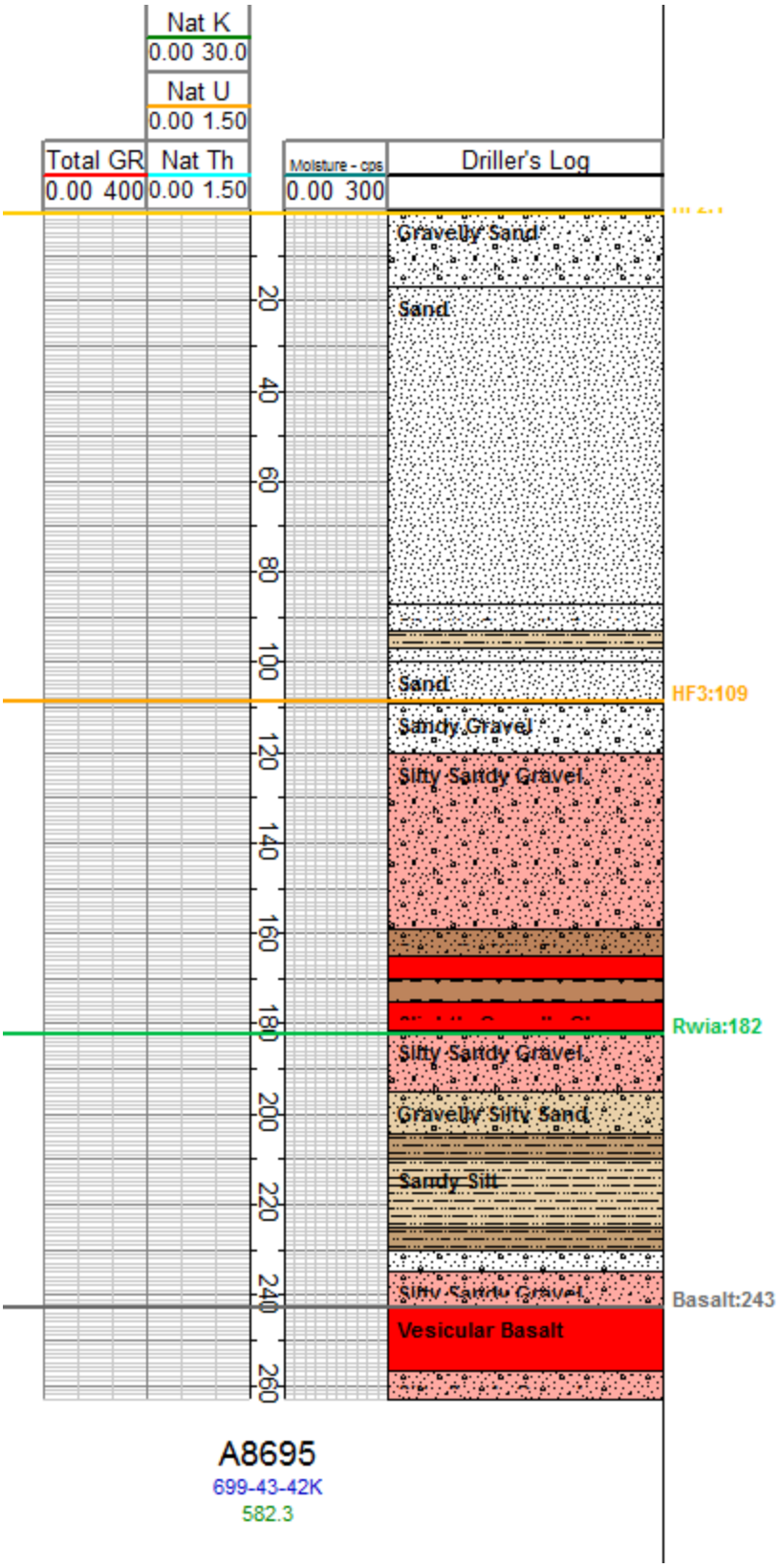

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:8
Silty Sand
Sand and Silt
Silty Sand
Sand
Silty Sand
Sand
Silty Sand
Rwie:302
Gravelly Sand
Sandy Gravel
50
100
150
200
250
300
A8558
699-35-59
726.2

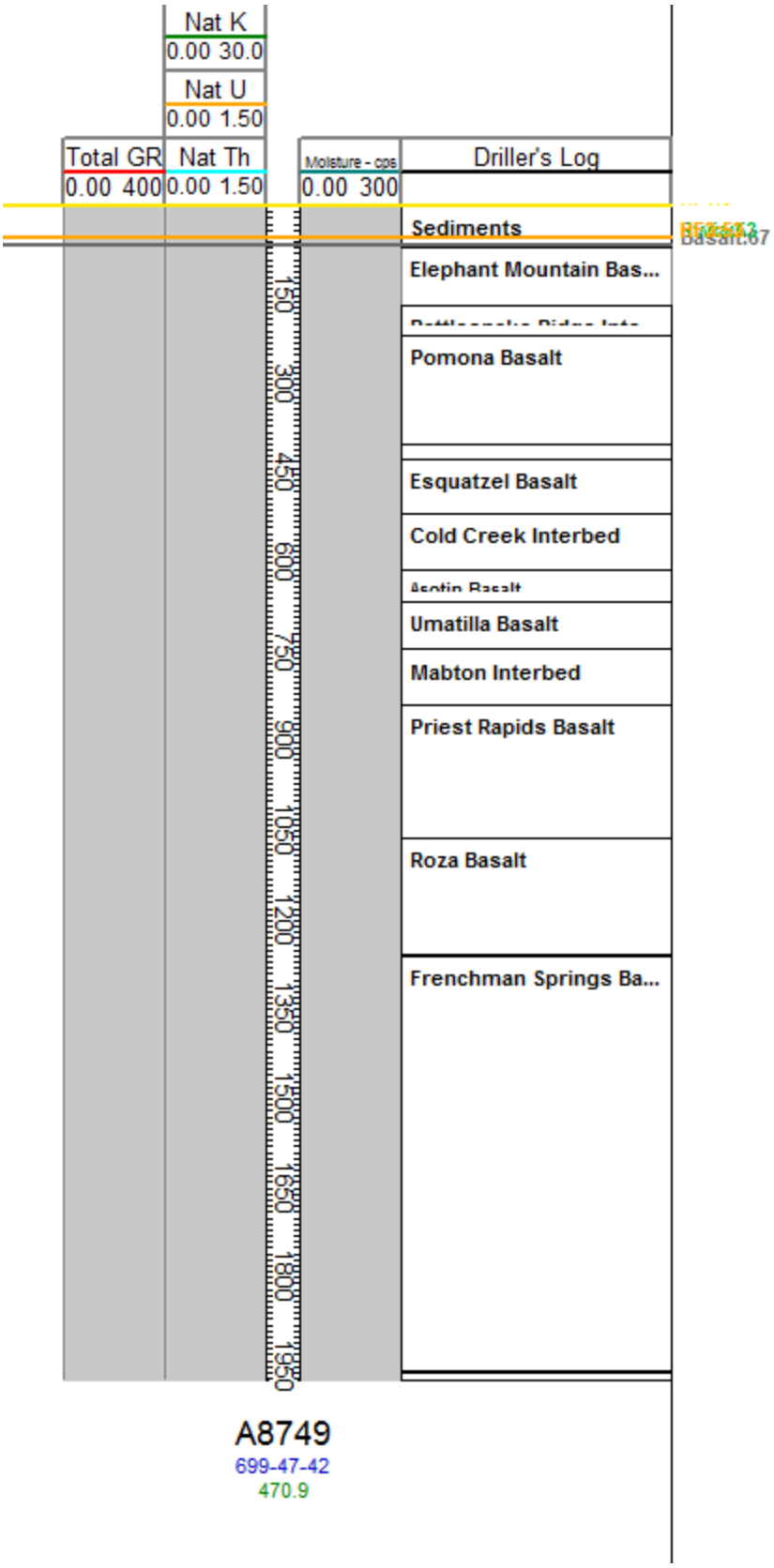

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:35
50
100
150
200
250
300
HF3:306
RWie:312
A8571
699-36-58A
737.1

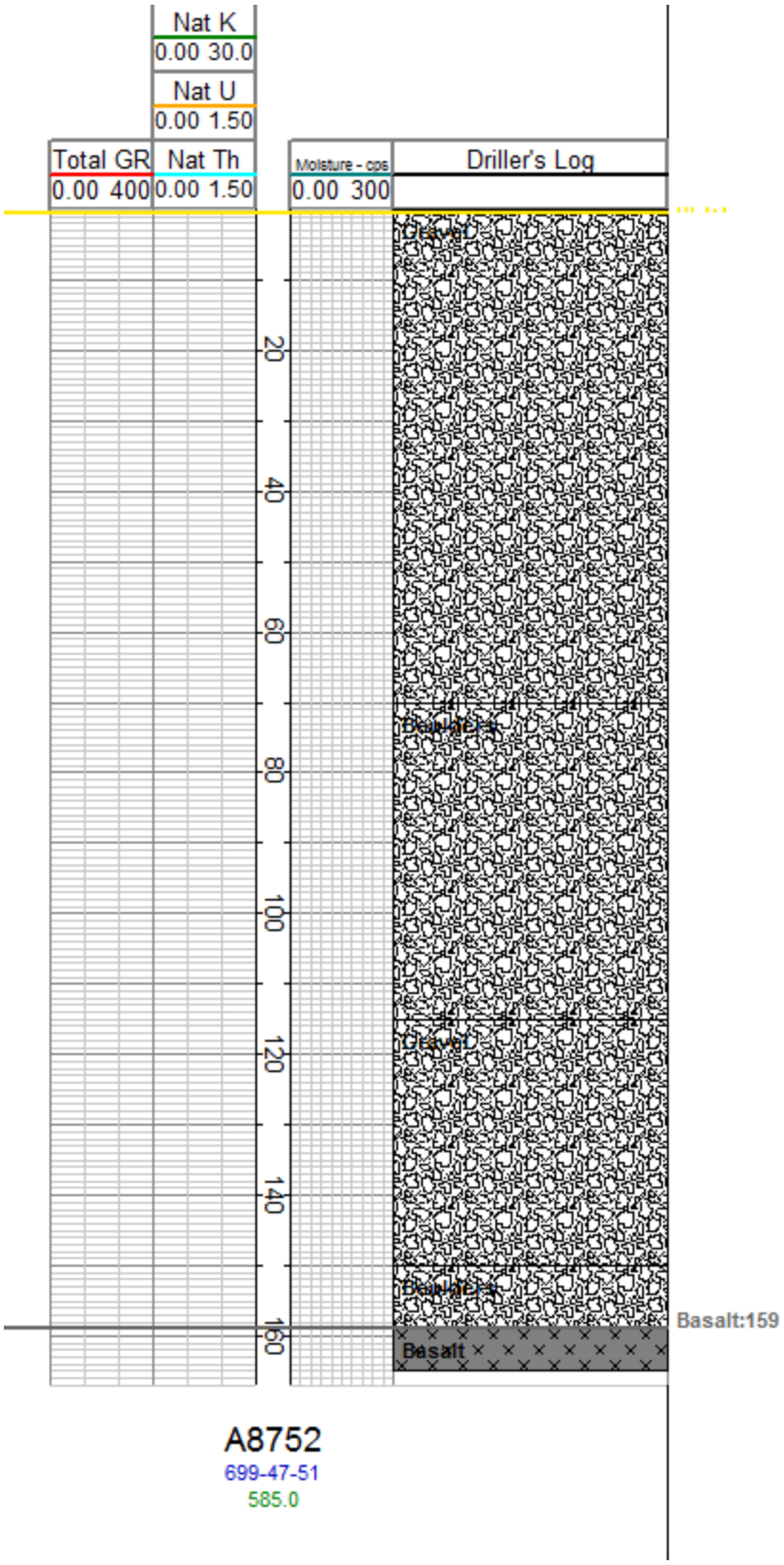

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF2:5
Silty Sand
Silty Sand
Sand
Silty Sand
Sand and...
Rwie:303
Sandy Gr...
50
100
150
200
250
300
A8572
699-36-58B

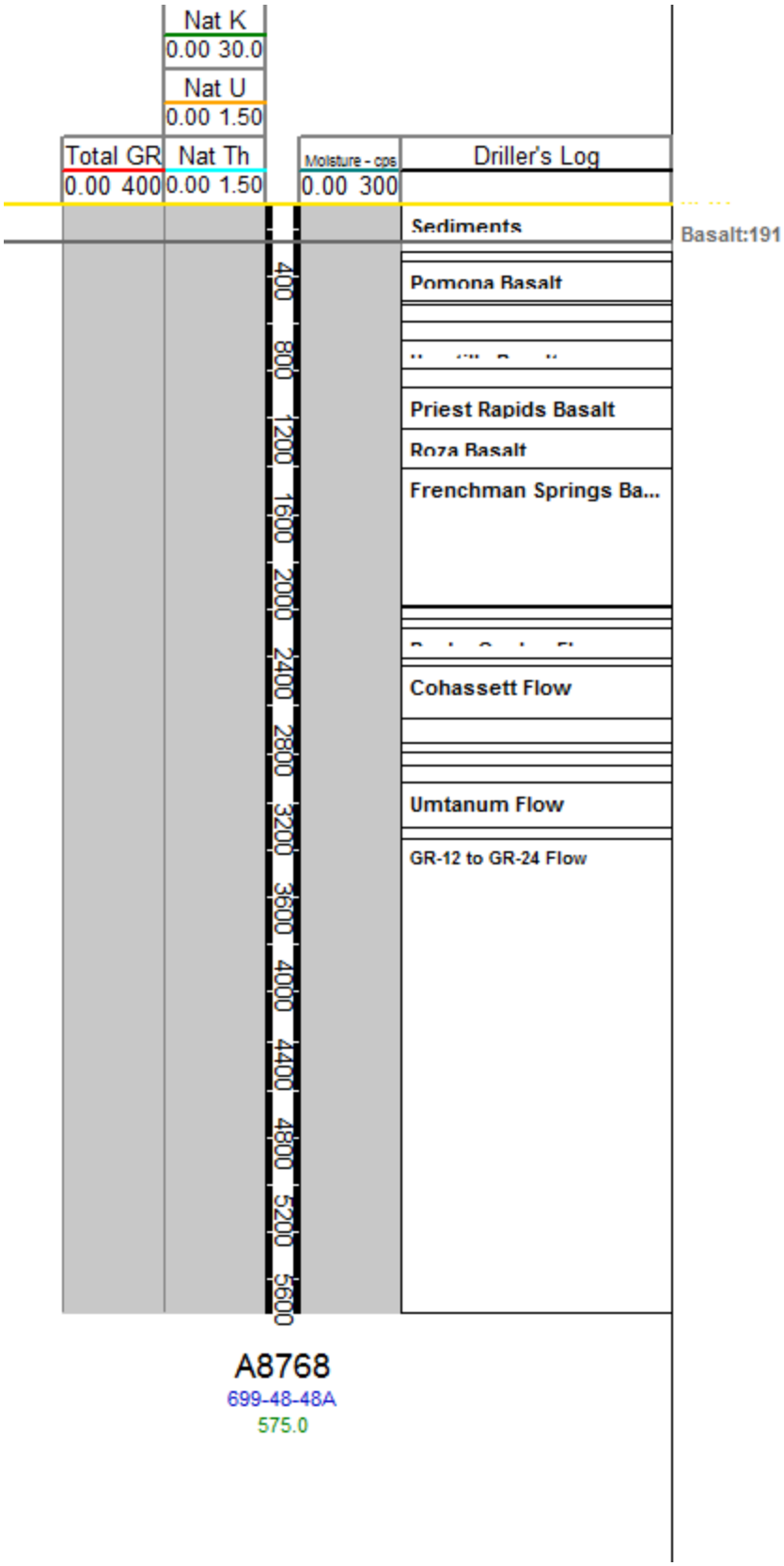

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:7
Fine Gravel
HF2:56
Fine Sand
Sand and Silt
Fine Sand
Silt and Clay
Rtf:245
Sand Clay Silt
Rwie:320
Clay and Gravel
Sand and Clay
Rlm:399
Blue Clay
Blue Clay
Rwia:476
Blue Clay and Gravel
Basalt:550
50
100
150
200
250
300
350
400
450
500
550
A8573
699-36-61B
749.6

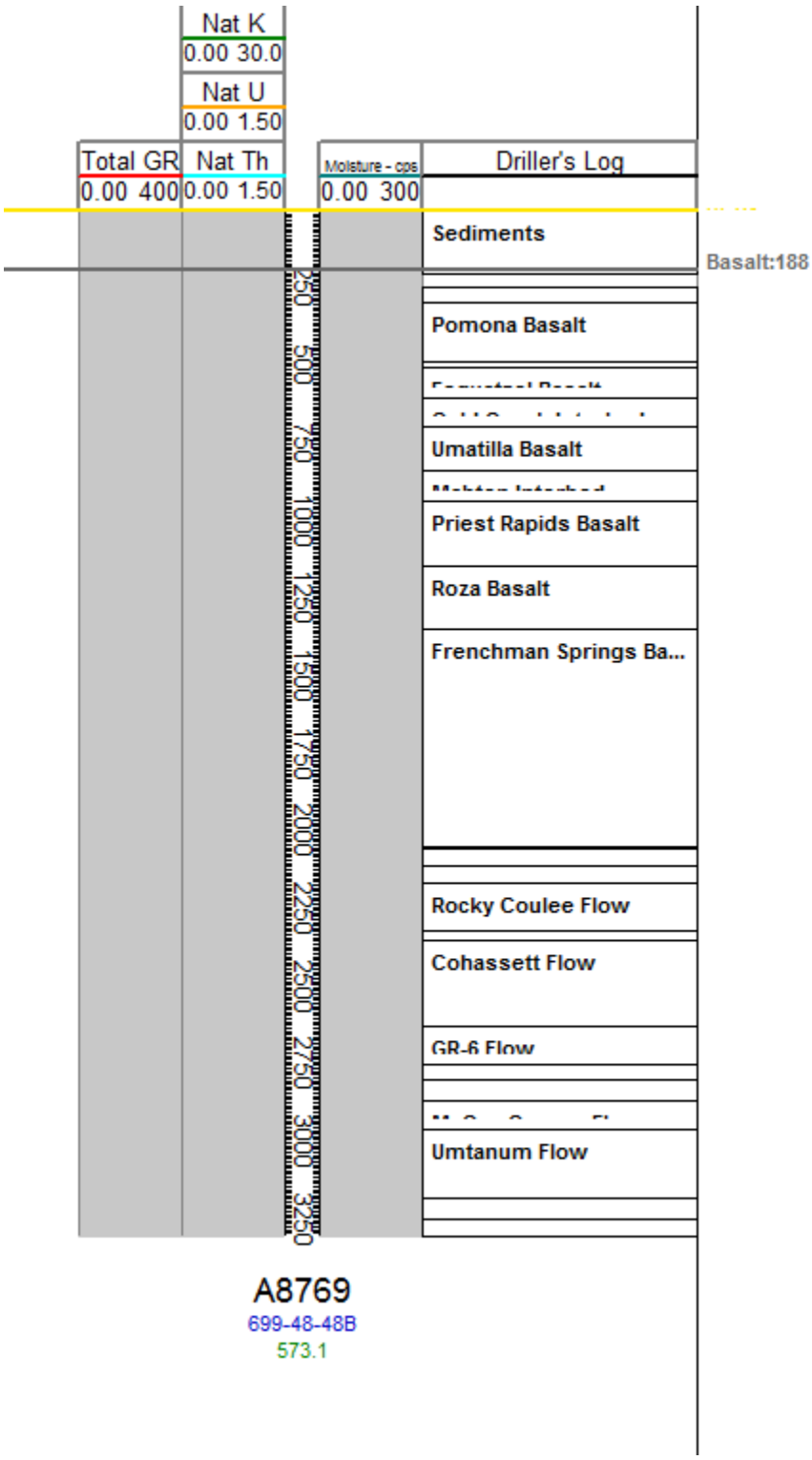

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
HF3:122
Clayey
Basalt:294
Basalt
Tuffaceo...
Basalt
Basalt
Clayey Sil...
Basalt
Silt and S...
Sand and...
100
200
300
400
500
600
700
800
900
1000
A8670
699-42-42A

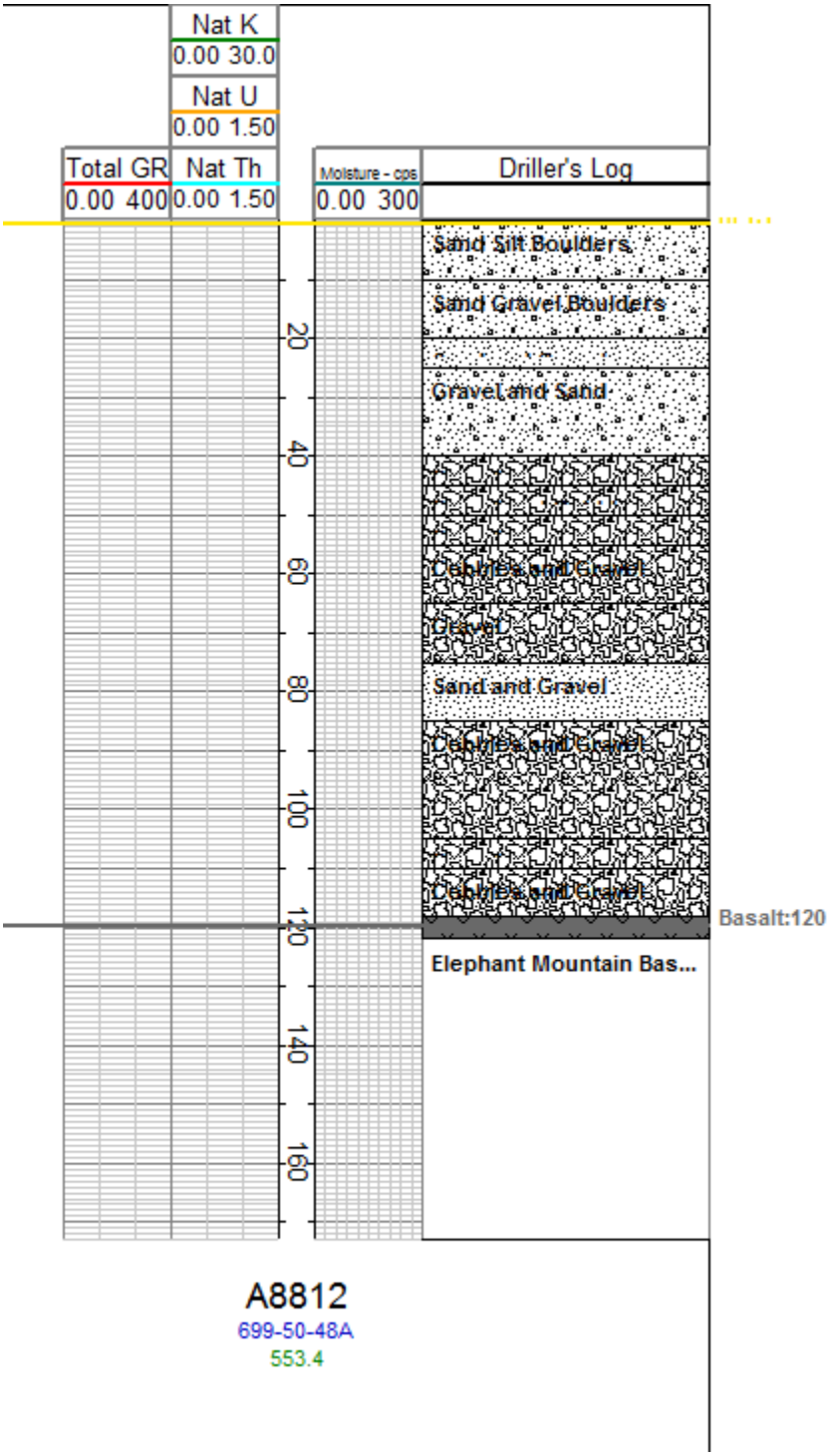

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravelly Sand
Sand
Sand
HF3:109
Sandy Gravel
Silty Sandy Gravel
Rwia:182
Silty Sandy Gravel
Gravelly Silty Sand
Sandy Silt
Silty Sandy Gravel
Basalt:243
Vesicular Basalt
20
40
60
80
100
120
140
160
180
200
220
240
260
A8695
699-43-42K
582.3

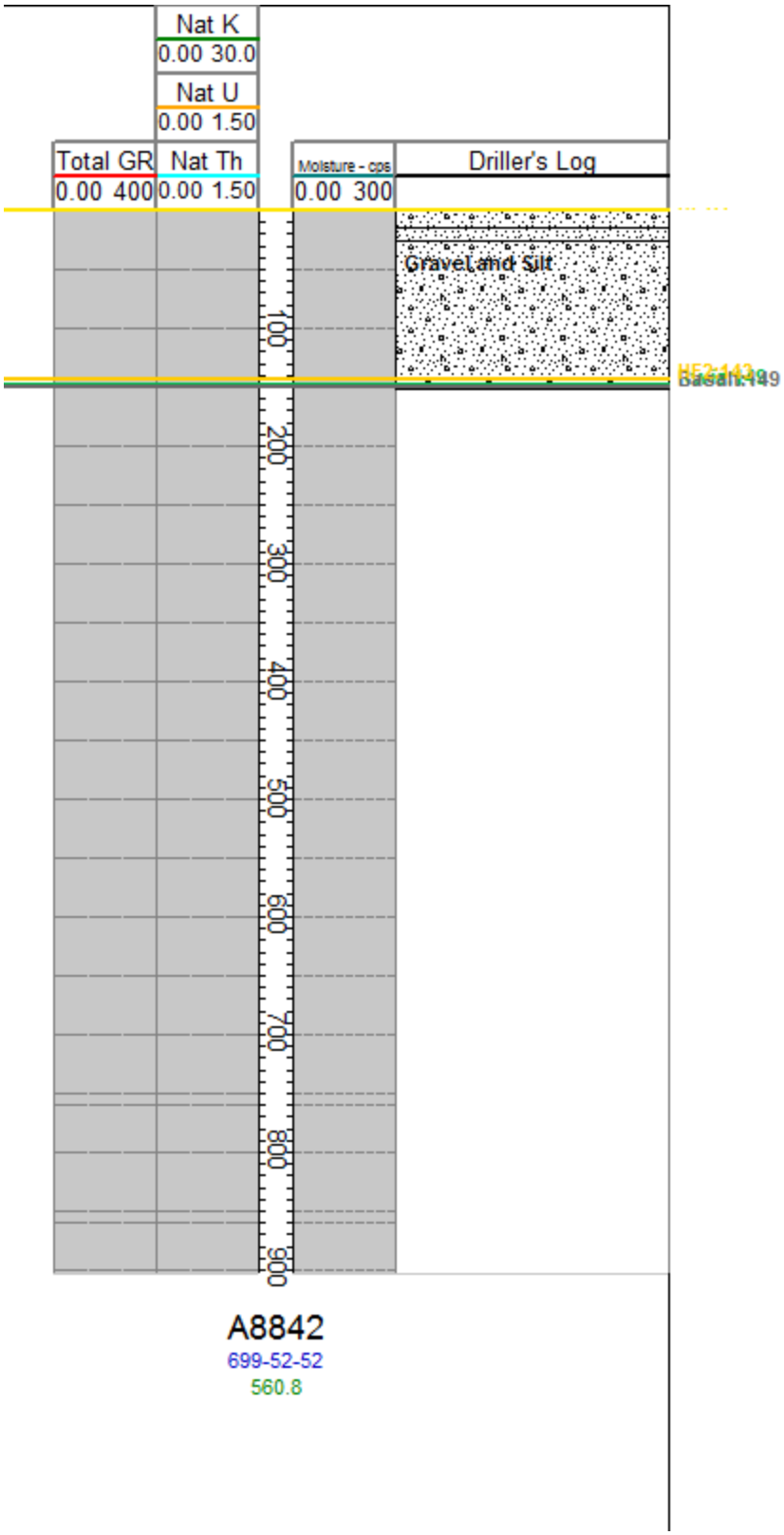

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sediments
Elephant Mountain Bas...
Pomona Basalt
Esquatzel Basalt
Cold Creek Interbed
Umatilla Basalt
Mabton Interbed
Priest Rapids Basalt
Roza Basalt
Frenchman Springs Ba...
150
300
450
600
750
900
1050
1200
1350
1500
1650
1800
1950
A8749
699-47-42
470.9

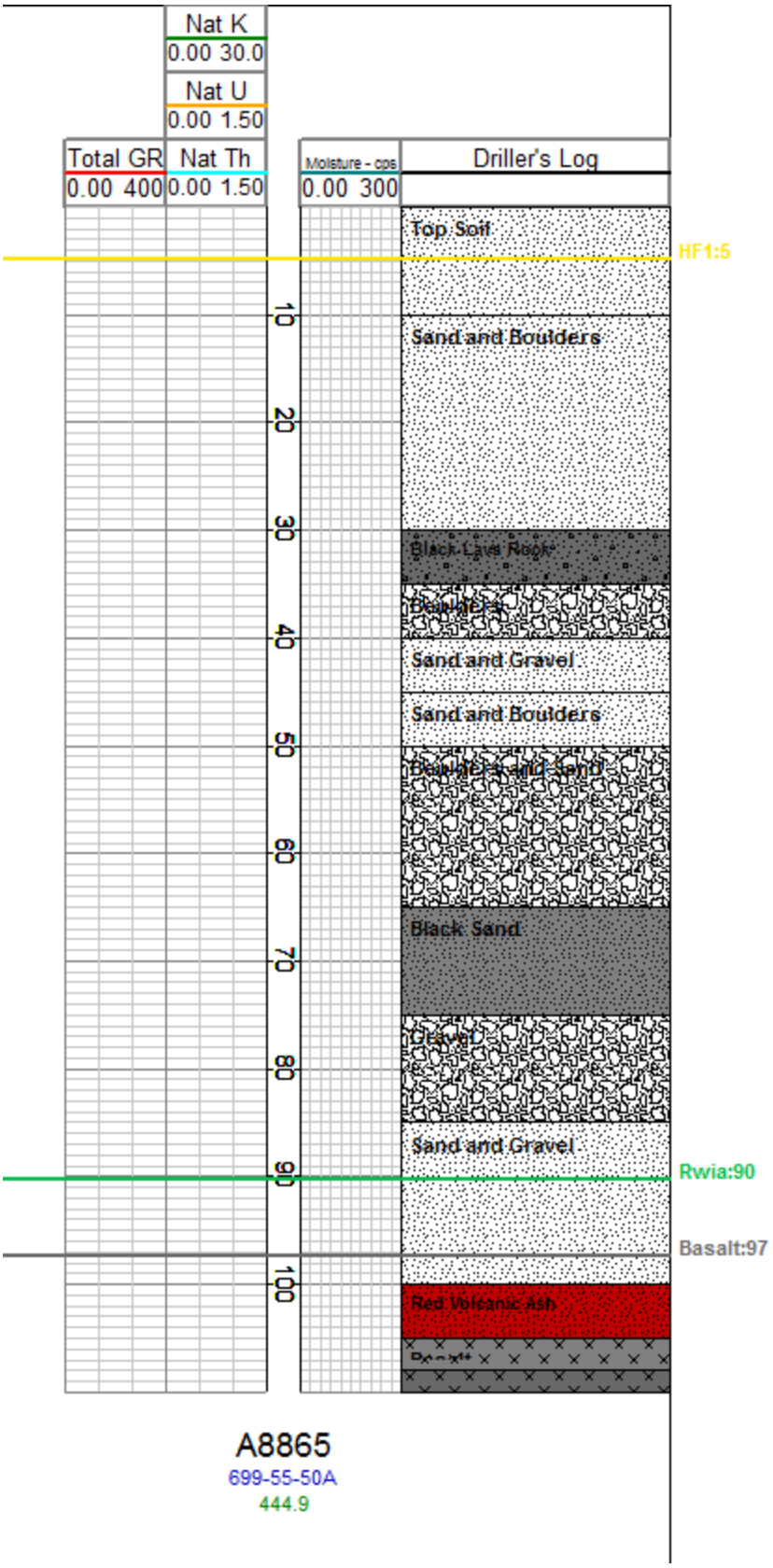

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravel
Boulders
Gravel
Boulders
Basalt
Basalt:159
20
40
60
80
100
120
140
160
A8752
699-47-51
585.0

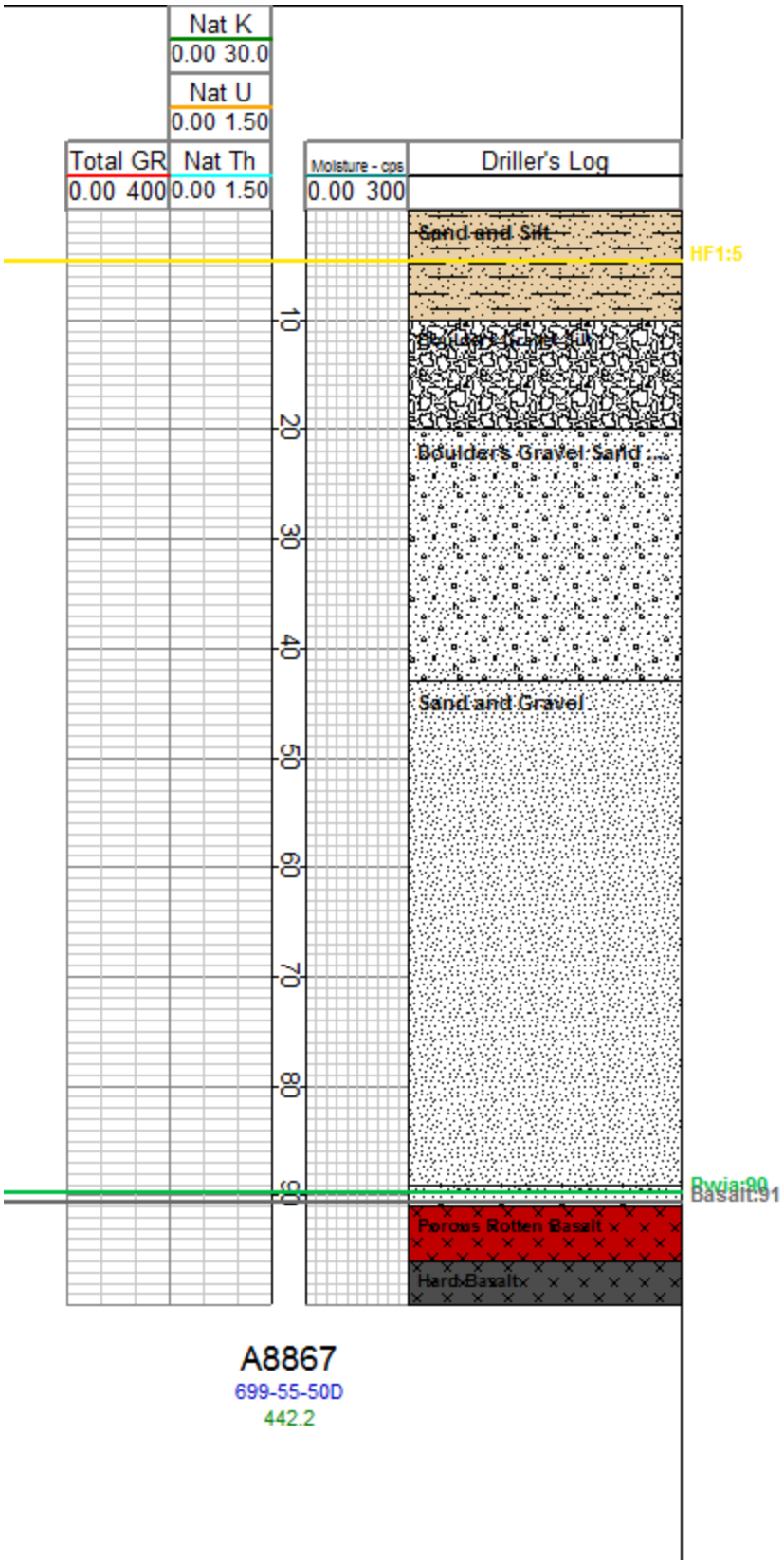

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sediments
Basalt:191
Pomona Basalt
Priest Rapids Basalt
Roza Basalt
Frenchman Springs Ba...
Cohassett Flow
Umtanum Flow
GR-12 to GR-24 Flow
400
800
1200
1600
2000
2400
2800
3200
3600
4000
4400
4800
5200
5600
A8768
699-48-48A
575.0

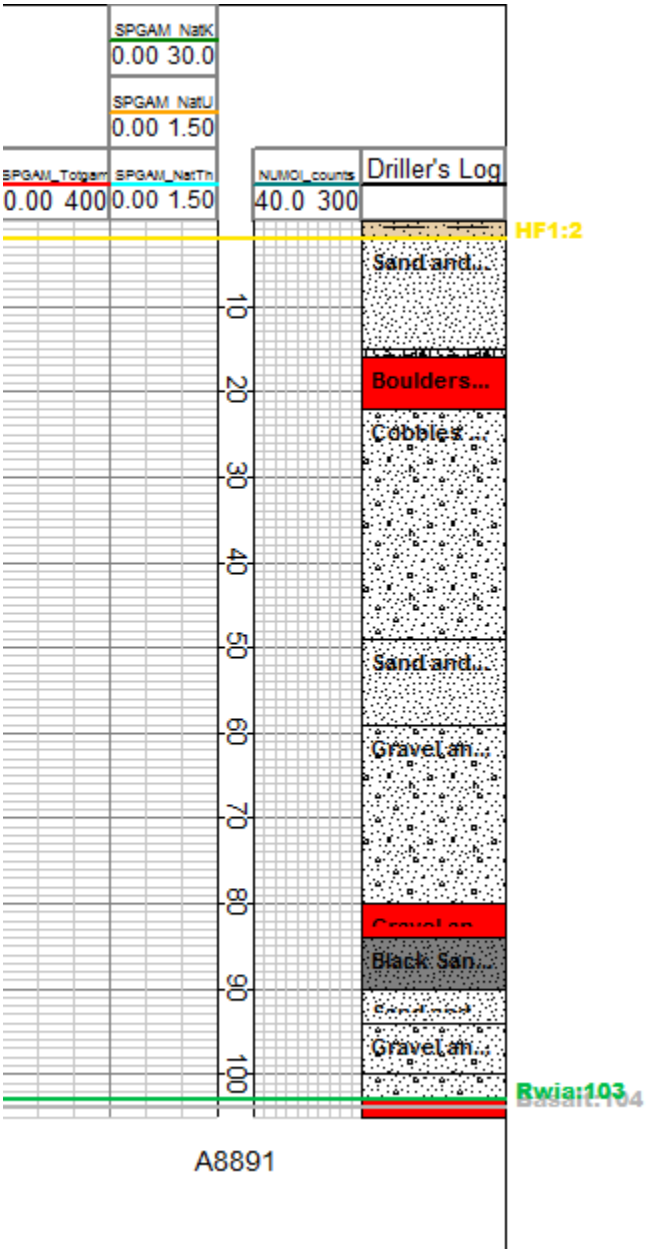

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sediments
Basalt:188
Pomona Basalt
Umatilla Basalt
Priest Rapids Basalt
Roza Basalt
Frenchman Springs Ba...
Rocky Coulee Flow
Cohassett Flow
GR-6 Flow
Umtanum Flow
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
A8769
699-48-48B
573.1

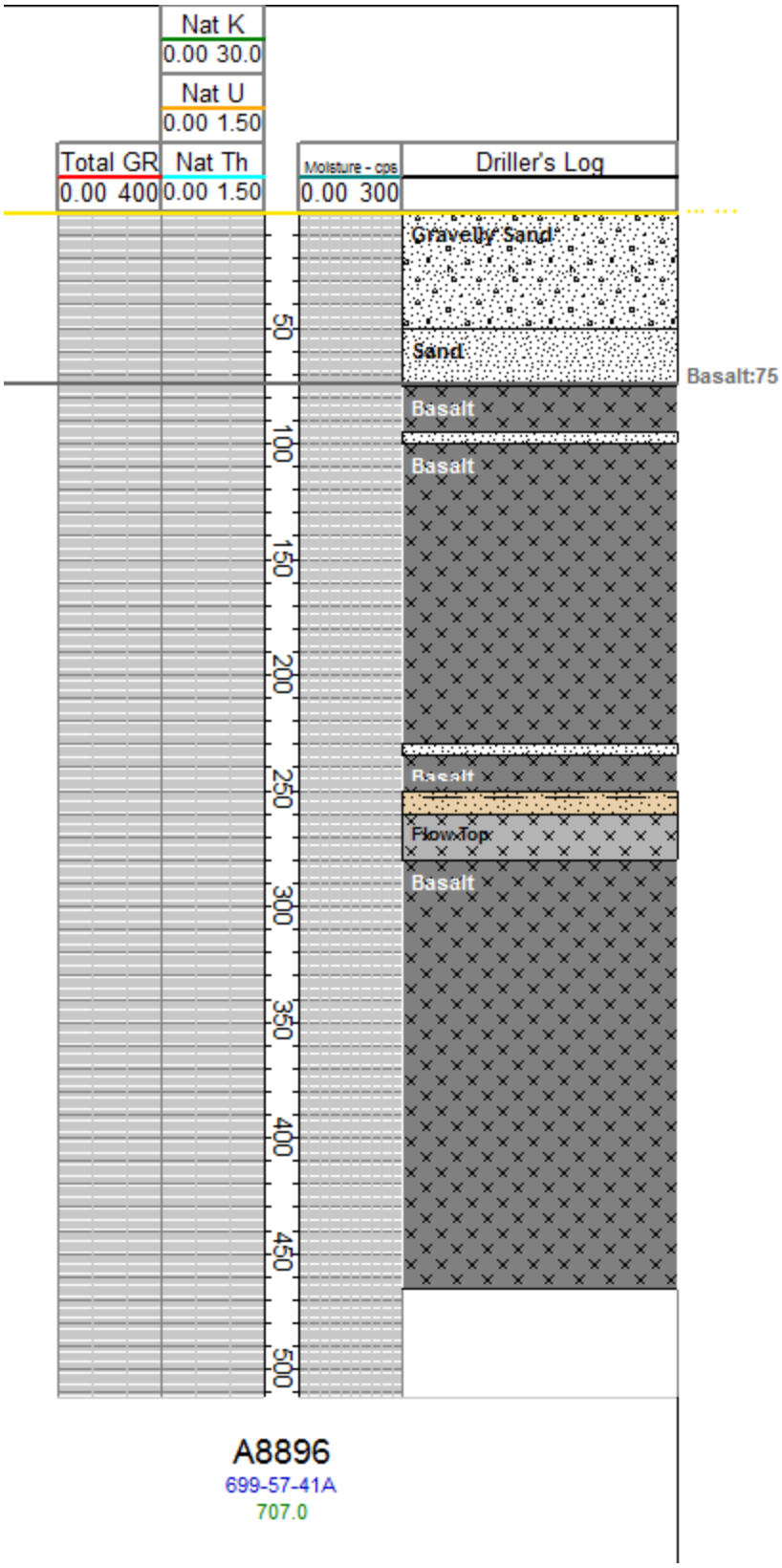

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand Silt Boulders
Sand Gravel Boulders
Gravel and Sand
Cobbles and Gravel
Gravel
Sand and Gravel
Cobbles and Gravel
Cobbles and Gravel
Basalt:120
Elephant Mountain Bas...
20
40
60
80
100
120
140
160
A8812
699-50-48A
553.4

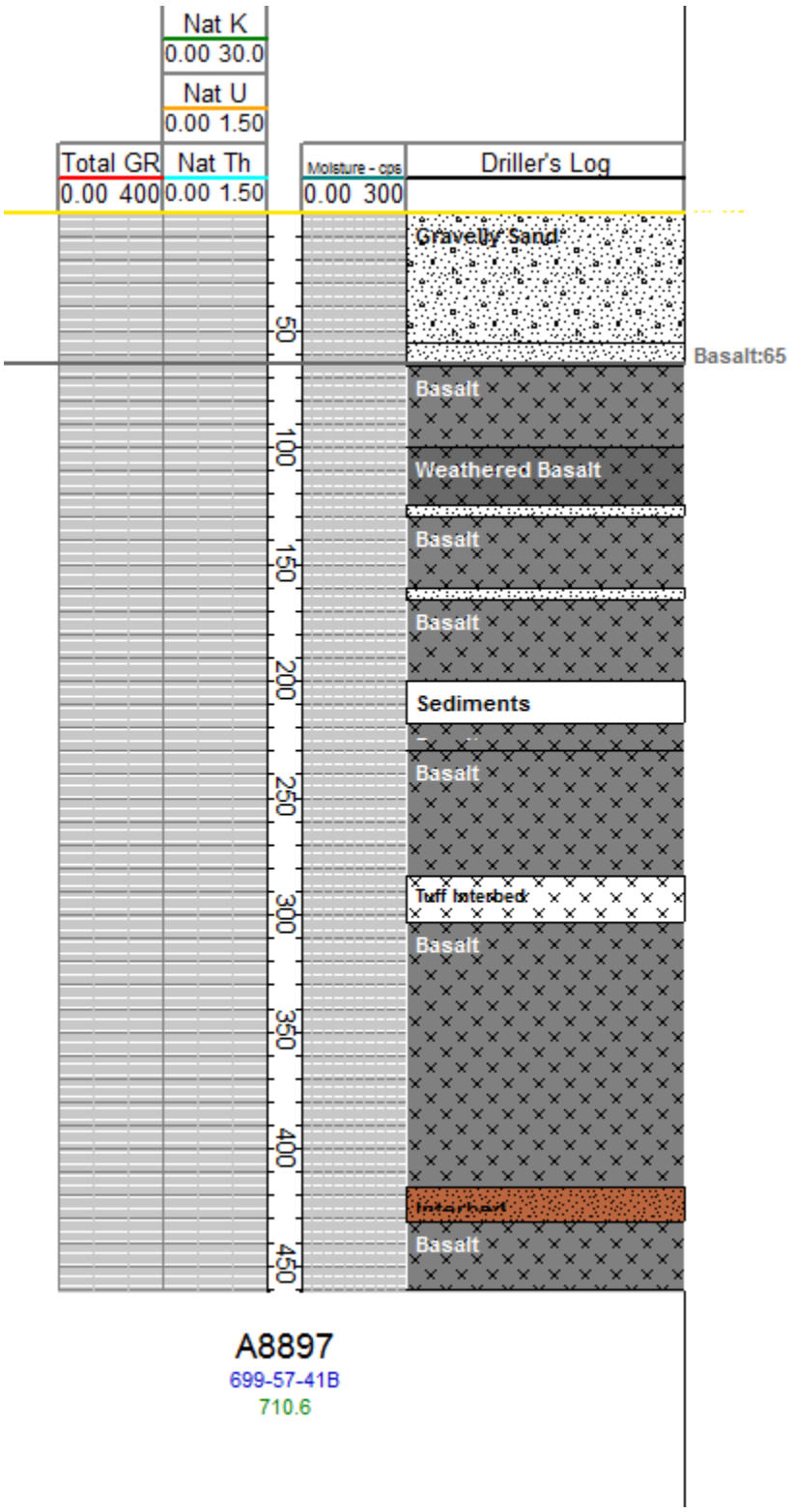

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravel and Silt
100
200
300
400
500
600
700
800
900
A8842
699-52-52
560.8

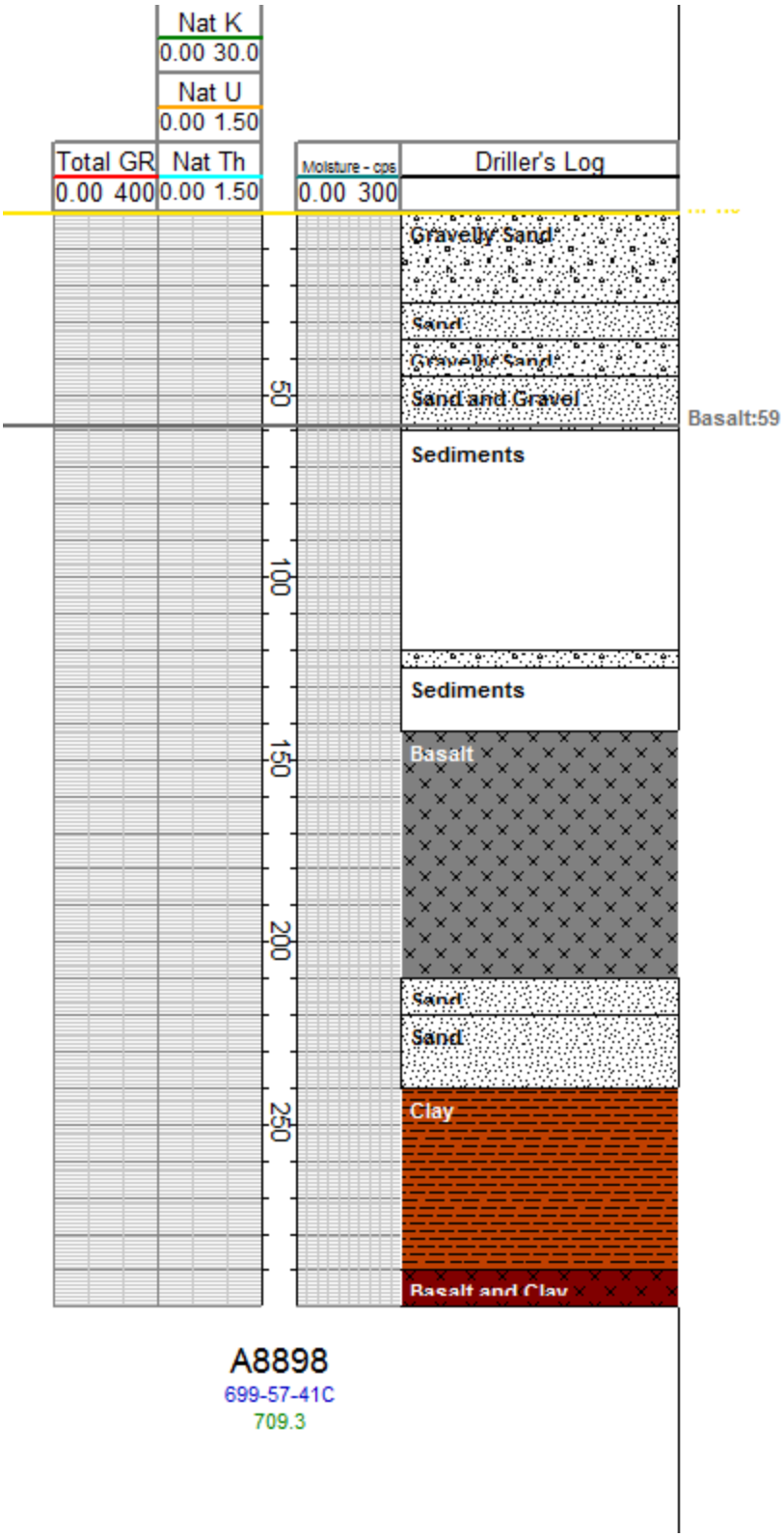

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Top Soil
HF1:5
Sand and Boulders
Black Lava Rock
Boulders
Sand and Gravel
Sand and Boulders
Boulders and Sand
Black Sand
Gravel
Sand and Gravel
Rwia:90
Basalt:97
Red Volcanic Ash
10
20
30
40
50
60
70
80
90
100
A8865
699-55-50A
444.9

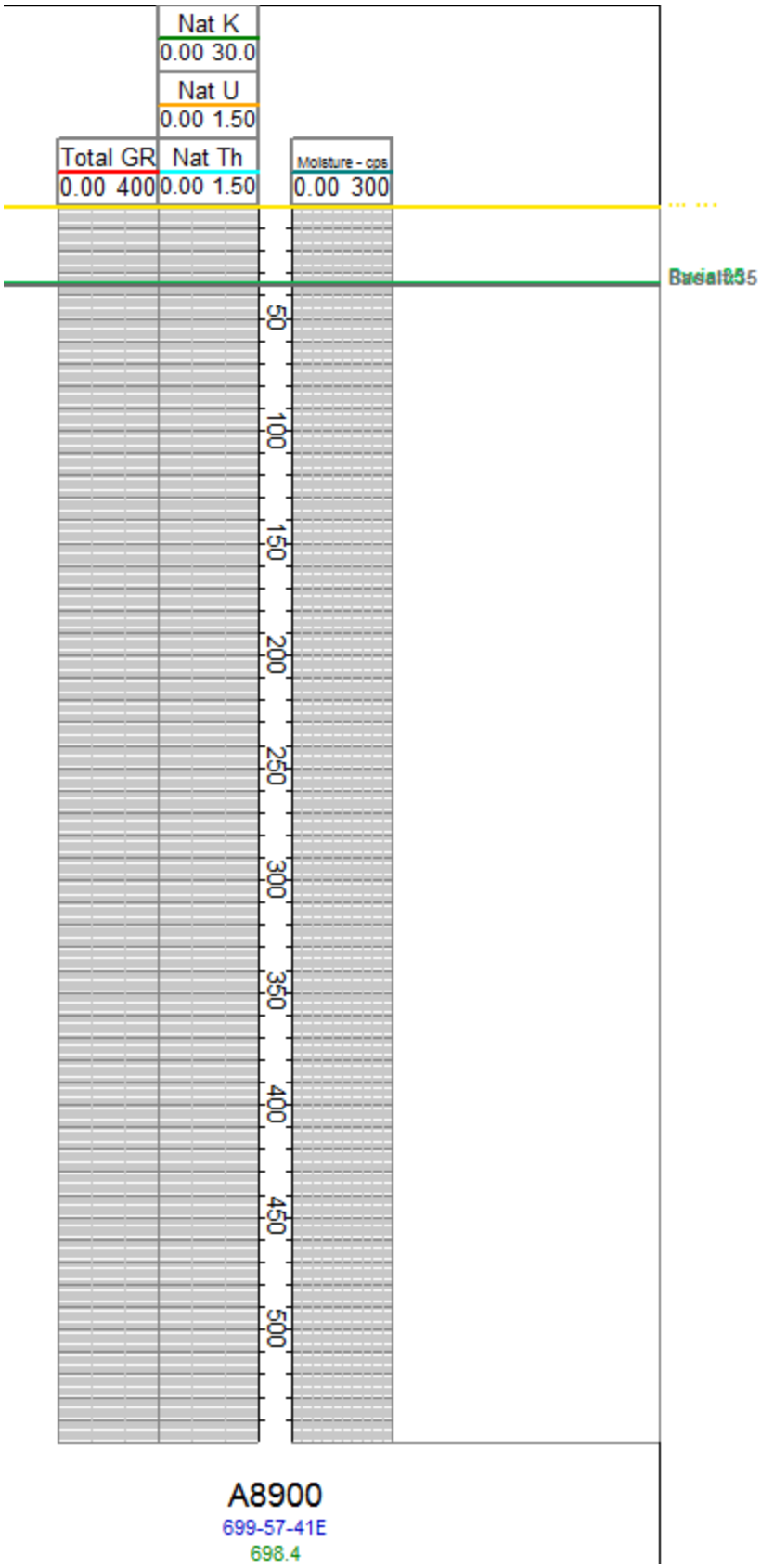

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Silt
HF1:5
Boulder's Gravel Sand
Sand and Gravel
Porous Rotten Basalt
Hard Basalt
10
20
30
40
50
60
70
80
90
Basalt:91
A8867
699-55-50D
442.2

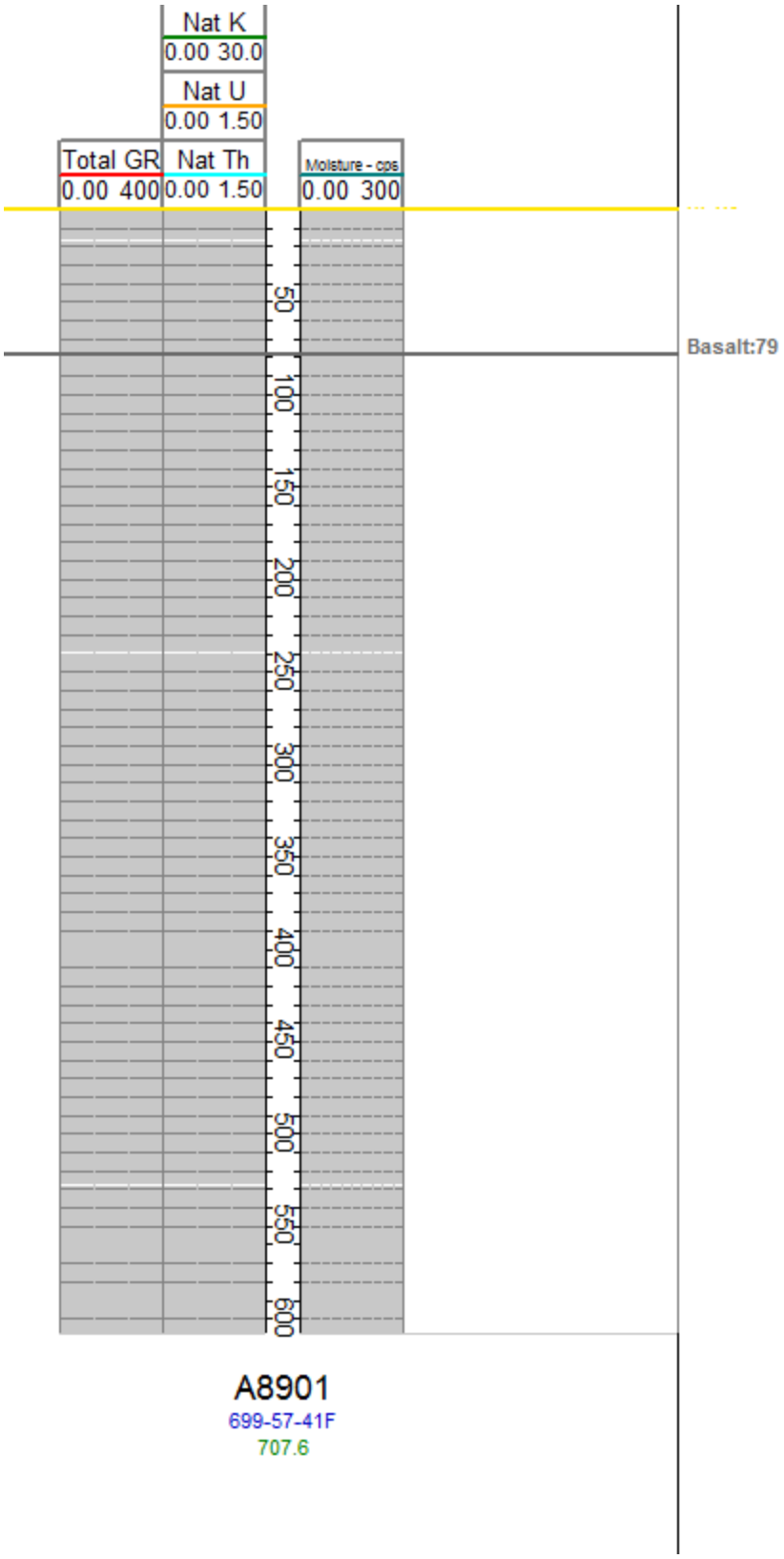

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
HF1:2
Sand and...
Boulders...
Cobbles ...
Sand and...
Gravel an...
Black San...
Gravel an...
Rwia:103
Basalt:104
10
20
30
40
50
60
70
80
90
100
A8891

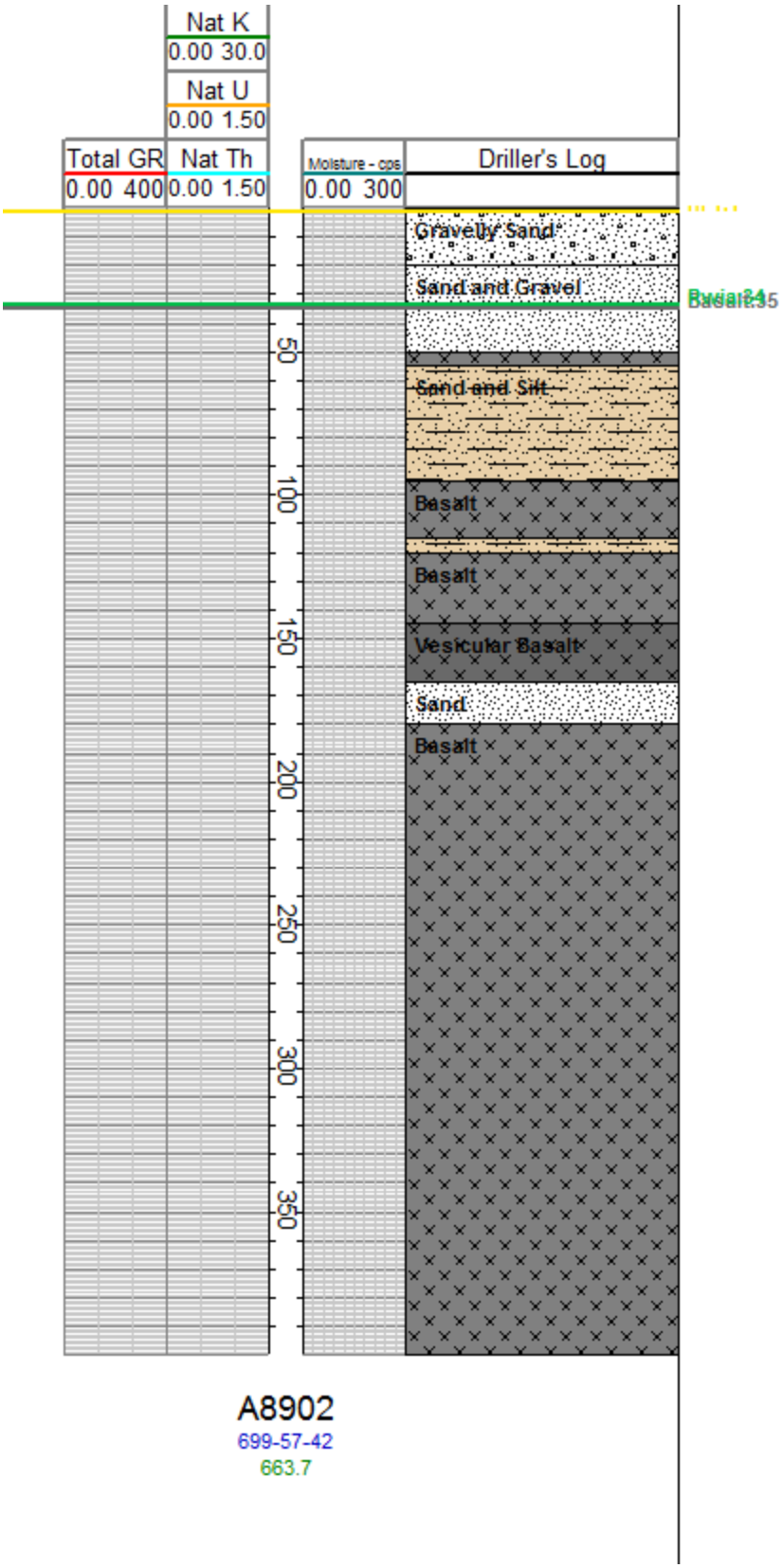

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravelly Sand
Sand
Basalt:75
Basalt
Basalt
Basalt
FlowTop
Basalt
50
100
150
200
250
300
350
400
450
500
A8896
699-57-41A
707.0

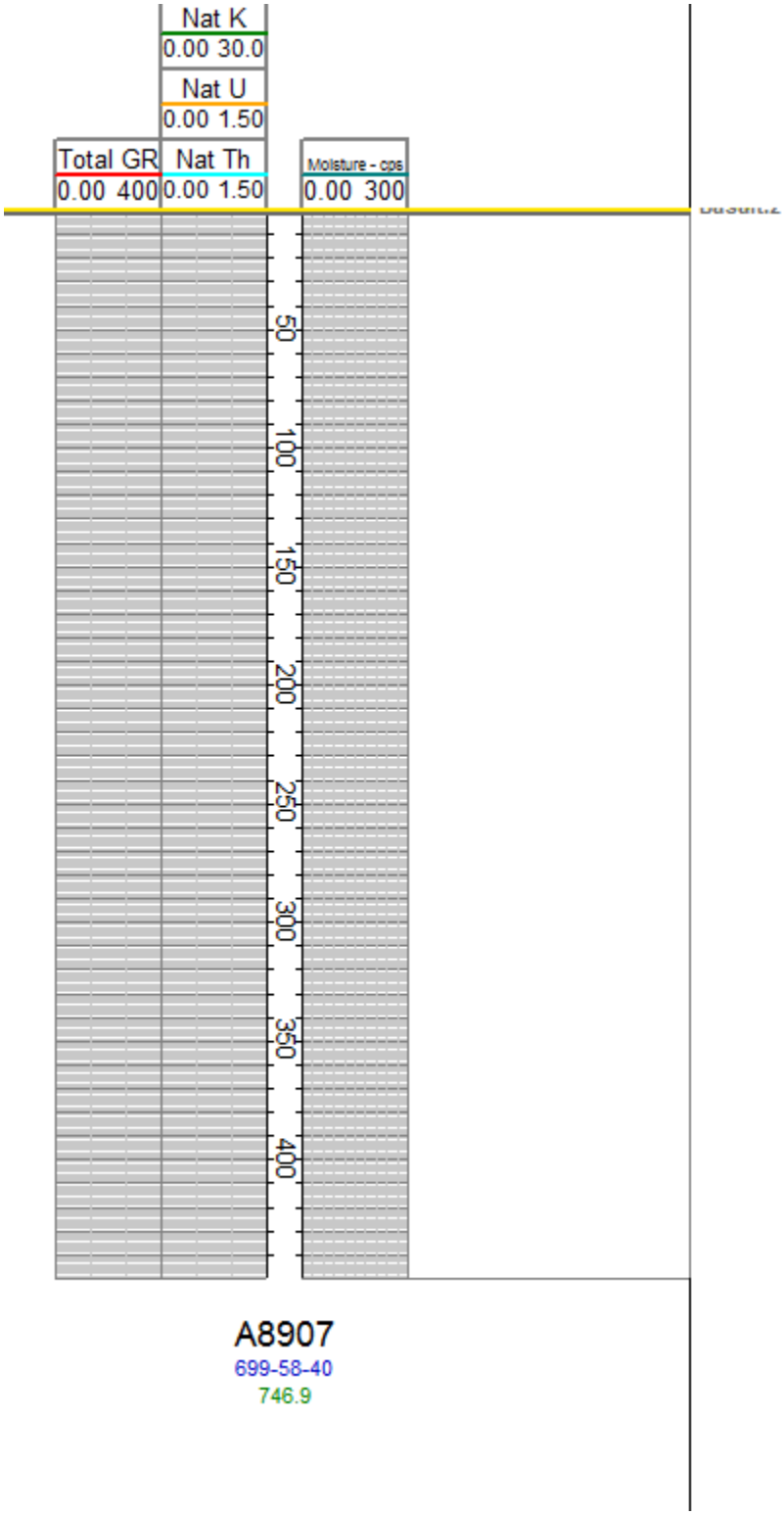

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravelly Sand
Basalt:65
Basalt
Weathered Basalt
Basalt
Basalt
Sediments
Basalt
Tuff Interbed
Basalt
Basalt
50
100
150
200
250
300
350
400
450
A8897
699-57-41B
710.6

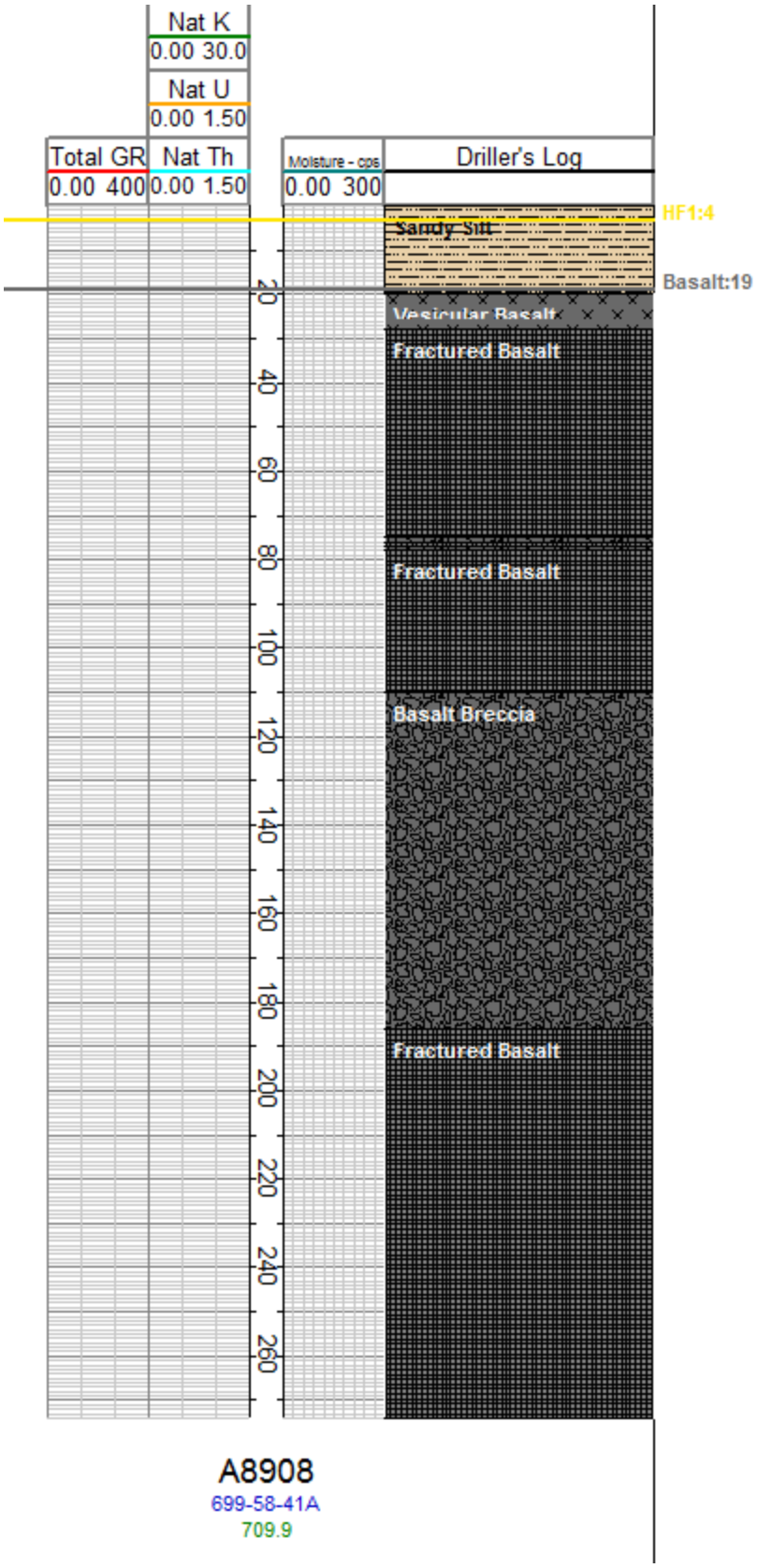

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravelly Sand
Sand
Gravelly Sand
Sand and Gravel
Basalt:59
Sediments
Sediments
Basalt
Sand
Sand
Clay
Basalt and Clay
50
100
150
200
250
A8898
699-57-41C
709.3

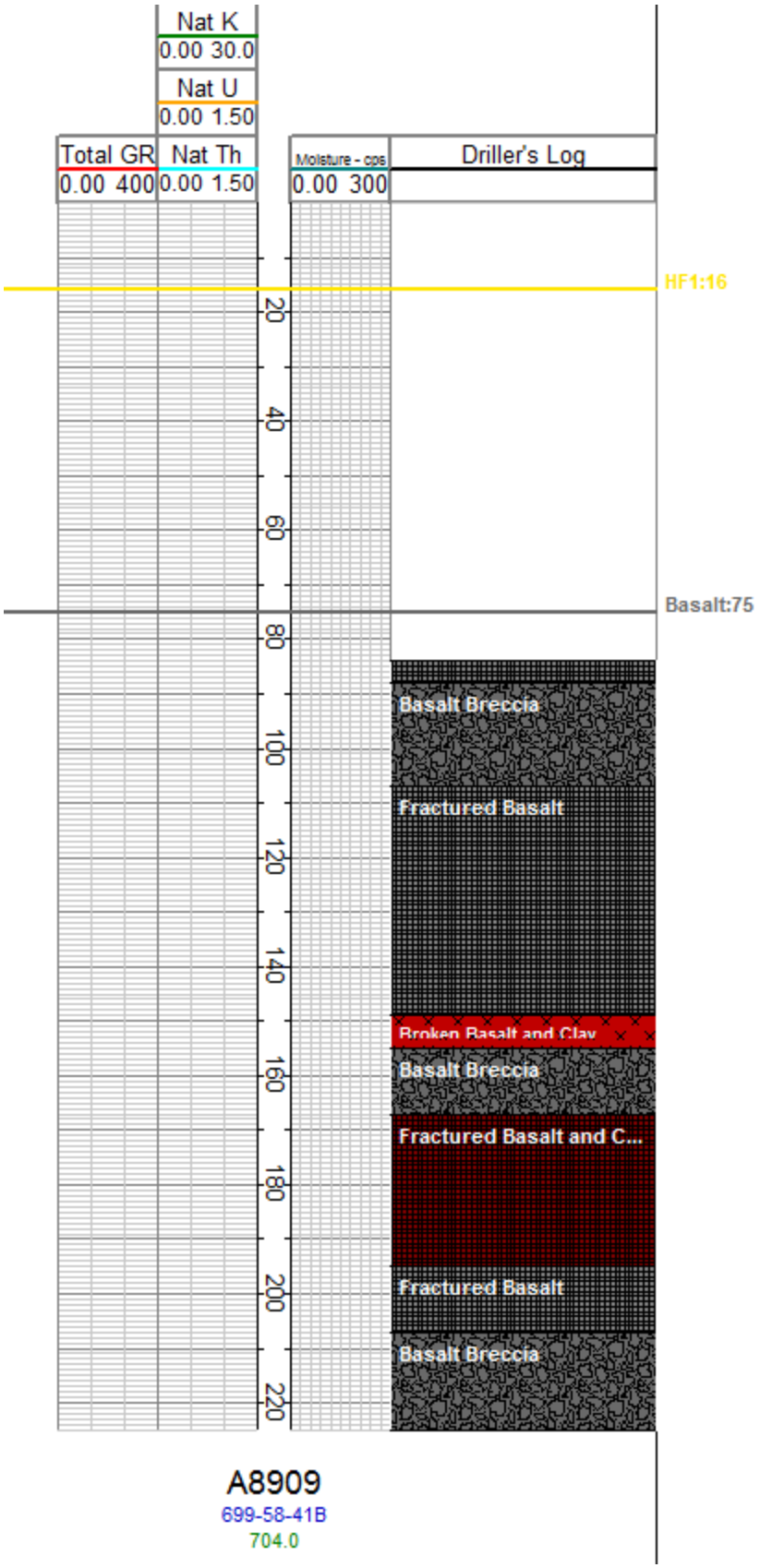

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
50
100
150
200
250
300
350
400
450
500
A8900
699-57-41E
698.4

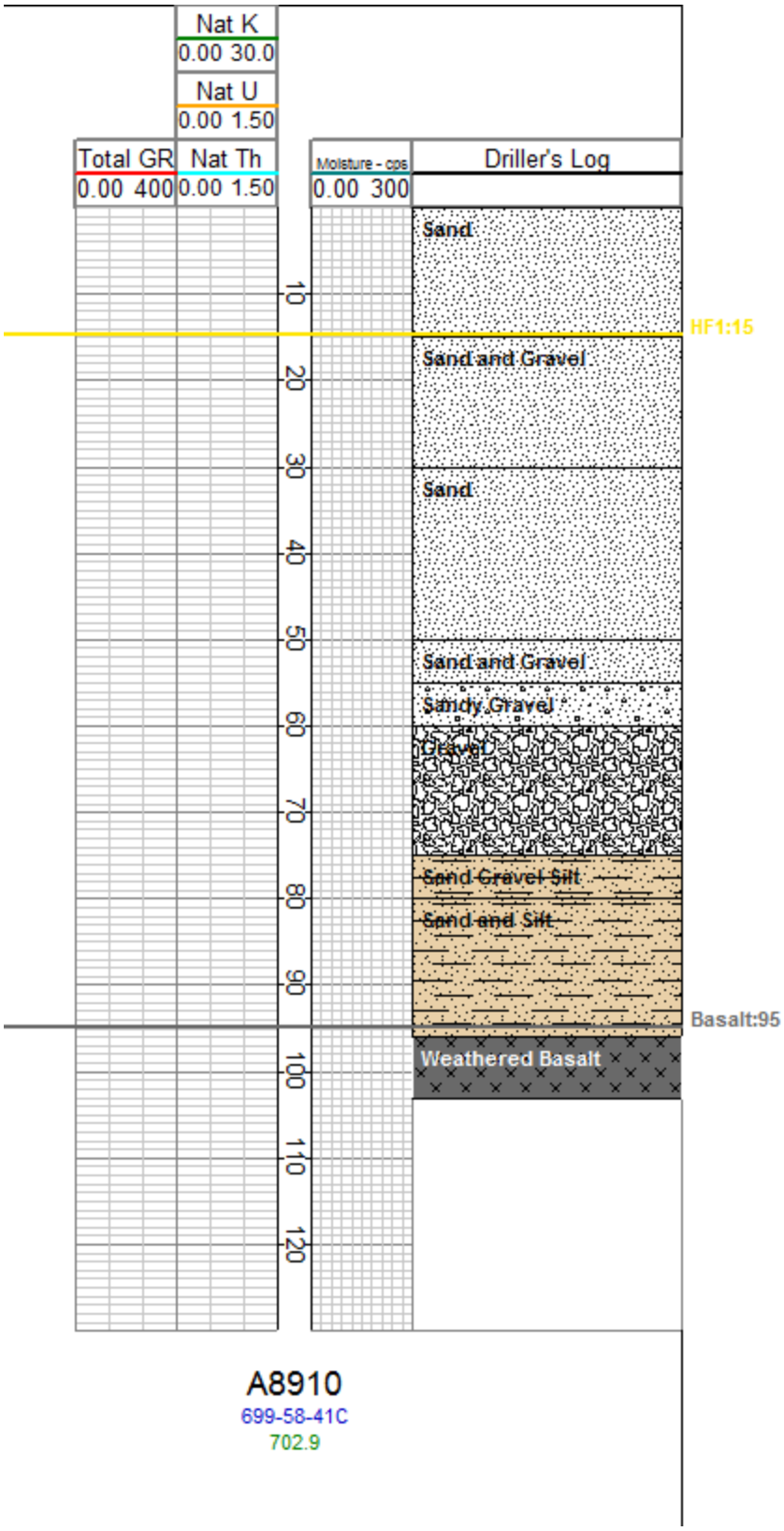

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
50
100
150
200
250
300
350
400
450
500
550
600
Basalt:79
A8901
699-57-41F
707.6

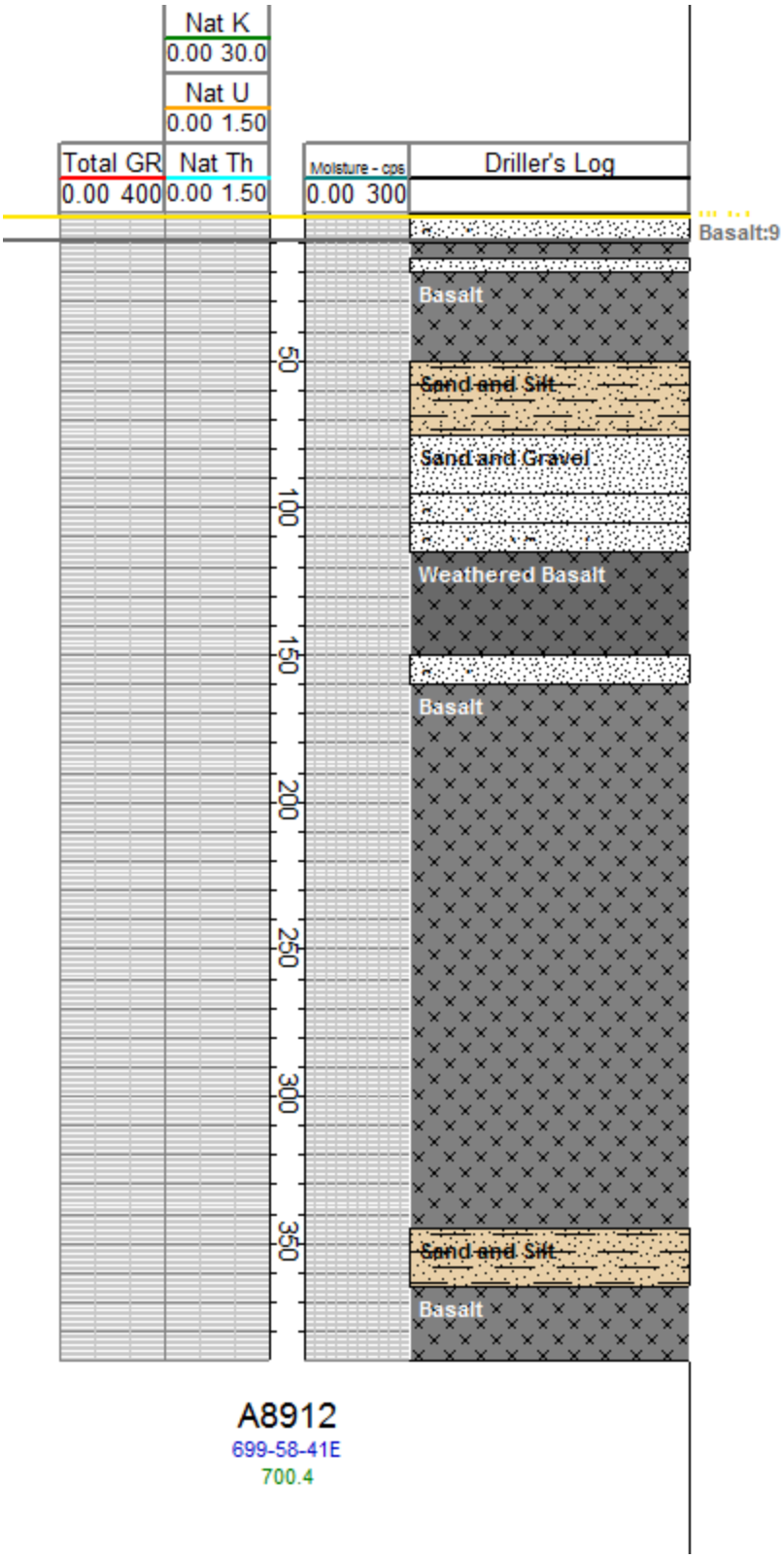

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravelly Sand
Sand and Gravel
Basalt:35
Sand and Silt
Basalt
Basalt
Vesicular Basalt
Sand
Basalt
50
100
150
200
250
300
350
A8902
699-57-42
663.7

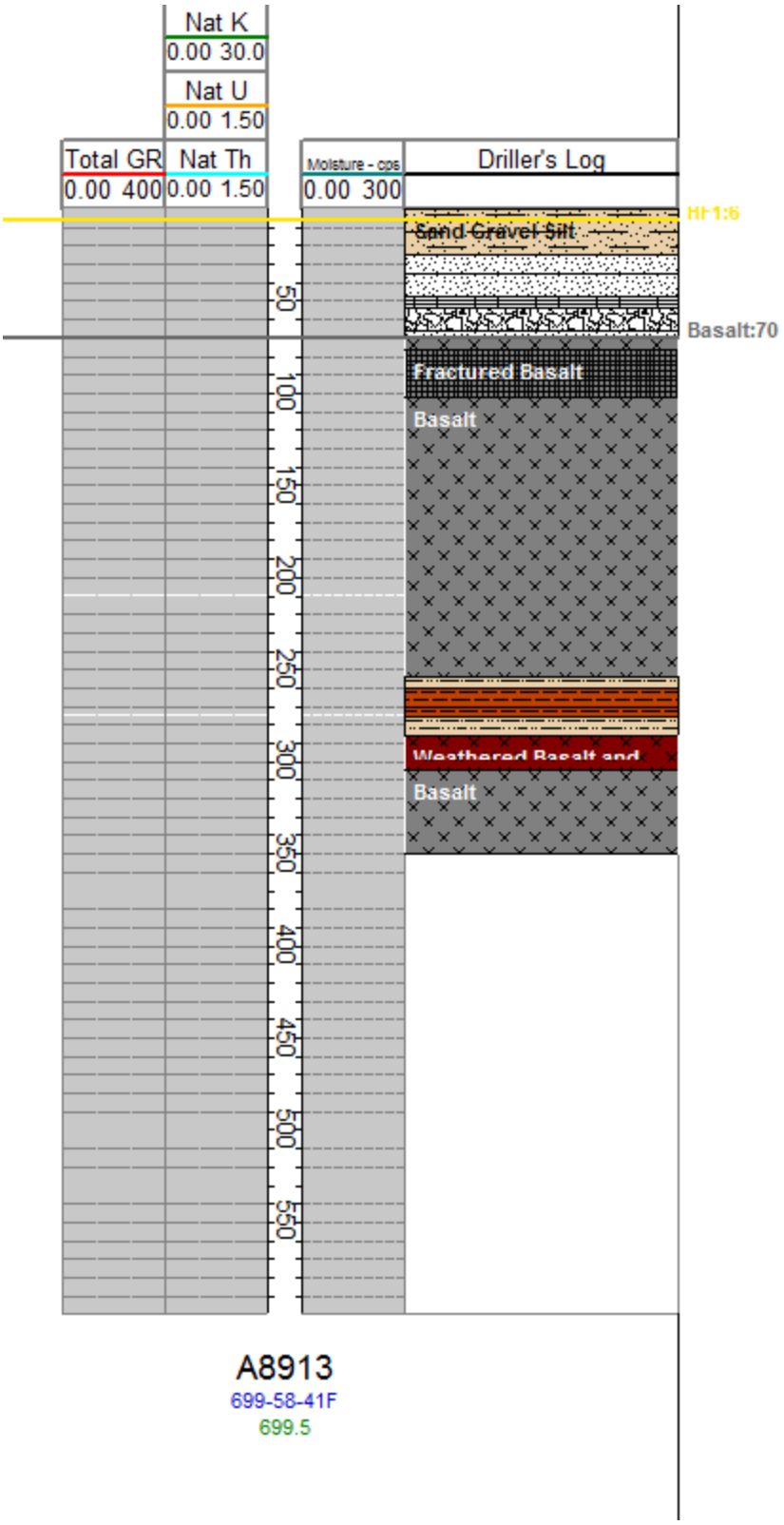

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
50
100
150
200
250
300
350
400
A8907
699-58-40
746.9

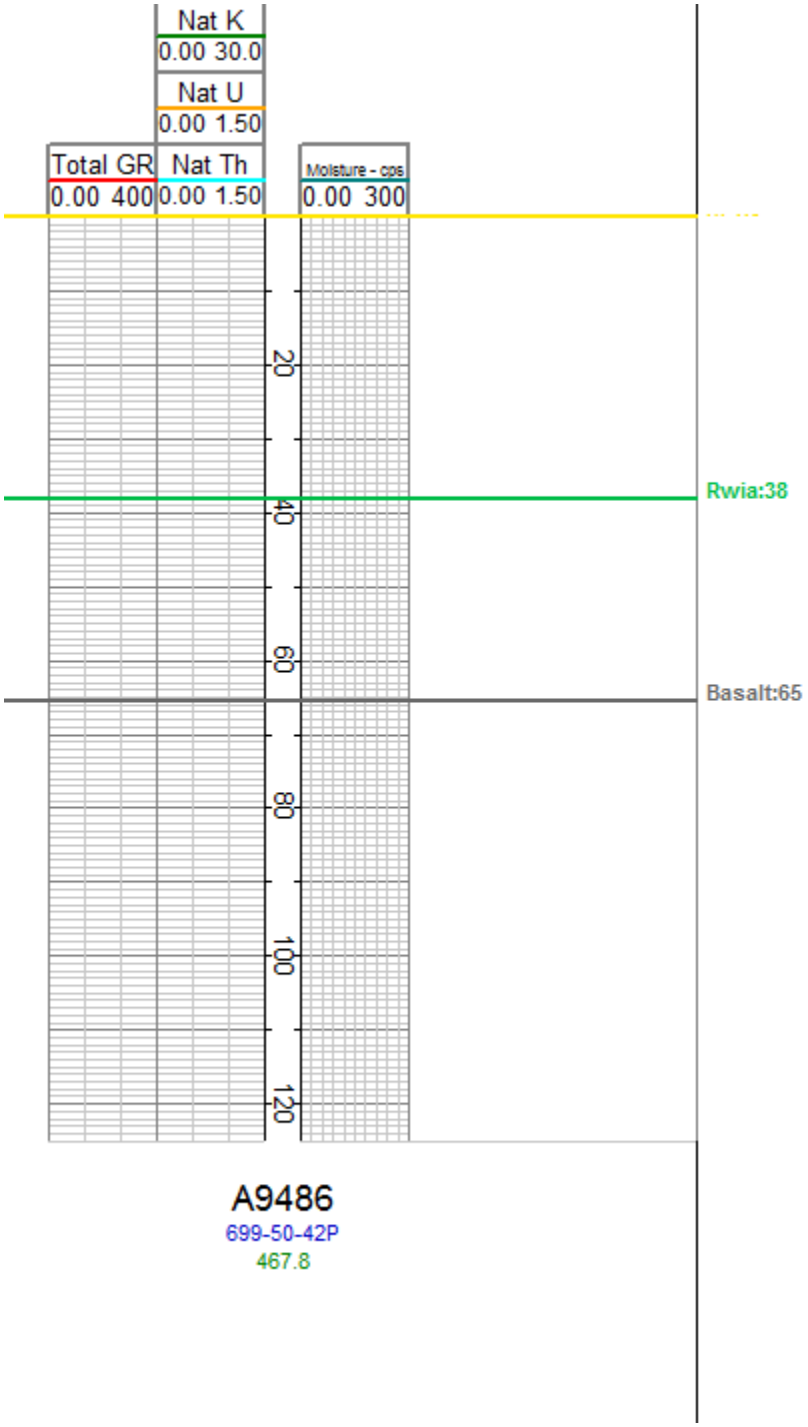

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:4
Sandy Silt
Basalt:19
Vesicular Basalt
Fractured Basalt
Fractured Basalt
Basalt Breccia
Fractured Basalt
20
40
60
80
100
120
140
160
180
200
220
240
260
A8908
699-58-41A
709.9

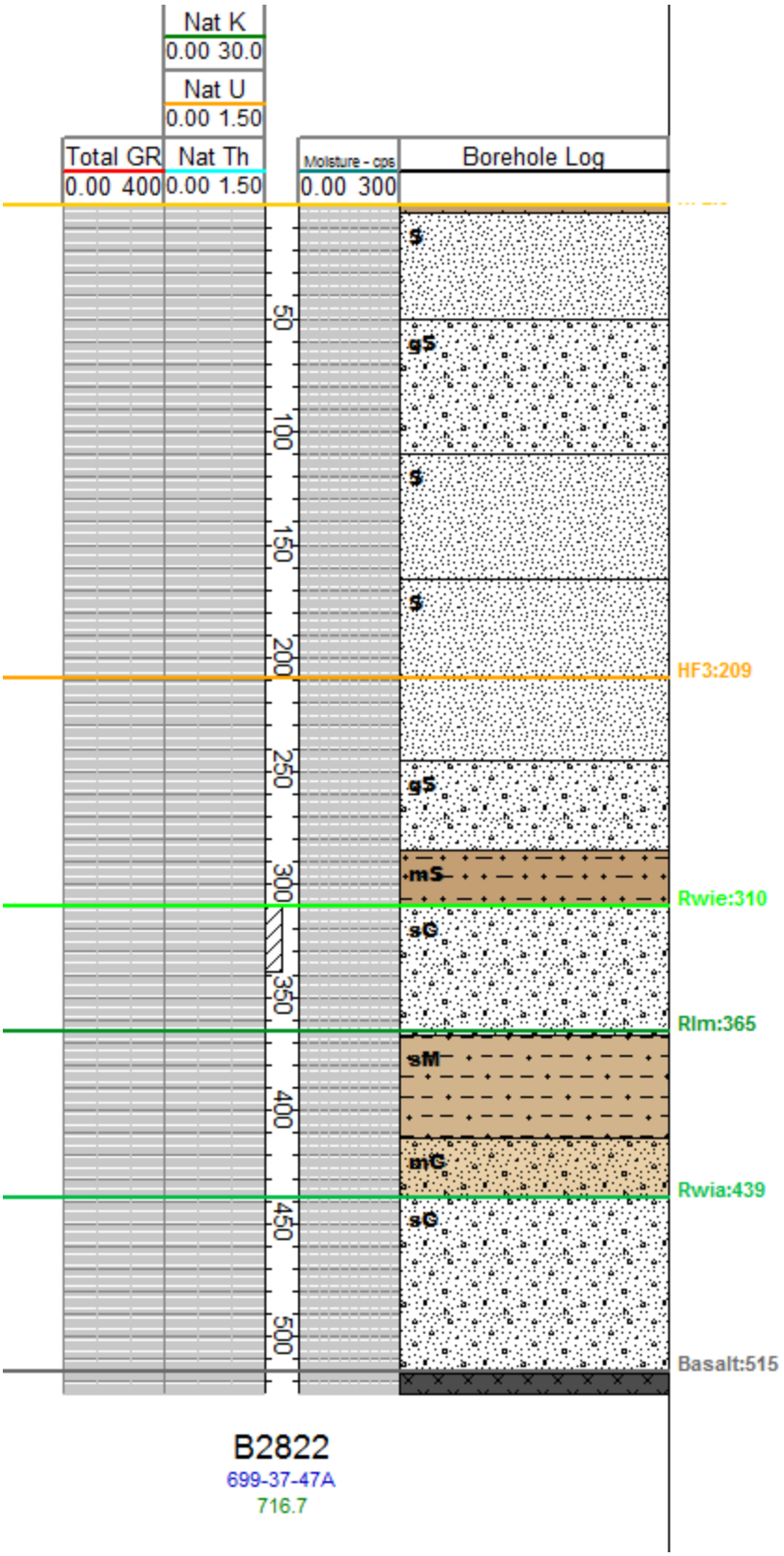

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:16
Basalt:75
20
40
60
80
100
120
140
160
180
200
220
Basalt Breccia
Fractured Basalt
Broken Basalt and Clay
Basalt Breccia
Fractured Basalt and C...
Fractured Basalt
Basalt Breccia
A8909
699-58-41B
704.0

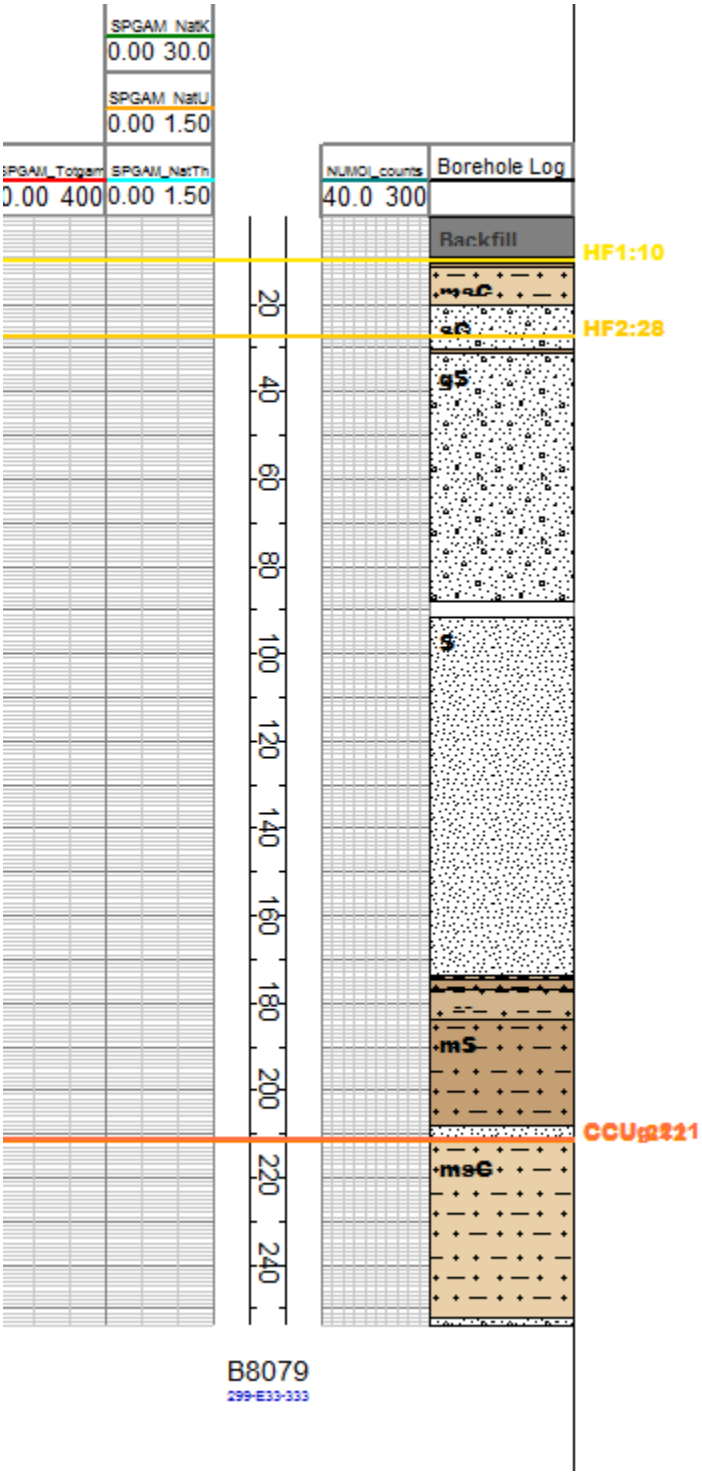

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF1:15
Sand and Gravel
Sand
Sand and Gravel
Sandy Gravel
Gravel
Sand Gravel Silt
Sand and Silt
Basalt:95
Weathered Basalt
10
20
30
40
50
60
70
80
90
100
110
120
A8910
699-58-41C
702.9

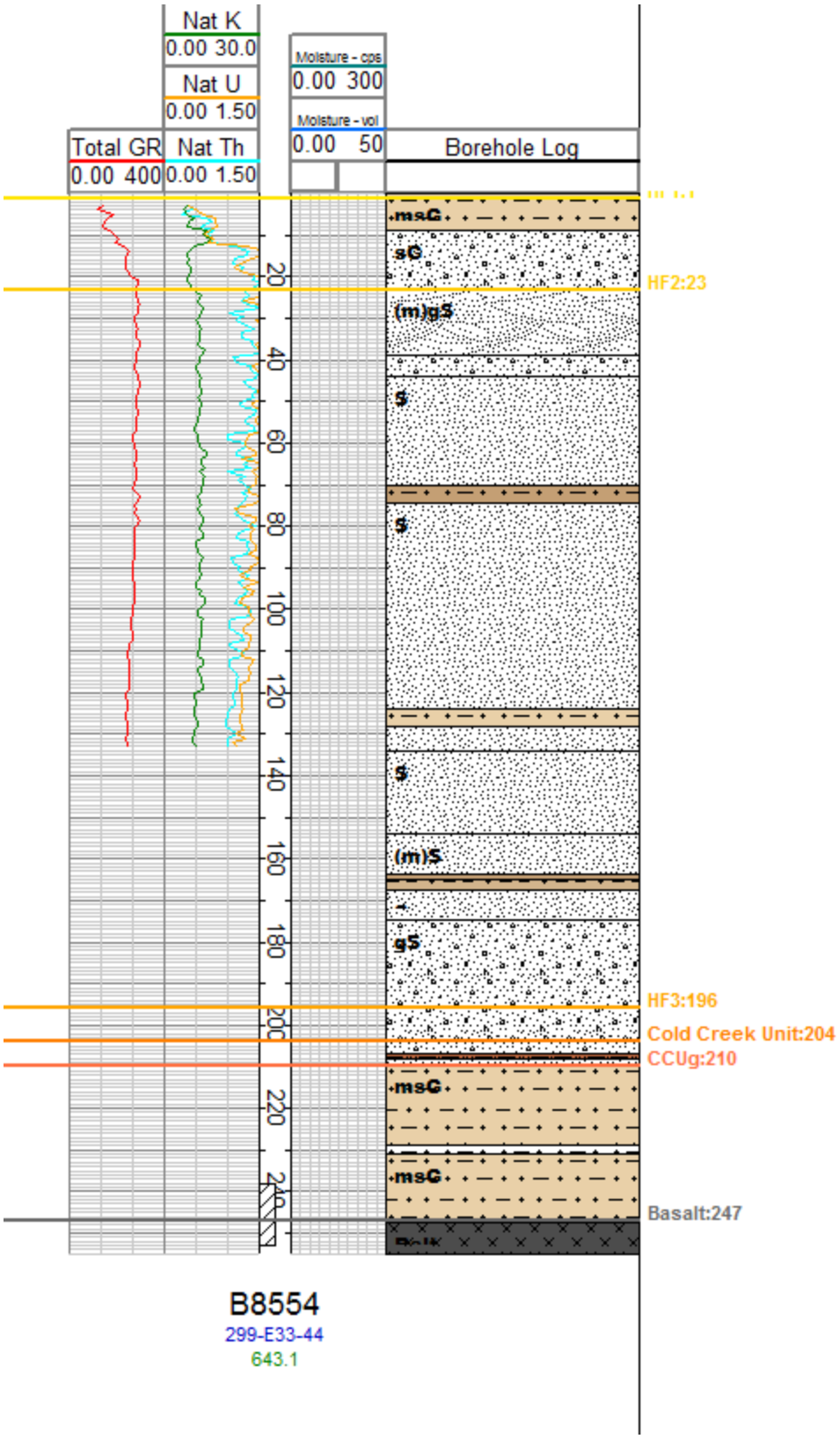

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Basalt:9
Basalt
Sand and Silt
Sand and Gravel
Weathered Basalt
Basalt
Sand and Silt
Basalt
50
100
150
200
250
300
350
A8912
699-58-41E
700.4

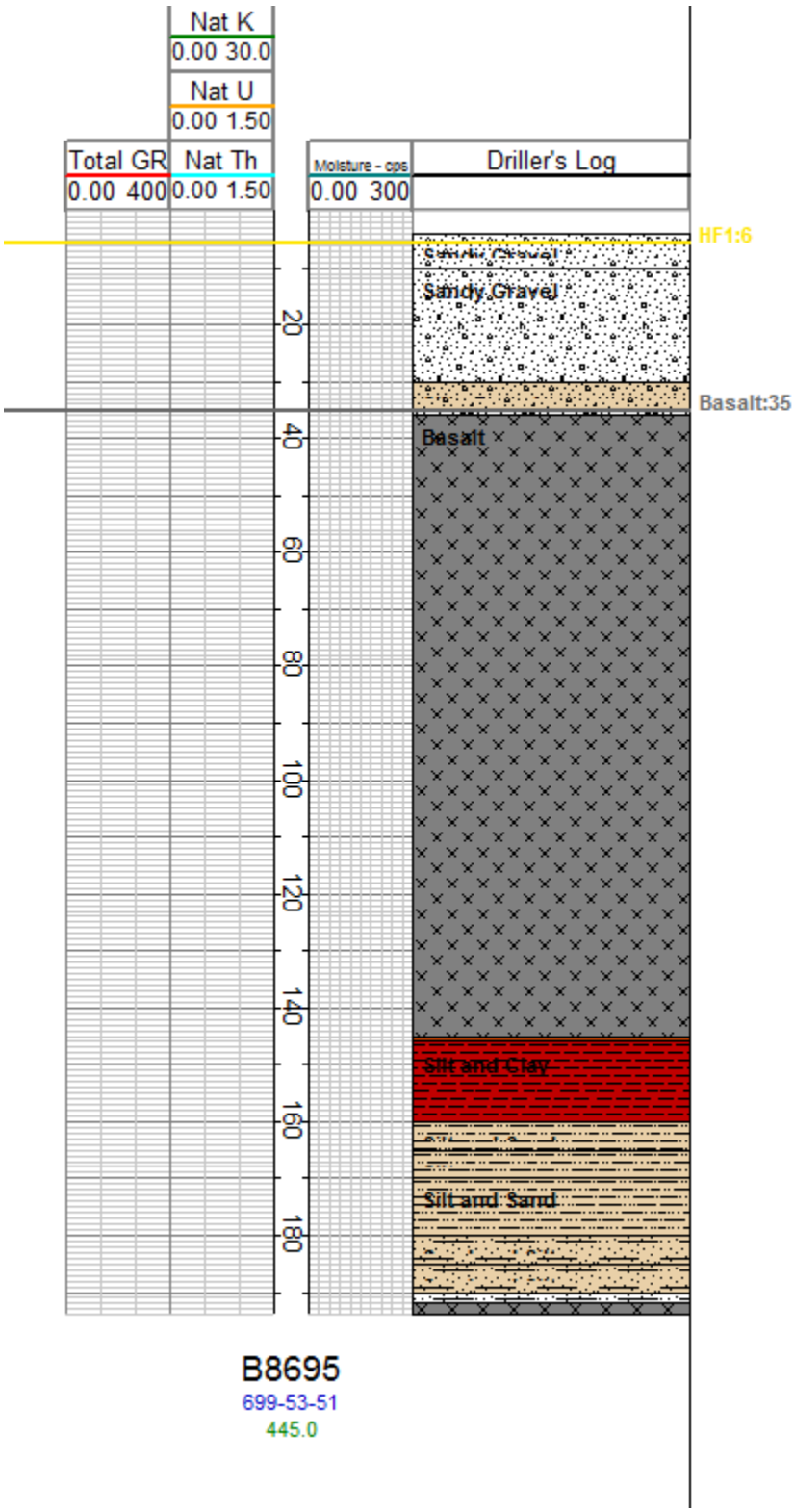

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF 1:6
Sand Gravel Silt
Basalt:70
Fractured Basalt
Basalt
Weathered Basalt and
Basalt
50
100
150
200
250
300
350
400
450
500
550
A8913
699-58-41F
699.5

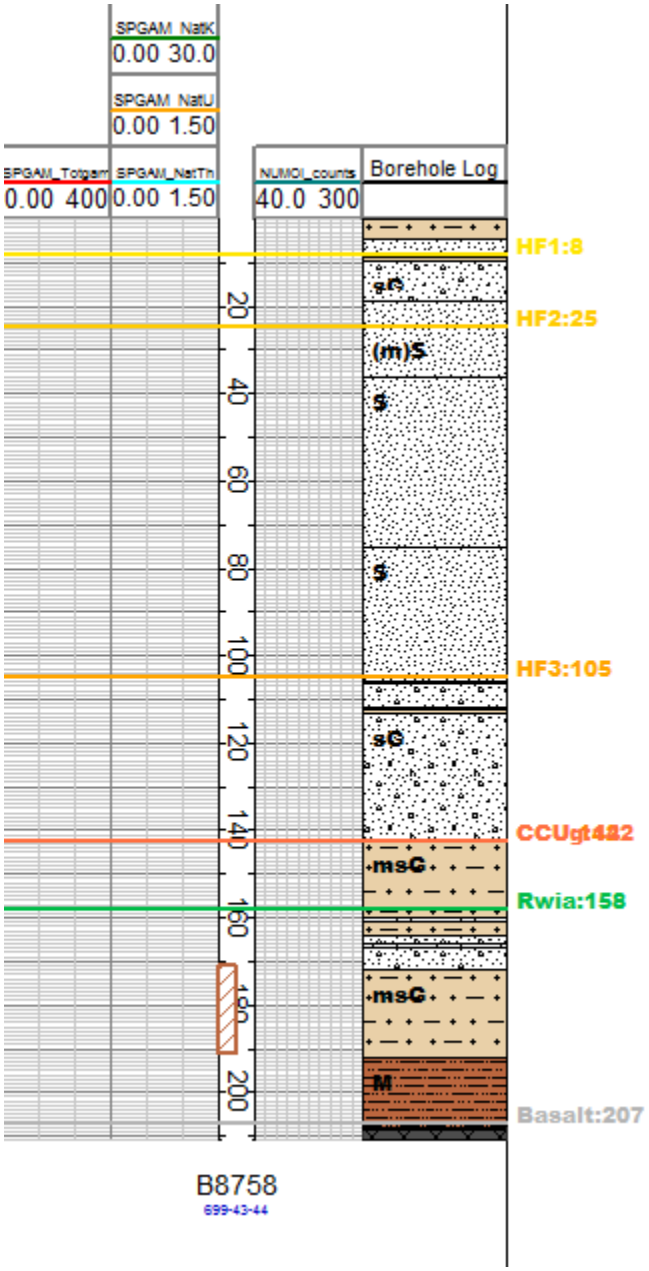

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
Rwia:38
Basalt:65
A9486
699-50-42P
467.8

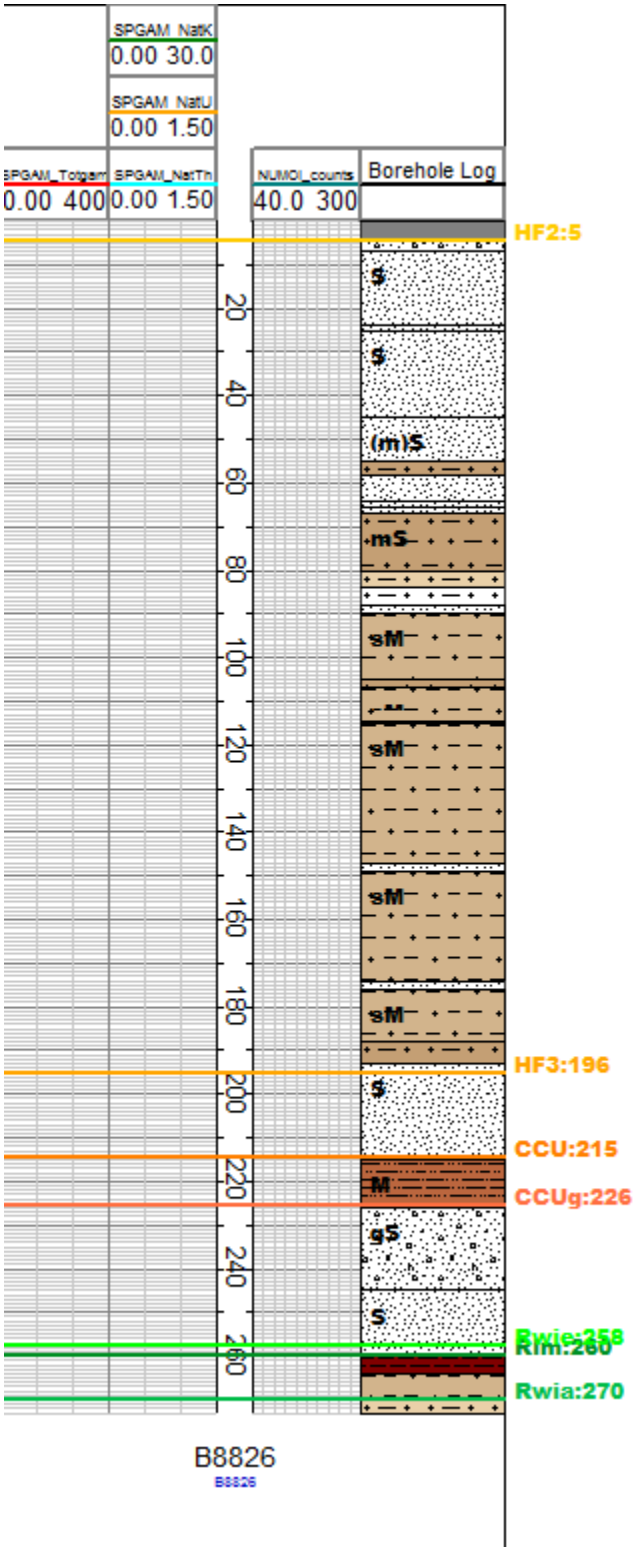

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
450
500
S
gS
S
S
gS
mS
sG
sM
mG
sG
HF3:209
Rwie:310
Rlm:365
Rwia:439
Basalt:515
B2822
699-37-47A
716.7

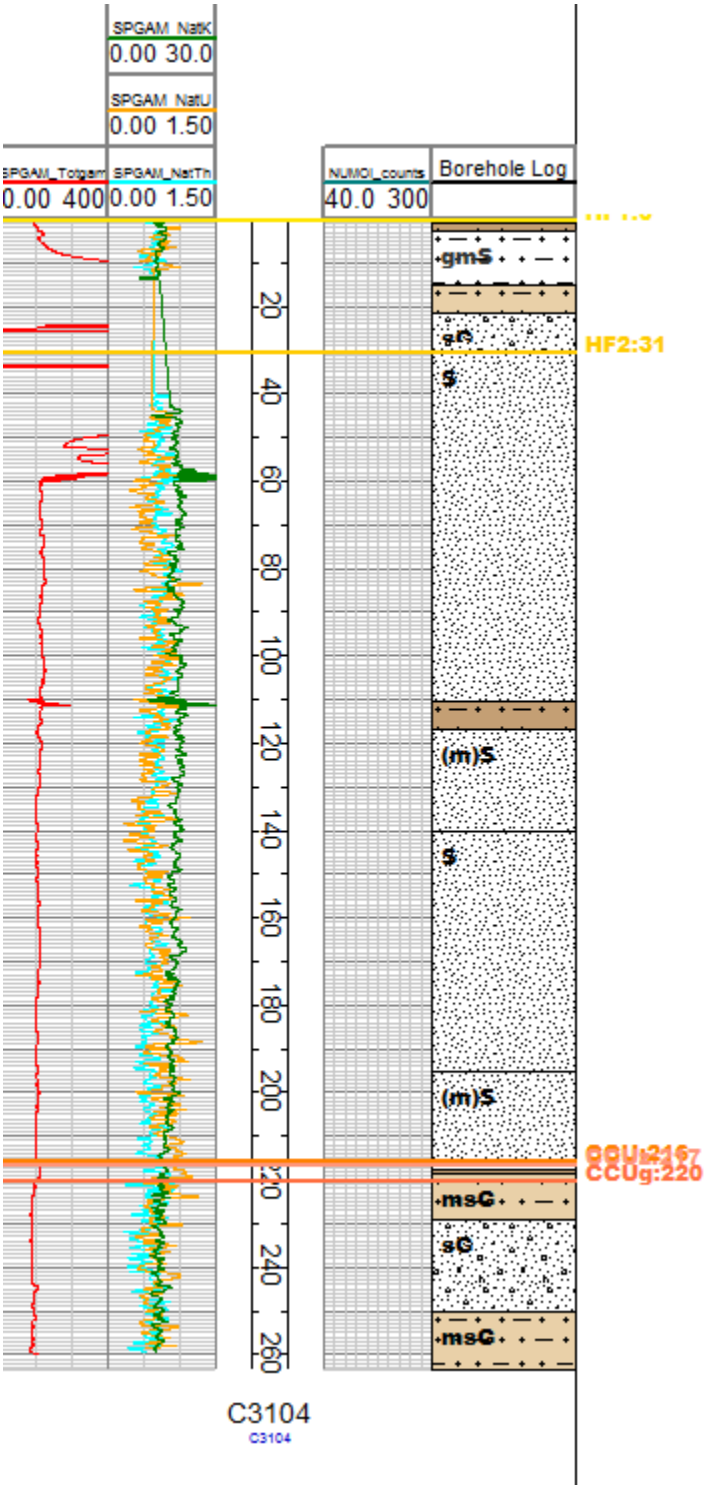

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Backfill
HF1:10
HF2:28
gS
S
mS
msG
20
40
60
80
100
120
140
160
180
200
220
240
B8079
299-E33-333

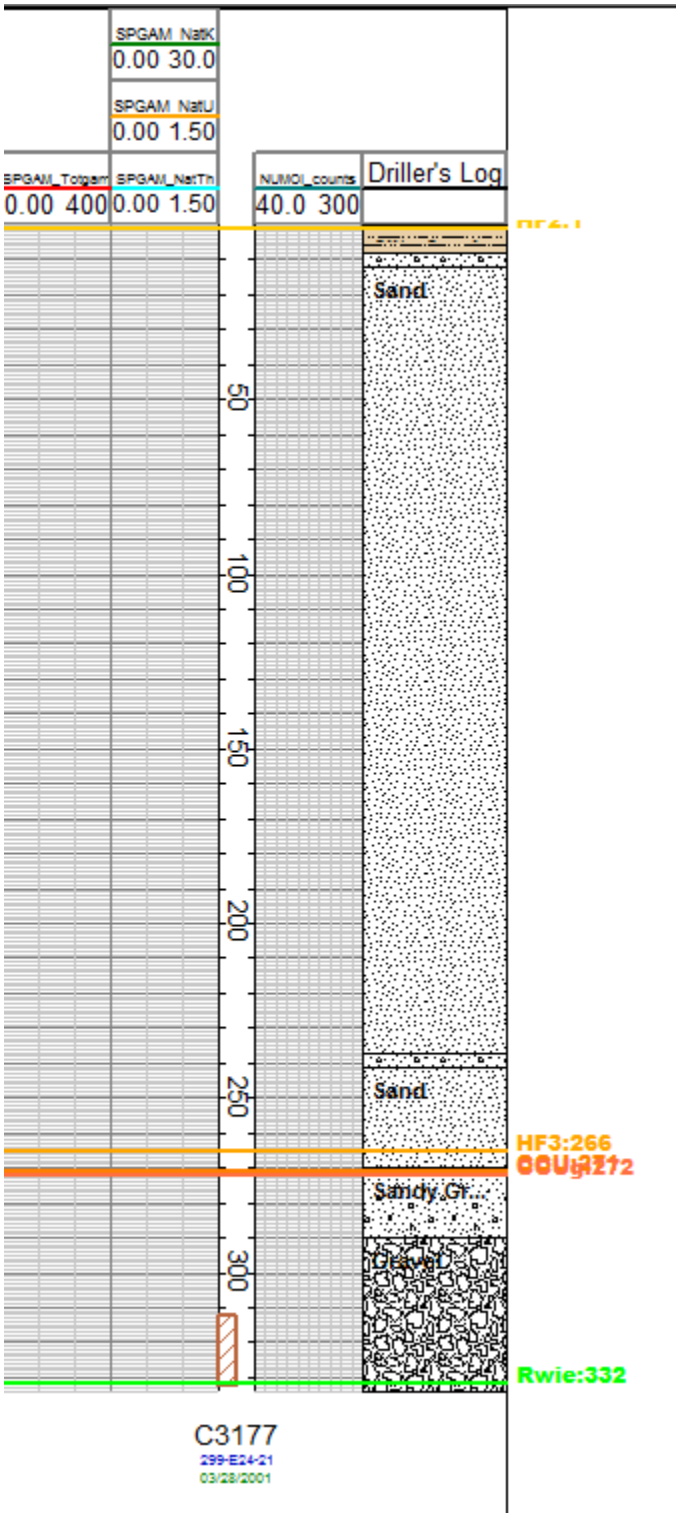

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
msG
sG
HF2:23
(m)gS
S
S
S
(m)S
gS
HF3:196
Cold Creek Unit:204
CCUg:210
msG
msG
Basalt:247
20
40
60
80
100
120
140
160
180
200
220
240
B8554
299-E33-44
643.1

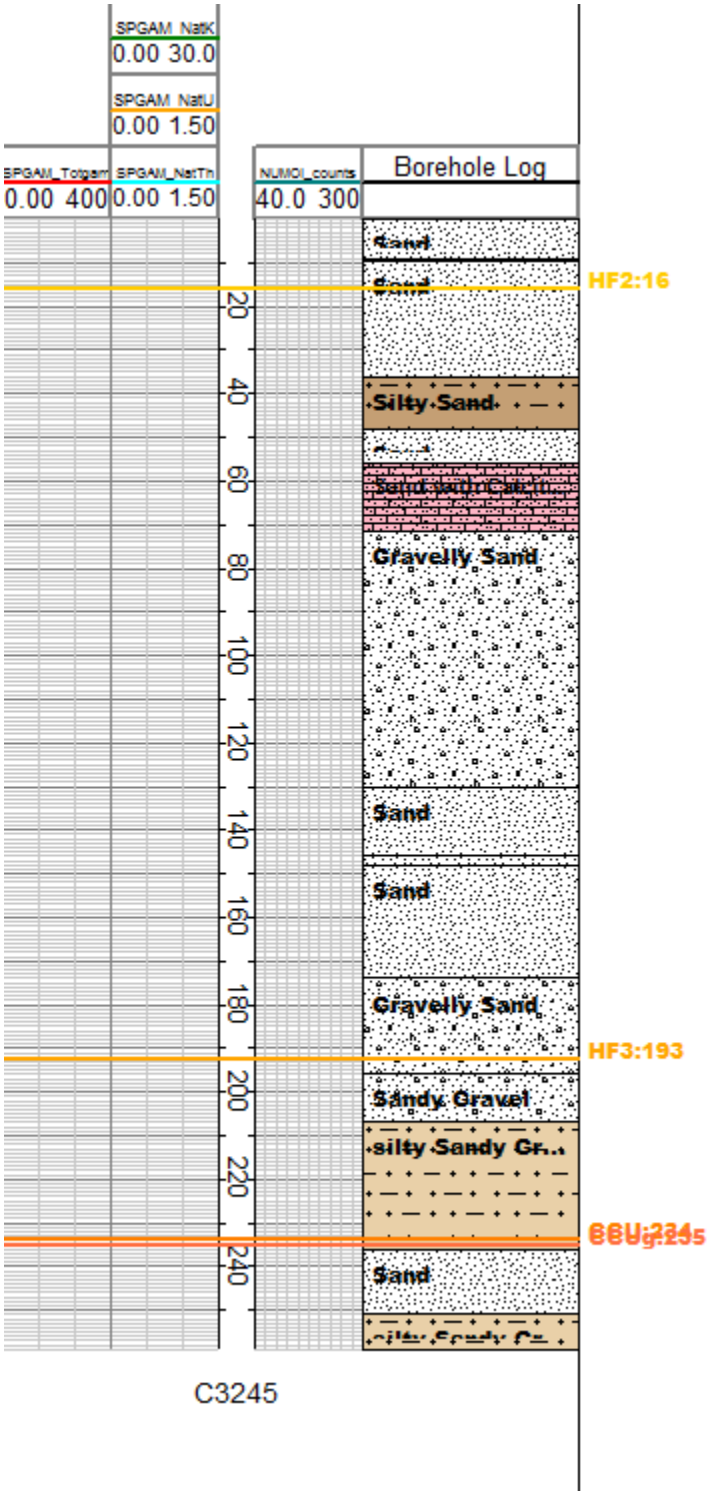

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:6
Sandy Gravel
Basalt:35
Basalt
Silt and Clay
Silt and Sand
20
40
60
80
100
120
140
160
180
B8695
699-53-51
445.0

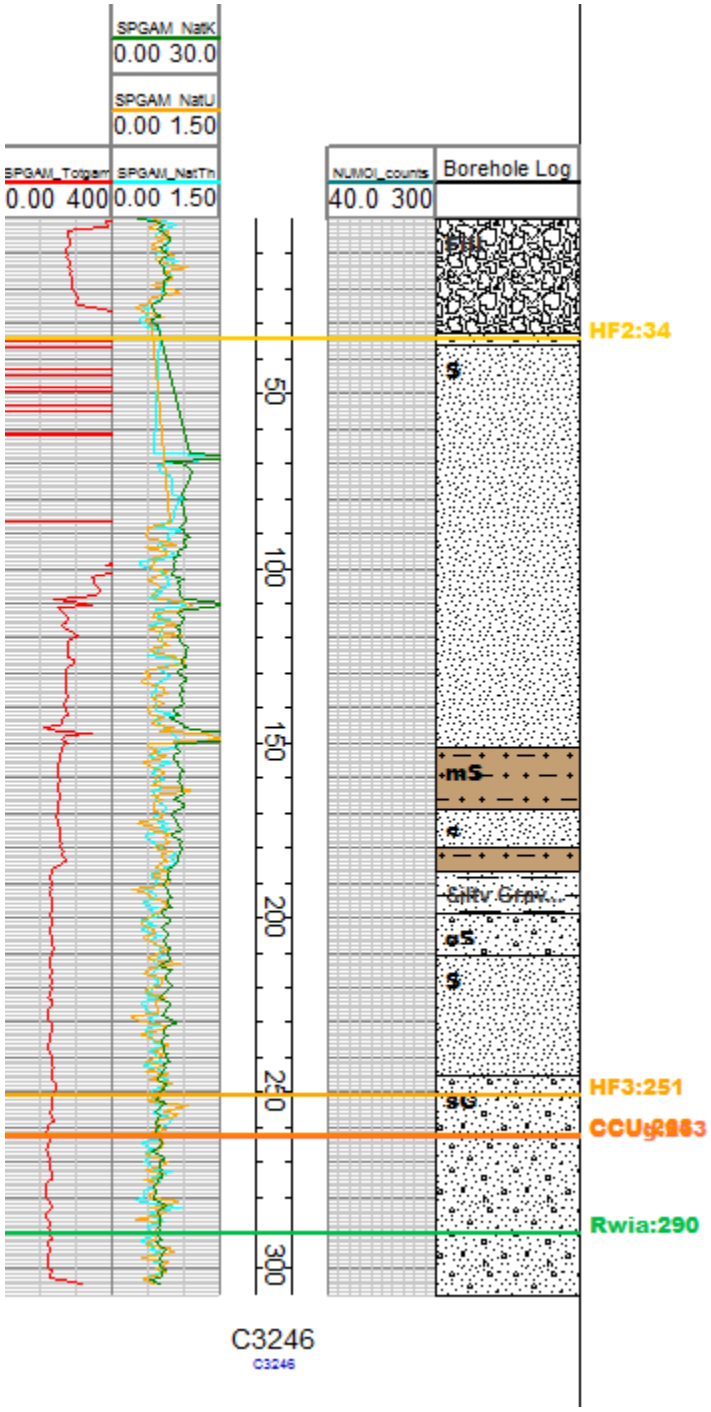

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:8
HF2:25
HF3:105
CCUgt482
Rwia:158
Basalt:207
sG
(m)S
S
S
sG
msG
msG
M
20
40
60
80
100
120
140
160
180
200
B8758
699-43-44

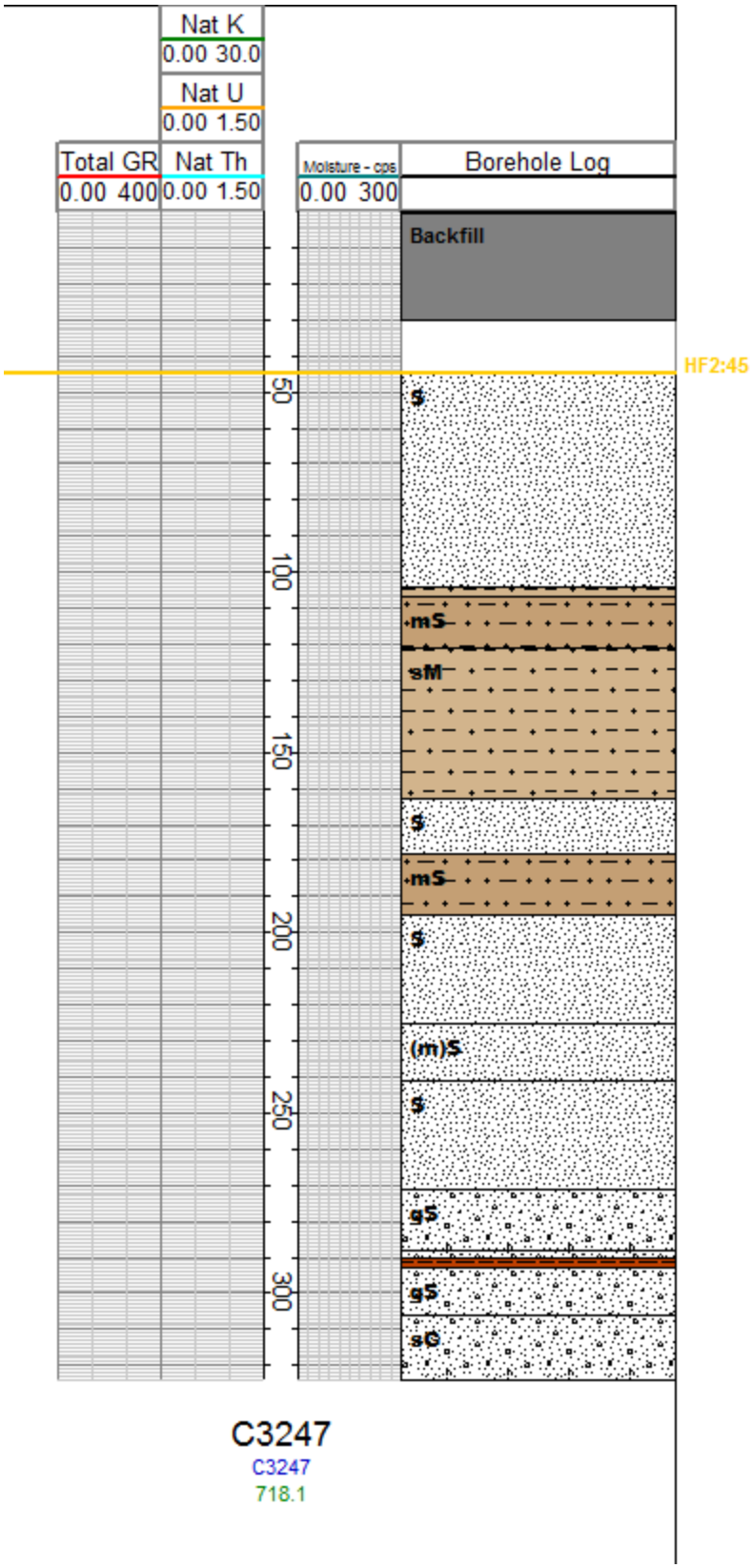

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:5
S
S
(m)S
mS
sM
sM
sM
sM
HF3:196
S
CCU:215
M
CCUg:226
gS
S
Rwie:258
Rim:260
Rwia:270
20
40
60
80
100
120
140
160
180
200
220
240
260
B8826

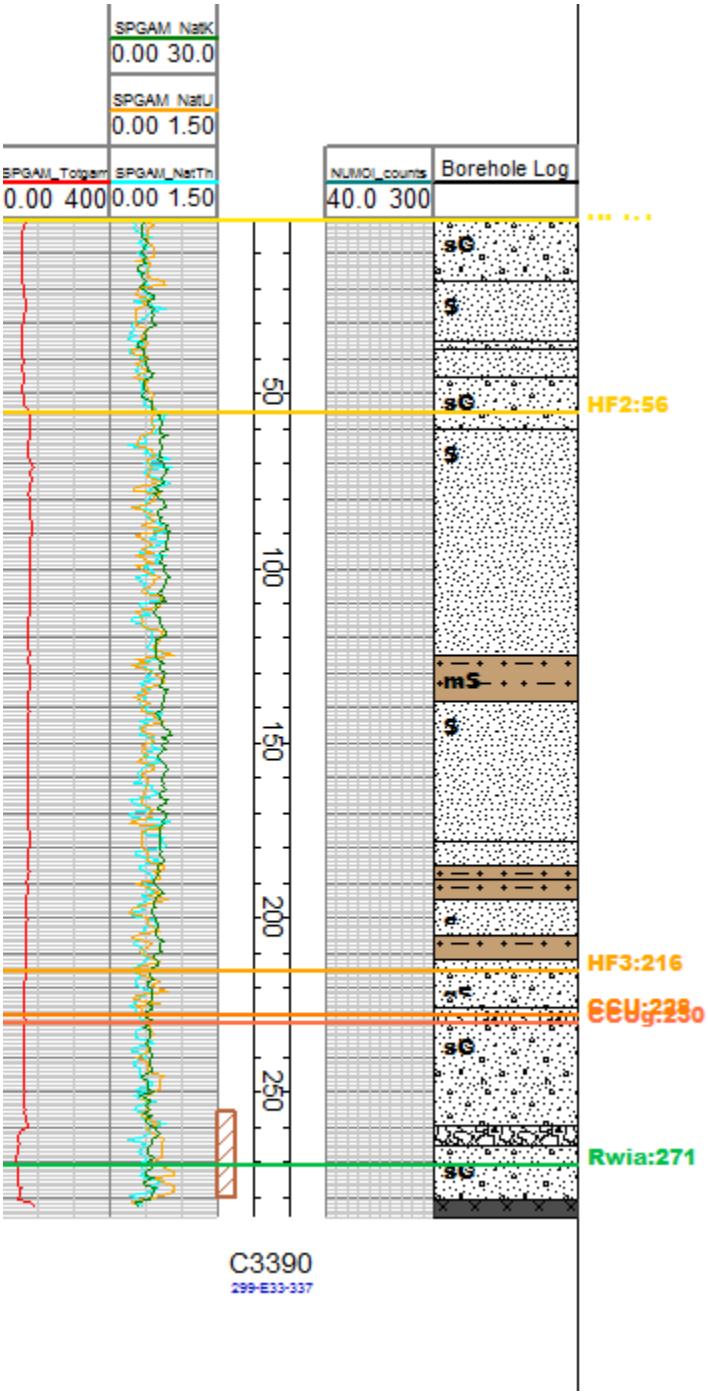

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
gmS
sG
S
HF2:31
(m)S
S
(m)S
CCUg:220
msG
sG
msG
20
40
60
80
100
120
140
160
180
200
220
240
260
C3104
C3104

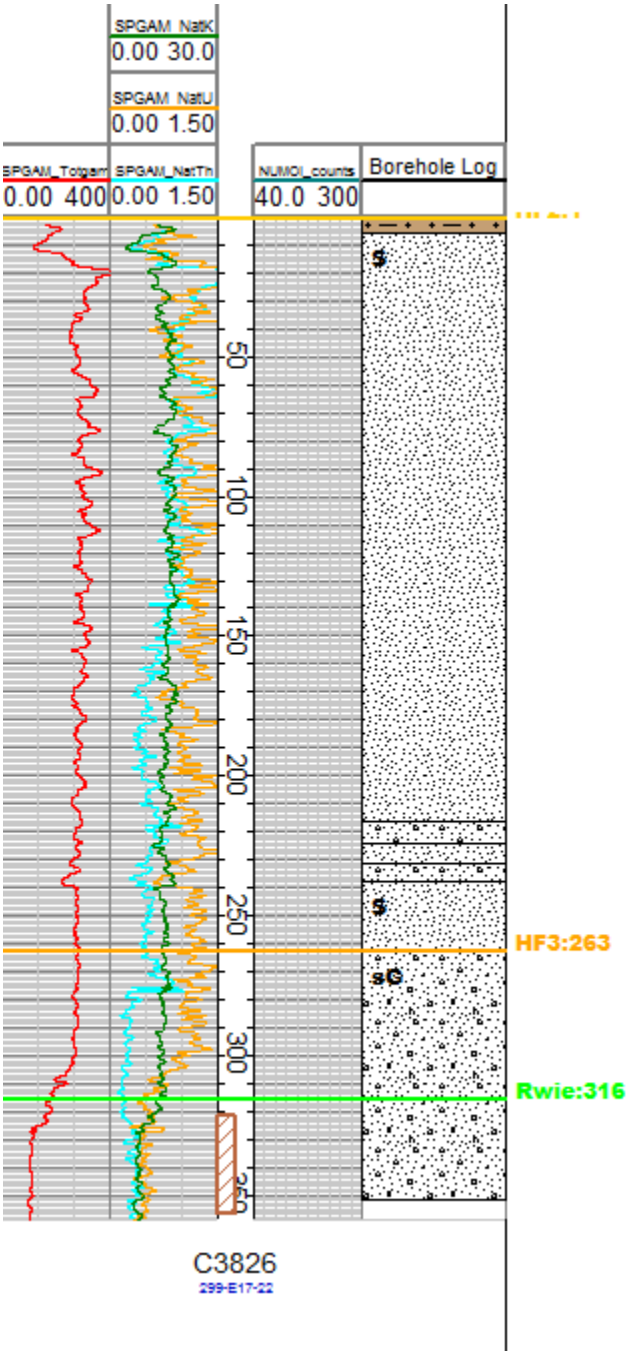

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Driller's Log
Sand
Sand
Sandy Gr...
Gravel
HF3:266
Rwie:332
50
100
150
200
250
300
C3177
299-E24-21
03/28/2001

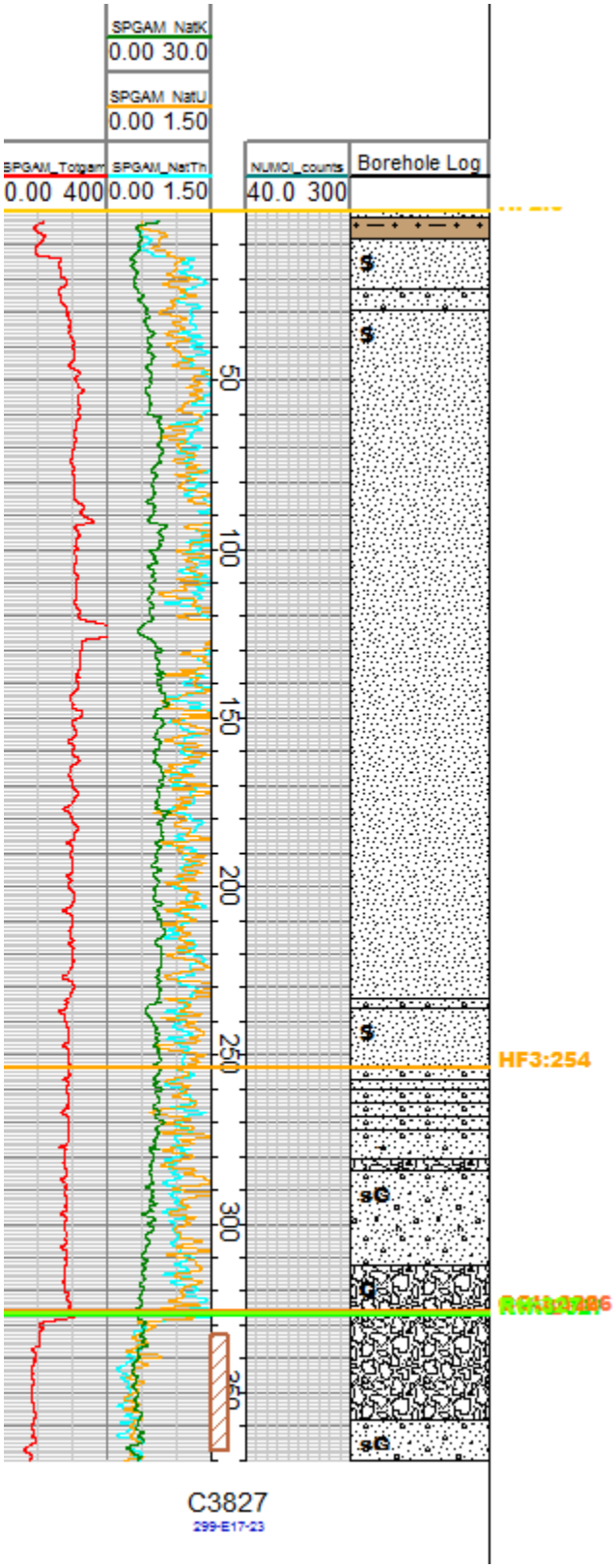

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sand
HF2:16
Silty Sand
Gravelly Sand
Sand
Sand
Gravelly Sand
HF3:193
Sandy Gravel
silty Sandy Gr...
BBU:234
Sand
20
40
60
80
100
120
140
160
180
200
220
240
C3245

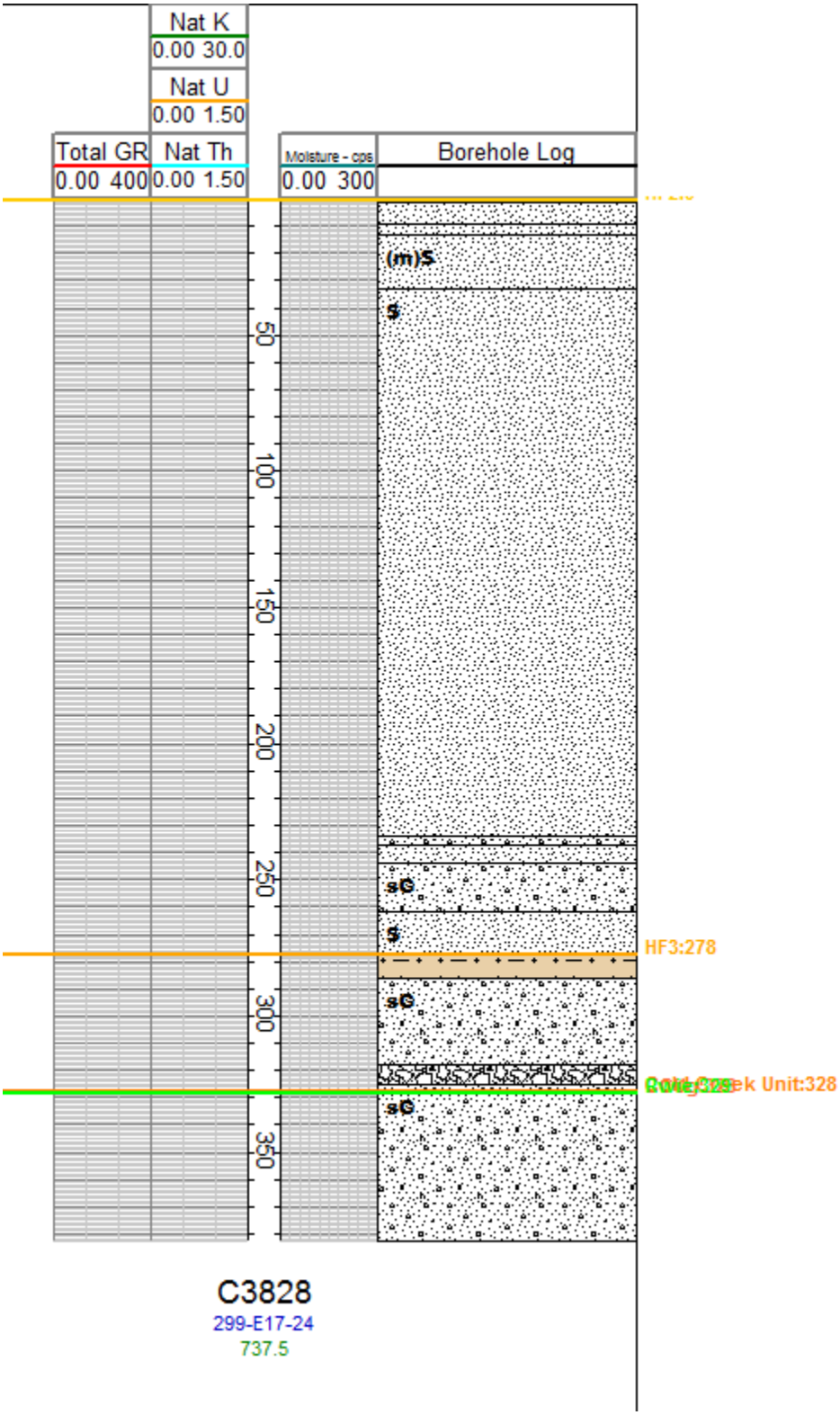

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:34
HF3:251
CCU:283
Rwia:290
50
100
150
200
250
300
C3246

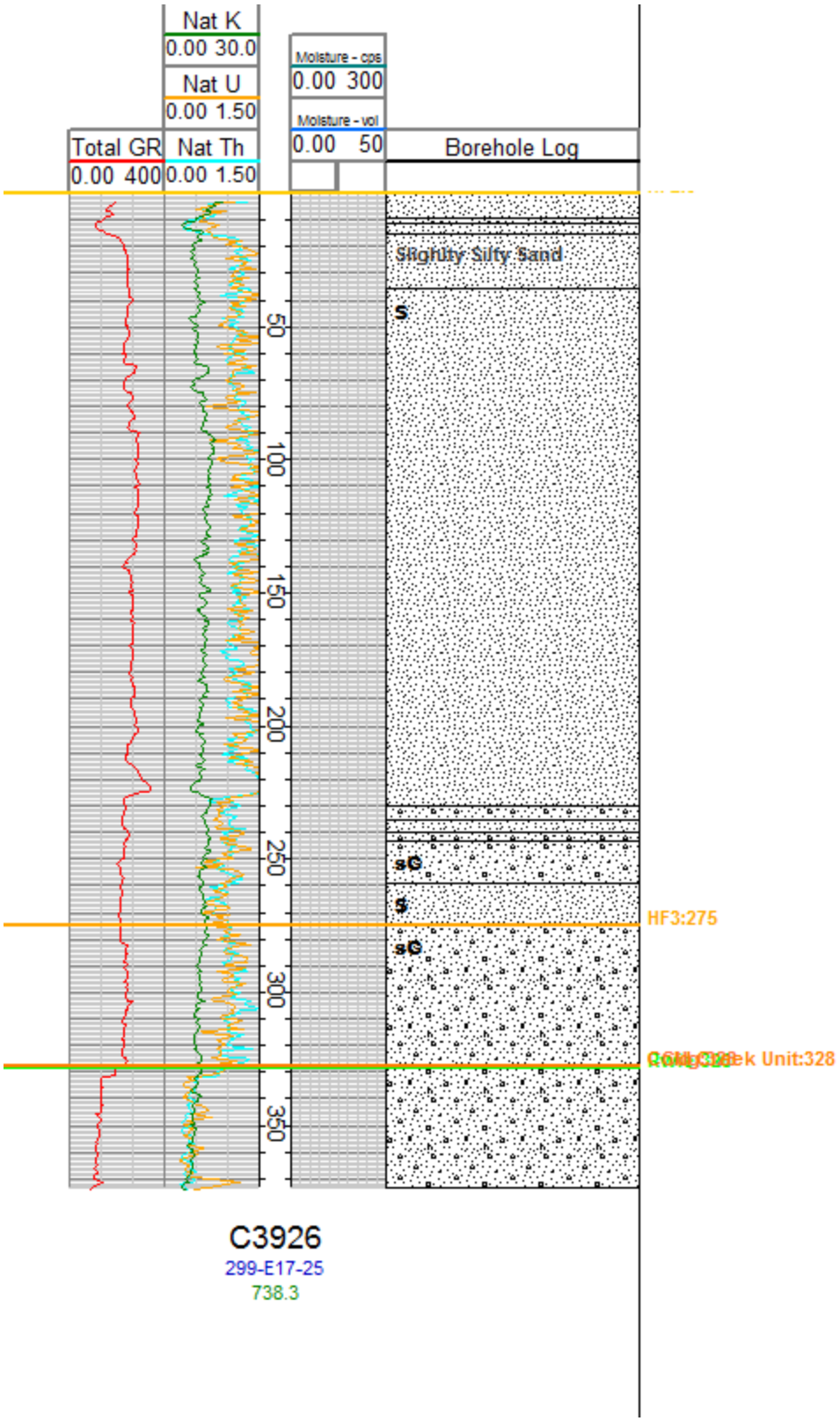

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
Backfill
HF2:45
50
100
150
200
250
300
S
mS
sM
S
mS
S
(m)S
S
gS
gS
sG
C3247
C3247
718.1

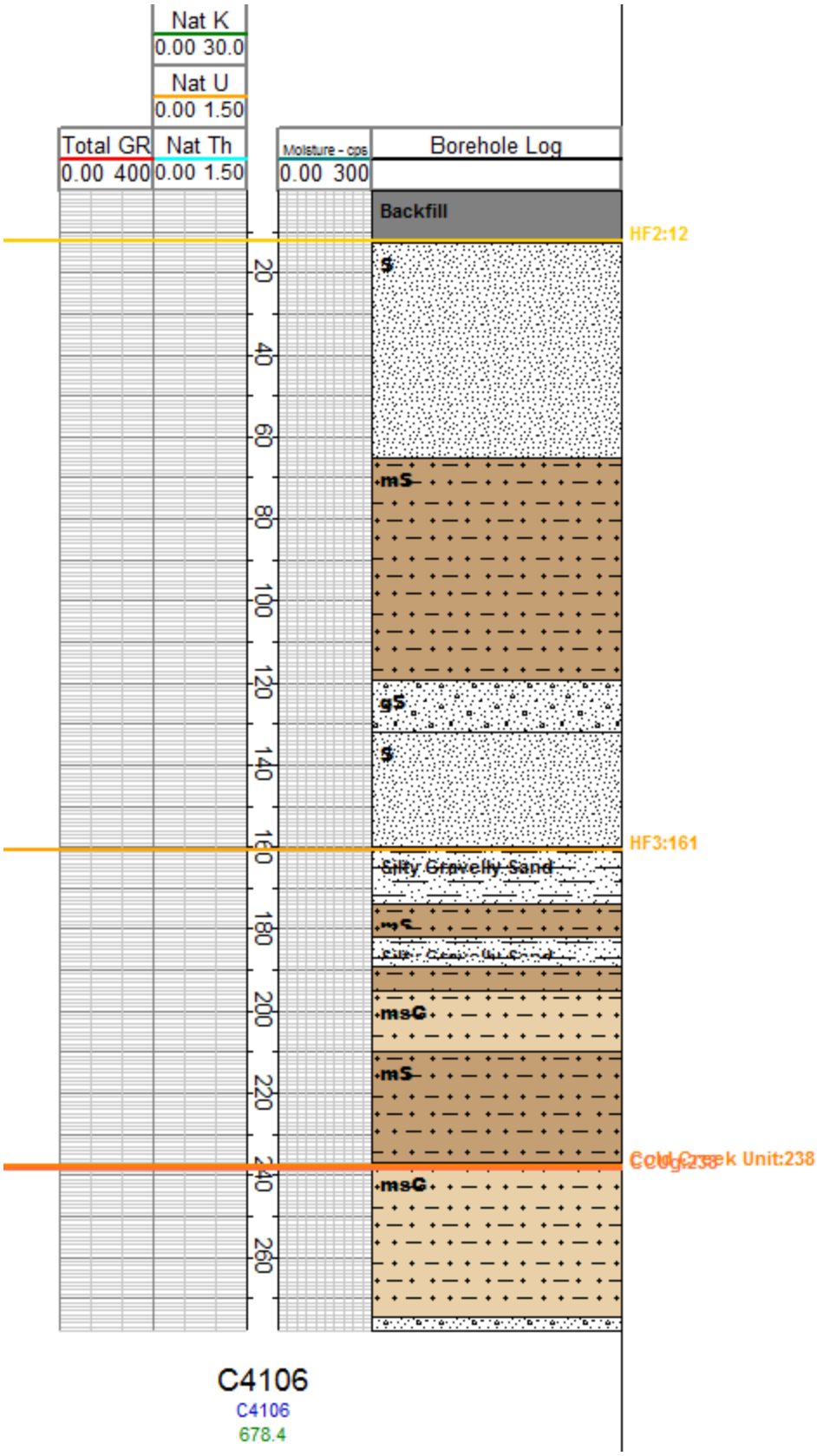

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
HF2:56
HF3:216
CCU:229
Rwia:271
C3390
299-E33-337

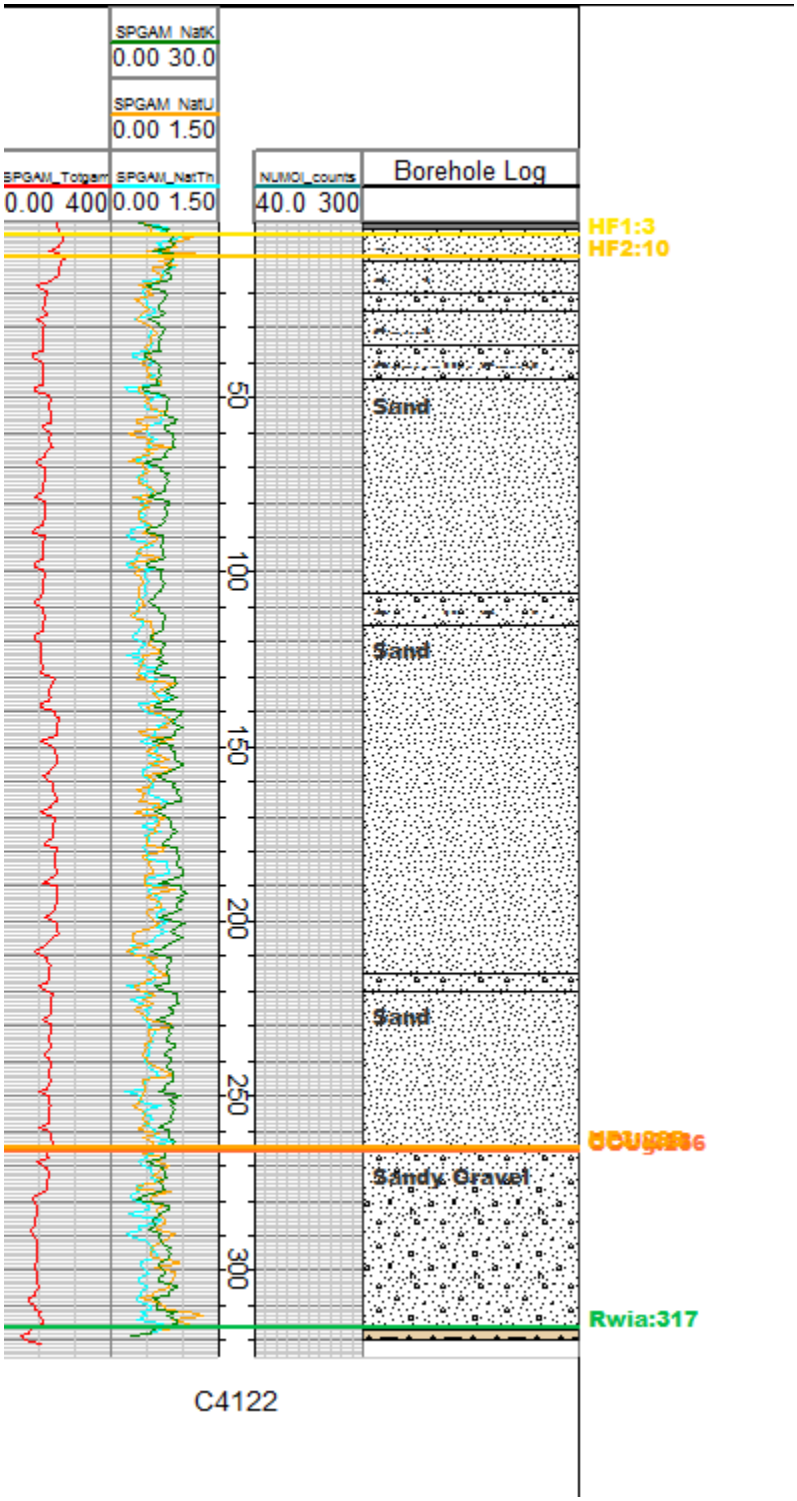

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
300
350
HF3:263
Rwie:316
C3826
299-E17-22

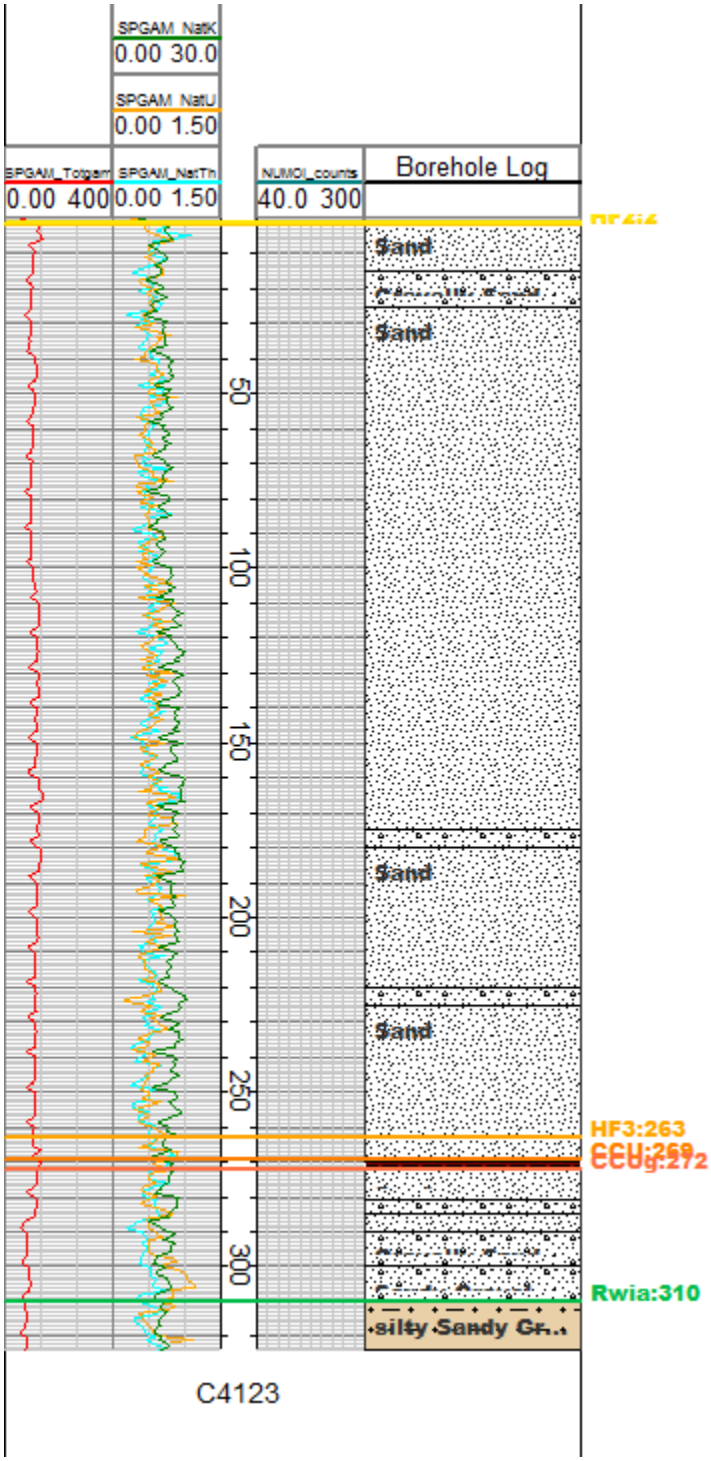

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
300
350
S
S
S
HF3:254
sG
C
sG
C3827
299-E17-23

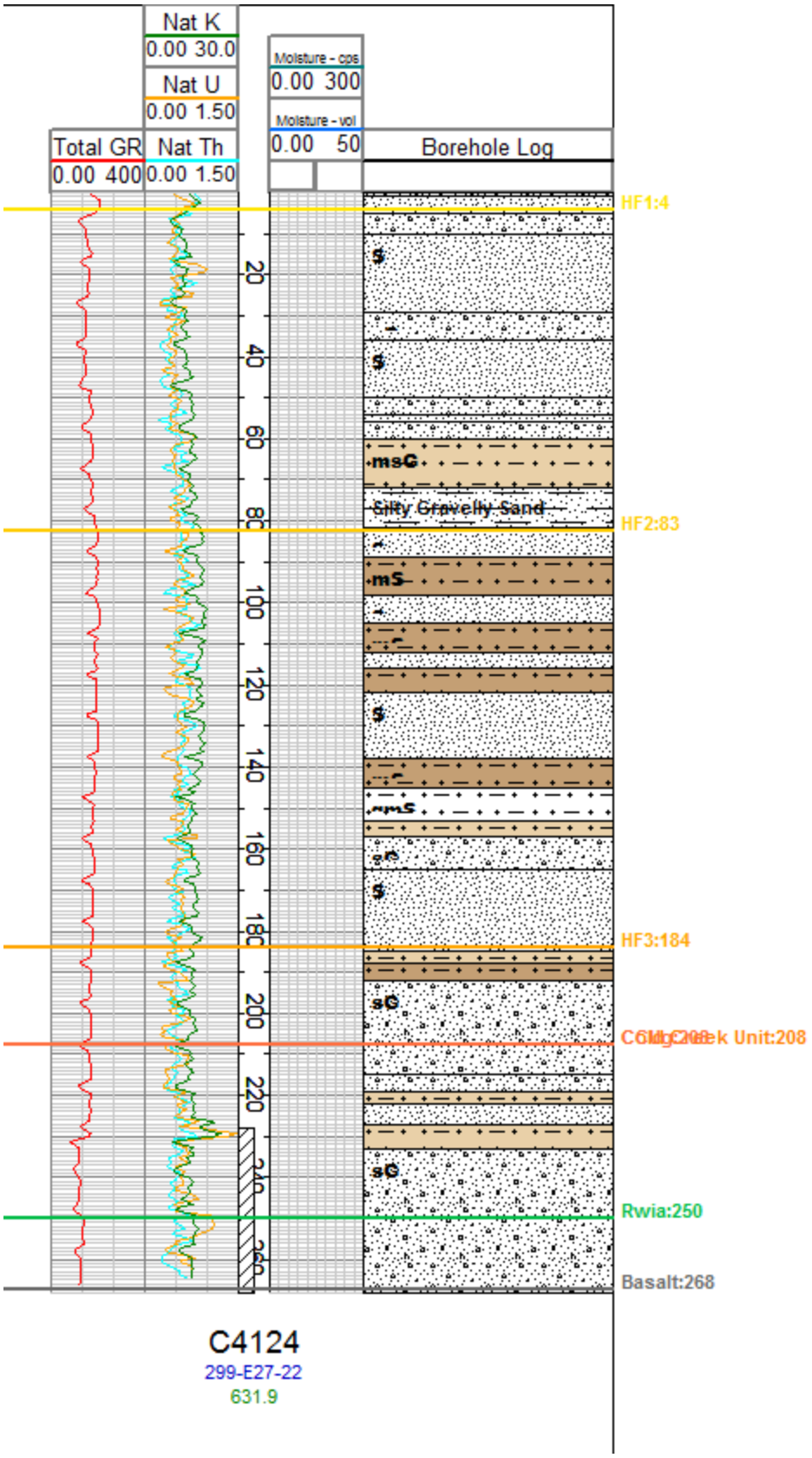

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
(m)S
S
sG
S
sG
sG
HF3:278
Gold Creek Unit:328
C3828
299-E17-24
737.5

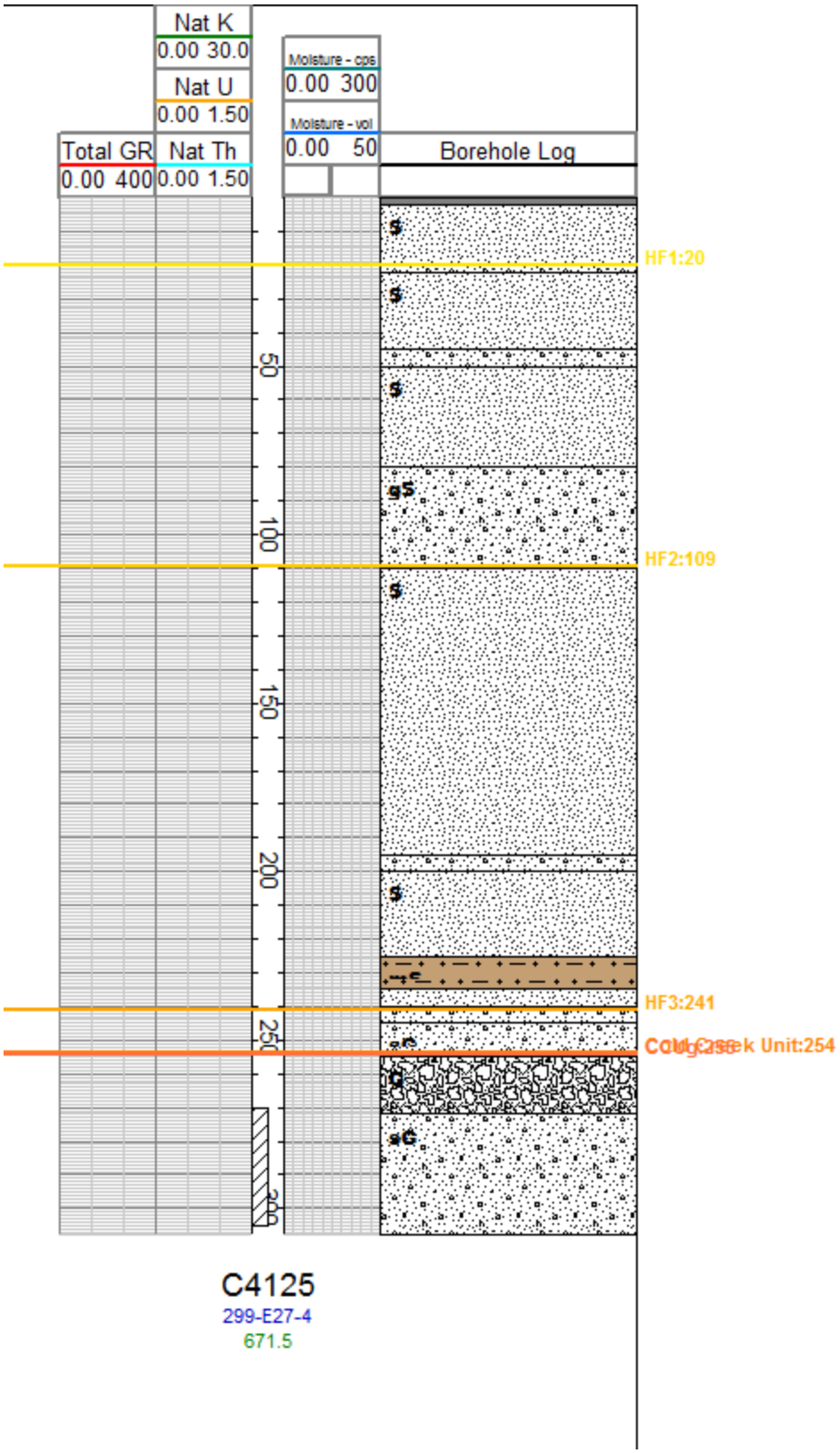

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
Slightly Silty Sand
S
sG
S
sG
HF3:275
Unit:328
50
100
150
200
250
300
350
C3926
299-E17-25
738.3

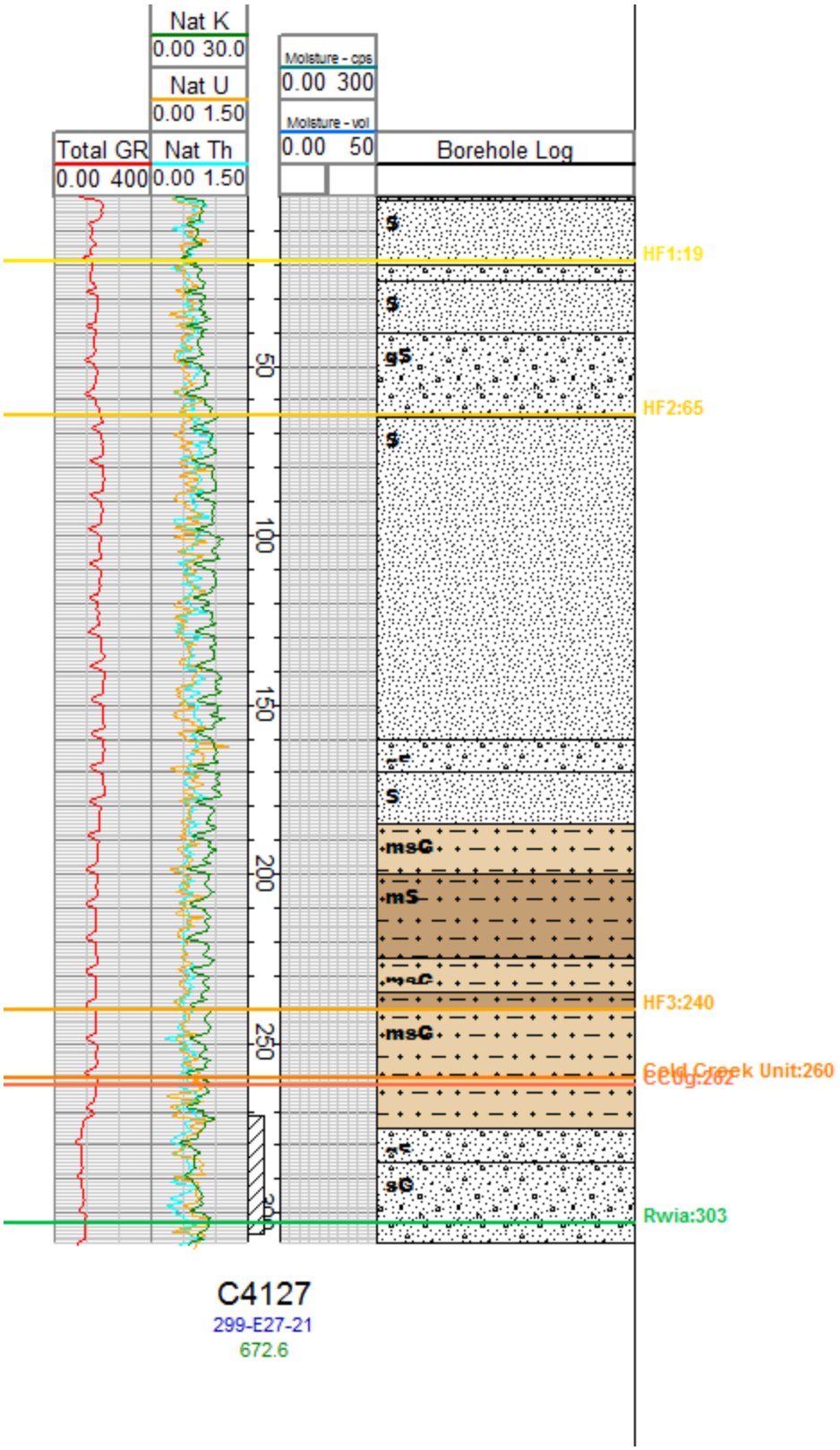

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
Backfill
HF2:12
S
mS
gS
S
HF3:161
Silty Gravelly Sand
msG
mS
Cold Creek Unit:238
msG
20
40
60
80
100
120
140
160
180
200
220
240
260
C4106
C4106
678.4

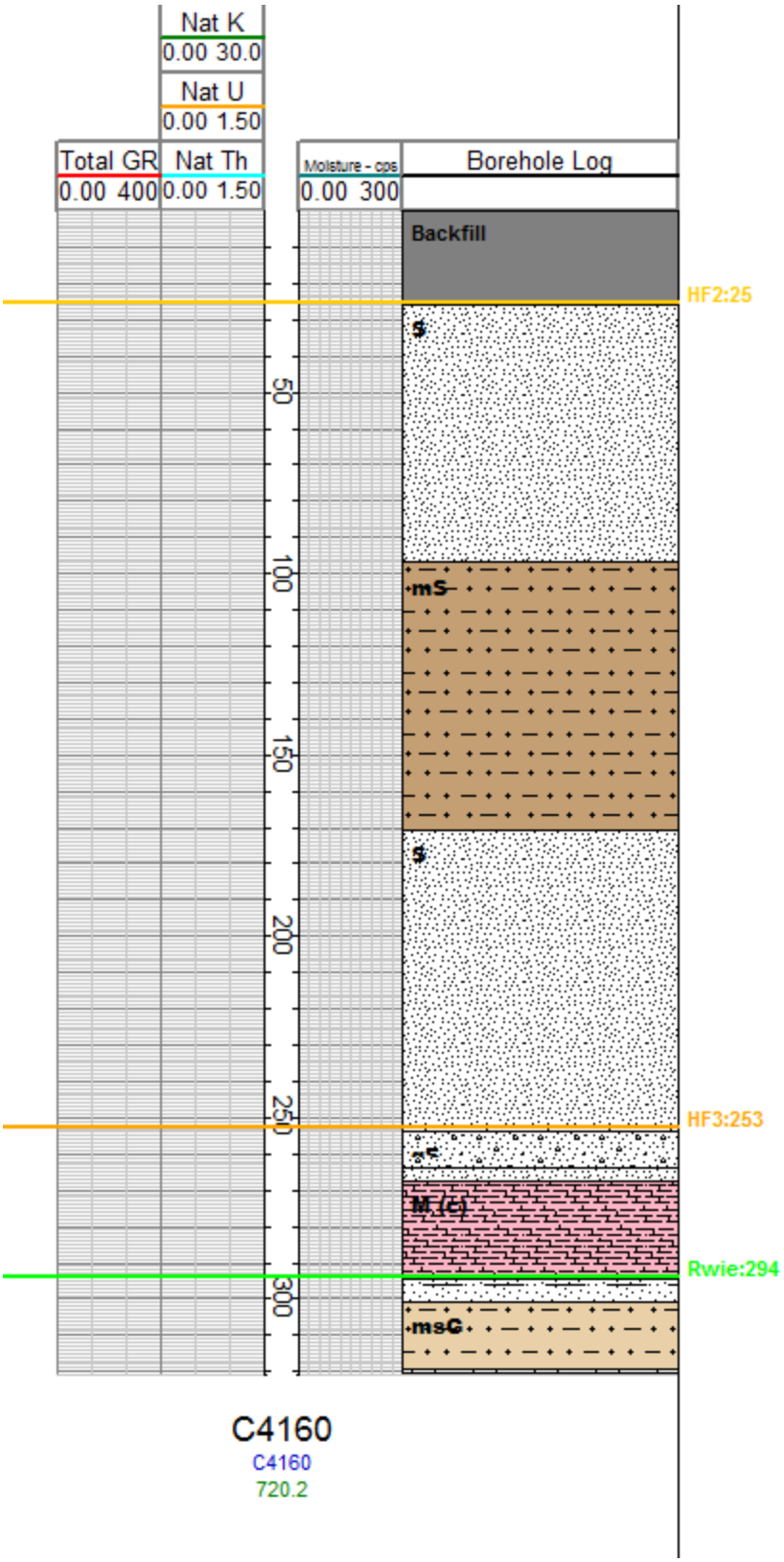

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:3
HF2:10
Sand
Sand
Sand
Sandy Gravel
Rwia:317
50
100
150
200
250
300
C4122

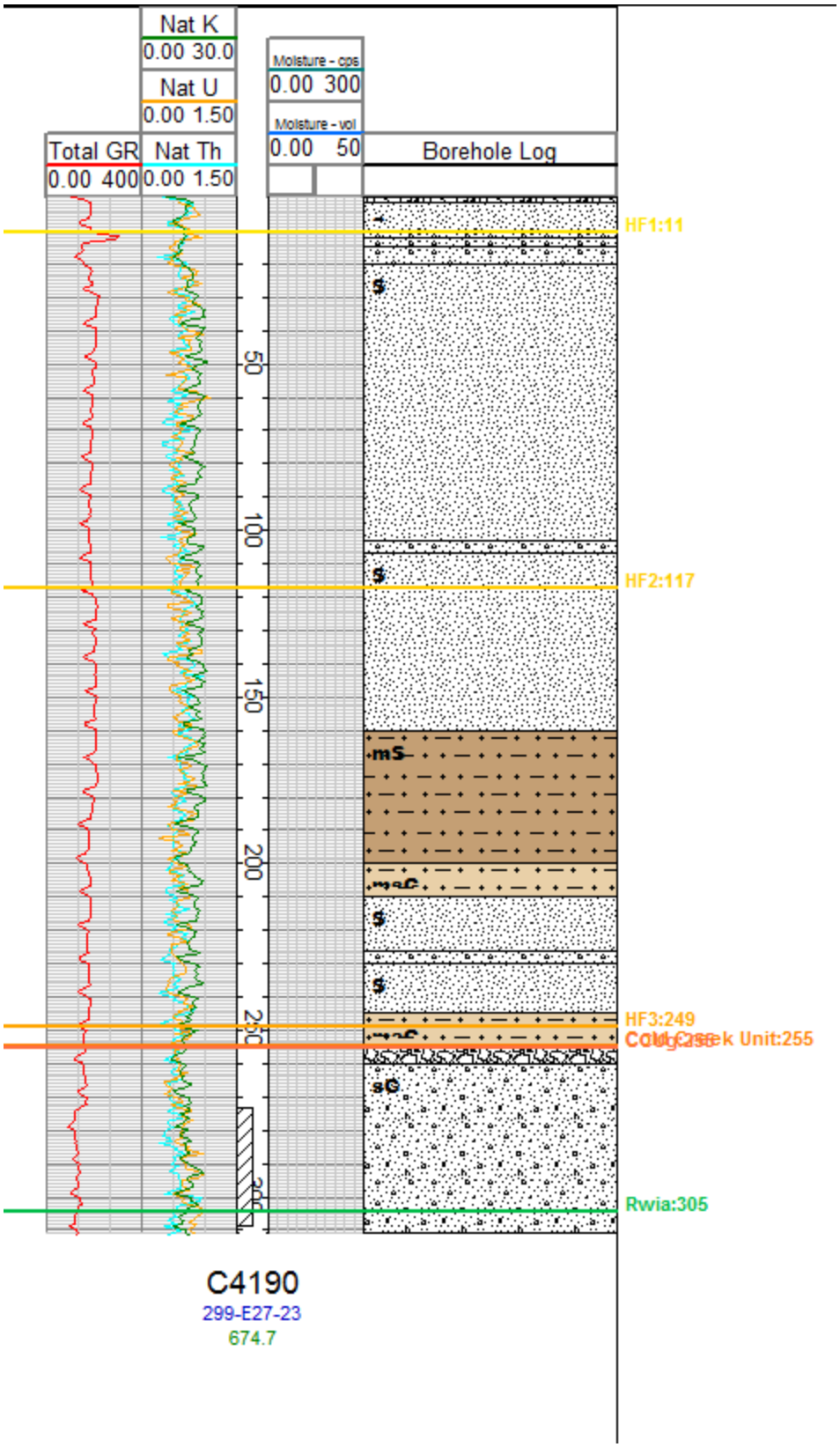

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sand
Sand
Sand
Sand
50
100
150
200
250
300
HF3:263
CCU:269
CCUg:272
Rwia:310
silty Sandy Gr...
C4123

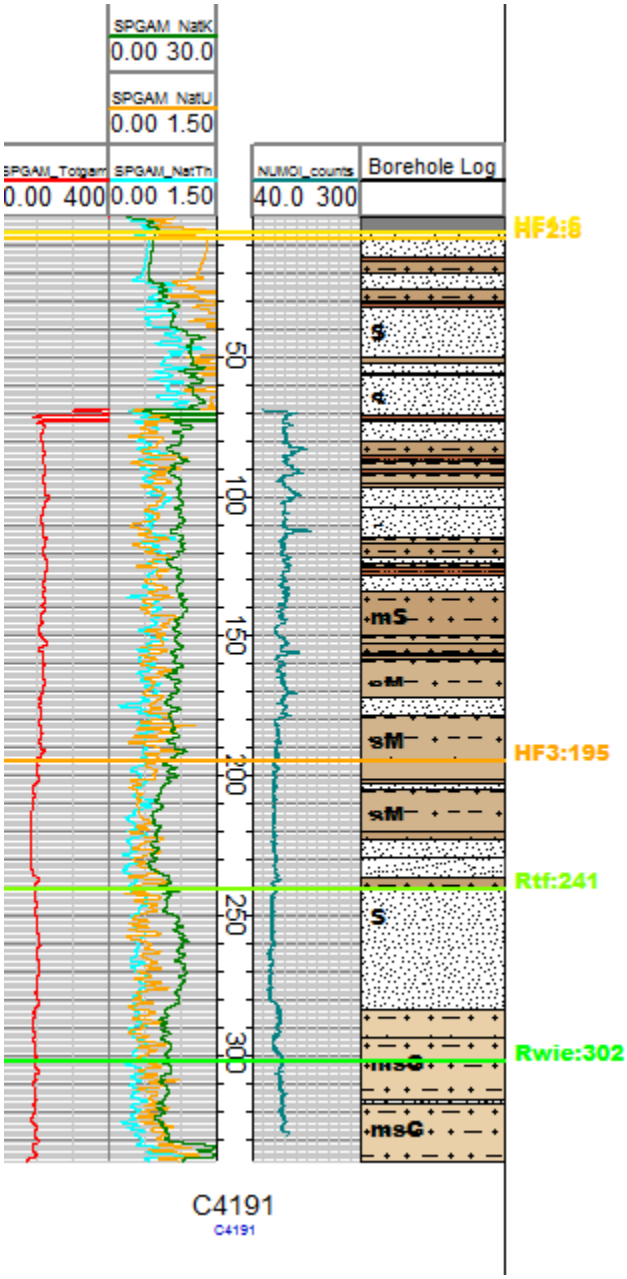

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:4
HF2:83
HF3:184
Rwia:250
Basalt:268
Silty Gravelly Sand
C4124
299-E27-22
631.9

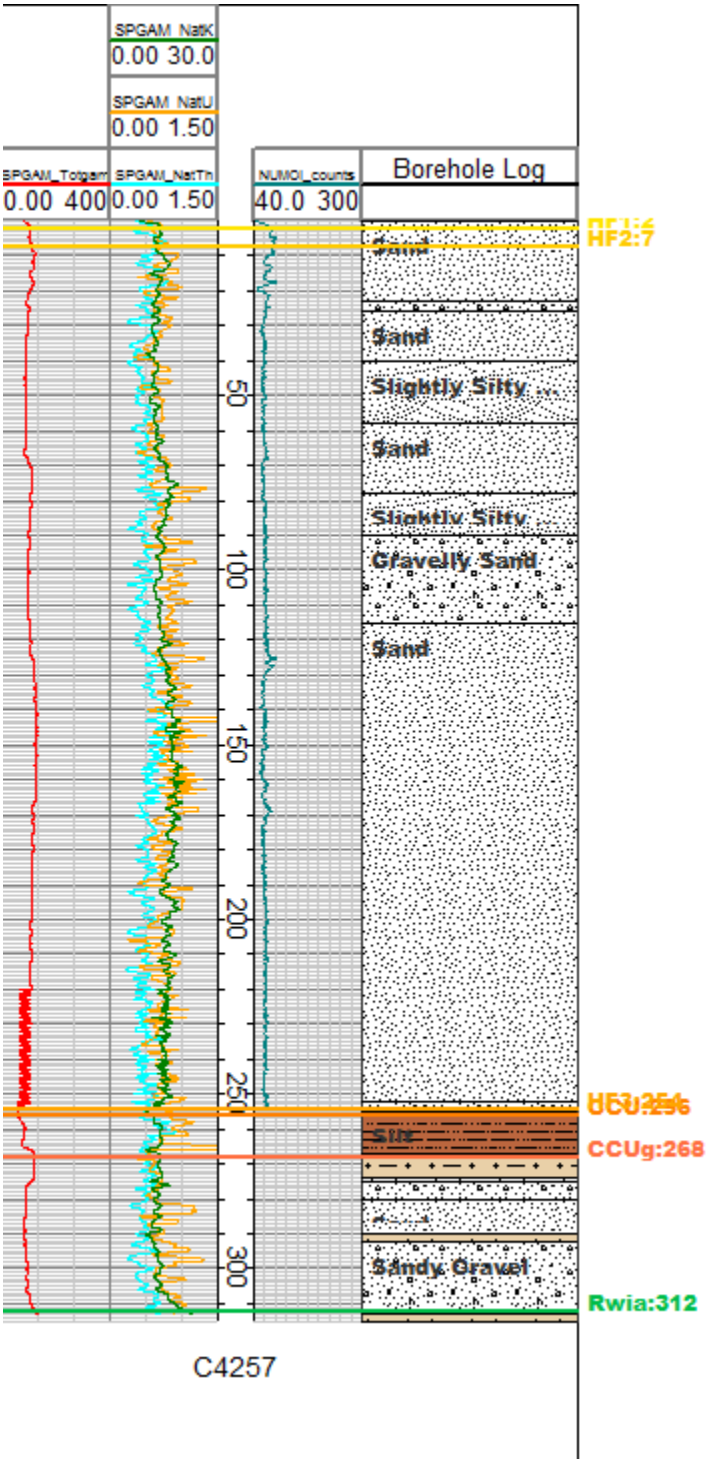

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
50
100
150
200
250
300
HF1:20
HF2:109
HF3:241
Cold Creek Unit:254
C4125
299-E27-4
671.5

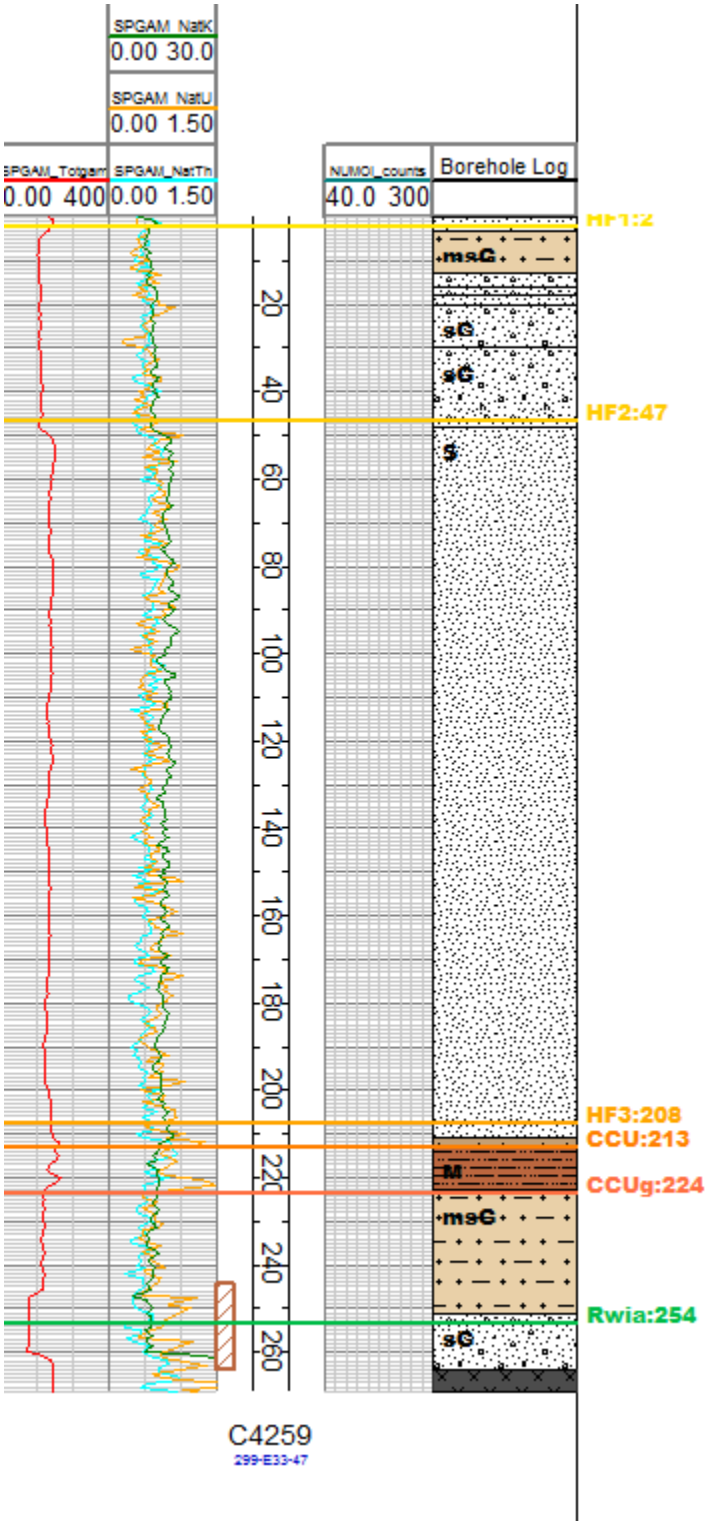

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
50
100
150
200
250
300
HF1:19
HF2:65
HF3:240
Cold Creek Unit:260
CCUg:262
Rwia:303
C4127
299-E27-21
672.6

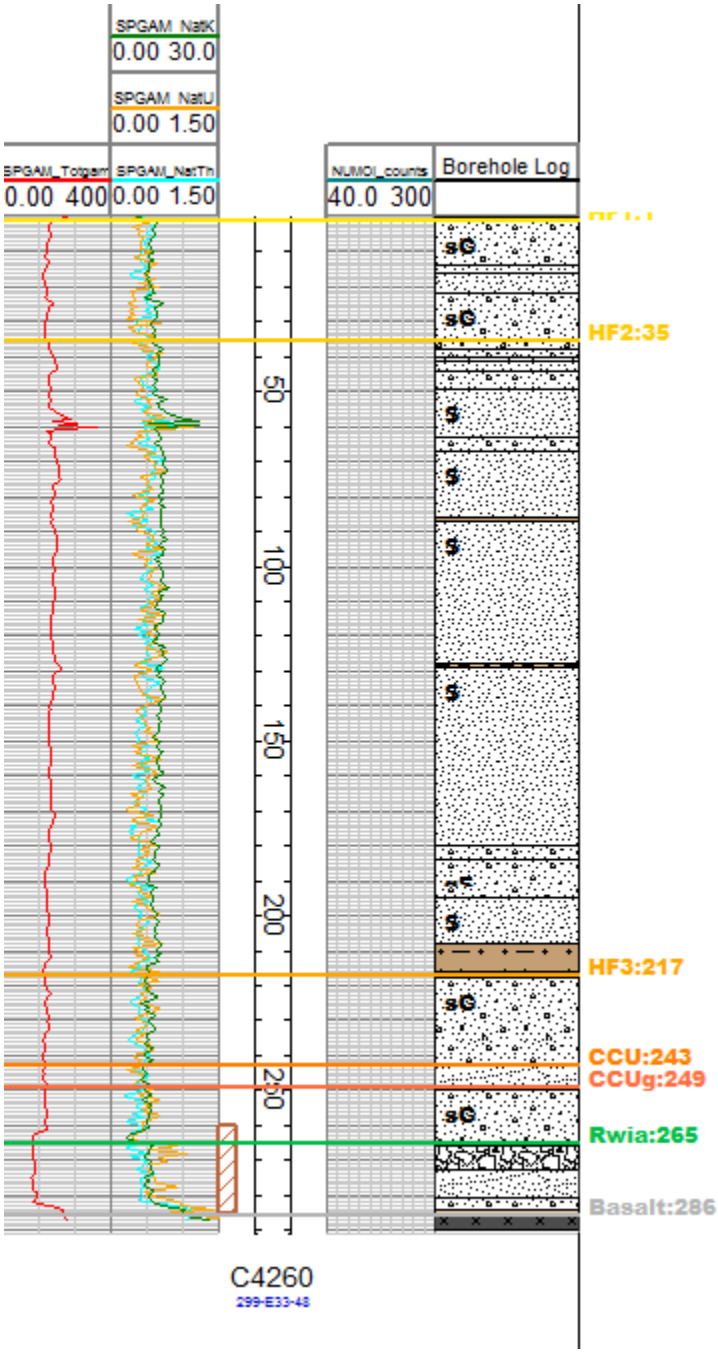

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
Backfill
HF2:25
S
mS
S
HF3:253
S
M (c)
Rwie:294
msG
50
100
150
200
250
300
C4160
C4160
720.2

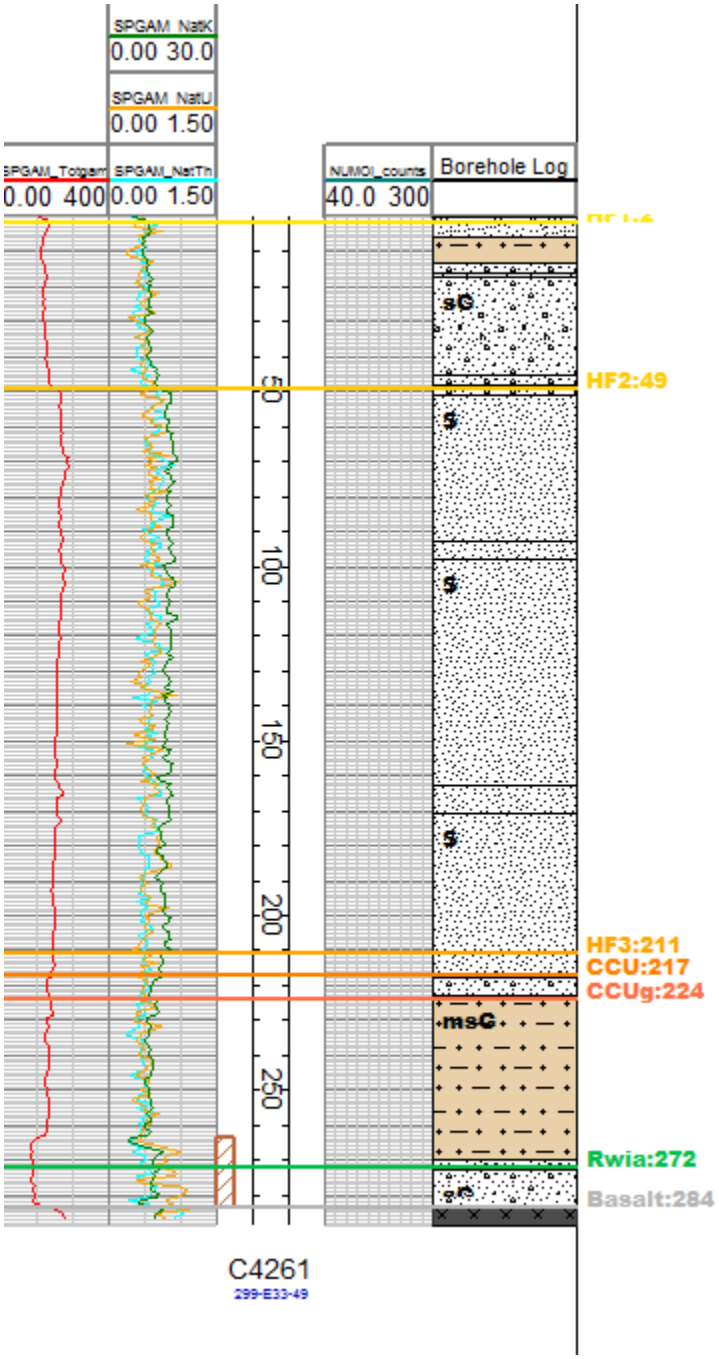

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:11
HF2:117
HF3:249
Cold Creek Unit:255
Rwia:305
50
100
150
200
250
300
C4190
299-E27-23
674.7

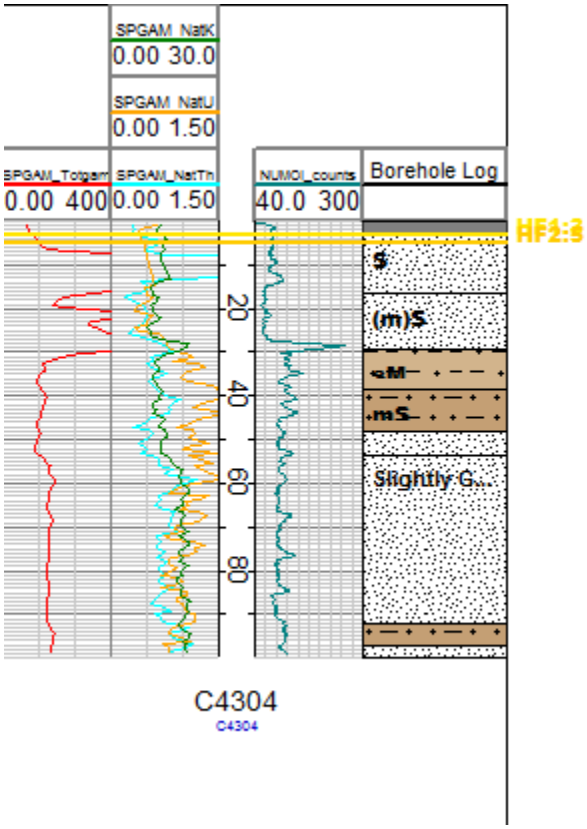

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:6
HF3:195
Rtf:241
Rwie:302
50
100
150
200
250
300
C4191
C4191

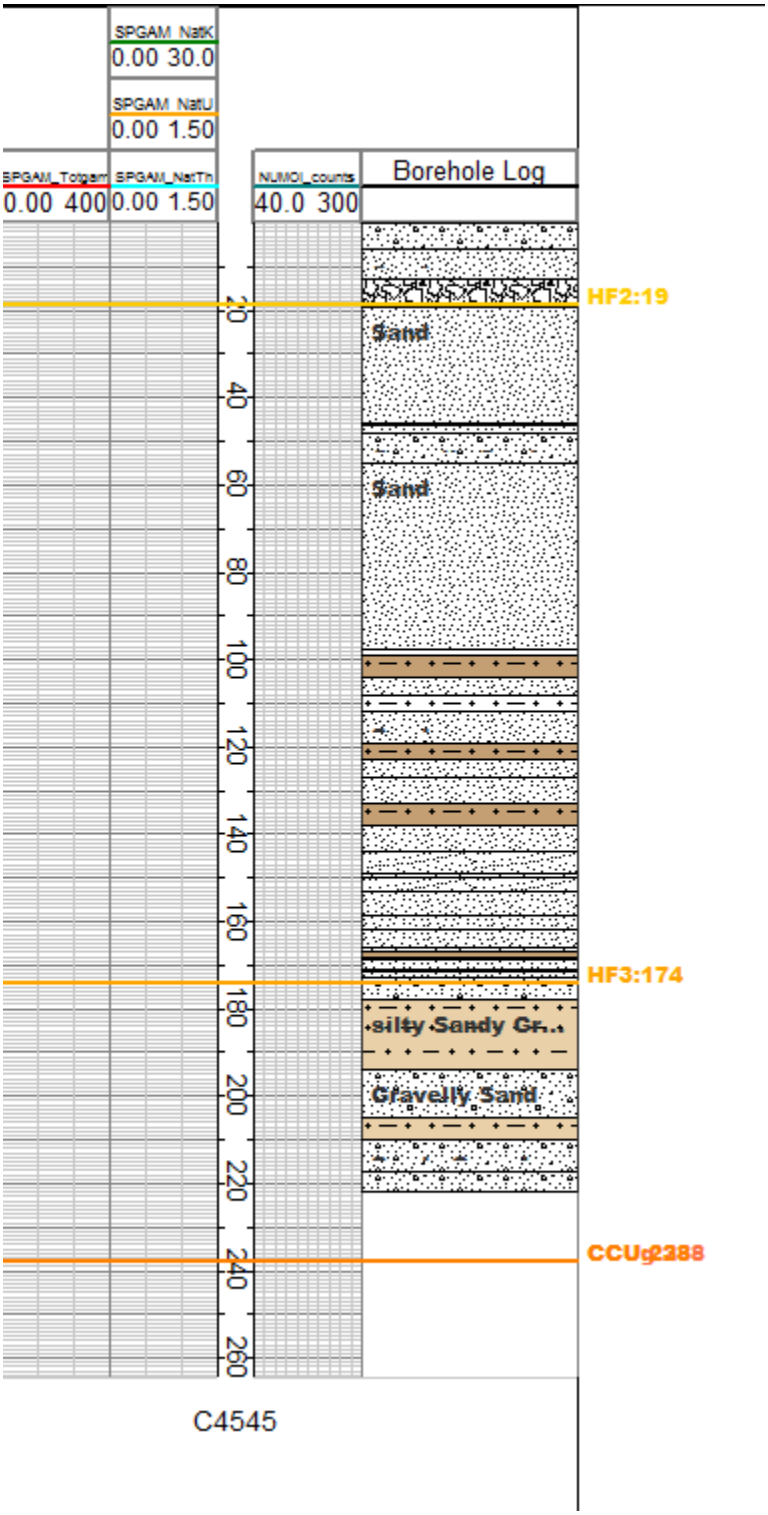

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:7
Sand
Slightly Silty ...
Sand
Slightly Silty ...
Gravelly Sand
Sand
Silt
Sandy Gravel
CCUg:268
Rwia:312
50
100
150
200
250
300
C4257

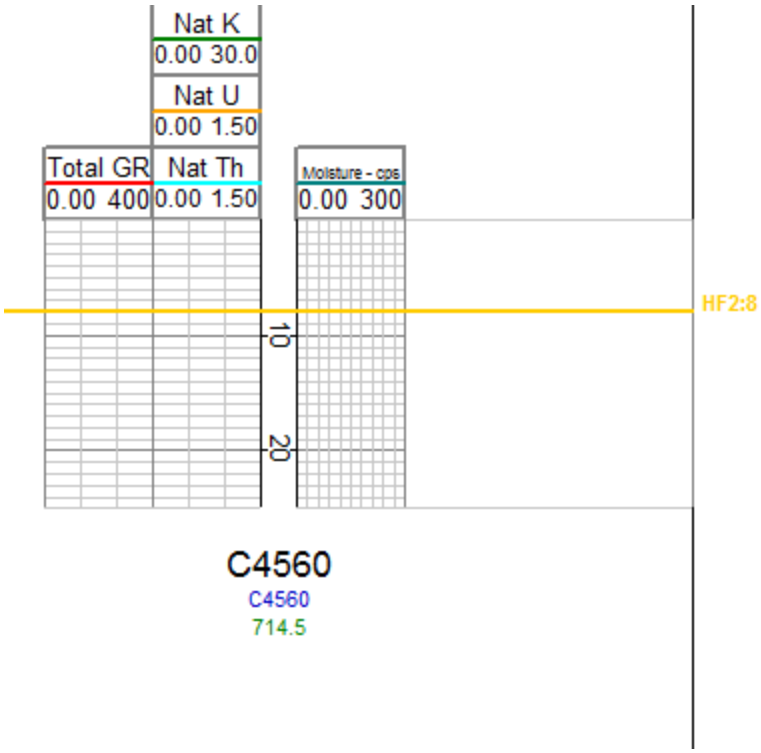

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:2
msG
sG
sG
HF2:47
S
HF3:208
CCU:213
M
CCUg:224
msG
Rwia:254
sG
20
40
60
80
100
120
140
160
180
200
220
240
260
C4259
299-E33-47

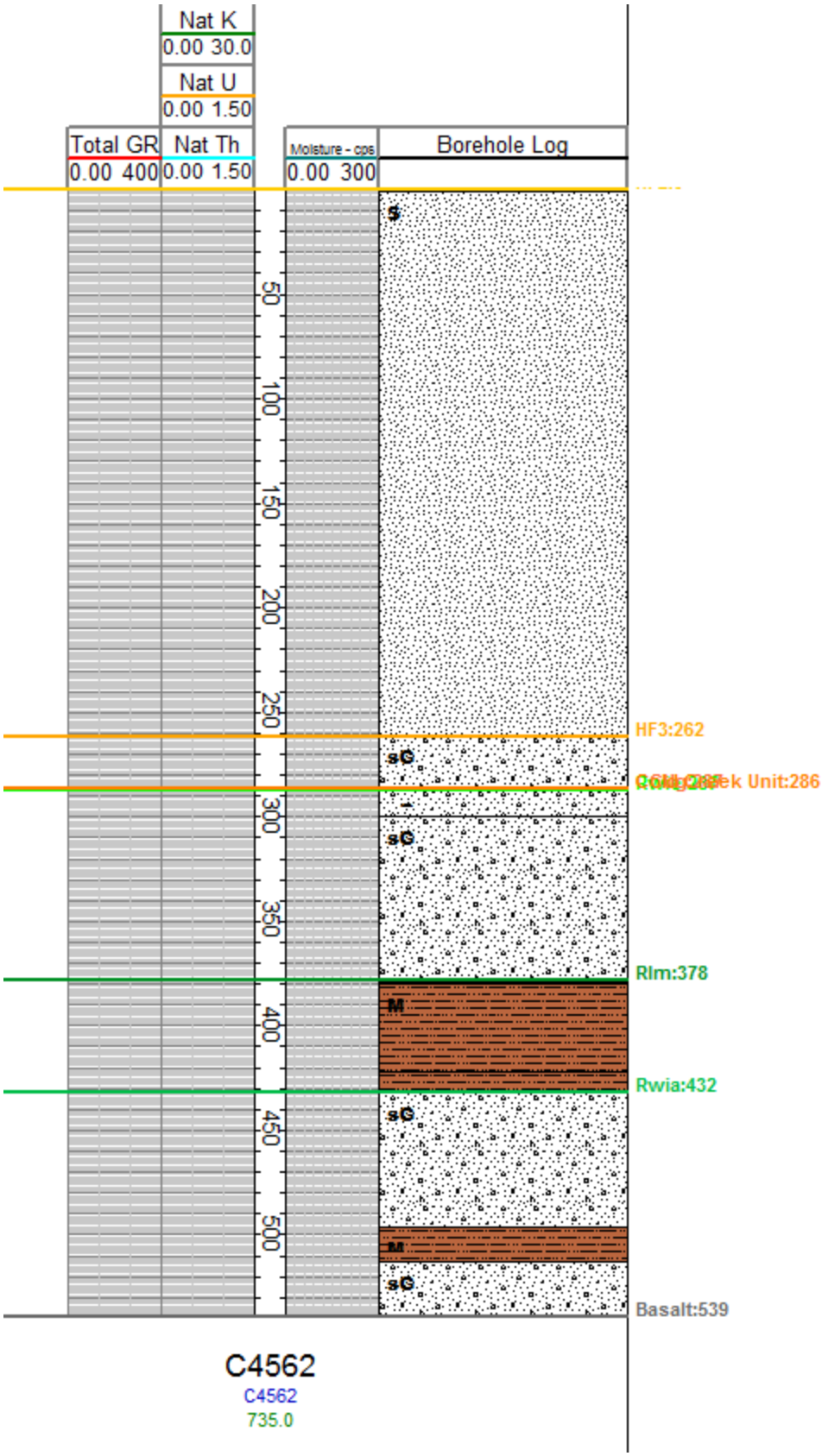

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
HF2:35
HF3:217
CCU:243
CCUg:249
Rwia:265
Basalt:286
C4260
299-E33-48

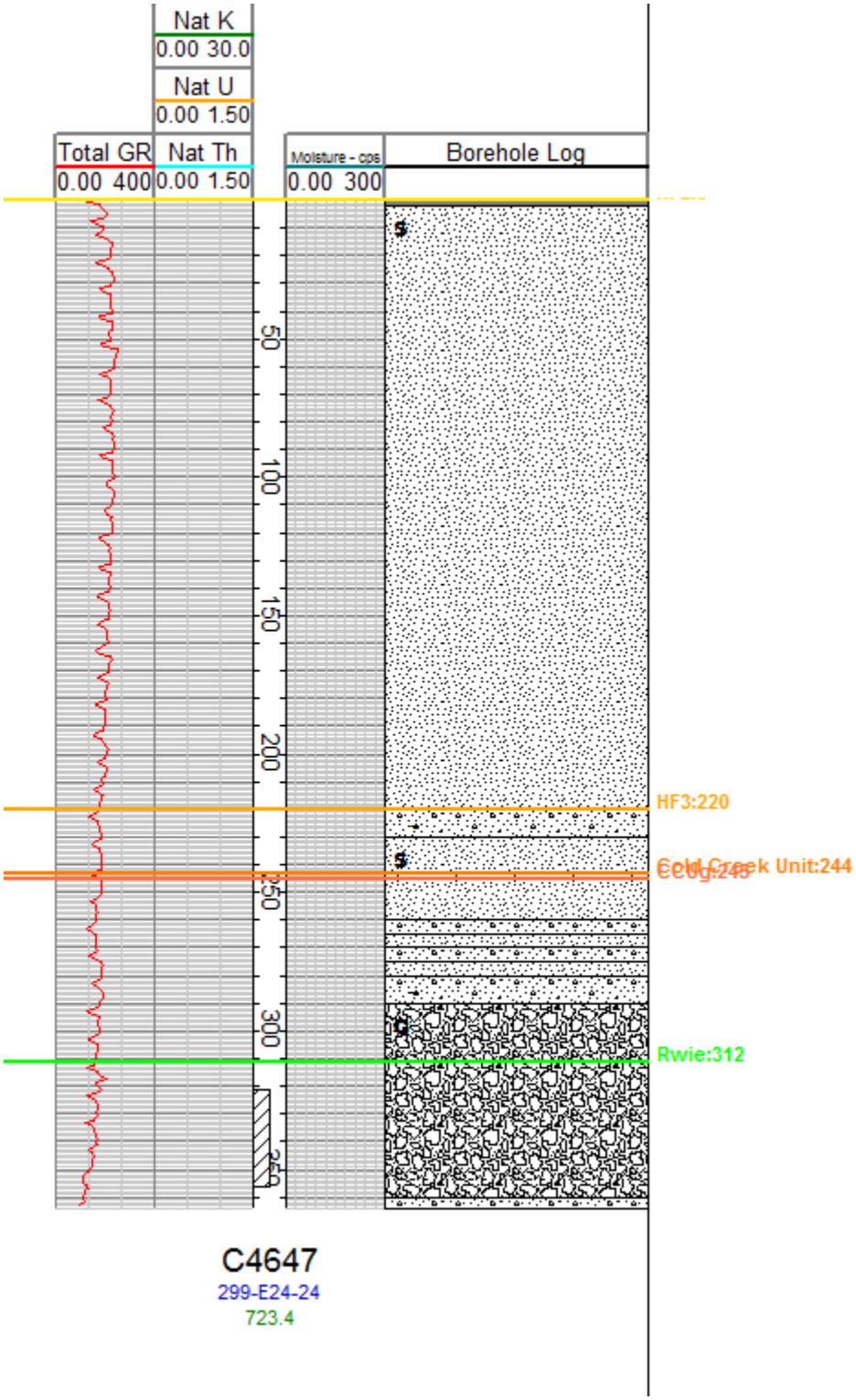

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
sG
S
S
S
msG
HF2:49
HF3:211
CCU:217
CCUg:224
Rwia:272
Basalt:284
C4261
299-E33-49

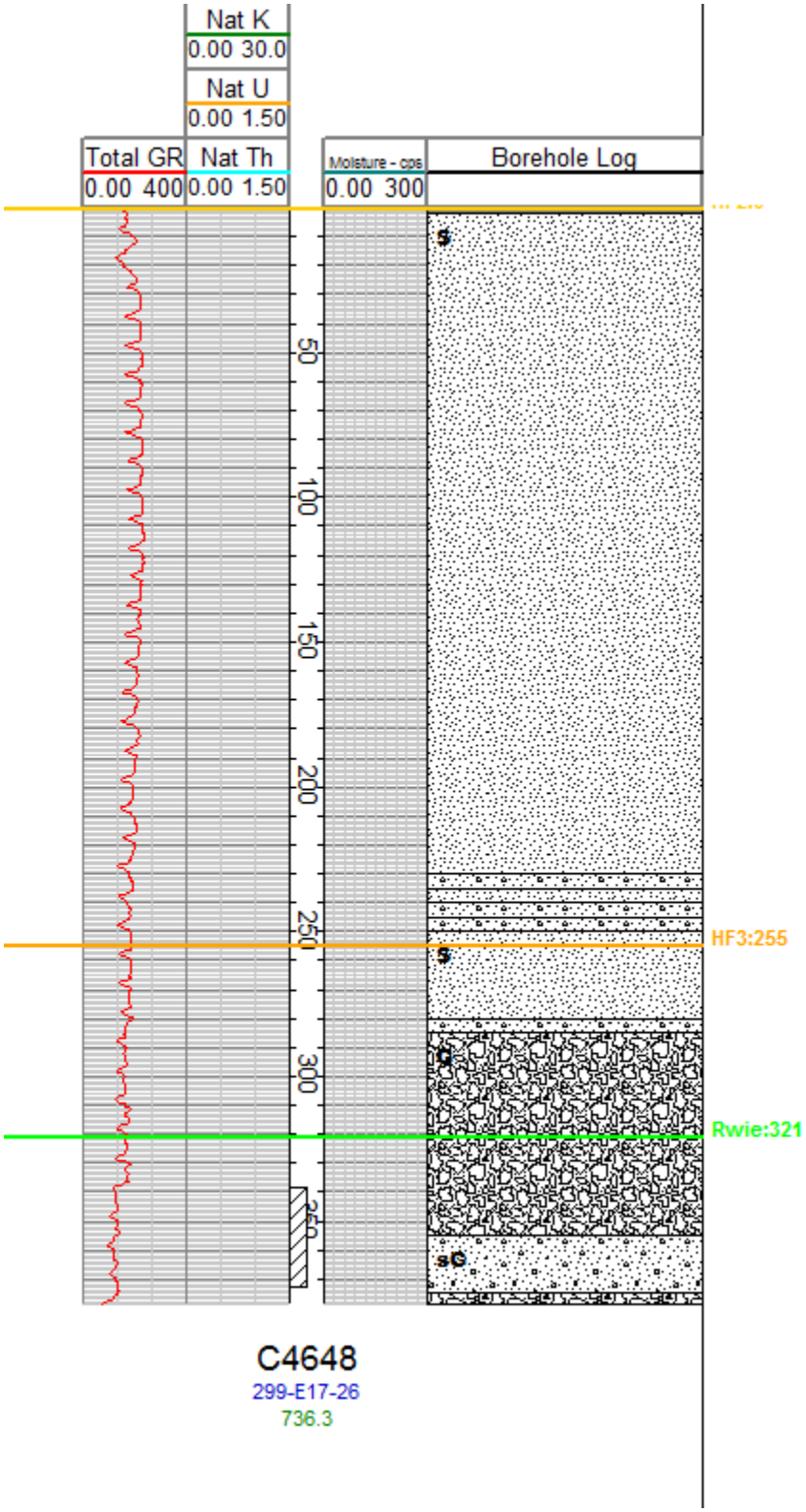

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:3
S
(m)S
mS
Slightly G...
20
40
60
80
C4304
C4304

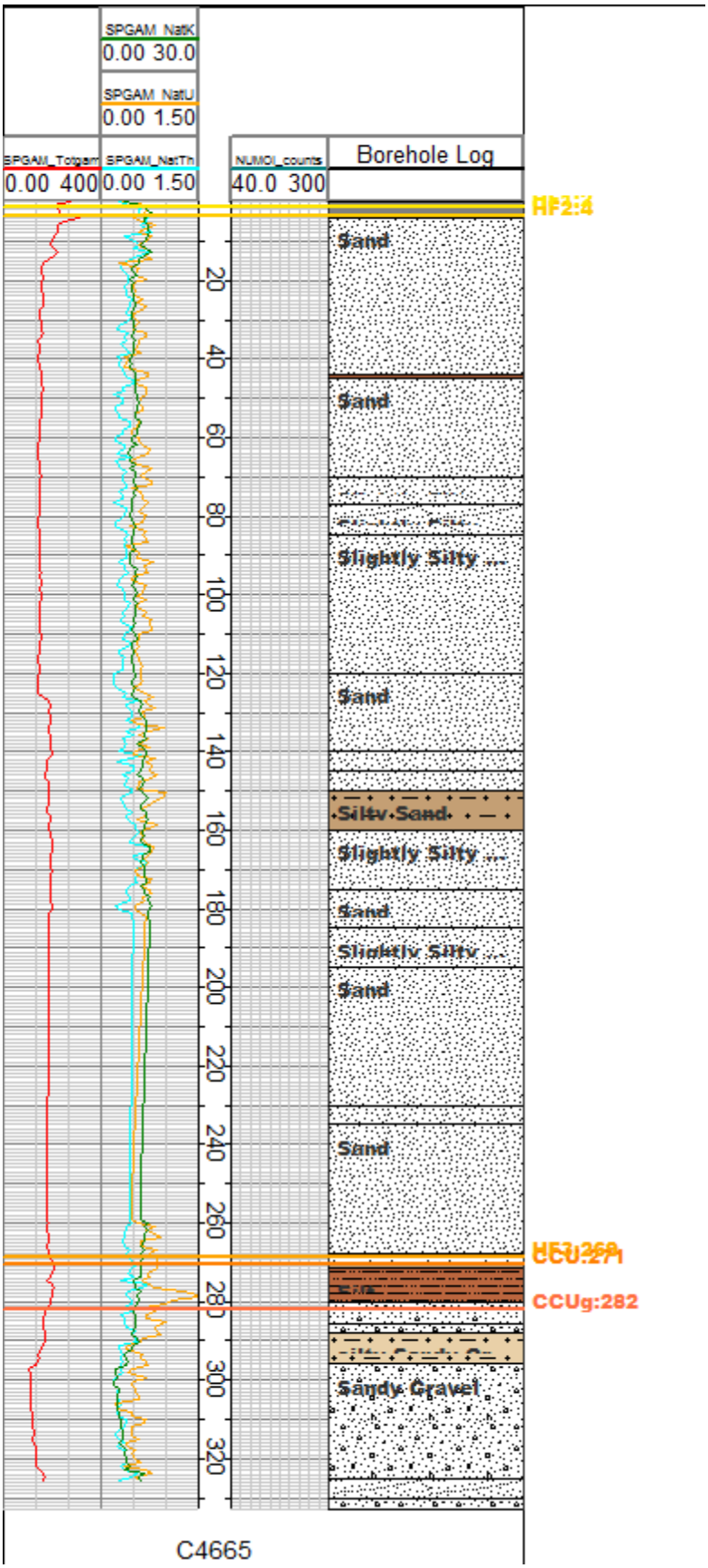

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:19
Sand
Sand
HF3:174
silty Sandy Gr...
Gravelly Sand
CCUg2288
20
40
60
80
100
120
140
160
180
200
220
240
260
C4545

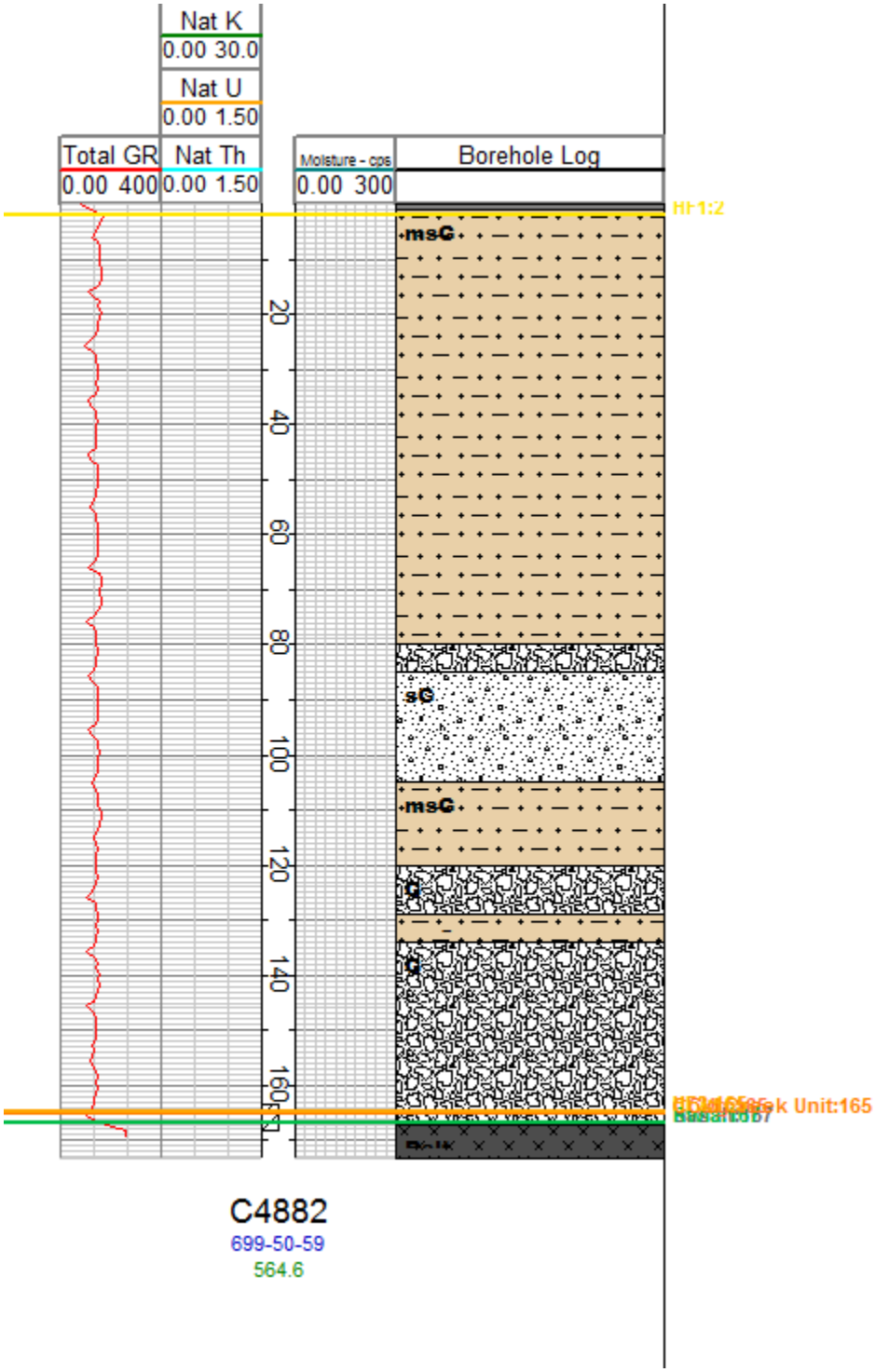

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:8
10
20
C4560
C4560
714.5

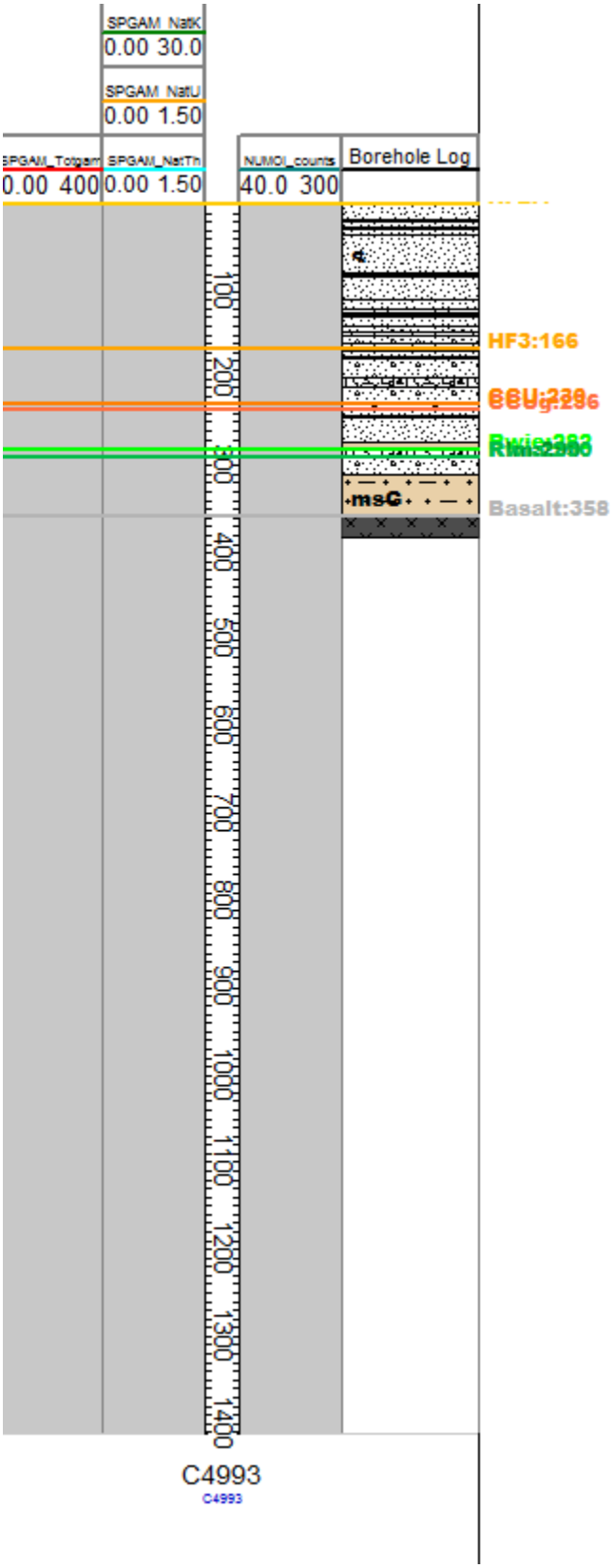

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
450
500
HF3:262
Rlm:378
Rwia:432
Basalt:539
C4562
C4562
735.0

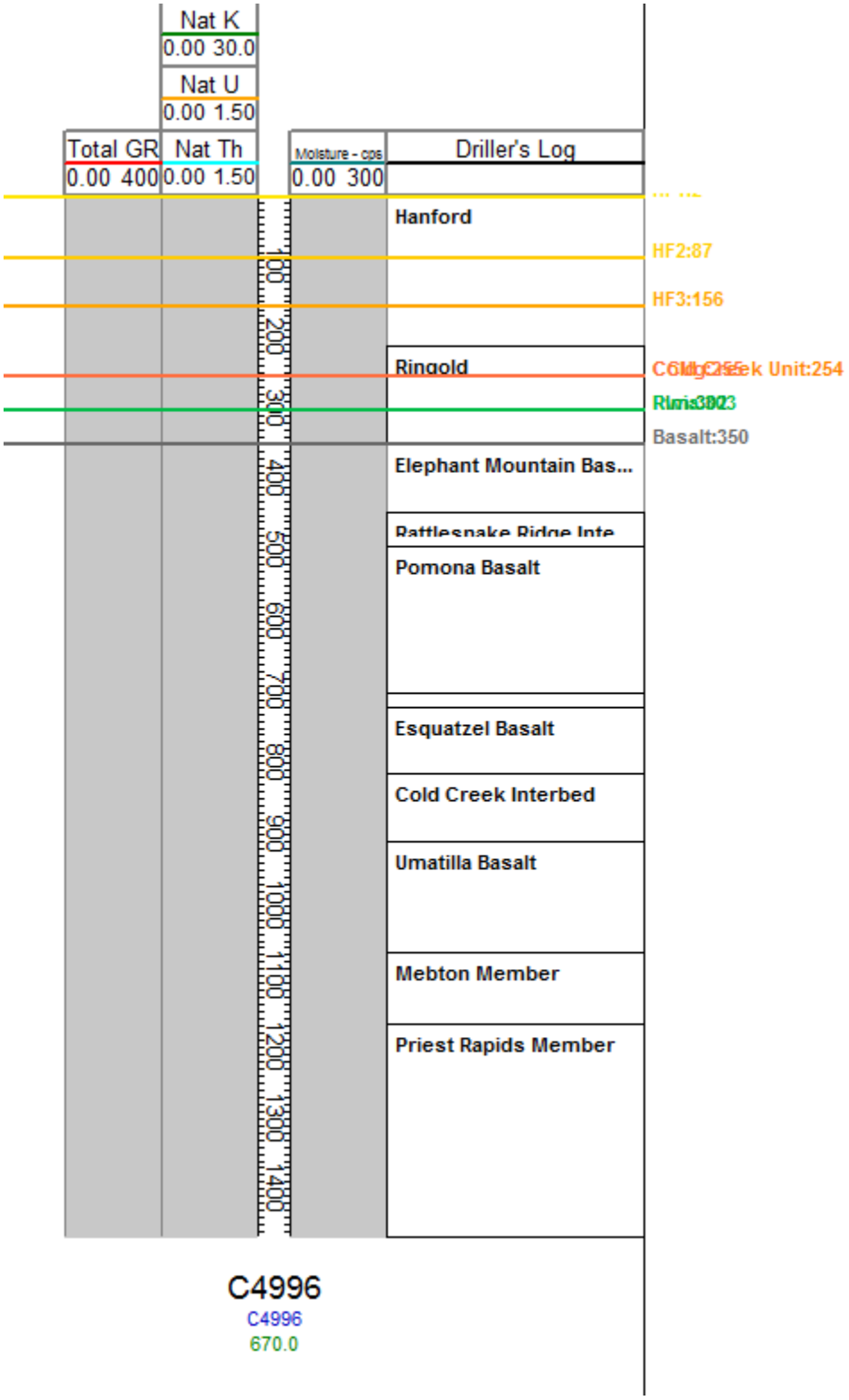

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
HF3:220
Cold Creek Unit:244
Rwie:312
C4647
299-E24-24
723.4

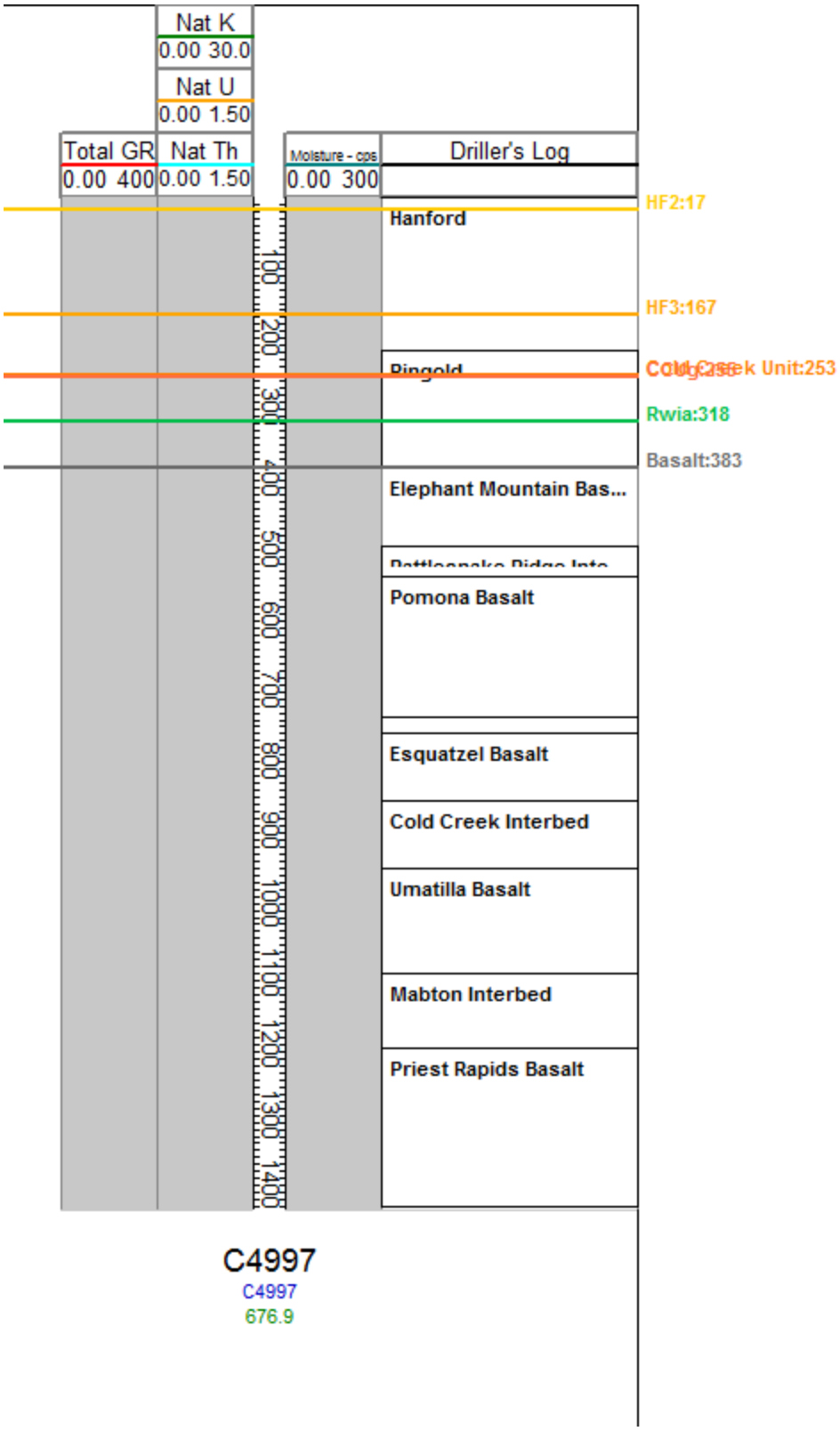

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
S
HF3:255
S
G
Rwie:321
sG
C4648
299-E17-26
736.3

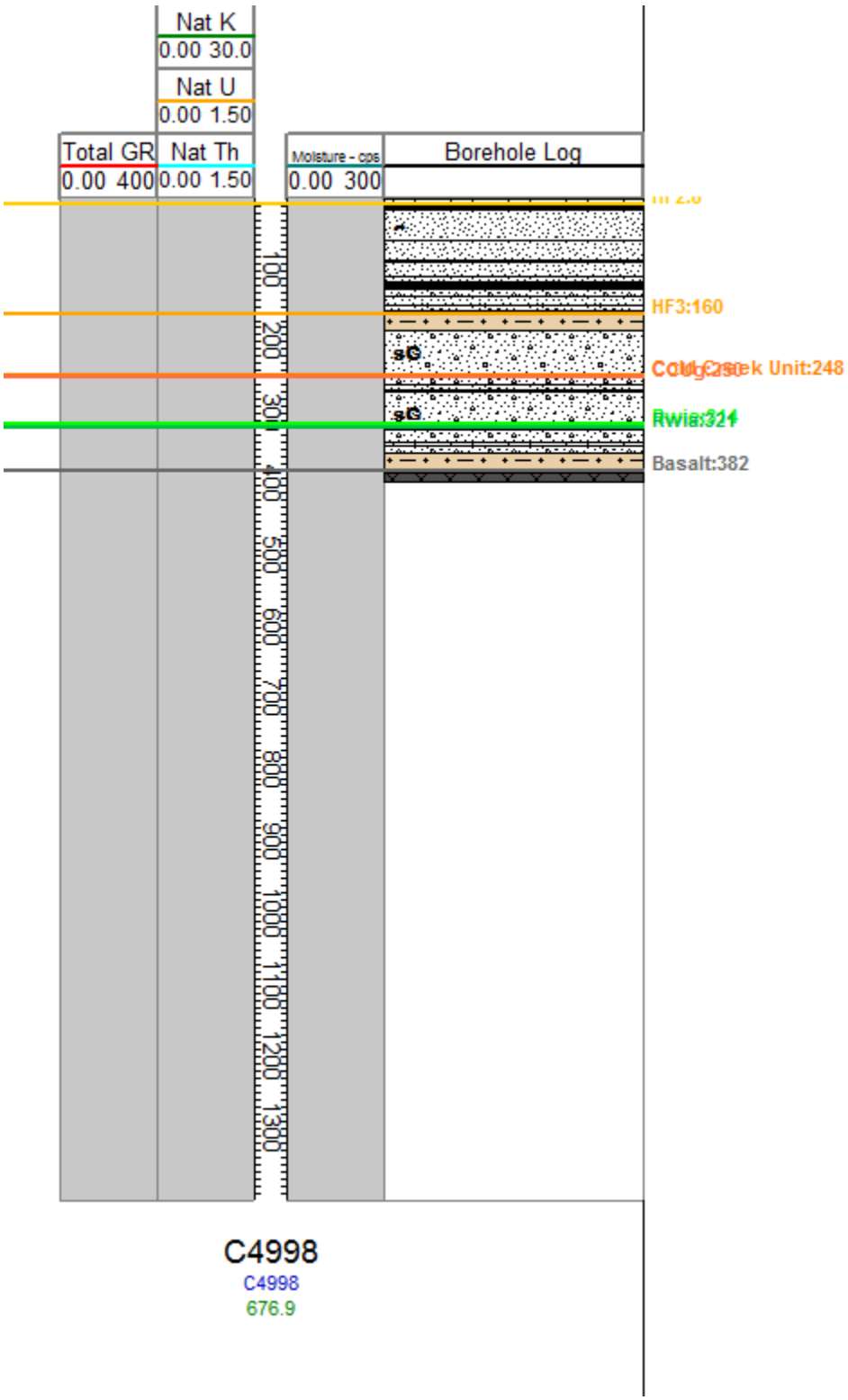

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:4
Sand
Sand
Slightly Silty ...
Sand
Silty Sand
Slightly Silty ...
Sand
Slightly Silty ...
Sand
Sand
CCUg:282
Sandy Gravel
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
C4665

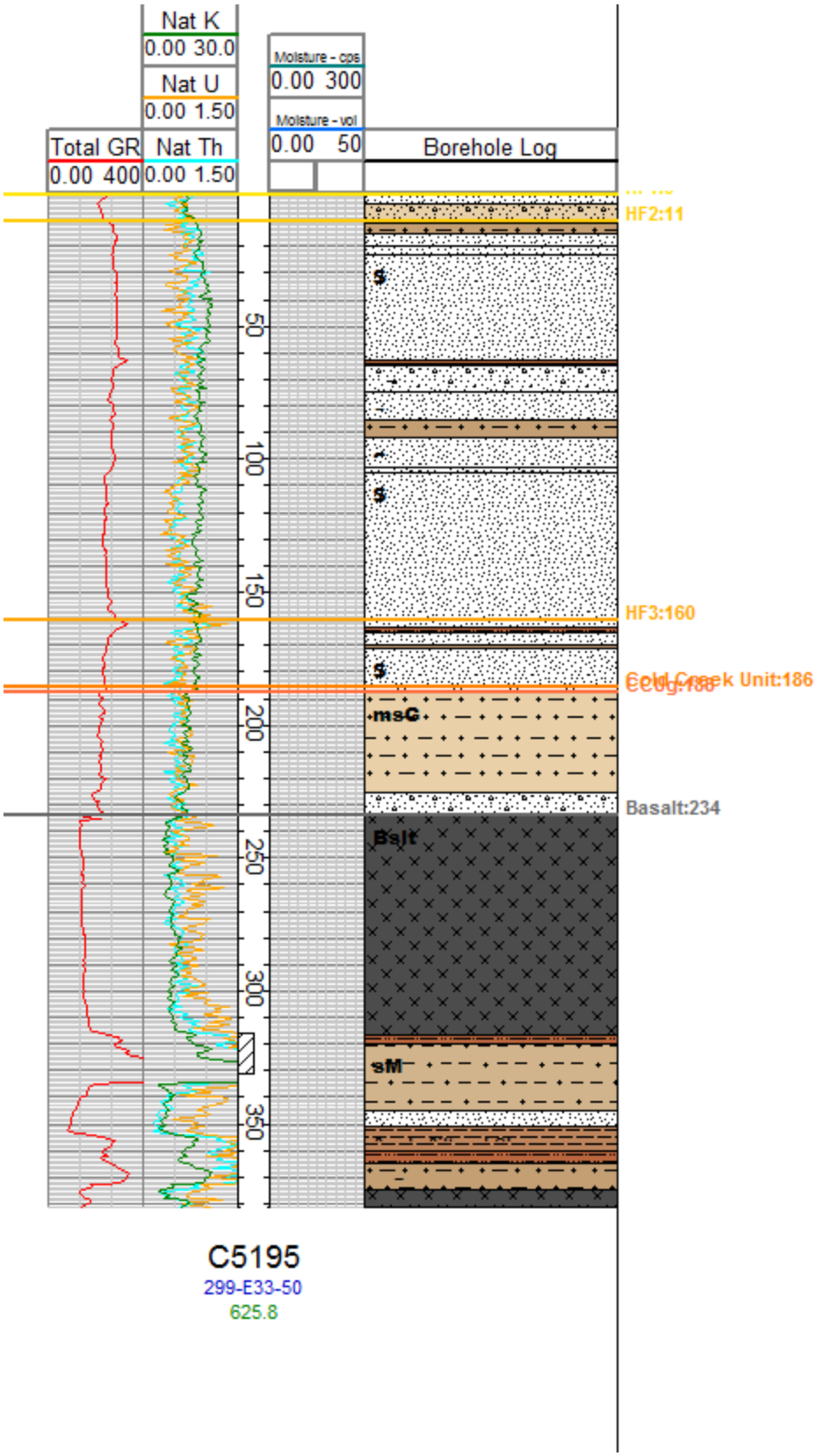

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
msG
sG
msG
G
G
20
40
60
80
100
120
140
160
Unit:165
C4882
699-50-59
564.6

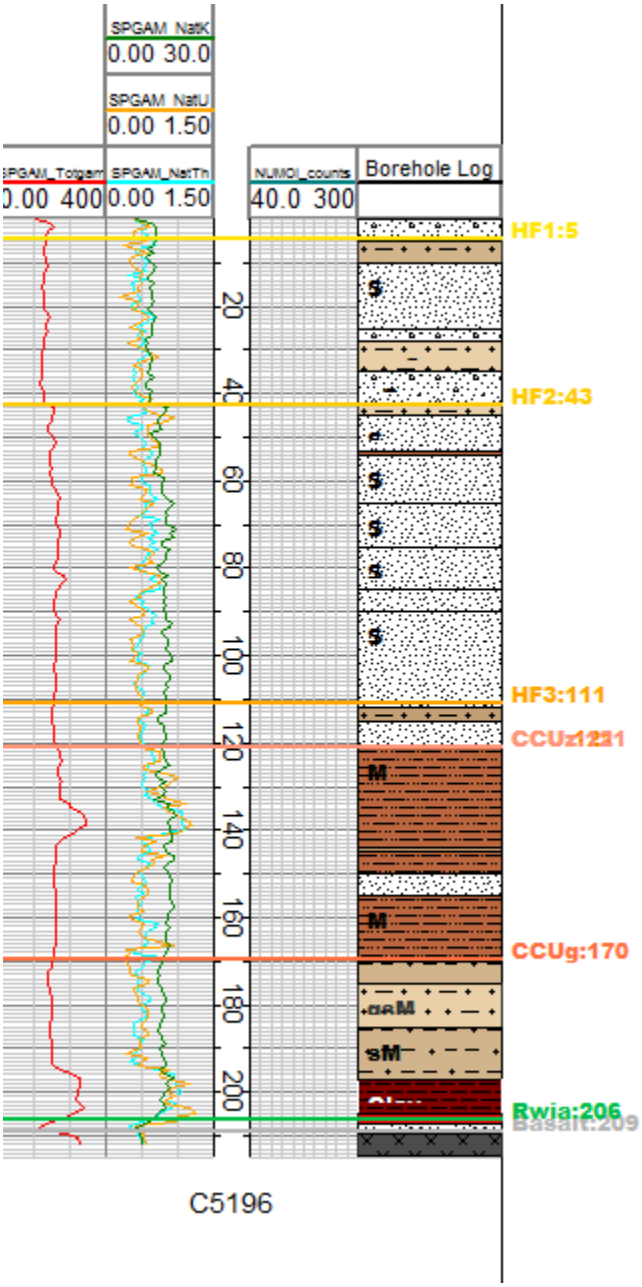

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF3:166
msC
Basalt:358
C4993
C4993


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Hanford
HF2:87
HF3:156
Ringold
Basalt:350
Elephant Mountain Bas...
Pomona Basalt
Esquatzel Basalt
Cold Creek Interbed
Umatilla Basalt
Mebton Member
Priest Rapids Member
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
C4996
C4996
670.0

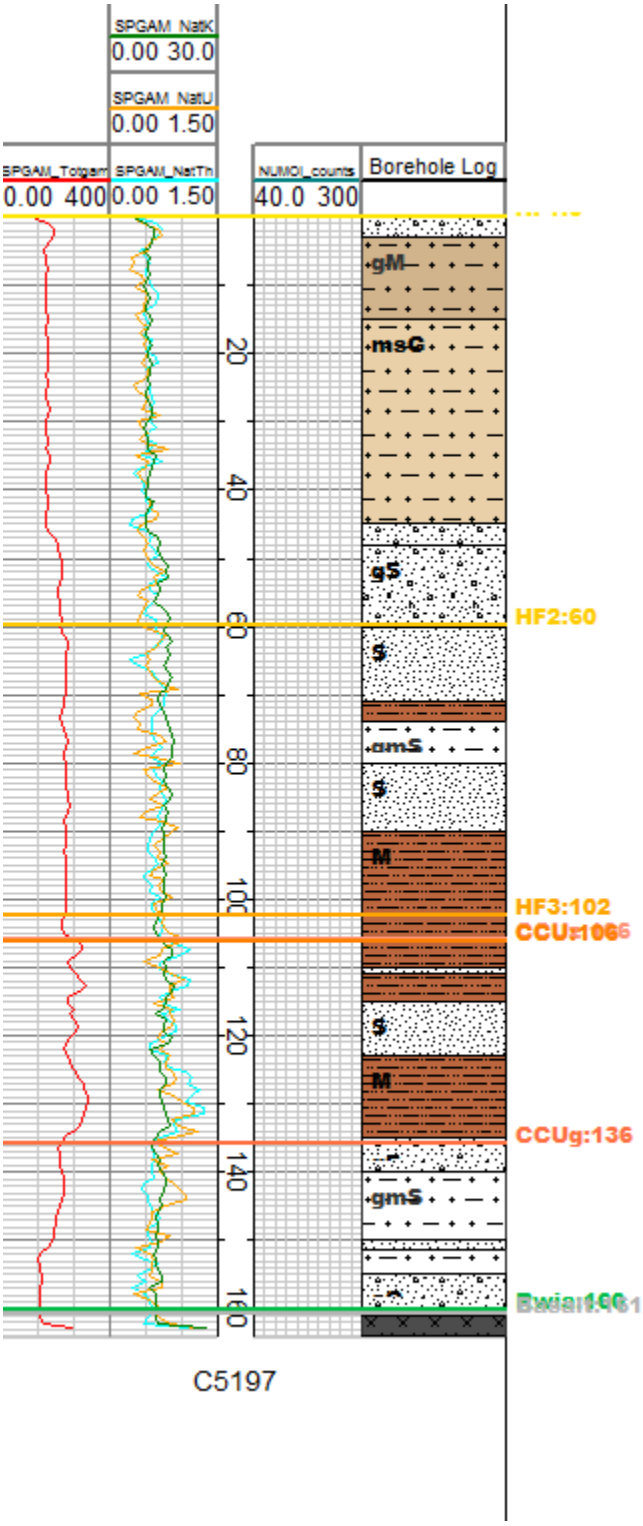

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:17
Hanford
HF3:167
Ringold
Cold Creek Unit:253
Rwia:318
Basalt:383
Elephant Mountain Bas...
Pomona Basalt
Esquatzel Basalt
Cold Creek Interbed
Umatilla Basalt
Mabton Interbed
Priest Rapids Basalt
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
C4997
C4997
676.9


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF3:160
Cold Creek Unit:248
Basalt:382
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
C4998
C4998
676.9

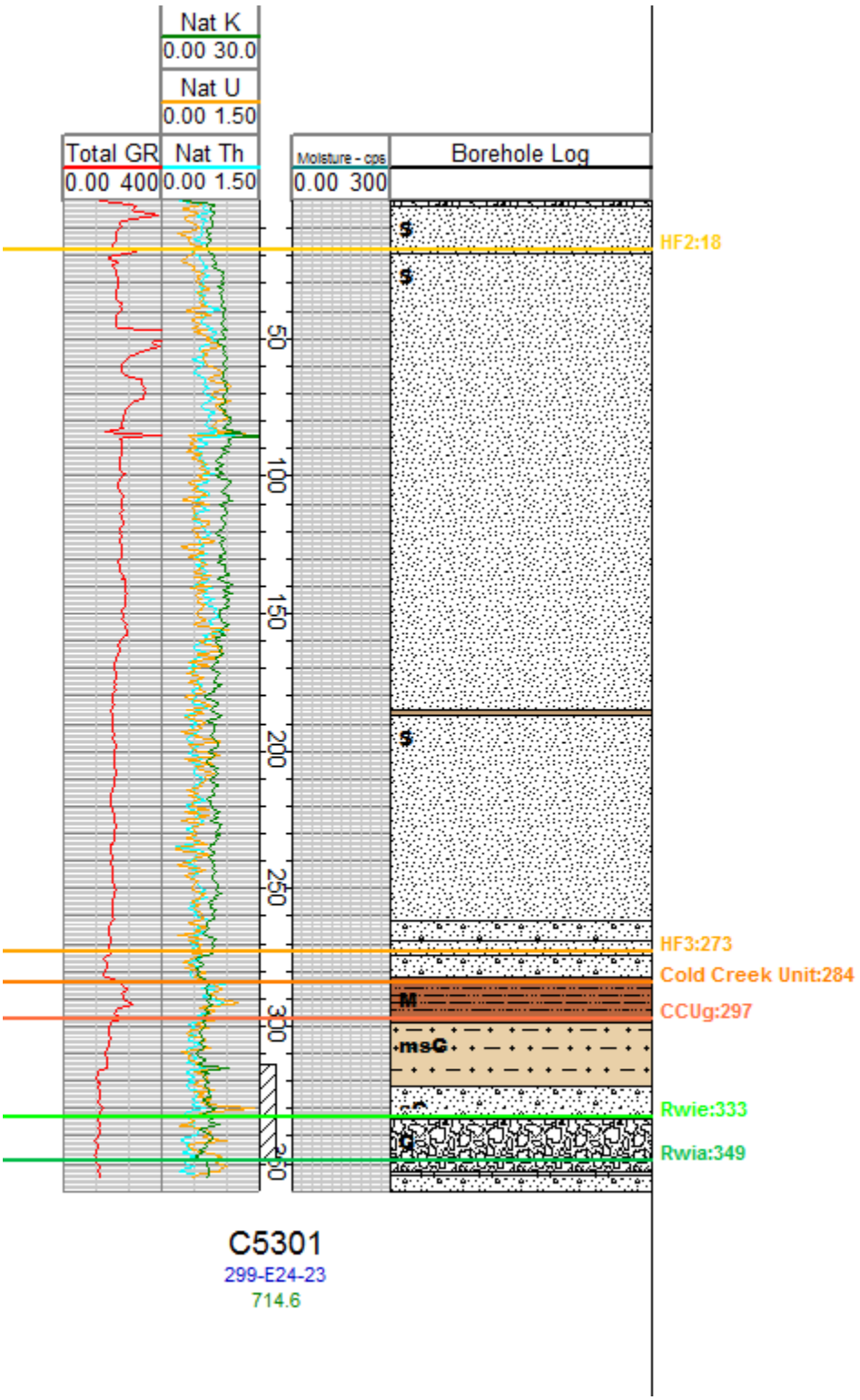

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF2:11
HF3:160
Cold Creek Unit:186
Basalt:234
msC
Balt
sM
50
100
150
200
250
300
350
C5195
299-E33-50
625.8

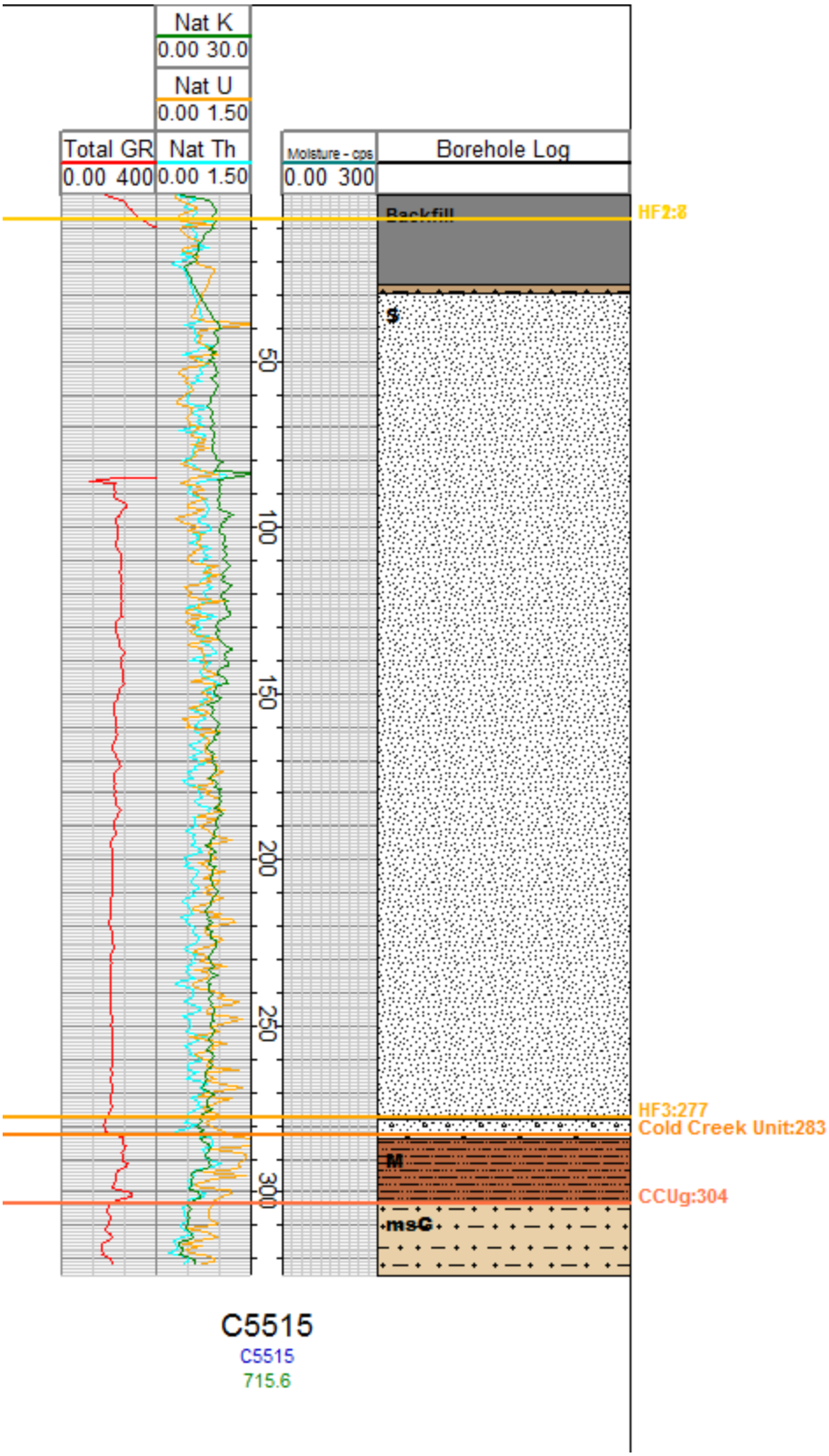

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:5
HF2:43
HF3:111
CCUz:121
CCUg:170
Rwia:206
Basalt:209
20
40
60
80
100
120
140
160
180
200

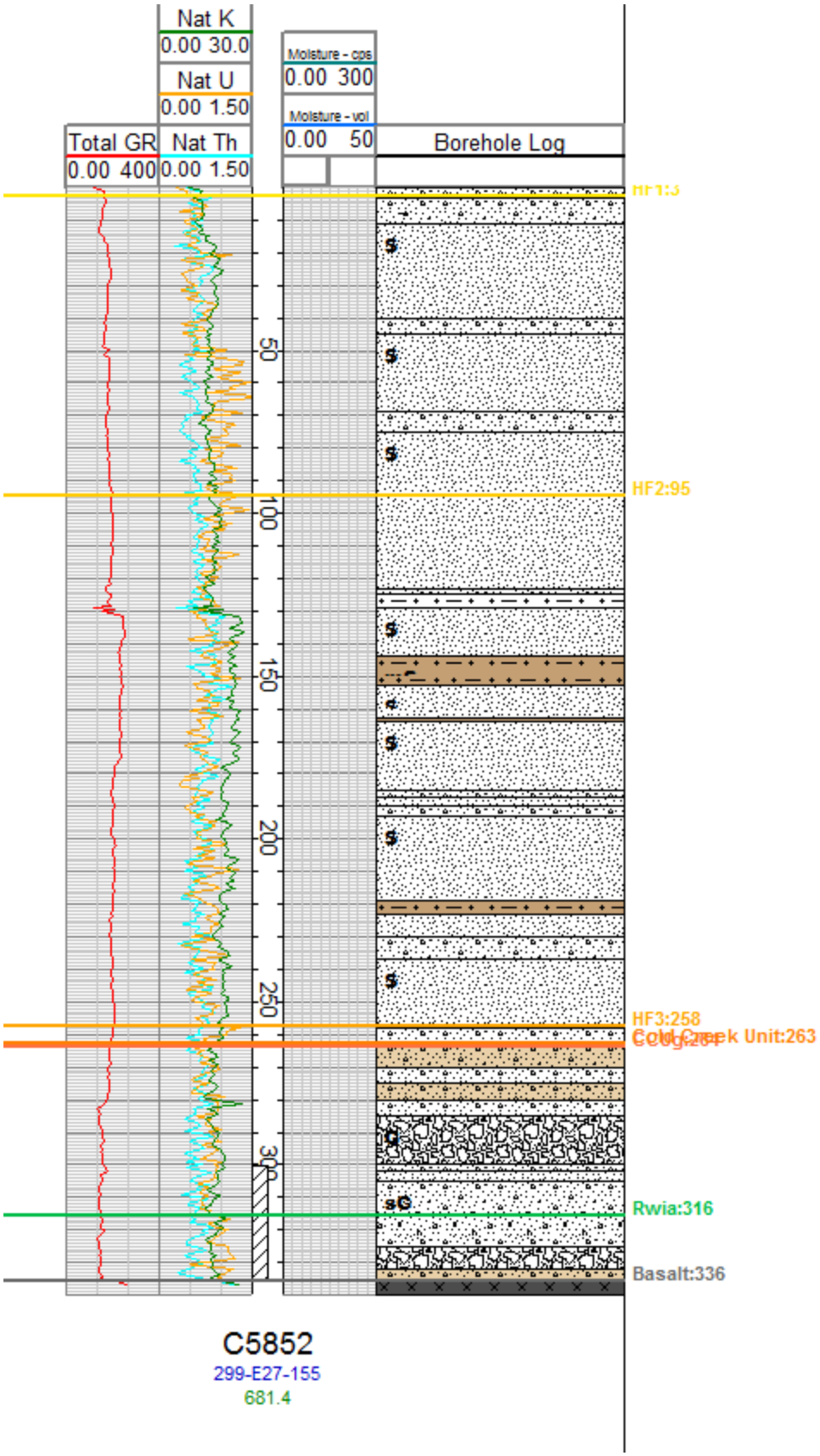
C5196

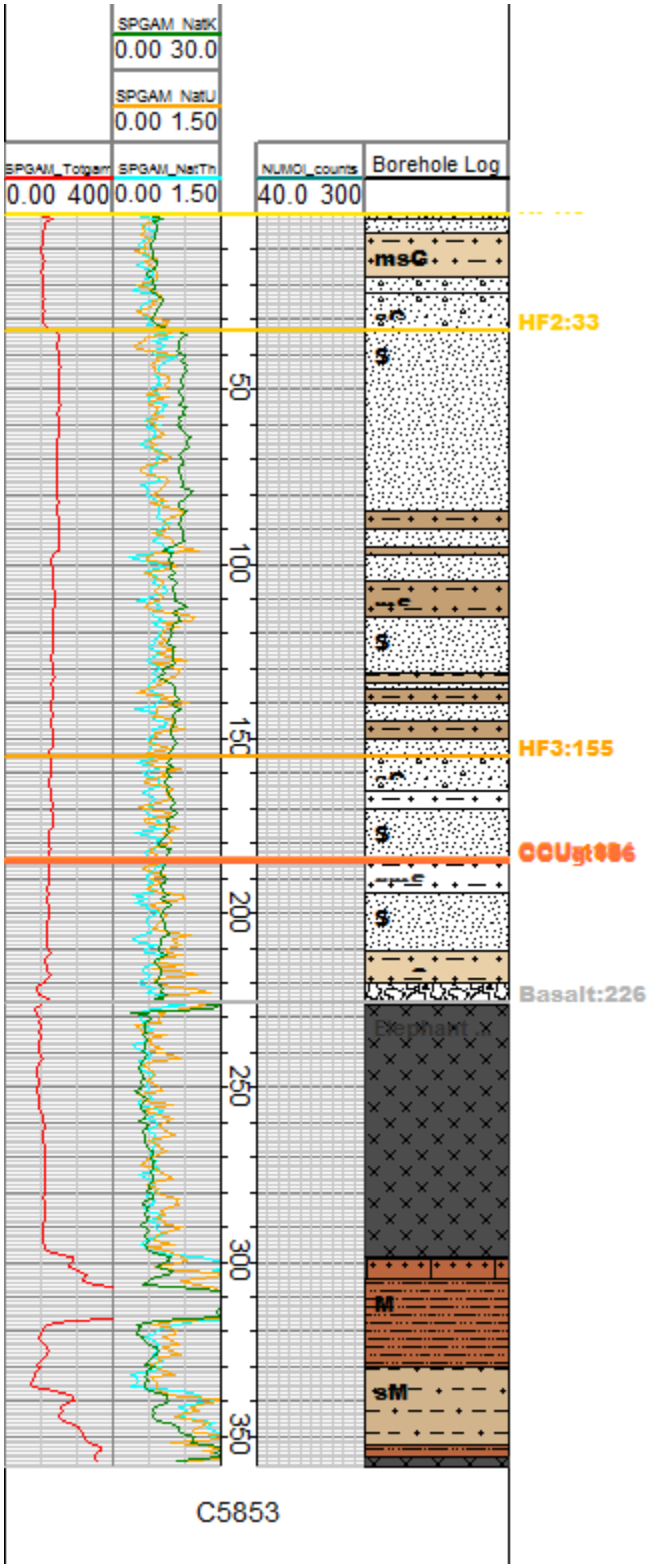

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
gM
msC
gS
S
amS
S
M
S
M
gmS
HF2:60
HF3:102
CCUg:136
20
40
60
80
100
120
140
160

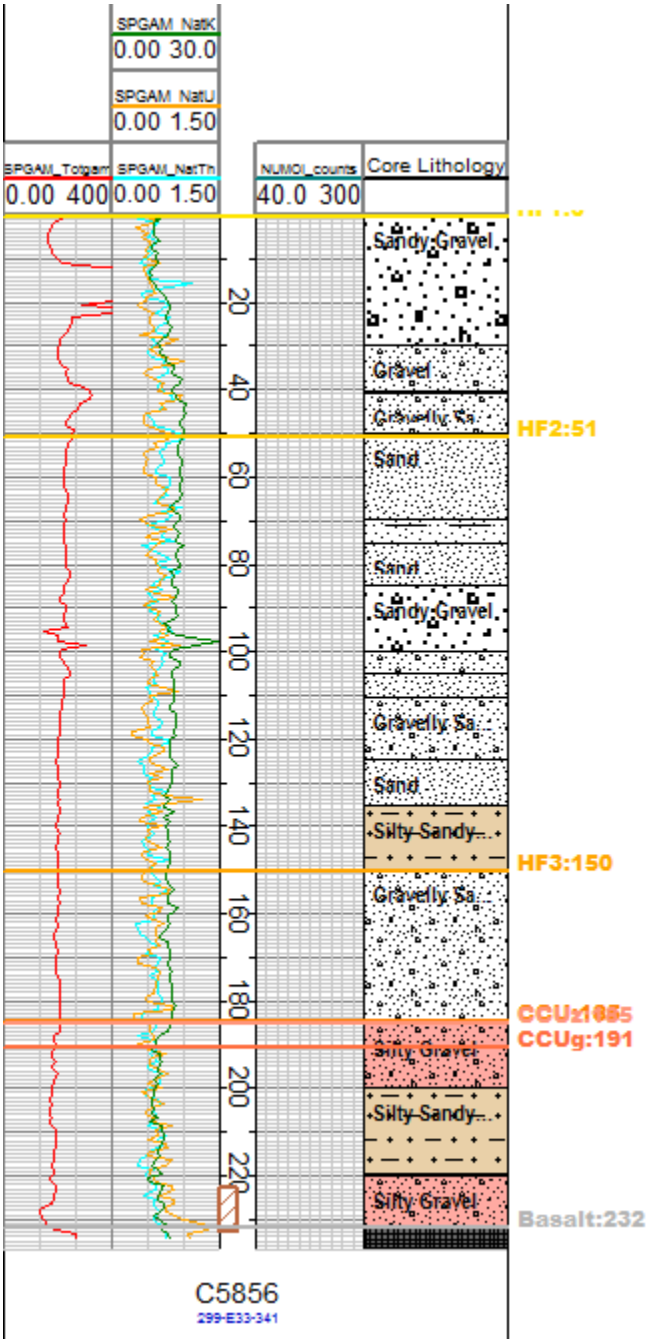
C5197

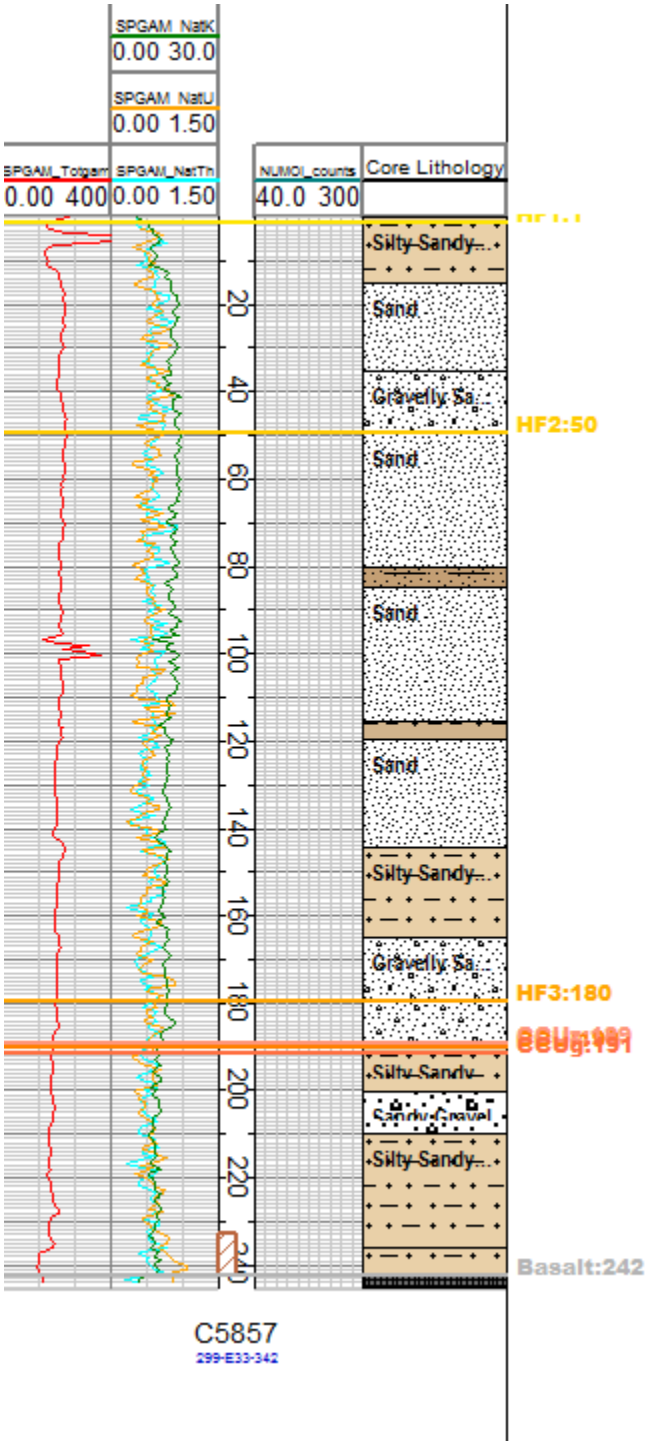

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:18
HF3:273
Cold Creek Unit:284
CCUg:297
Rwie:333
Rwia:349
50
100
150
200
250
300
350
C5301
299-E24-23
714.6

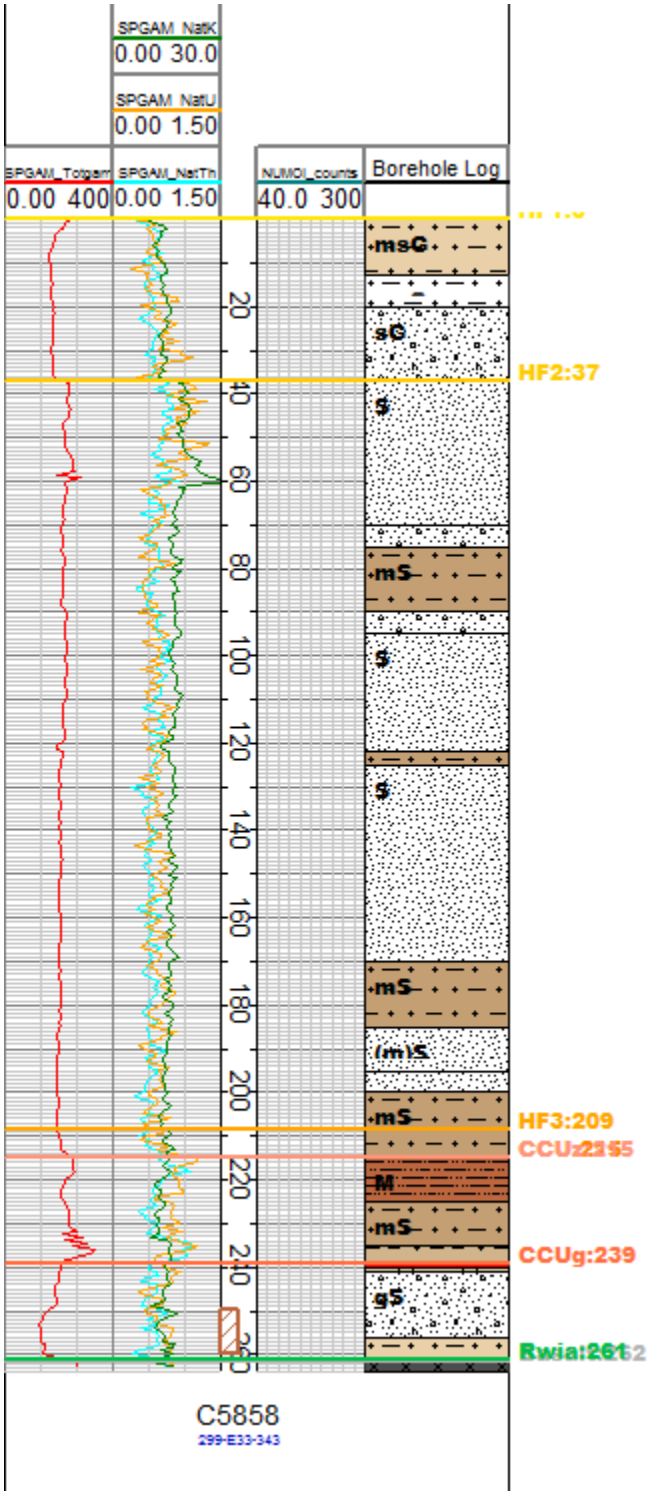

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
Backfill
HF2:8
S
50
100
150
200
250
300
HF3:277
Cold Creek Unit:283
M
CCUg:304
msG
C5515
C5515
715.6

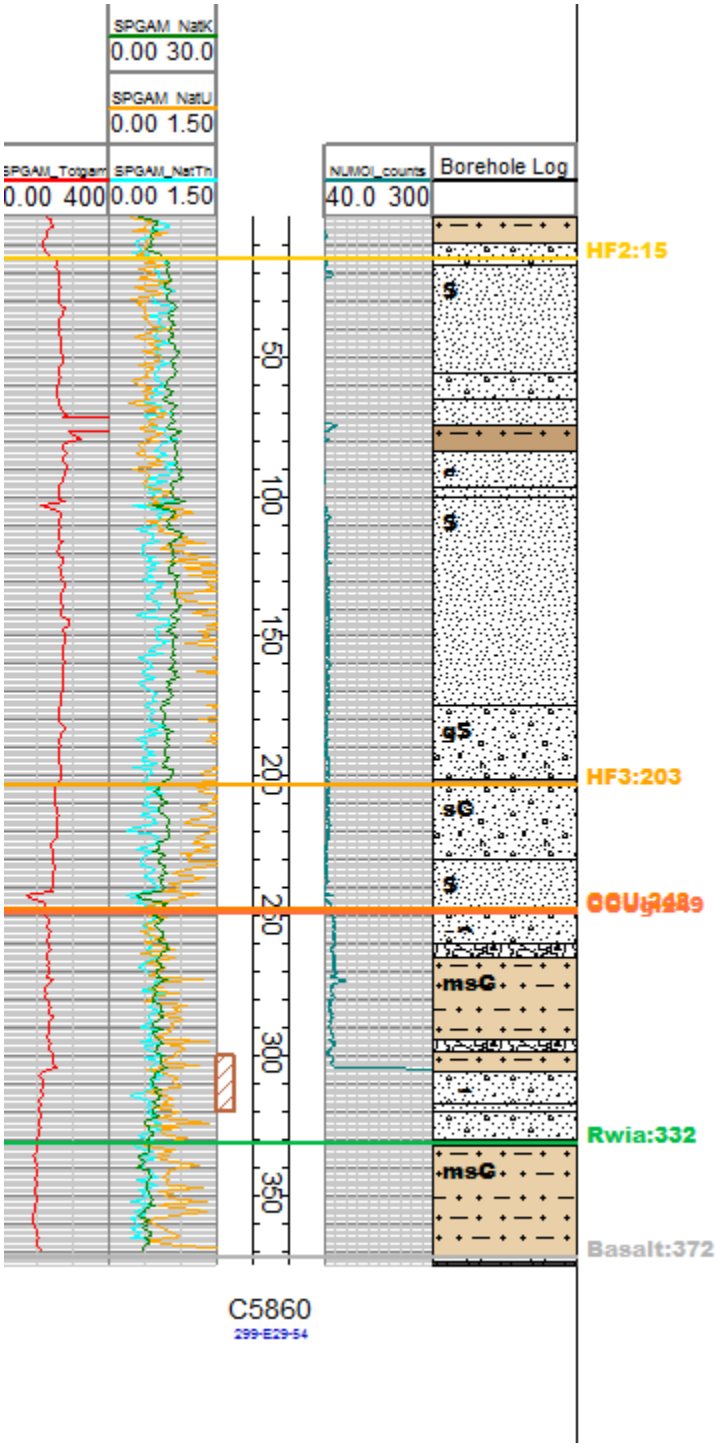

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
50
100
150
200
250
300
HF2:95
HF3:258
Cold Creek Unit:263
Rwia:316
Basalt:336
C5852
299-E27-155
681.4

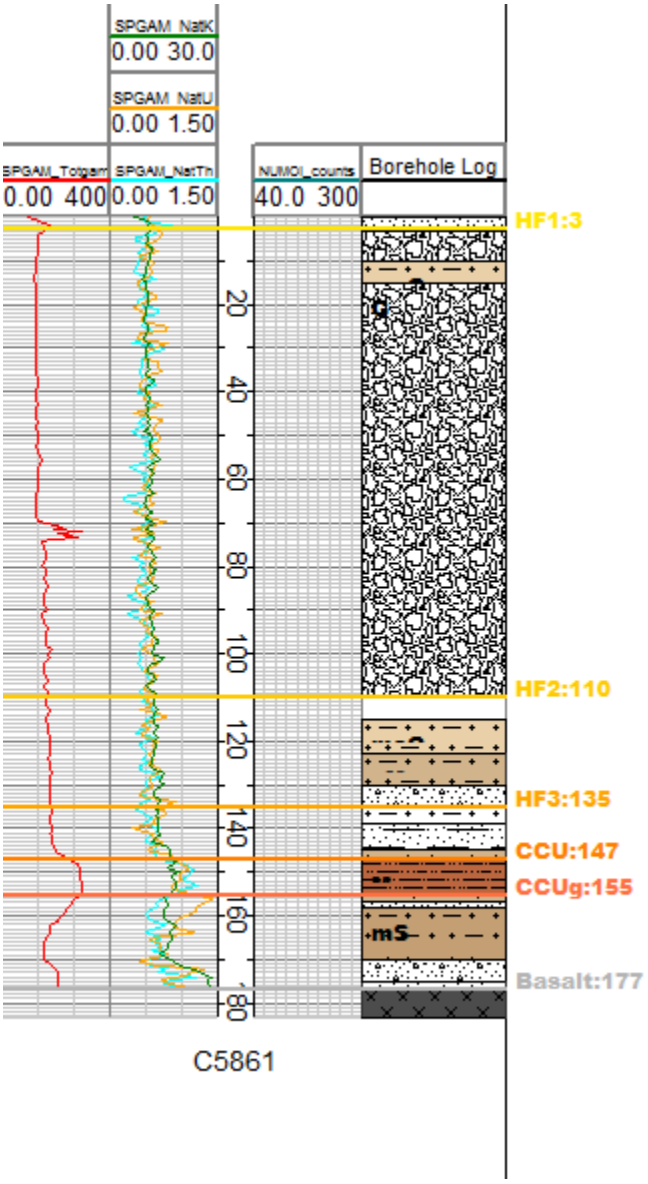

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
HF2:33
HF3:155
CCUgt886
Basalt:226
Permanent
M
sM
50
100
150
200
250
300
350
C5853

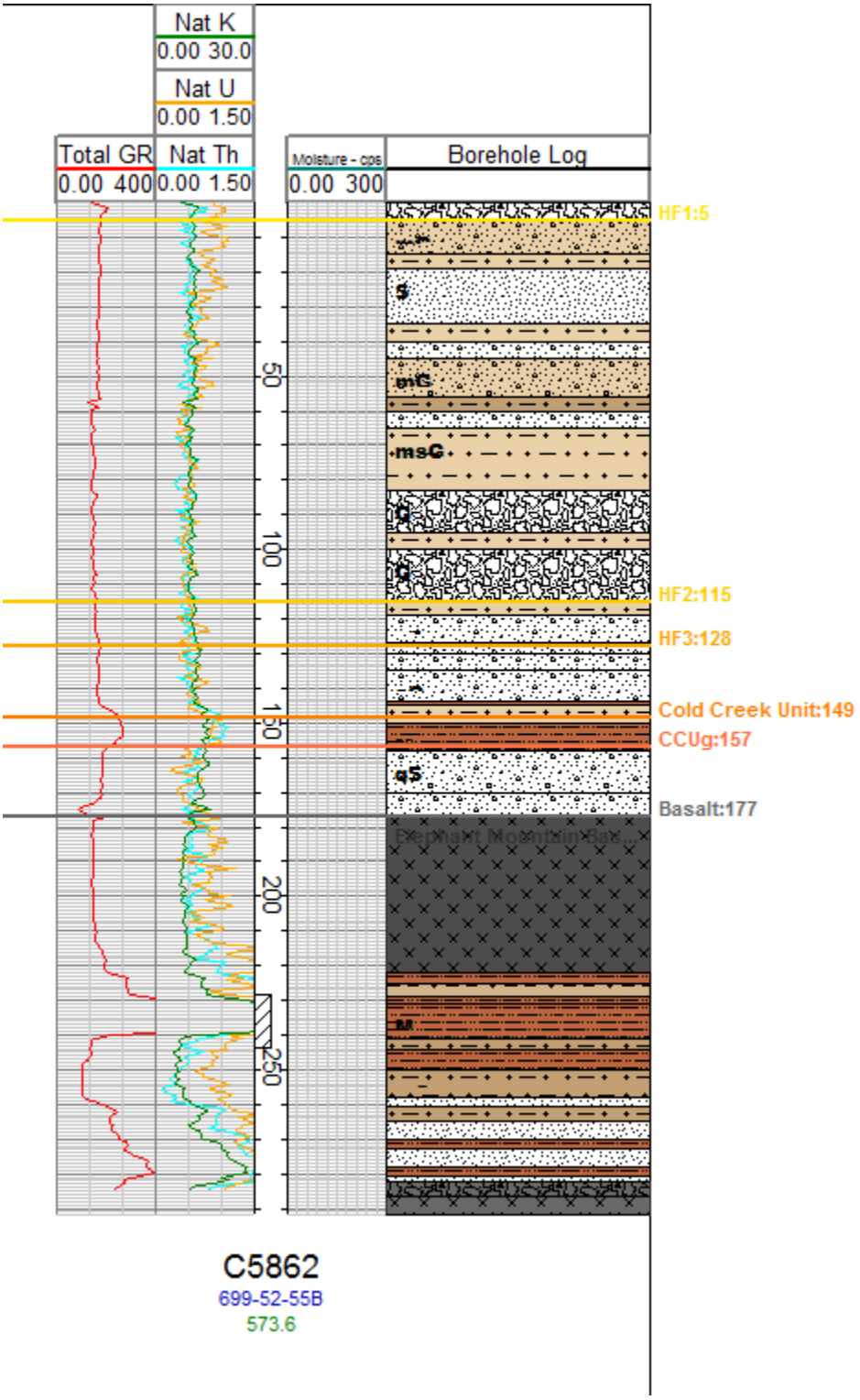

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Sandy Gravel
Gravel
Gravelly Sa
HF2:51
Sand
Sand
Sandy Gravel
Gravelly Sa
Sand
Silty Sandy
HF3:150
Gravelly Sa
CCUz:185
CCUg:191
Silty Gravel
Silty Sandy
Silty Gravel
Basalt:232
20
40
60
80
100
120
140
160
180
200
220
C5856
299-E33-341

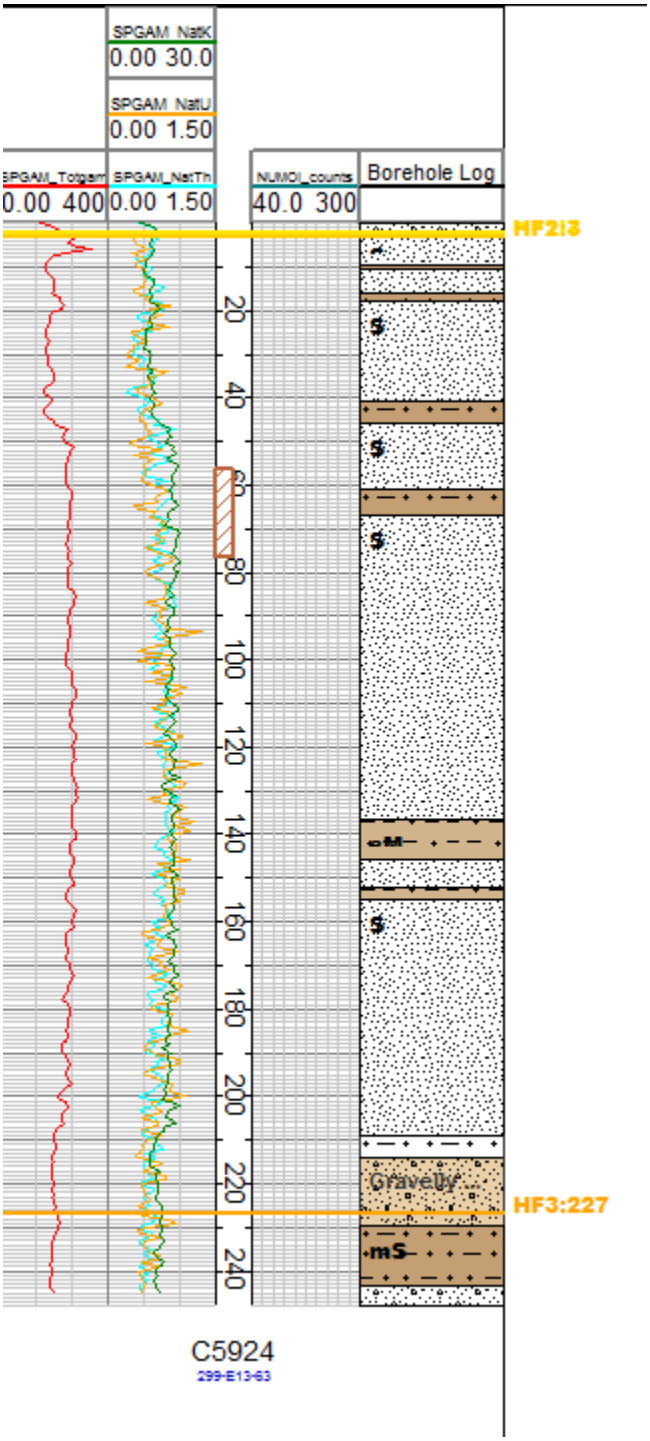

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Silty Sandy...
Sand
Gravelly Sa...
HF2:50
Sand
Sand
Sand
Silty Sandy...
Gravelly Sa...
HF3:180
Silty Sandy...
Sandy Gravel
Silty Sandy...
Basalt:242
20
40
60
80
100
120
140
160
180
200
220
240
C5857
299-E33-342

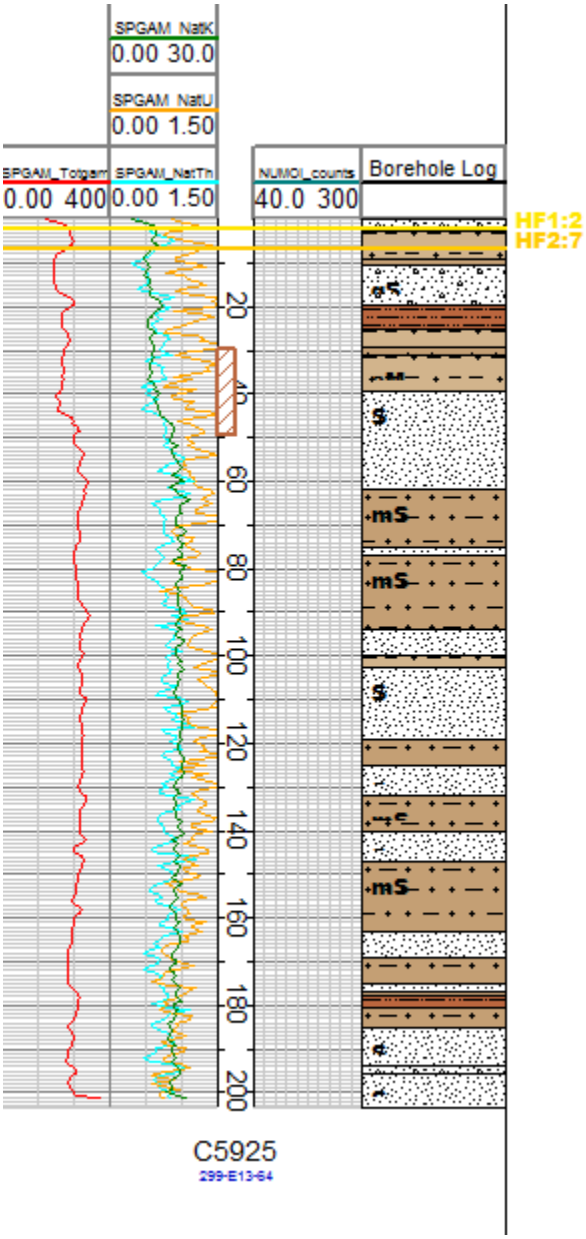

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
sG
S
mS
S
S
mS
(m)S
mS
HF3:209
M
mS
CCUg:239
gS
Rwia:261
HF2:37
20
40
60
80
100
120
140
160
180
200
220
240
260
C5858
299-E33-343

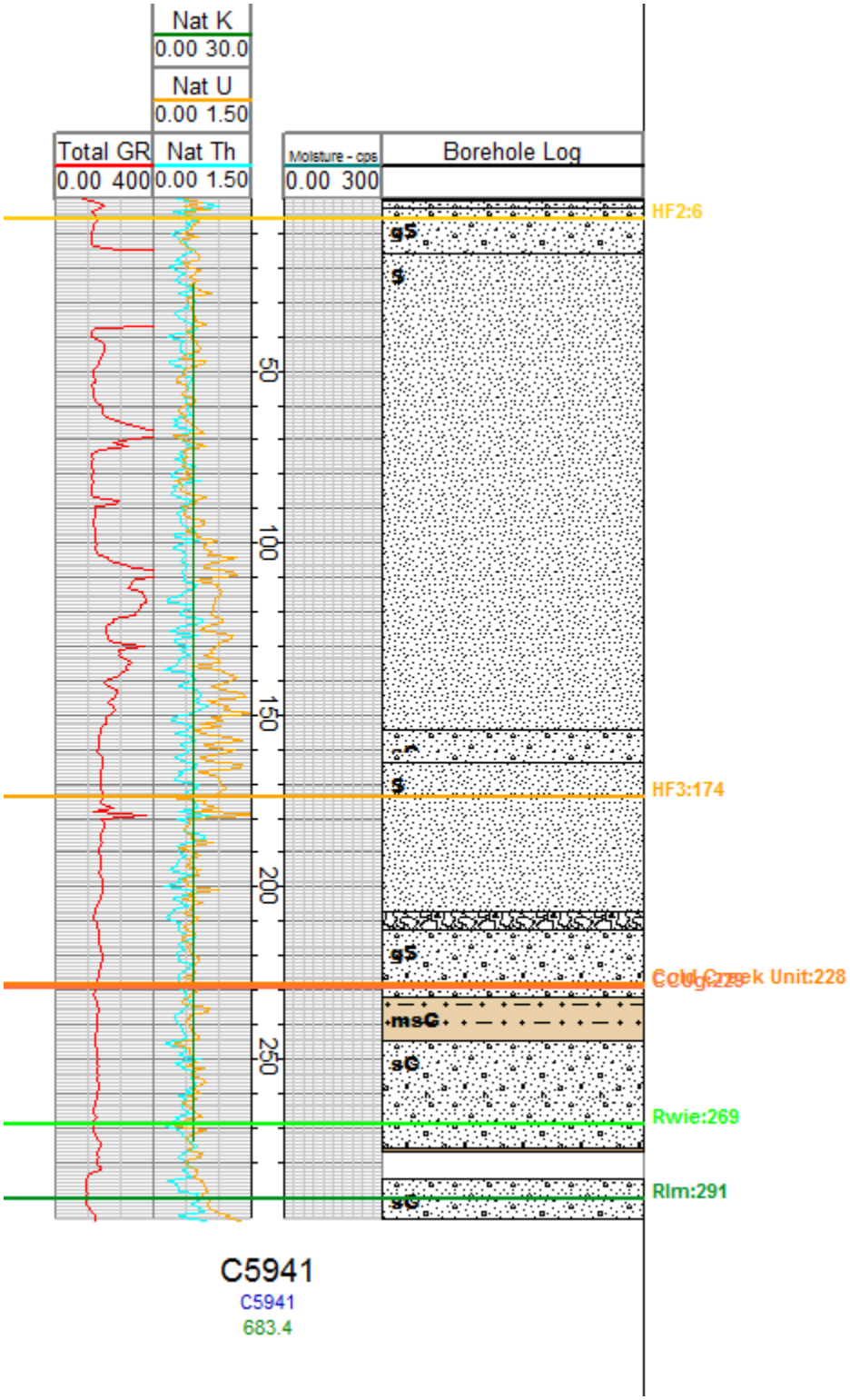

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:15
HF3:203
Rwia:332
Basalt:372
msC
C5860
299-E29-54

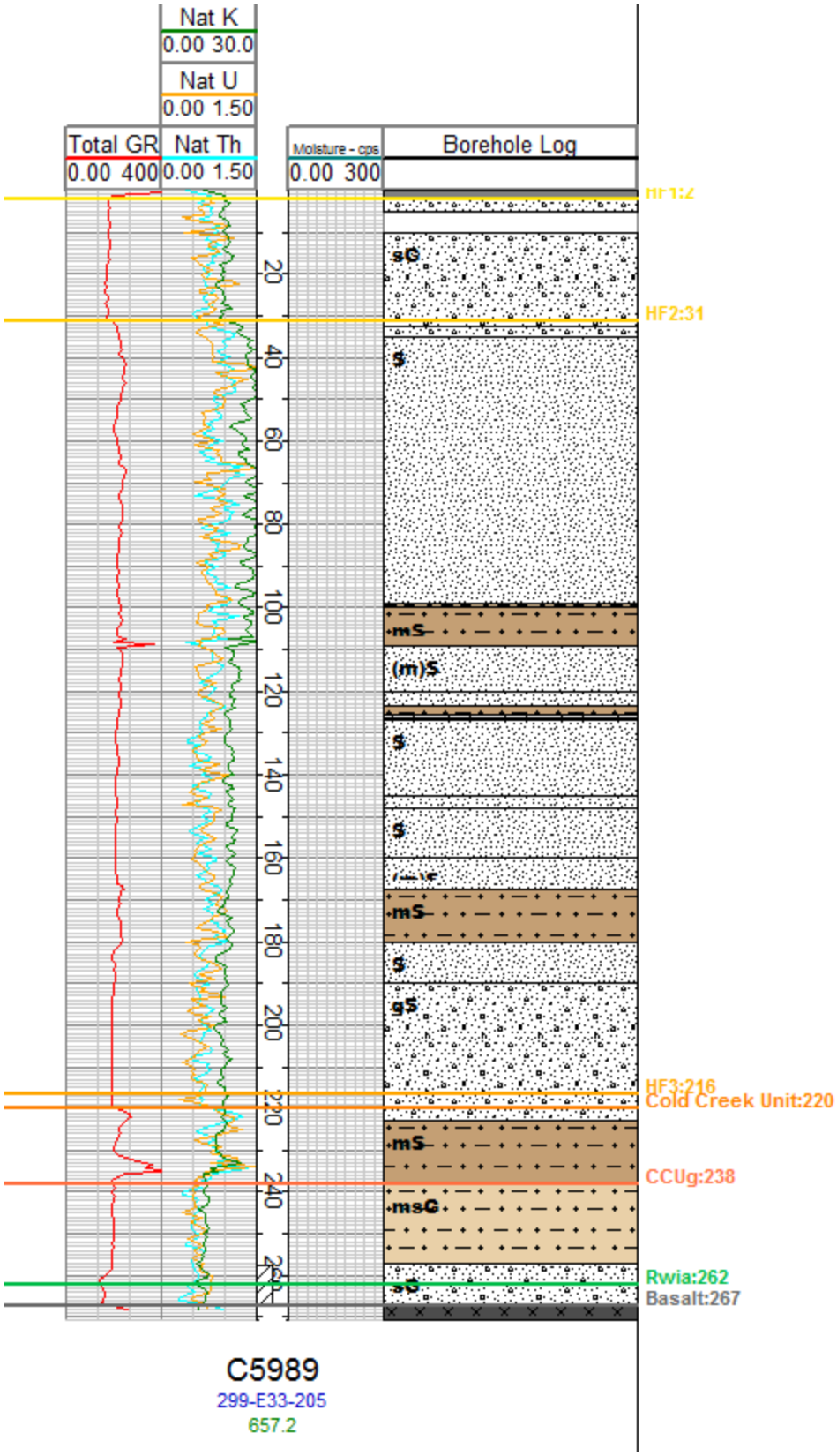

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:3
HF2:110
HF3:135
CCU:147
CCUg:155
Basalt:177
20
40
60
80
100
120
140
160
180
C5861

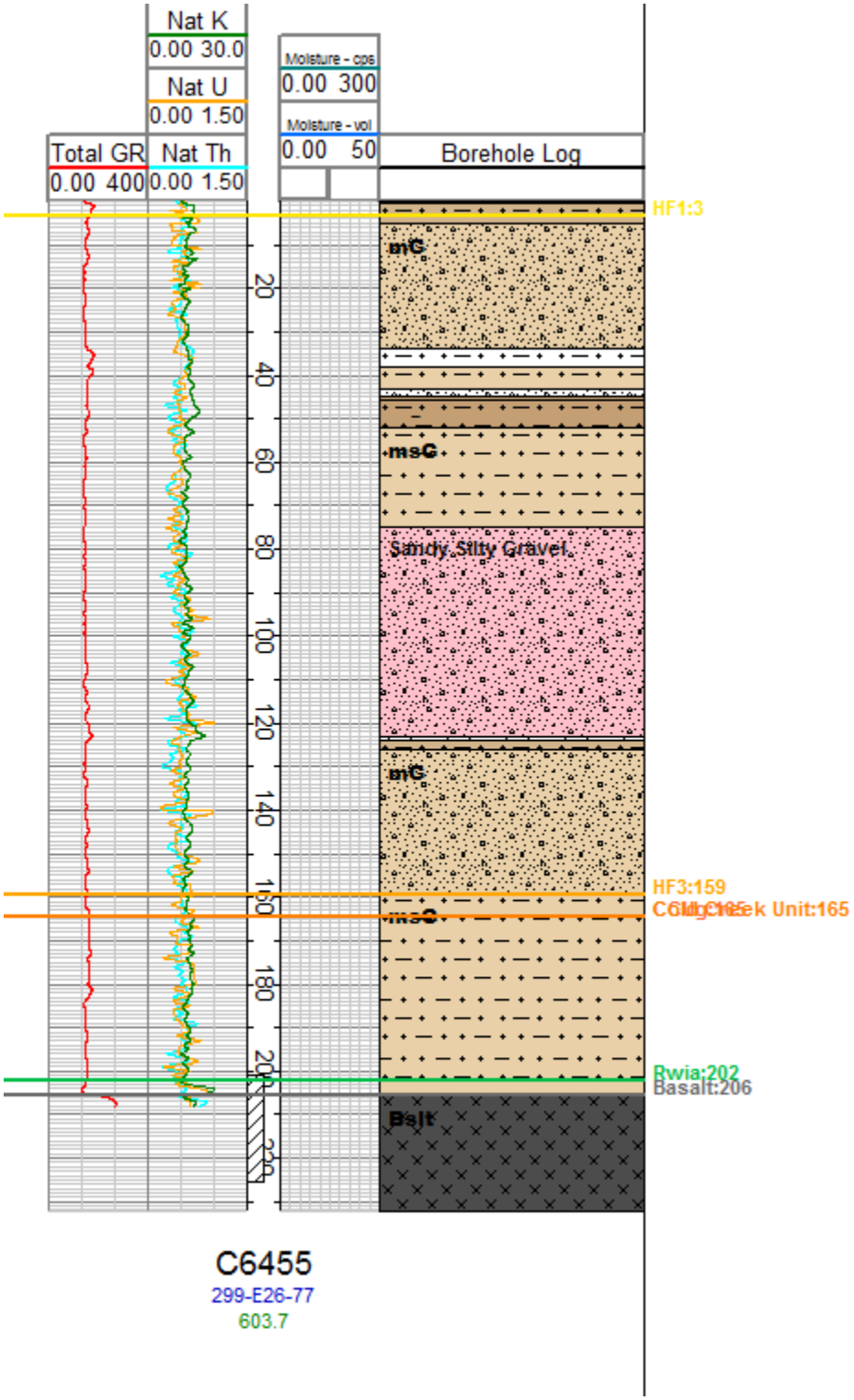

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:5
HF2:115
HF3:128
Cold Creek Unit:149
CCUg:157
Basalt:177
50
100
150
200
250
C5862
699-52-55B
573.6

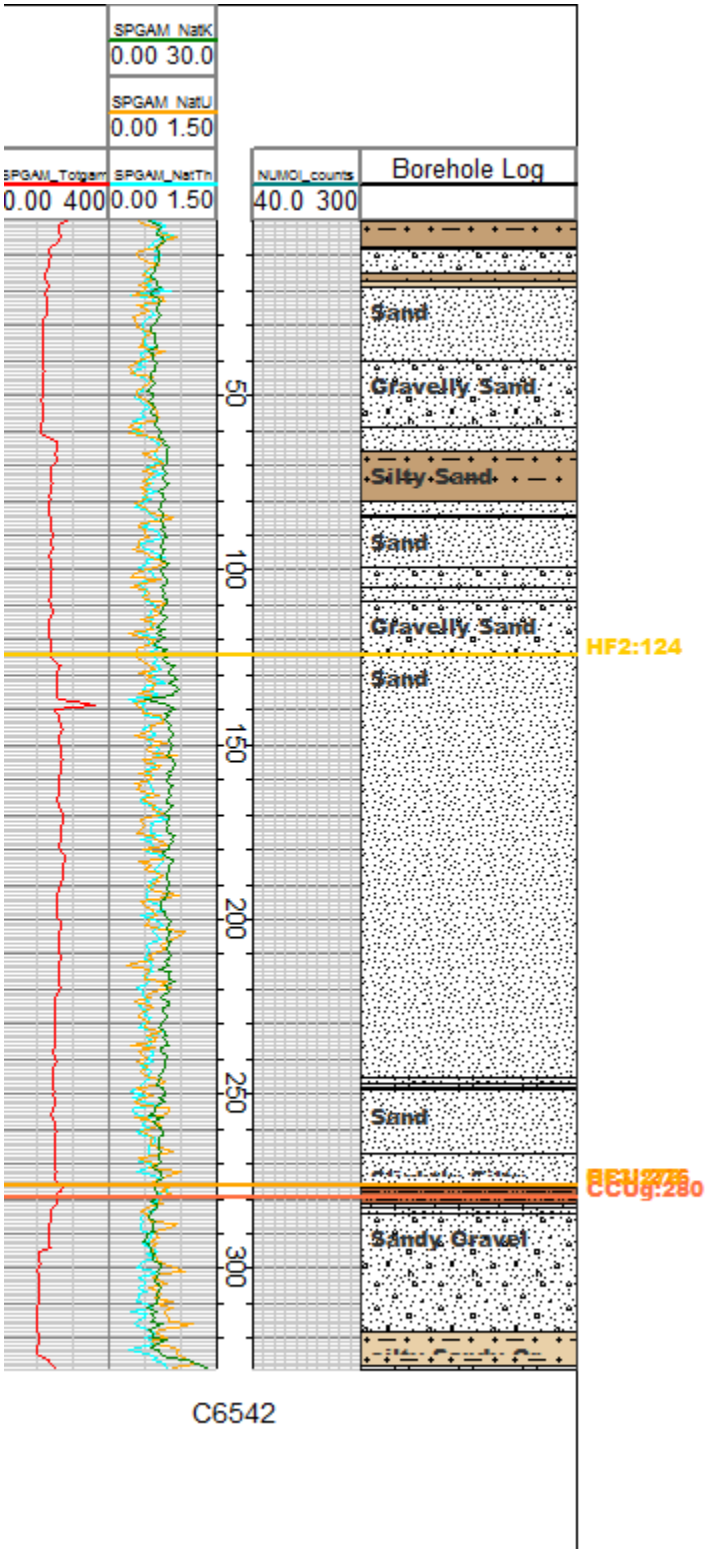

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:3
HF3:227
Gravelly
C5924
299-E13-63

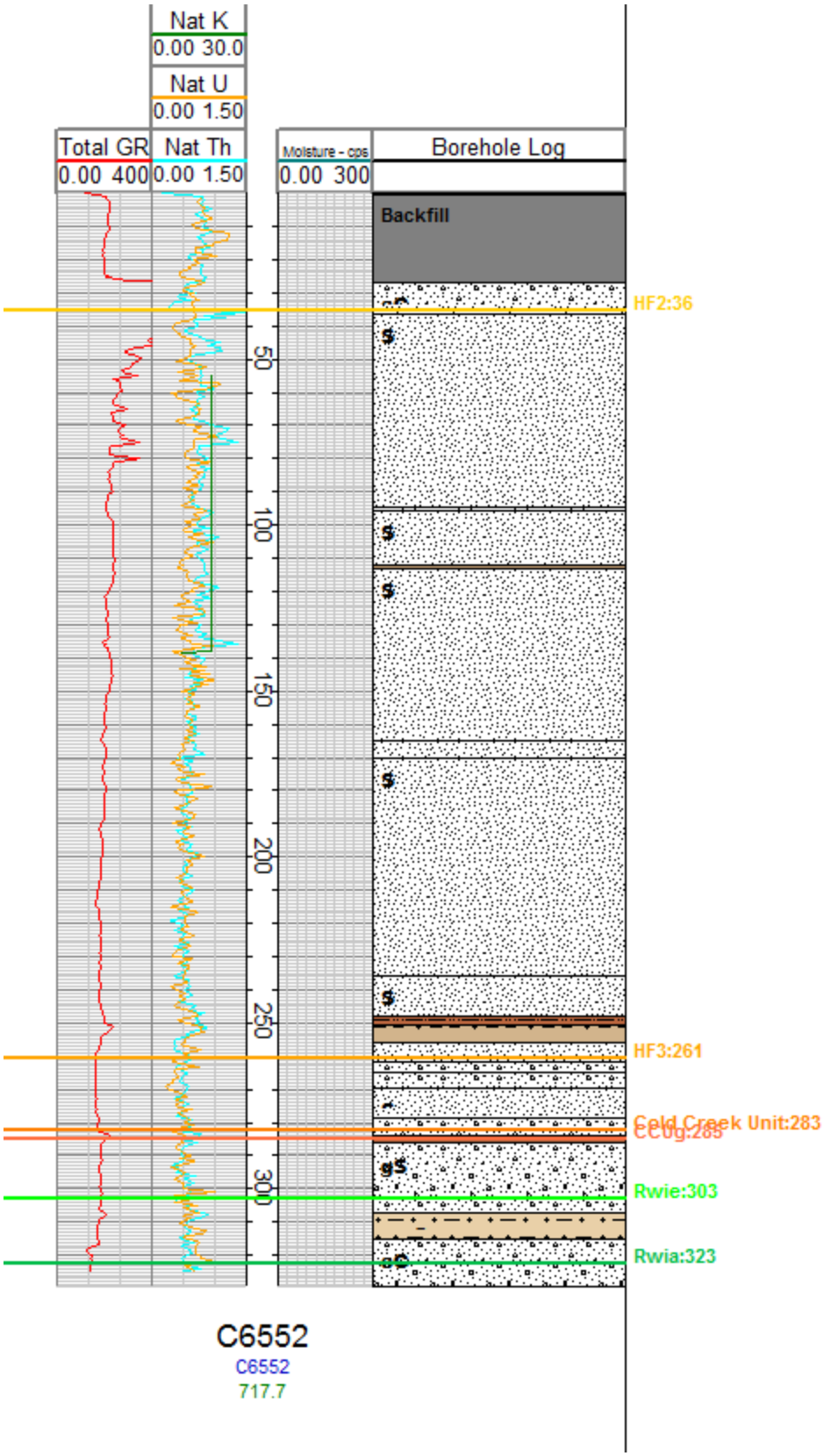

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:2
HF2:7
20
40
60
80
100
120
140
160
180
200
C5925
299-E13-64

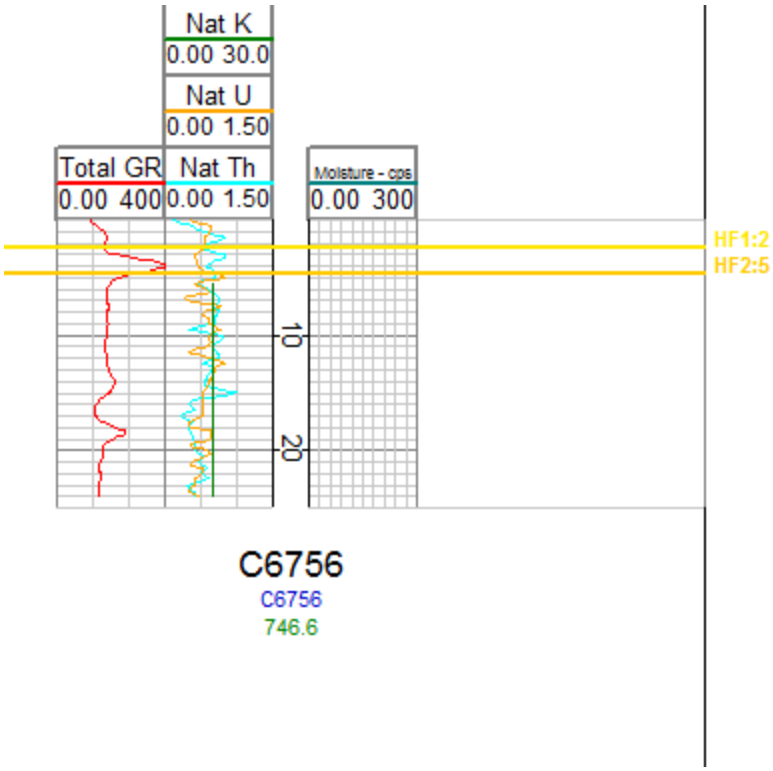

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:6
gS
S
50
100
150
HF3:174
200
gS
Cold Creek Unit:228
msG
sG
250
Rwie:269
Rlm:291
sG
C5941
C5941
683.4

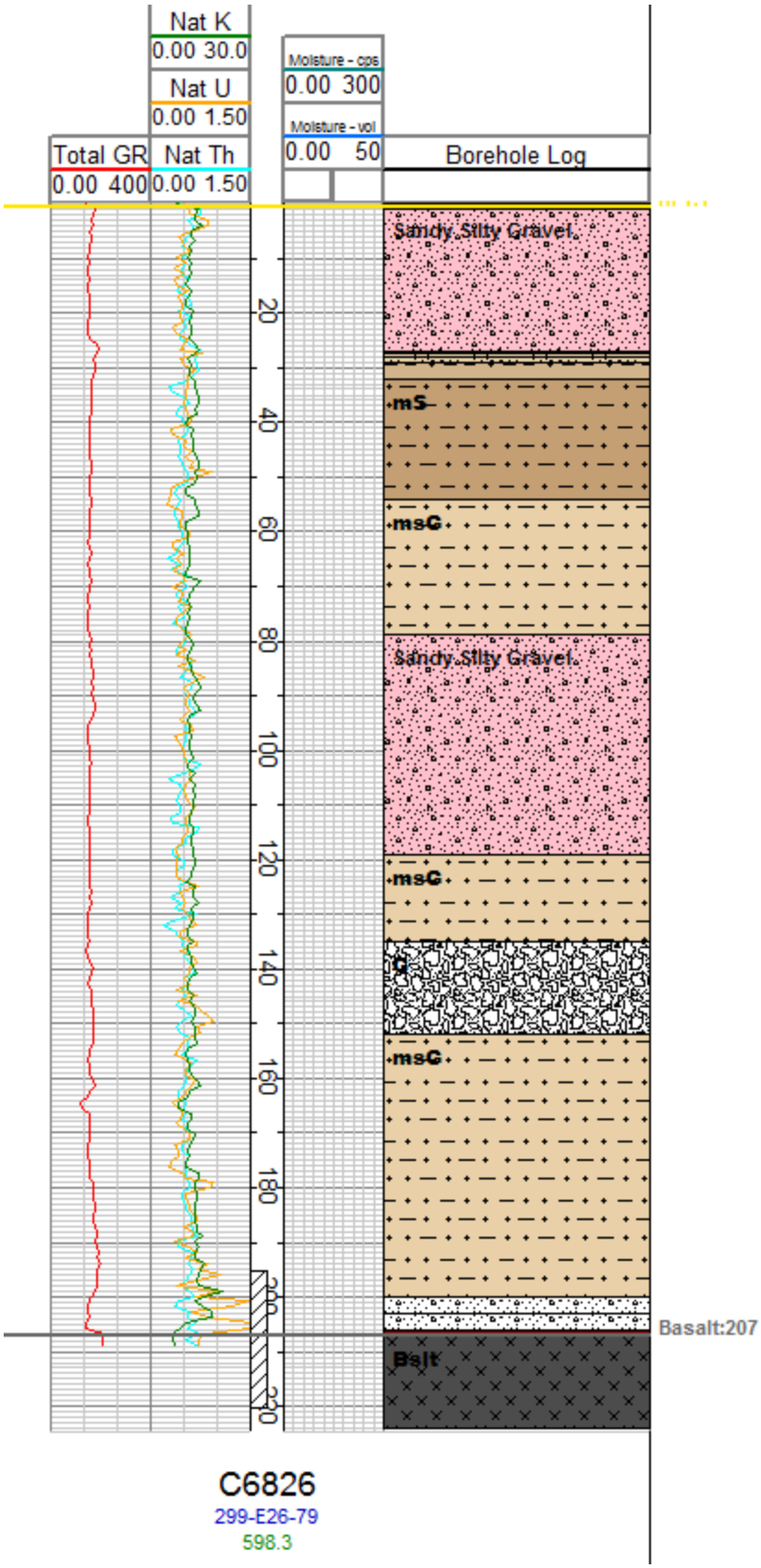

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:31
HF3:216
Cold Creek Unit:220
CCUg:238
Rwia:262
Basalt:267
20
40
60
80
100
120
140
160
180
200
220
240
260
sG
S
mS
(m)S
S
S
mS
S
gS
mS
msG
sG
C5989
299-E33-205
657.2

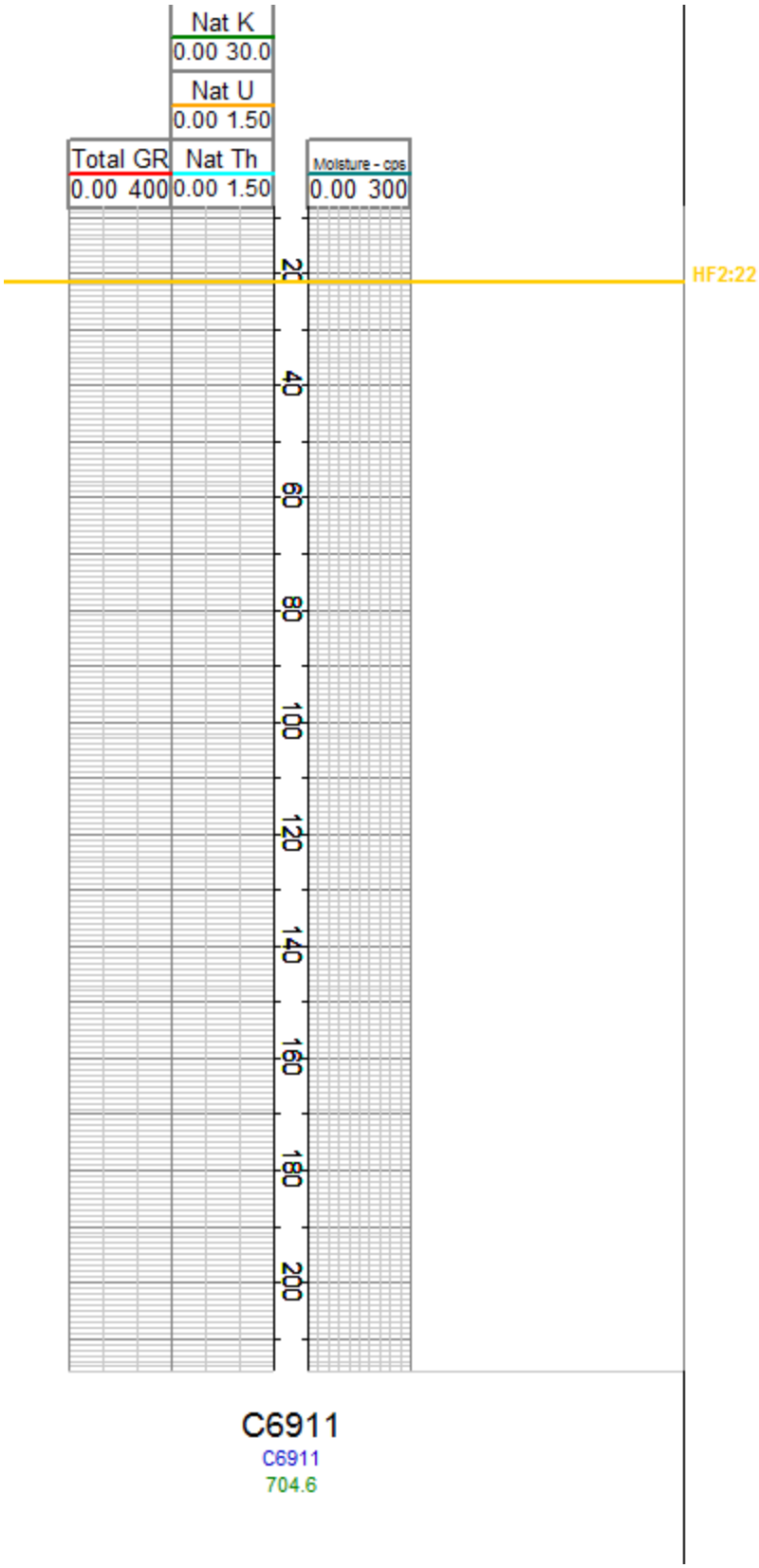

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:3
mG
msG
Sandy Silty Gravel
mG
HF3:159
msG
Rwia:202
Basalt:206
Bslt
20
40
60
80
100
120
140
160
180
200
220
C6455
299-E26-77
603.7

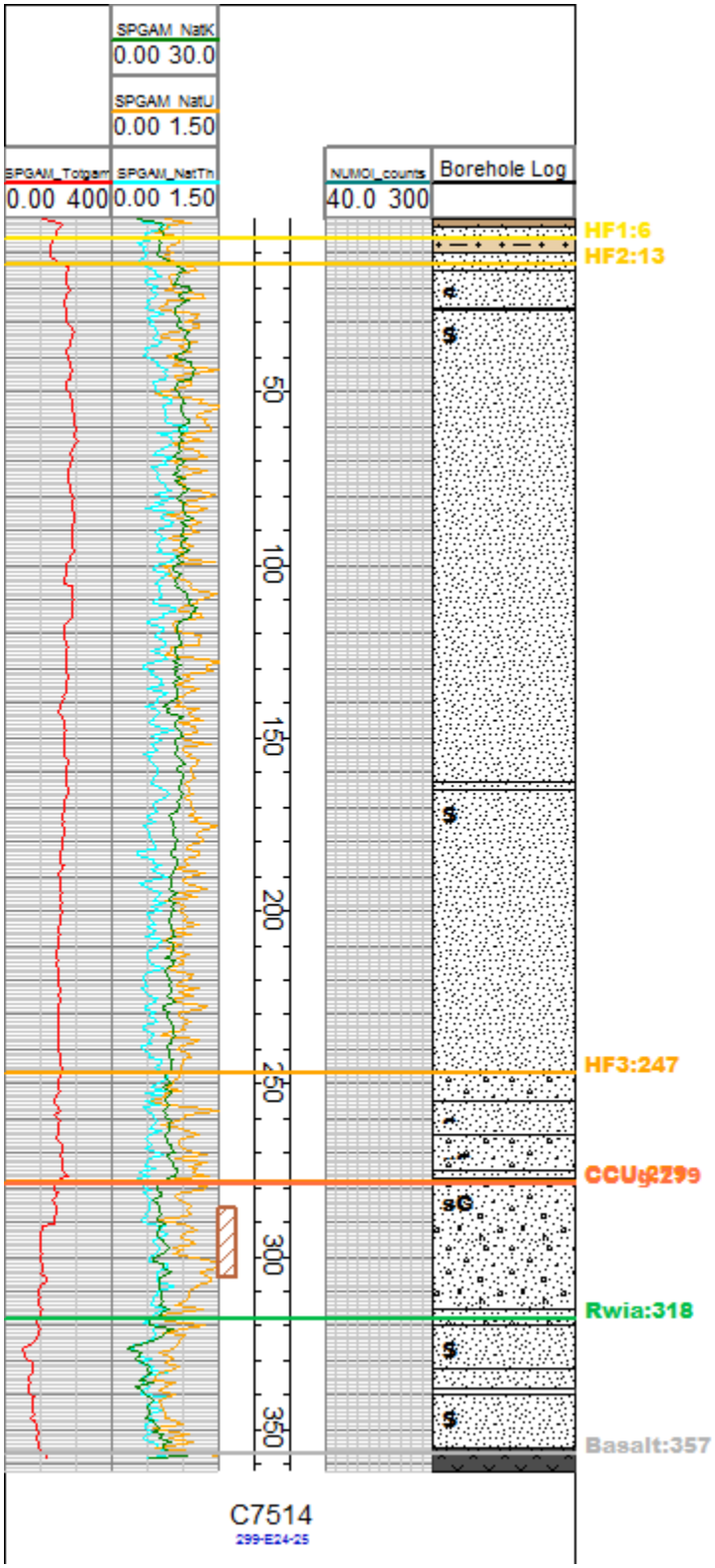

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sand
Gravelly Sand
Silty Sand
Sand
Gravelly Sand
Sand
Sand
Sandy Gravel
HF2:124
CCUg:280
50
100
150
200
250
300
C6542

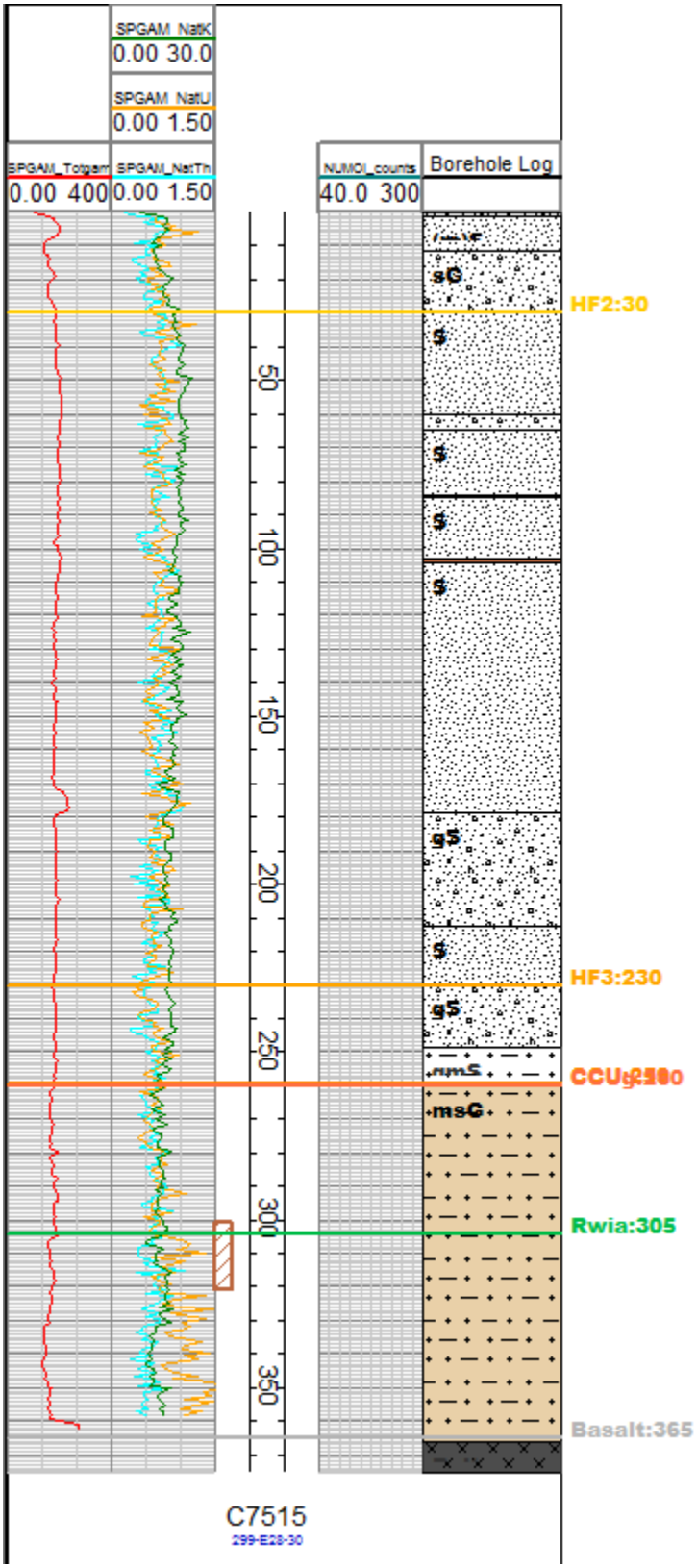

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
Backfill
HF2:36
HF3:261
Cold Creek Unit:283
CCUg:285
Rwie:303
Rwia:323
50
100
150
200
250
300
C6552
C6552
717.7

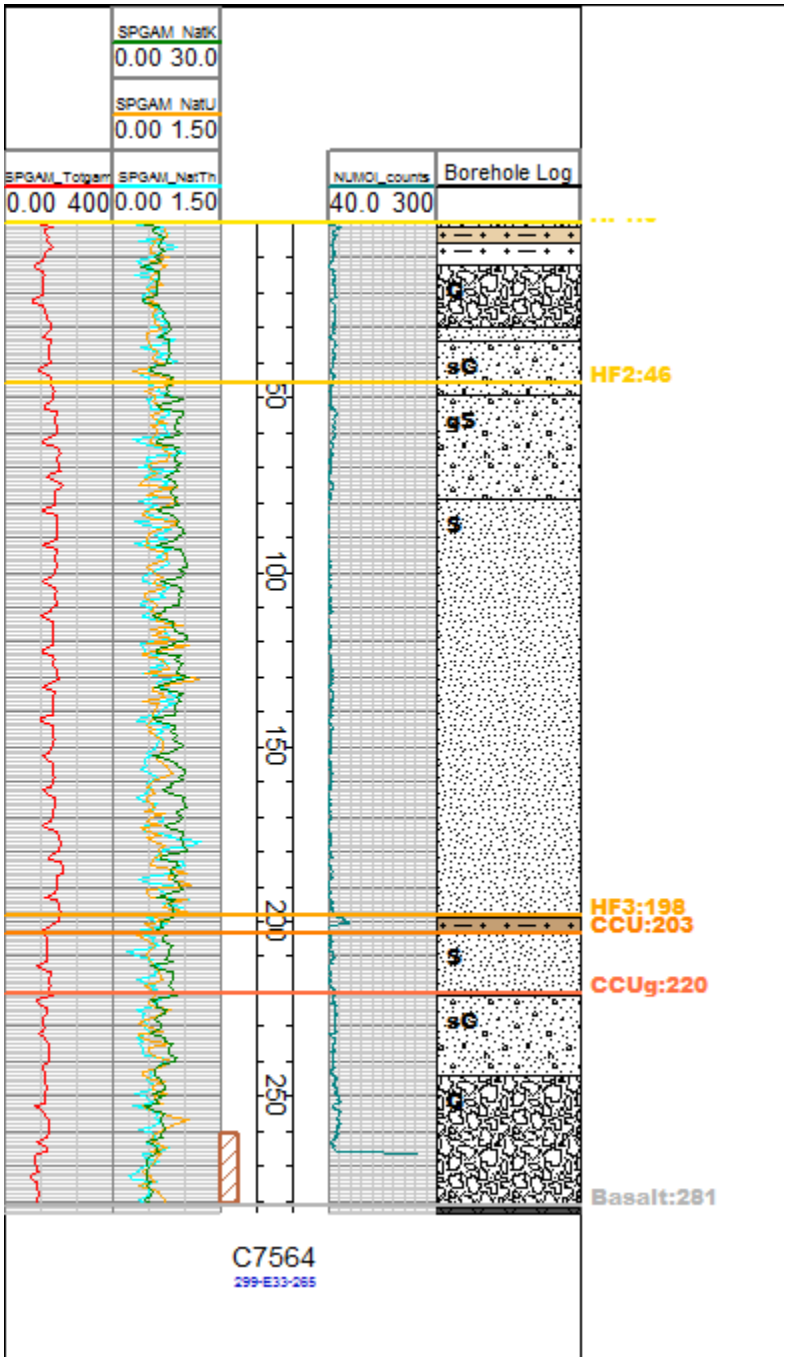

Total GR
0.00 400
Nat K
0.00 30.0
Nat U
0.00 1.50
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:2
HF2:5
10
20
C6756
C6756
746.6

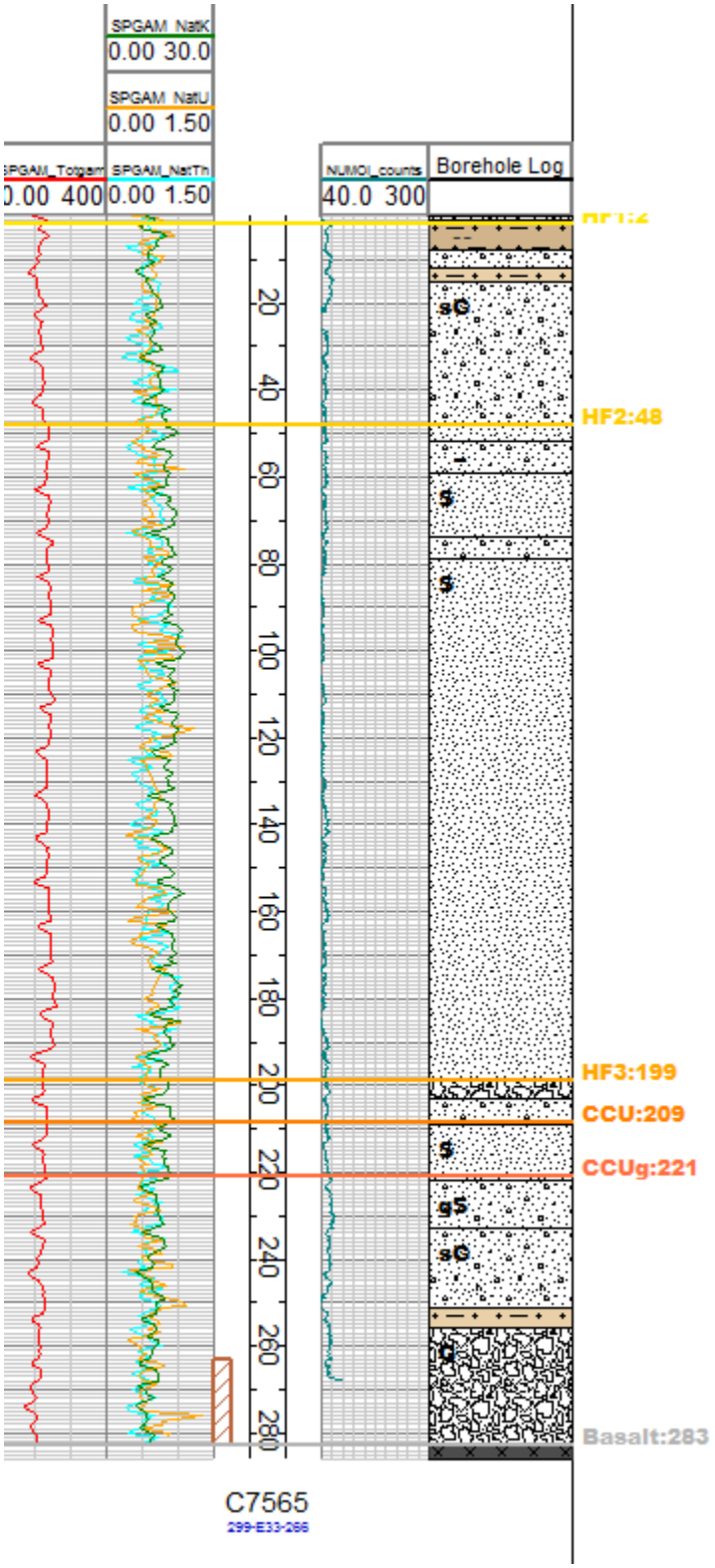

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
Sandy Silty Gravel
mS
msG
Sandy Silty Gravel
msG
G
msG
Basalt:207
Bslt
20
40
60
80
100
120
140
160
180
200
220
C6826
299-E26-79
598.3

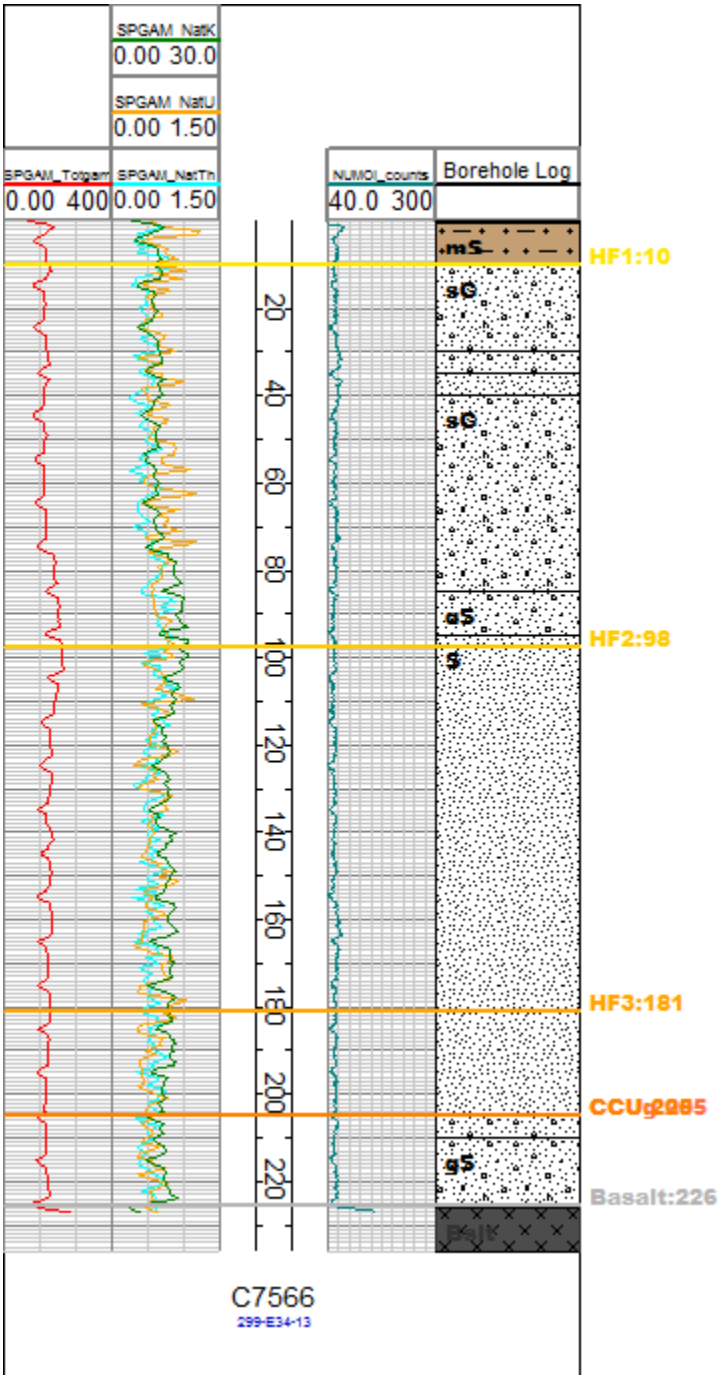

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:22
20
40
60
80
100
120
140
160
180
200
C6911
C6911
704.6

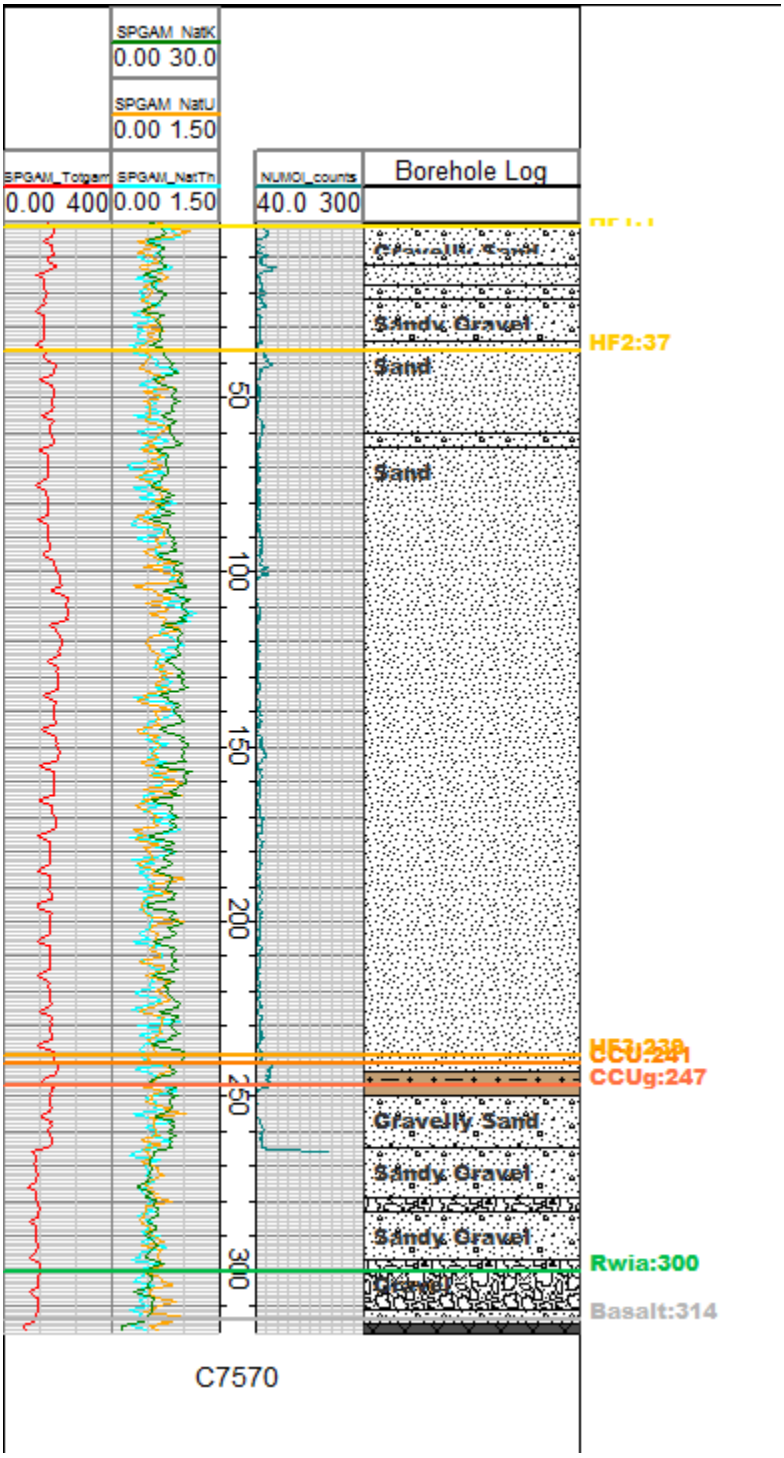

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:6
HF2:13
HF3:247
CCUg:279
Rwia:318
Basalt:357
50
100
150
200
250
300
350
C7514
299-E24-25

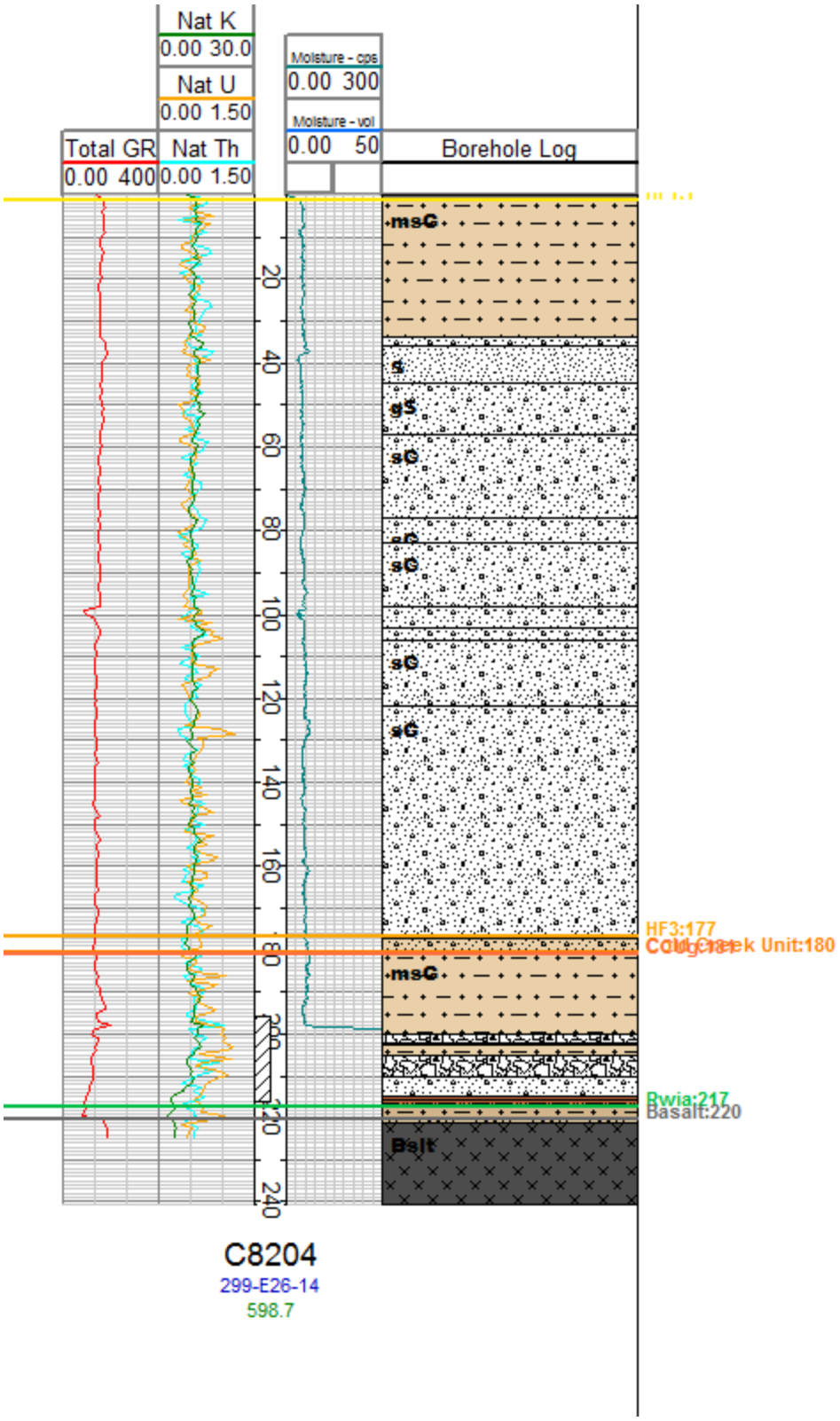

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:30
HF3:230
CCU:250
Rwia:305
Basalt:365
50
100
150
200
250
300
350
C7515
299-E28-30

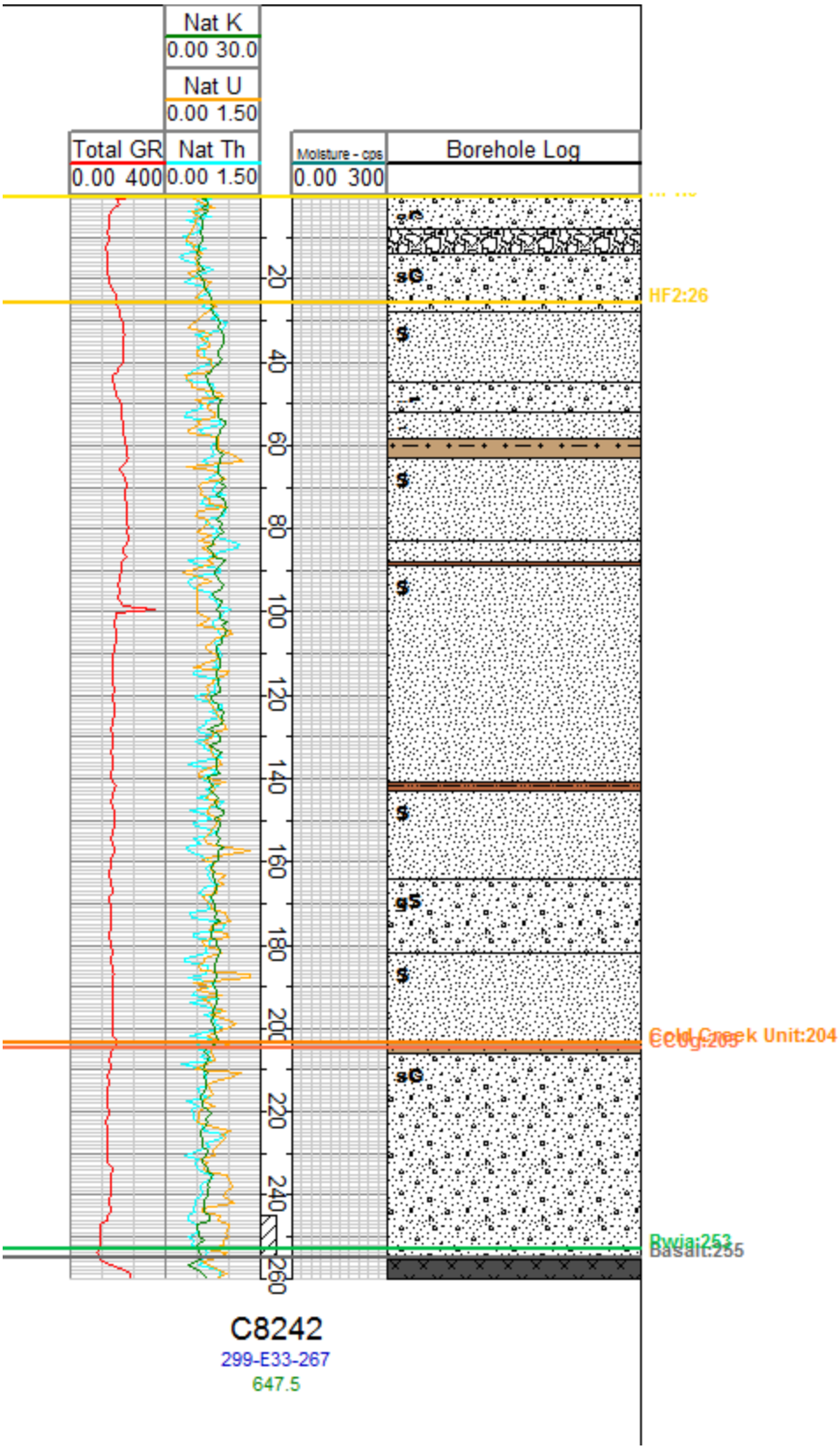

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:46
HF3:198
CCU:203
CCUg:220
Basalt:281
50
100
150
200
250
C7564
299-E33-265

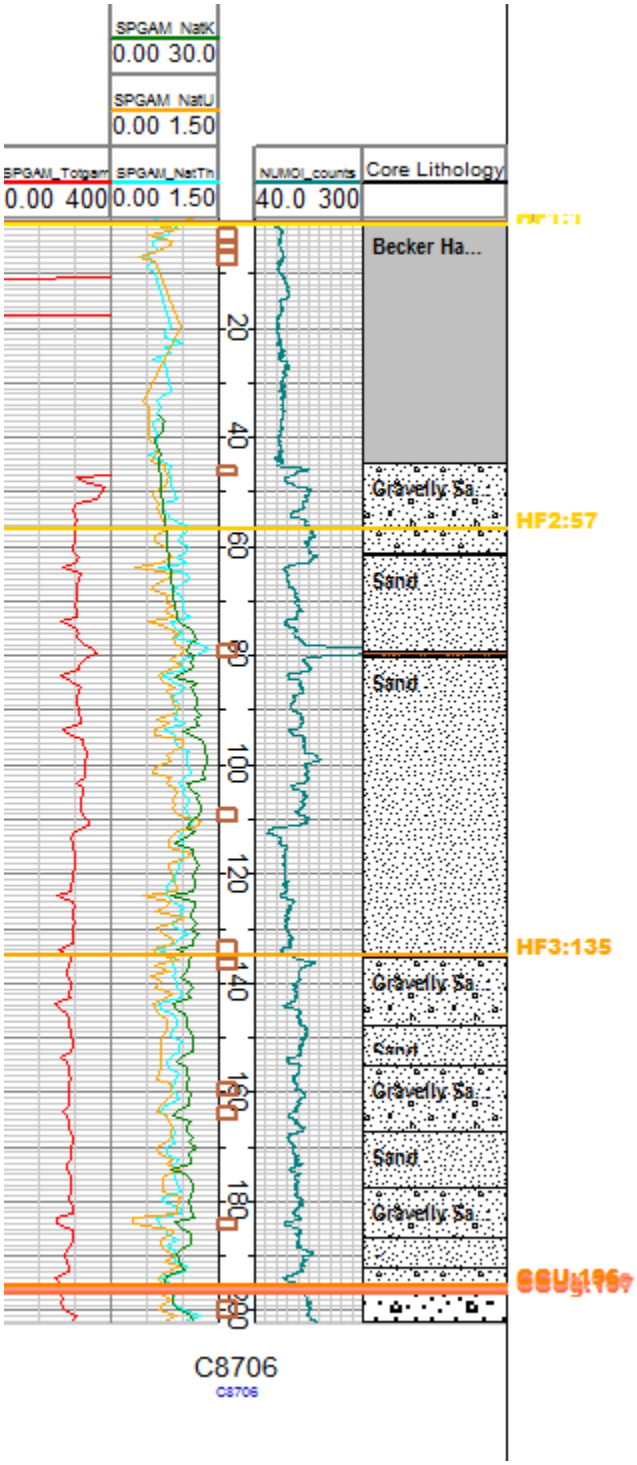

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:48
HF3:199
CCU:209
CCUg:221
Basalt:283
C7565
299-E33-266

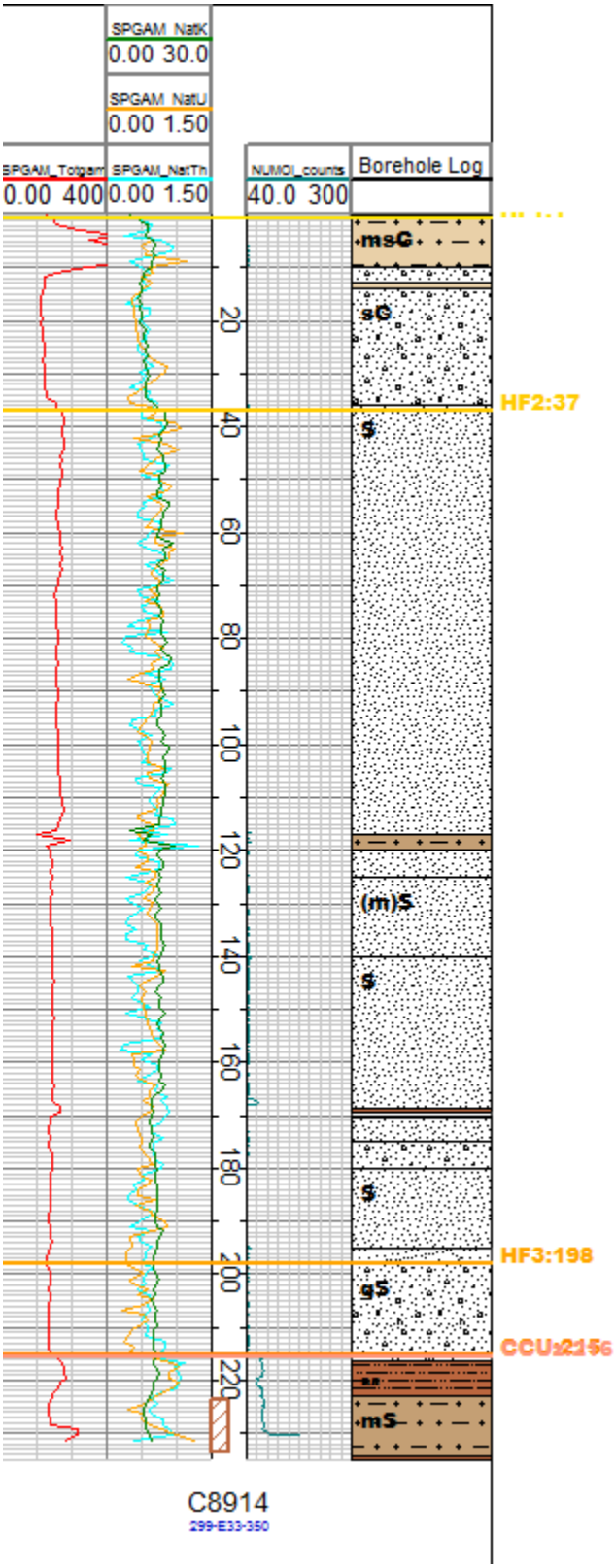

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
mS
sG
sG
gS
S
gS
Basalt
HF1:10
HF2:98
HF3:181
CCUg2085
Basalt:226
20
40
60
80
100
120
140
160
180
200
220
C7566
299-E34-13

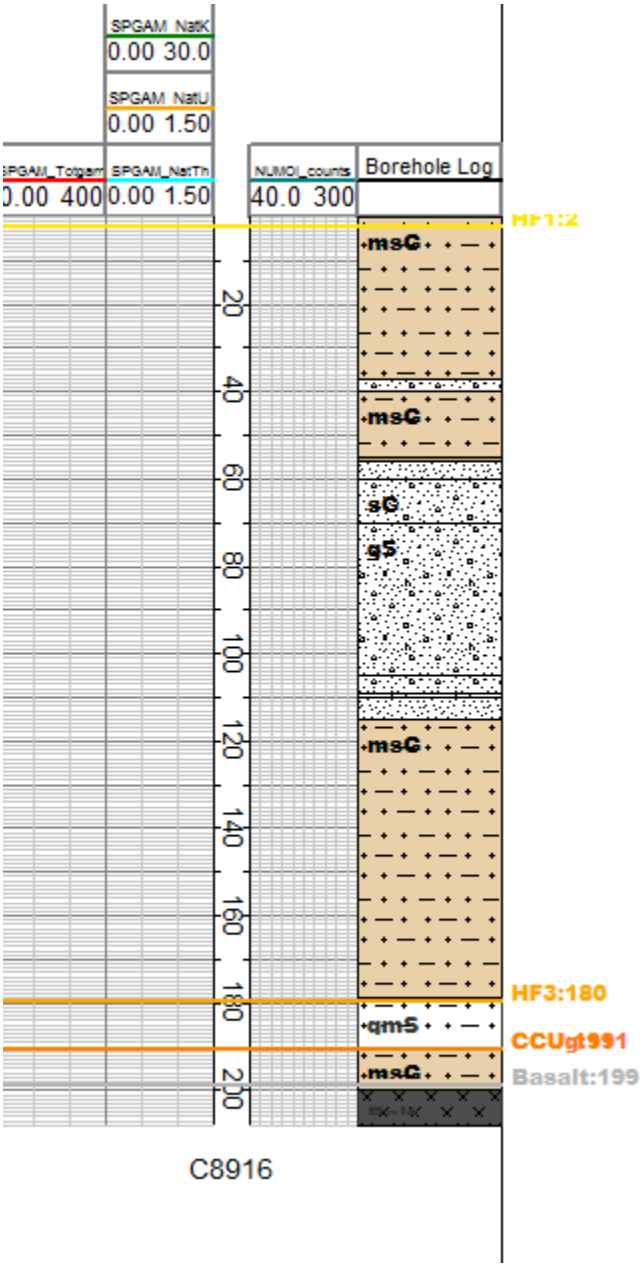

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
Sandy Gravel
HF2:37
Sand
Sand
50
100
150
200
250
300
CCUg:247
Gravelly Sand
Sandy Gravel
Sandy Gravel
Rwia:300
Basalt:314
C7570


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
msG
g
gS
sG
sG
sG
sG
msG
Bslt
HF3:177
Cold Creek Unit:180
Rwia:217
Basalt:220
20
40
60
80
100
120
140
160
180
200
220
240
C8204
299-E26-14
598.7

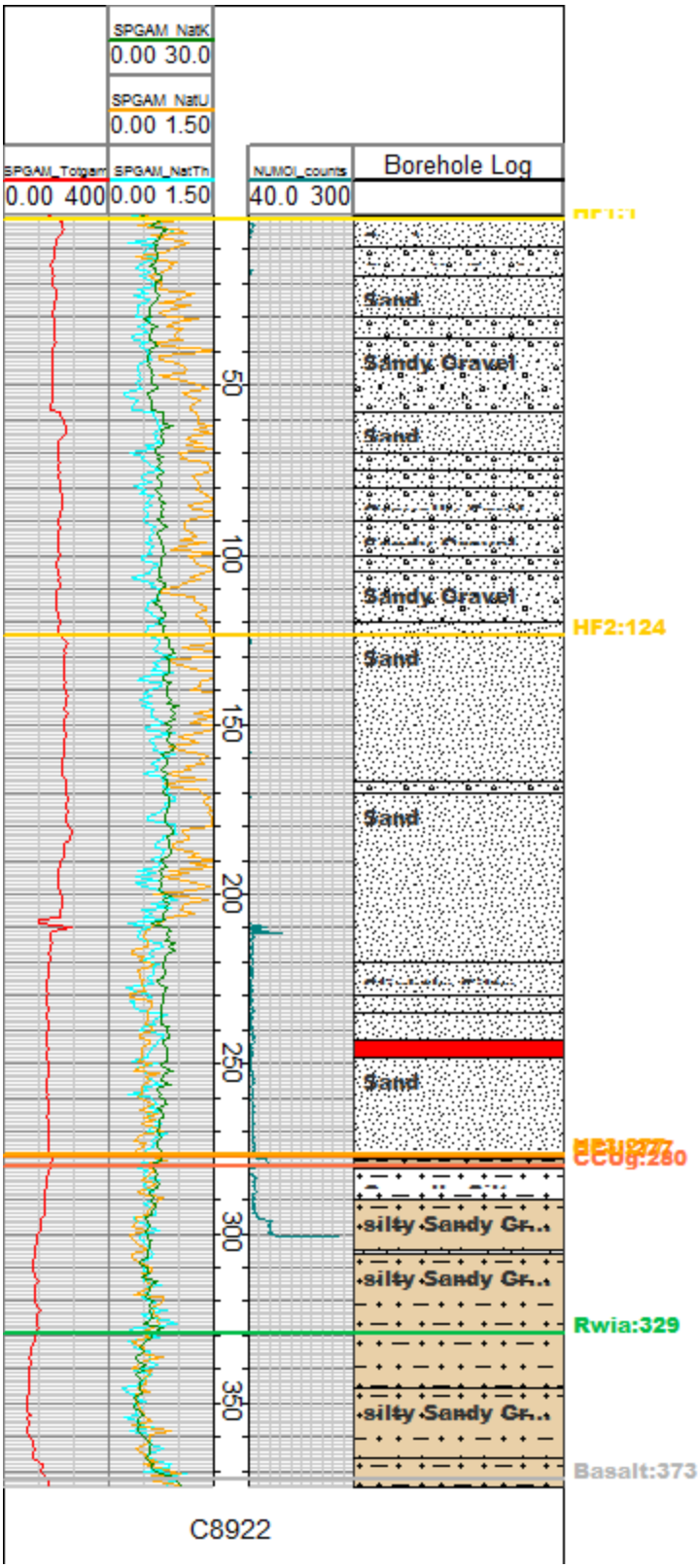

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:26
Gold Creek Unit:204
Basalt:255
C8242
299-E33-267
647.5

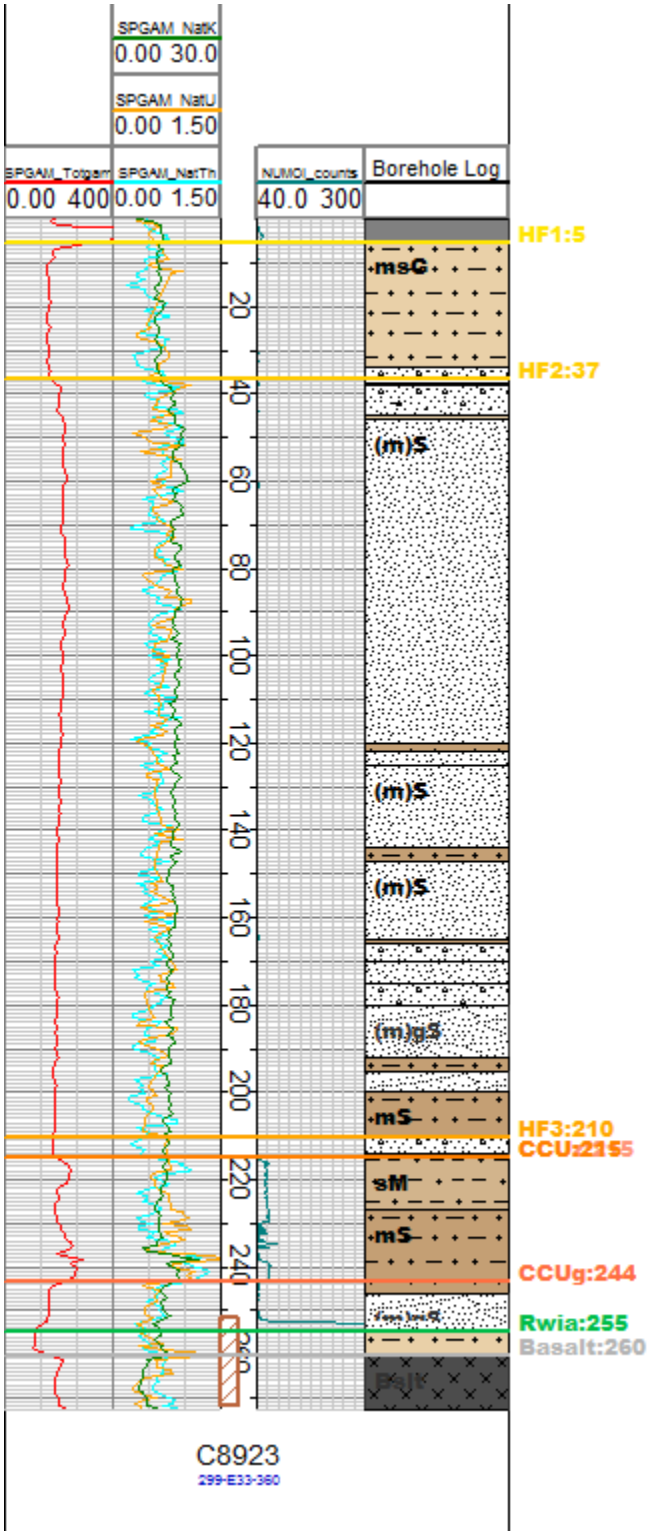

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
Gravelly Sa
HF2:57
Sand
Sand
HF3:135
Gravelly Sa
Sand
Gravelly Sa
Sand
Gravelly Sa
20
40
60
80
100
120
140
160
180
200
C8706
C8706

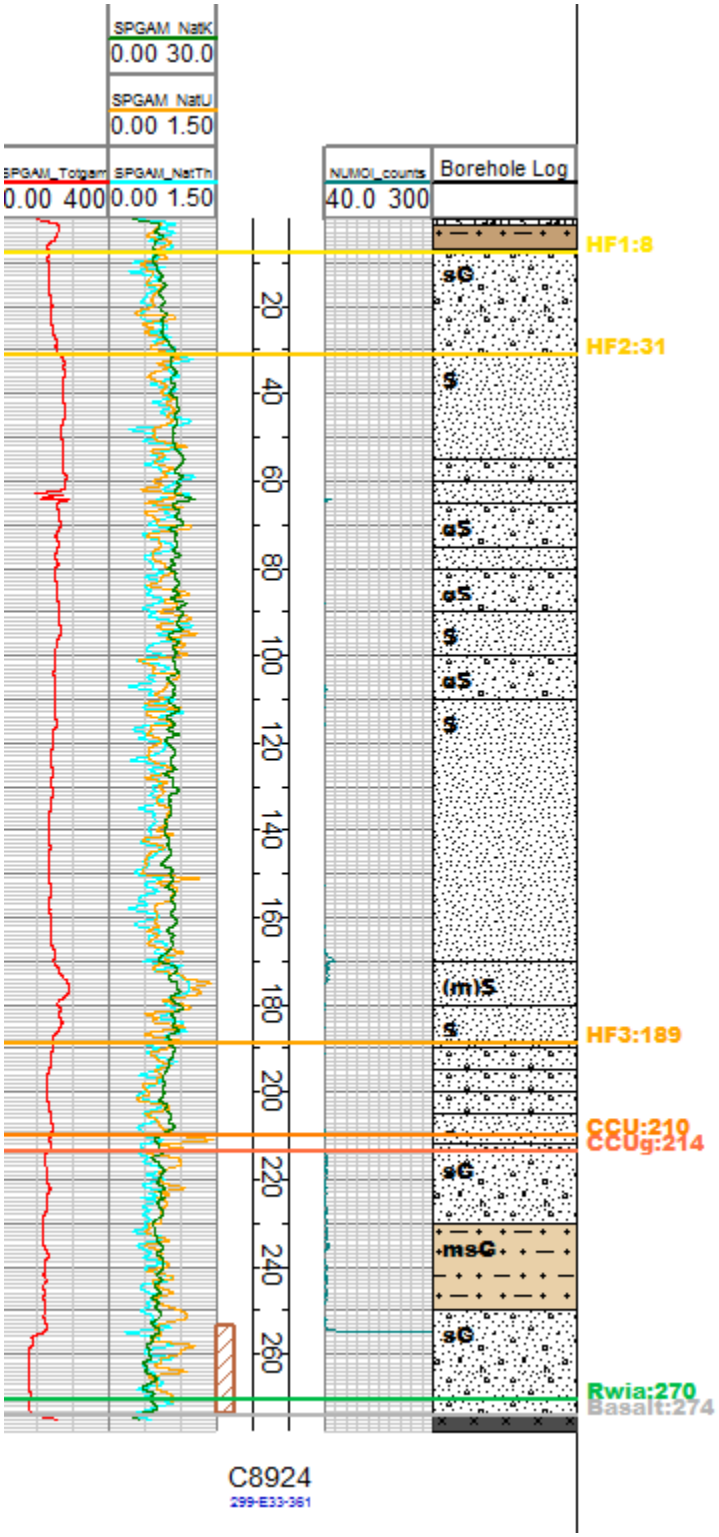

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
sG
S
(m)S
S
S
gS
mS
HF2:37
HF3:198
CCU:2156
20
40
60
80
100
120
140
160
180
200
220
C8914
299-E33-350

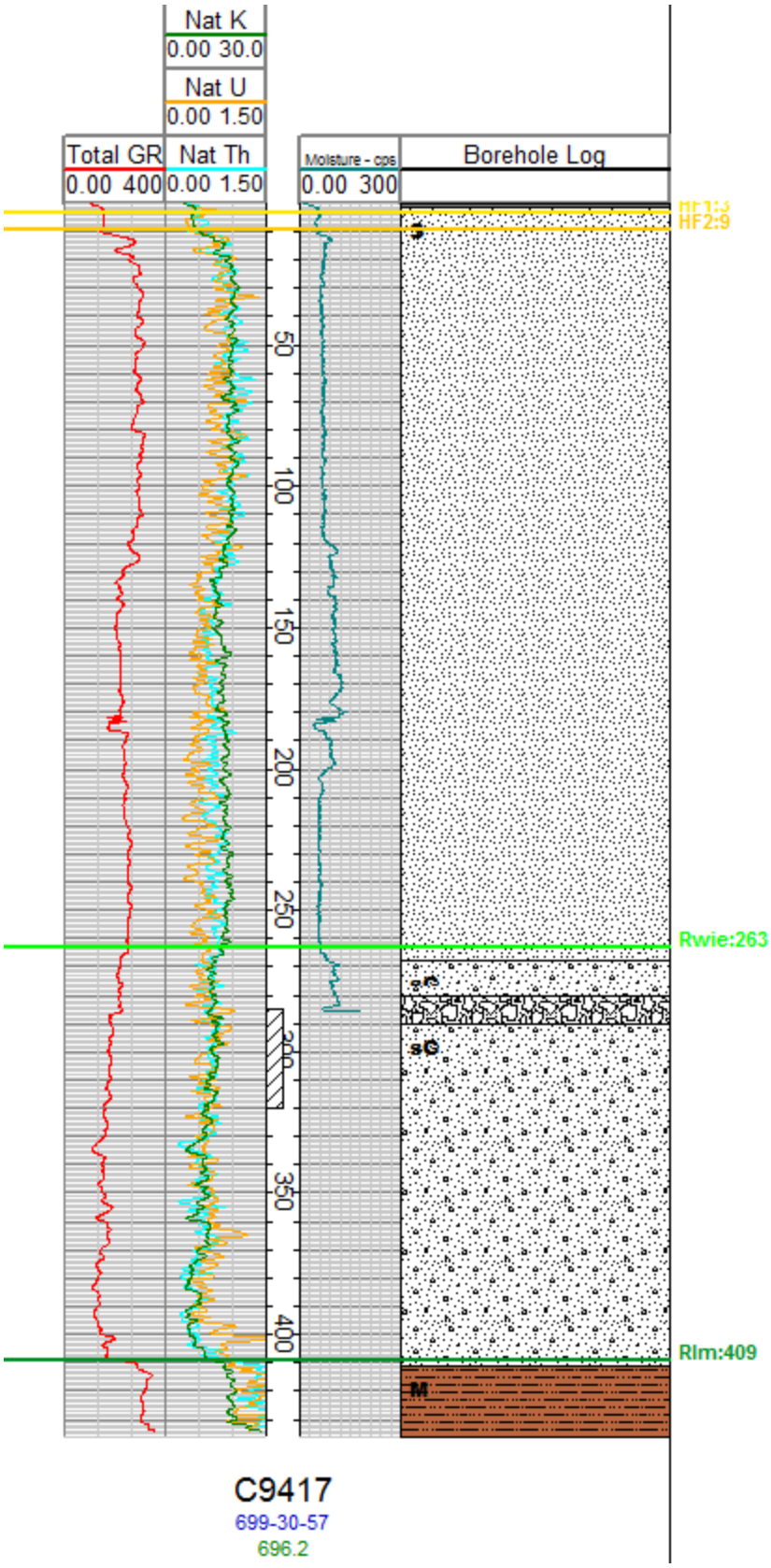

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
msG
msG
sG
gS
msG
HF3:180
qmS
CCUgt991
msG
Basalt:199
20
40
60
80
100
120
140
160
180
200

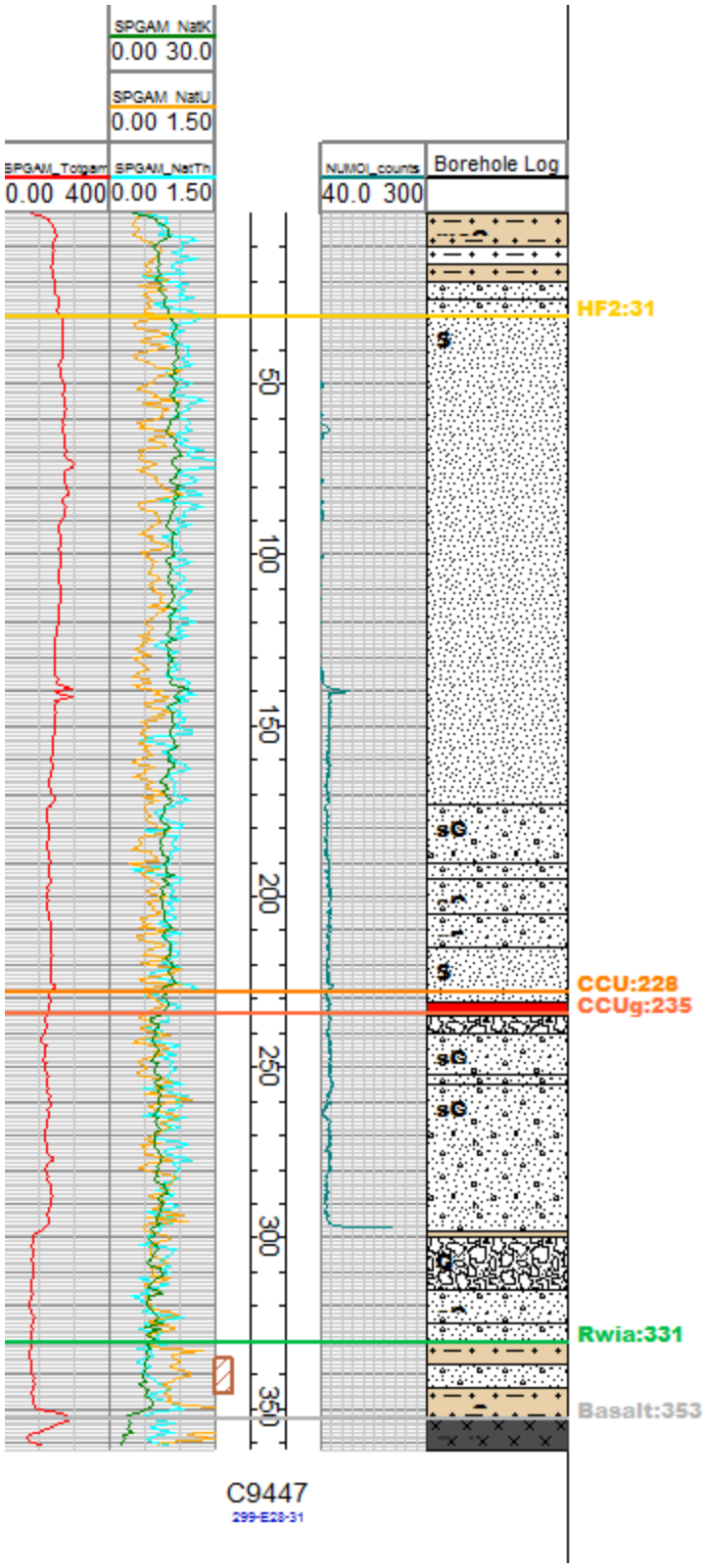
C8916

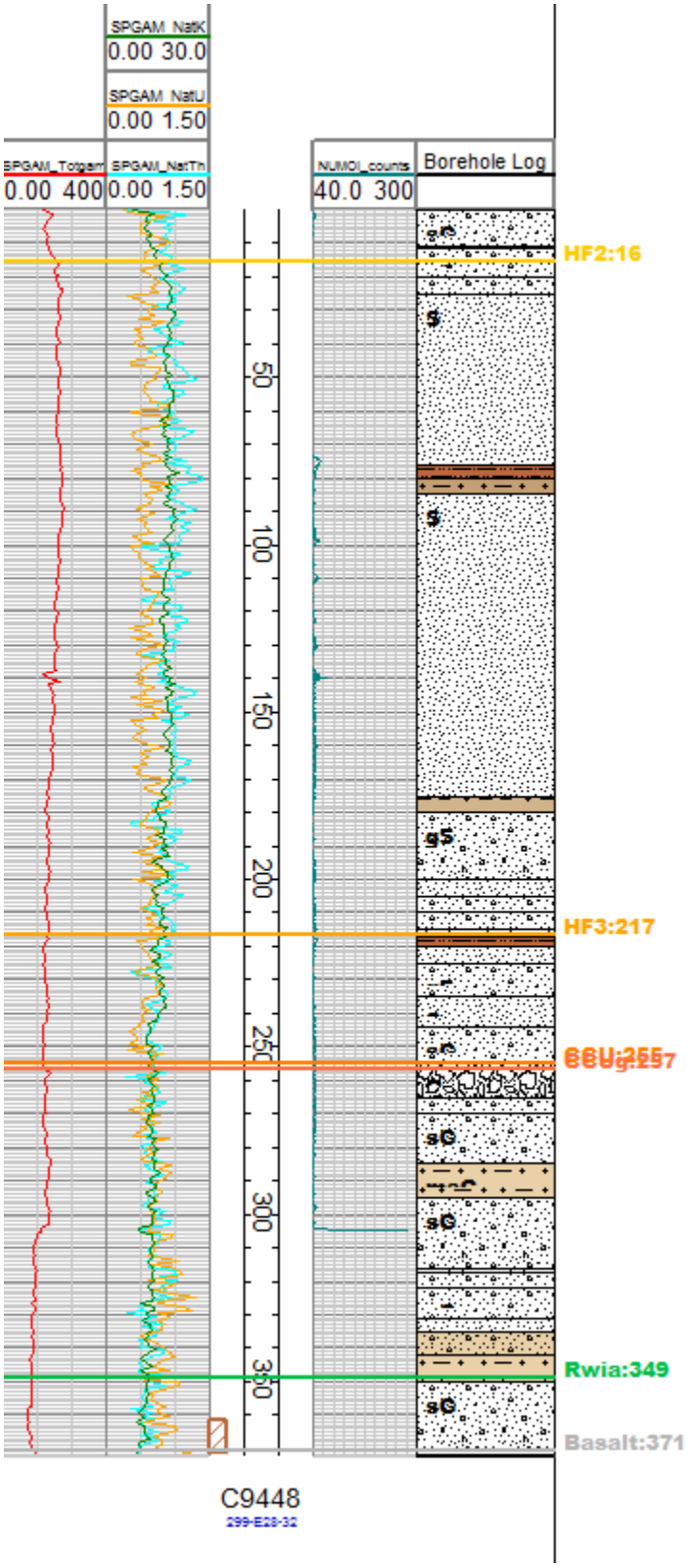

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
300
350
Sand
Sandy Gravel
Sand
Sandy Gravel
HF2:124
Sand
Sand
Sand
CCUg:280
silty Sandy Gr...
silty Sandy Gr...
Rwia:329
silty Sandy Gr...
Basalt:373
C8922

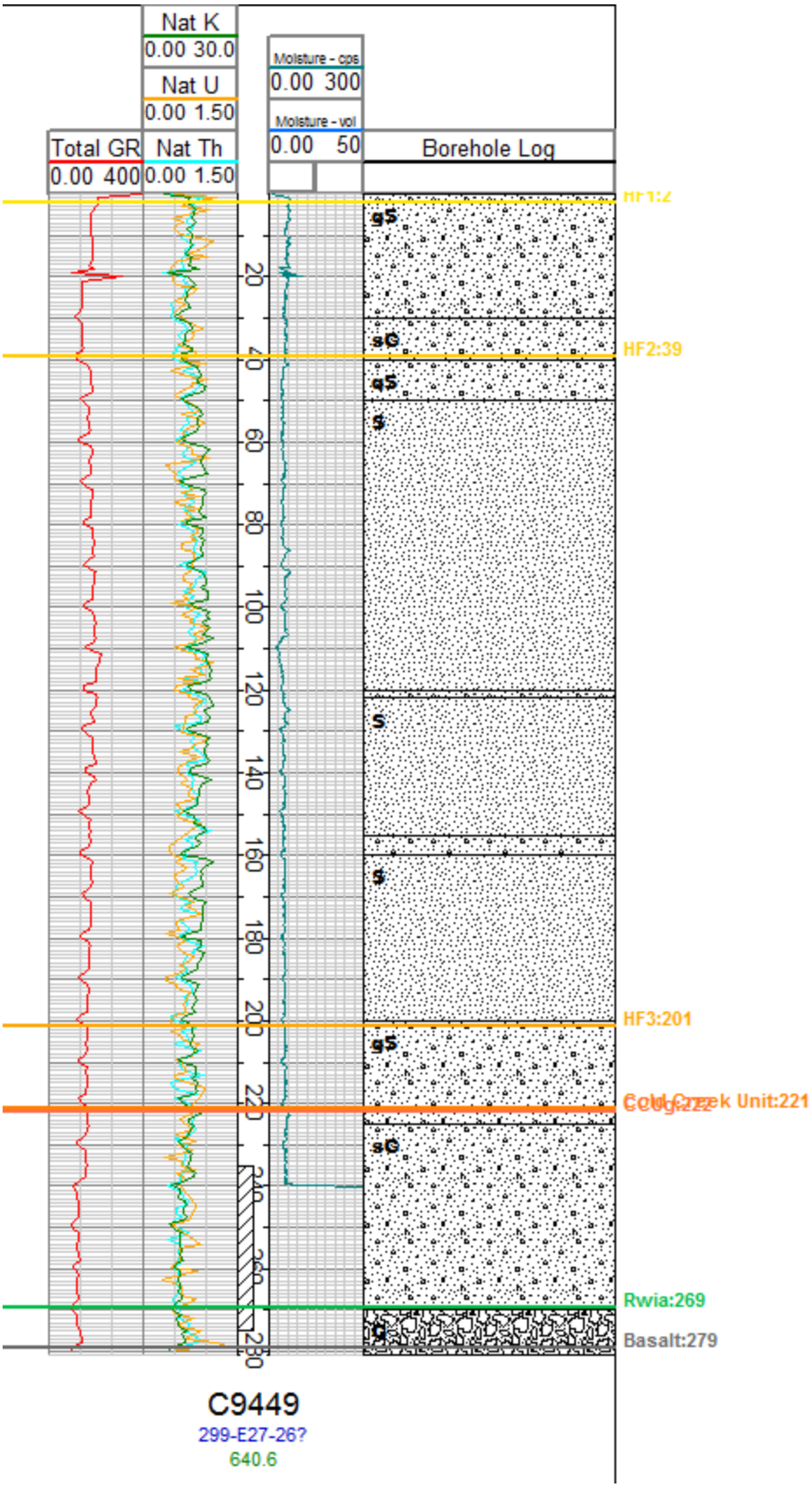

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:5
msG
HF2:37
(m)S
(m)S
(m)S
(m)gS
mS
HF3:210
CCUz:215
sM
mS
CCUg:244
Rwia:255
Basalt:260
C8923
299-E33-360

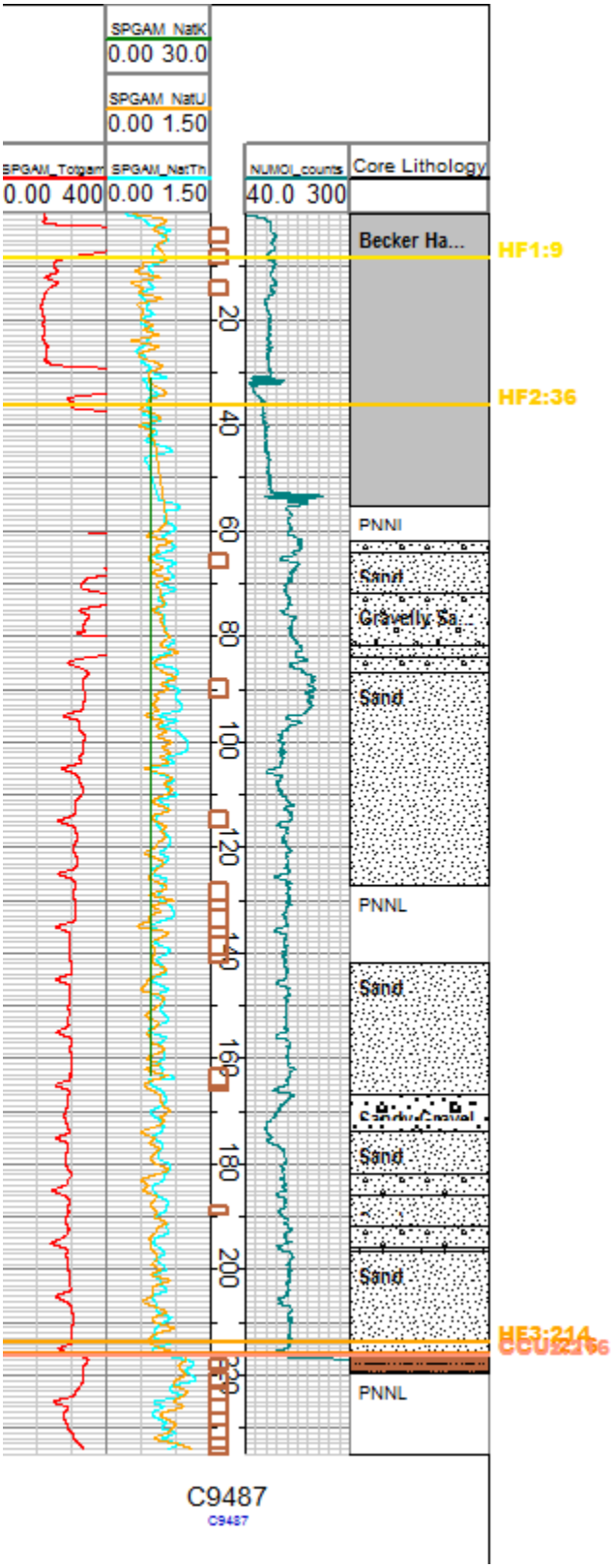

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF1:8
HF2:31
HF3:189
CCU:210
CCUg:214
Rwia:270
Basalt:274
sG
S
aS
(m)S
msG
20
40
60
80
100
120
140
160
180
200
220
240
260
C8924
299-E33-361

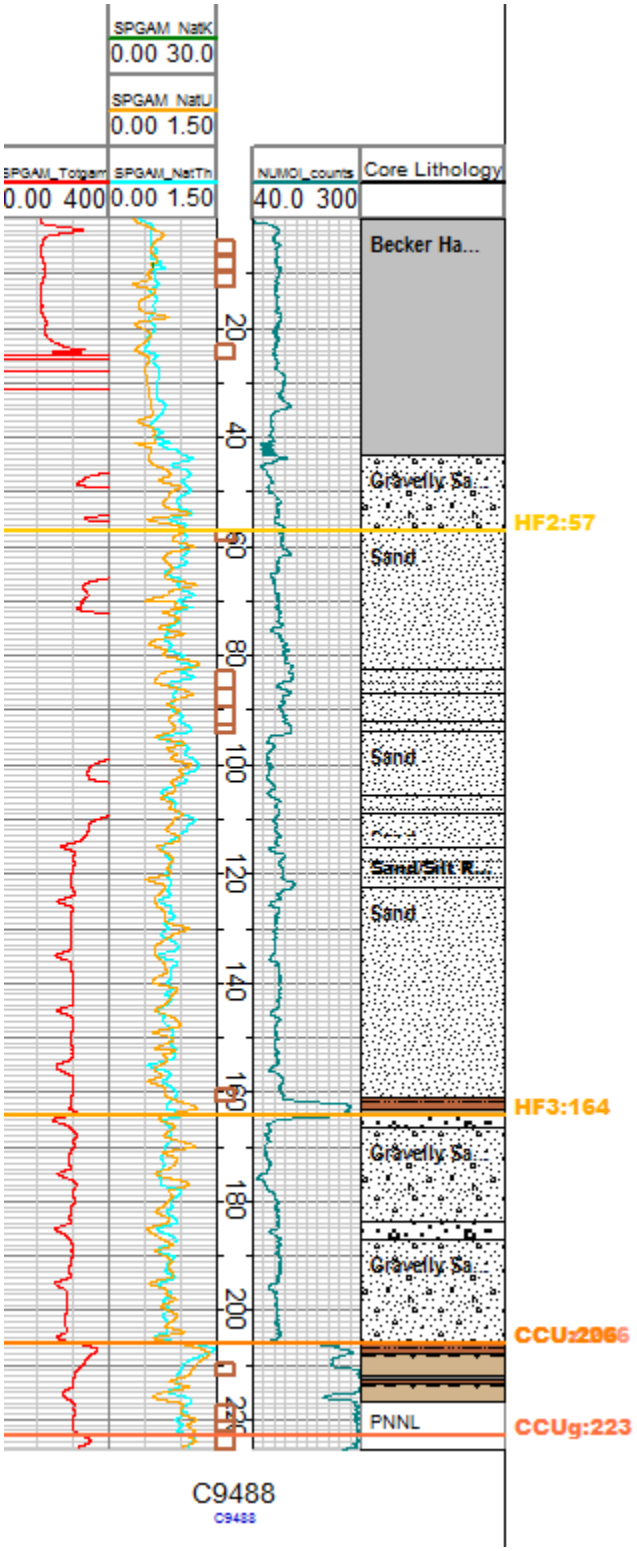

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:9
50
100
150
200
250
300
350
400
Rwie:263
Rlm:409
C9417
699-30-57
696.2

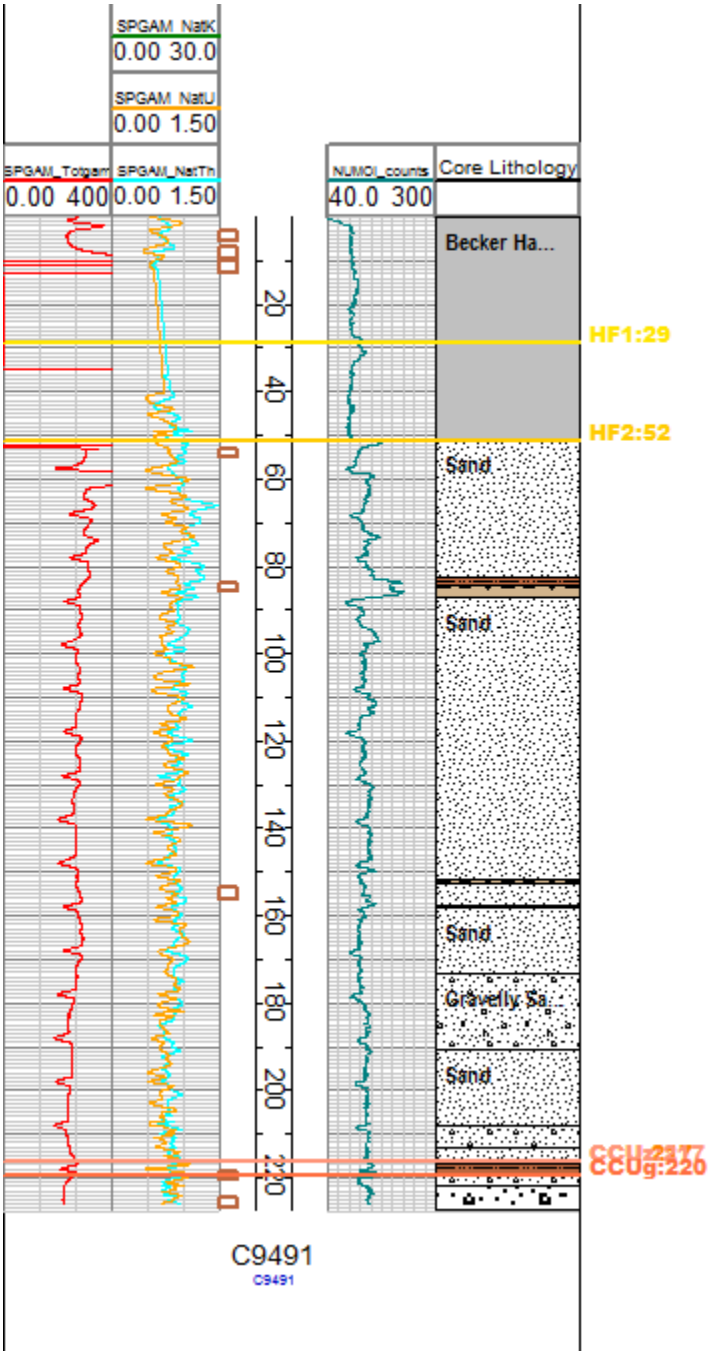

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
HF2:31
CCU:228
CCUg:235
Rwia:331
Basalt:353
50
100
150
200
250
300
350
C9447
299-E28-31

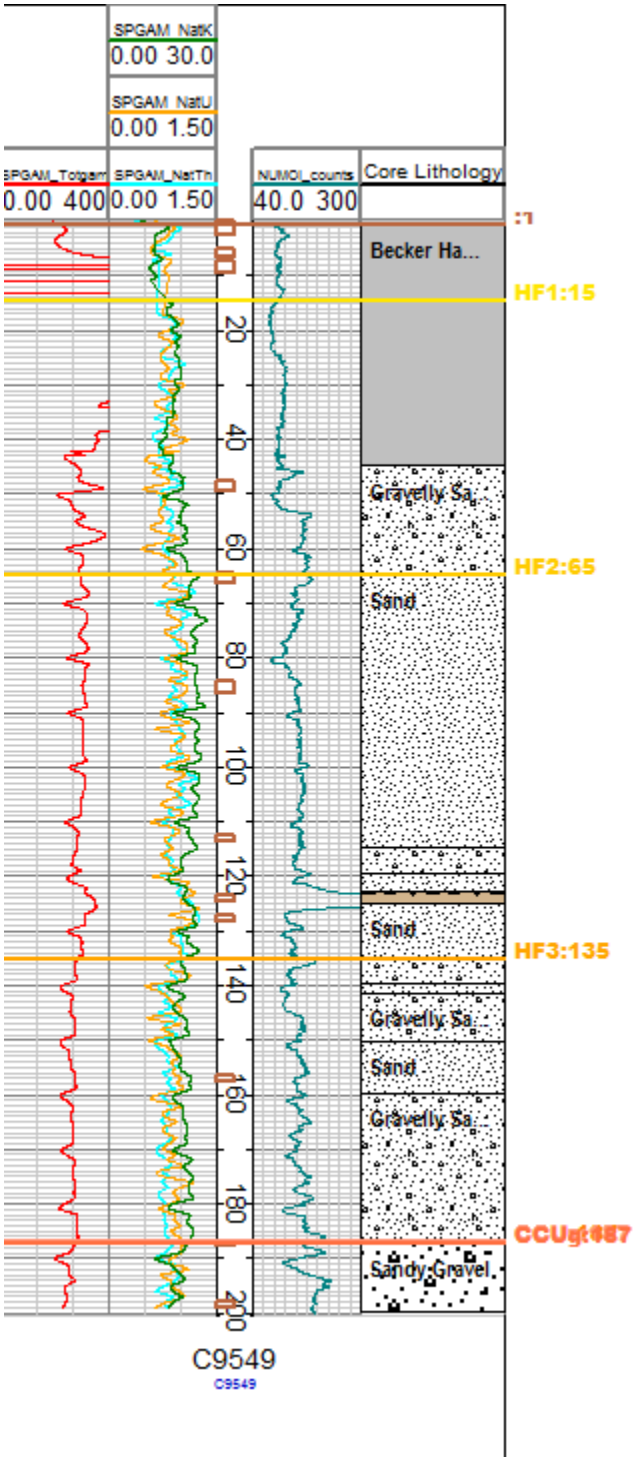

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Borehole Log
50
100
150
200
250
300
350
HF2:16
HF3:217
CCU:255
Rwia:349
Basalt:371
C9448
299-E28-32

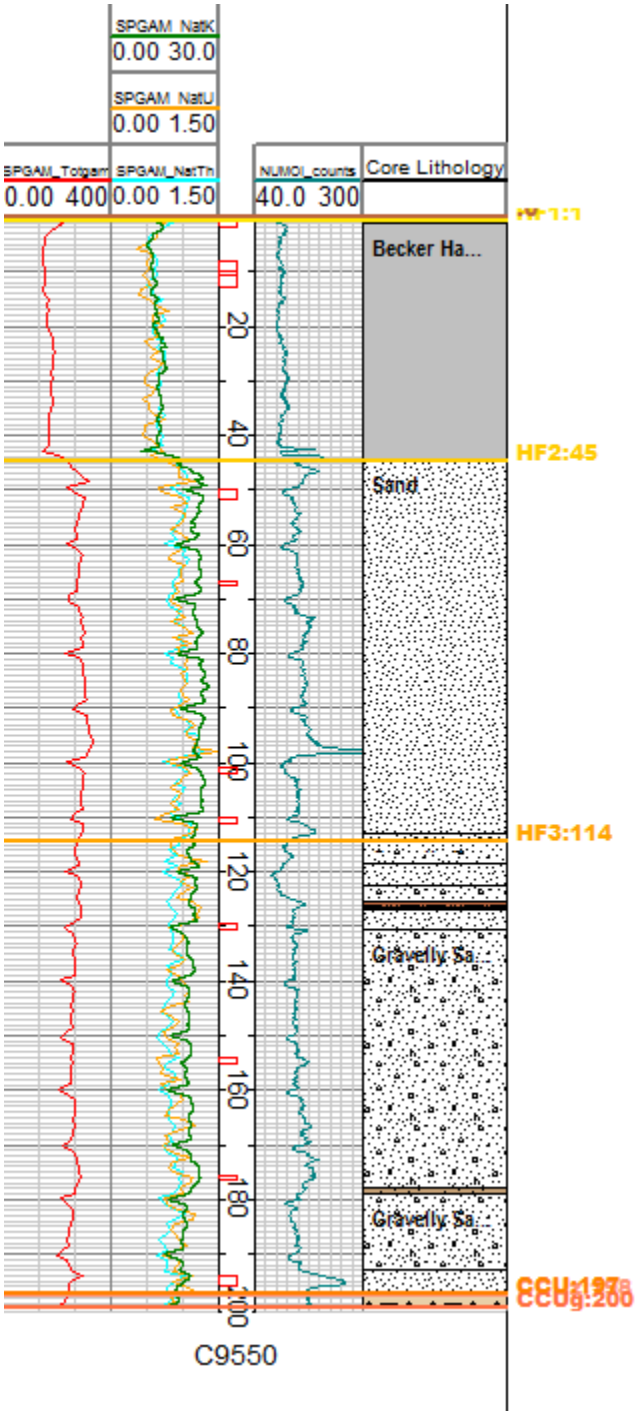

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF2:39
HF3:201
Cold Creek Unit:221
Rwia:269
Basalt:279
C9449
299-E27-26?
640.6

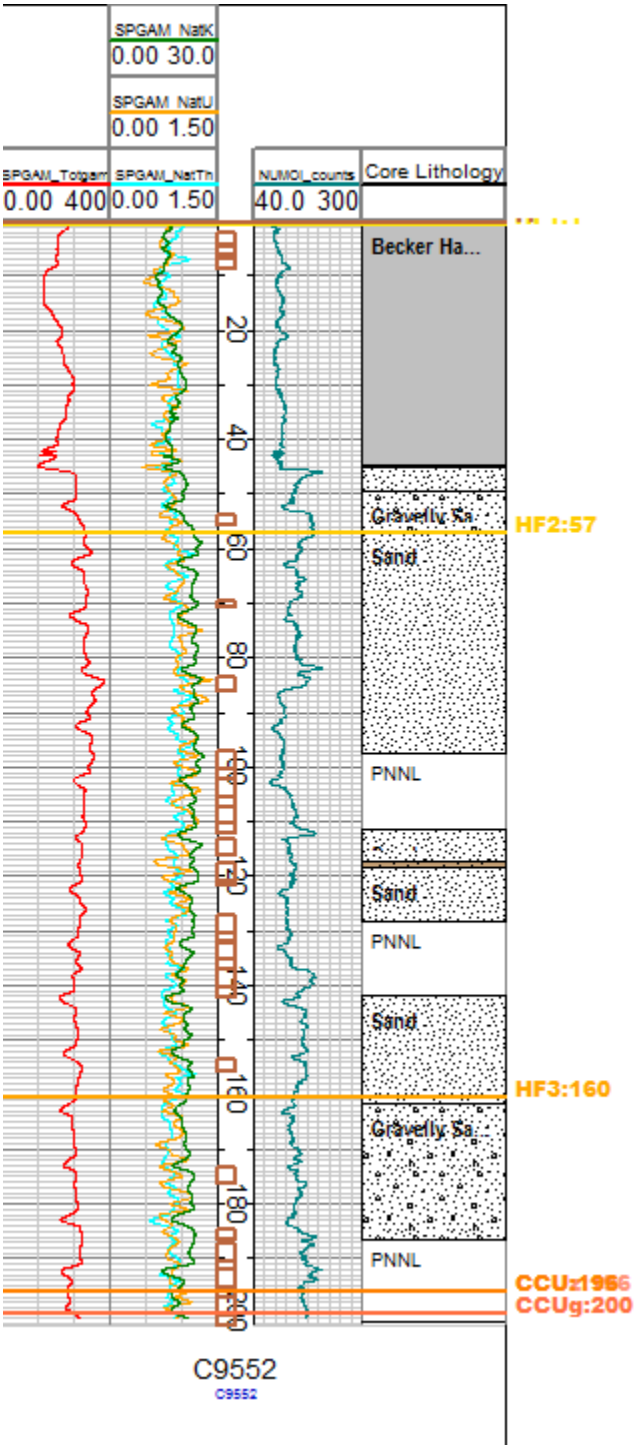

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
HF1:9
HF2:36
PNNI
Sand
Gravelly Sa...
Sand
PNNL
Sand
Sand
Sand
HF3:214
PNNL
20
40
60
80
100
120
140
160
180
200
220
C9487
C9487

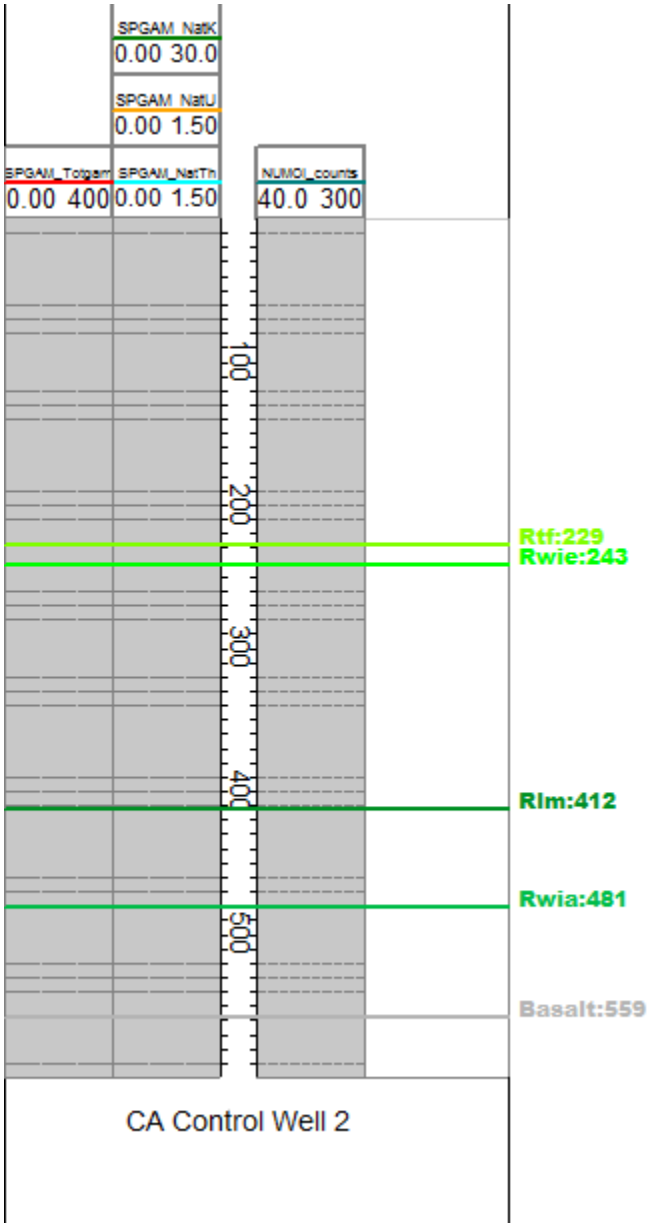

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
Gravelly Sa
HF2:57
Sand
Sand
Sand/Silt R...
Sand
HF3:164
Gravelly Sa
Gravelly Sa
CCUz:206
PNNL
CCUg:223
20
40
60
80
100
120
140
160
180
200
C9488


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
HF1:29
HF2:52
Sand
Sand
Sand
Gravelly Sa...
Sand
CCUg:226
20
40
60
80
100
120
140
160
180
200
220
C9491
C9491


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
HF1:15
Gravelly Sa
HF2:65
Sand
Sand
HF3:135
Gravelly Sa
Sand
Gravelly Sa
CCUgt487
Sandy Gravel
20
40
60
80
100
120
140
160
180
200
C9549
C9549


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
HF2:45
Sand
HF3:114
Gravelly Sa...
Gravelly Sa...
20
40
60
80
100
120
140
160
180
200
C9550


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
Core Lithology
Becker Ha...
Gravelly Sa
HF2:57
Sand
PNNL
Sand
PNNL
Sand
HF3:160
Gravelly Sa
PNNL
CCUz:196
CCUg:200
20
40
60
80
100
120
140
160
180
200
C9552


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 300
100
200
300
400
500
Rtf:229
Rwie:243
Rlm:412
Rwia:481
Basalt:559
CA Control Well 2

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B1.2 200 West Graphic Log Profiles

Figures for the 200 West graphic log profiles are provided on the following pages, using Table B-2 as a key.

Table B-2. 200 West Graphic Log Profiles

Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number
A4738	B-385	A4936	B-417	A5001	B-449	A5471	B-481
A4891	B-386	A4937	B-418	A5003	B-450	A5472	B-482
A4892	B-387	A4939	B-419	A5004	B-451	A5473	B-483
A4894	B-388	A4940	B-420	A5006	B-452	A5475	B-484
A4896	B-389	A4942	B-421	A5008	B-453	A5476	B-485
A4897	B-390	A4943	B-422	A5009	B-454	A5478	B-486
A4899	B-391	A4944	B-423	A5010	B-455	A5479	B-487
A4900	B-392	A4945	B-424	A5011	B-456	A7136	B-488
A4902	B-393	A4946	B-425	A5016	B-457	A7142	B-489
A4903	B-394	A4947	B-426	A5017	B-458	A7146	B-490
A4905	B-395	A4952	B-427	A5121	B-459	A7147	B-491
A4906	B-396	A4954	B-428	A5124	B-460	A7149	B-492
A4908	B-397	A4955	B-429	A5125	B-461	A7152	B-493
A4910	B-398	A4956	B-430	A5128	B-462	A7155	B-494
A4911	B-399	A4957	B-431	A5129	B-463	A7159	B-495
A4912	B-400	A4964	B-432	A5131	B-464	A7160	B-496
A4913	B-401	A4968	B-433	A5139	B-465	A7161	B-497
A4914	B-402	A4969	B-434	A5144	B-466	A7162	B-498
A4915	B-403	A4970	B-435	A5147	B-467	A7163	B-499
A4916	B-404	A4976	B-436	A5158	B-468	A7165	B-500
A4917	B-405	A4979	B-437	A5188	B-469	A7166	B-501
A4918	B-406	A4980	B-438	A5202	B-470	A7170	B-502
A4919	B-407	A4982	B-439	A5221	B-471	A7172	B-503
A4925	B-408	A4985	B-440	A5409	B-472	A7173	B-504
A4926	B-409	A4986	B-441	A5434	B-473	A7178	B-505
A4927	B-410	A4987	B-442	A5435	B-474	A7179	B-506
A4928	B-411	A4988	B-443	A5436	B-475	A7180	B-507
A4929	B-412	A4989	B-444	A5437	B-476	A7181	B-508
A4932	B-413	A4991	B-445	A5439	B-477	A7182	B-509
A4933	B-414	A4996	B-446	A5445	B-478	A7183	B-510
A4934	B-415	A4998	B-447	A5463	B-479	A7184	B-511
A4935	B-416	A4999	B-448	A5466	B-480	A7185	B-512

Table B-2. 200 West Graphic Log Profiles

Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number
A7186	B-513	A7339	B-550	A7735	B-587	A8580	B-624
A7187	B-514	A7346	B-551	A7740	B-588	A8584	B-625
A7188	B-515	A7348	B-552	A7743	B-589	A8643	B-626
A7189	B-516	A7349	B-553	A7746	B-590	A8644	B-627
A7252	B-517	A7350	B-554	A7763	B-591	A8658	B-628
A7275	B-518	A7354	B-555	A7772	B-592	A8712	B-629
A7276	B-519	A7355	B-556	A7773	B-593	A8772	B-630
A7277	B-520	A7356	B-557	A7828	B-594	A8774	B-631
A7278	B-521	A7357	B-558	A7829	B-595	A8797	B-632
A7282	B-522	A7358	B-559	A7830	B-596	A8798	B-633
A7283	B-523	A7360	B-560	A7831	B-597	A9516	B-634
A7284	B-524	A7361	B-561	A7833	B-598	A9728	B-635
A7287	B-525	A7362	B-562	A7835	B-599	A9731	B-636
A7297	B-526	A7363	B-563	A7838	B-600	A9740	B-637
A7298	B-527	A7364	B-564	A7839	B-601	A9742	B-638
A7299	B-528	A7365	B-565	A7840	B-602	A9890	B-639
A7301	B-529	A7367	B-566	A7842	B-603	A9901	B-640
A7302	B-530	A7377	B-567	A7846	B-604	B2460	B-641
A7303	B-531	A7381	B-568	A7849	B-605	B2461	B-642
A7304	B-532	A7382	B-569	A7850	B-606	B2463	B-643
A7305	B-533	A7507	B-570	A7856	B-607	B2464	B-644
A7306	B-534	A7508	B-571	A7857	B-608	B2465	B-645
A7307	B-535	A7509	B-572	A7870	B-609	B2732	B-646
A7308	B-536	A7510	B-573	A7878	B-610	B2752	B-647
A7309	B-537	A7522	B-574	A7879	B-611	B2753	B-648
A7310	B-538	A7524	B-575	A7883	B-612	B8545	B-649
A7311	B-539	A7526	B-576	A7884	B-613	B8546	B-650
A7312	B-540	A7531	B-577	A7885	B-614	B8547	B-651
A7323	B-541	A7532	B-578	A7886	B-615	B8548	B-652
A7324	B-542	A7569	B-579	A7902	B-616	B8549	B-653
A7328	B-543	A7571	B-580	A8057	B-617	B8550	B-654
A7329	B-544	A7578	B-581	A8059	B-618	B8551	B-655
A7330	B-545	A7580	B-582	A8060	B-619	B8553	B-656
A7331	B-546	A7660	B-583	A8062	B-620	B8812	B-657
A7335	B-547	A7727	B-584	A8494	B-621	B8814	B-658
A7337	B-548	A7731	B-585	A8558	B-622	B8815	B-659
A7338	B-549	A7734	B-586	A8573	B-623	B8817	B-660

Table B-2. 200 West Graphic Log Profiles

Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number	Profile Number	Page Number
B8828	B-661	C4668	B-697	C5855	B-733	C8716	B-769
C3102	B-662	C4669	B-698	C6174	B-734	C8717	B-770
C3114	B-663	C4683	B-699	C6219	B-735	C8718	B-771
C3117	B-664	C4684	B-700	C6931	B-736	C8719	B-772
C3118	B-665	C4685	B-701	C7017	B-737	C8720	B-773
C3119	B-666	C4694	B-702	C7018	B-738	C8721	B-774
C3123	B-667	C4695	B-703	C7019	B-739	C8786	B-775
C3125	B-668	C4697	B-704	C7020	B-740	C8920	B-776
C3242	B-669	C4738	B-705	C7021	B-741	C8925	B-777
C3339	B-670	C4948	B-706	C7022	B-742	C8928	B-778
C3393	B-671	C4950	B-707	C7024	B-743	C8943	B-779
C3394	B-672	C4966	B-708	C7025	B-744	C8945	B-780
C3396	B-673	C4968	B-709	C7026	B-745	C9411	B-781
C3398	B-674	C4969	B-710	C7027	B-746	C9412	B-782
C3808	B-675	C4970	B-711	C7028	B-747	C9413	B-783
C3955	B-676	C4971	B-712	C7029	B-748	C9414	B-784
C3956	B-677	C4972	B-713	C7030	B-749	C9415	B-785
C3957	B-678	C4973	B-714	C7298	B-750	C9416	B-786
C3958	B-679	C4974	B-715	C7494	B-751	C9427	B-787
C4129	B-680	C4976	B-716	C7574	B-752	C9430	B-788
C4175	B-681	C4977	B-717	C7575	B-753	C9439	B-789
C4235	B-682	C4978	B-718	C7576	B-754	C9440	B-790
C4236	B-683	C4986	B-719	C7664	B-755	C9482	B-791
C4237	B-684	C4988	B-720	C8065	B-756	C9483	B-792
C4238	B-685	C4989	B-721	C8066	B-757	C9484	B-793
C4256	B-686	C4990	B-722	C8067	B-758	C9492	B-794
C4258	B-687	C5101	B-723	C8068	B-759	C9499	B-795
C4298	B-688	C5102	B-724	C8069	B-760	C9505	B-796
C4299	B-689	C5103	B-725	C8070	B-761	C9506	B-797
C4300	B-690	C5193	B-726	C8096	B-762	C9507	B-798
C4301	B-691	C5194	B-727	C8097	B-763	C9510	B-799
C4302	B-692	C5243	B-728	C8201	B-764	C9511	B-800
C4303	B-693	C5572	B-729	C8202	B-765	C9512	B-801
C4557	B-694	C5573	B-730	C8203	B-766	C9514	B-802
C4639	B-695	C5574	B-731	C8240	B-767	C9593	B-803
C4667	B-696	C5704	B-732	C8386	B-768	C9594	B-804

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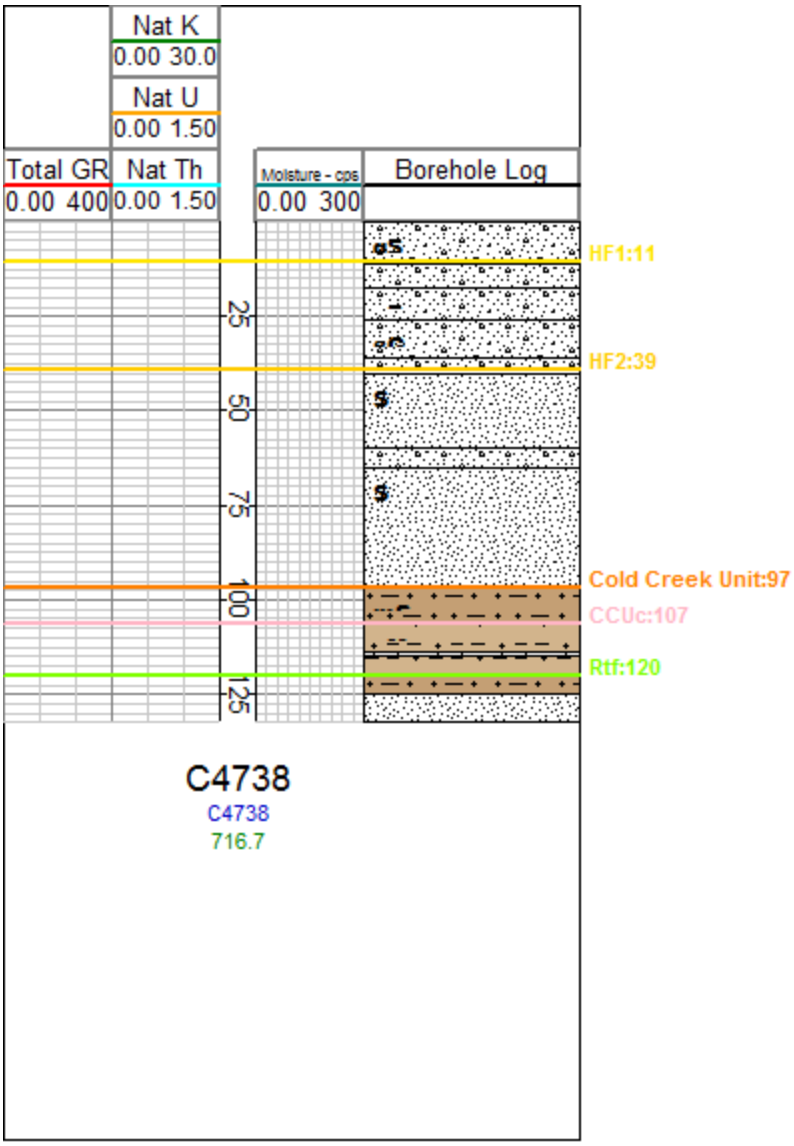
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Nat U
0.00 1.50
Total GR
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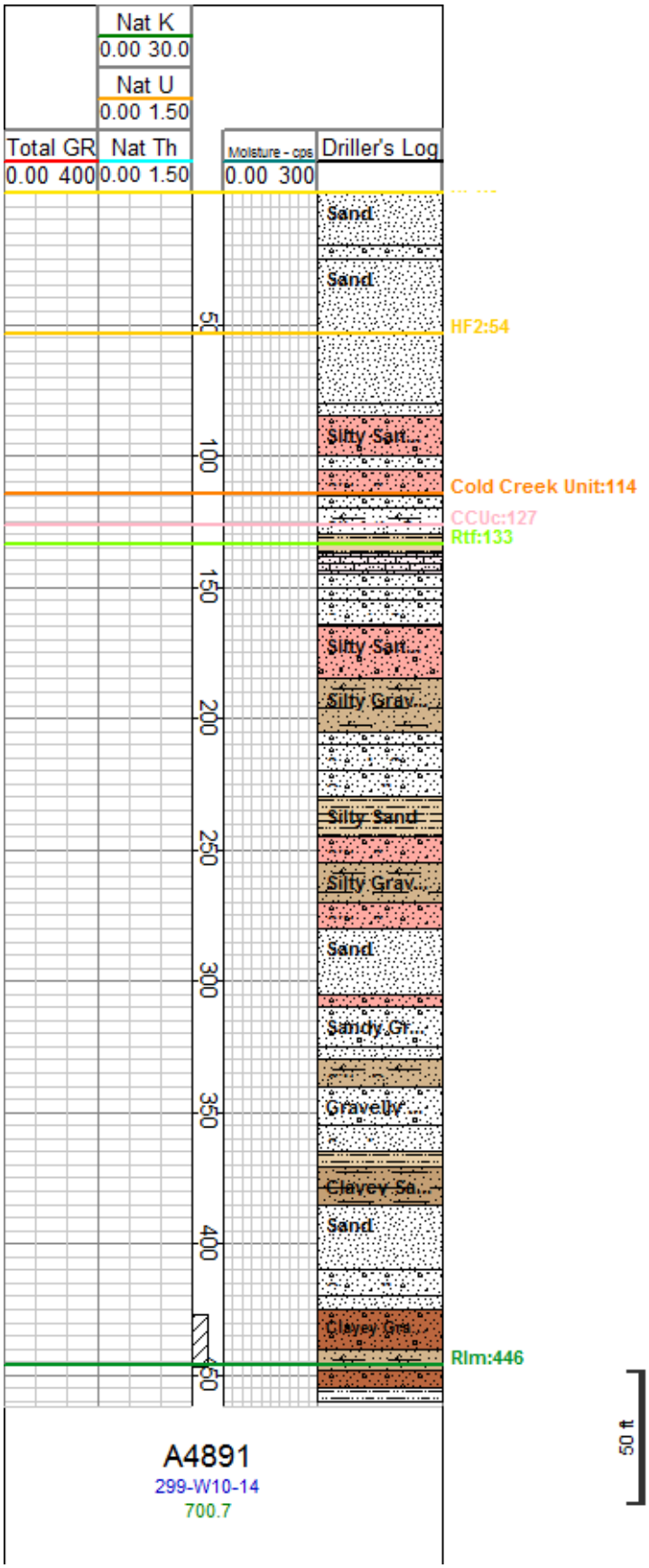
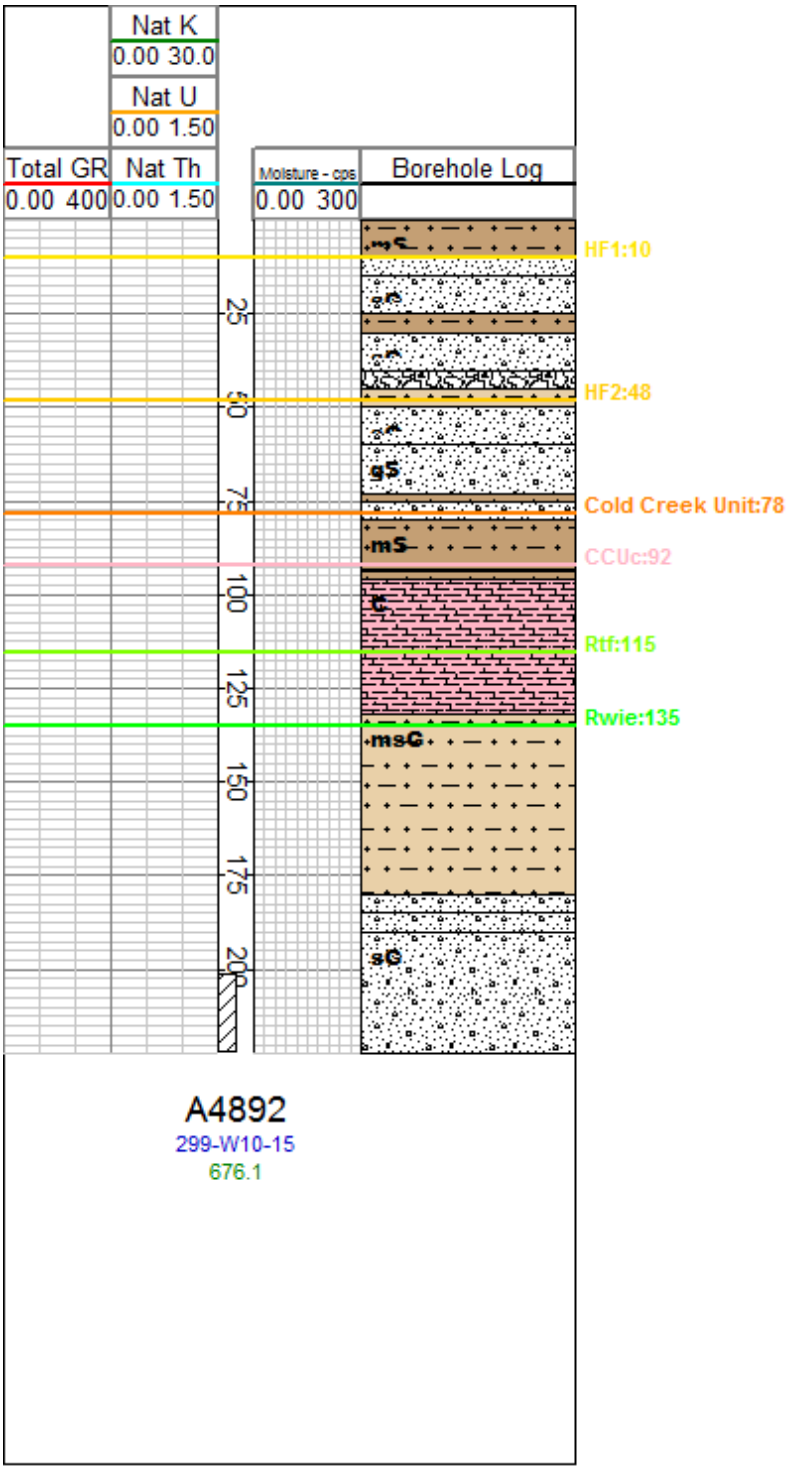
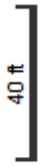
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:11
HF2:39
Cold Creek Unit:97
CCUc:107
Rtf:120
25
50
75
100
125
C4738
C4738
716.7

40 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Sand
HF2:54
Silty Sant...
Cold Creek Unit:114
CCUc:127
Rtf:133
Silty Sant...
Silty Grav...
Silty Sand
Silty Grav...
Sand
Sandy Gr...
Gravelly...
Clayey Sa...
Sand
Clayey Gra...
Rlm:446
50
100
150
200
250
300
350
400
450
50 ft
A4891
299-W10-14
700.7


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
25
50
75
100
125
150
175
200
HF1:10
HF2:48
Cold Creek Unit:78
CCUc:92
Rtf:115
Rwie:135
A4892
299-W10-15
676.1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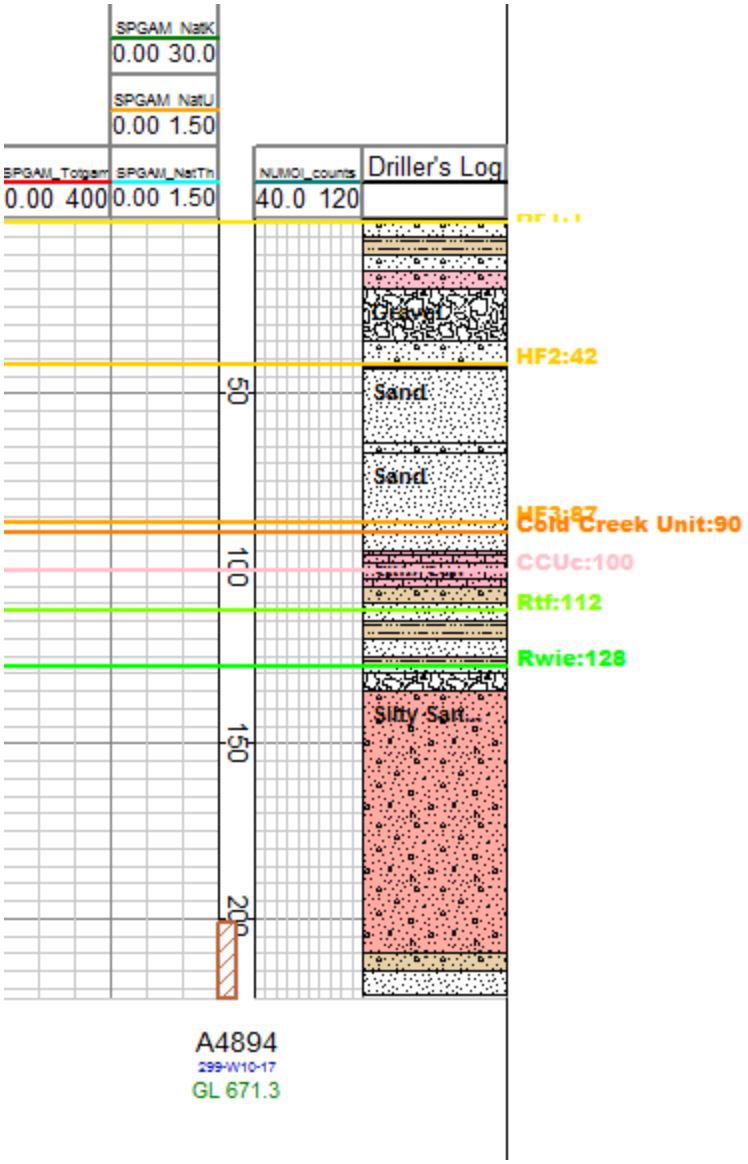
SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
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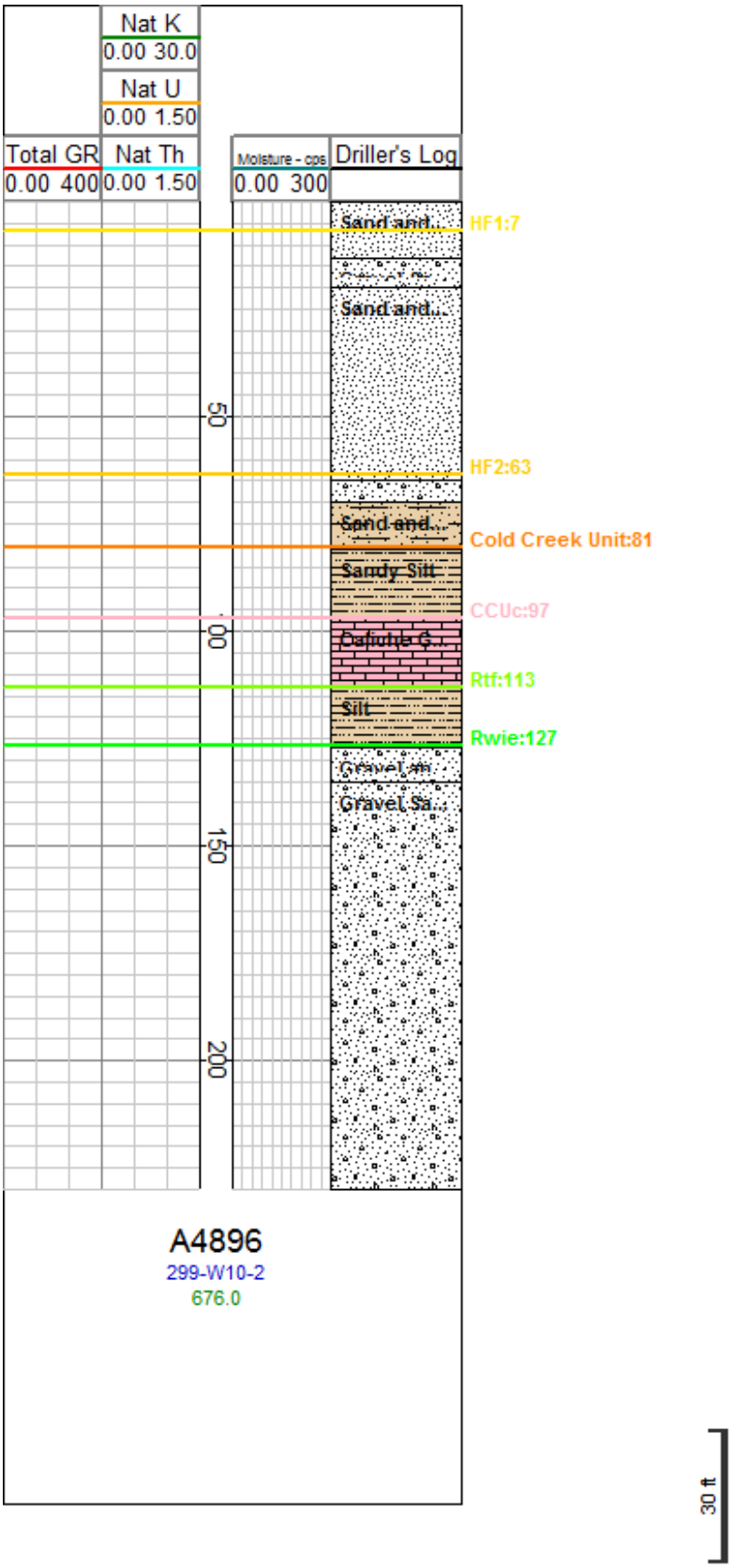
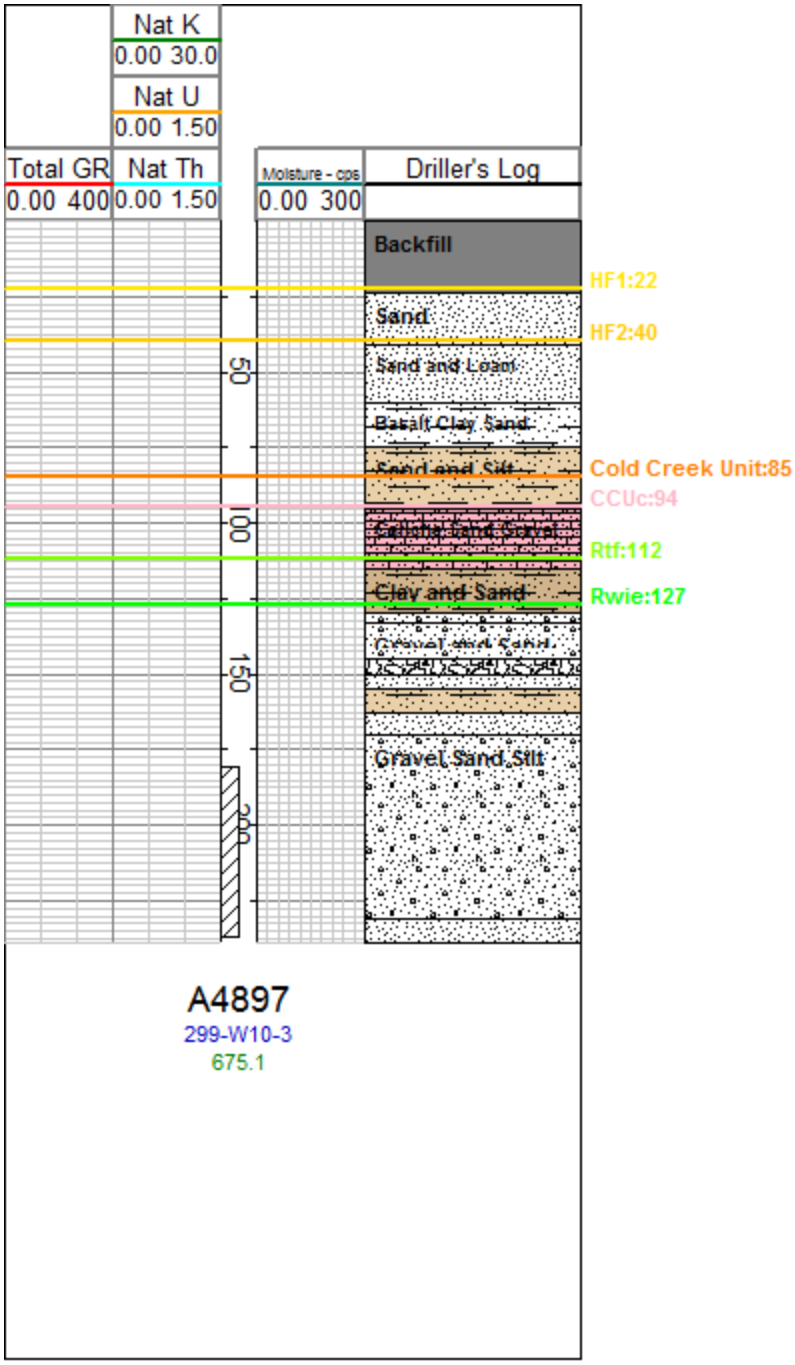
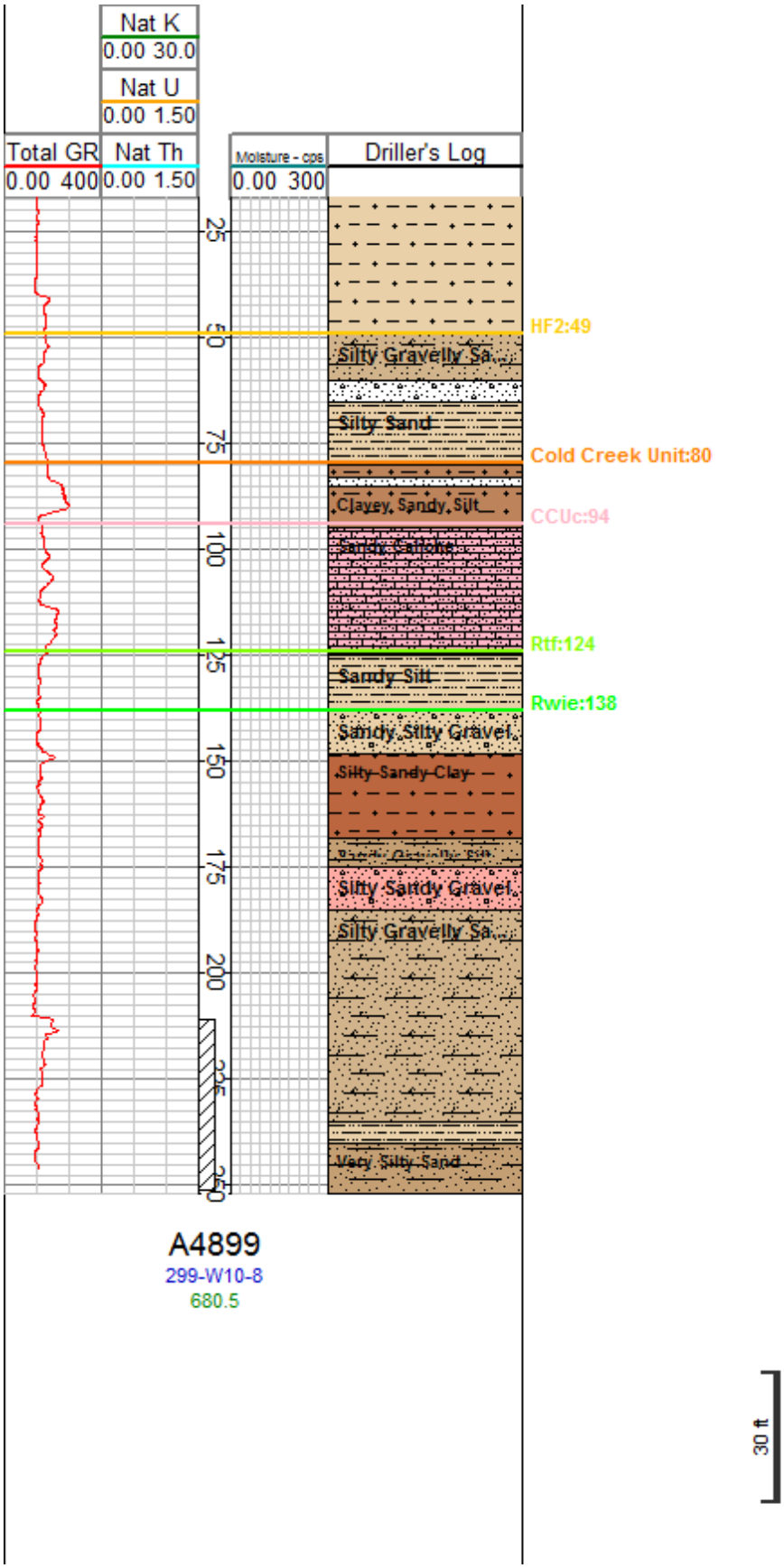
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:42
Sand
Sand
Cold Creek Unit:90
CCUc:100
Rtf:112
Rwie:128
Silty Sand
50
100
150
200
A4894
299-W10-17
GL 671.3


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and...
Sand and...
Sand and...
Sandy Silt
Silt
Gravel, Sa...
HF1:7
HF2:63
Cold Creek Unit:81
CCUc:97
Rtf:113
Rwie:127
50
100
150
200
A4896
299-W10-2
676.0
30 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
HF1:22
Sand
HF2:40
Sand and Loam
Basalt Clay Sand
Sand and Silt
Cold Creek Unit:85
CCUc:94
Caliche Sand Gravel
Rtf:112
Clay and Sand
Rwie:127
Gravel and Sand
Gravel Sand Silt
50
100
150
200
A4897
299-W10-3
675.1

50 ft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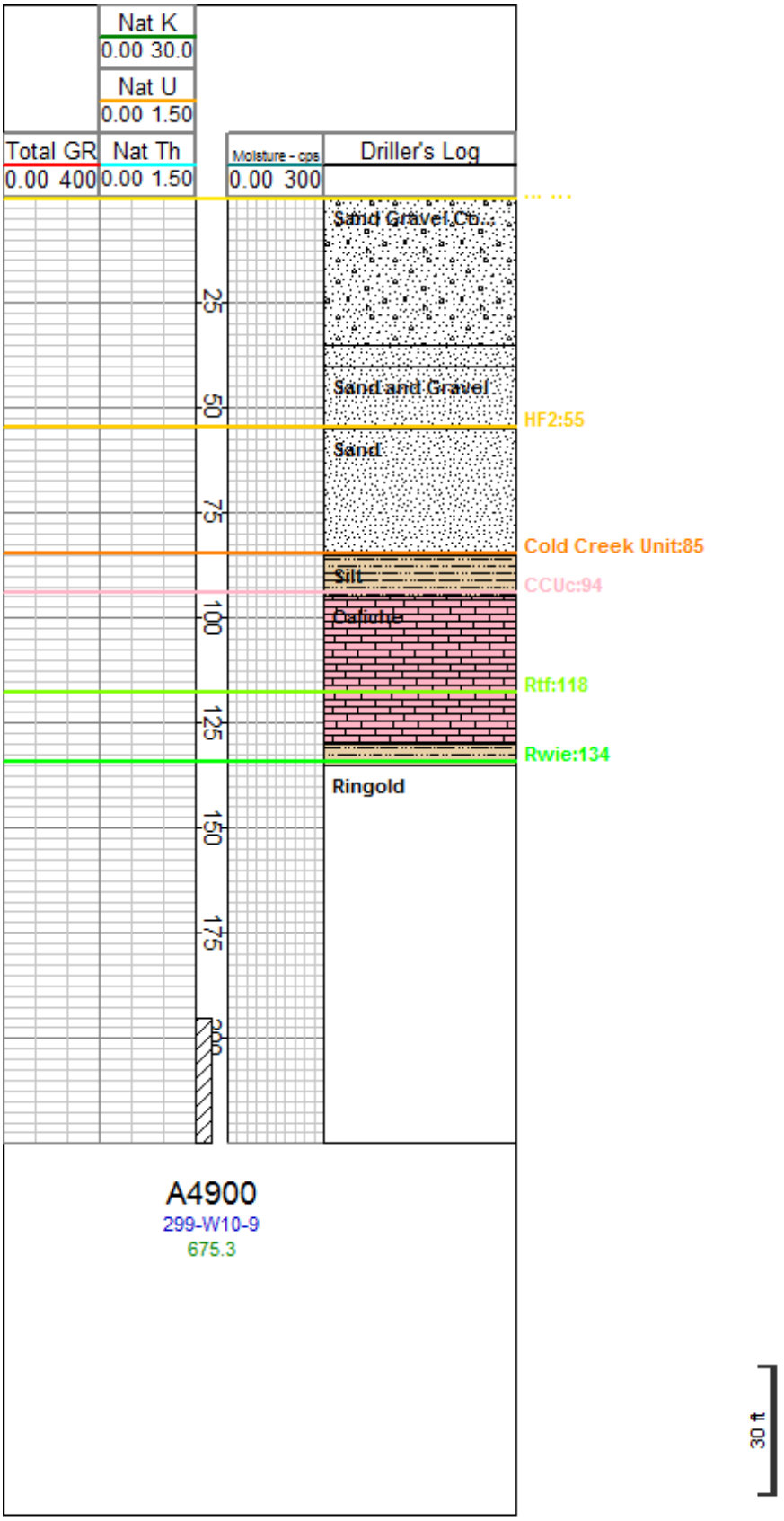
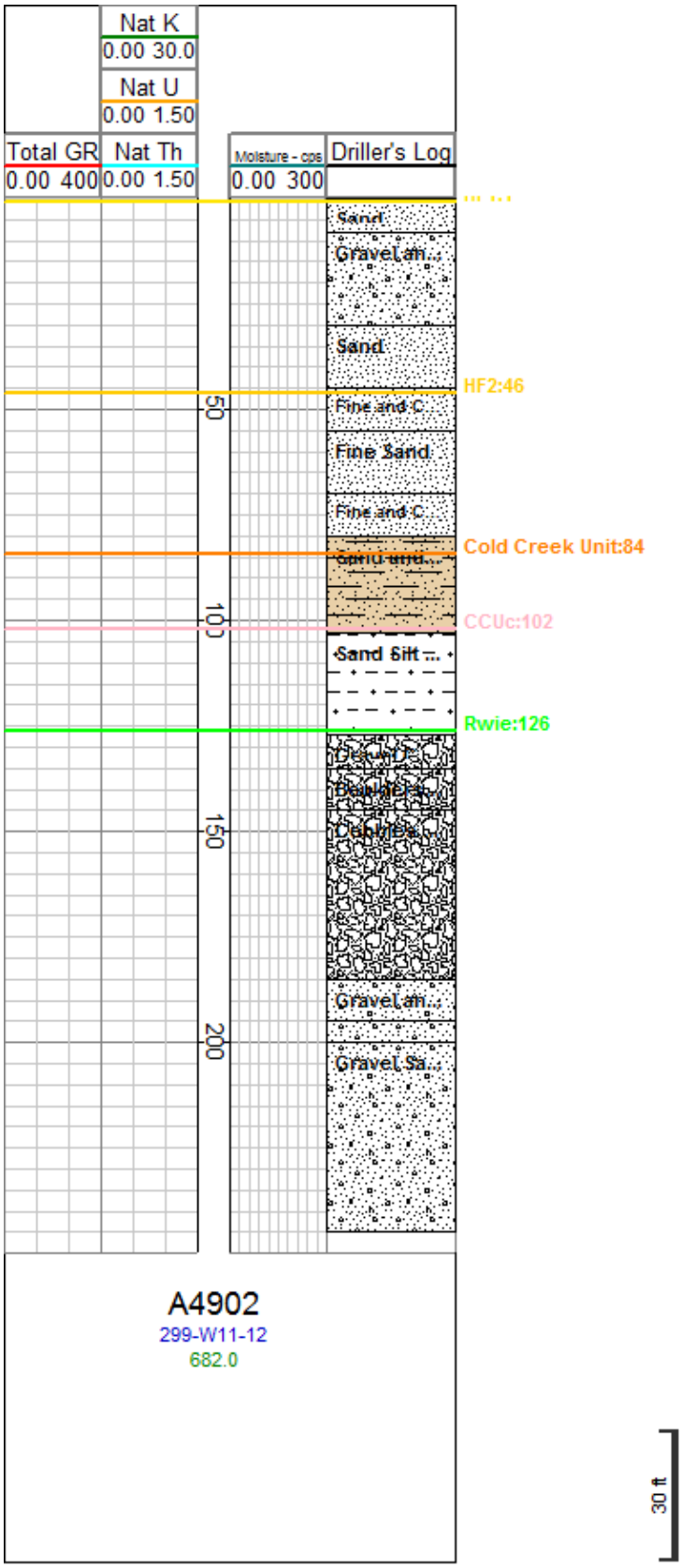
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
25
50
75
100
125
150
175
200
225
250
HF2:49
Silty Gravelly Sa
Silty Sand
Cold Creek Unit:80
Clayey, Sandy, Silt
CCUc:94
Rtf:124
Sandy Silt
Rwie:138
Sandy Silty Gravel
Silty Sandy Clay
Silty Sandy Gravel
Silty Gravelly Sa
Very Silty Sand
A4899
299-W10-8
680.5
30 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand Gravel,Co...
Sand and Gravel
HF2:55
Sand
Cold Creek Unit:85
Silt
CCUc:94
Caliche
Rtf:118
Rwie:134
Ringold
25
50
75
100
125
150
175
200
A4900
299-W10-9
675.3
30 ft


Nat K
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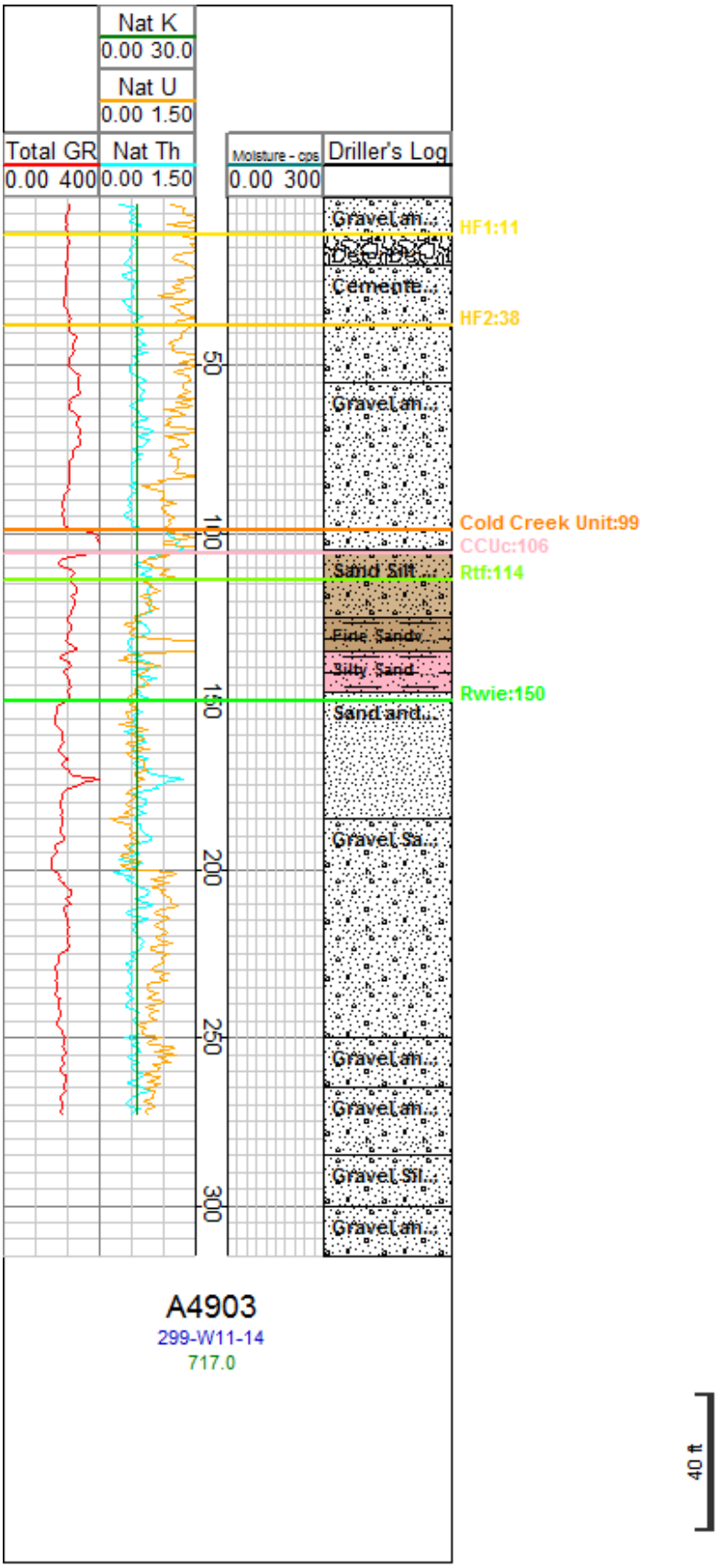
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Gravel,an...
Sand
HF2:46
Fine and C
Fine Sand
Fine and C
Cold Creek Unit:84
CCUc:102
Sand Silt
Rwie:126
Gravel,an...
Gravel,Sa...
50
100
150
200
A4902
299-W11-12
682.0
30 ft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Nat U
0.00 1.50
Total GR
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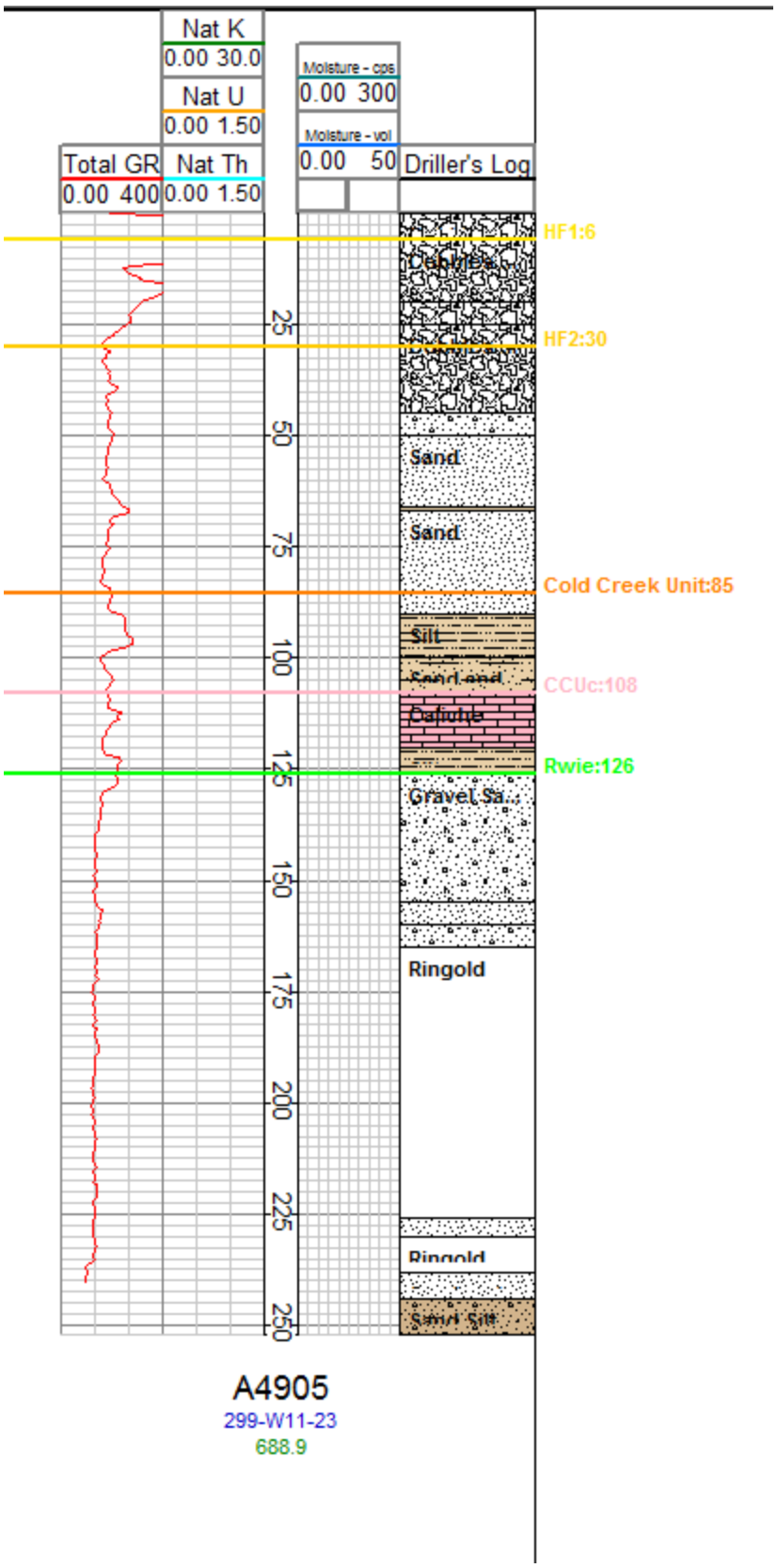
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:11
HF2:38
Cold Creek Unit:99
CCUc:106
Rtf:114
Rwie:150
50
100
150
200
250
300
A4903
299-W11-14
717.0
40 ft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0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:6
HF2:30
Sand
Sand
Cold Creek Unit:85
Silt
CCUc:108
Rwie:126
Ringold
Ringold
25
50
75
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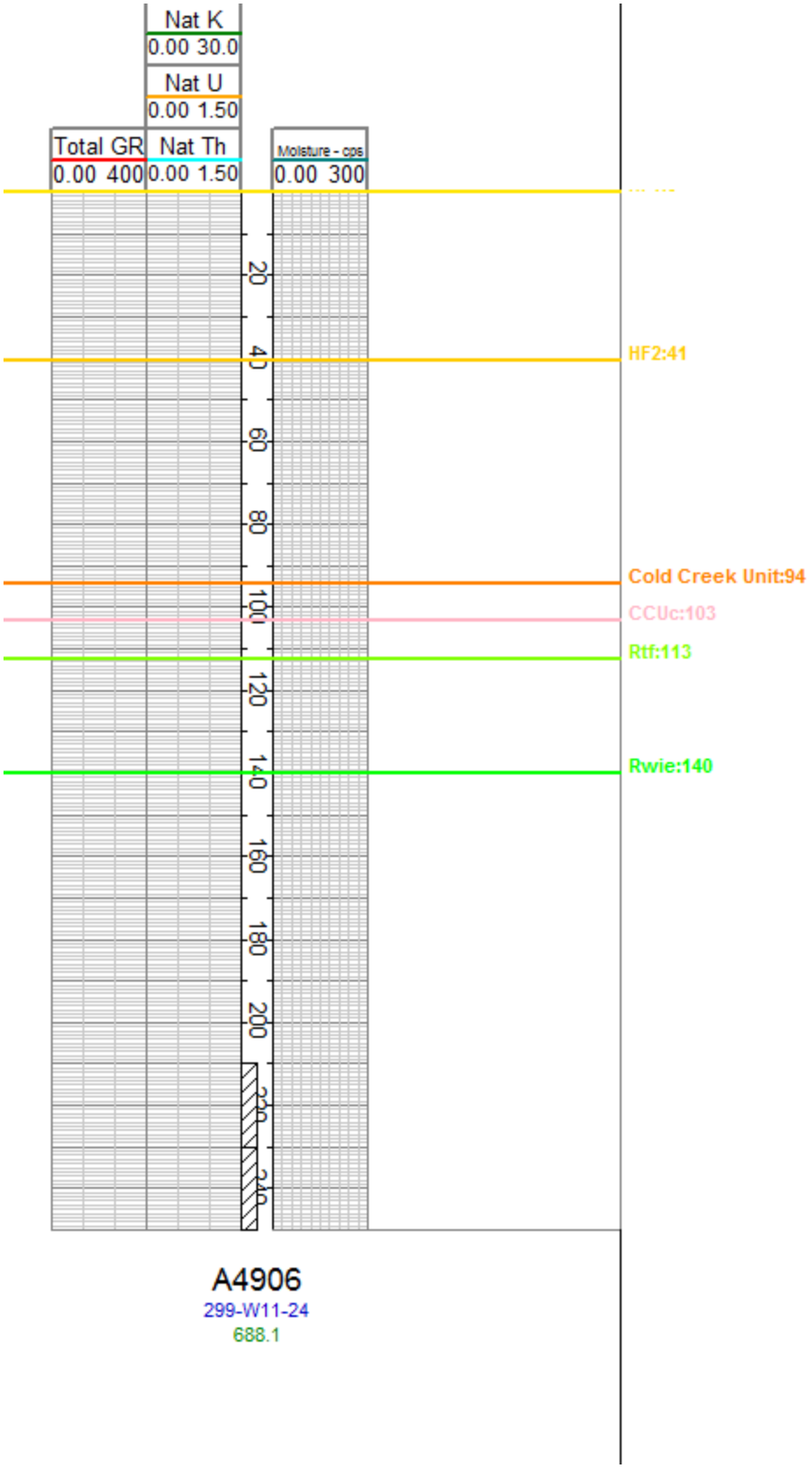
175
200
225
250
A4905
299-W11-23
688.9


Nat K
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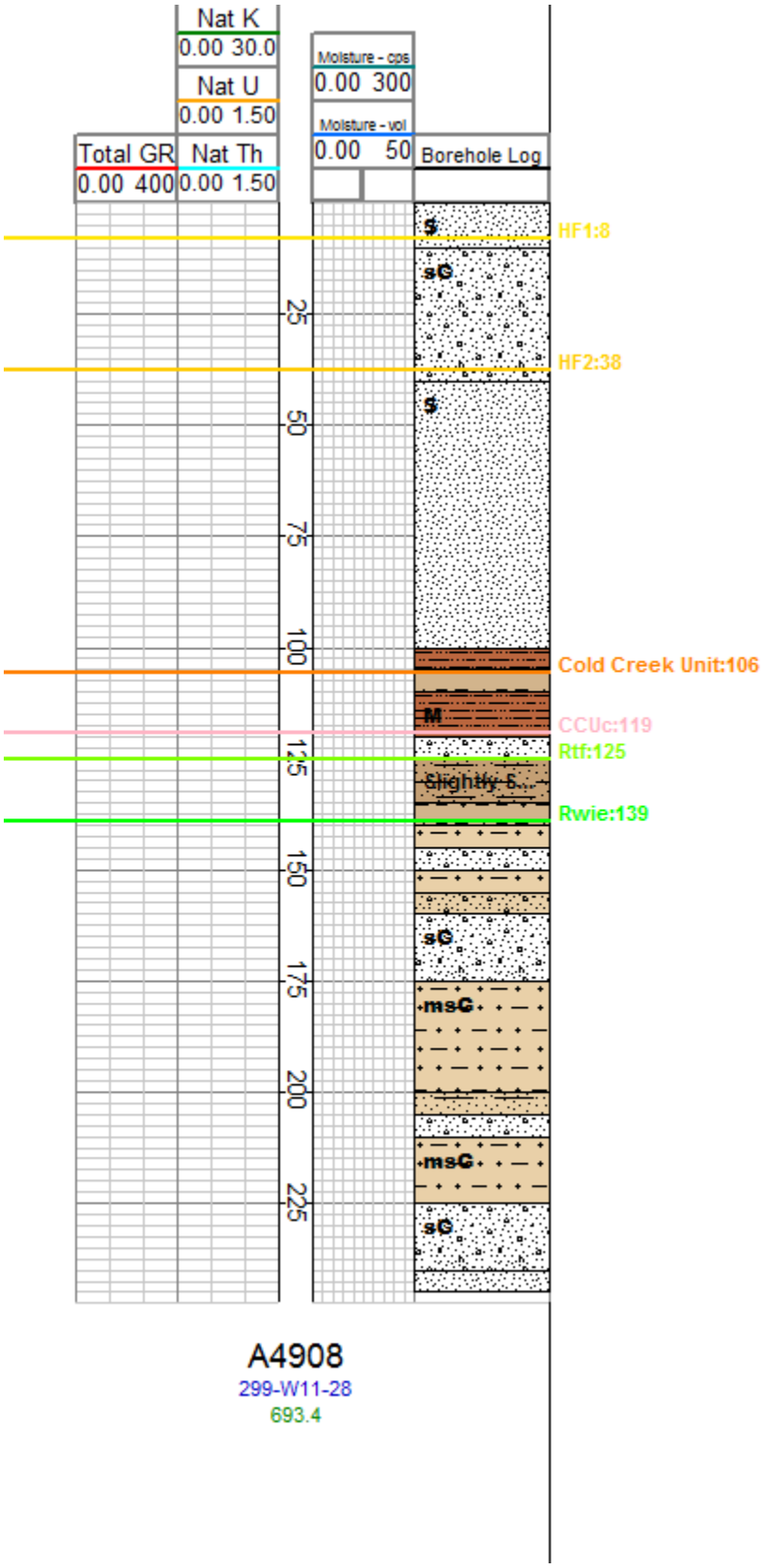
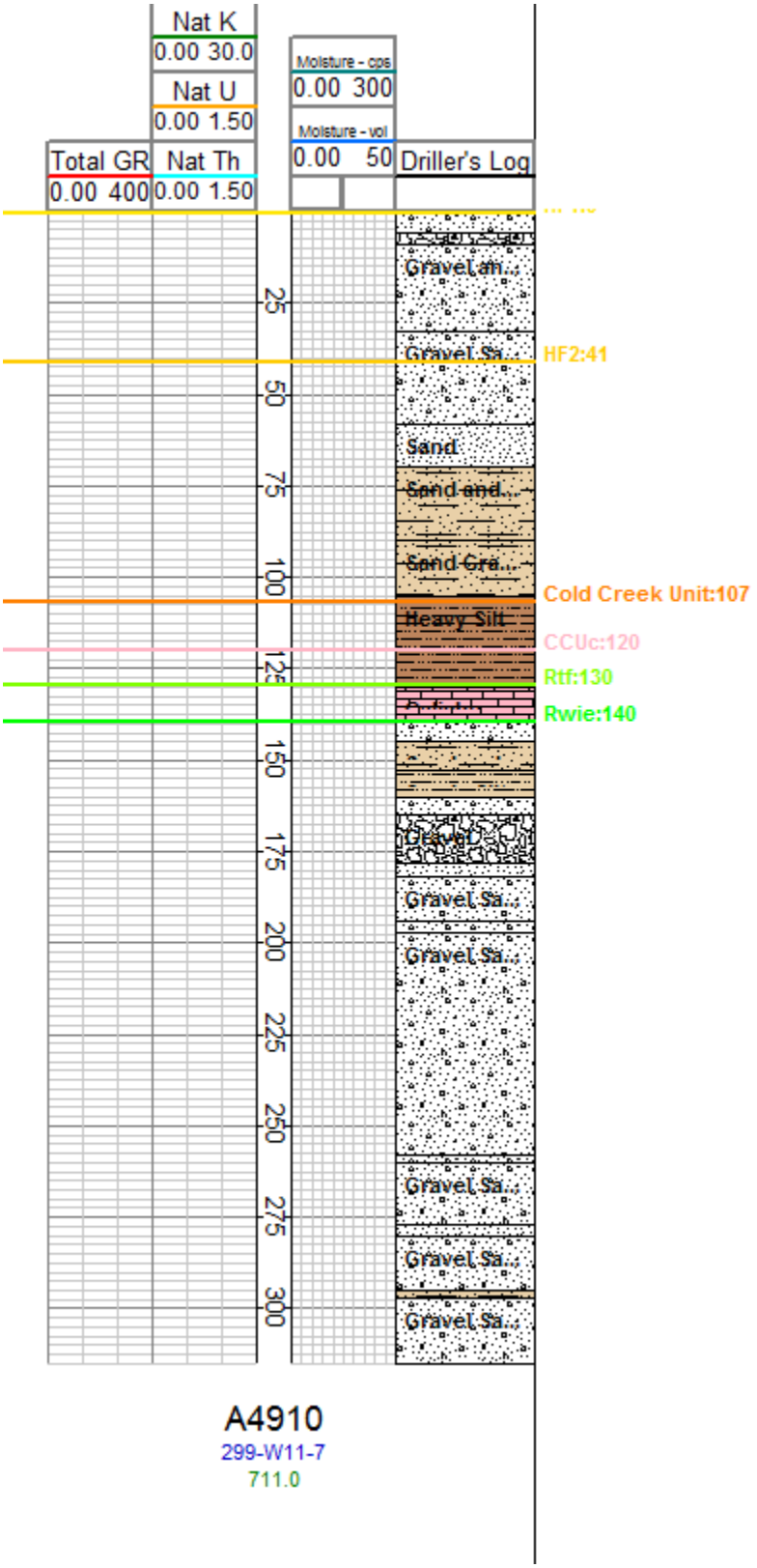
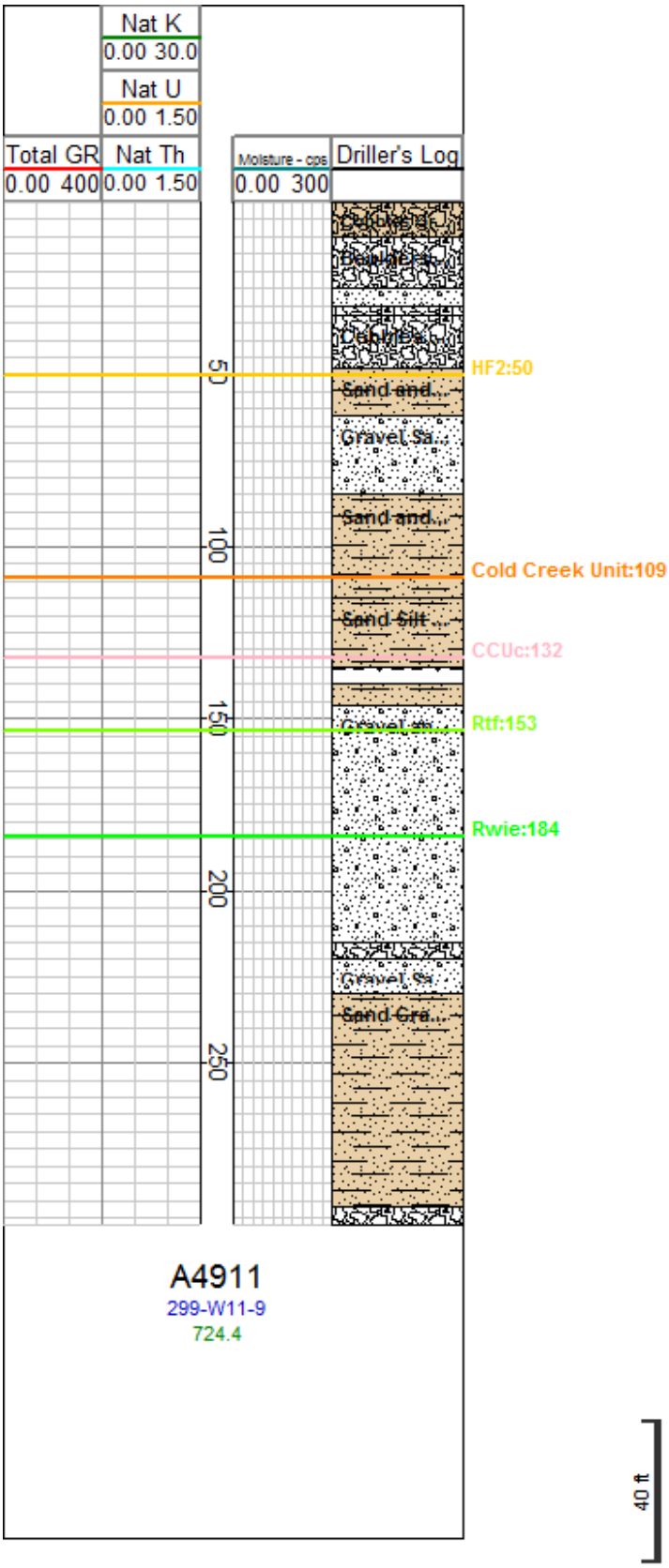
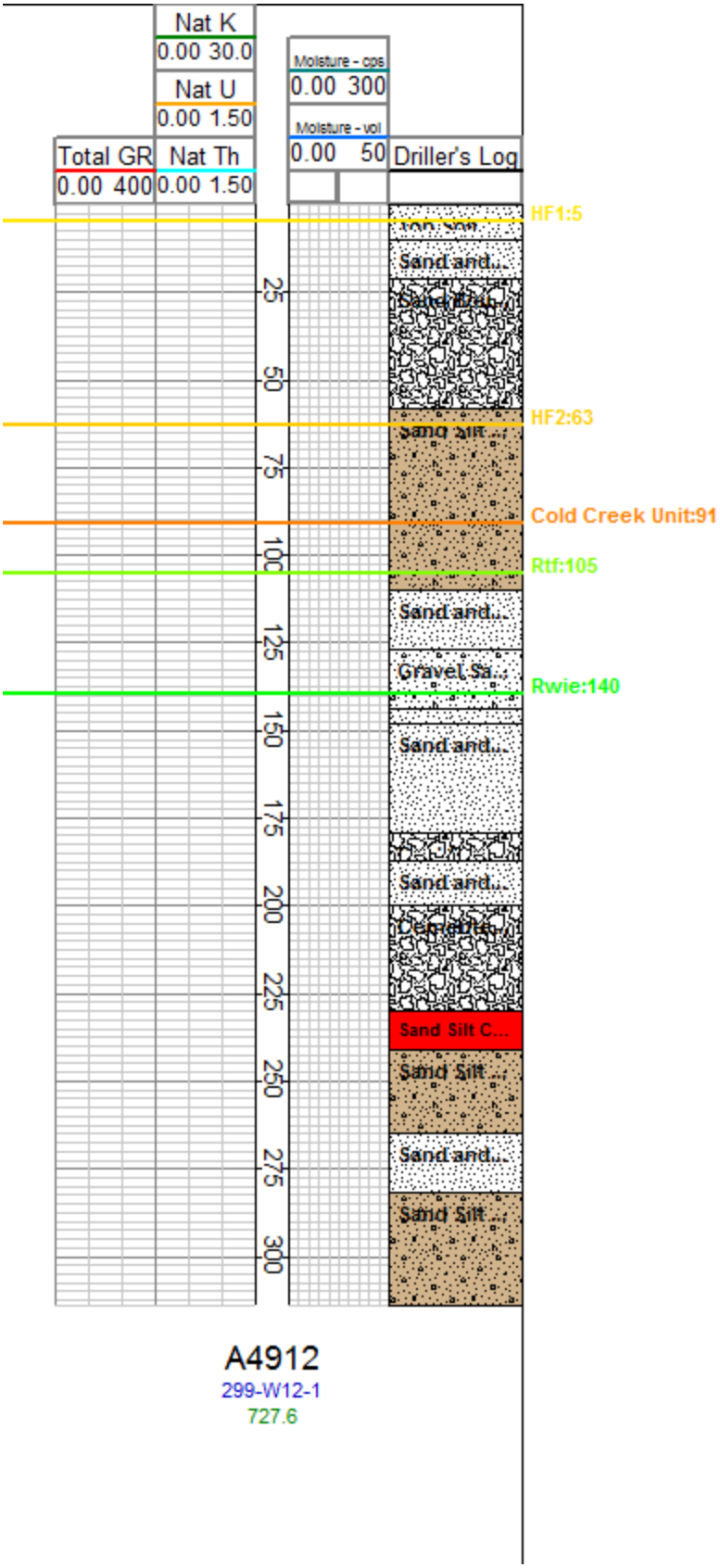
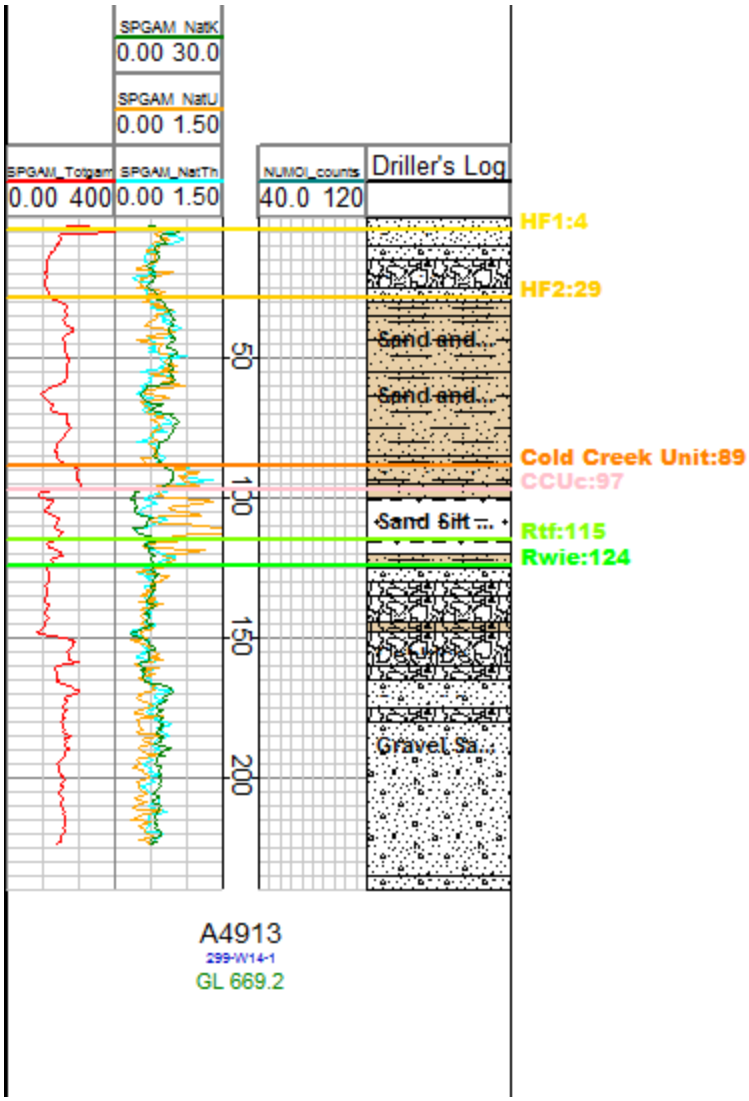
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
160
180
200
220
240
HF2:41
Cold Creek Unit:94
CCUc:103
Rtf:113
Rwie:140
A4906
299-W11-24
688.1


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:8
HF2:38
Cold Creek Unit:106
CCUc:119
Rtf:125
Rwie:139
25
50
75
100
125
150
175
200
225
A4908
299-W11-28
693.4


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
25
50
75
100
125
150
175
200
225
250
275
300
Gravel,an...
Gravel,Sa...
Sand
Sand and...
Sand,Gra...
Heavy Silt
Gravel
Gravel,Sa...
Gravel,Sa...
Gravel,Sa...
Gravel,Sa...
Gravel,Sa...
HF2:41
Cold Creek Unit:107
CCUc:120
Rtf:130
Rwie:140
A4910
299-W11-7
711.0


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
50
100
150
200
250
HF2:50
Cold Creek Unit:109
CCUc:132
Rtf:153
Rwie:184
A4911
299-W11-9
724.4
40 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:5
HF2:63
Cold Creek Unit:91
Rtf:105
Rwie:140
Sand and...
Gravel Sa...
Sand Silt C...
Sand Silt ...
25
50
75
100
125
150
175
200
225
250
275
300
A4912
299-W12-1
727.6


SPGAM_NatK
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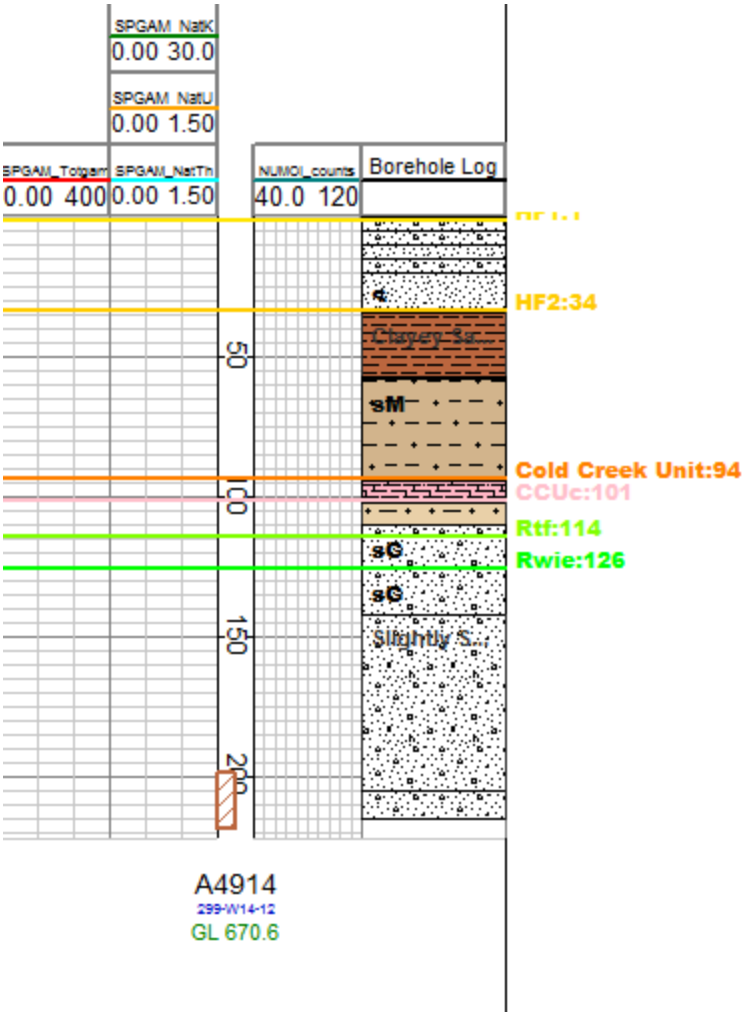
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:4
HF2:29
Sand and...
Sand and...
Cold Creek Unit:89
CCUc:97
Sand Silt ...
Rtf:115
Rwie:124
Gravel Sa...
50
100
150
200
A4913
299-W14-1
GL 669.2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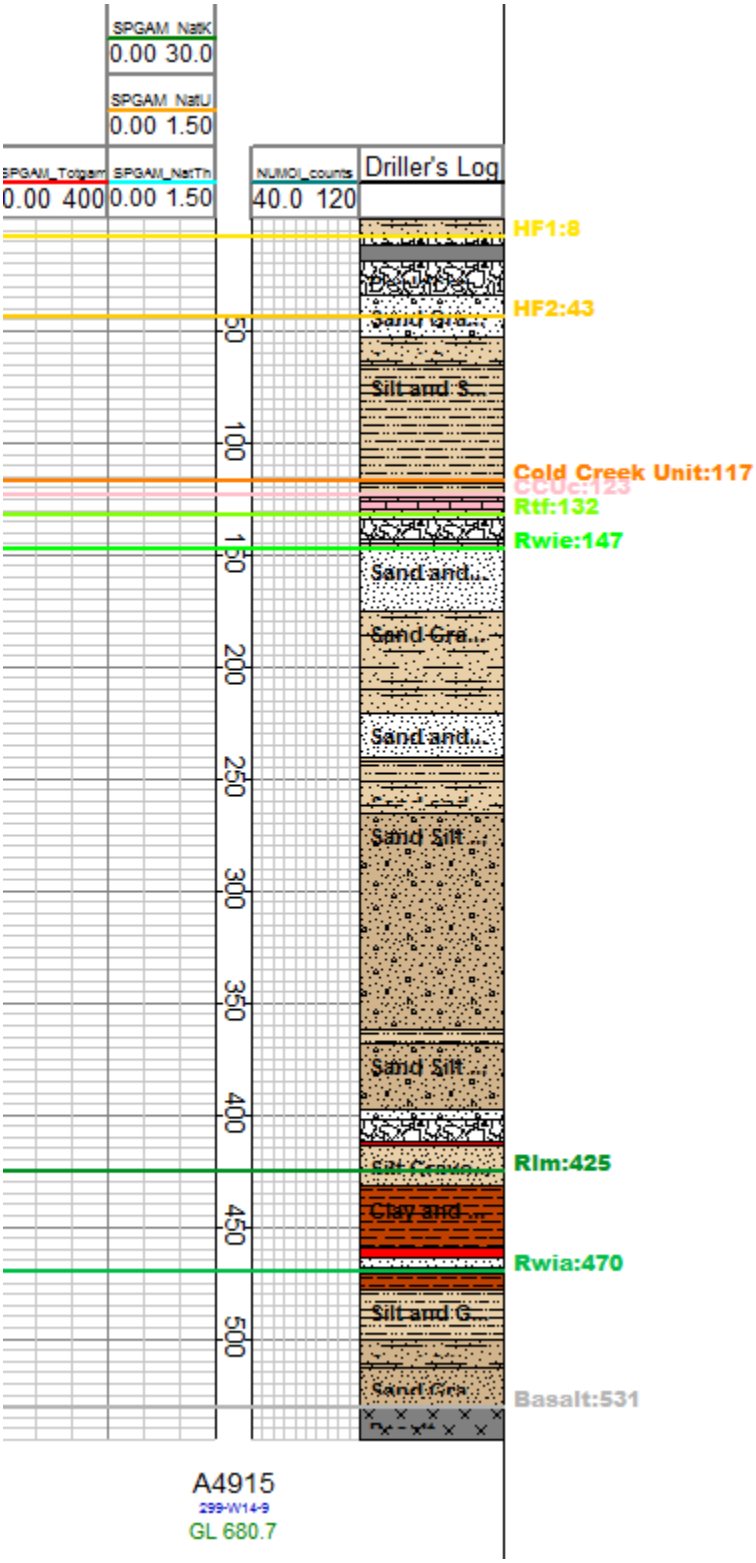
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:34
Cold Creek Unit:94
CCUc:101
Rtf:114
Rwie:126
50
100
150
200
A4914
299-W14-12
GL 670.6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SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:8
HF2:43
Silt and S...
Cold Creek Unit:117
CCUc:123
Rtf:132
Rwie:147
Sand and...
Sand Gra...
Sand and...
Sand Silt ...
Sand Silt ...
Rlm:425
Clay and ...
Rwia:470
Silt and G...
Sand Gra
Basalt:531
50
100
150
200
250
300
350
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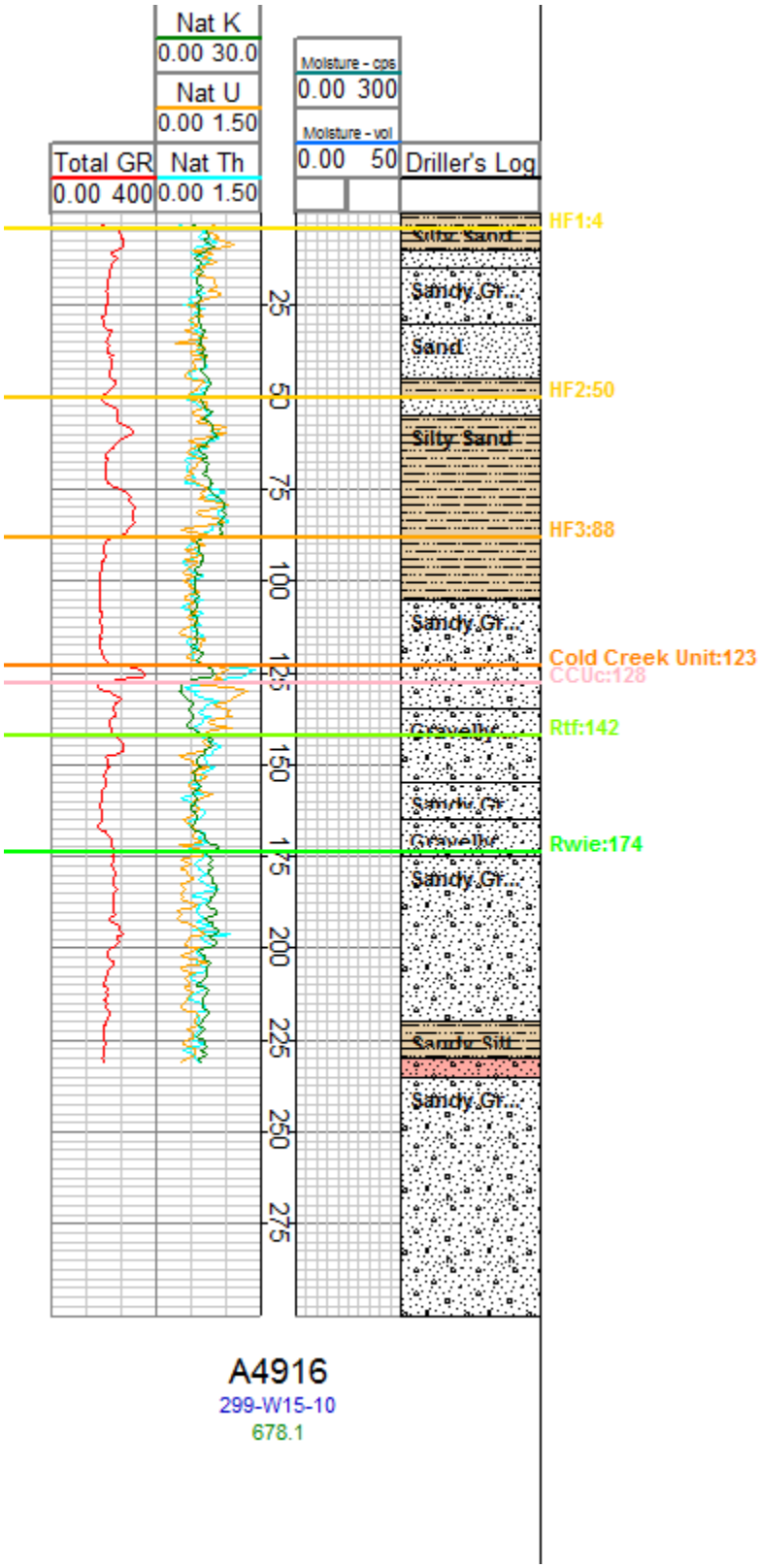
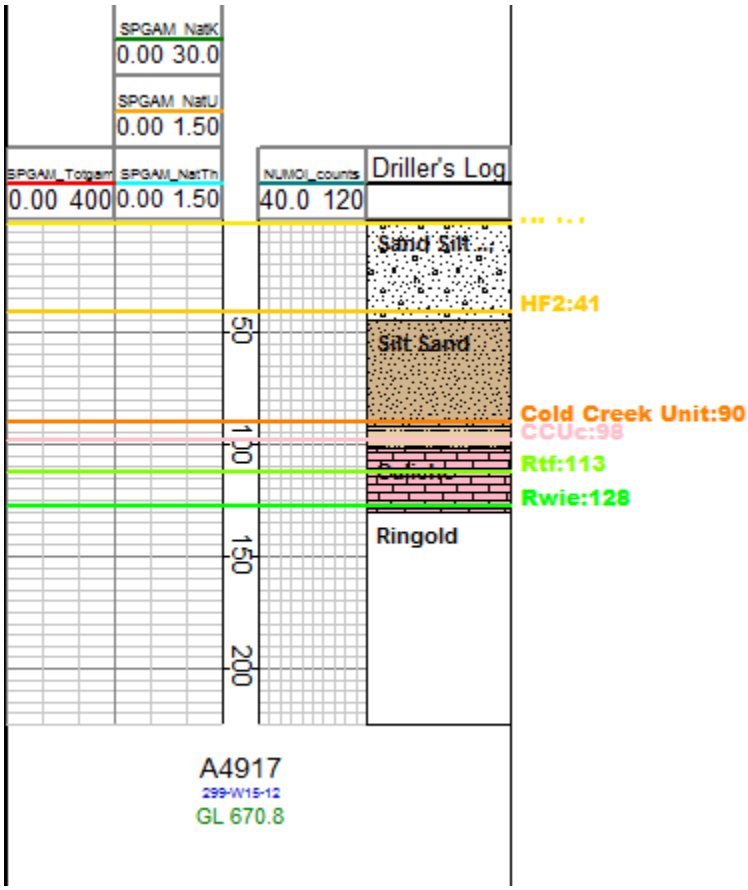
500
A4915
299-W14-9
GL 680.7


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:4
Silty Sand
Sandy Gr...
Sand
HF2:50
Silty Sand
HF3:88
Sandy Gr...
Cold Creek Unit:123
CCUc:128
Rtf:142
Gravelly...
Sandy Gr...
Gravelly...
Rwie:174
Sandy Gr...
Sandy Silt
Sandy Gr...
25
50
75
100
125
150
175
200
225
250
275
A4916
299-W15-10
678.1


SPGAM_NatK
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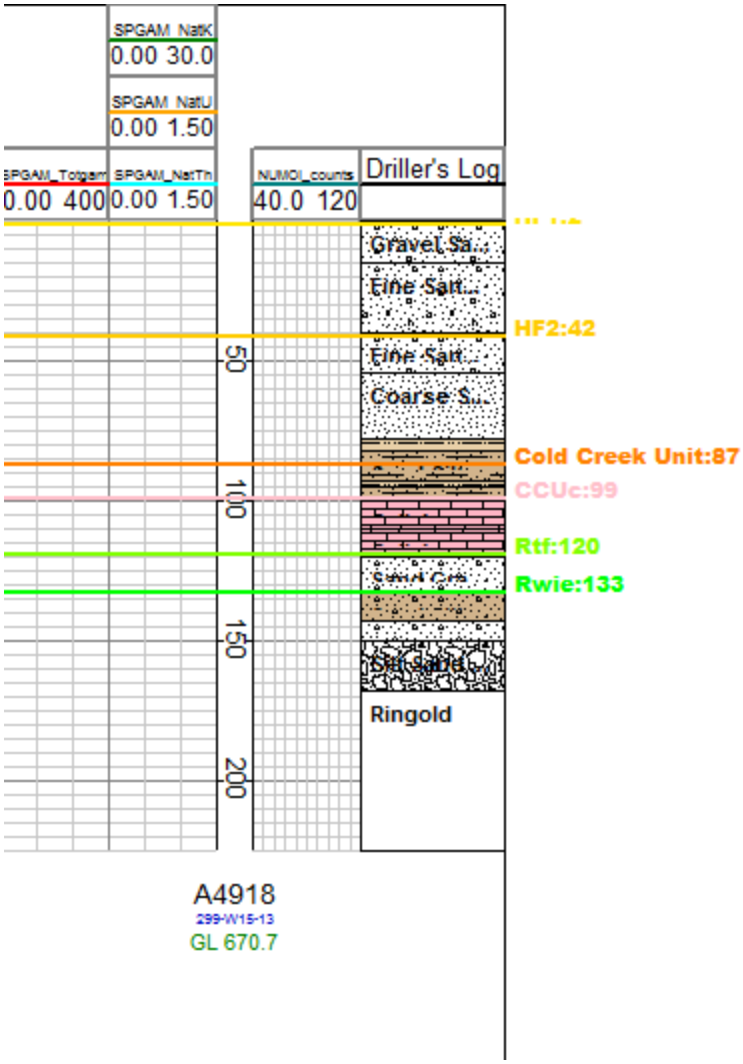
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand Silt
HF2:41
Silt Sand
Cold Creek Unit:90
CCUc:98
Rtf:113
Rwie:128
Ringold
50
100
150
200
A4917
299-W15-12
GL 670.8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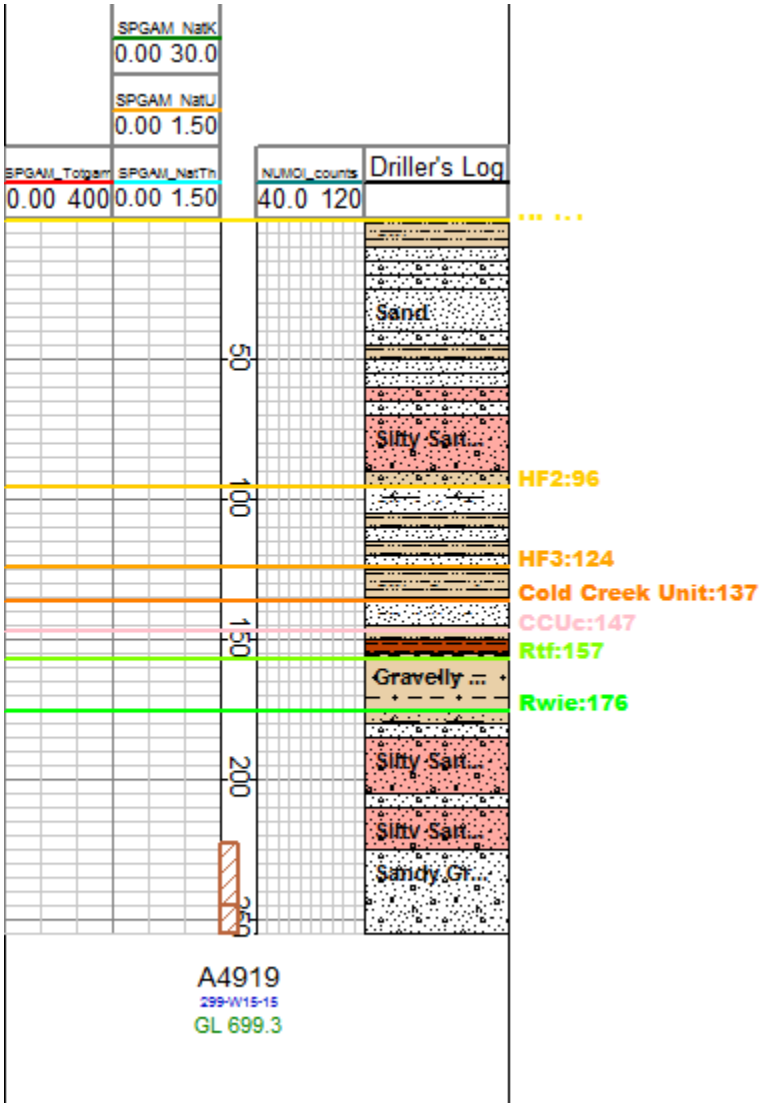
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Gravel Sa...
Fine Salt...
HF2:42
Fine Salt...
Coarse S...
Cold Creek Unit:87
CCUc:99
Rtf:120
Rwie:133
Ringold
50
100
150
200
A4918
299-W15-13
GL 670.7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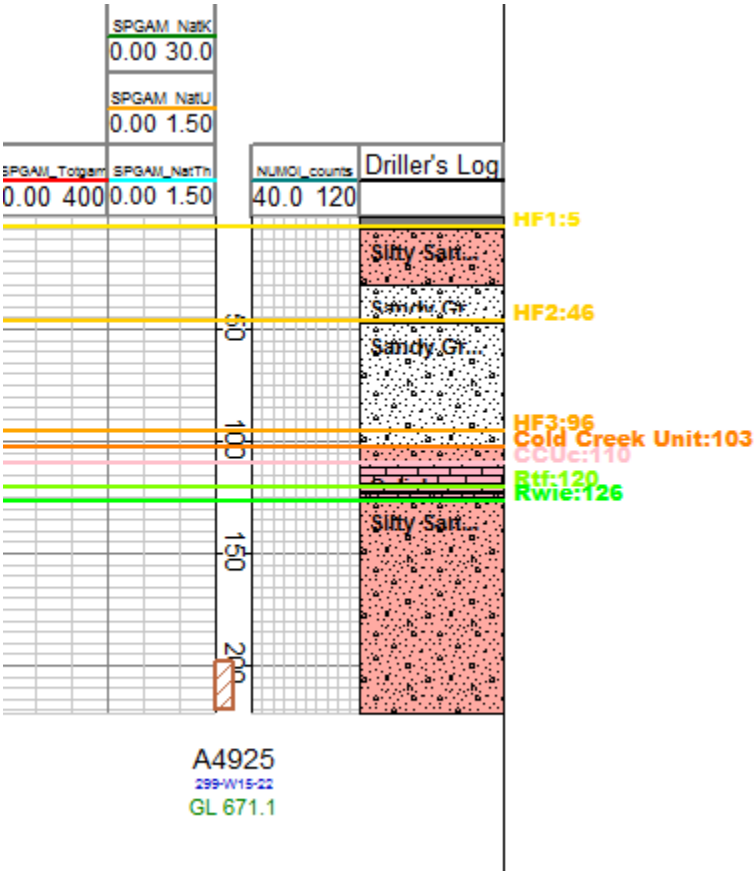
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
Silty Salt...
HF2:96
HF3:124
Cold Creek Unit:137
CCUc:147
Rtf:157
Gravelly ...
Rwie:176
Silty Salt...
Silty Salt...
Sandy Gr...
50
100
150
200
250
A4919
299-W15-15
GL 699.3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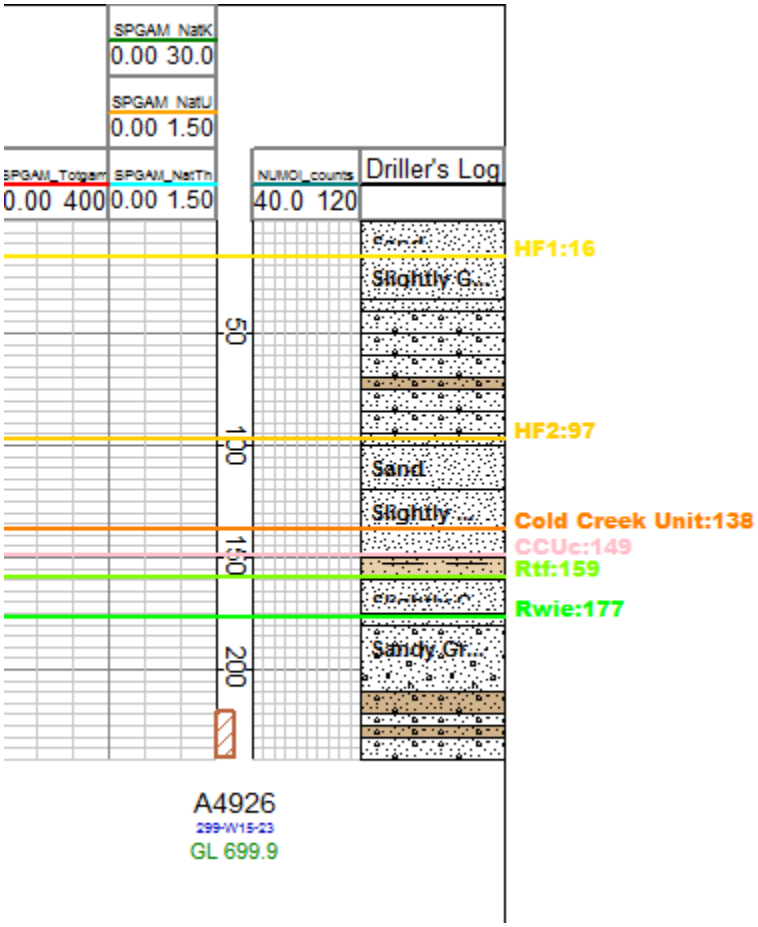
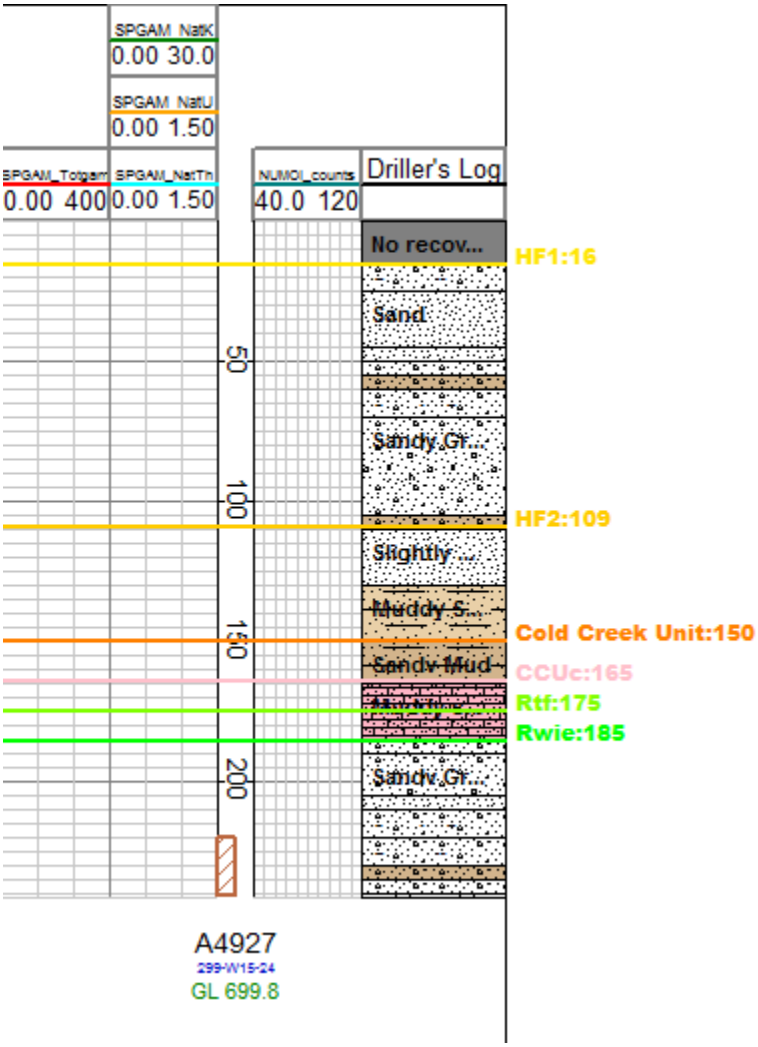
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:5
Silty Sant...
Sandy Gr...
HF2:46
Sandy Gr...
HF3:96
Cold Creek Unit:103
CCUc:110
Rtf:120
Rwie:126
Silty Sant...
50
100
150
200
A4925
299-W15-22
GL 671.1


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:16
Slightly G...
50
HF2:97
100
Sand
Slightly ...
Cold Creek Unit:138
CCUc:149
150
Rtf:159
Rwie:177
Sandy Gr...
200
A4926
299-W15-23
GL 699.9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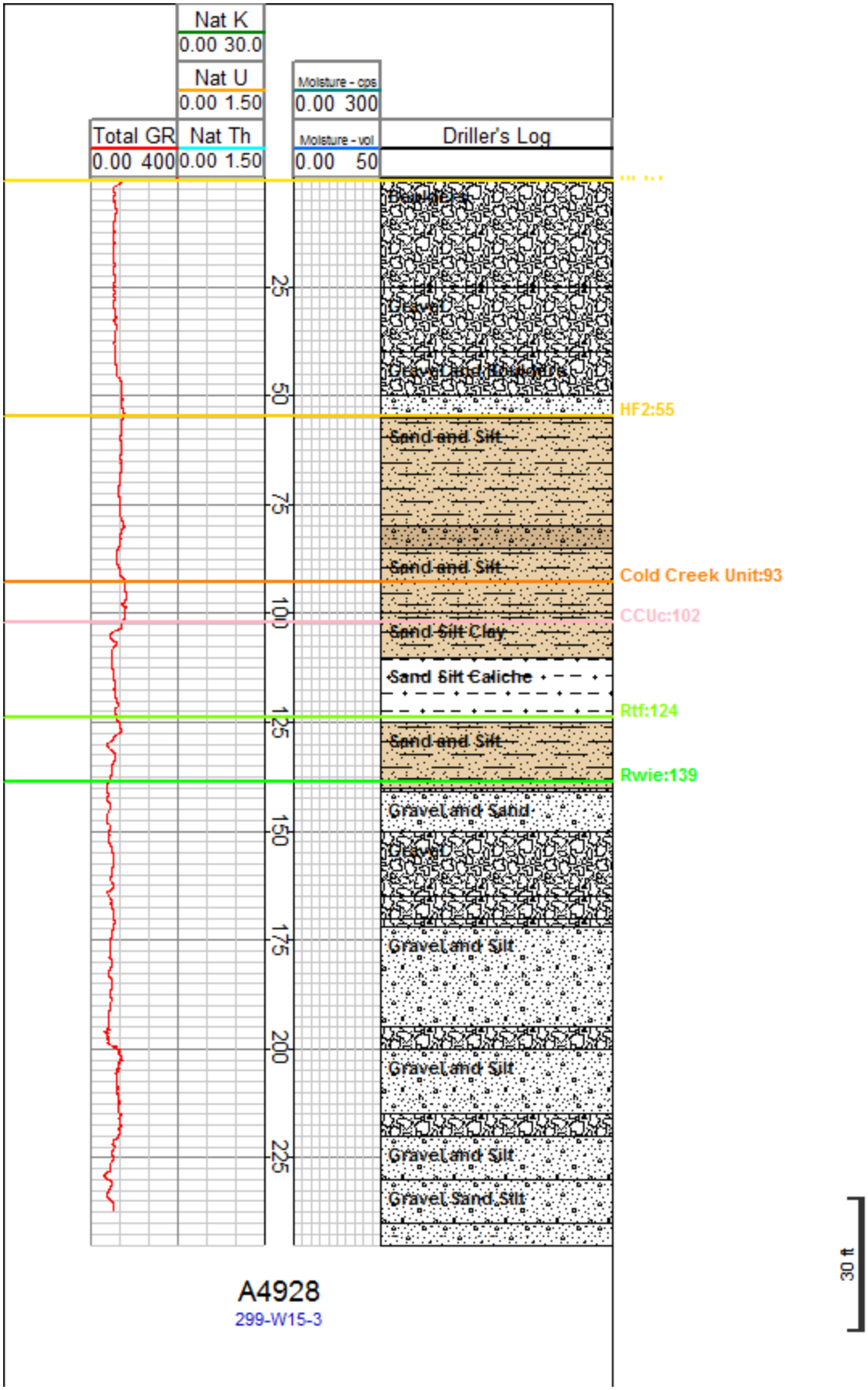
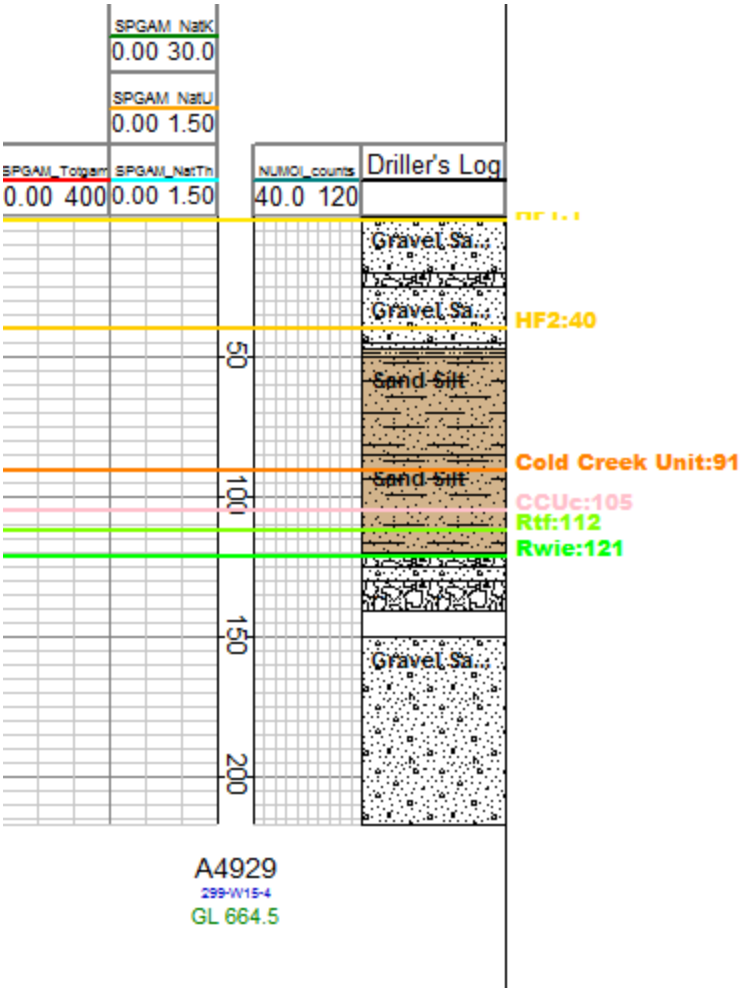
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
No recov...
HF1:16
Sand
50
Sandy Gr...
100
HF2:109
Slightly ...
Muddy S...
Cold Creek Unit:150
150
Sandy Mud
CCUc:165
Rtf:175
Rwie:185
200
Sandy Gr...
A4927
299-W15-24
GL 699.8


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
25
50
75
100
125
150
175
200
225
Boulders
Gravel
Gravel and Boulders
HF2:55
Sand and Silt
Sand and Silt
Cold Creek Unit:93
CCUc:102
Sand Silt Clay
Sand Silt Caliche
Rtf:124
Sand and Silt
Rwie:139
Gravel and Sand
Gravel
Gravel and Silt
Gravel and Silt
Gravel and Silt
Gravel Sand Silt
30 ft
A4928
299-W15-3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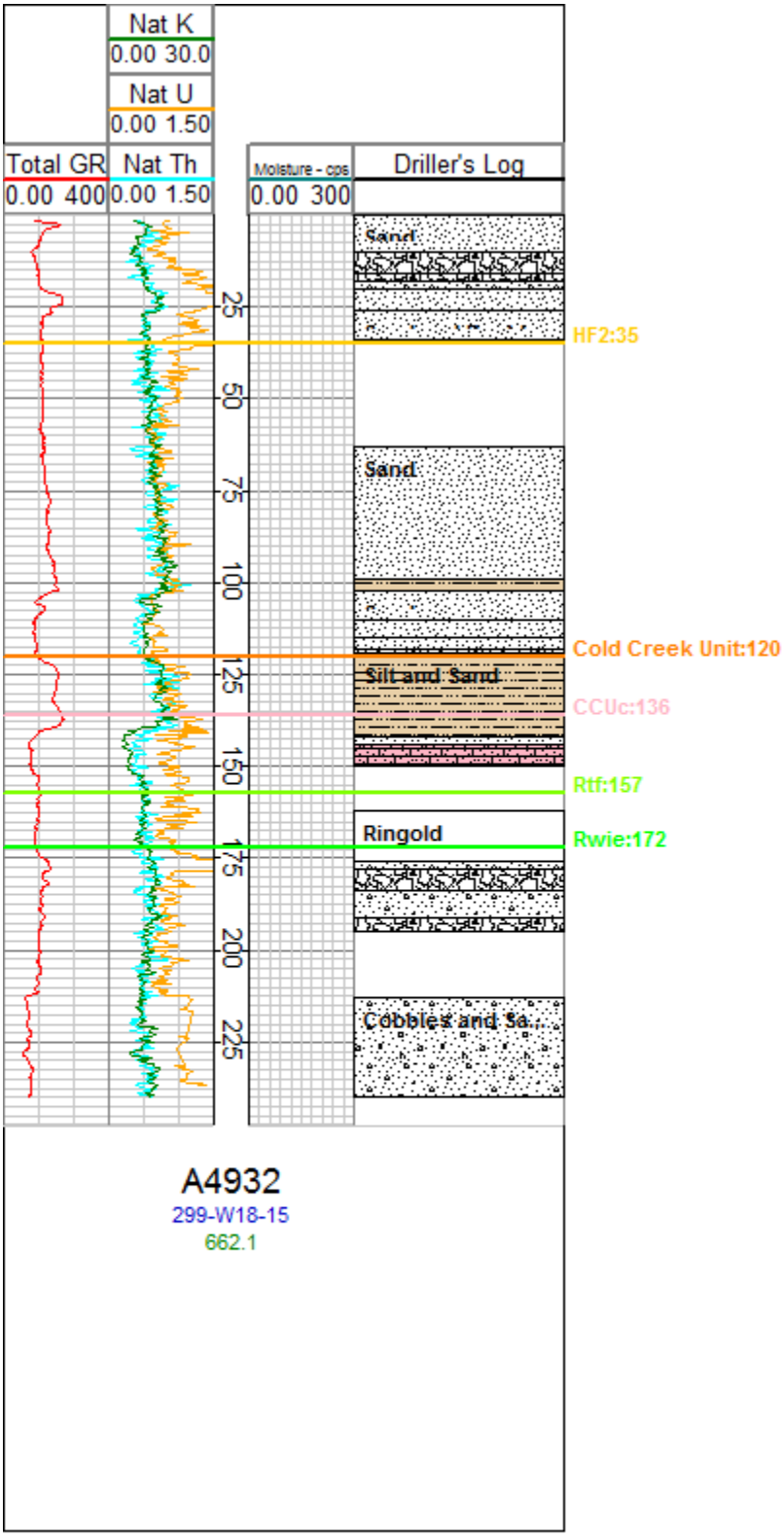
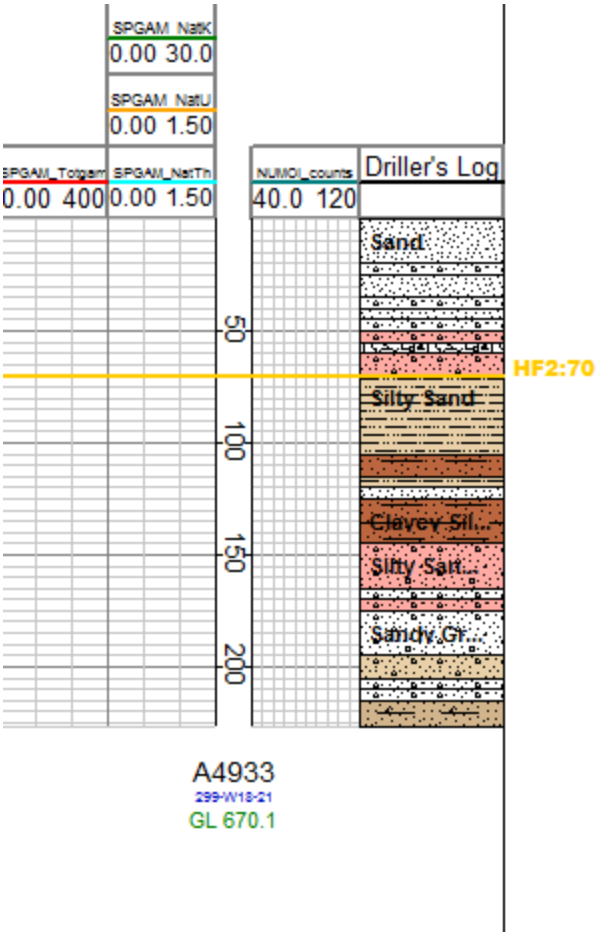
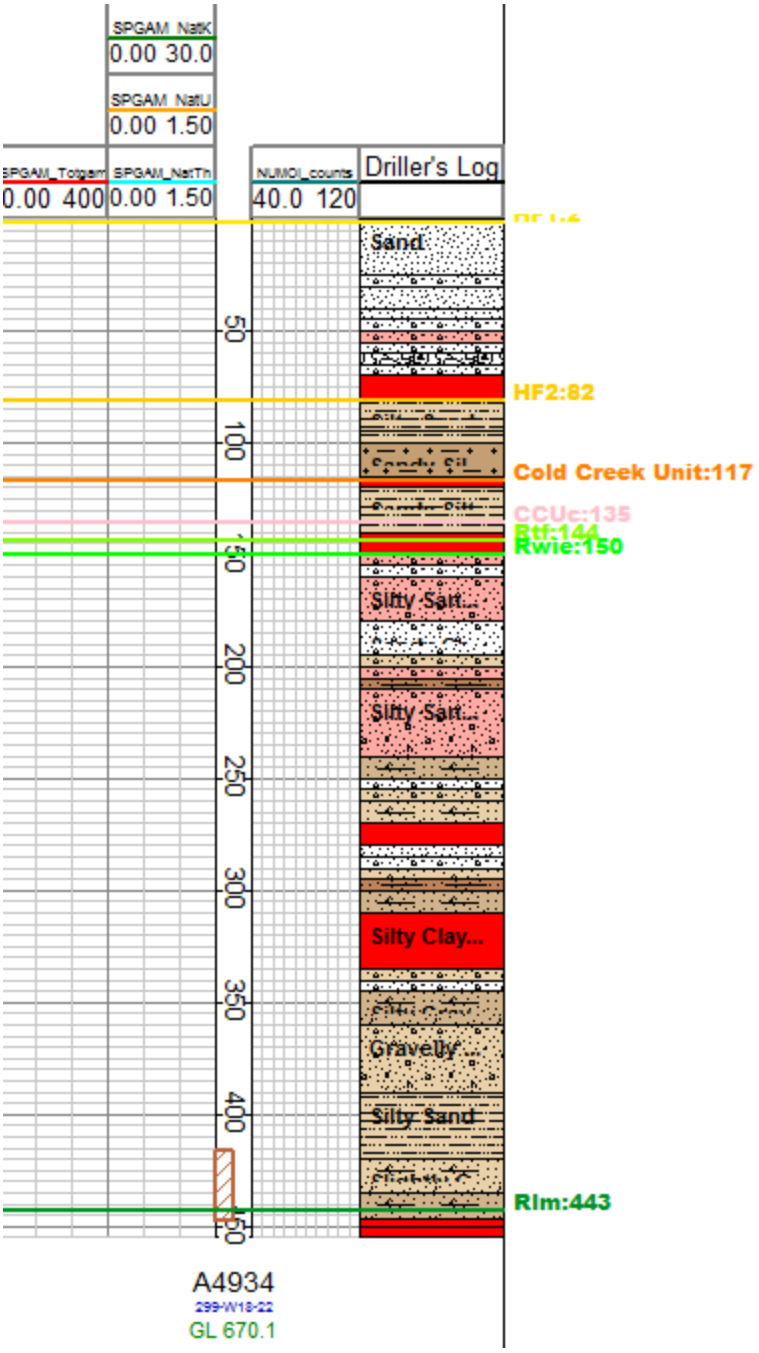
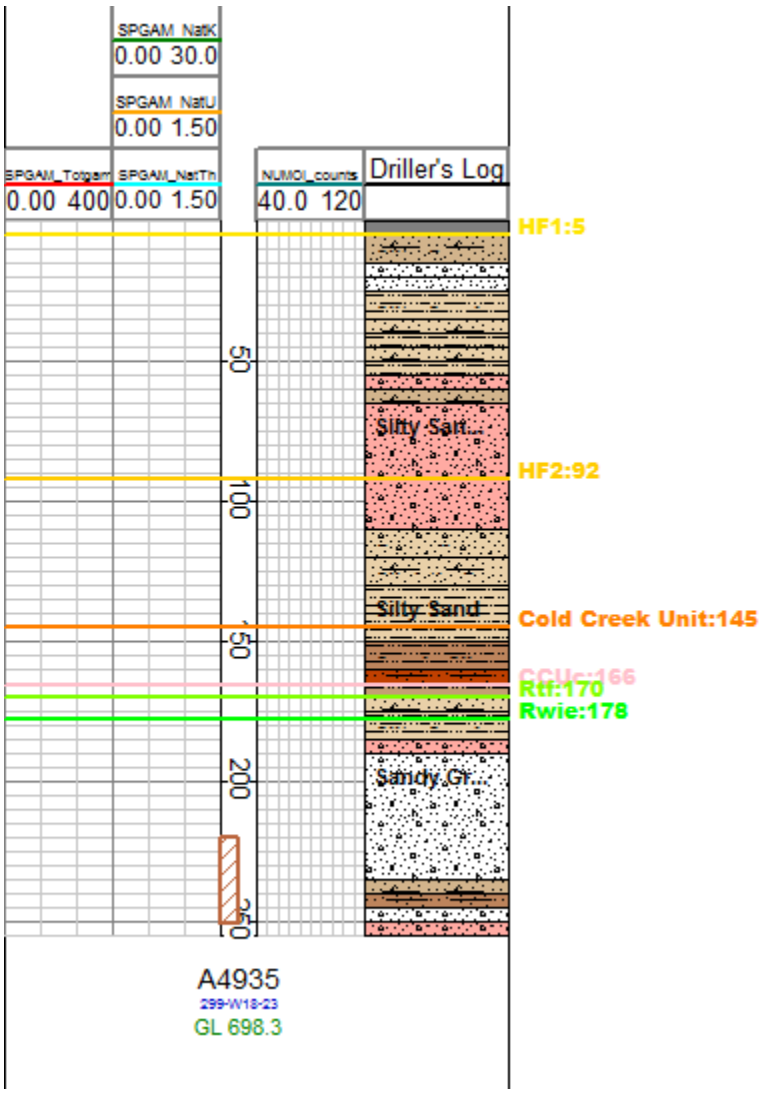
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Gravel Sa.
Gravel Sa.
HF2:40
Sand Silt
Cold Creek Unit:91
Sand Silt
CCUc:105
Rtf:112
Rwie:121
Gravel Sa.
50
100
150
200
A4929
299-W15-4
GL 664.5


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
HF2:35
Sand
Cold Creek Unit:120
Silt and Sand
CCUc:136
Rtf:157
Ringold
Rwie:172
Cobbles and Sa...
25
50
75
100
125
150
175
200
225
A4932
299-W18-15
662.1

40 ft


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
Silty Sand
Clayey Sil...
Silty San...
Sandy Gr...
HF2:70
50
100
150
200
A4933
299-W18-21
GL 670.1


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
HF2:82
Cold Creek Unit:117
CCUc:135
Rtf:144
Rwie:150
Silty Sand...
Silty Sand...
Silty Clay...
Gravelly ...
Silty Sand
Rlm:443
50
100
150
200
250
300
350
400
450
A4934
299-W18-22
GL 670.1


SPGAM_NatK
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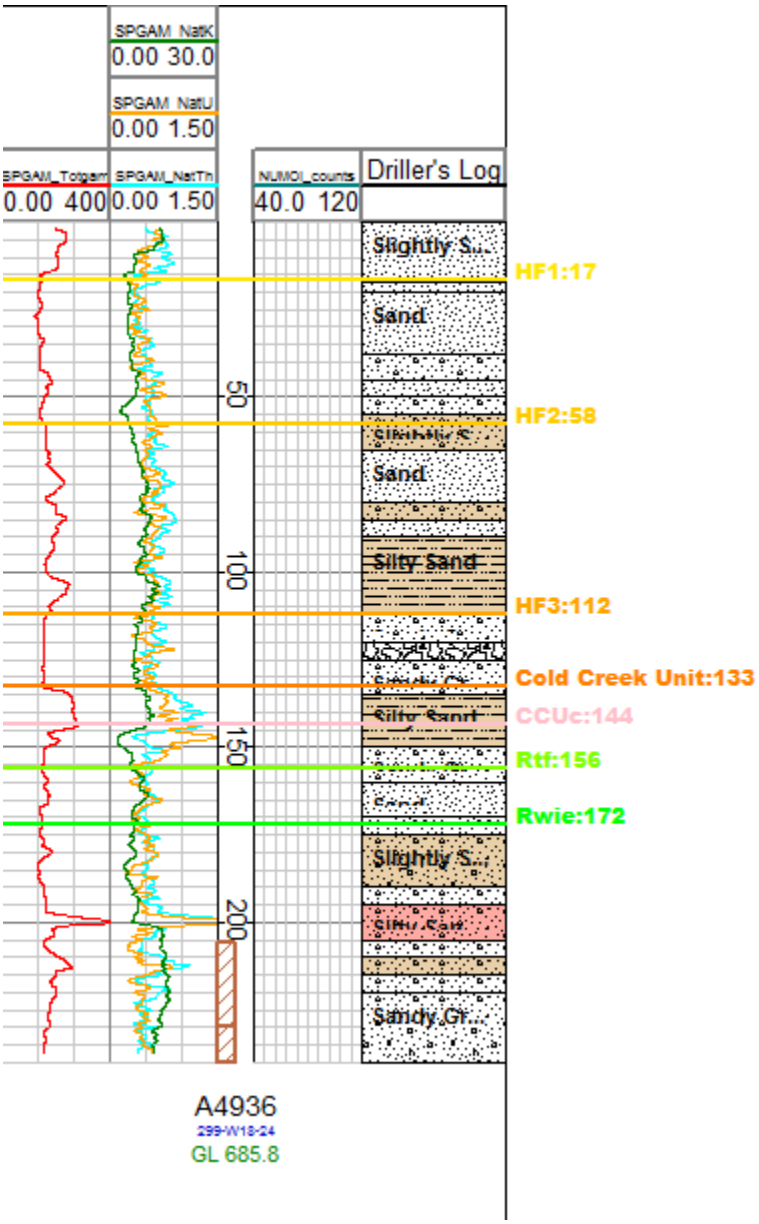
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:5
50
Silty Sand
HF2:92
100
Silty Sand
Cold Creek Unit:145
150
CCUc:166
Rtf:170
Rwie:178
200
Sandy Gr...
250
A4935
299-W18-23
GL 698.3


SPGAM_NatK
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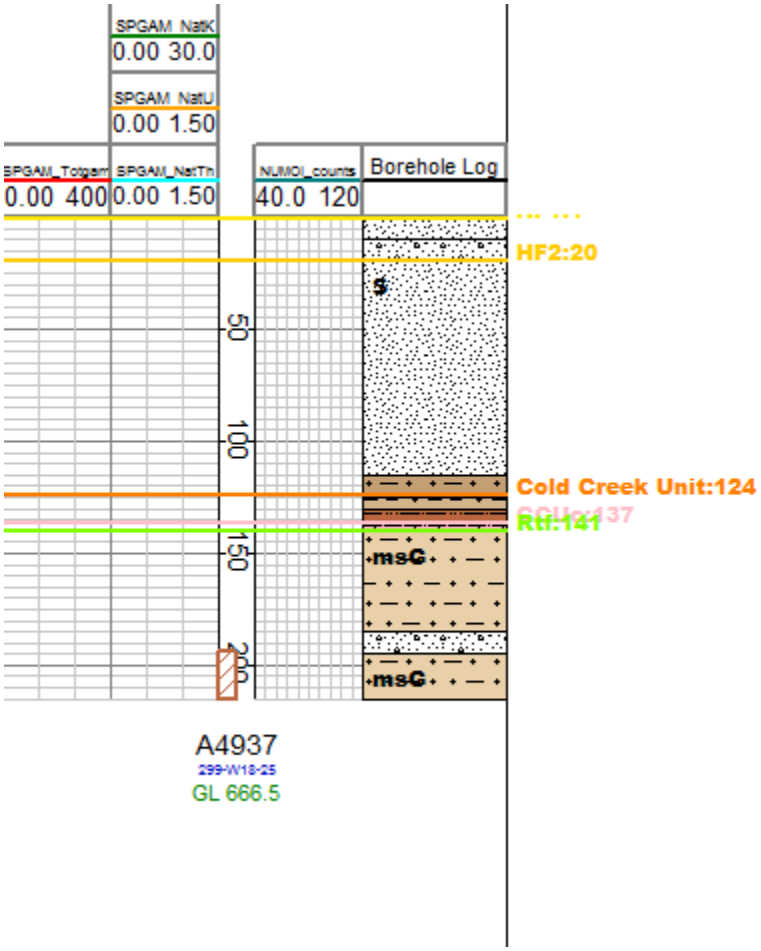
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Slightly S...
Sand
Sand
Silty Sand
Sandy Gr...
50
100
150
200
HF1:17
HF2:58
HF3:112
Cold Creek Unit:133
CCUc:144
Rtf:156
Rwie:172
A4936
299-W18-24
GL 685.8


SPGAM_NatK
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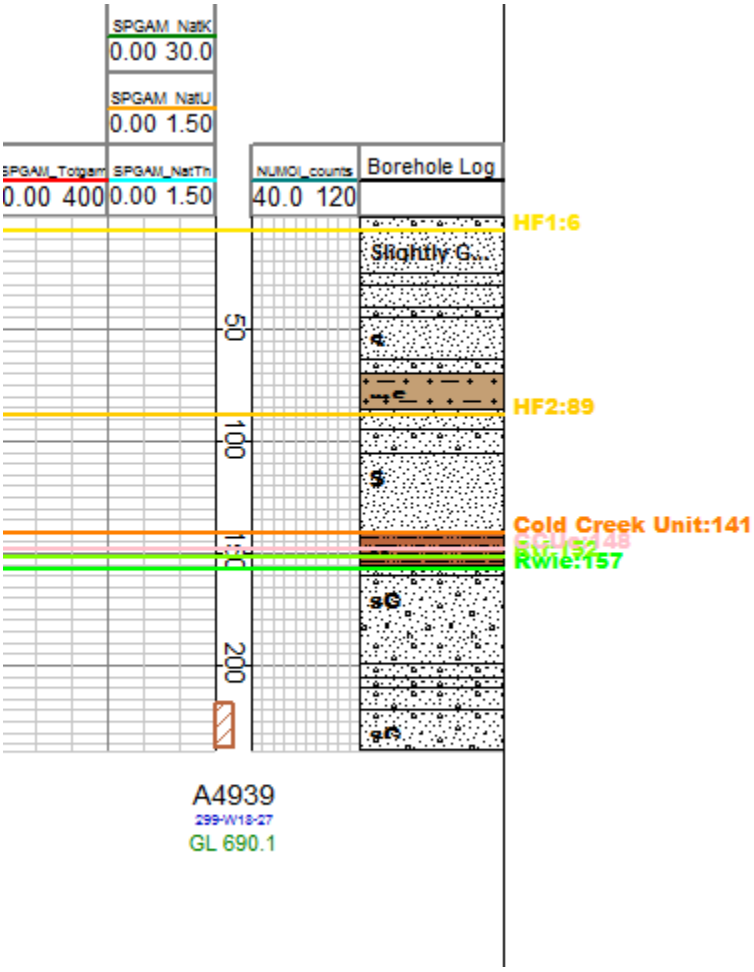
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:20
Cold Creek Unit:124
Rtf:141
msC
msC
50
100
150
200
A4937
299-W18-25
GL 666.5


SPGAM_NatK
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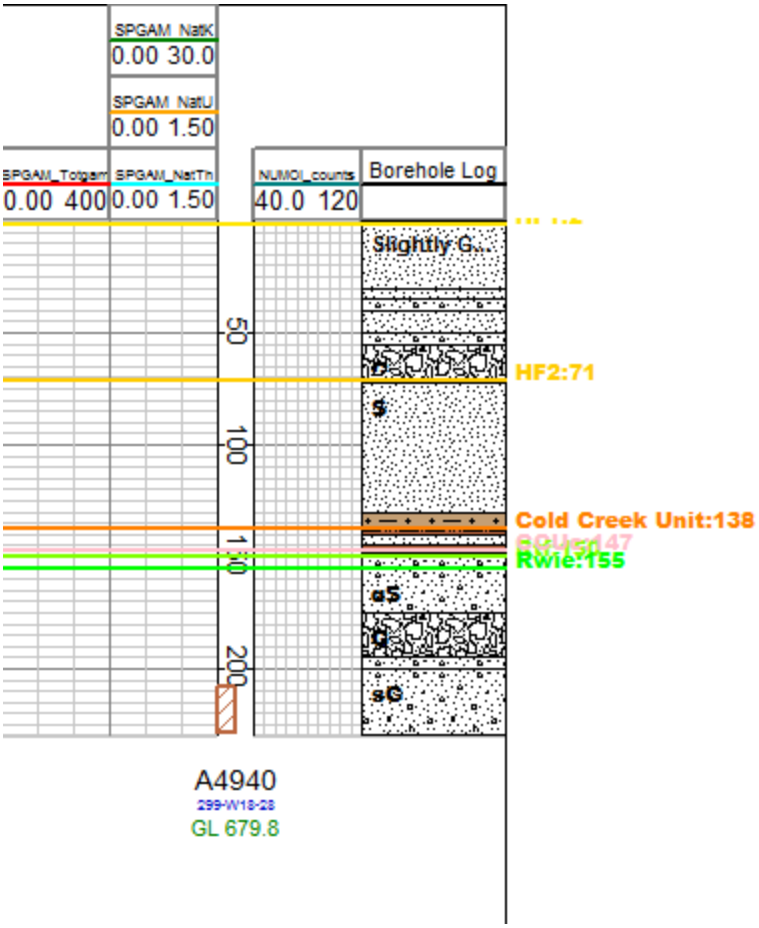
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:6
Slightly G...
HF2:89
Cold Creek Unit:141
Rwie:157
50
100
150
200
A4939
299-W18-27
GL 690.1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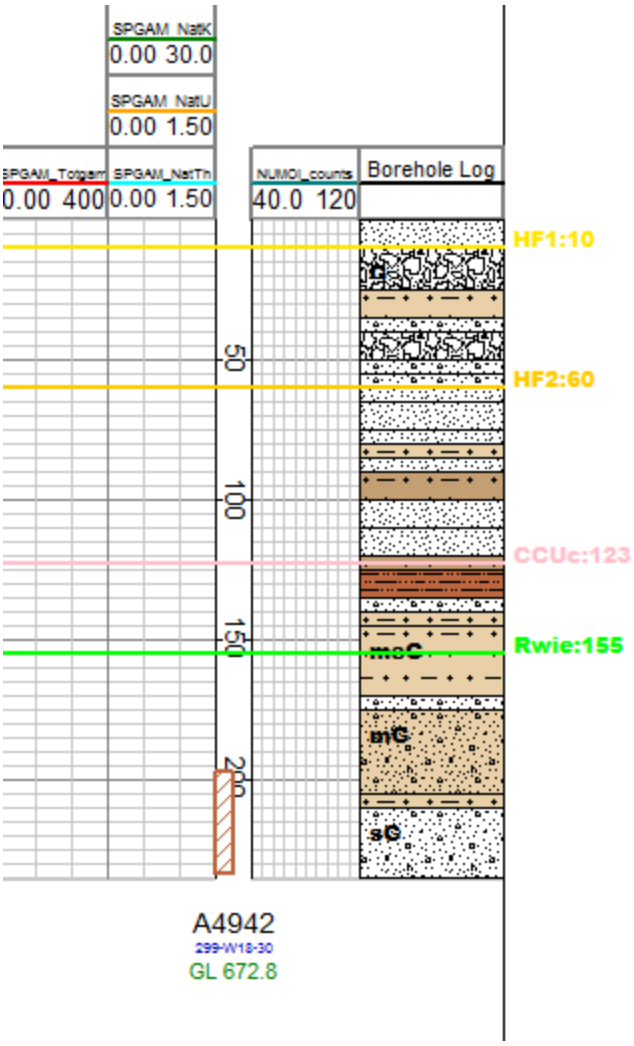
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
Slightly G...
HF2:71
Cold Creek Unit:138
Rwie:155
50
100
150
200
A4940
299-W18-28
GL 679.8


SPGAM_NatK
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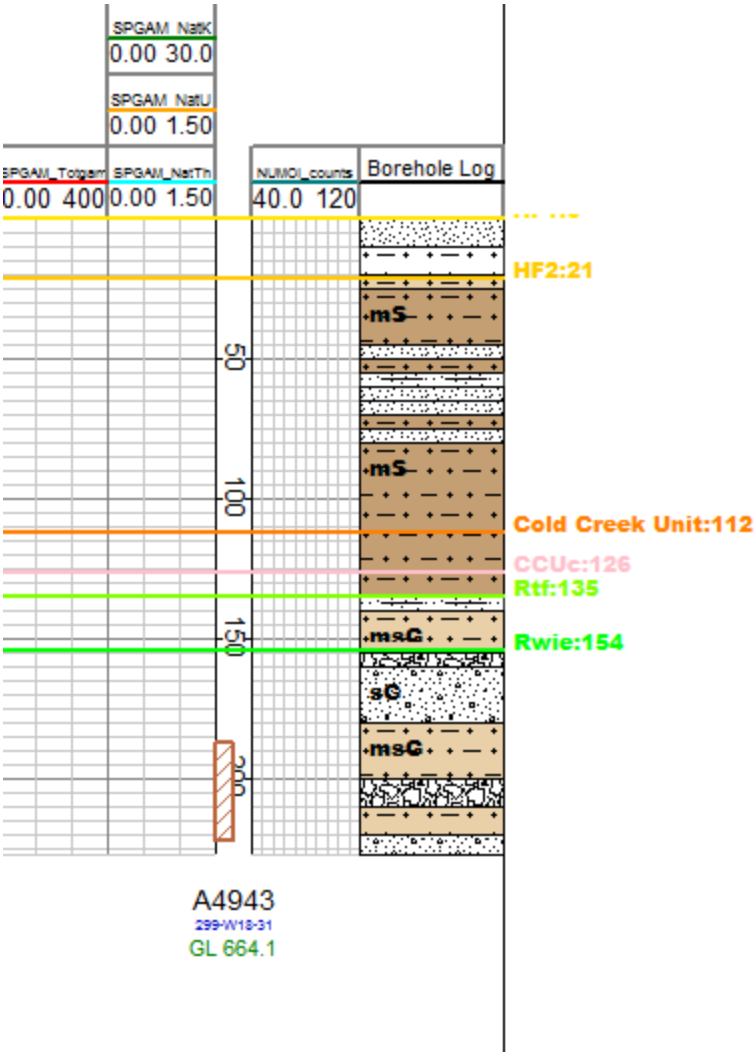
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:10
HF2:60
CCUc:123
Rwie:155
50
100
150
200
mC
sC
A4942
299-W18-30
GL 672.8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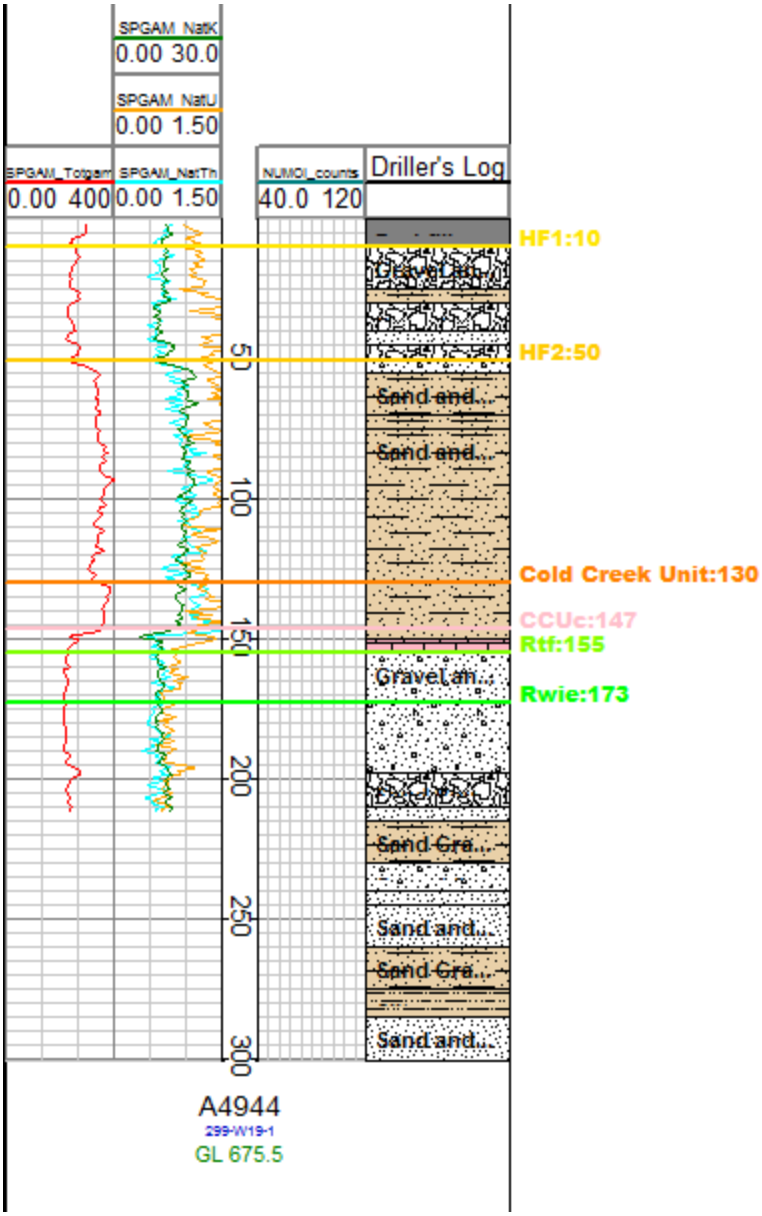
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:21
mS
mS
Cold Creek Unit:112
CCUc:126
Rtf:135
msG
Rwie:154
sG
msG
50
100
150
200
A4943
299-W18-31
GL 664.1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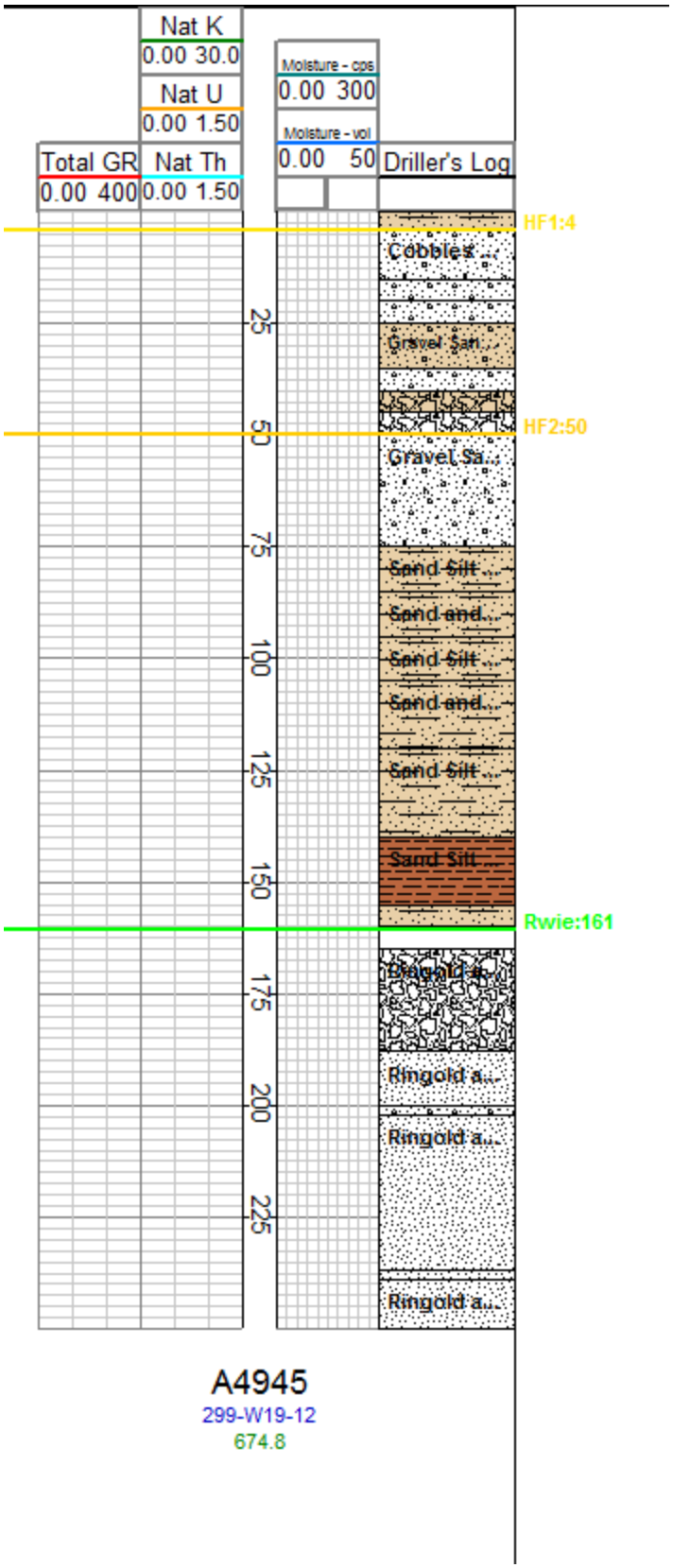
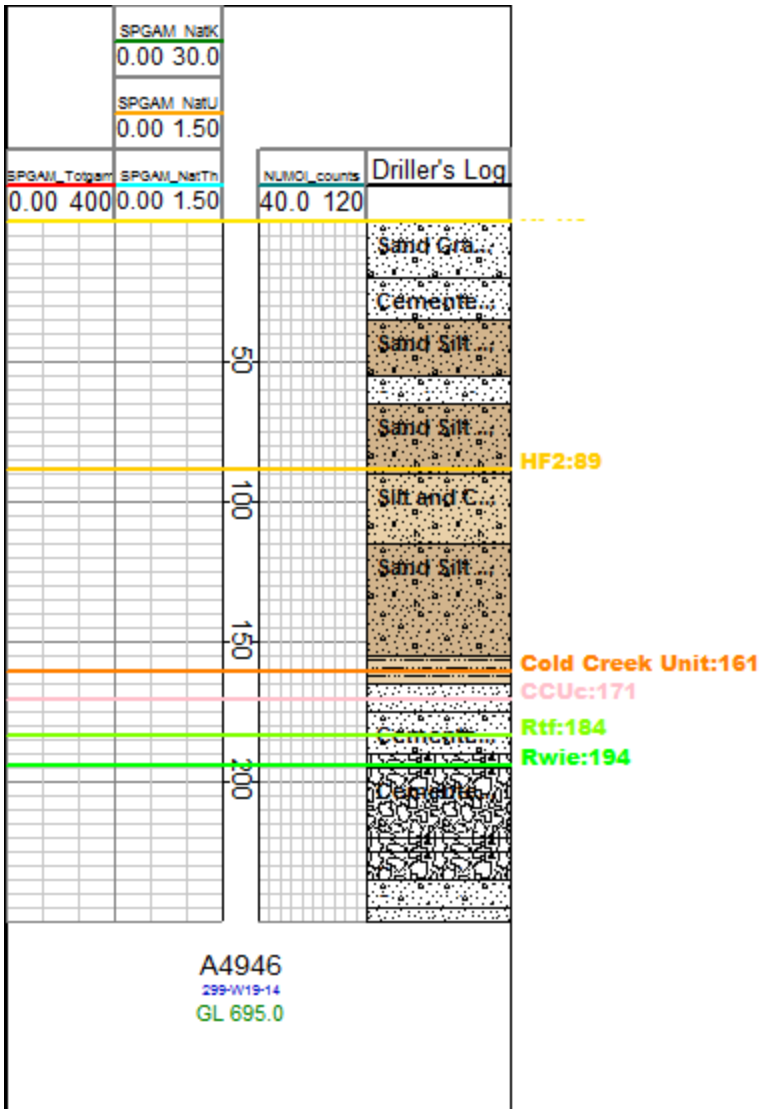
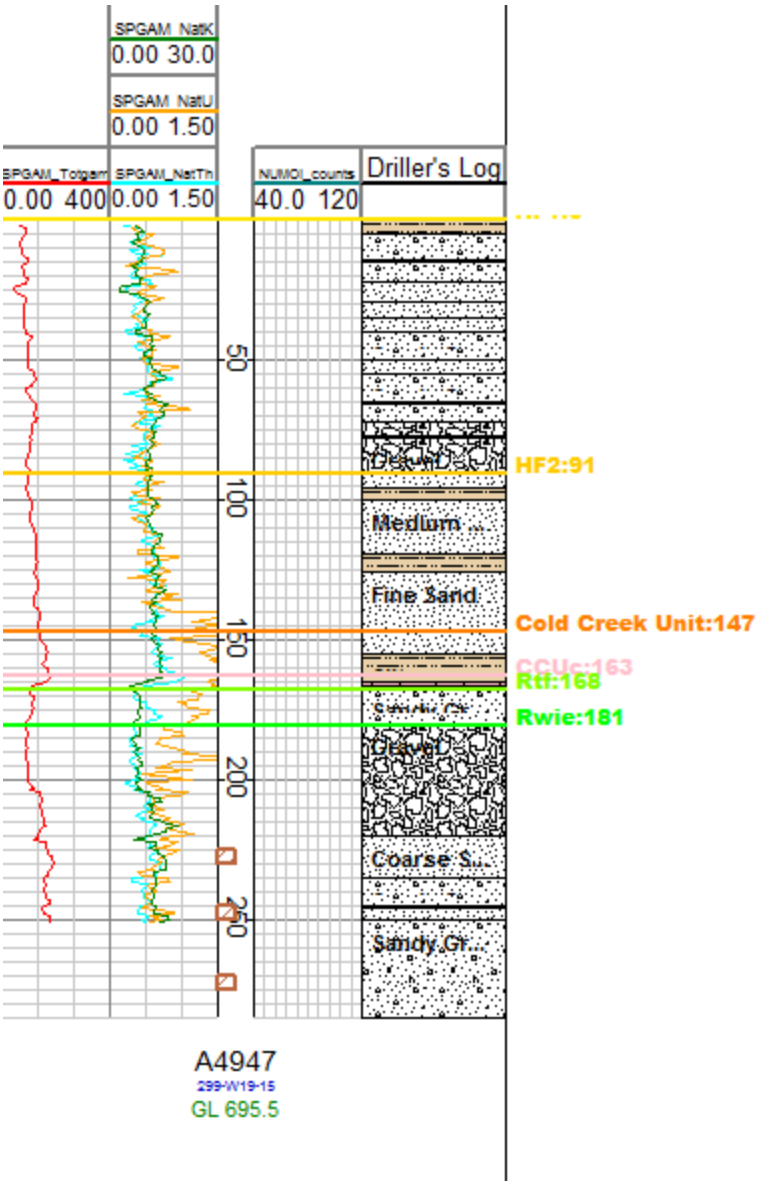
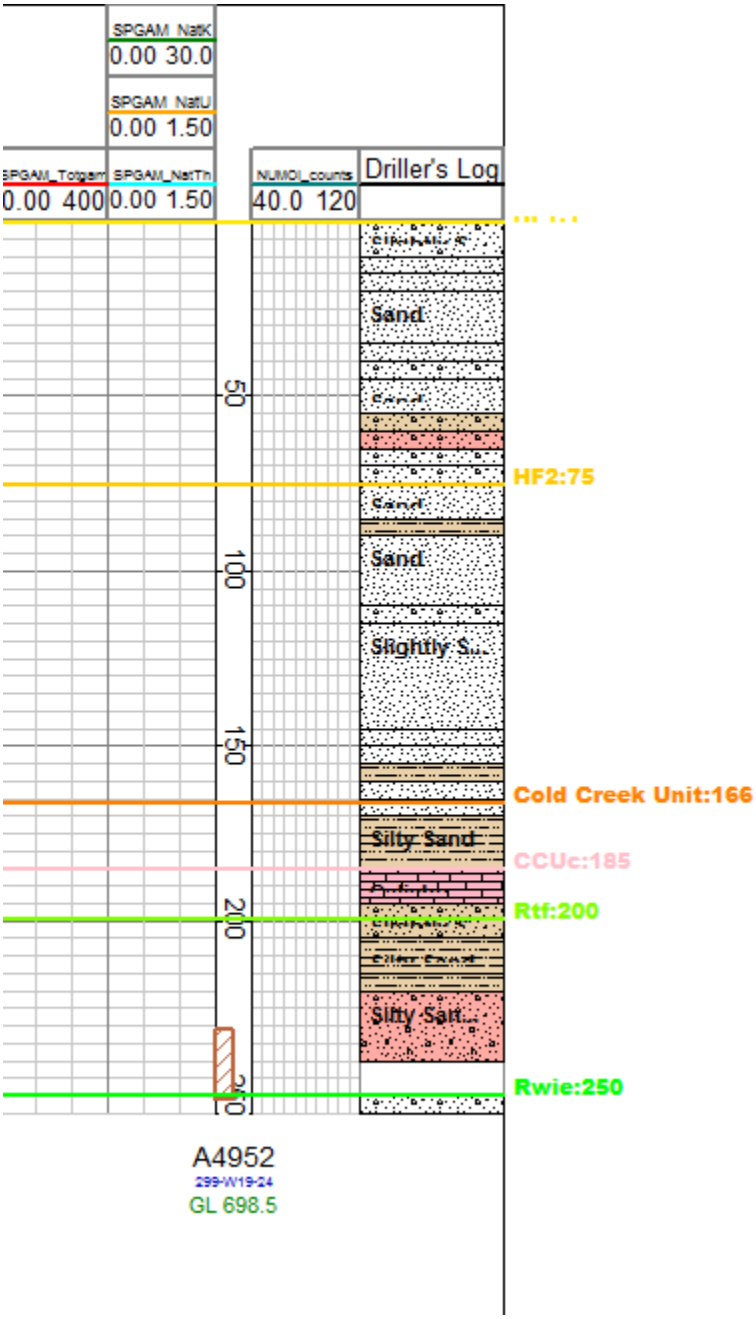
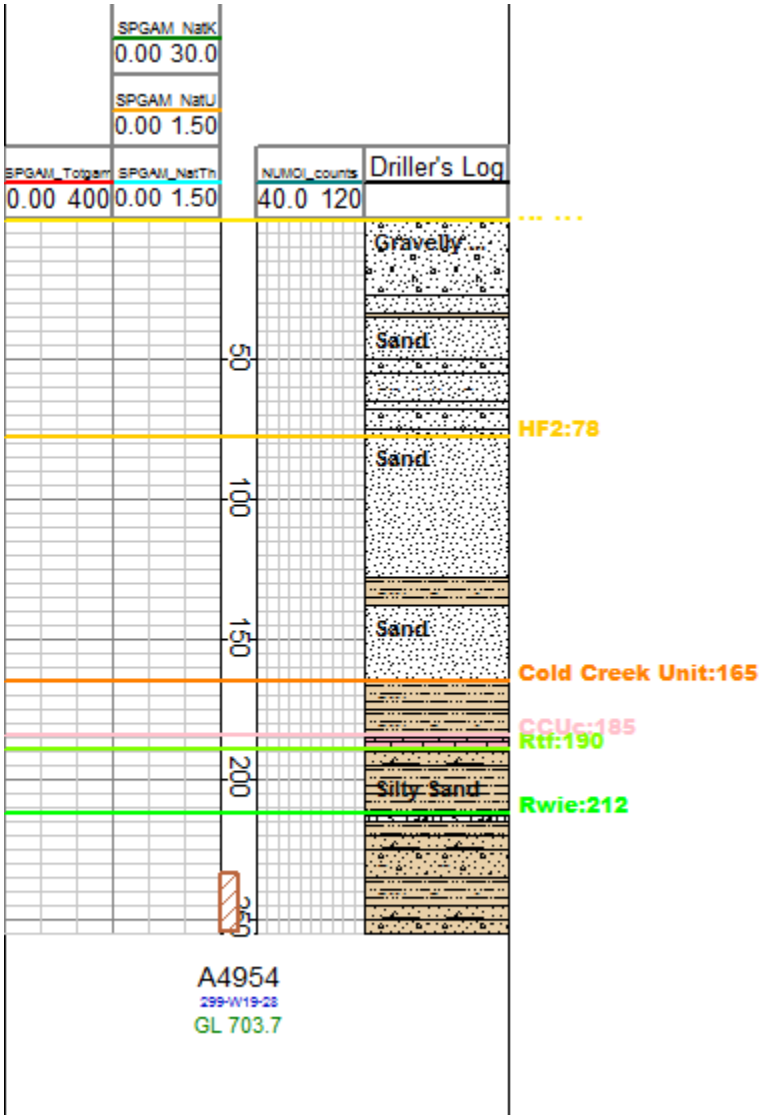
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:10
HF2:50
Cold Creek Unit:130
CCUc:147
Rtf:155
Rwie:173
Sand and...
Sand and...
Gravel,an...
Sand Gra...
Sand and...
Sand Gra...
Sand and...
50
100
150
200
250
300
A4944
299-W19-1
GL 675.5


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:4
Cobbles ...
Gravel San...
HF2:50
Gravel Sa...
Sand Silt ...
Sand and...
Sand Silt ...
Sand and...
Sand Silt ...
Sand Silt ...
Rwie:161
Ringold a...
Ringold a...
Ringold a...
Ringold a...
25
50
75
100
125
150
175
200
225
A4945
299-W19-12
674.8


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand Gra...
Cemente...
Sand Silt ...
Sand Silt ...
HF2:89
Silt and C...
Sand Silt ...
Cold Creek Unit:161
CCUc:171
Rtf:184
Rwie:194
50
100
150
200
A4946
299-W19-14
GL 695.0


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
250
HF2:91
Medium ...
Fine Sand
Cold Creek Unit:147
CCUc:163
Rtf:168
Rwie:181
Gravel
Coarse S...
Sandy Gr...
A4947
299-W19-15
GL 695.5


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
Sand
Slightly S...
Silty Sand
Silty San...
50
100
150
200
250
HF2:75
Cold Creek Unit:166
CCUc:185
Rtf:200
Rwie:250
A4952
299-W19-24
GL 698.5


SPGAM_NatK
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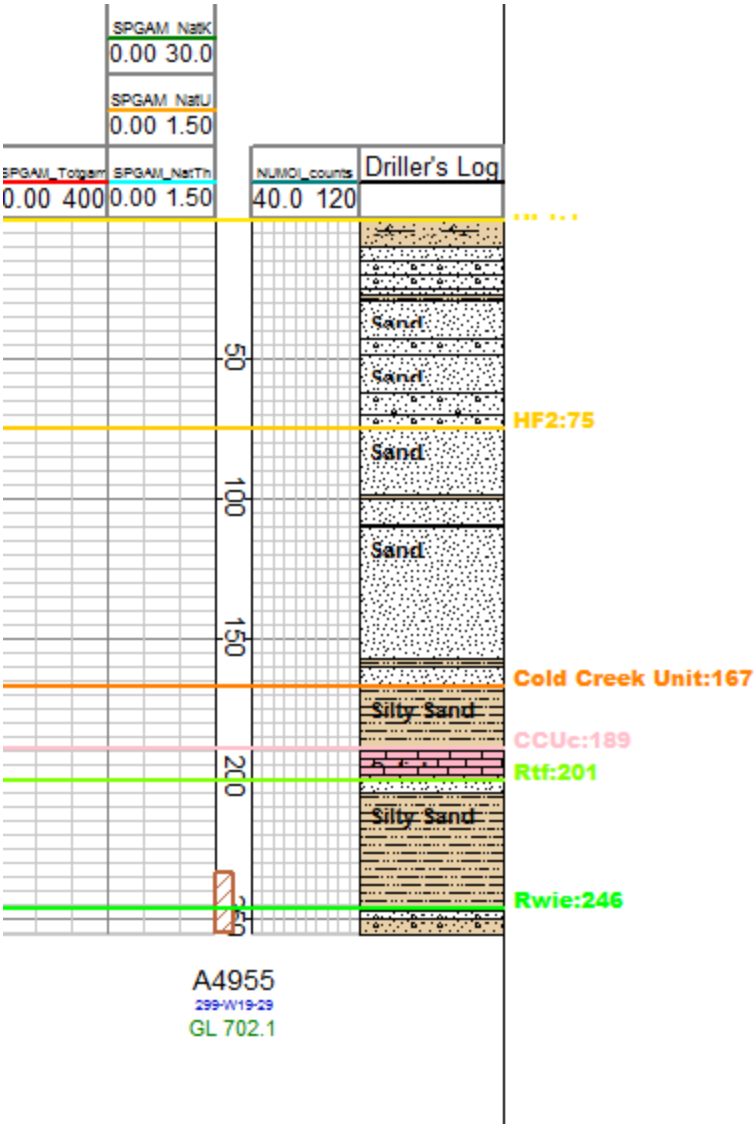
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Gravelly
Sand
HF2:78
Sand
Sand
Cold Creek Unit:165
CCUc:185
Rtf:190
Silty Sand
Rwie:212
50
100
150
200
250
A4954
299-W19-28
GL 703.7


SPGAM_NatK
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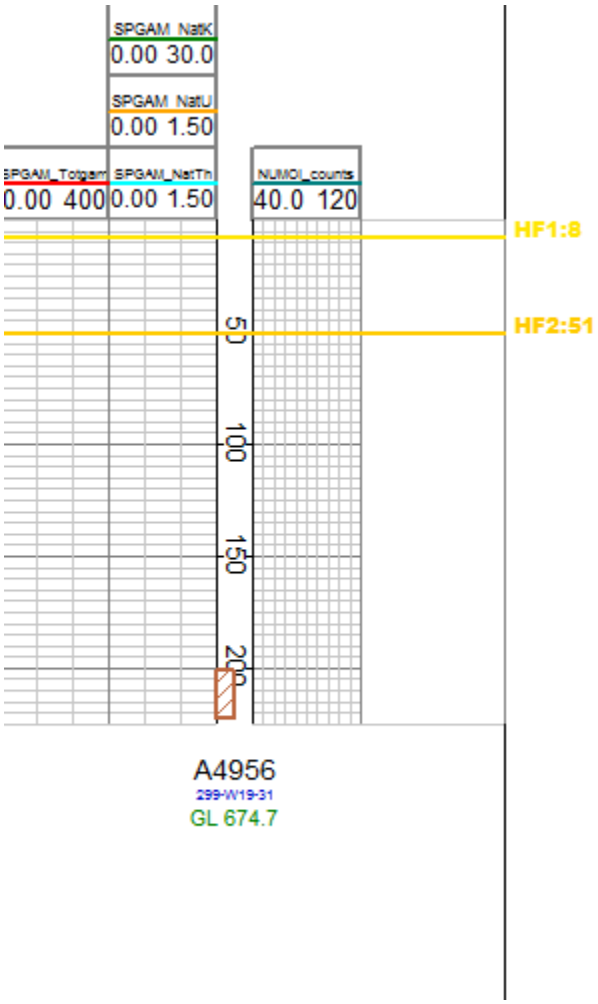
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
250
Sand
Sand
Sand
Sand
Silty Sand
Silty Sand
HF2:75
Cold Creek Unit:167
CCUc:189
Rtf:201
Rwie:246
A4955
299-W19-29
GL 702.1


SPGAM_NatK
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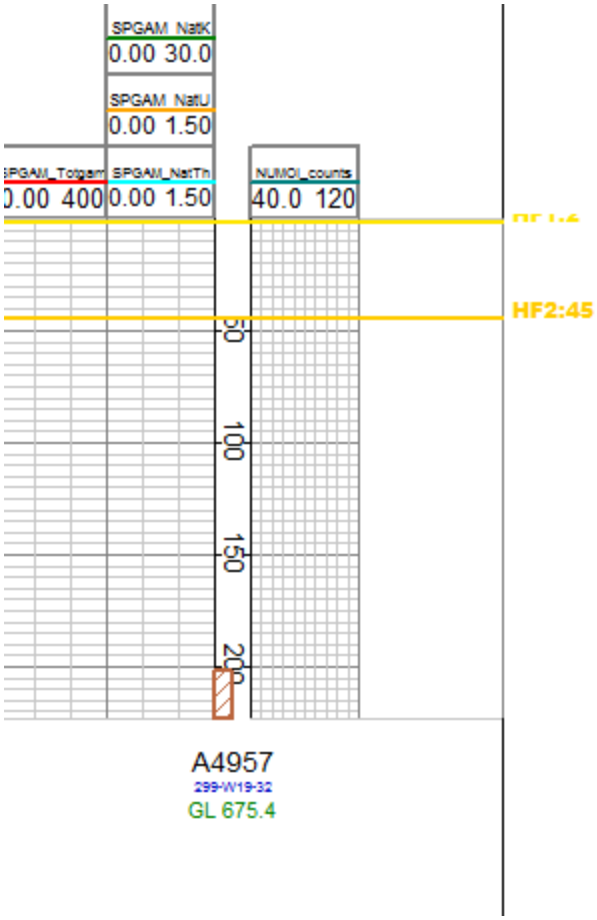
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
HF1:8
HF2:51
50
100
150
200
A4956
299-W19-31
GL 674.7


SPGAM_NatK
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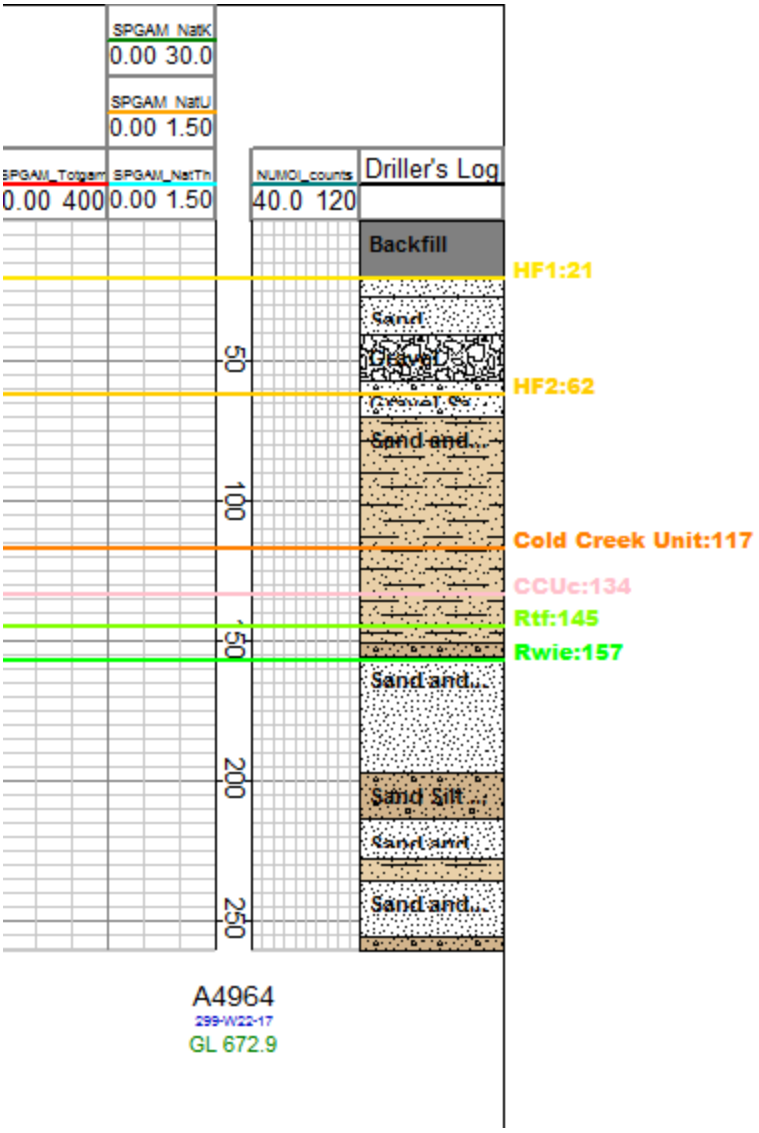
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
HF2:45
50
100
150
200
A4957
299-W19-32
GL 675.4


SPGAM_NatK
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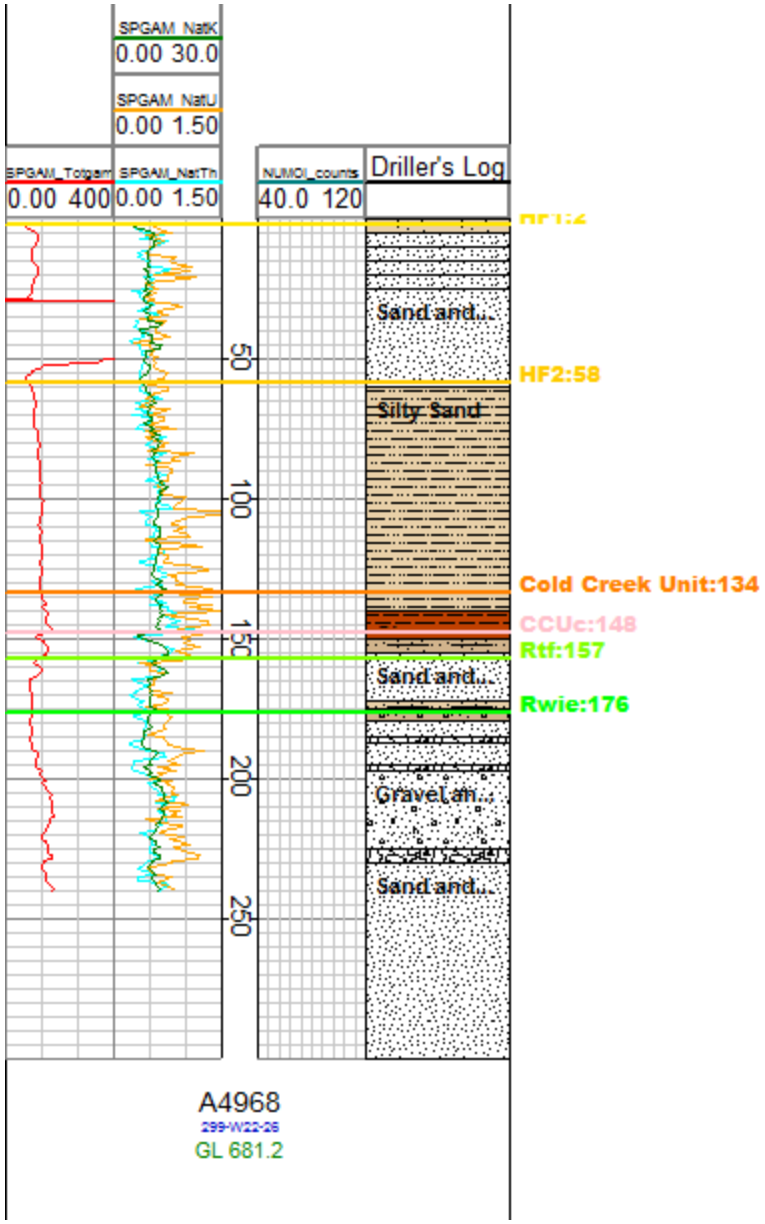
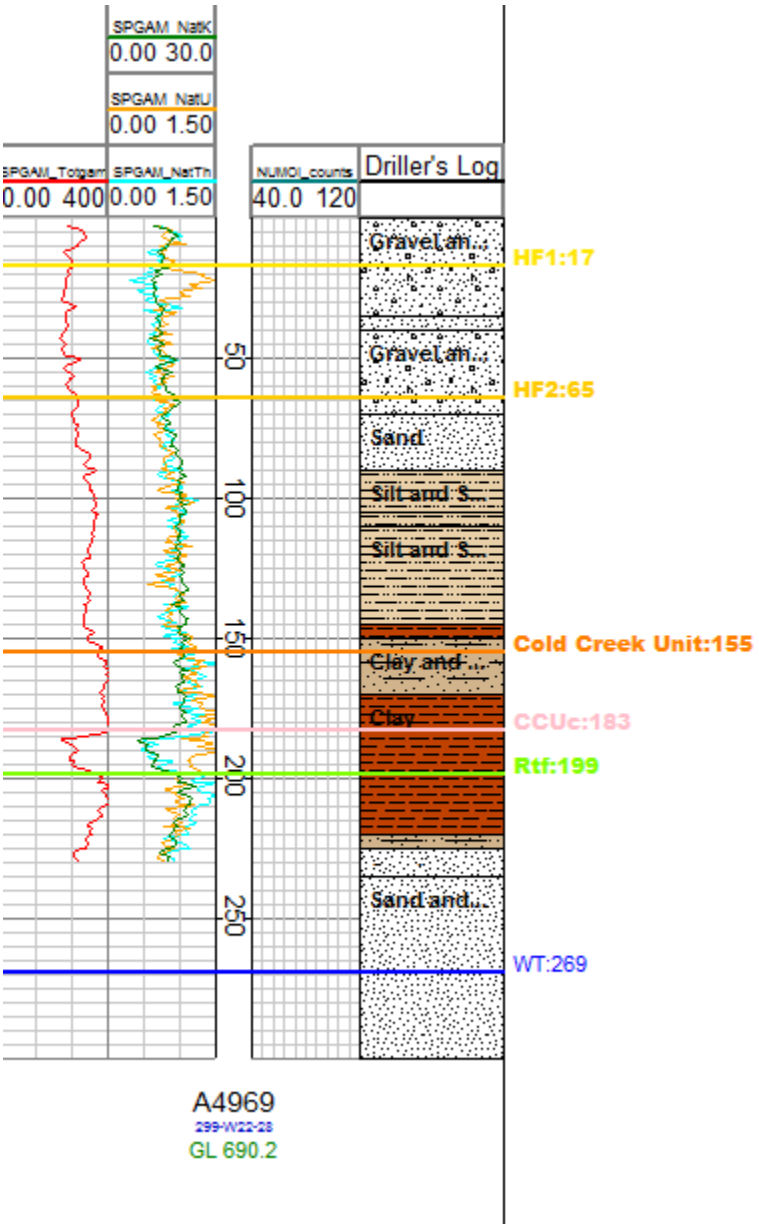
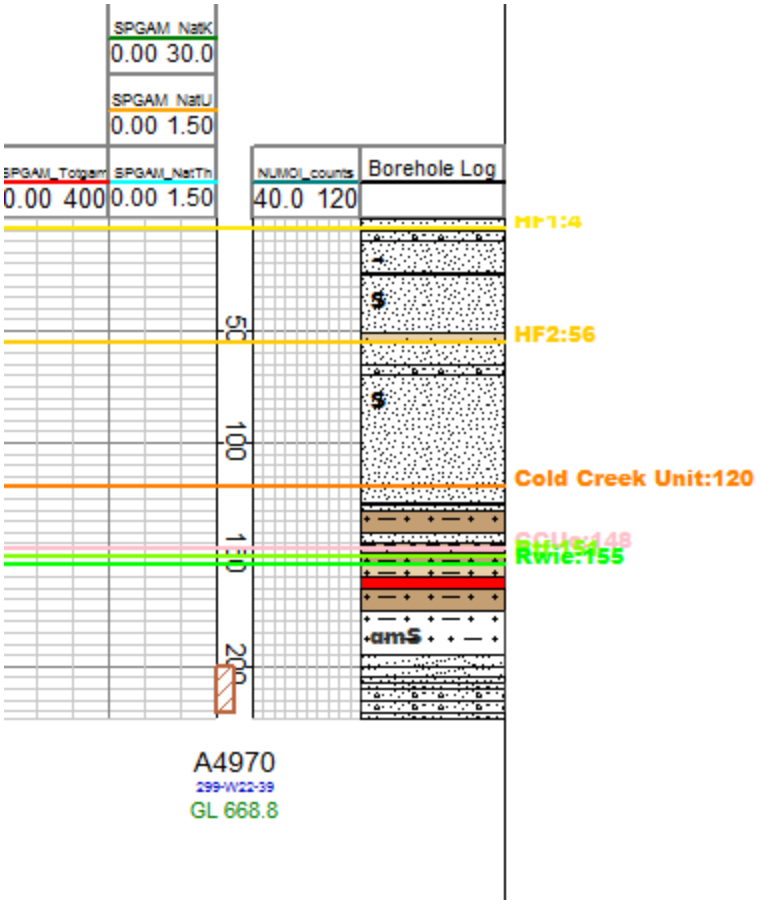
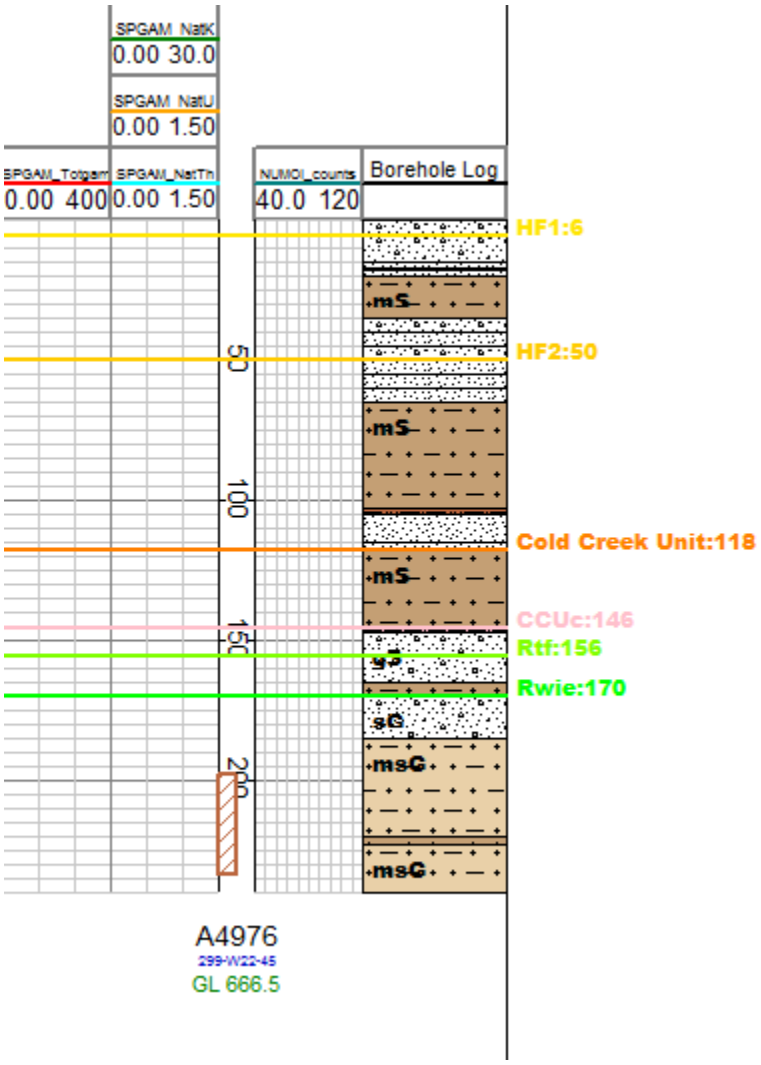
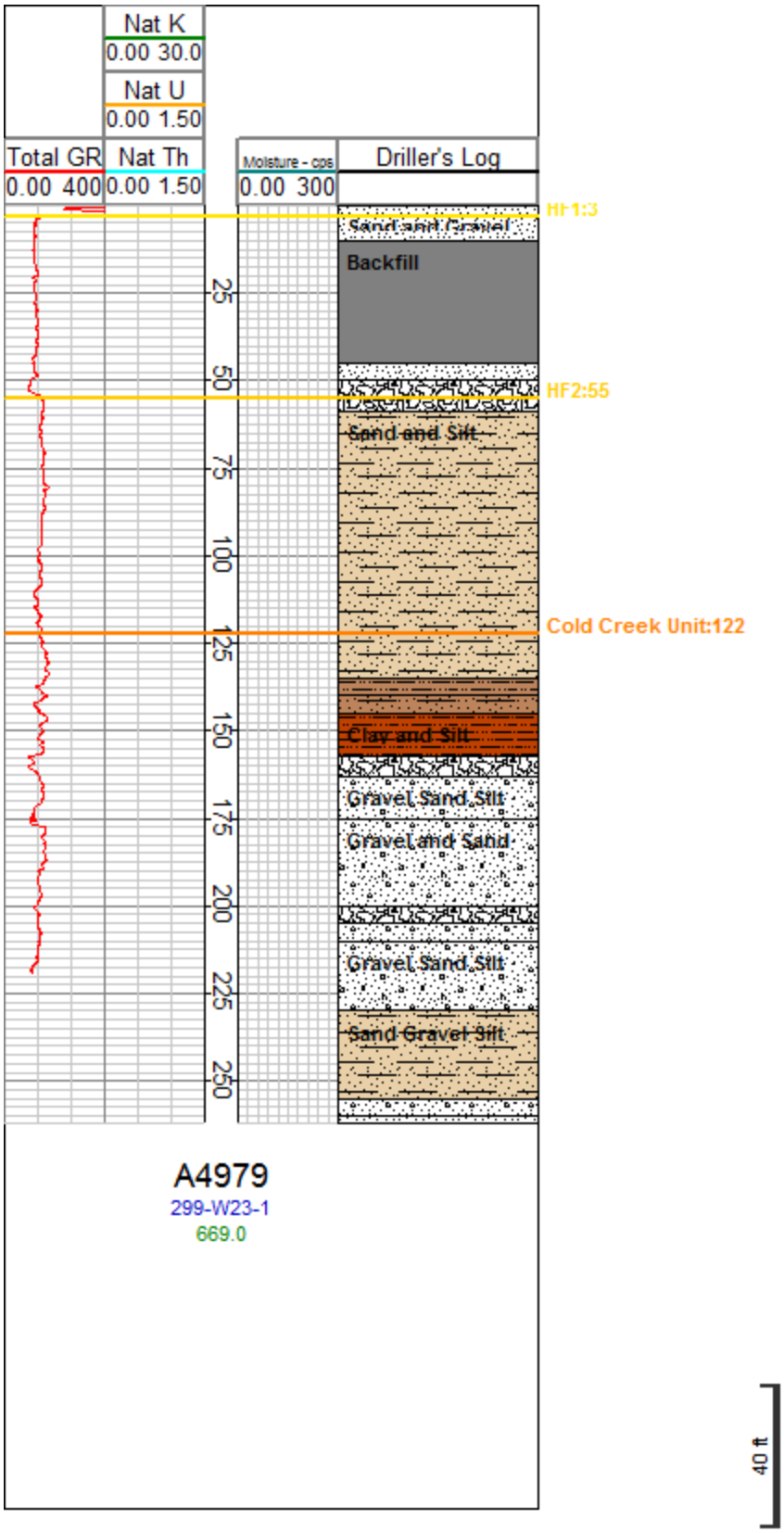
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF1:21
Sand
Gravel
HF2:62
Gravel Sa...
Sand and...
Cold Creek Unit:117
CCUc:134
Rtf:145
Rwie:157
Sand and...
Sand Silt ...
Sand and
Sand and...
50
100
150
200
250
A4964
299-W22-17
GL 672.9

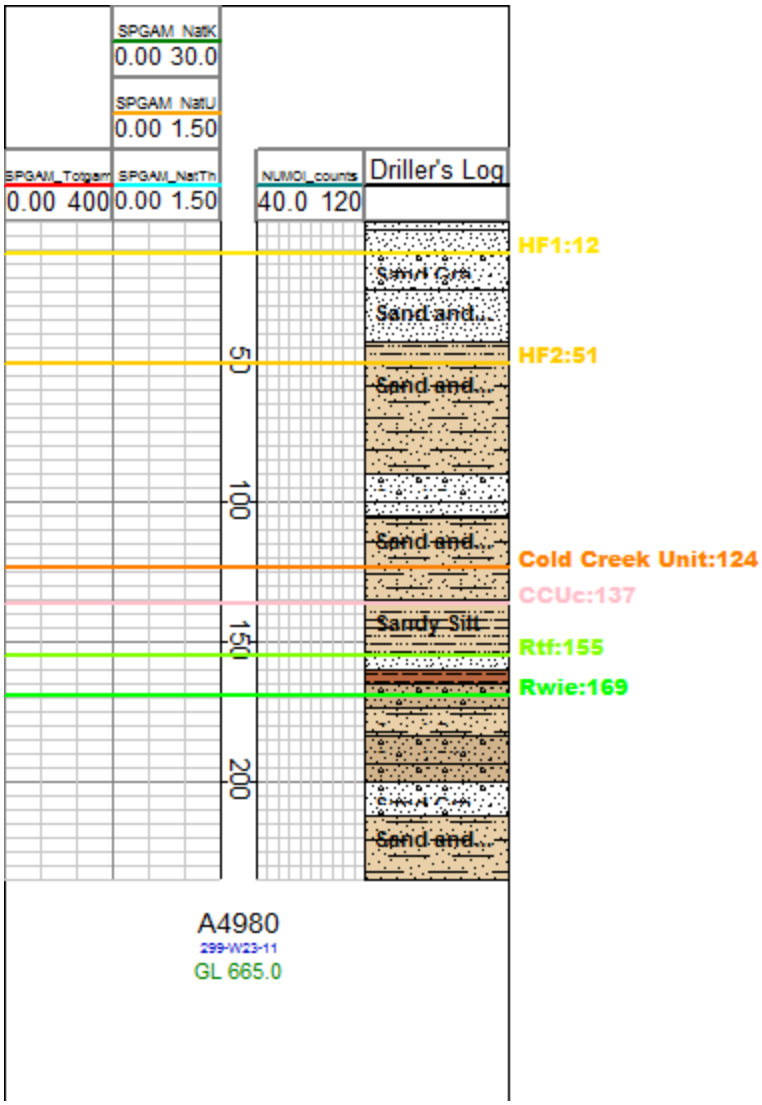

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
250
Sand and...
HF2:58
Silty Sand
Cold Creek Unit:134
CCUc:148
Rtf:157
Sand and...
Rwie:176
Gravel an...
Sand and...
A4968
299-W22-26
GL 681.2

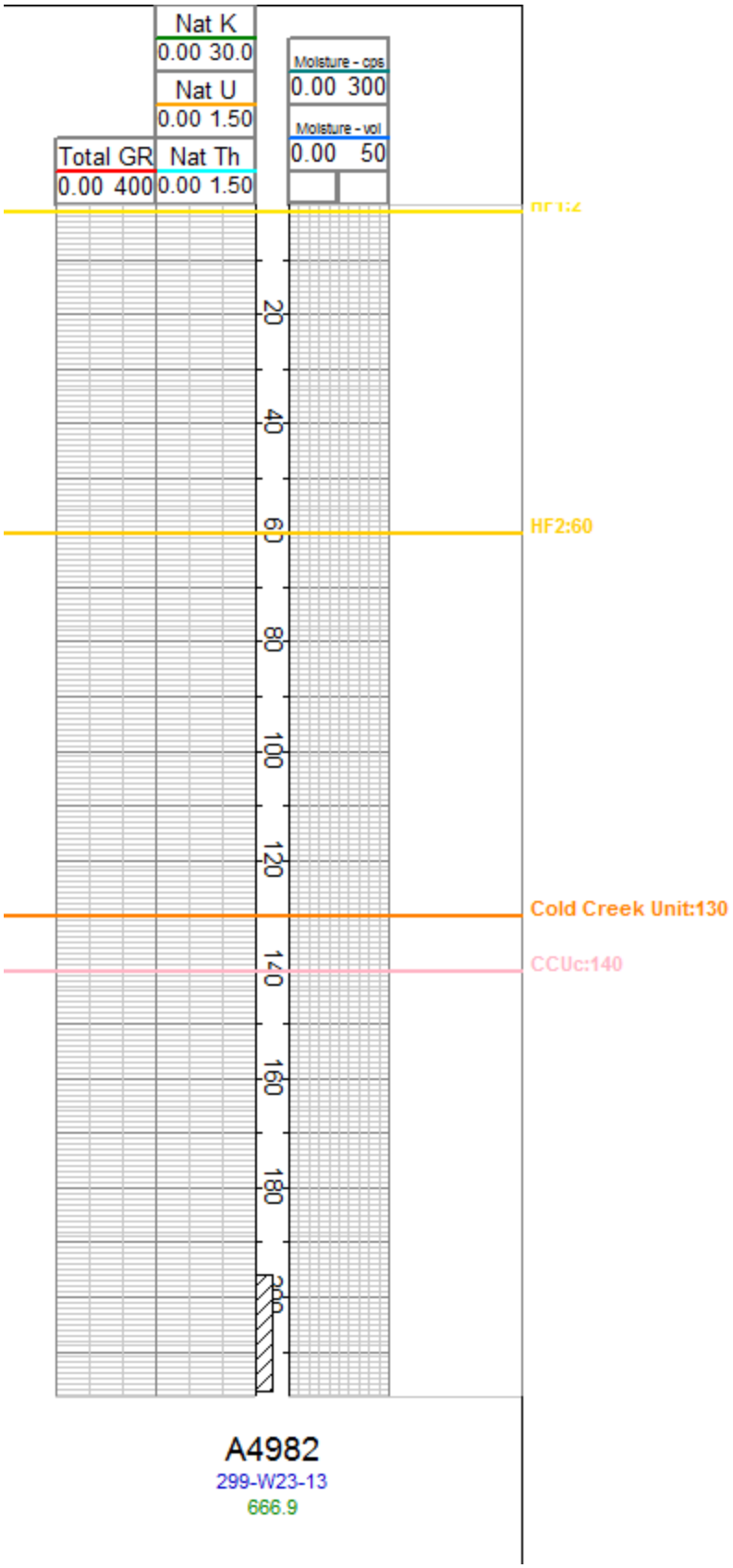

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
250
Gravel,an...
Gravel,an...
Sand
Silt and S...
Silt and S...
Clay and ...
Clay
Sand and...
HF1:17
HF2:65
Cold Creek Unit:155
CCUc:183
Rtf:199
WT:269
A4969
299-W22-28
GL 690.2

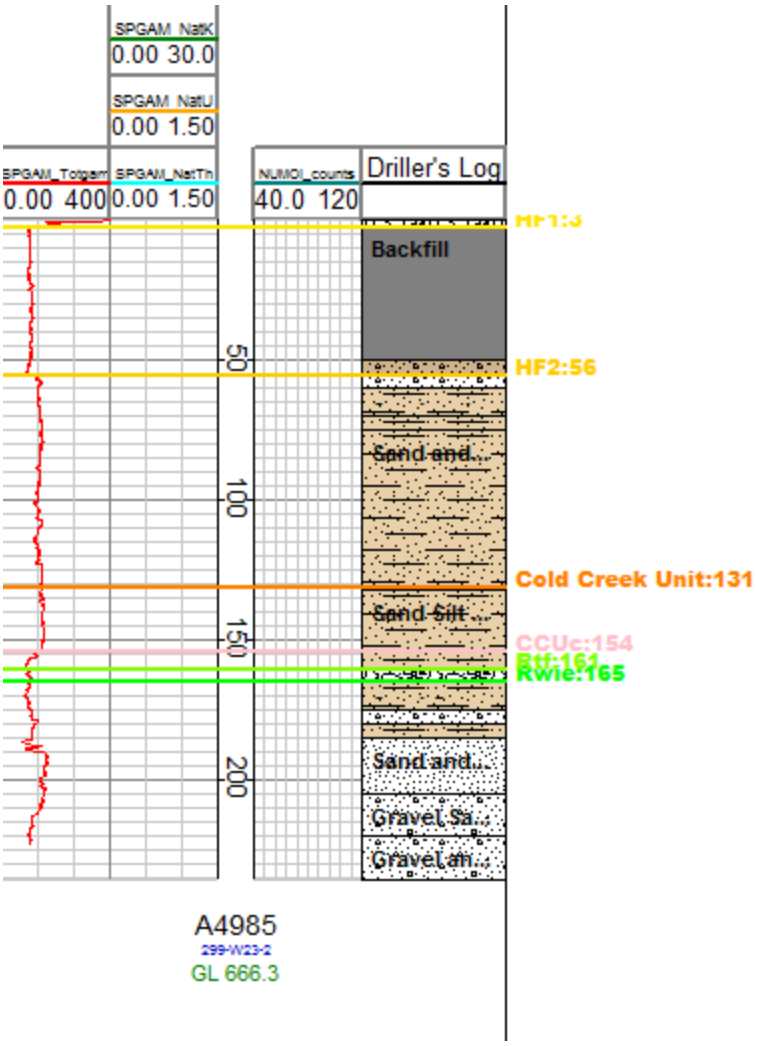

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:4
HF2:56
Cold Creek Unit:120
CCU:148
Rwie:155
50
100
150
200
A4970
299-W22-39
GL 668.8

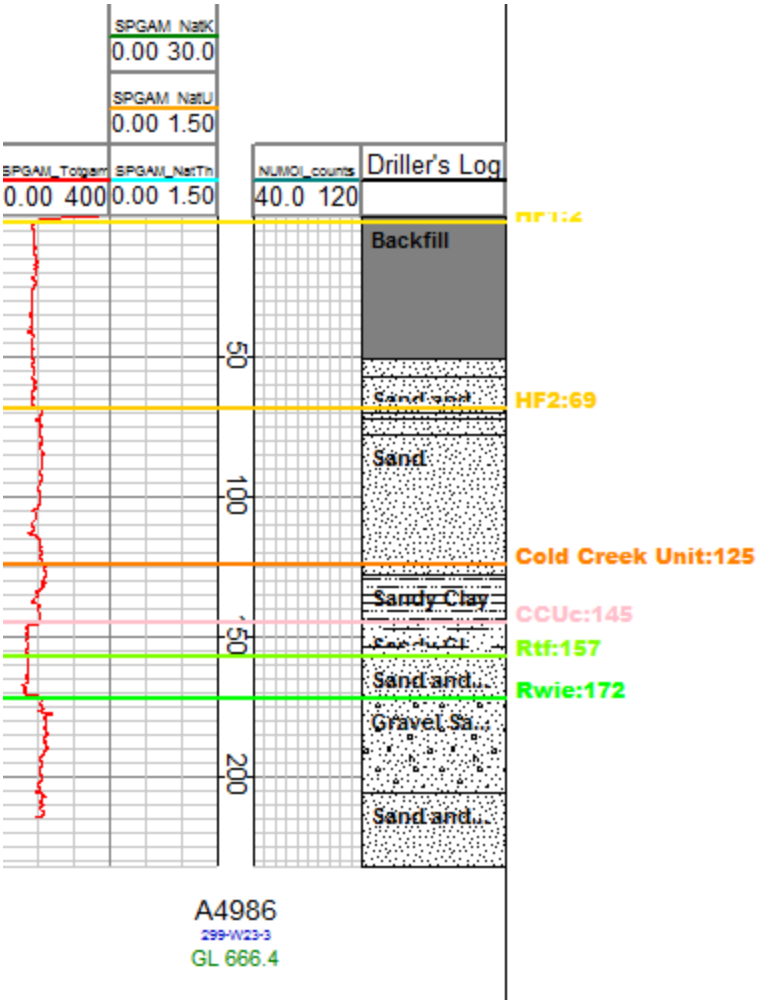

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:6
HF2:50
Cold Creek Unit:118
CCUc:146
Rtf:156
Rwie:170
50
100
150
200
mS
mS
mS
sP
sG
msG
msG
A4976
299-W22-45
GL 666.5

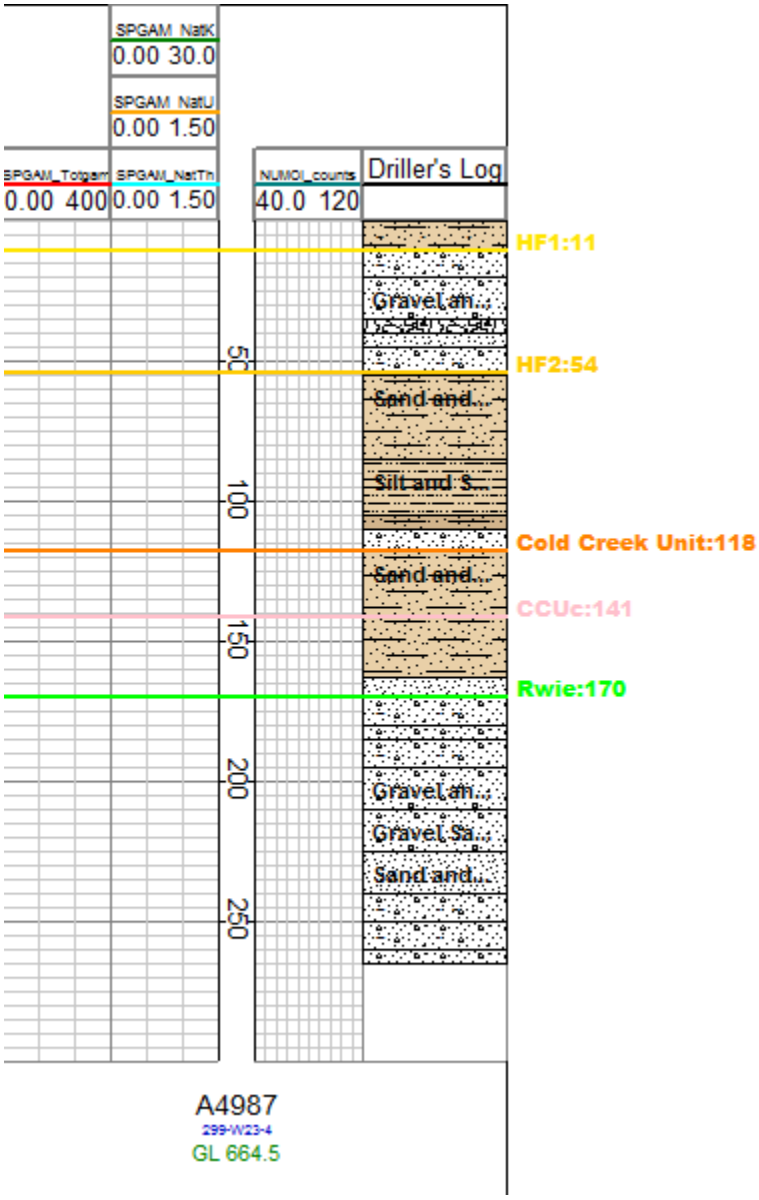

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:3
Sand and Gravel
Backfill
HF2:55
Sand and Silt
Cold Creek Unit:122
Clay and Silt
Gravel Sand Silt
Gravel and Sand
Gravel Sand Silt
Sand Gravel Silt
25
50
75
100
125
150
175
200
225
250
A4979
299-W23-1
669.0
40 ft

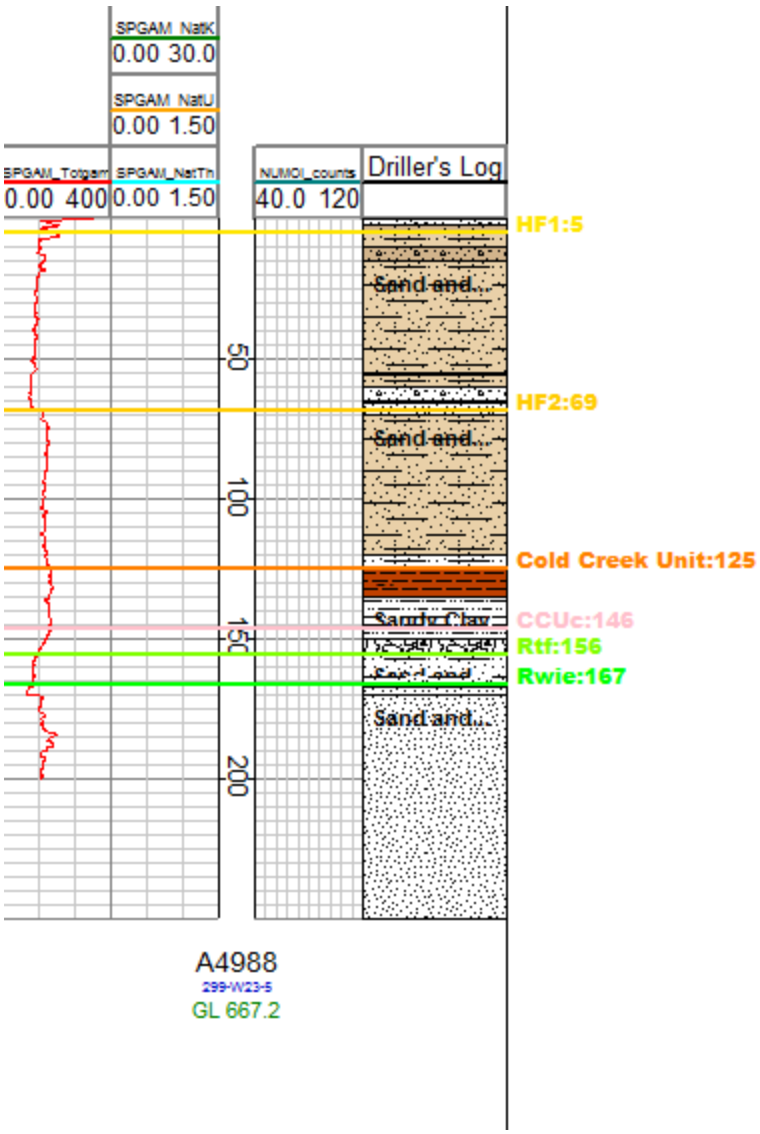

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:12
Sand and...
HF2:51
Sand and...
Sand and...
Cold Creek Unit:124
CCUc:137
Sandy Silt
Rtf:155
Rwie:169
Sand and...
50
100
150
200
A4980
299-W23-11
GL 665.0

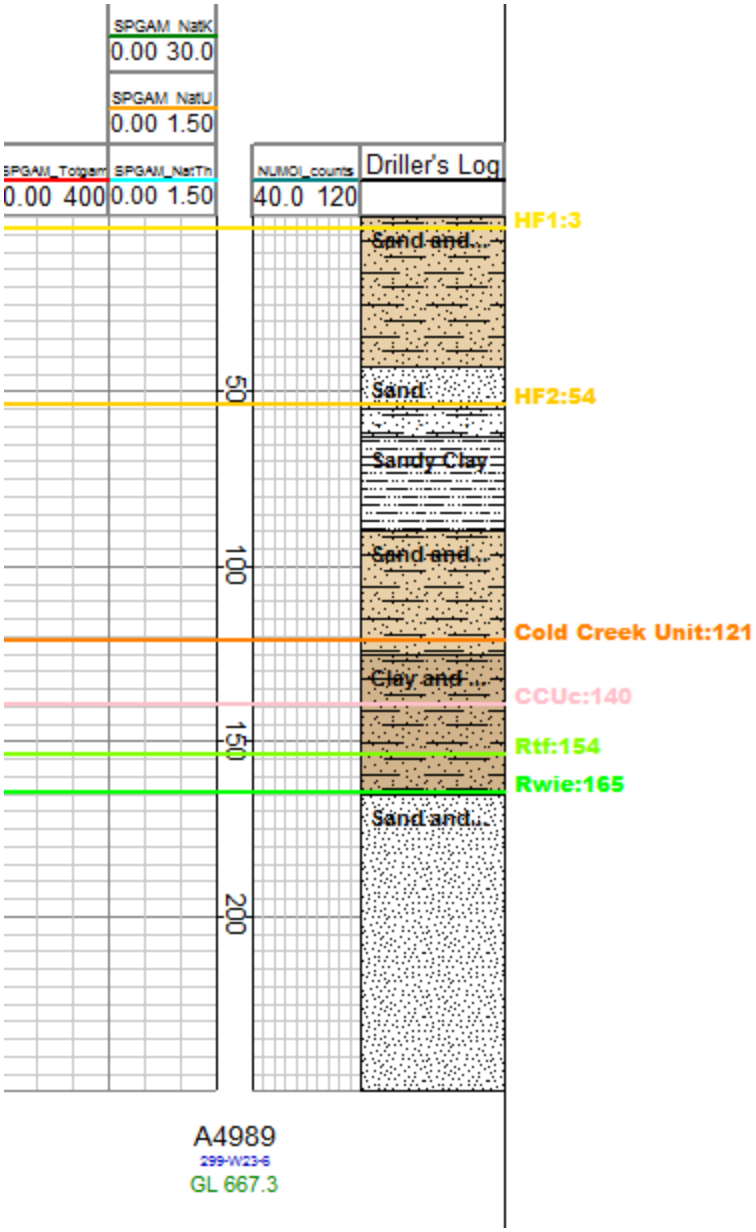

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
20
40
60
80
100
120
140
160
180
200
HF2:60
Cold Creek Unit:130
CCUc:140
A4982
299-W23-13
666.9

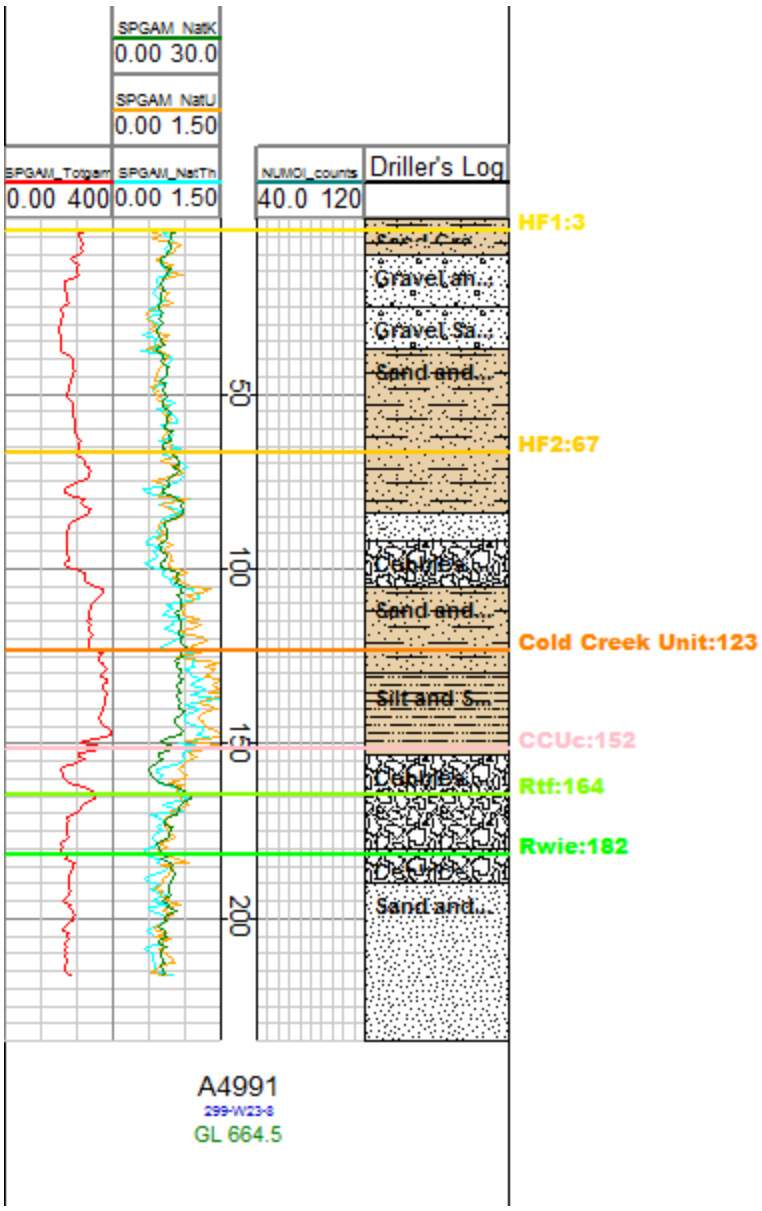

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF2:56
Sand and...
Cold Creek Unit:131
Sand Silt ...
CCUc:154
Rwie:165
Sand and...
Gravel Sa...
Gravel an...
50
100
150
200
A4985
299-W23-2
GL 666.3

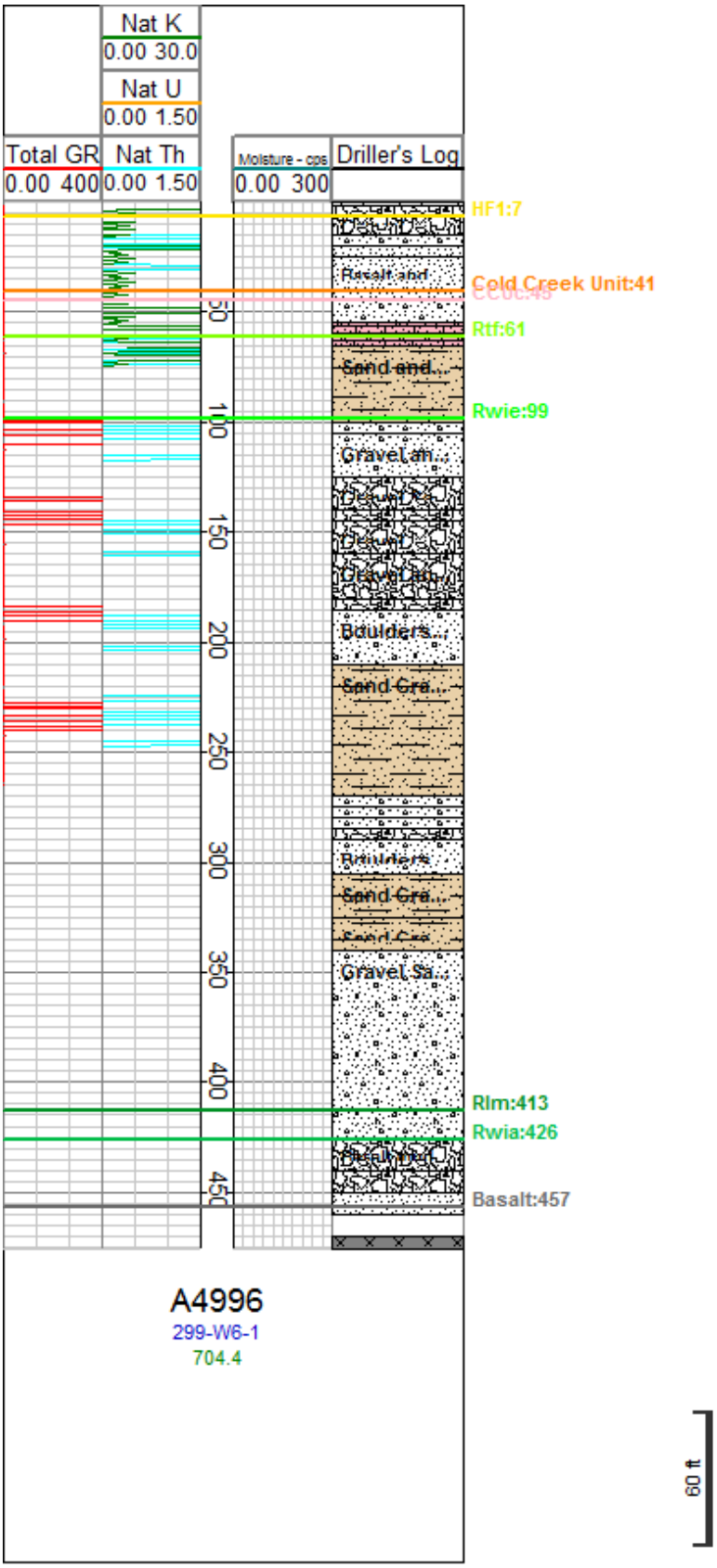

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF2:69
Sand
Cold Creek Unit:125
Sandy Clay
CCUc:145
Rtf:157
Sand and...
Rwie:172
Gravel Sa...
Sand and...
50
100
150
200
A4986
299-W23-3
GL 666.4

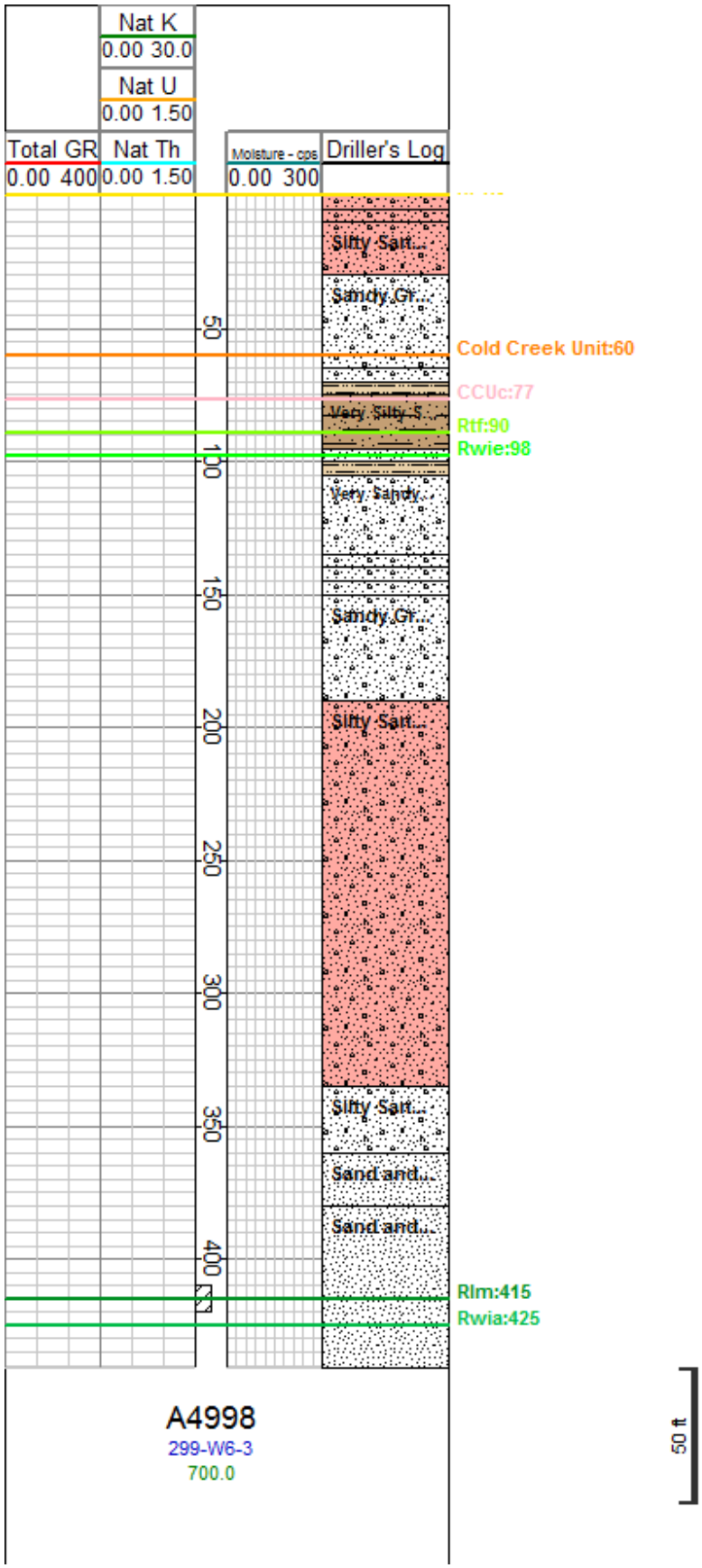

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:11
Gravel,an...
HF2:54
Sand and...
Silt and S...
Cold Creek Unit:118
Sand and...
CCUc:141
Rwie:170
Gravel,an...
Gravel,Sa...
Sand and...
50
100
150
200
250
A4987
299-W23-4
GL 664.5

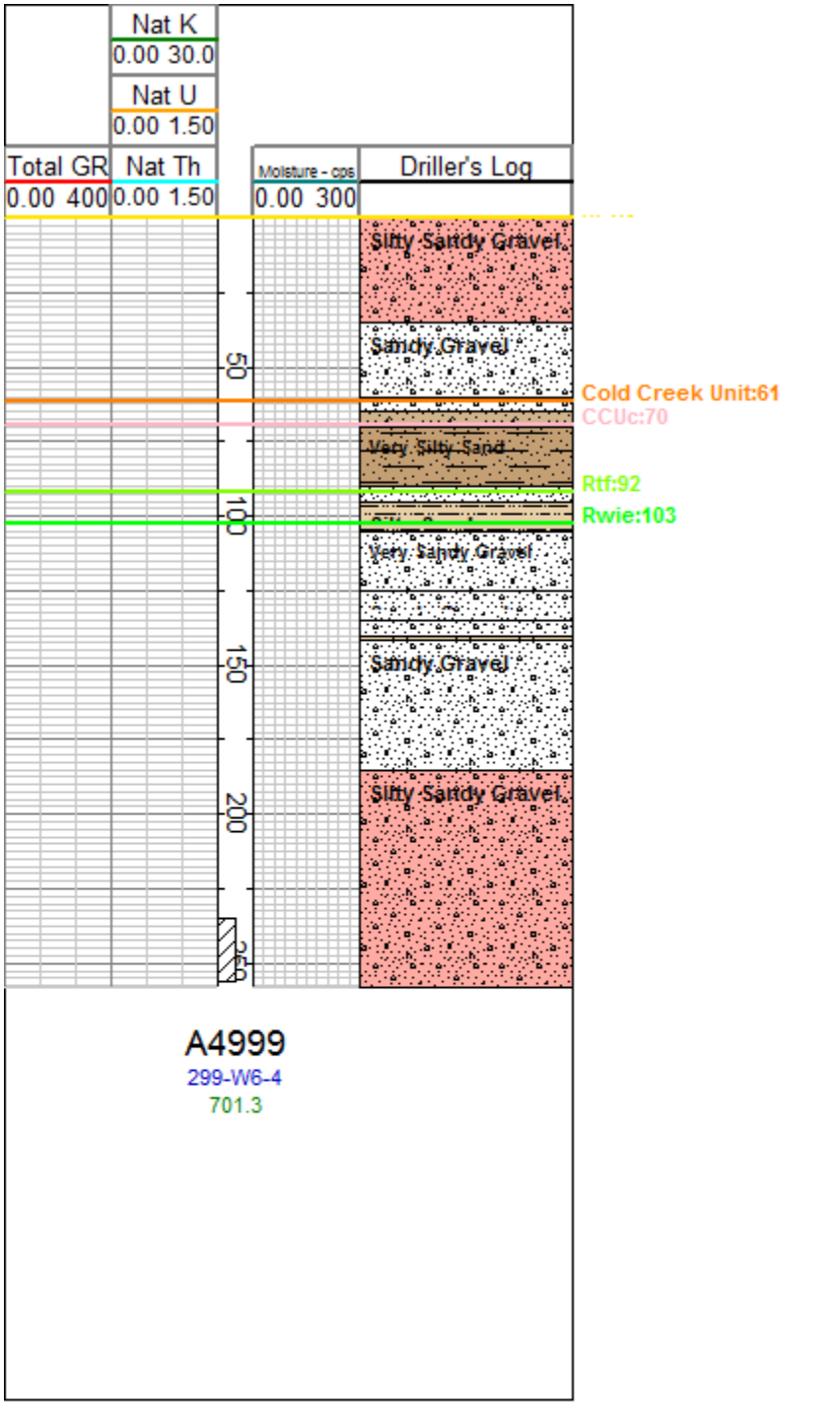

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:5
Sand and...
HF2:69
Sand and...
Cold Creek Unit:125
Sandy Clay
CCUc:146
Rtf:156
Rwie:167
Sand and...
50
100
150
200
A4988
299-W23-5
GL 667.2


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:3
Sand and...
Sand
HF2:54
Sandy Clay
Sand and...
Cold Creek Unit:121
Clay and ...
CCUc:140
Rtf:154
Rwie:165
Sand and...
50
100
150
200
A4989
299-W23-6
GL 667.3

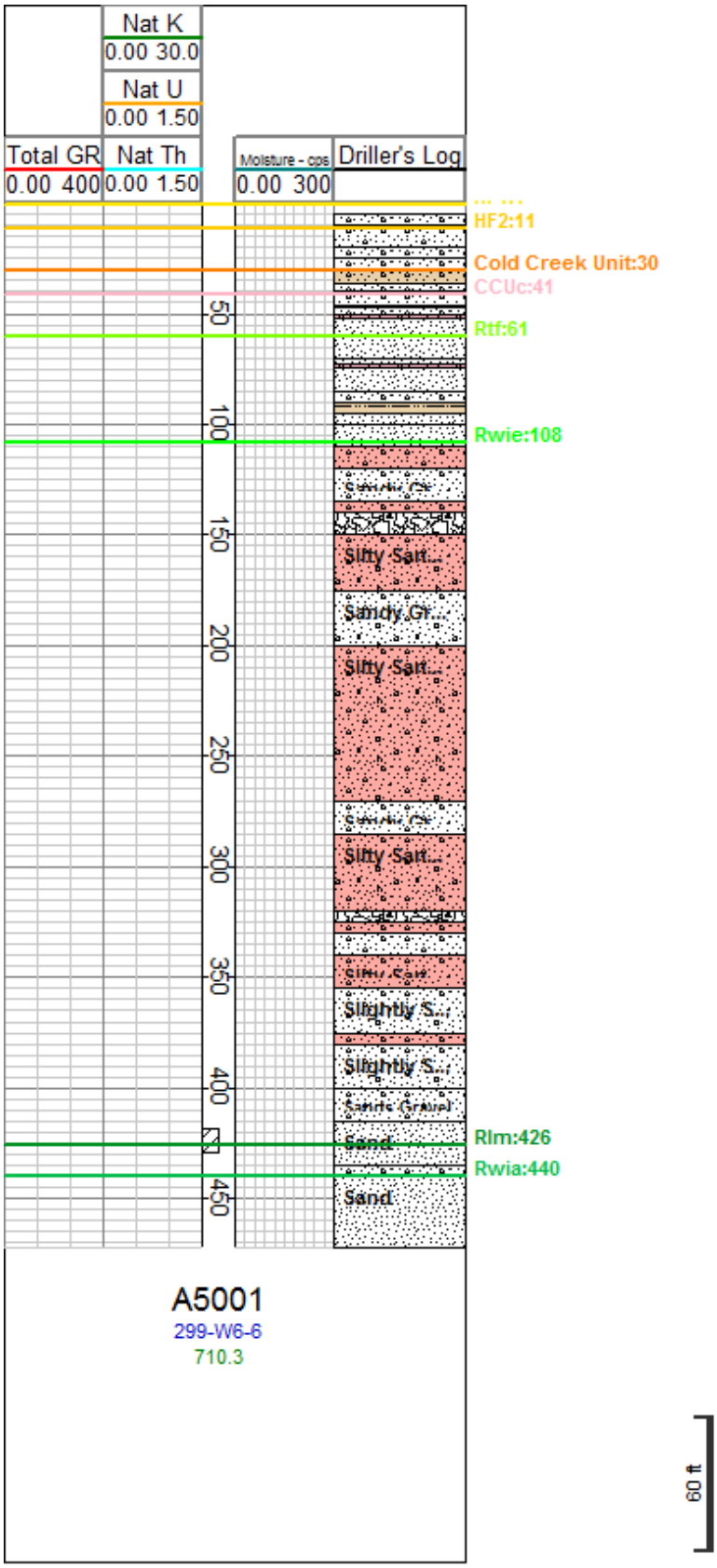

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:3
Gravel an...
Gravel Sa...
Sand and...
50
HF2:67
100
Cobbles
Sand and...
Cold Creek Unit:123
Silt and S...
150
CCUc:152
Cobbles
Rtf:164
Rwie:182
Cobbles
Sand and...
200
A4991
299-W23-8
GL 664.5

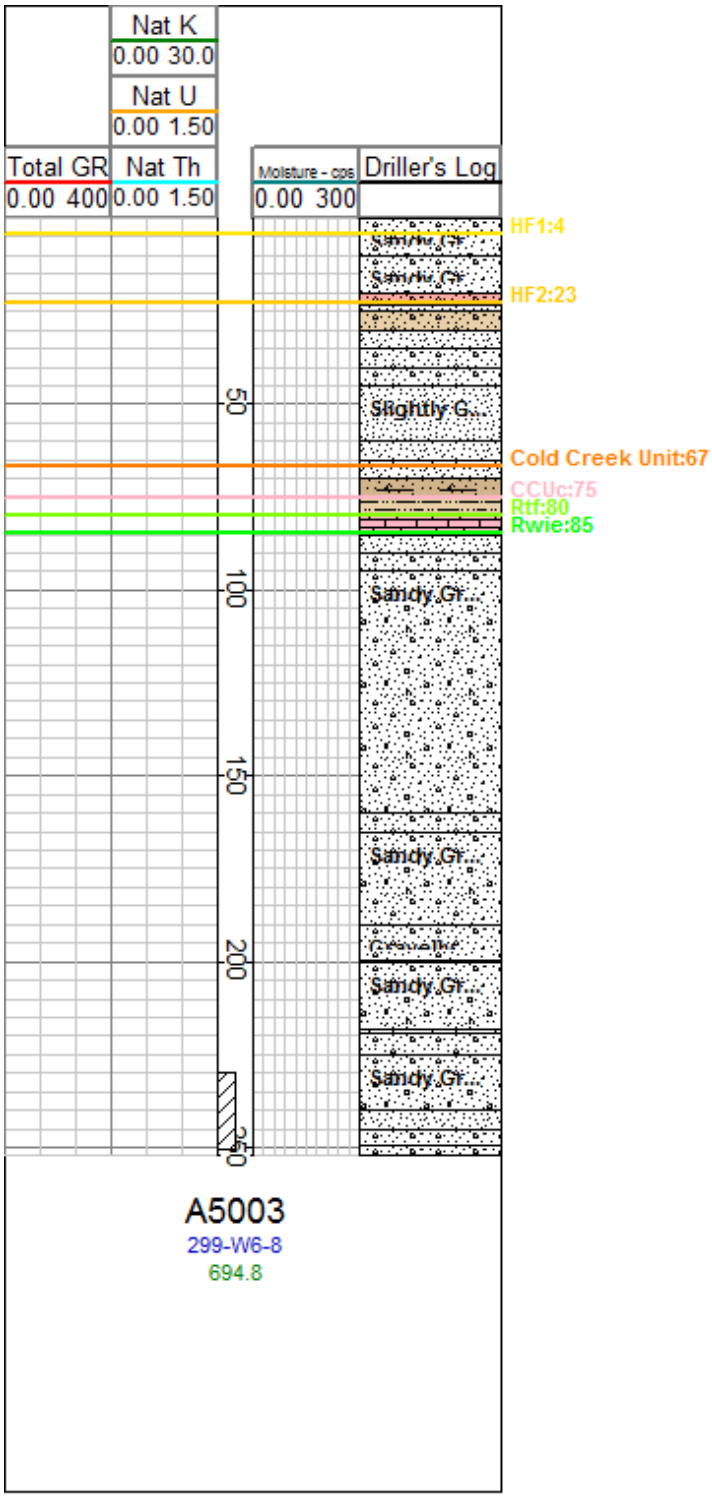

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:7
Cold Creek Unit:41
Rtf:61
Rwie:99
Rlm:413
Rwia:426
Basalt:457
50
100
150
200
250
300
350
400
450
A4996
299-W6-1
704.4
60 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silty Sart...
Sandy Gr...
Cold Creek Unit:60
CCUc:77
Very Silty S...
Rtf:90
Rwie:98
Very Sandy...
Sandy Gr...
Silty Sart...
Silty Sart...
Sand and...
Sand and...
Rlm:415
Rwia:425
50
100
150
200
250
300
350
400
A4998
299-W6-3
700.0
50 ft

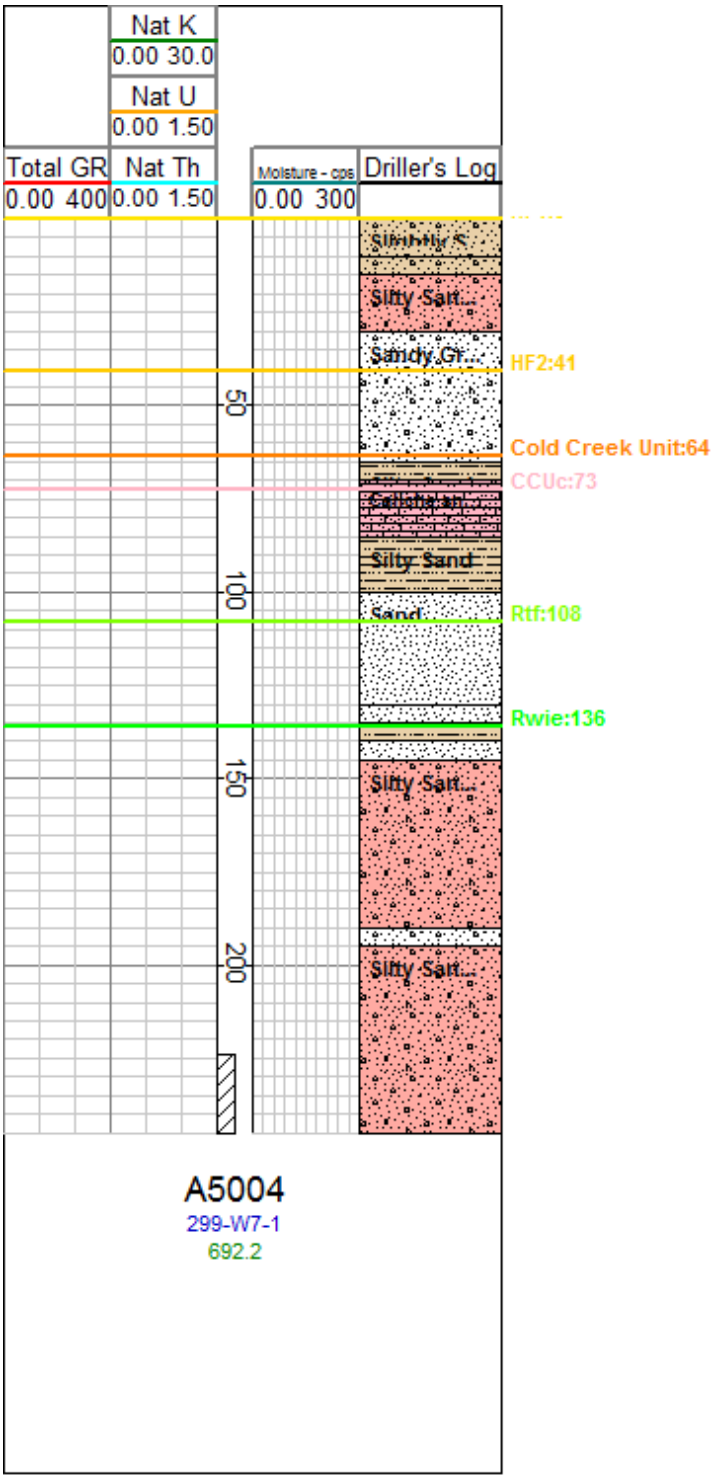

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silty Sandy Gravel
Sandy Gravel
Cold Creek Unit:61
CCUc:70
Very Silty Sand
Rtf:92
Rwie:103
Very Sandy Gravel
Sandy Gravel
Silty Sandy Gravel
50
100
150
200
250
A4999
299-W6-4
701.3

50 ft

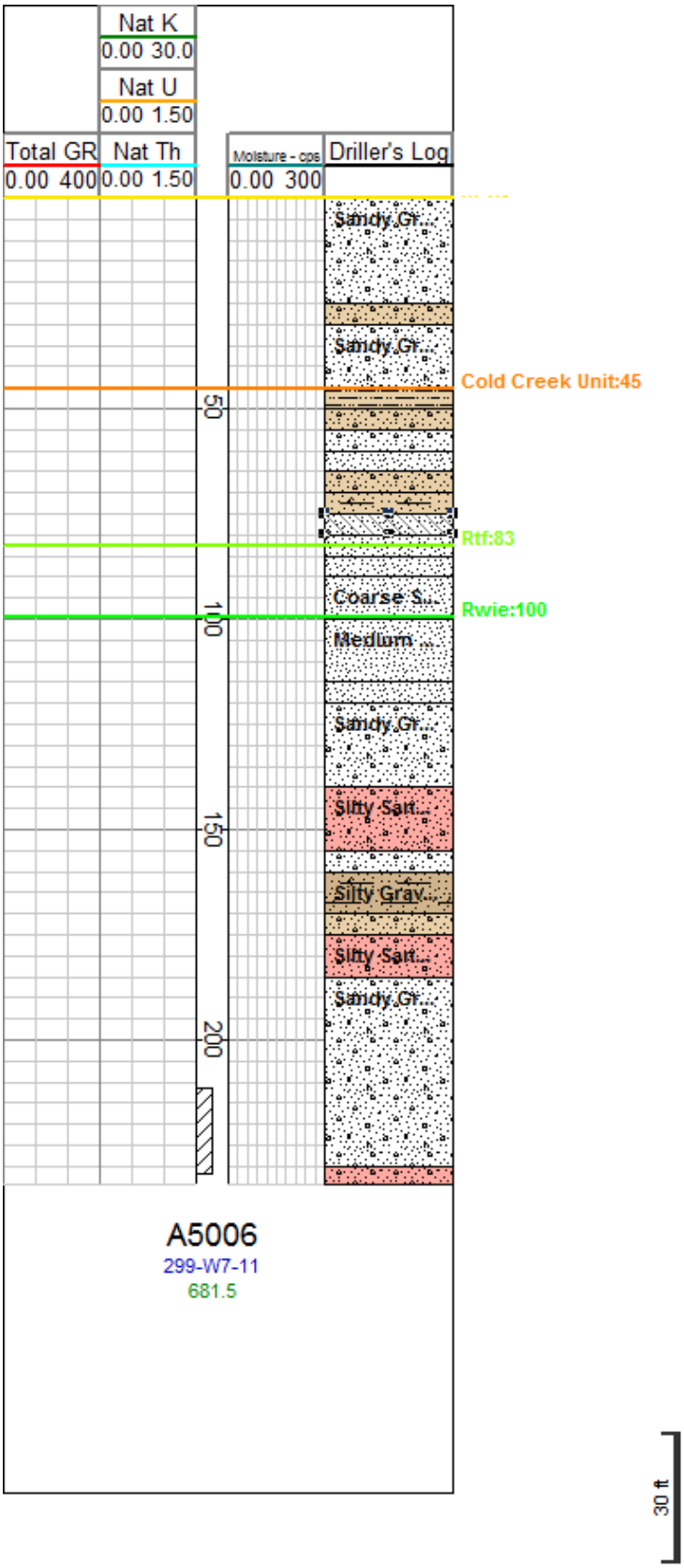

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:11
Cold Creek Unit:30
CCUc:41
Rtf:61
Rwie:108
Silty Sant...
Sandy Gr...
Silty Sant...
Silty Sant...
Slightly S...
Slightly S...
Sand
Rlm:426
Rwia:440
Sand
50
100
150
200
250
300
350
400
450
A5001
299-W6-6
710.3
60 ft

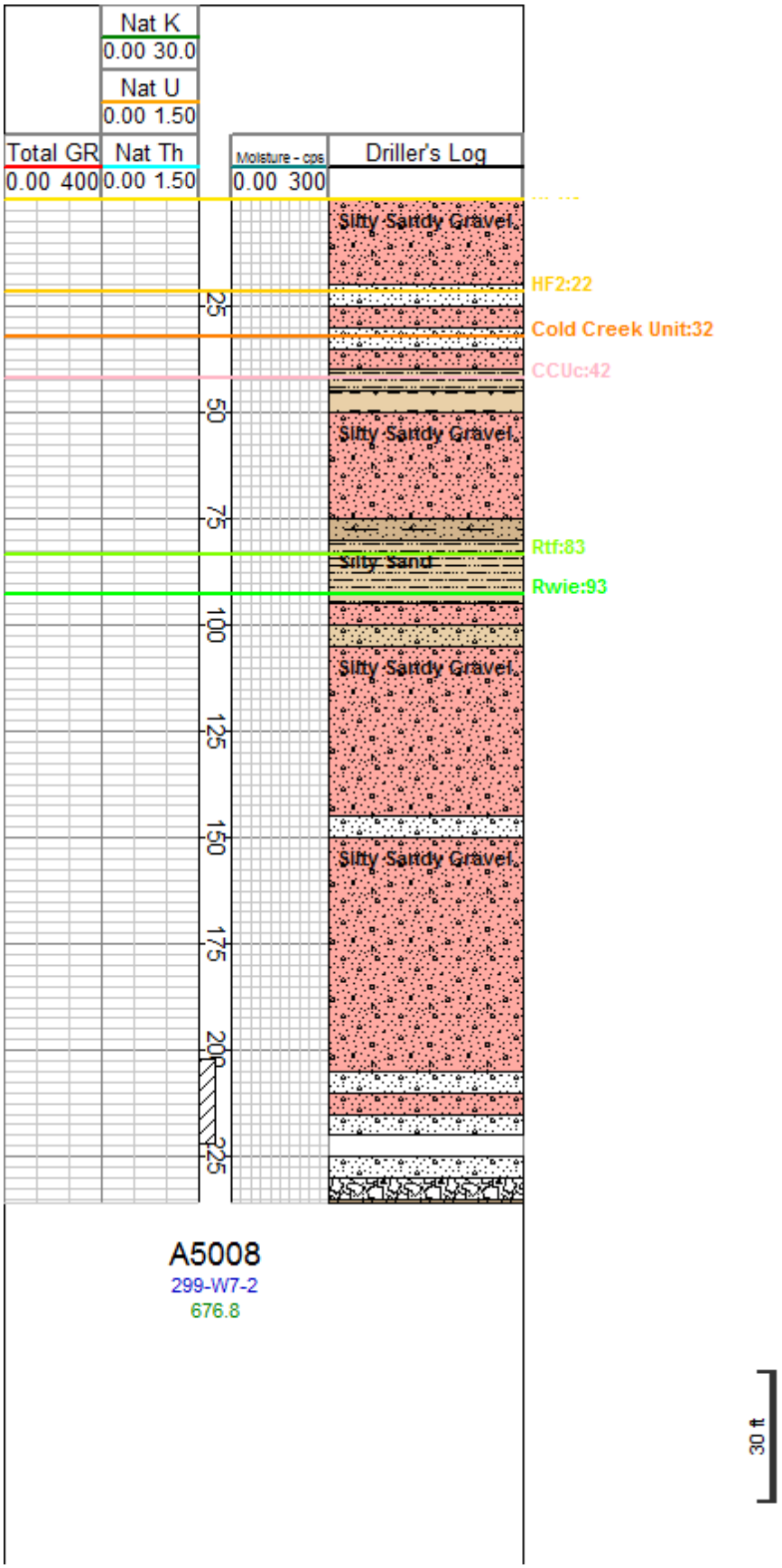

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:4
HF2:23
Slightly G...
Cold Creek Unit:67
CCUc:75
Rtf:80
Rwie:85
Sandy,Gr...
Sandy,Gr...
Sandy,Gr...
Sandy,Gr...
50
100
150
200
250
A5003
299-W6-8
694.8

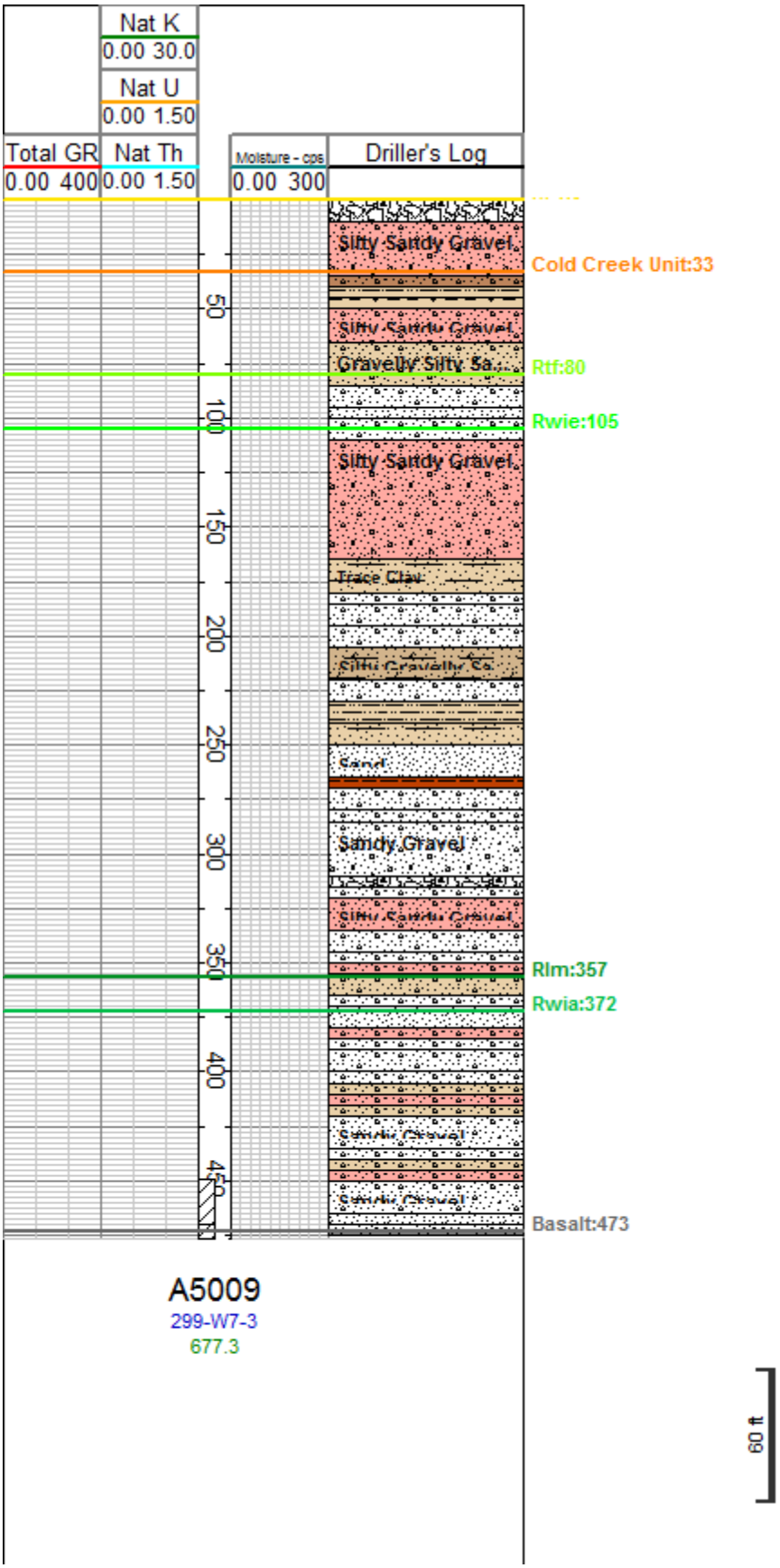
40 ft

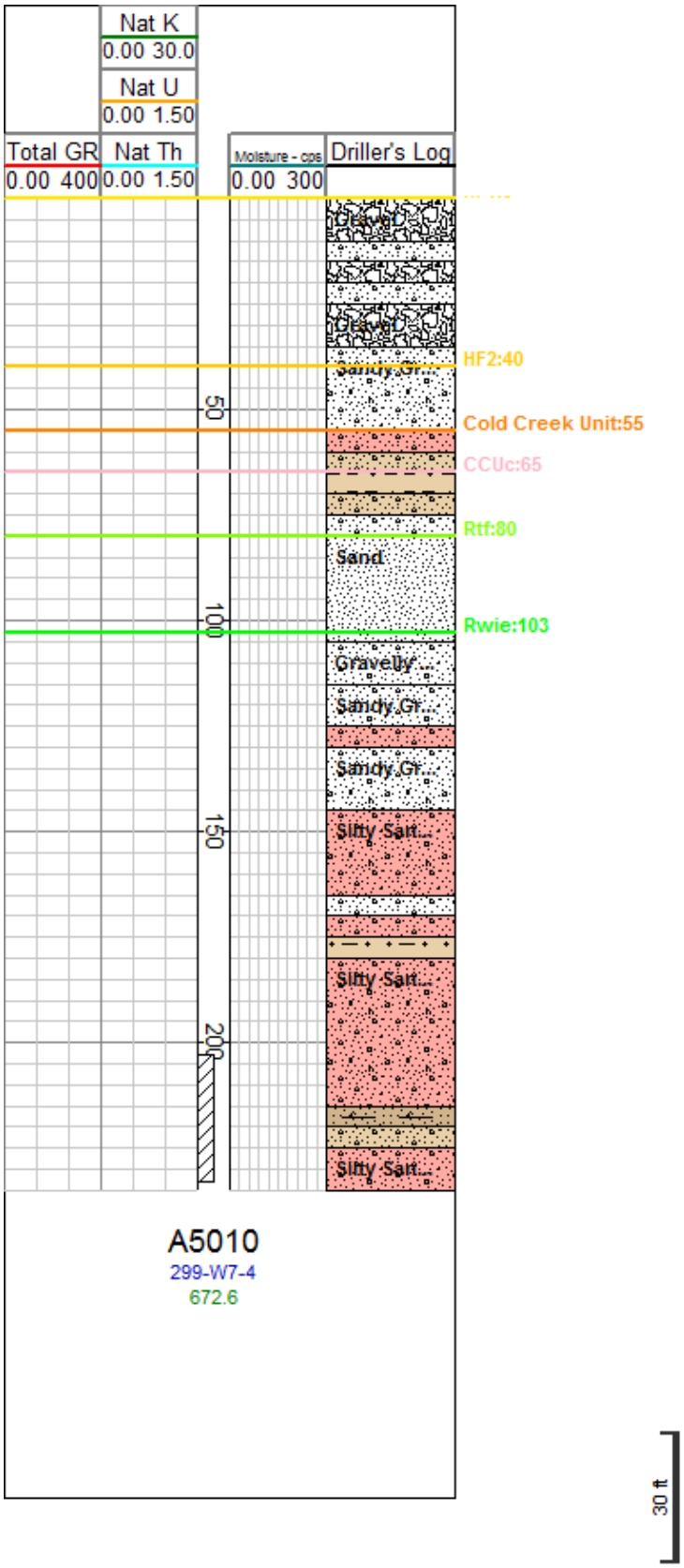

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silty Sand
Sandy Gr...
HF2:41
50
Cold Creek Unit:64
CCUc:73
Silty Sand
100
Rtf:108
Rwie:136
150
Silty Sand
200
Silty Sand
A5004
299-W7-1
692.2

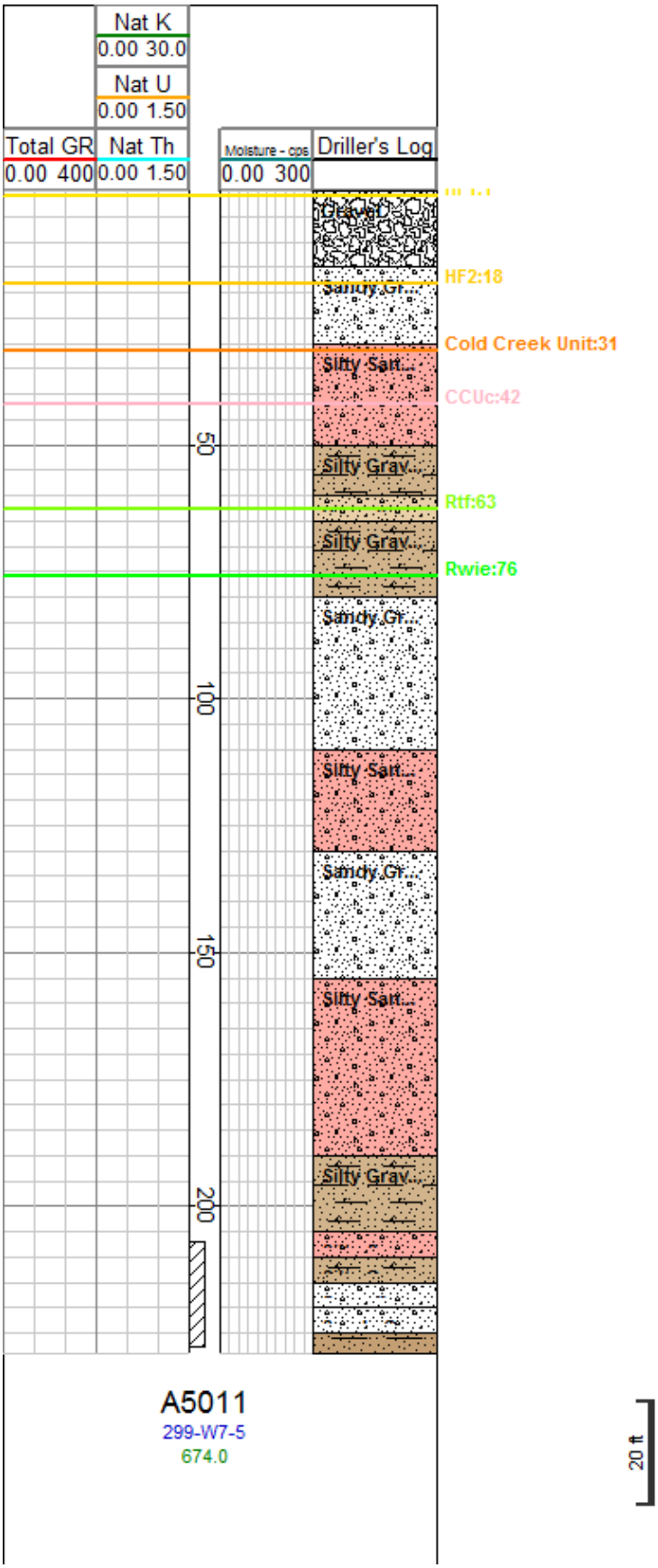
40 ft

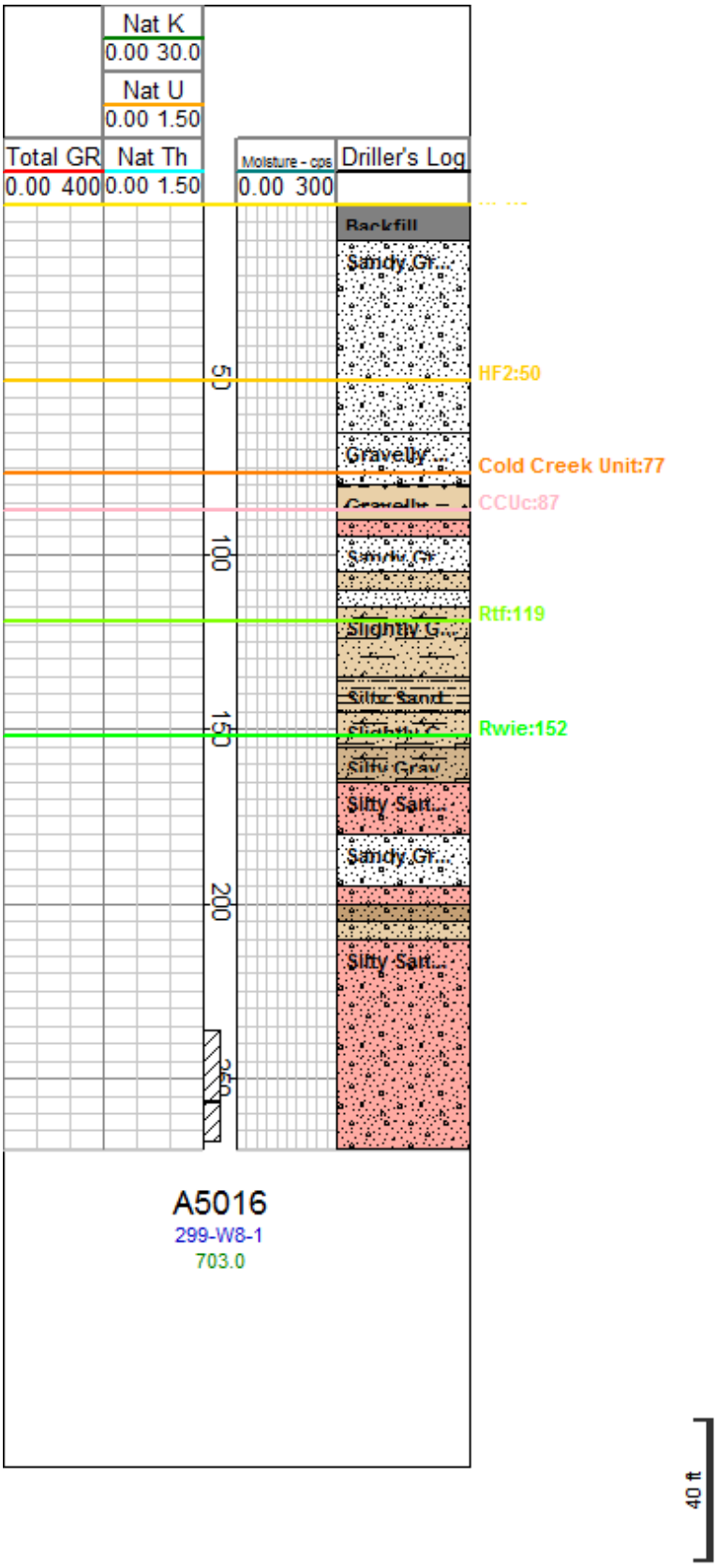

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sandy Gr...
Sandy Gr...
Cold Creek Unit:45
50
Rtf:83
Coarse S...
Rwie:100
100
Medium ...
Sandy Gr...
Silty San...
150
Silty Grav...
Silty San...
Sandy Gr...
200
A5006
299-W7-11
681.5
30 ft

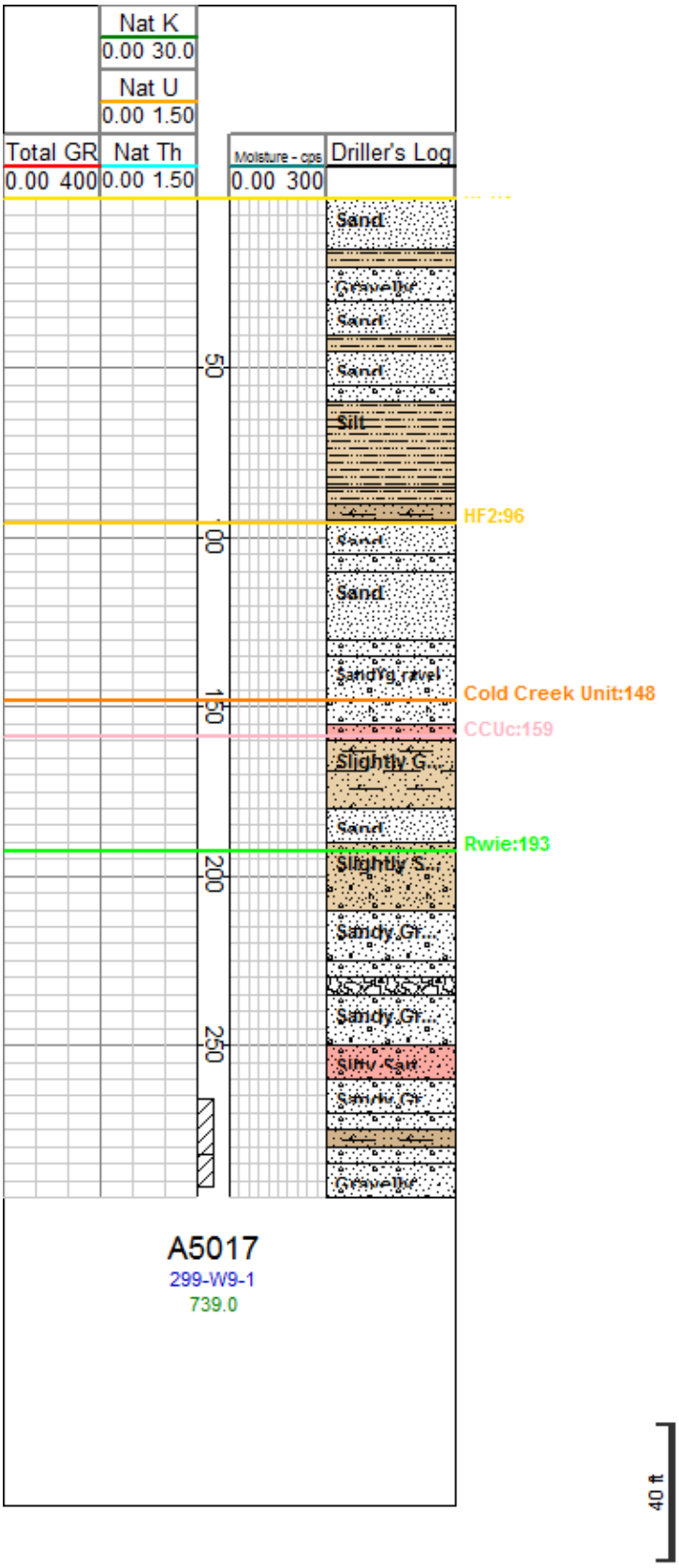

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silty Sandy Gravel
HF2:22
Cold Creek Unit:32
CCUc:42
Silty Sandy Gravel
Rtf:83
Silty Sand
Rwie:93
Silty Sandy Gravel
Silty Sandy Gravel
25
50
75
100
125
150
175
200
225
A5008
299-W7-2
676.8
30 ft

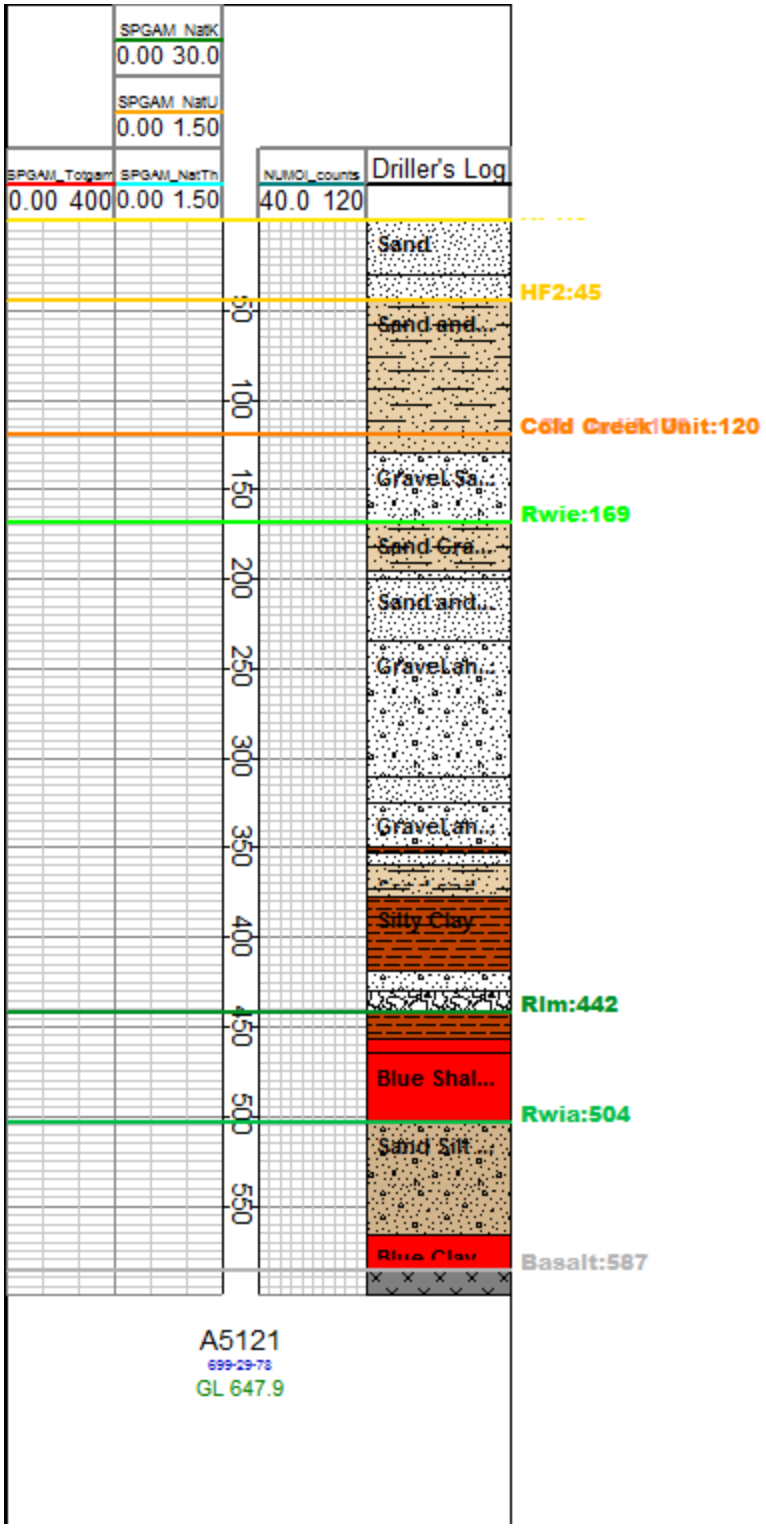

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silty Sandy Gravel
Cold Creek Unit:33
Silty Sandy Gravel
Gravelly Silty Sa...
Rtf:80
Rwie:105
Silty Sandy Gravel
Trace Clay
Sandy Gravel
Silty Sandy Gravel
Rlm:357
Rwia:372
Basalt:473
50
100
150
200
250
300
350
400
450
A5009
299-W7-3
677.3
60 ft

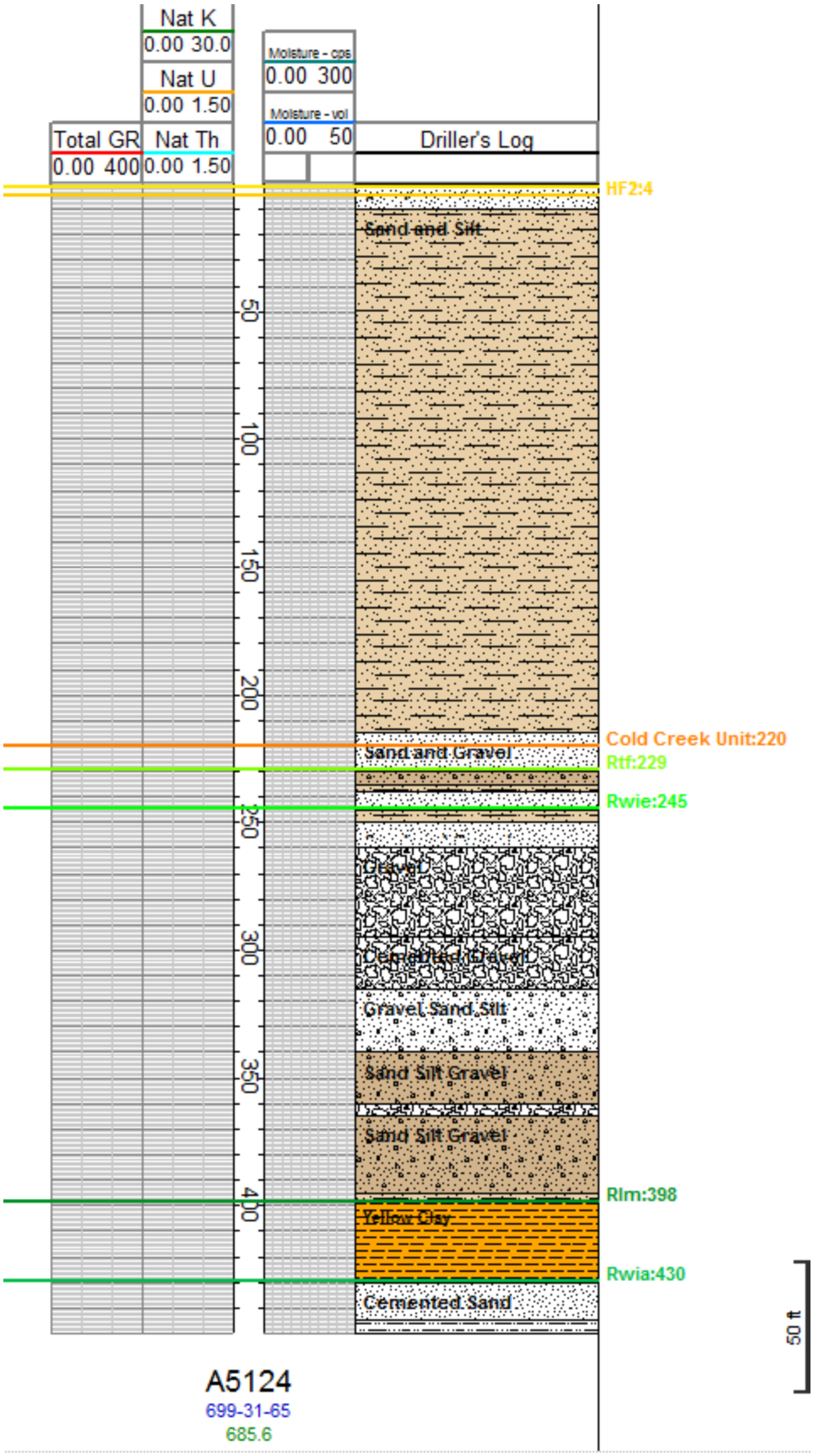

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:40
Cold Creek Unit:55
CCUc:65
Rtf:80
Rwie:103
Sand
Gravelly ...
Sandy Gr...
Sandy Gr...
Silty Sant...
Silty Sant...
Silty Sant...
50
100
150
200
A5010
299-W7-4
672.6
30 ft

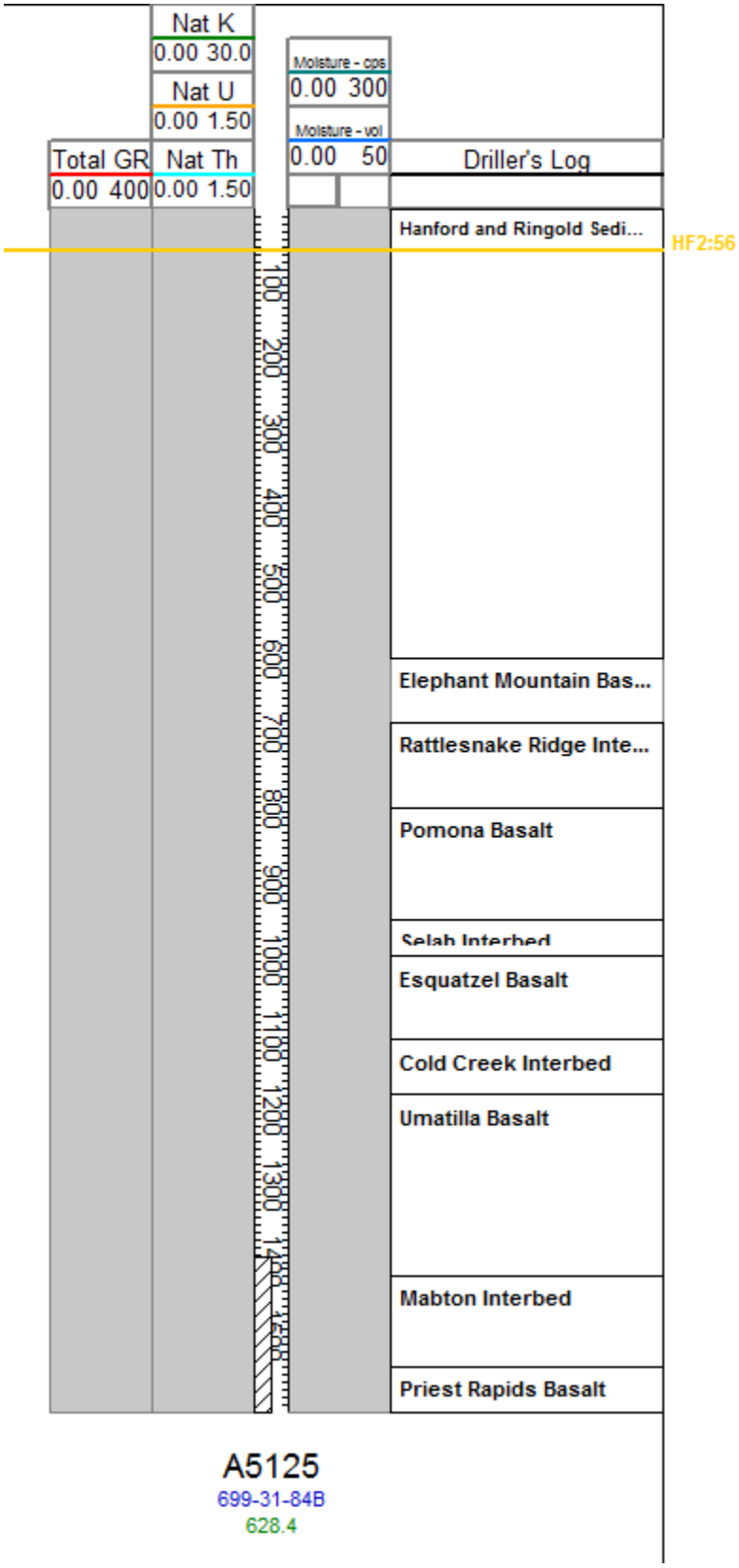

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Gravel
Sandy Gr...
HF2:18
Cold Creek Unit:31
Silty Sand...
CCUc:42
Silty Grav...
Rtf:63
Silty Grav...
Rwie:76
Sandy Gr...
Silty Sand...
Sandy Gr...
Silty Sand...
Silty Grav...
50
100
150
200
A5011
299-W7-5
674.0
20 ft

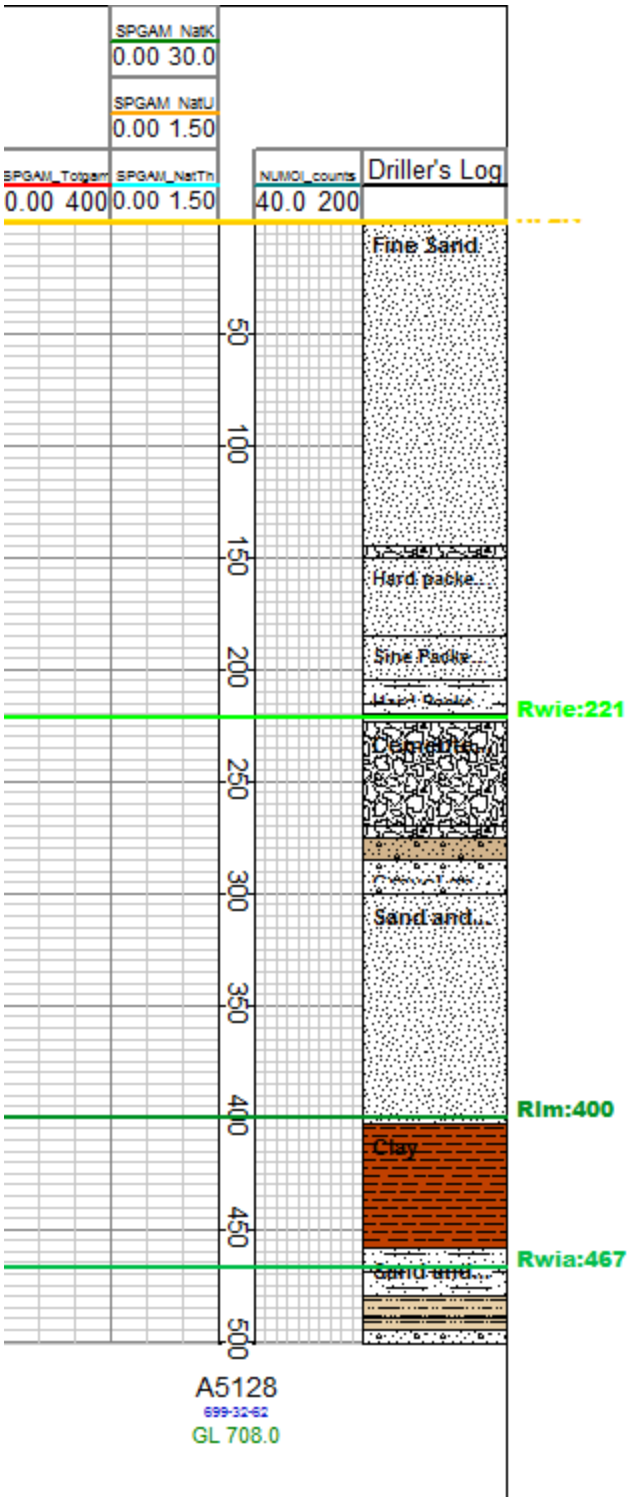

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Sandy Gr...
HF2:50
Gravelly ...
Cold Creek Unit:77
CCUc:87
Rtf:119
Silty Sand
Rwie:152
Silty Sand...
Sandy Gr...
Silty Sand...
50
100
150
200
250
A5016
299-W8-1
703.0
40 ft

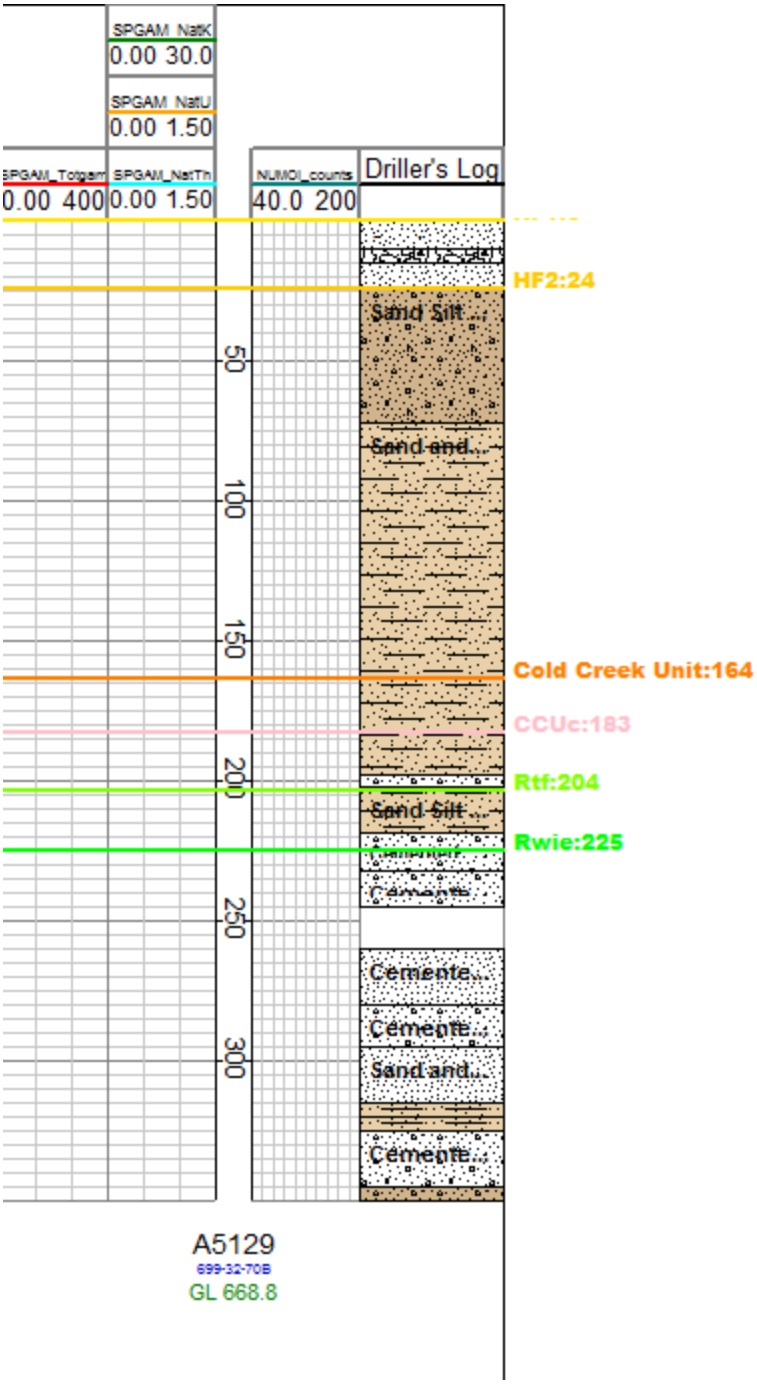

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Gravelly
Sand
Sand
Silt
HF2:96
Sand
Sand
Sandy gravel
Cold Creek Unit:148
CCUc:159
Slightly G...
Sand
Rwie:193
Slightly S...
Sandy Gr...
Sandy Gr...
Silty Sand
Sandy Gr...
Gravelly
50
100
150
200
250
A5017
299-W9-1
739.0
40 ft

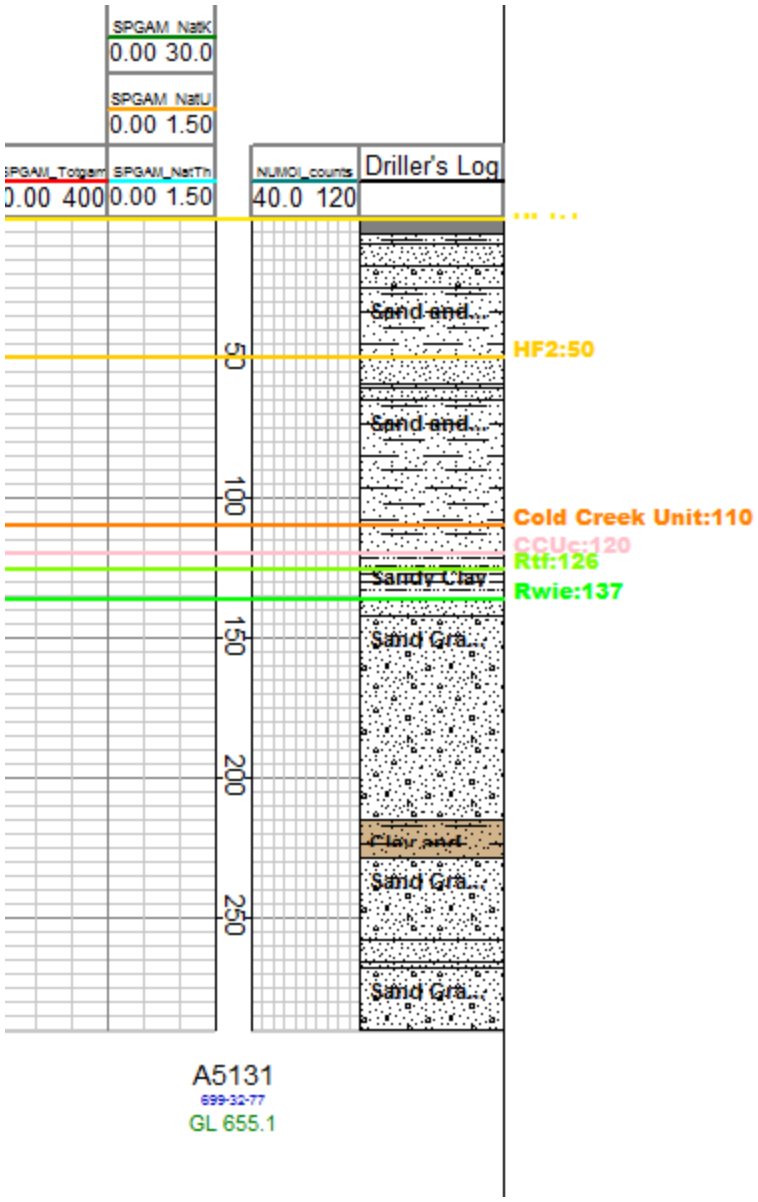

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
HF2:45
Sand and...
Cold Creek Unit:120
Gravel Sa...
Rwie:169
Sand Gra...
Sand and...
Gravel an...
Gravel an...
Silty Clay
Rlm:442
Blue Shal...
Rwia:504
Sand Silt...
Blue Clay
Basalt:587
50
100
150
200
250
300
350
400
450
500
550
A5121
699-29-78
GL 647.9

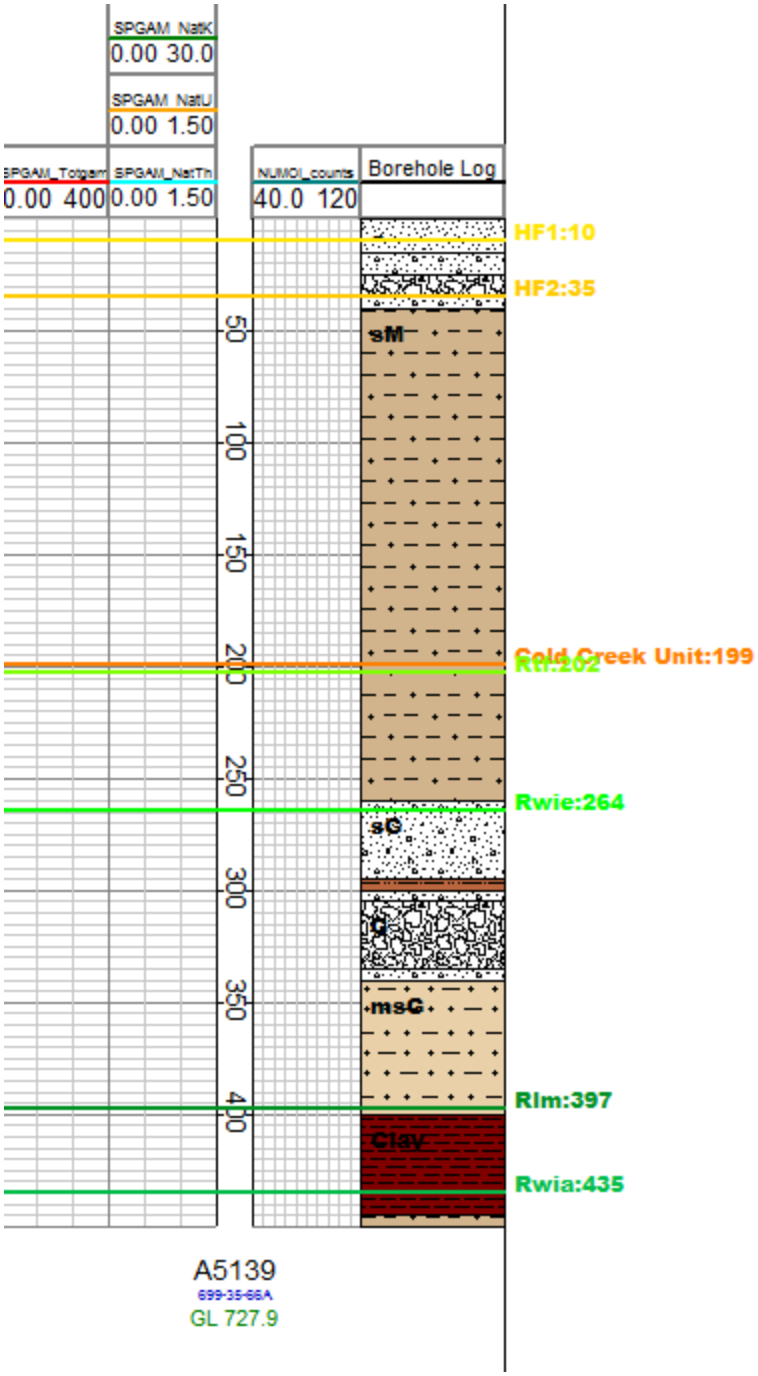

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF2:4
Sand and Silt
50
100
150
200
Cold Creek Unit:220
Sand and Gravel
Rtf:229
Rwie:245
250
Gravel
300
Cemented Gravel
Gravel Sand Silt
350
Sand Silt Gravel
Sand Silt Gravel
Rlm:398
400
Yellow Clay
Rwia:430
Cemented Sand
50 ft
A5124
699-31-65
685.6

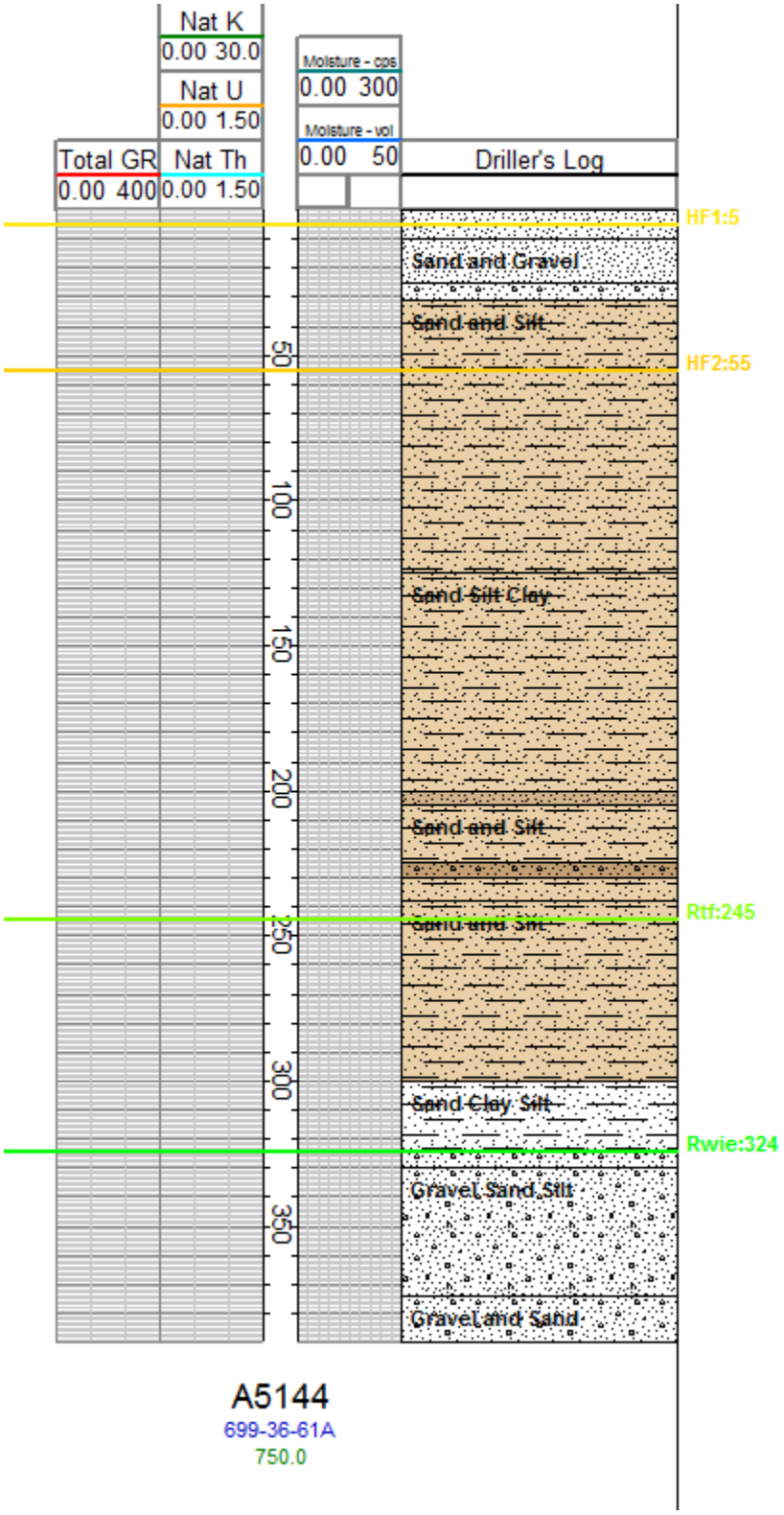

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Hanford and Ringold Sedi...
HF2:56
Elephant Mountain Bas...
Rattlesnake Ridge Inte...
Pomona Basalt
Selah Interbed
Esquatzel Basalt
Cold Creek Interbed
Umatilla Basalt
Mabton Interbed
Priest Rapids Basalt
A5125
699-31-84B
628.4

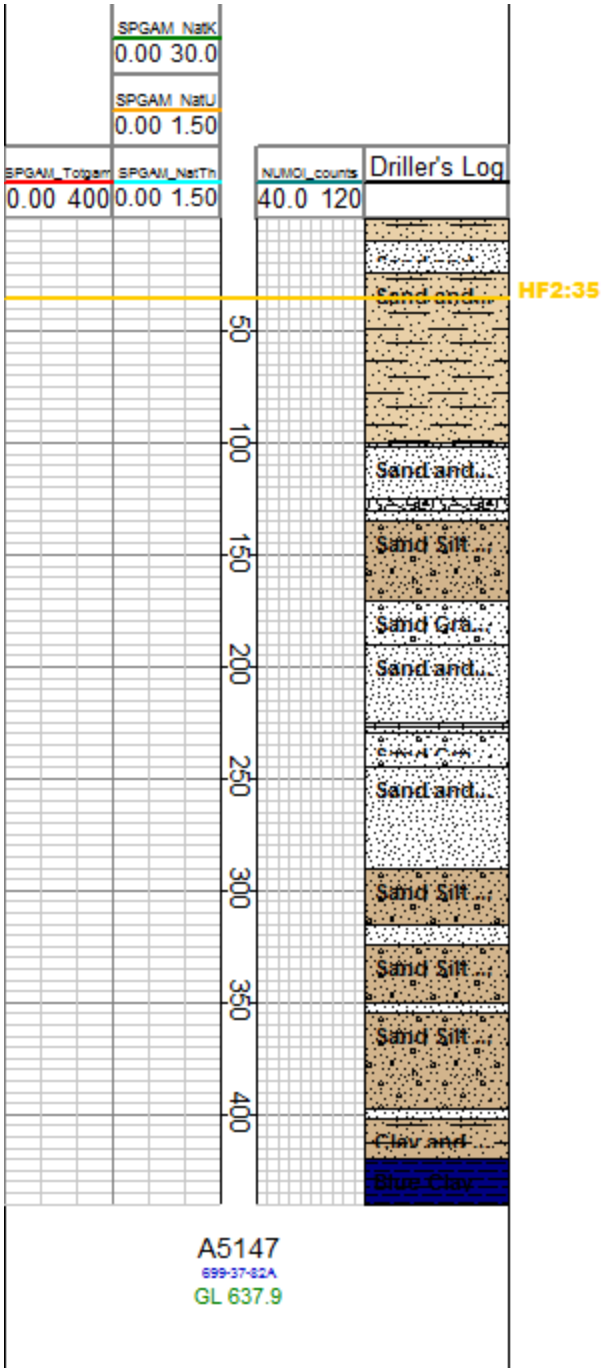

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Fine Sand
Hard packe...
Sand and...
Clay
Rwie:221
Rlm:400
Rwia:467
50
100
150
200
250
300
350
400
450
500
A5128
699-32-62
GL 708.0

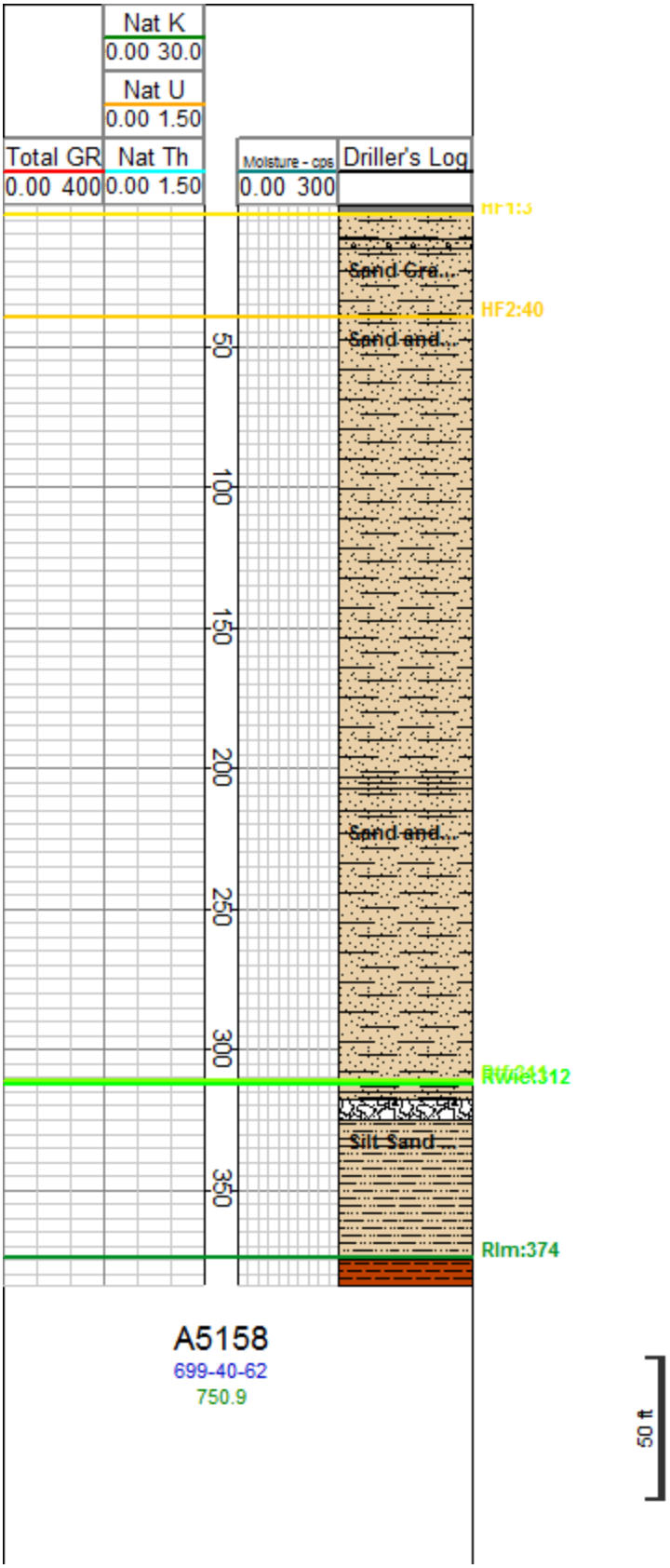

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF2:24
Sand Silt ...
Sand and...
Cold Creek Unit:164
CCUc:183
Rtf:204
Sand Silt ...
Rwie:225
Cemente...
Cemente...
Cemente...
Sand and...
Cemente...
50
100
150
200
250
300
A5129
699-32-70B
GL 668.8

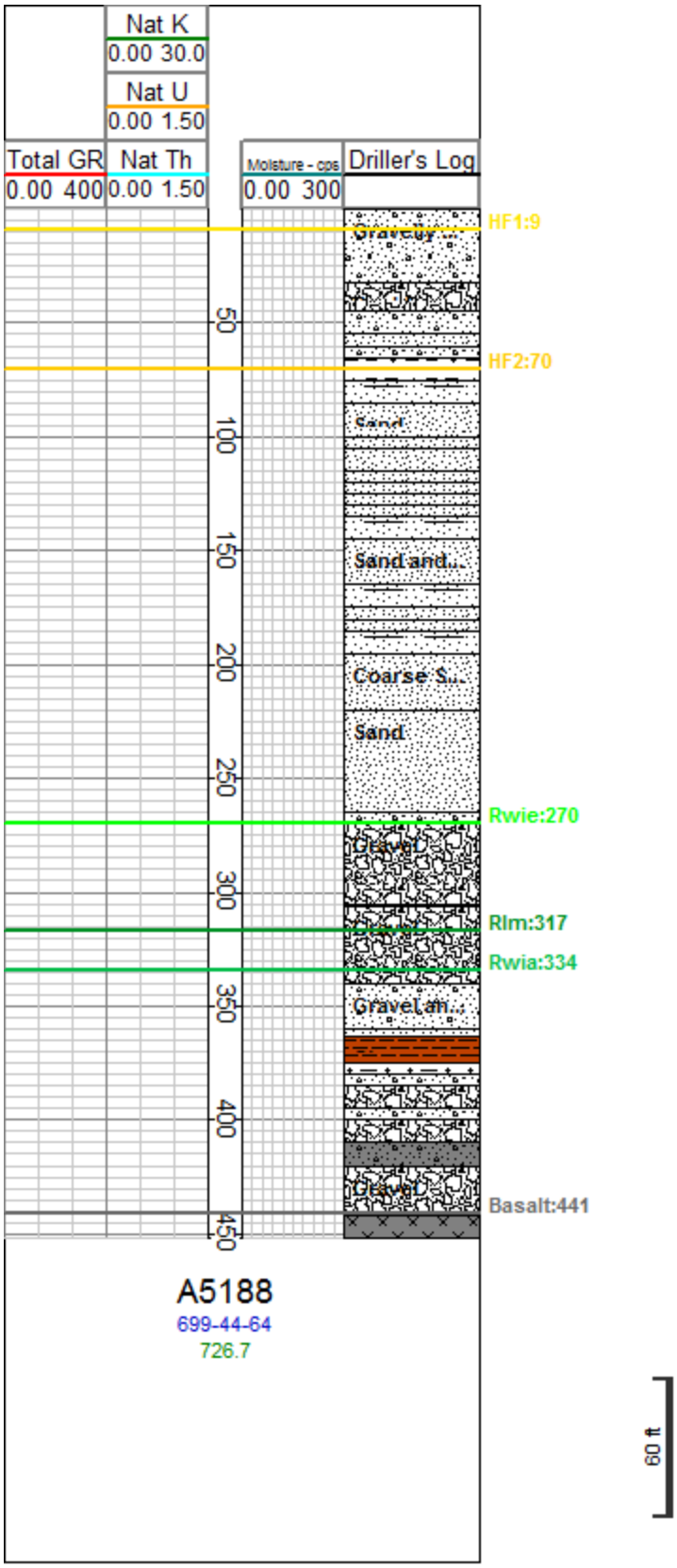

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:50
Cold Creek Unit:110
CCUc:120
Rtf:126
Rwie:137
Sand and...
Sand and...
Sandy Clay
Sand Gra...
Clay and...
Sand Gra...
Sand Gra...
50
100
150
200
250
A5131
699-32-77
GL 655.1

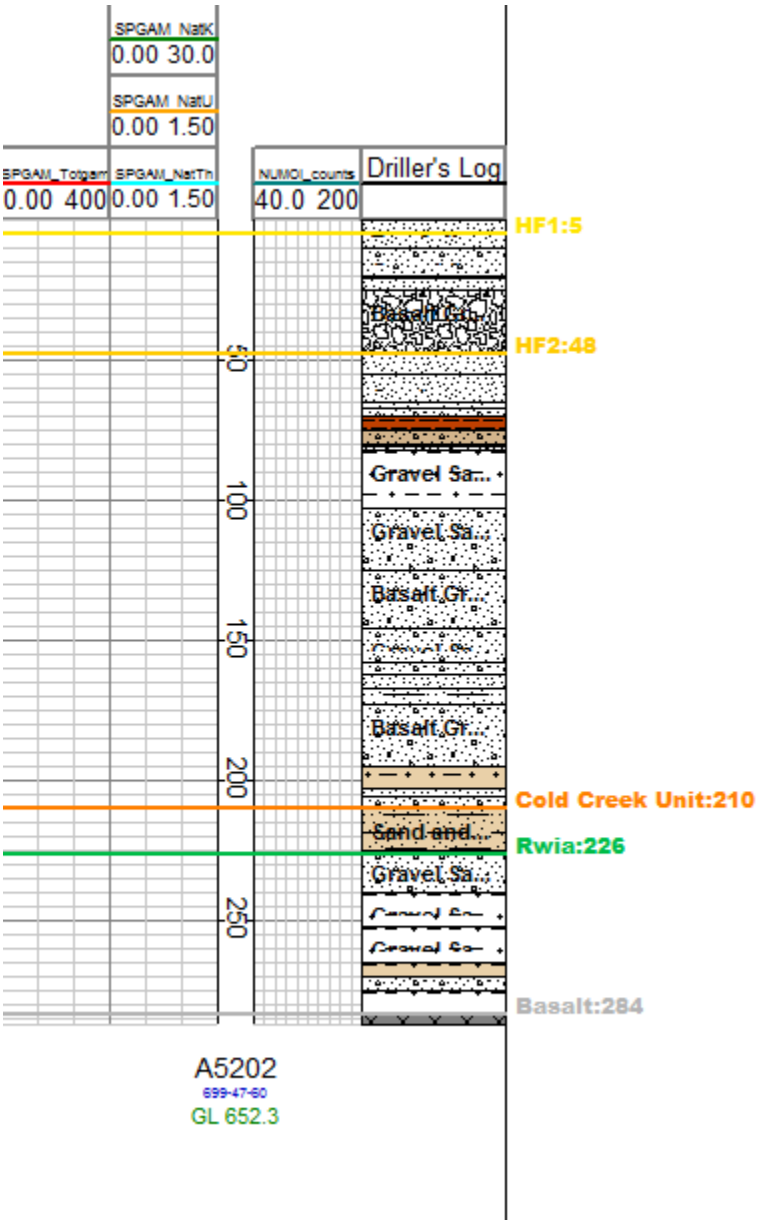

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:10
HF2:35
sM
Cold Creek Unit:199
Rtl:202
Rwie:264
sG
G
msG
Rlm:397
Clay
Rwia:435
50
100
150
200
250
300
350
400
A5139
699-35-66A
GL 727.9

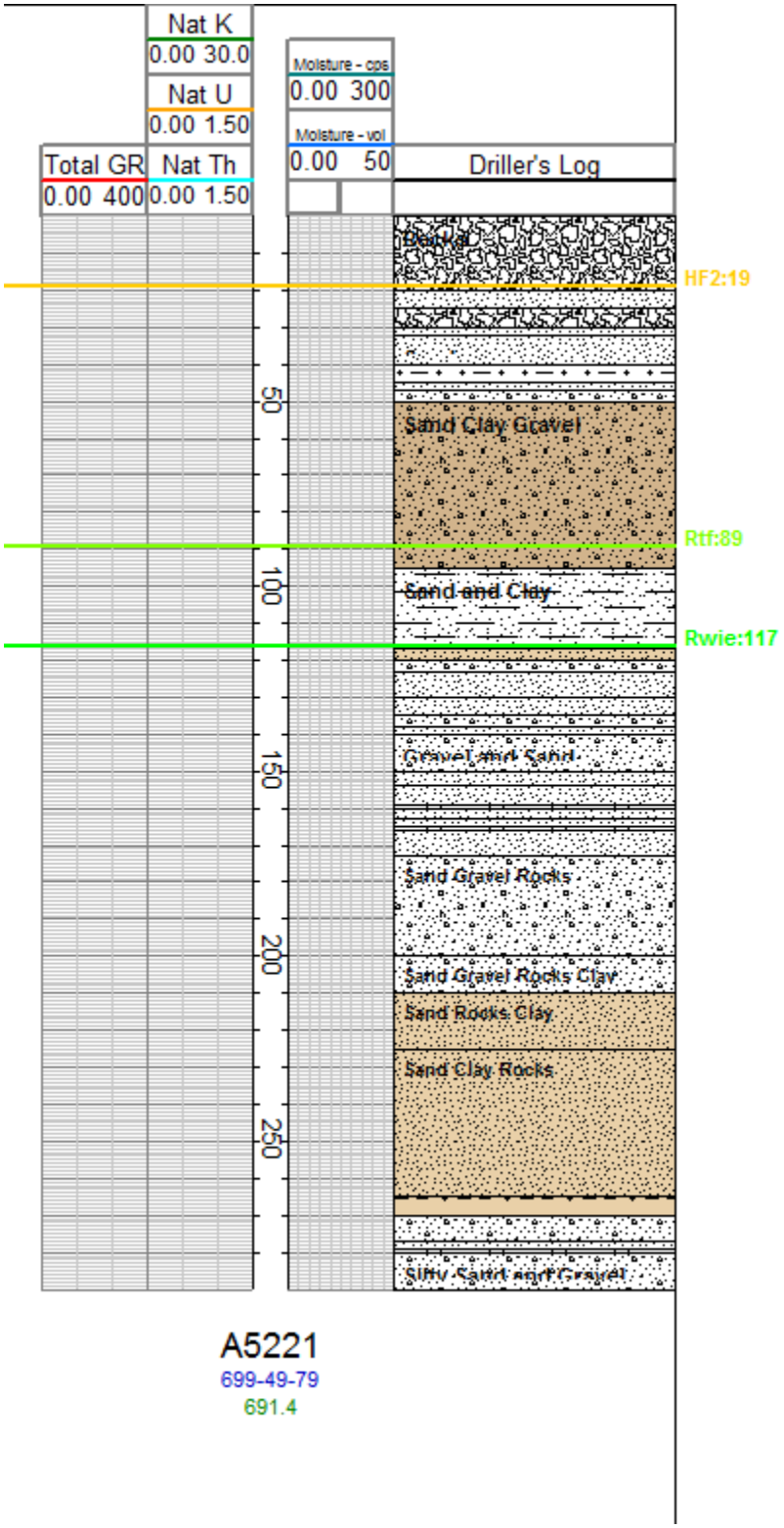

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:5
Sand and Gravel
Sand and Silt
HF2:55
Sand Silt Clay
Sand and Silt
Rtf:245
Sand and Silt
Sand Clay Silt
Rwie:324
Gravel Sand Silt
Gravel and Sand
50
100
150
200
250
300
350
A5144
699-36-61A
750.0

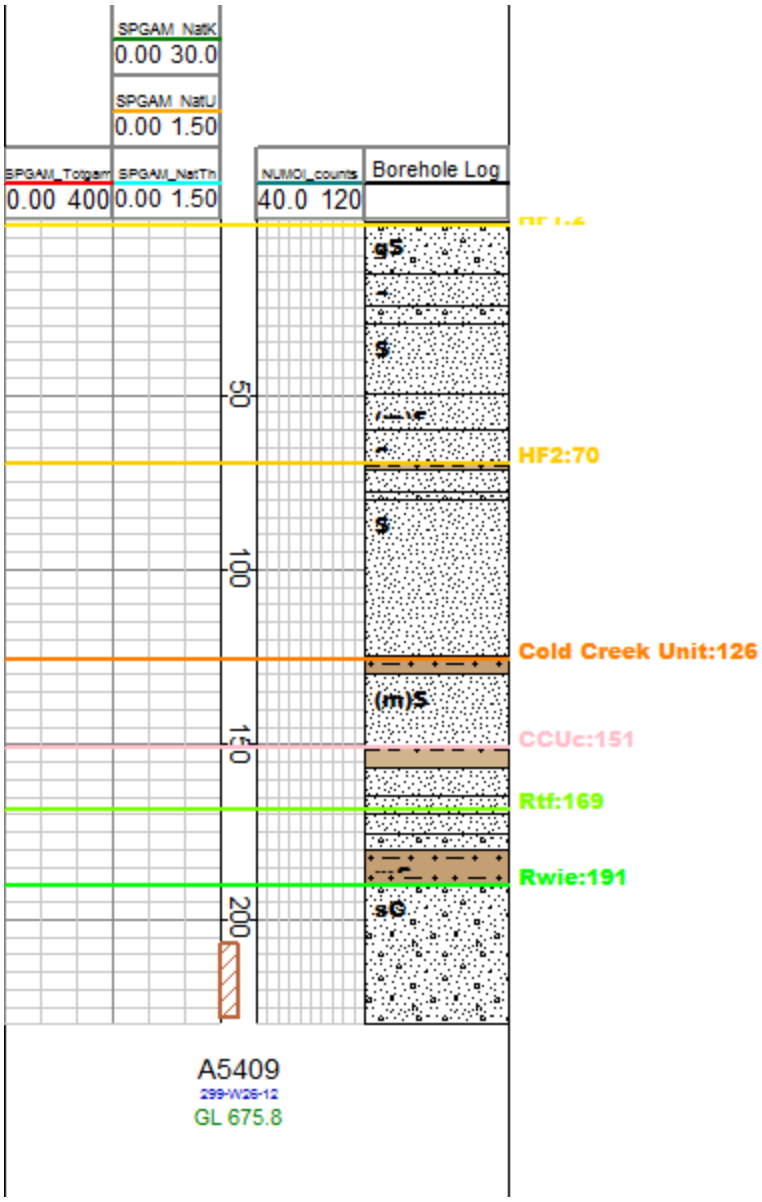

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:35
50
100
150
200
250
300
350
400
Sand and...
Sand Silt ...
Sand Gra...
Sand and...
Sand and...
Sand Silt ...
Sand Silt ...
Sand Silt ...
Clay and ...
Blue Clay ...
A5147
699-37-82A
GL 637.9

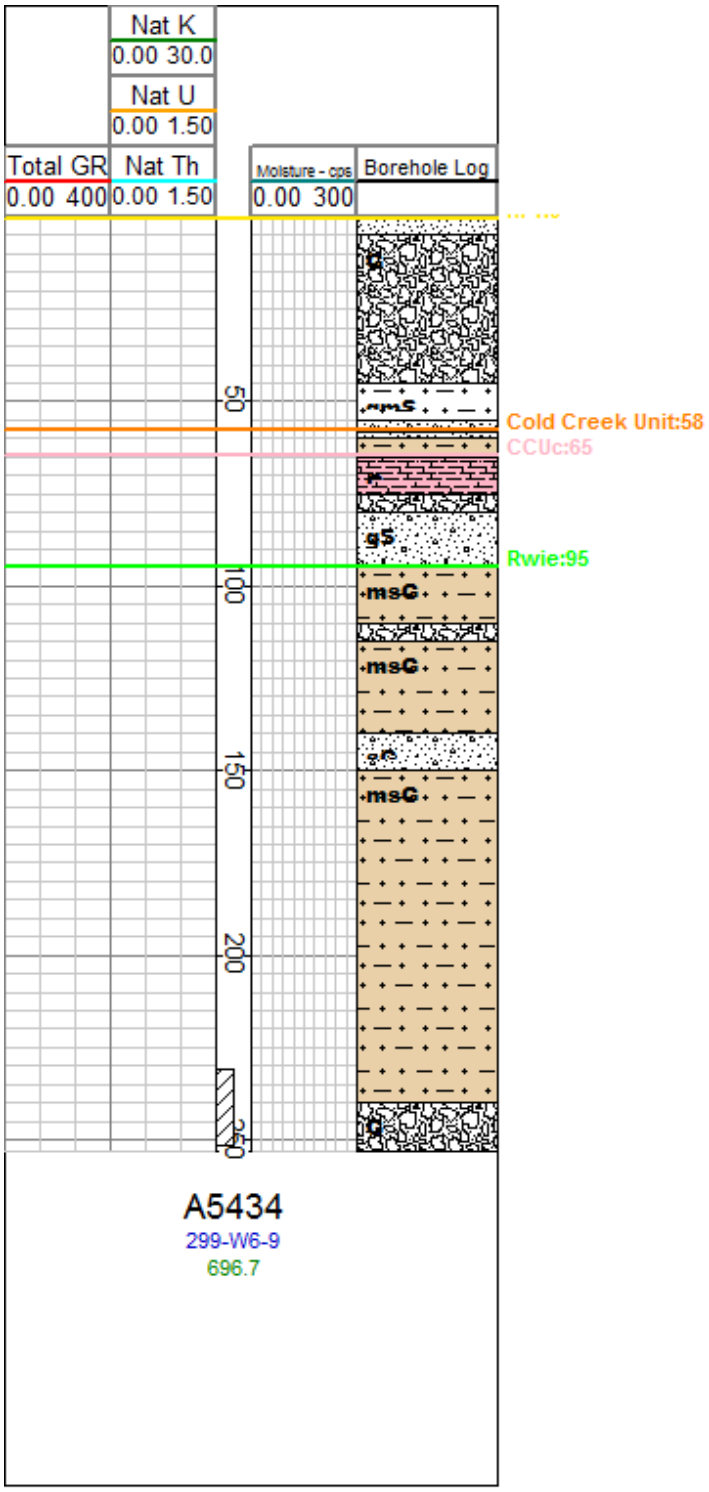

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:40
Sand and...
Sand and...
Silt Sand ...
Rlm:374
50
100
150
200
250
300
350
A5158
699-40-62
750.9
50 ft

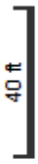

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:9
HF2:70
Sand
Sand and...
Coarse S...
Sand
Rwie:270
Gravel
Rlm:317
Rwia:334
Gravel an...
Gravel
Basalt:441
50
100
150
200
250
300
350
400
450
A5188
699-44-64
726.7
60 ft

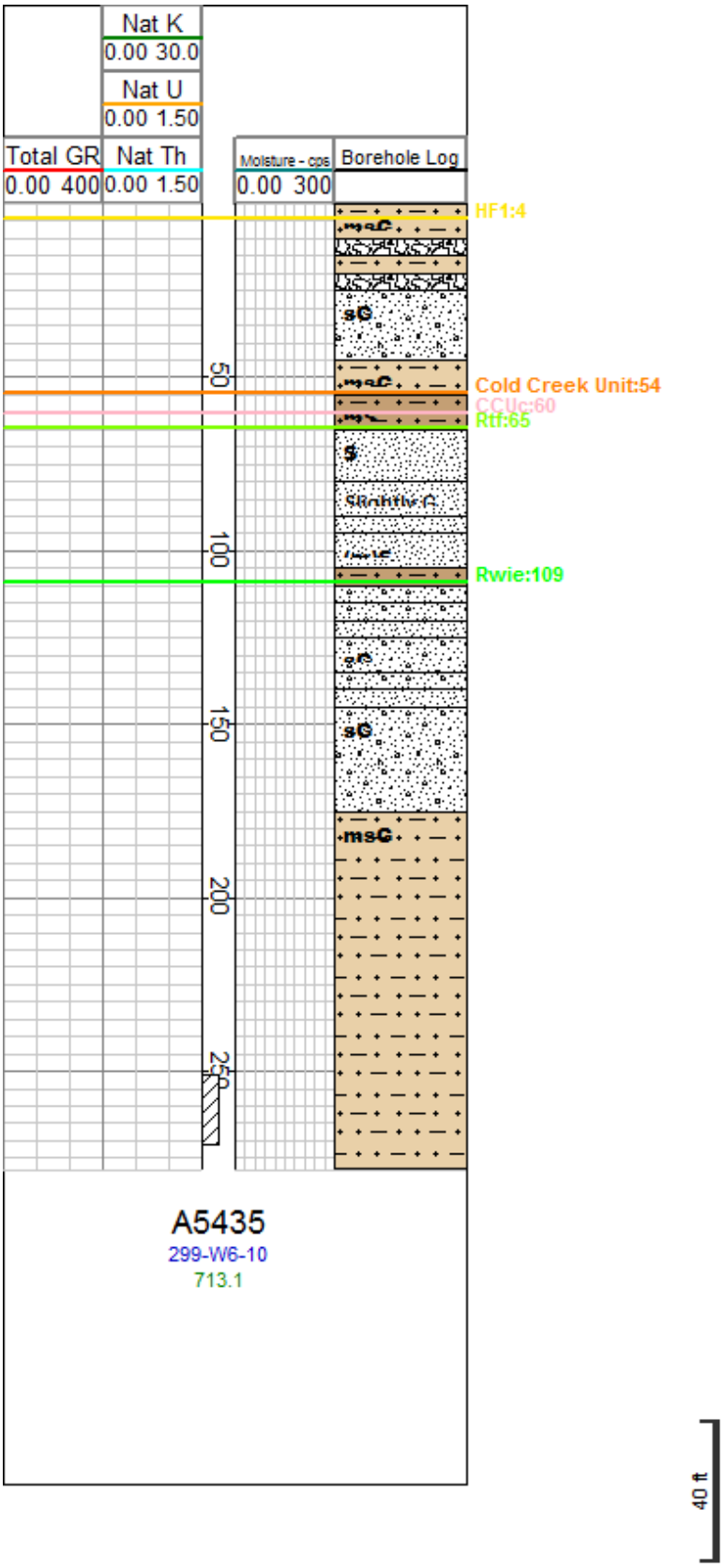

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF1:5
HF2:48
50
100
150
200
250
Gravel Sa...
Gravel Sa...
Basalt Gr...
Basalt Gr...
Cold Creek Unit:210
Sand and...
Rwia:226
Gravel Sa...
Basalt:284
A5202
699-47-60
GL 652.3

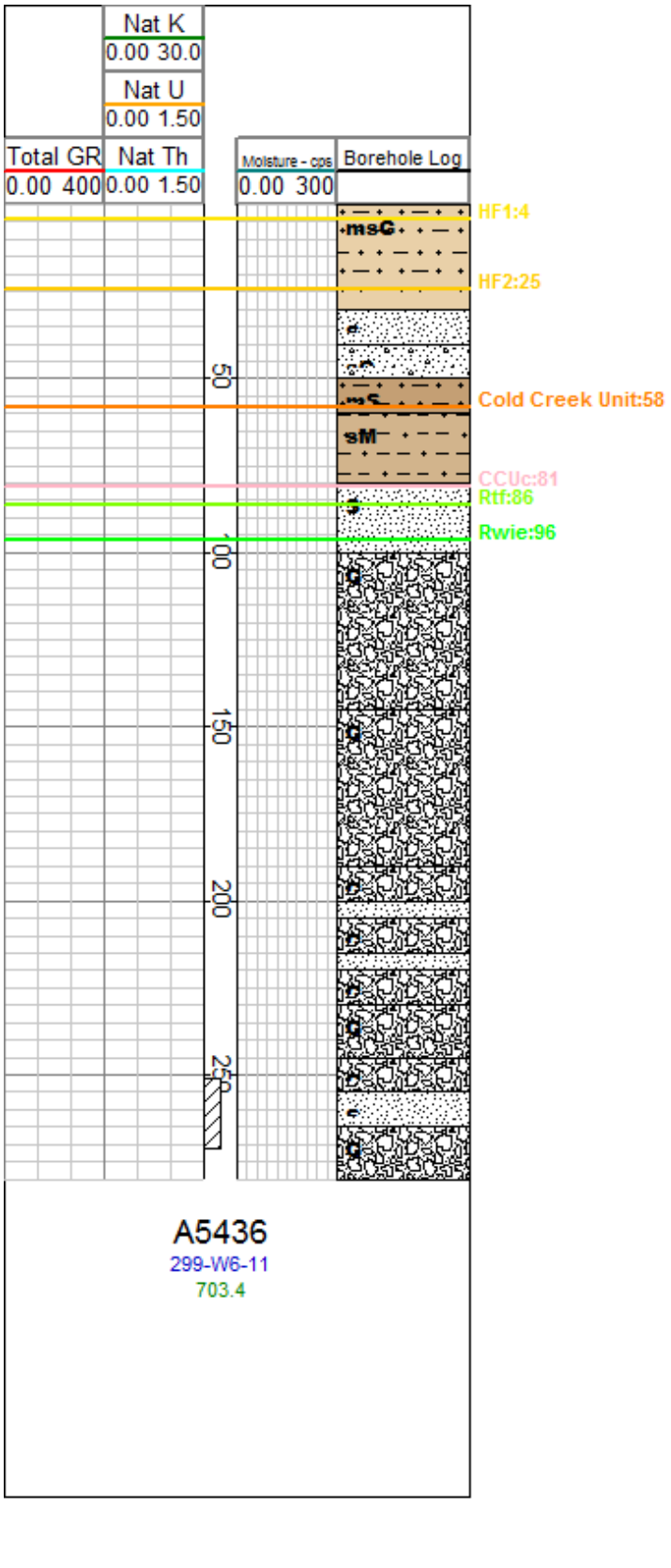

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF2:19
Sand Clay Gravel
Rtf:89
Sand and Clay
Rwie:117
Gravel and Sand
Sand Gravel Rocks
Sand Gravel Rocks Clay
Sand Rocks Clay
Sand Clay Rocks
Silty Sand and Gravel
50
100
150
200
250
A5221
699-49-79
691.4

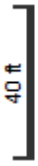

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
HF2:70
Cold Creek Unit:126
CCUc:151
Rtf:169
Rwie:191
A5409
GL 675.8

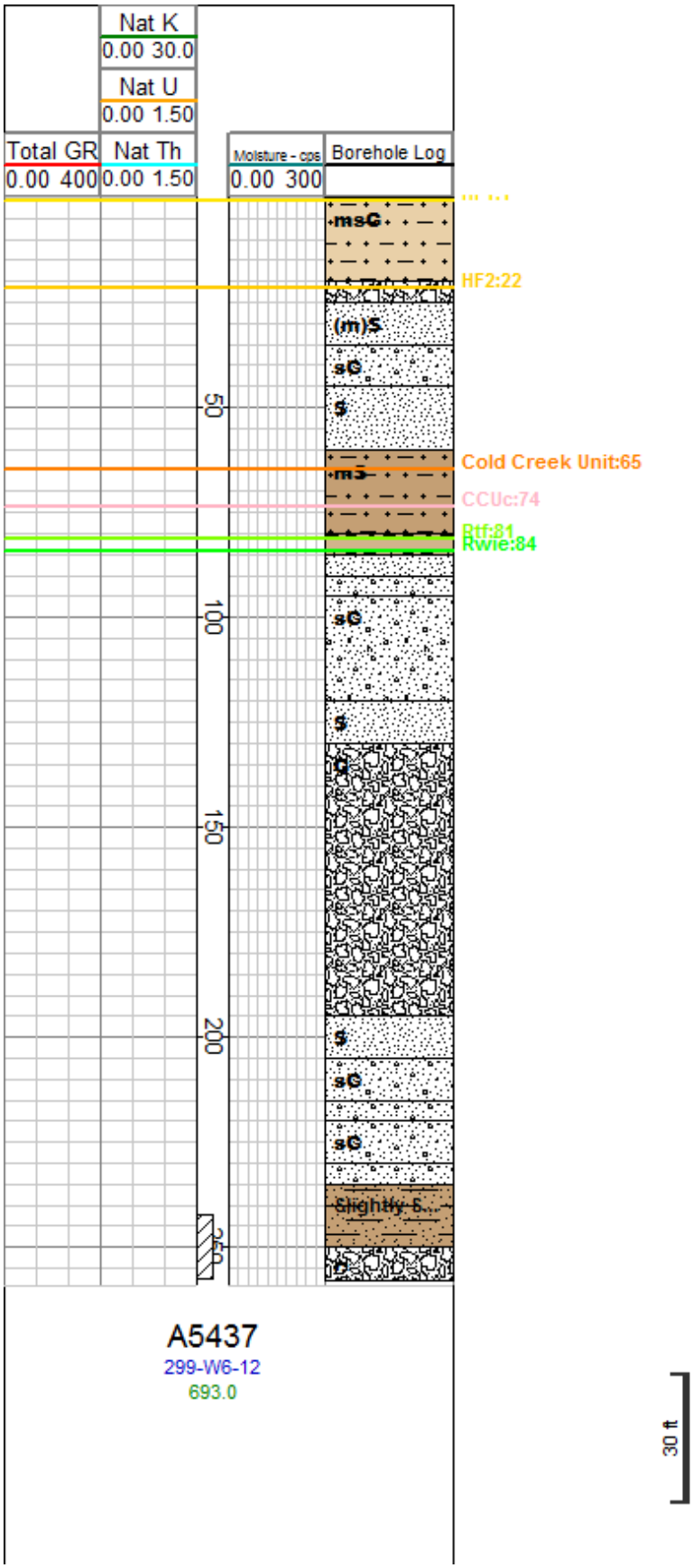

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
Cold Creek Unit:58
CCUc:65
Rwie:95
msS
gS
msG
msG
msG
A5434
299-W6-9
696.7

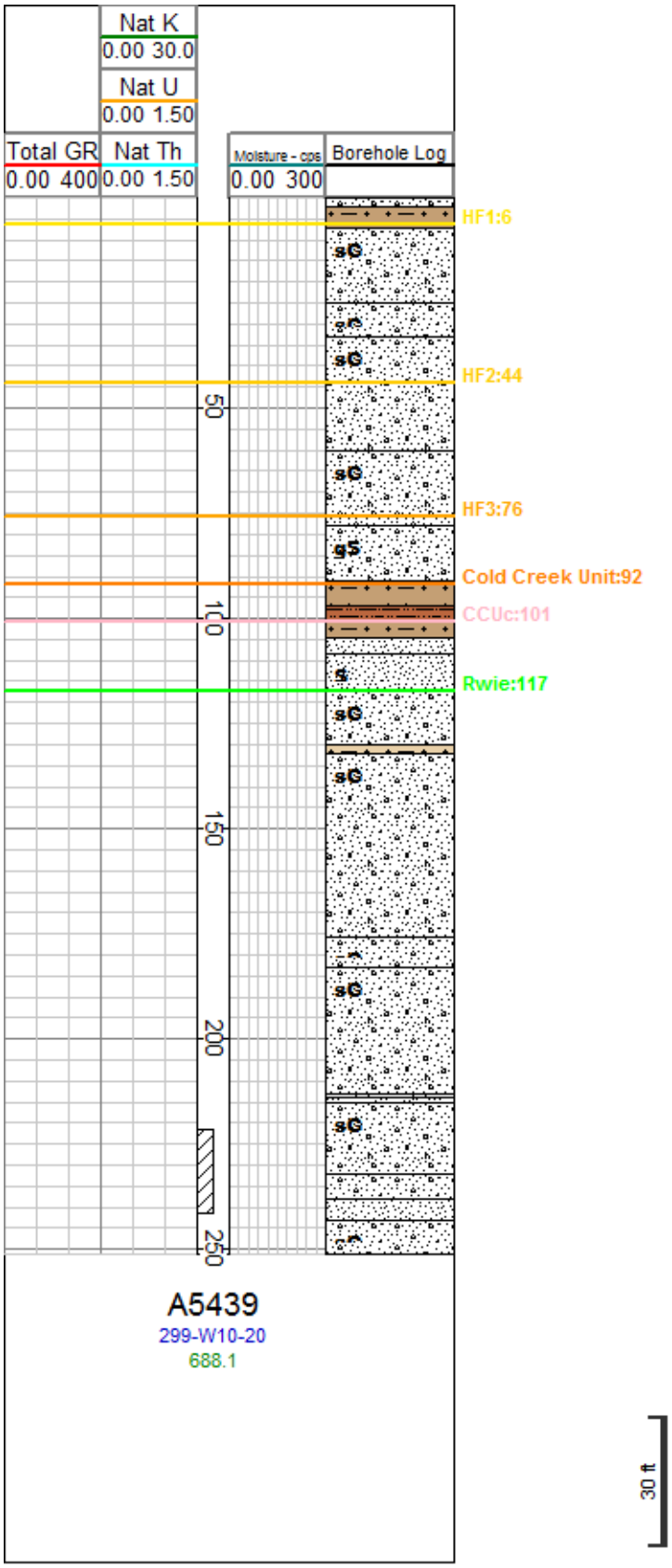

40 ft

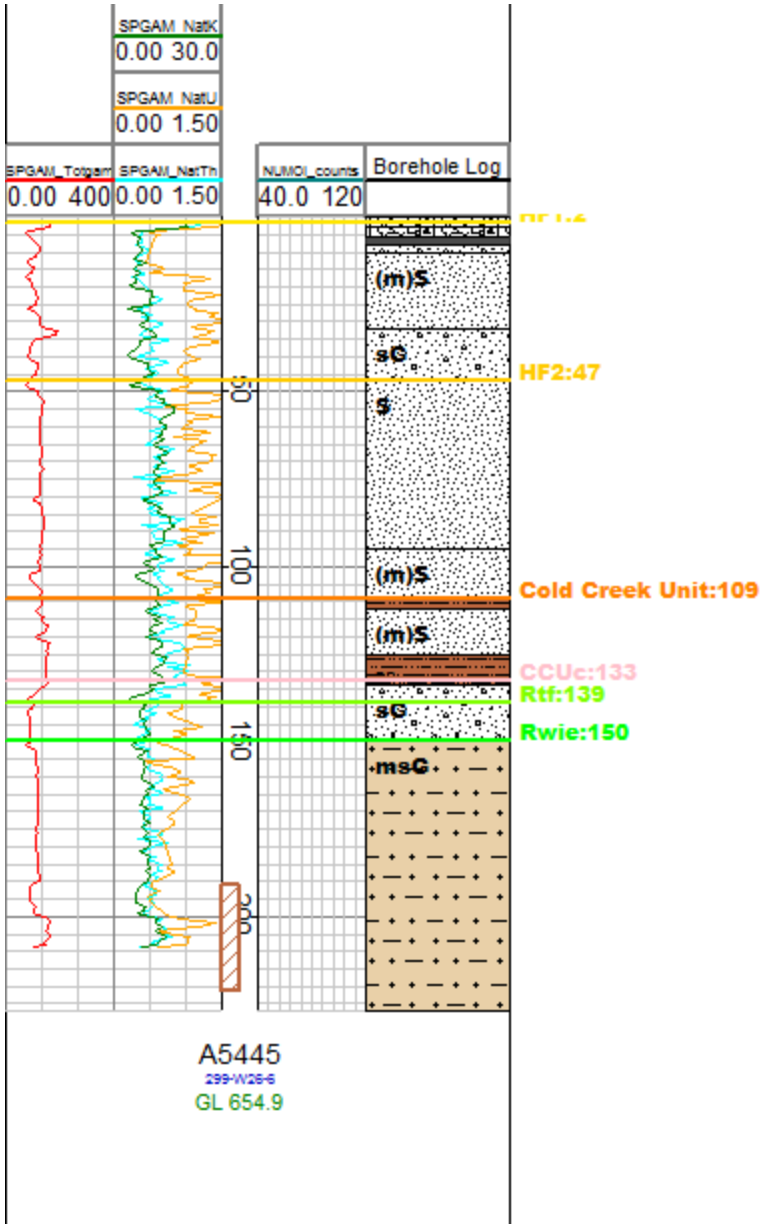

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:4
Cold Creek Unit:54
CCUc:60
Rtf:65
Rwie:109
50
100
150
200
250
msC
sG
S
A5435
299-W6-10
713.1
40 ft

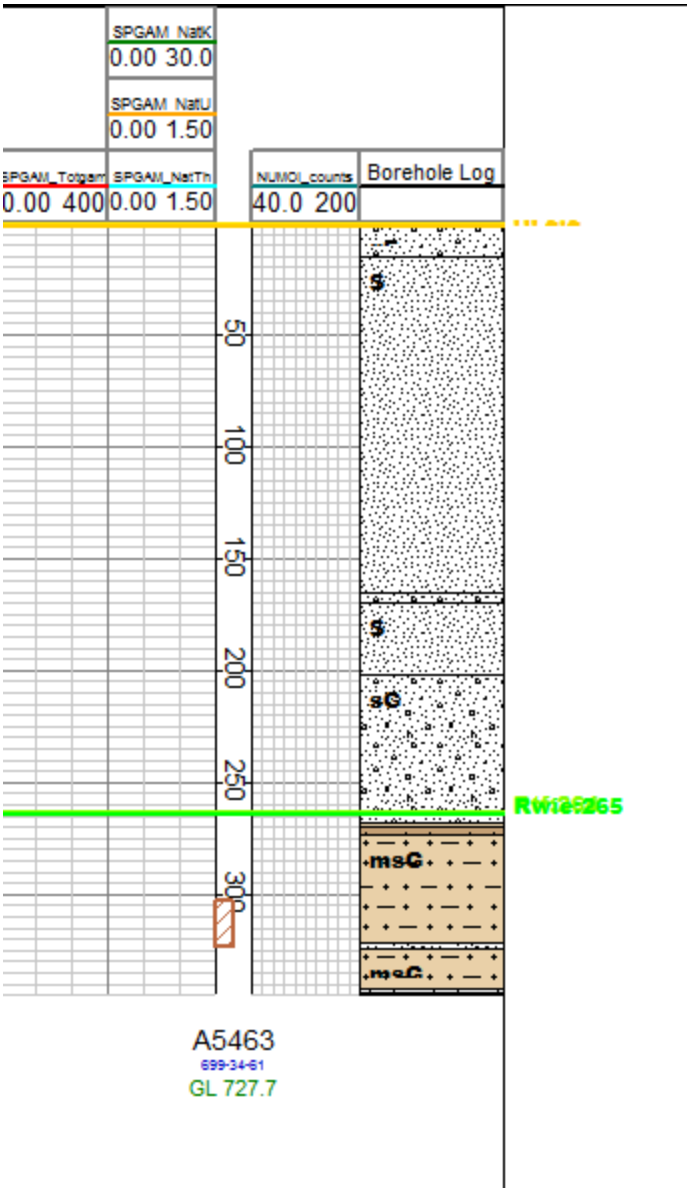

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:4
HF2:25
Cold Creek Unit:58
CCUc:81
Rtf:86
Rwie:96
50
100
150
200
250
msG
sM
A5436
299-W6-11
703.4

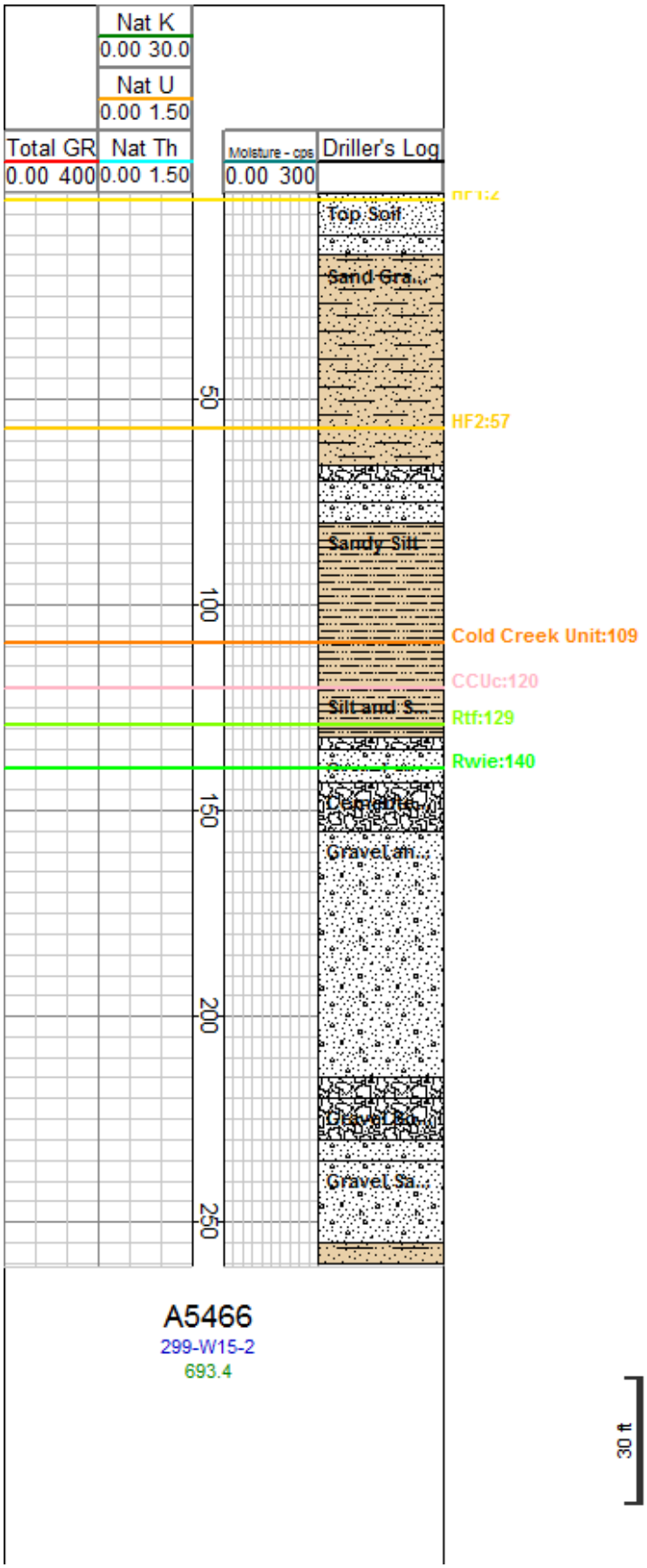

40 ft

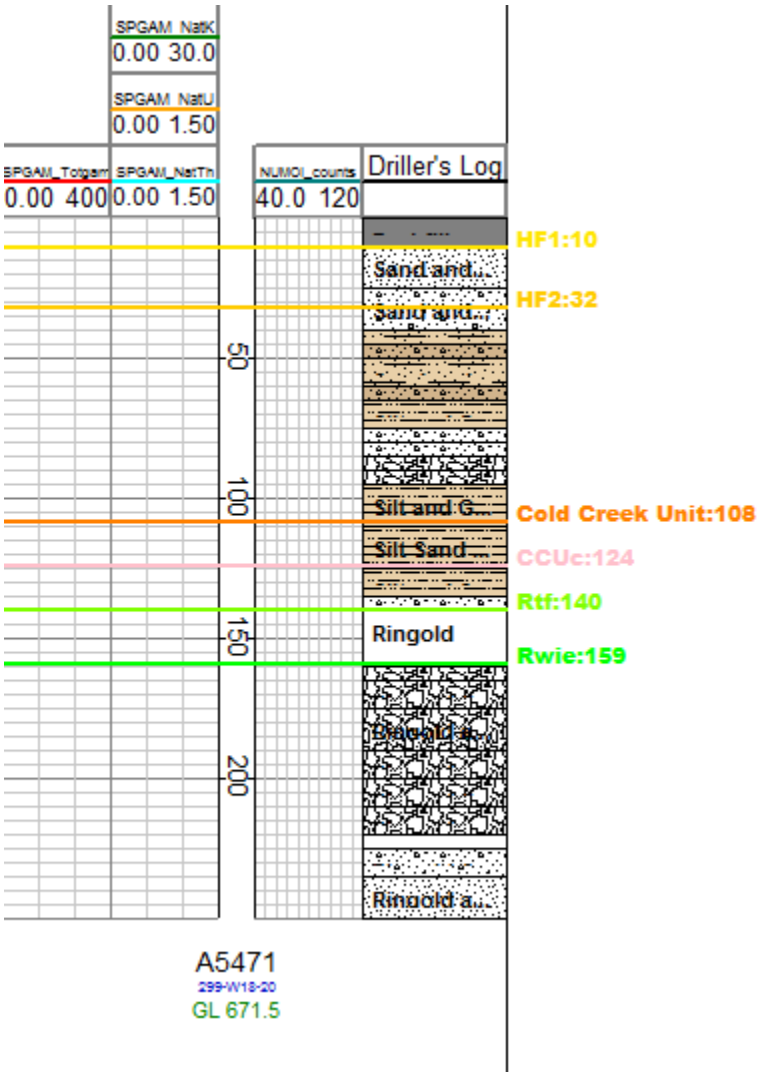

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
msG
HF2:22
(m)S
sG
S
Cold Creek Unit:65
mS
CCUc:74
Rtf:81
Rwie:84
sG
S
G
S
sG
sG
Slightly S...
50
100
150
200
250
A5437
299-W6-12
693.0
30 ft

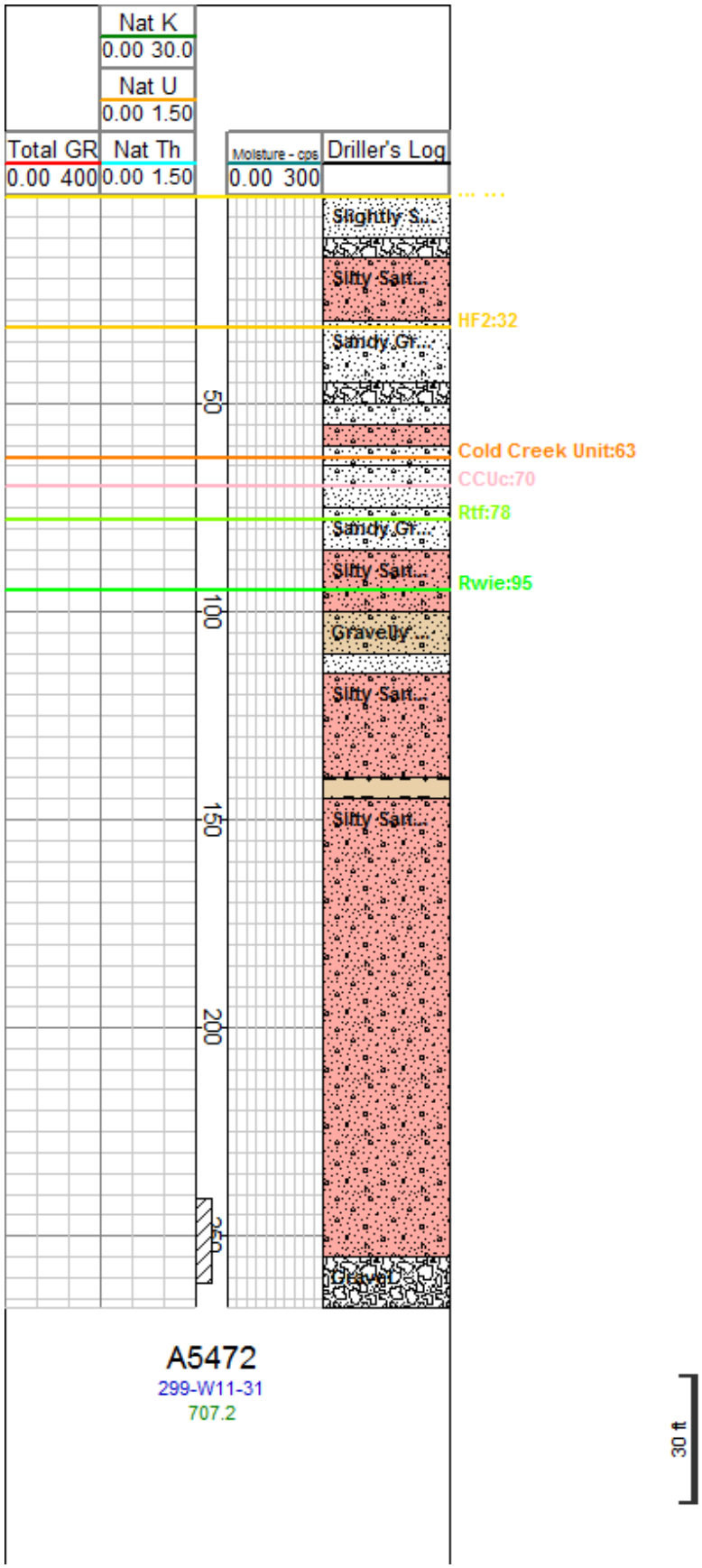

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:6
HF2:44
HF3:76
Cold Creek Unit:92
CCUc:101
Rwie:117
50
100
150
200
250
A5439
299-W10-20
688.1
30 ft

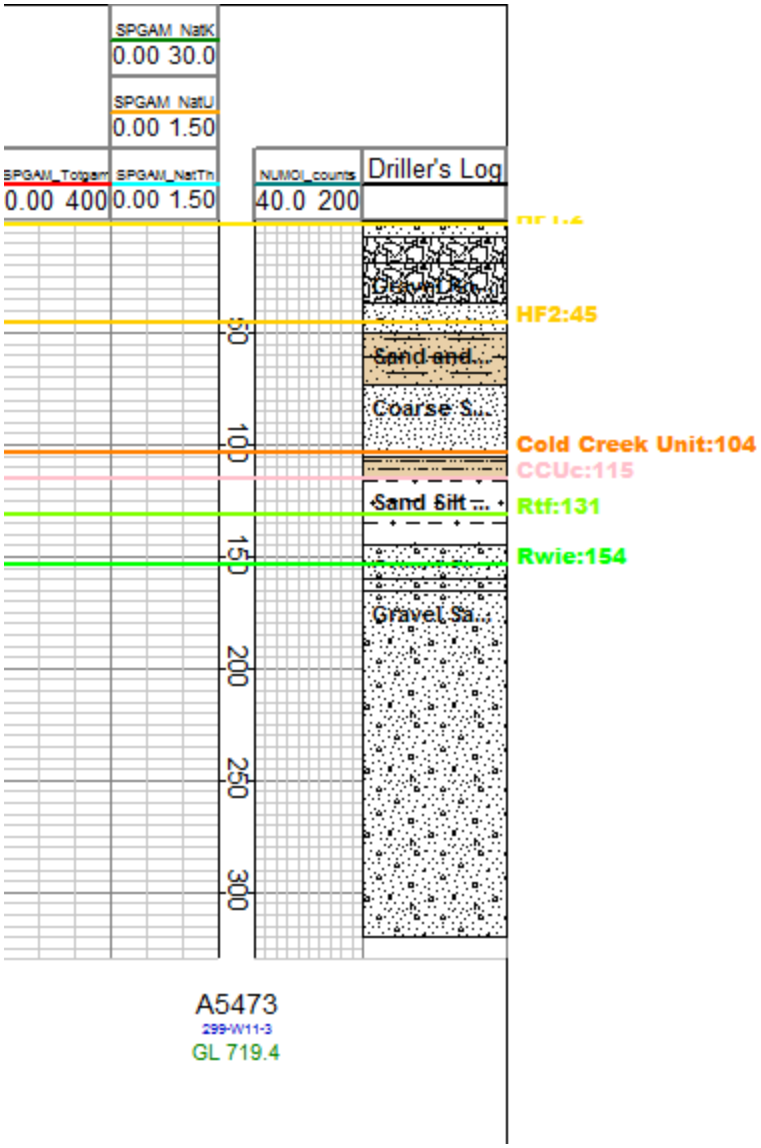

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
(m)S
sG
S
(m)S
(m)S
sG
msG
HF2:47
Cold Creek Unit:109
CCUc:133
Rtf:139
Rwie:150
50
100
150
200
A5445
299-W26-6
GL 654.9


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
50
100
150
200
250
300
S
S
SG
msG
msG
A5463
699-34-61
GL 727.7


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Top Soil
Sand Gra...
Sandy Silt
Silt and S...
Gravel Lan...
Gravel Sa...
50
100
150
200
250
HF2:57
Cold Creek Unit:109
CCUc:120
Rtf:129
Rwie:140
A5466
299-W15-2
693.4
30 ft


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:10
Sand and...
HF2:32
Sand and...
50
100
Silt and G...
Cold Creek Unit:108
Silt Sand ...
CCUc:124
Rtf:140
150
Ringold
Rwie:159
Ringold a...
200
Ringold a...
A5471
299-W18-20
GL 671.5


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Slightly S...
Silty Sand...
HF2:32
Sandy Gr...
Cold Creek Unit:63
CCUc:70
Rtf:78
Sandy Gr...
Silty Sand...
Rwie:95
Gravelly ...
Silty Sand...
Silty Sand...
Gravel
50
100
150
200
250
A5472
299-W11-31
707.2
30 ft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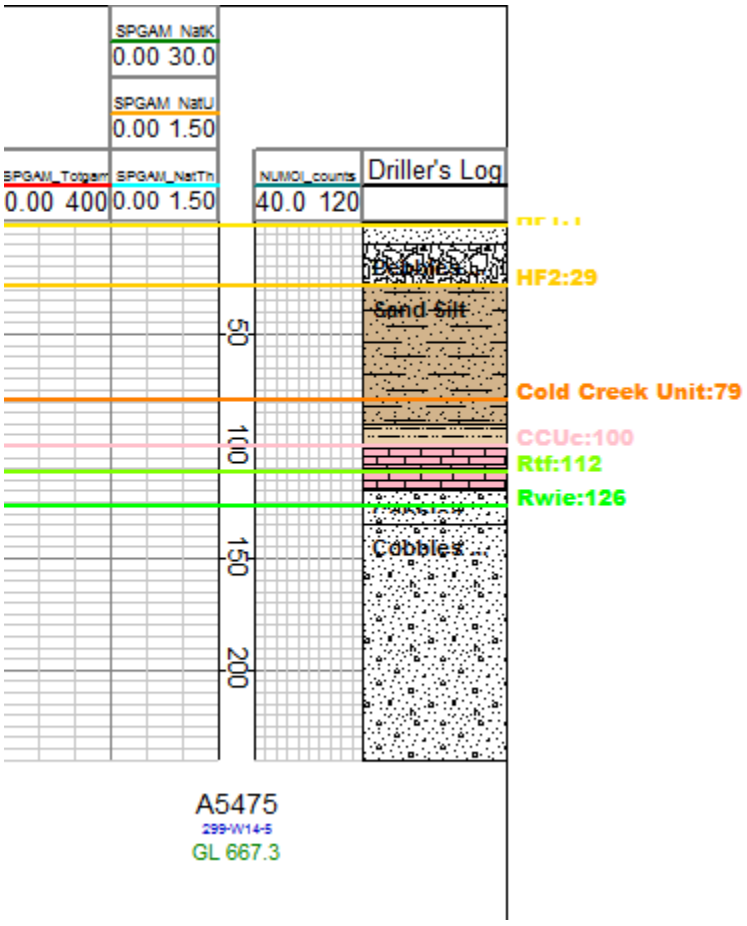
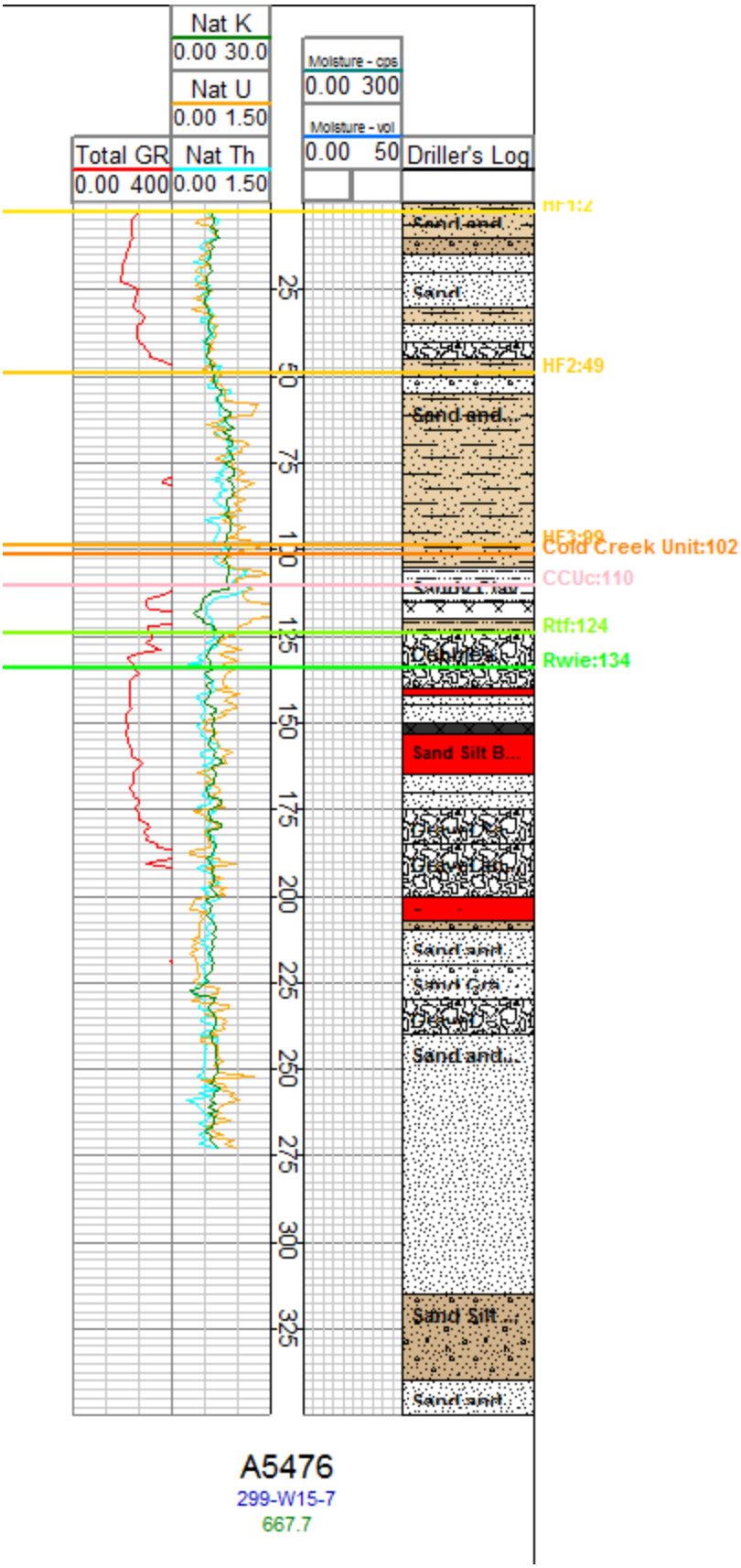
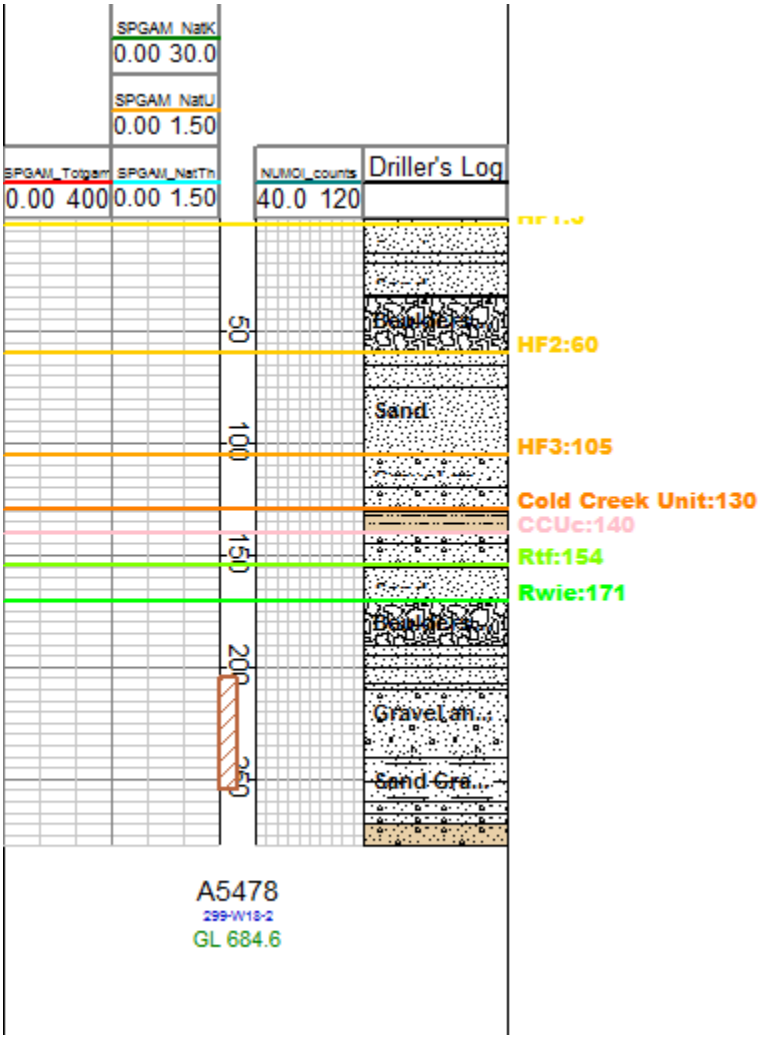
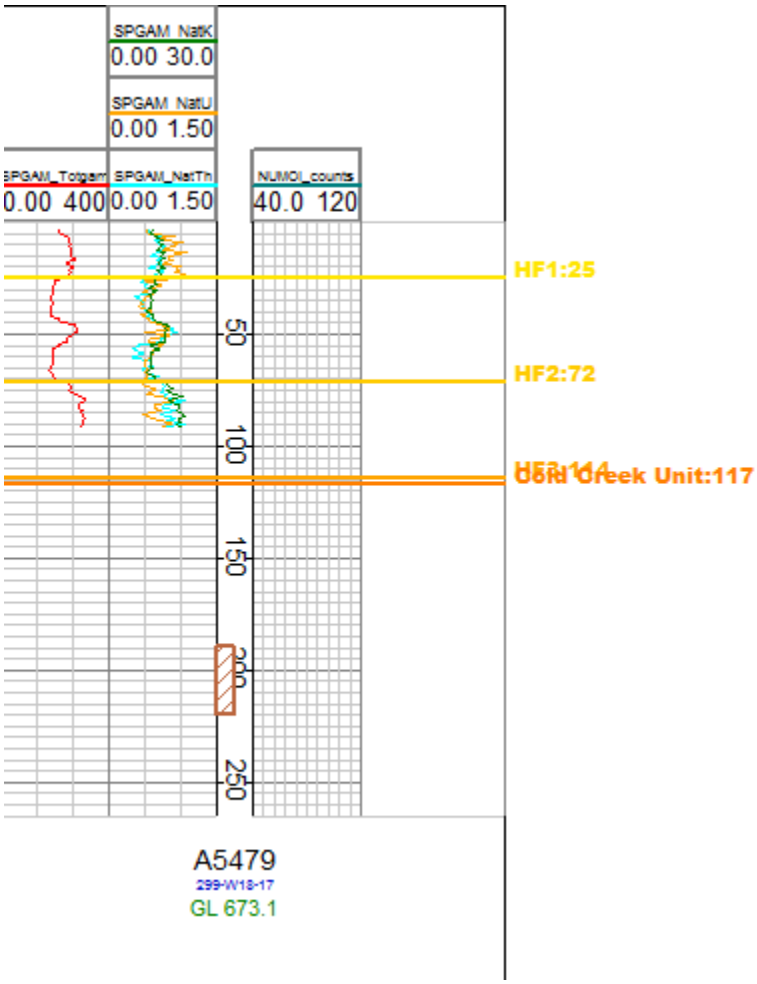
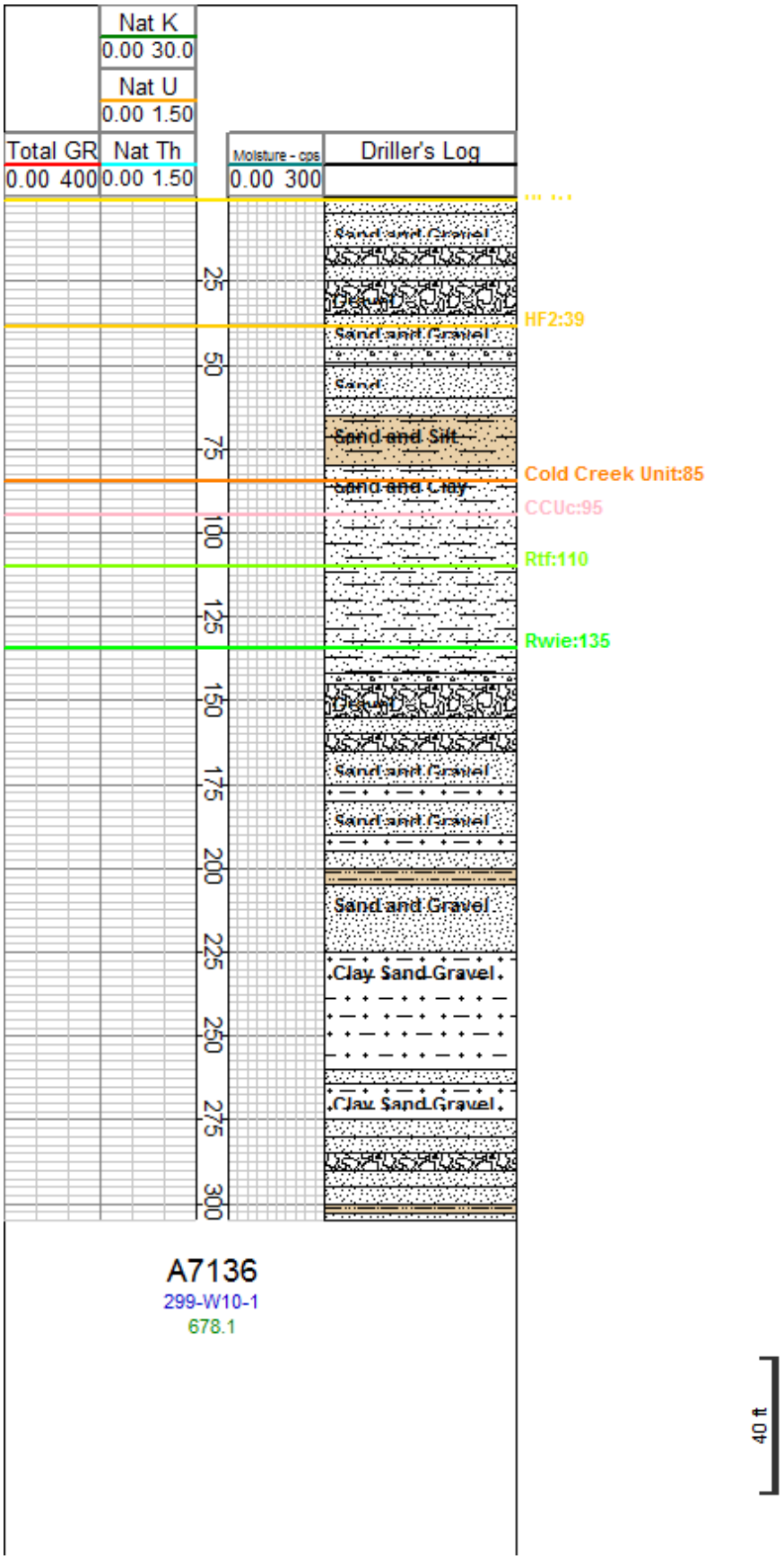
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF2:45
Sand and...
Coarse S...
Cold Creek Unit:104
CCUc:115
Sand Silt ...
Rtf:131
Rwie:154
Gravel Sa...
50
100
150
200
250
300
A5473
299-W11-3
GL 719.4

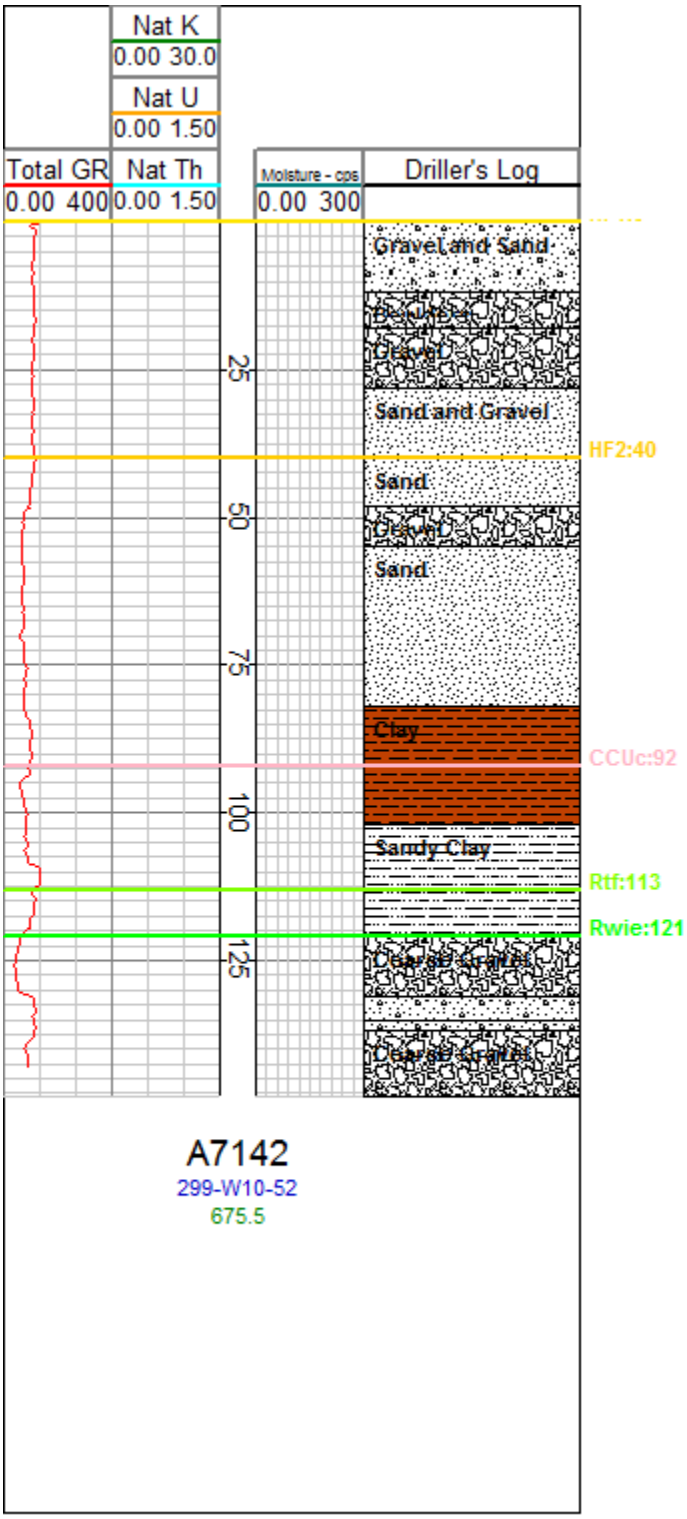

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:29
Sand Silt
Cold Creek Unit:79
CCUc:100
Rtf:112
Rwie:126
Cobbles
50
100
150
200
A5475
299-W14-5
GL 667.3


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
HF2:49
HF3:99
Cold Creek Unit:102
CCUc:110
Rtf:124
Rwie:134
Sand and...
Sand
Sand and...
Sand Silt B...
Sand and...
Sand Gra...
Sand and...
Sand Silt ...
Sand and...
25
50
75
100
125
150
175
200
225
250
275
300
325
A5476
299-W15-7
667.7

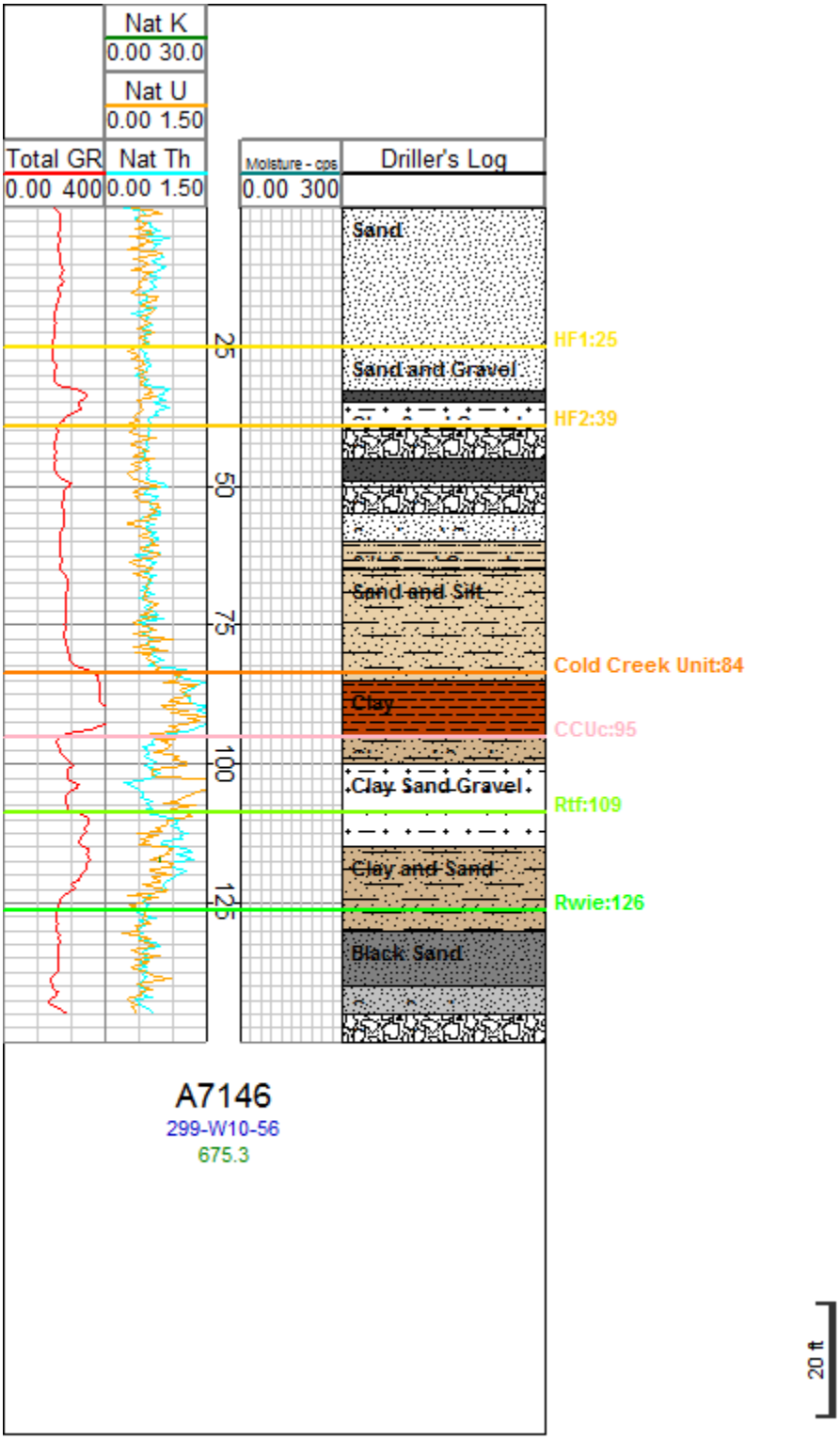

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
250
Sand
HF2:60
HF3:105
Cold Creek Unit:130
CCUc:140
Rtf:154
Rwie:171
A5478
299-W18-2
GL 684.6

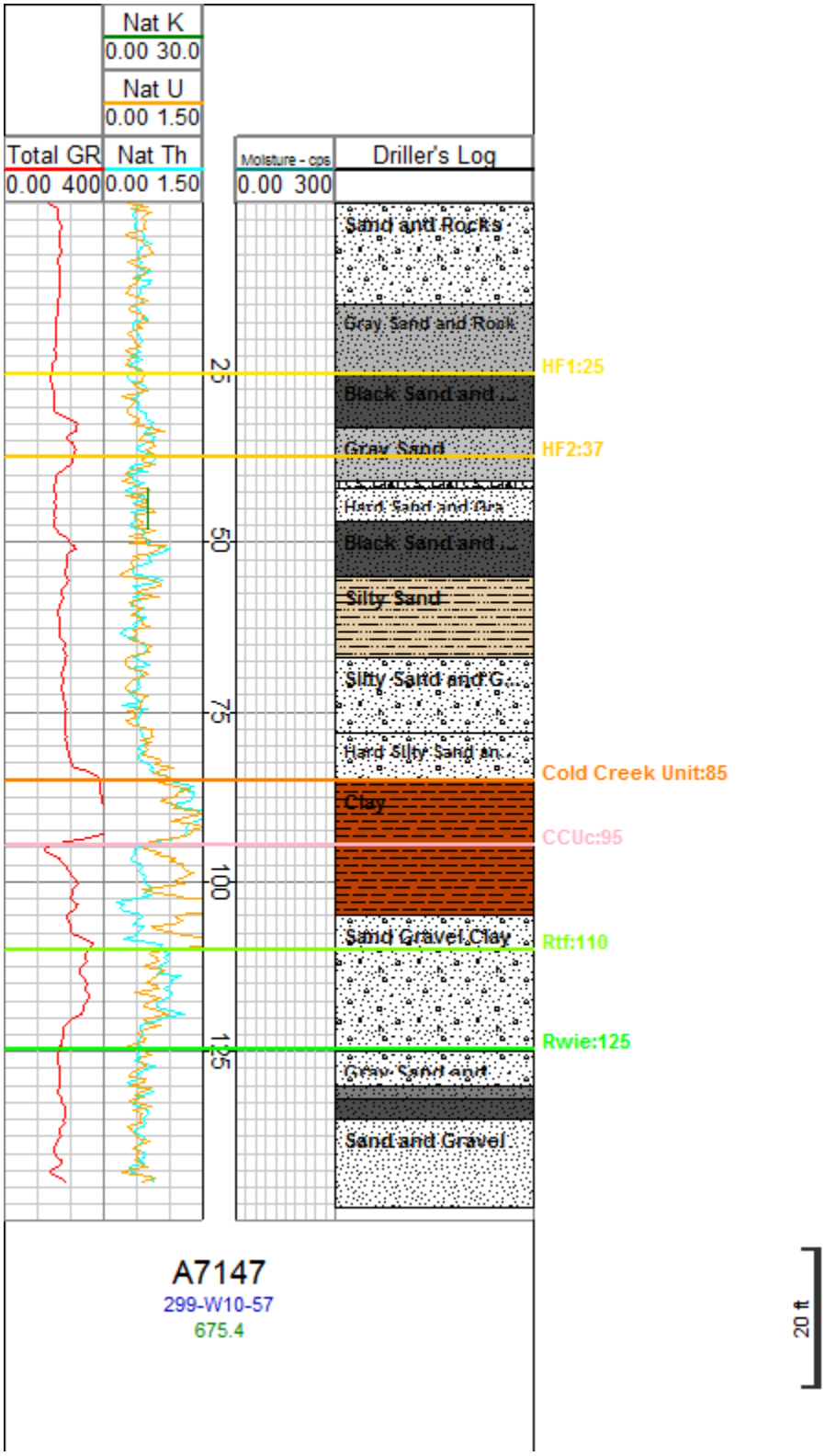

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 120
HF1:25
HF2:72
Cold Creek Unit:117
50
100
150
200
250
A5479
299-W18-17
GL 673.1

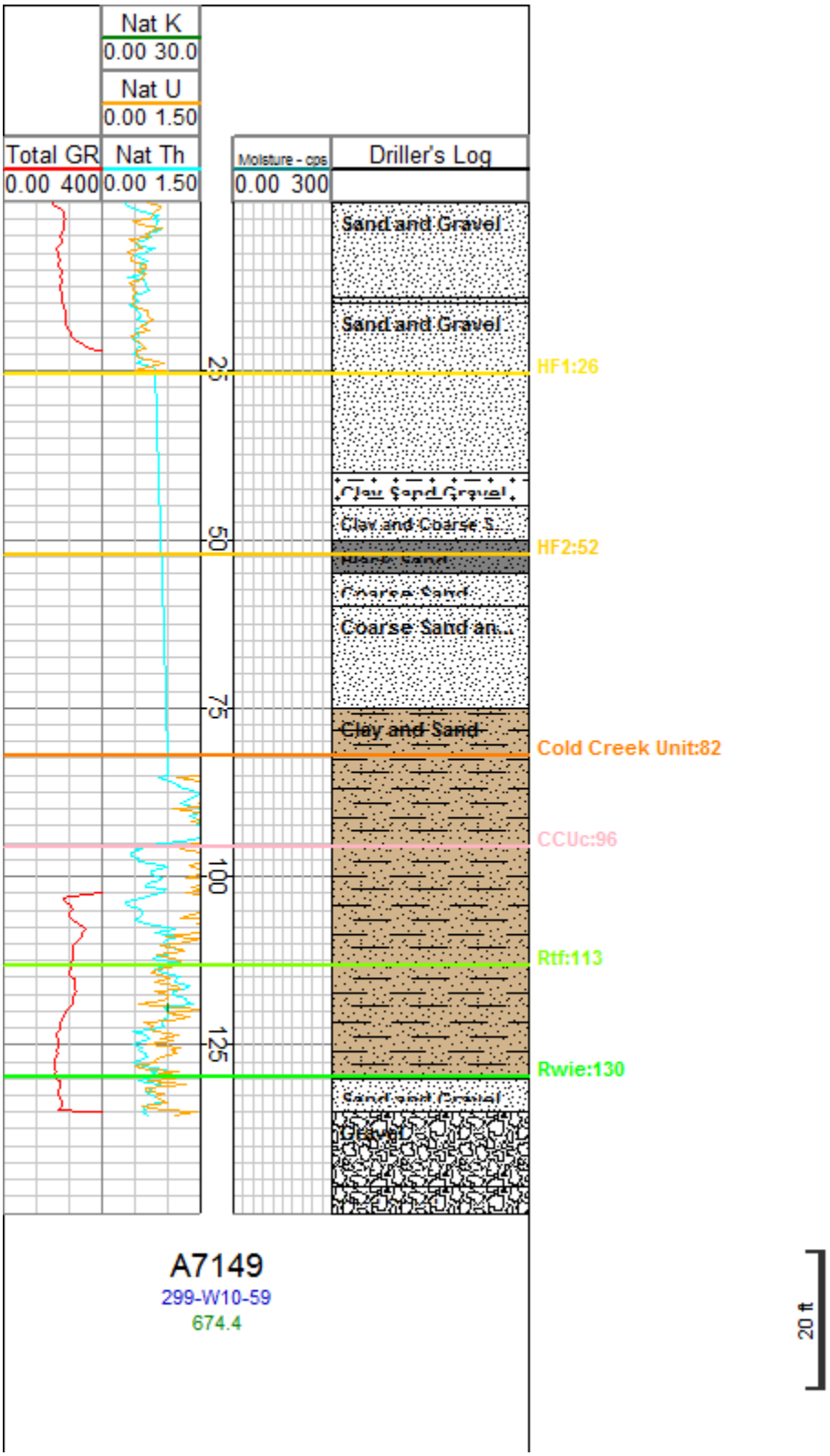

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
25
50
75
100
125
150
175
200
225
250
275
300
Sand and Gravel
Sand and Silt
Sand and Clay
Sand and Gravel
Clay Sand Gravel
HF2:39
Cold Creek Unit:85
CCUc:95
Rtf:110
Rwie:135
A7136
299-W10-1
678.1
40 ft

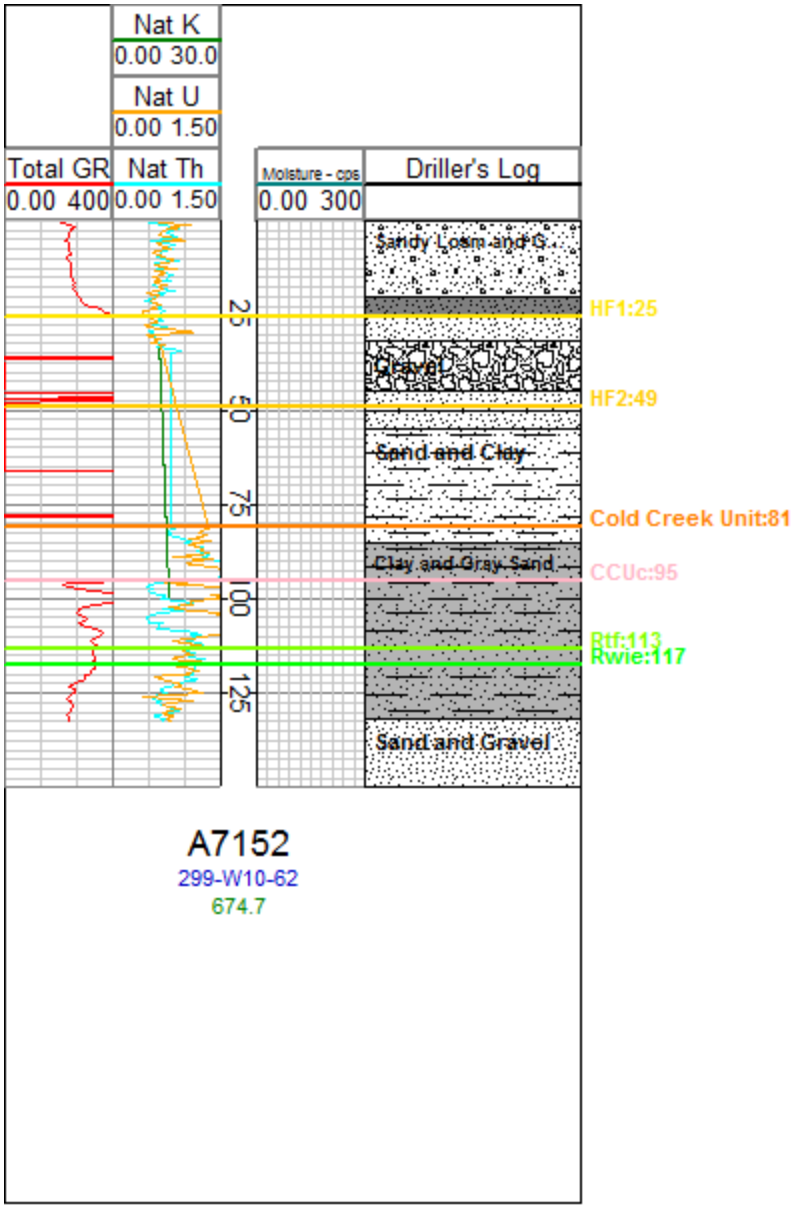

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
25
50
75
100
125
Gravel and Sand
Gravel
Sand and Gravel
HF2:40
Sand
Gravel
Sand
Clay
CCUc:92
Sandy Clay
Rtf:113
Rwie:121
Coarse Gravel
Coarse Gravel
A7142
299-W10-52
675.5

20 ft

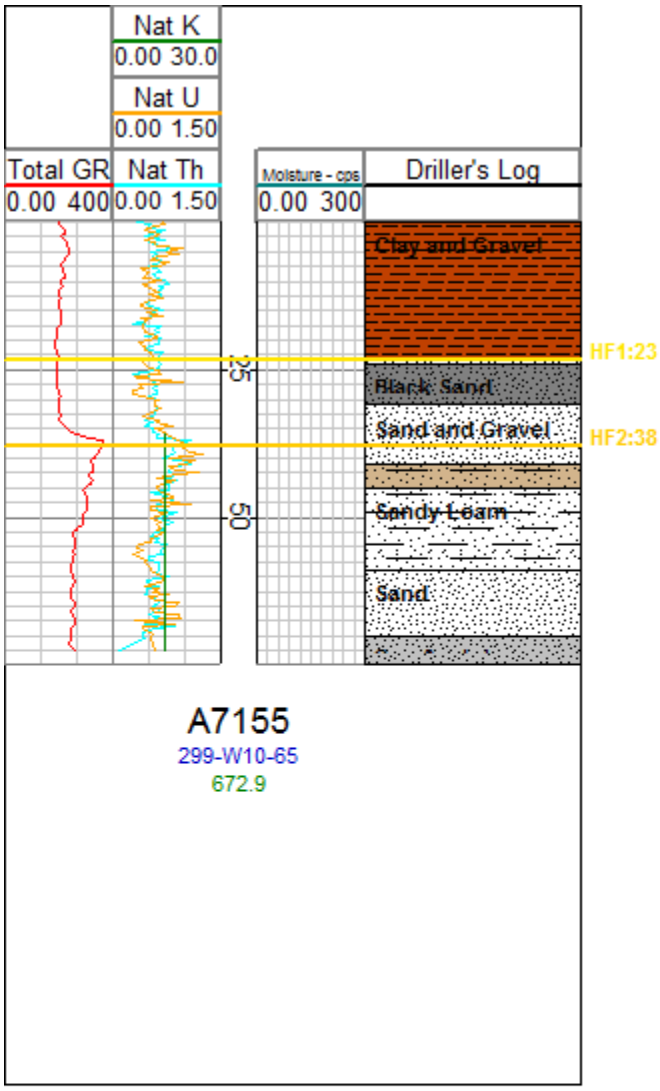

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand
Sand and Gravel
Sand and Silt
Clay
Clay Sand Gravel
Clay and Sand
Black Sand
25
50
75
100
125
HF1:25
HF2:39
Cold Creek Unit:84
CCUc:95
Rtf:109
Rwie:126
A7146
299-W10-56
675.3
20 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Rocks
Gray Sand and Rock
Black Sand and ...
Gray Sand
Hard Sand and Pea
Black Sand and ...
Silty Sand
Silty Sand and G...
Hard Silty Sand an...
Clay
Sand Gravel Clay
Gray Sand and
Sand and Gravel
25
50
75
100
125
HF1:25
HF2:37
Cold Creek Unit:85
CCUc:95
Rtf:110
Rwie:125
A7147
299-W10-57
675.4
20 ft

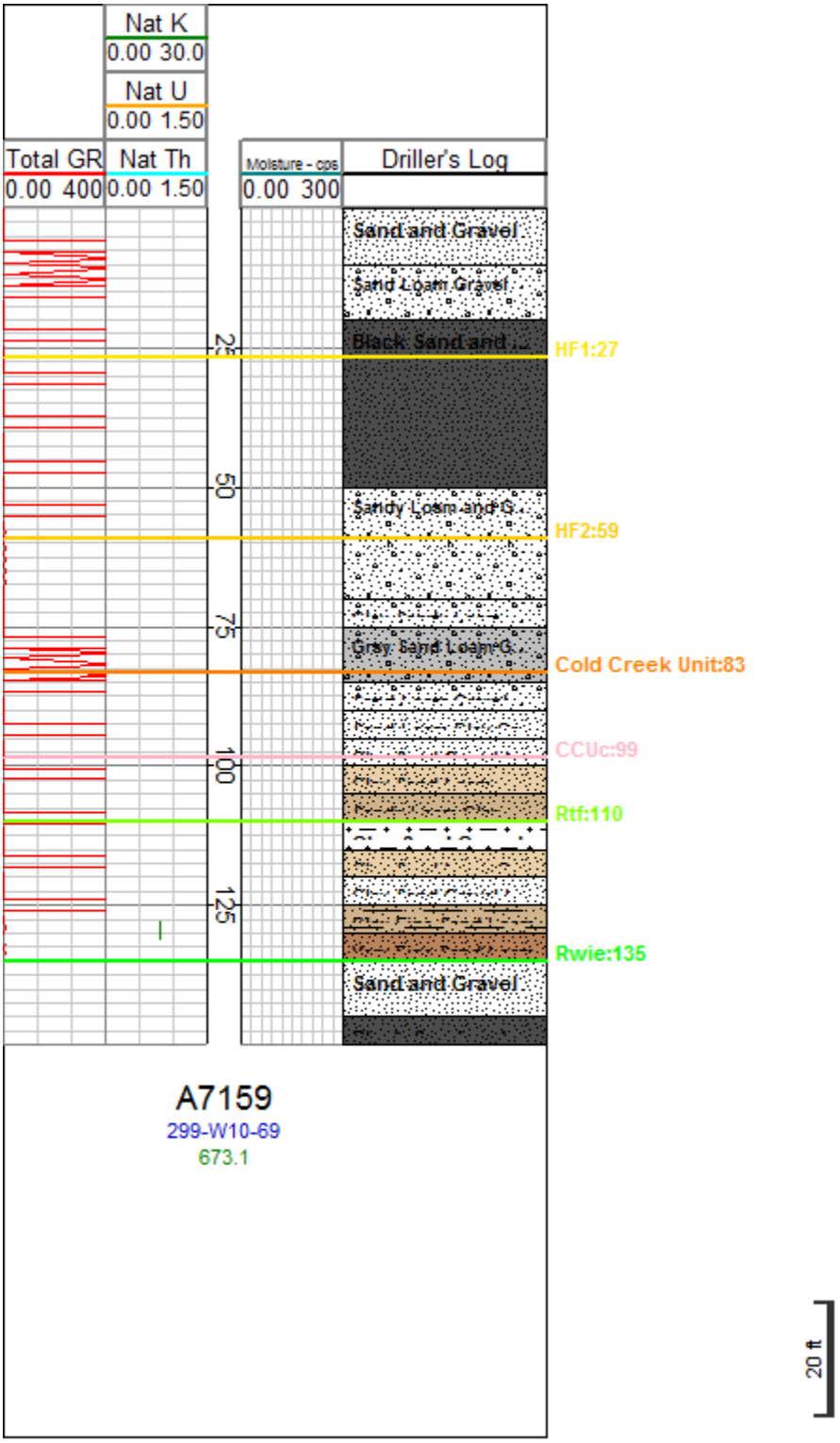

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Gravel
Sand and Gravel
HF1:26
Clay and Coarse S...
HF2:52
Coarse Sand an...
Clay and Sand
Cold Creek Unit:82
CCUc:96
Rtf:113
Rwie:130
Gravel
25
50
75
100
125
A7149
299-W10-59
674.4
20 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sandy Loam and G
Gravel
Sand and Clay
Clay and Gray Sand
Sand and Gravel
25
50
75
100
125
HF1:25
HF2:49
Cold Creek Unit:81
CCUc:95
Rtf:113
Rwie:117
A7152
299-W10-62
674.7

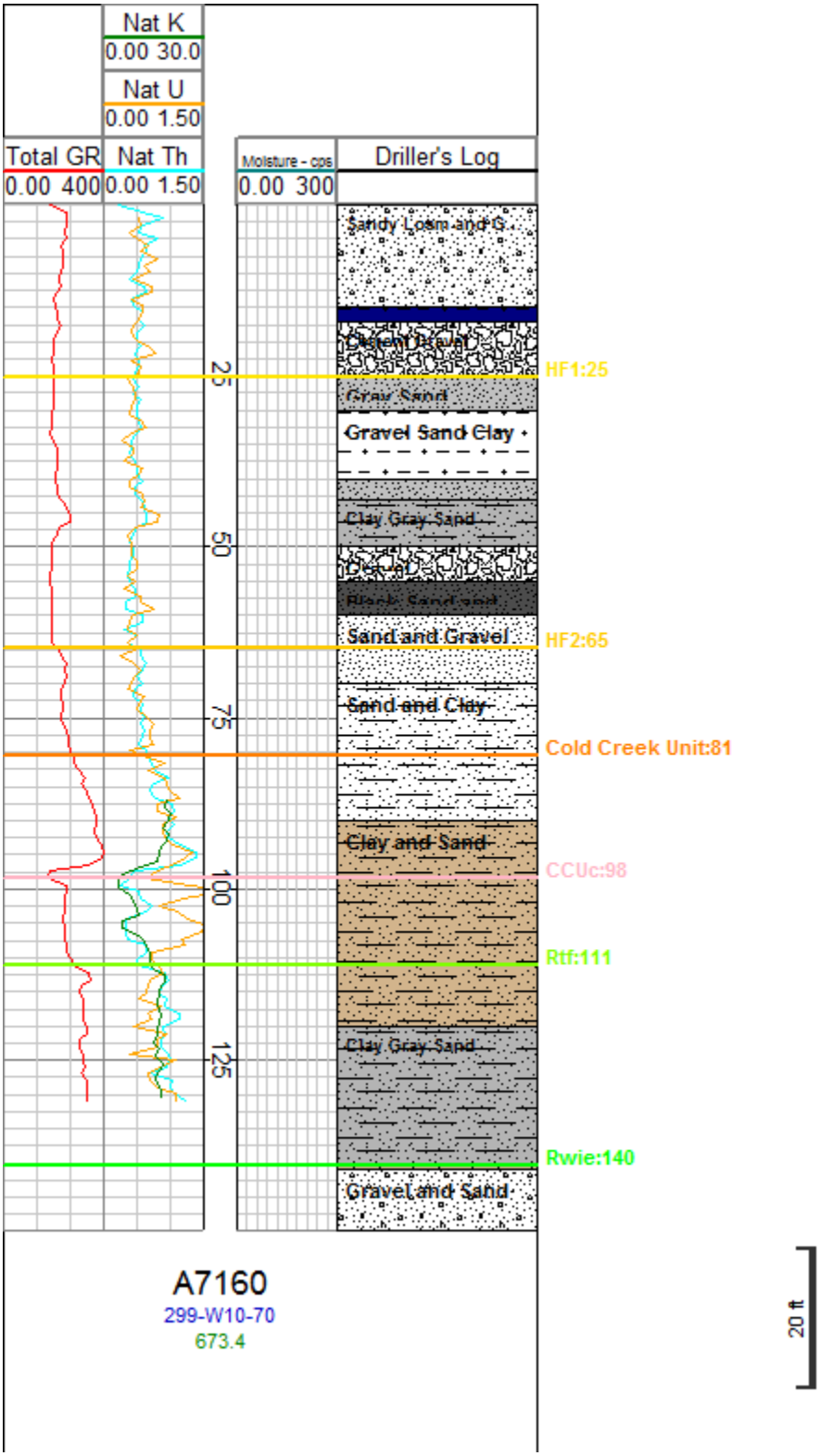
40 ft

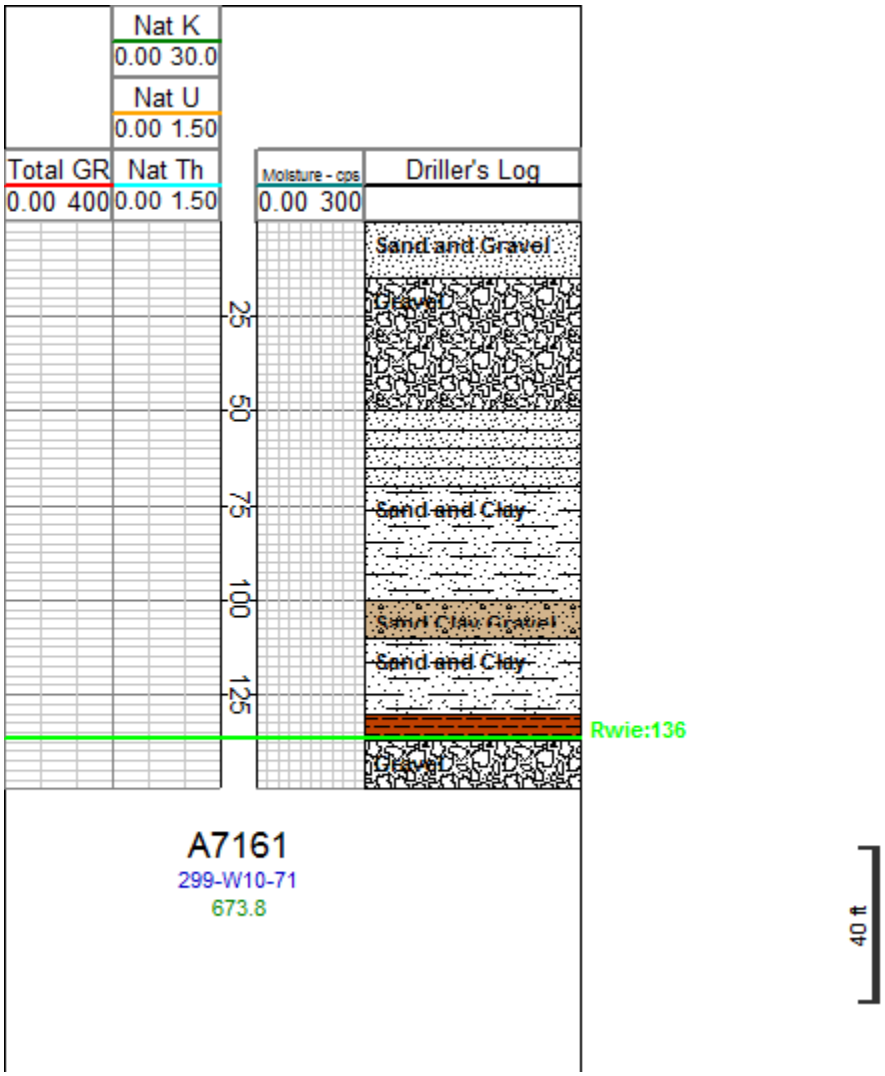

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Clay and Gravel
HF1:23
Black Sand
Sand and Gravel
HF2:38
Sandy Loam
Sand
35
50
A7155
299-W10-65
672.9

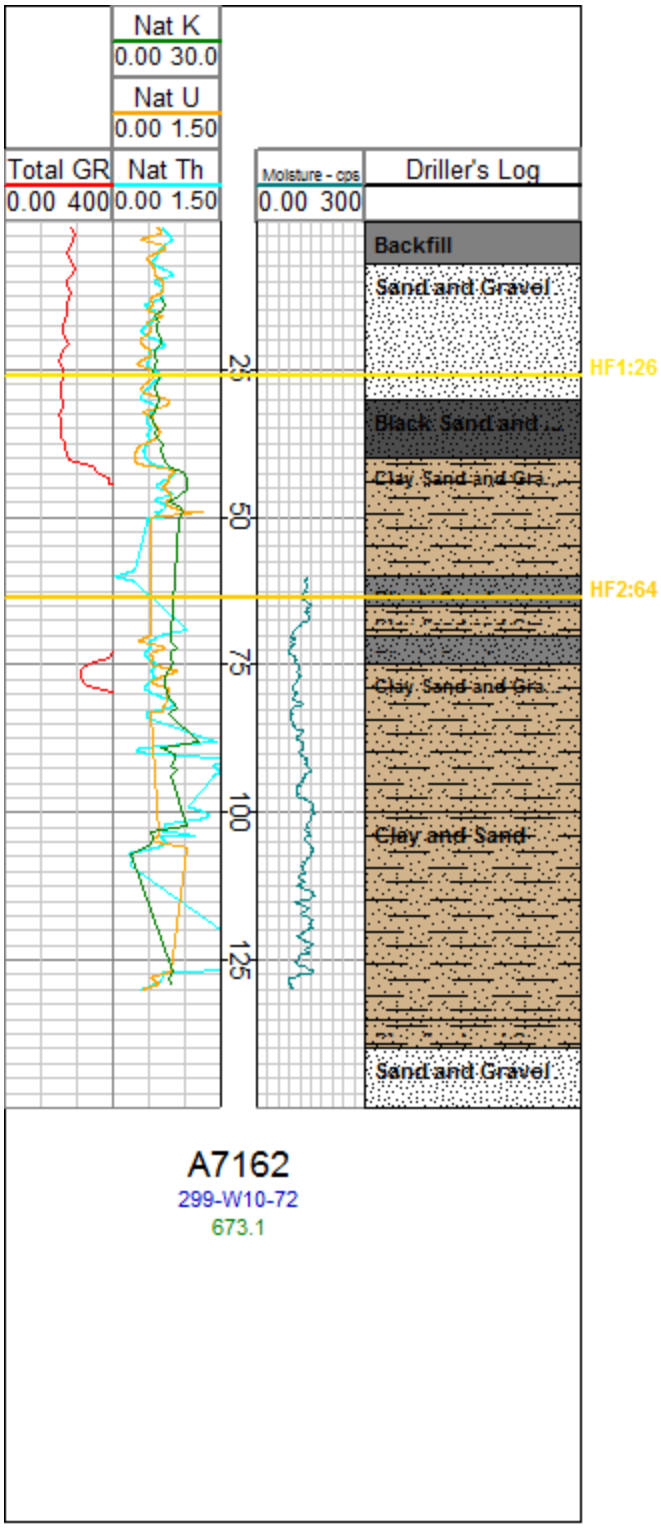
20 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Gravel
Sand Loam Gravel
Black Sand and ...
HF1:27
Sandy Loam and G...
HF2:59
Gray Sand Loam G...
Cold Creek Unit:83
CCUc:99
Rtf:110
Rwie:135
Sand and Gravel
25
50
75
100
125
A7159
299-W10-69
673.1

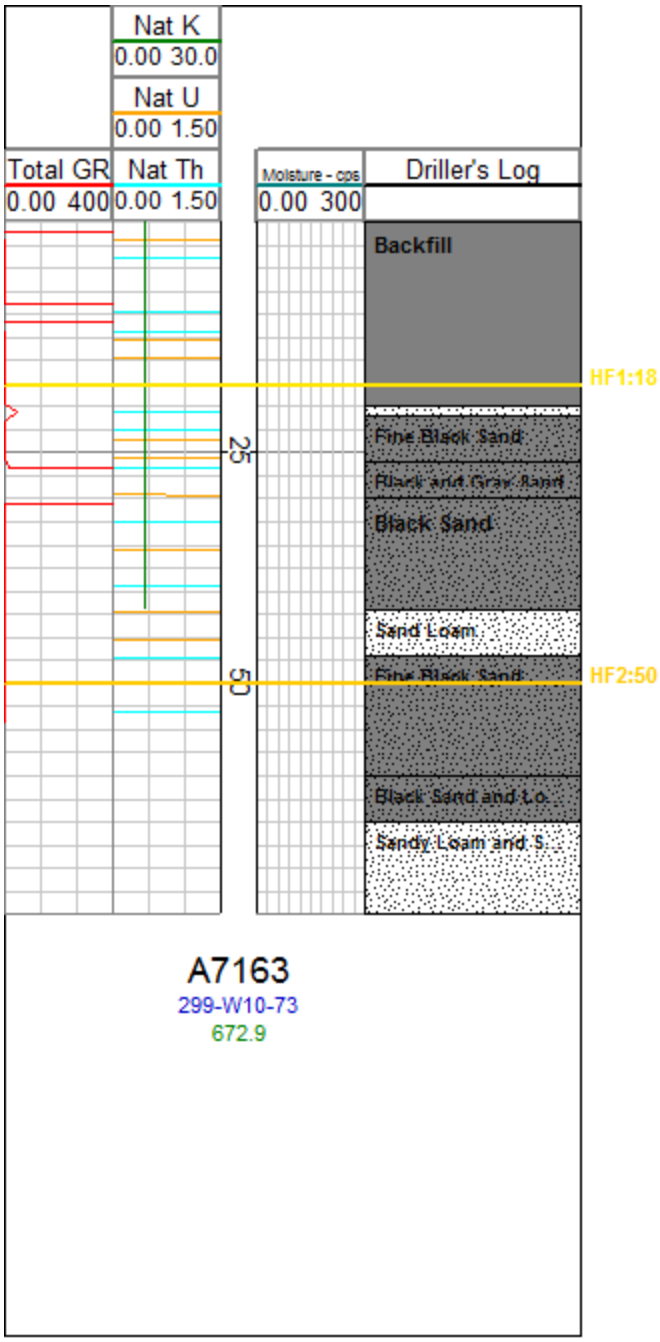
20 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sandy Loam and G
Gravel Sand Clay
Clay Gray Sand
Sand and Gravel
Sand and Clay
Clay and Sand
Clay Gray Sand
Gravel and Sand
HF1:25
HF2:65
Cold Creek Unit:81
CCUc:98
Rtf:111
Rwie:140
25
50
75
100
125
A7160
299-W10-70
673.4
20 ft

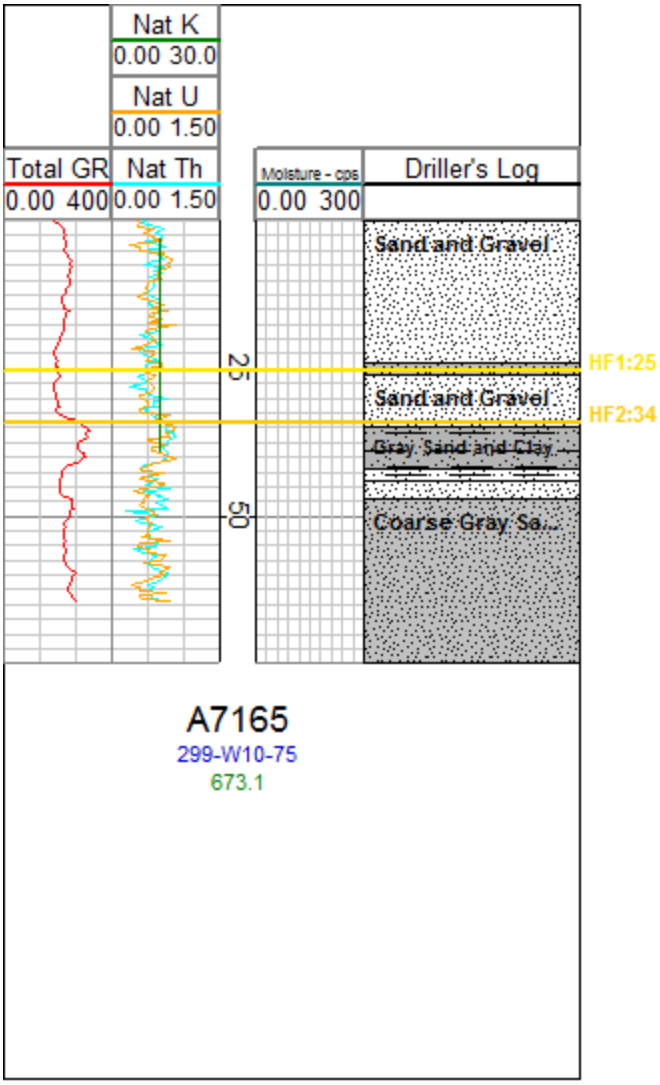

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Gravel
Gravel
Sand and Clay
Sand Clay Gravel
Sand and Clay
Gravel
25
50
75
100
125
Rwie:136
A7161
299-W10-71
673.8
40 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Sand and Gravel
HF1:26
Black Sand and
Clay Sand and Gra
HF2:64
Clay Sand and Gra
Clay and Sand
Sand and Gravel
25
50
75
100
125
A7162
299-W10-72
673.1

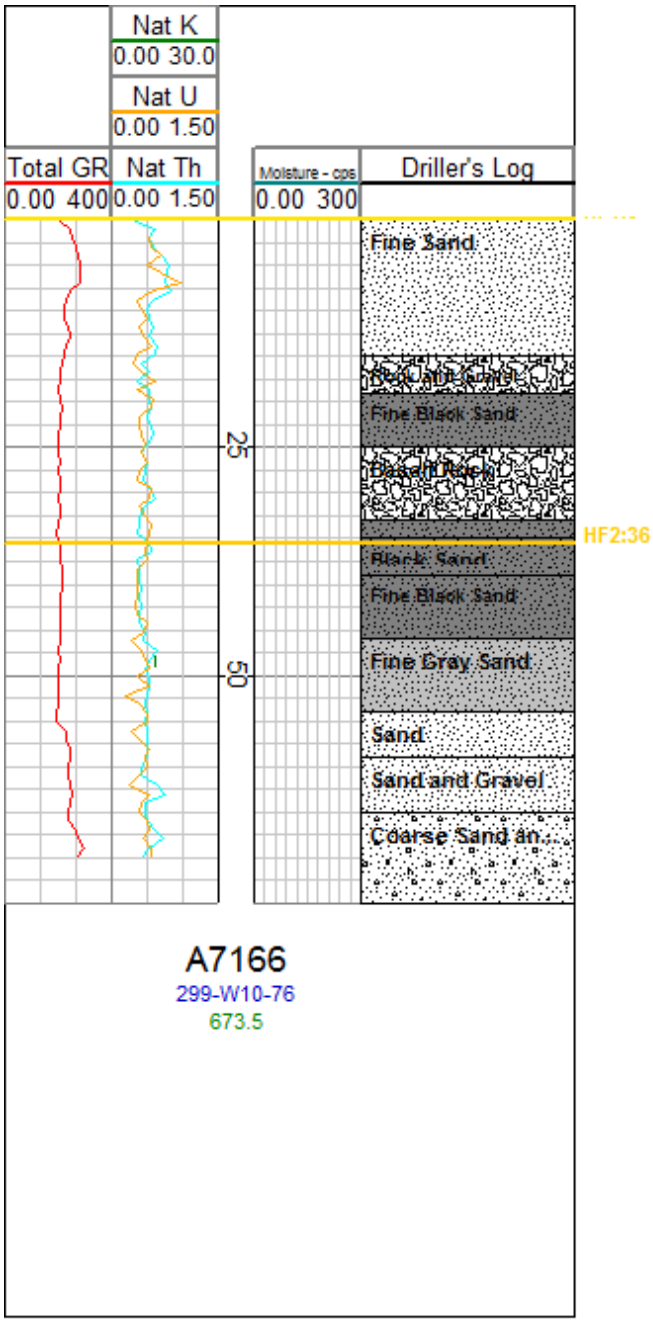
20 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
HF1:18
Fine Black Sand
Black and Gray Sand
Black Sand
Sand Loam
Fine Black Sand
HF2:50
Black Sand and Lo
Sandy Loam and S
25
50
A7163
299-W10-73
672.9

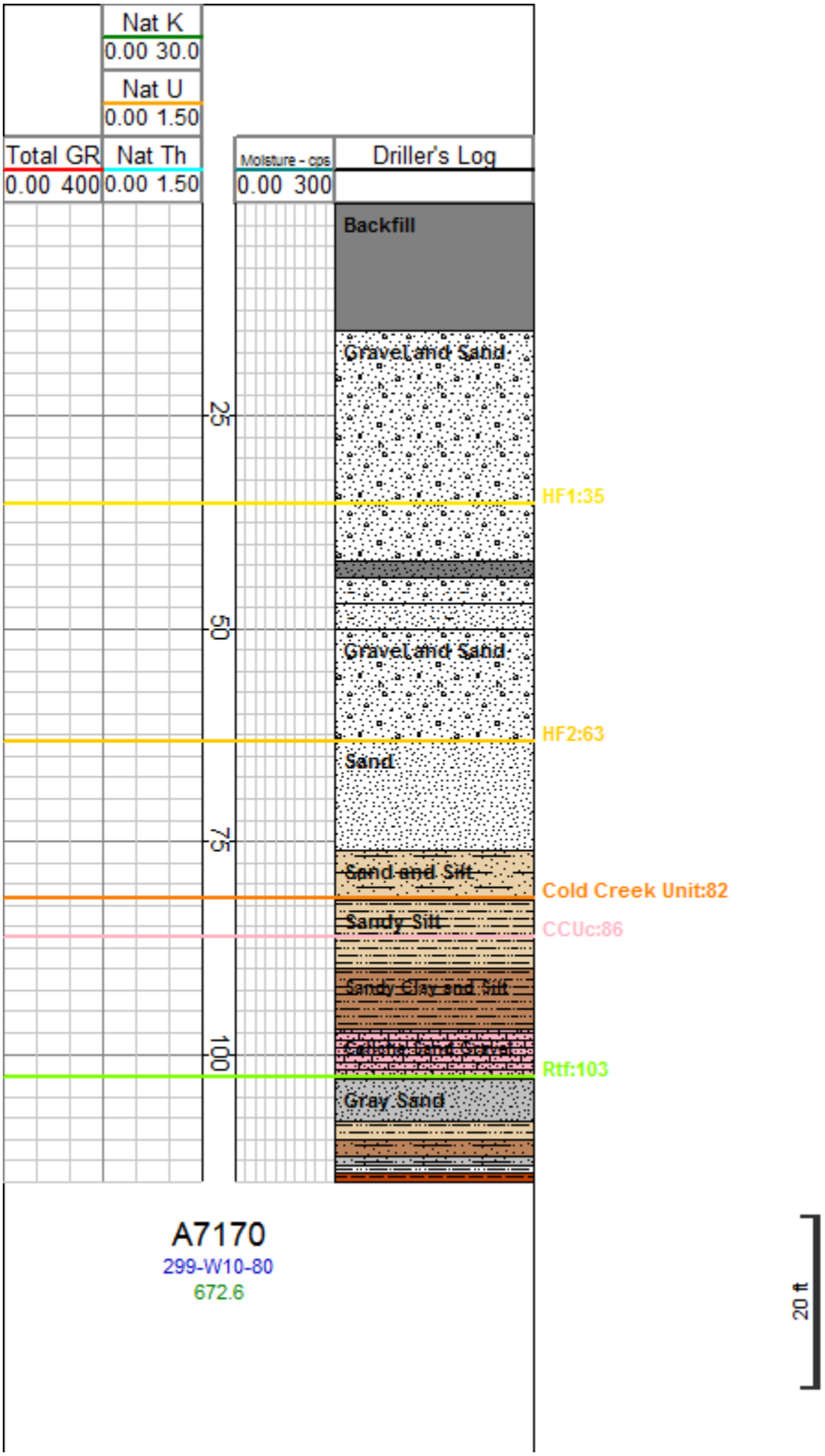
20 ft

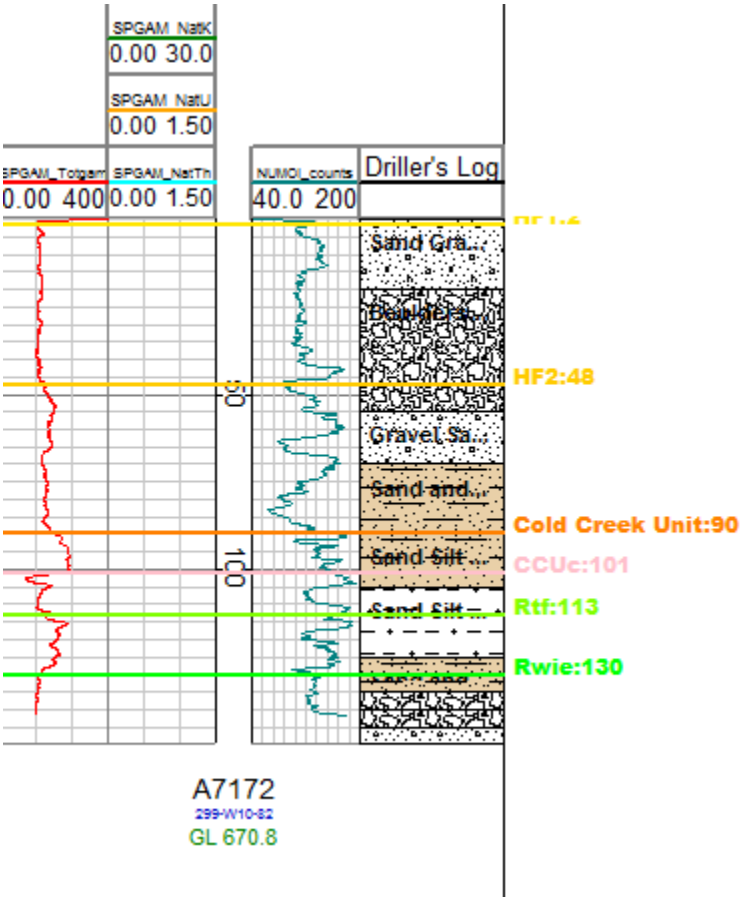

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand and Gravel
HF1:25
Sand and Gravel
HF2:34
Gray Sand and Clay
Coarse Gray Sa...
25
50
A7165
299-W10-75
673.1

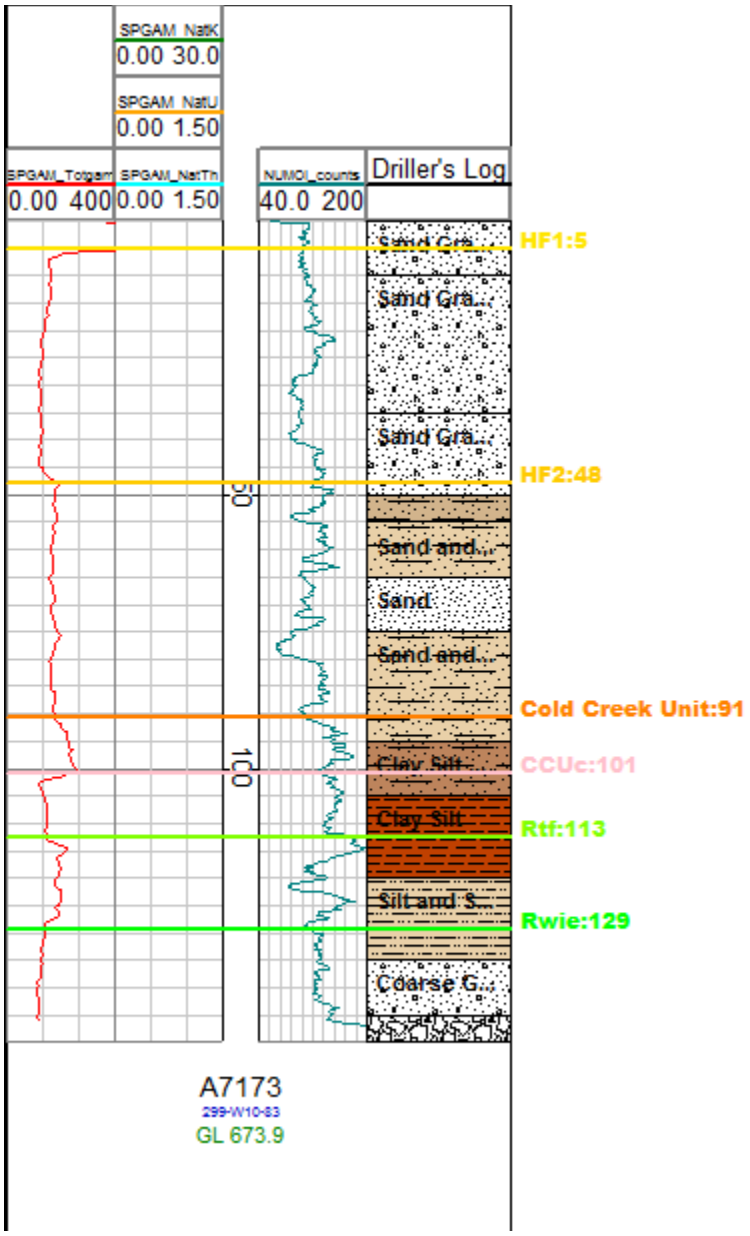
20 ft

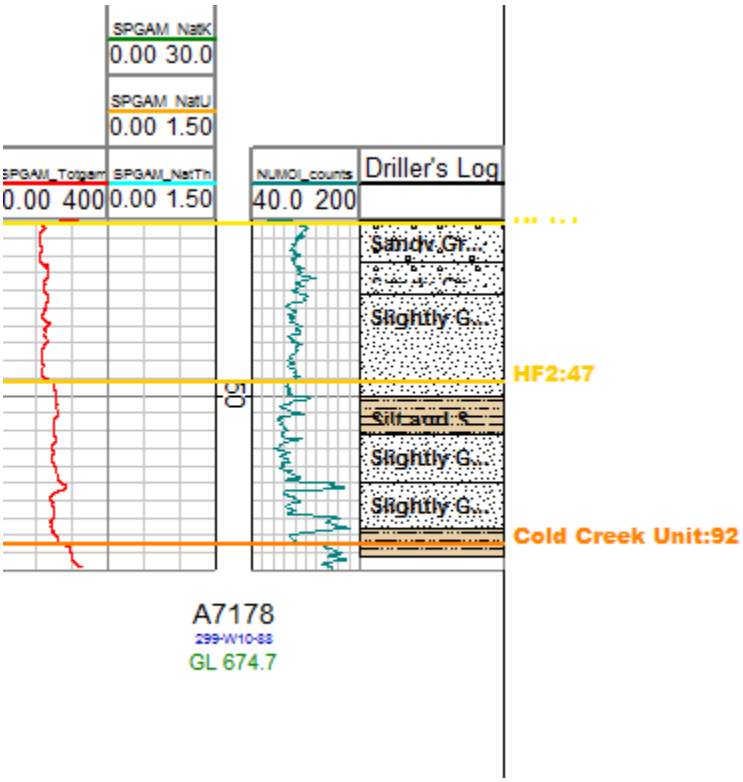

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Fine Sand
Fine Black Sand
Fine Black Sand
Fine Gray Sand
Sand
Sand and Gravel
Coarse Sand an...
HF2:36
25
50
A7166
299-W10-76
673.5

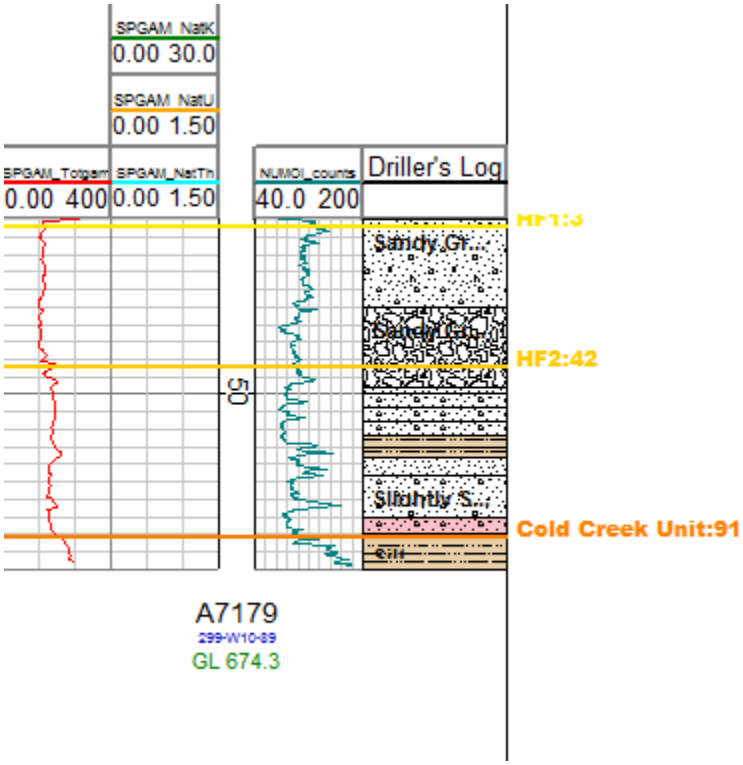
20 ft

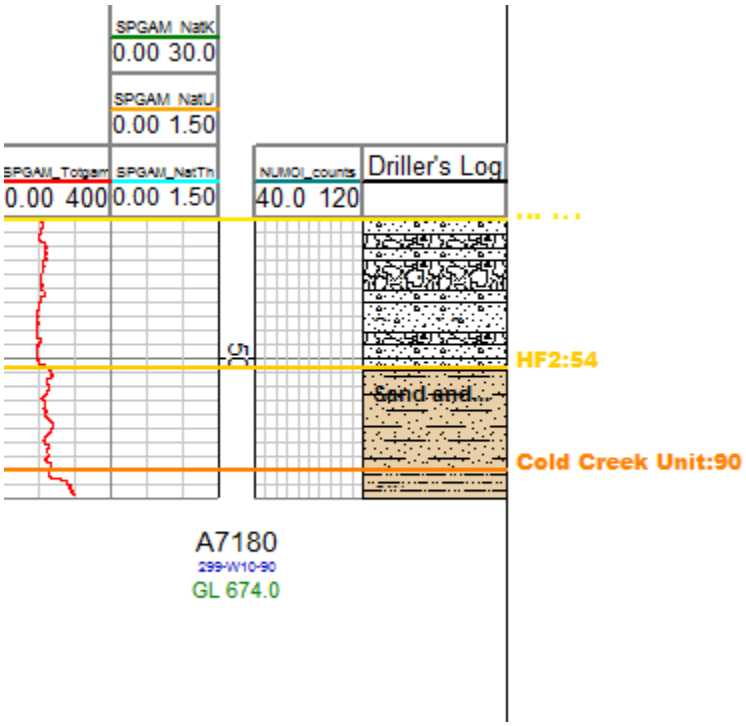

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Backfill
Gravel and Sand
25
HF1:35
50
Gravel and Sand
HF2:63
Sand
75
Sand and Silt
Cold Creek Unit:82
Sandy Silt
CCUc:86
Sandy Clay and Silt
100
Rtf:103
Gray Sand
A7170
299-W10-80
672.6
20 ft

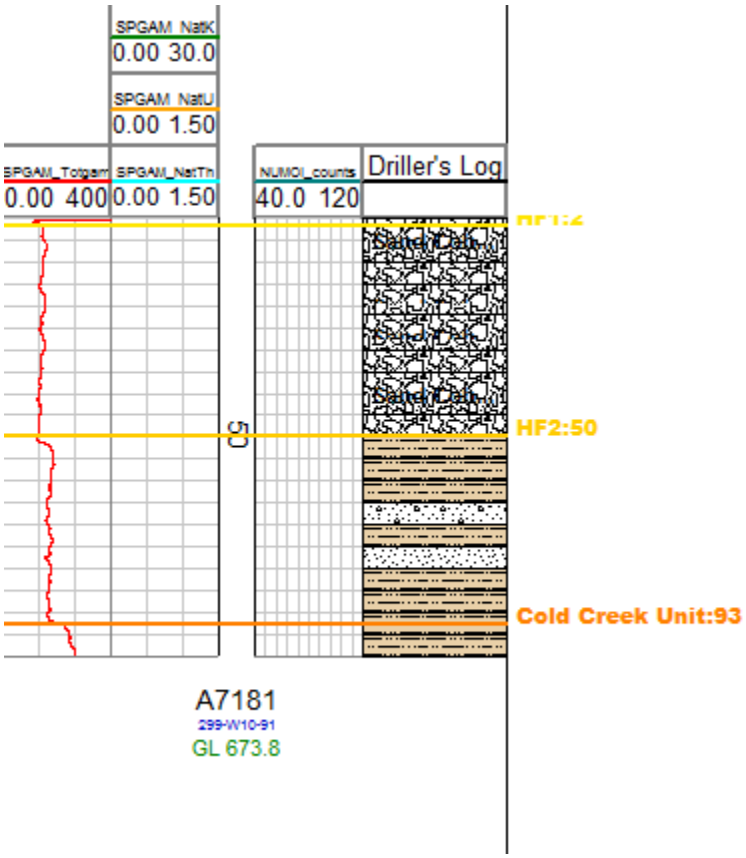

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sand Gra...
Gravel Sa...
Sand and...
Sand Silt ...
HF2:48
Cold Creek Unit:90
CCUc:101
Rtf:113
Rwie:130
50
100
A7172
299-W10-82
GL 670.8

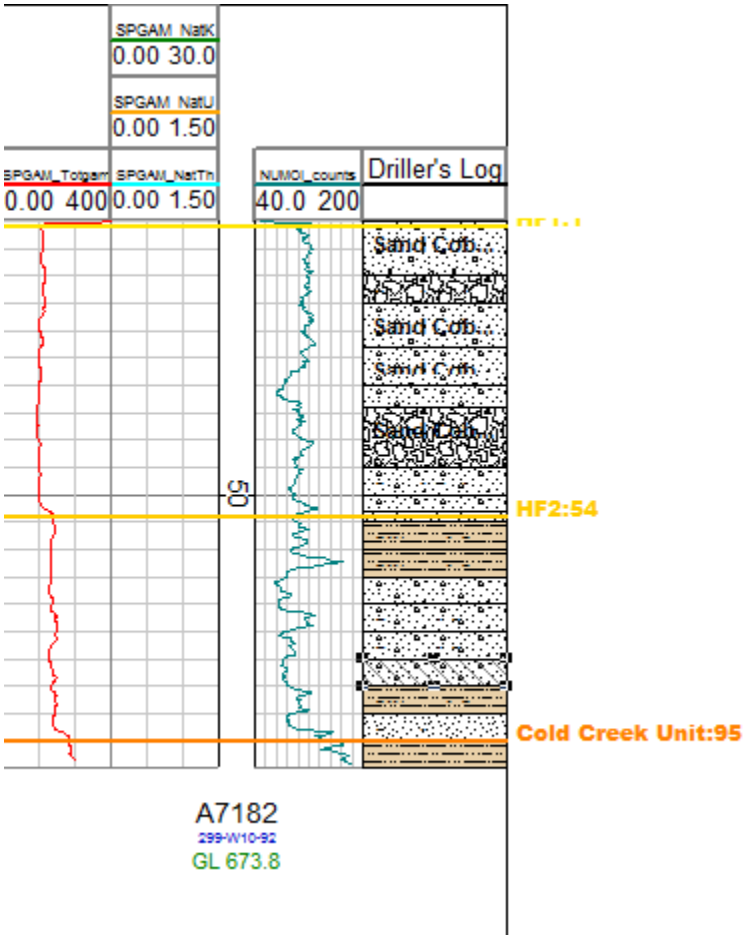

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF1:5
Sand Gra...
Sand Gra...
Sand Gra...
HF2:48
50
Sand and...
Sand
Sand and...
Cold Creek Unit:91
Clay Silt...
CCUc:101
100
Clay Silt...
Rtf:113
Silt and S...
Rwie:129
Coarse G...
A7173
299-W10-83
GL 673.9

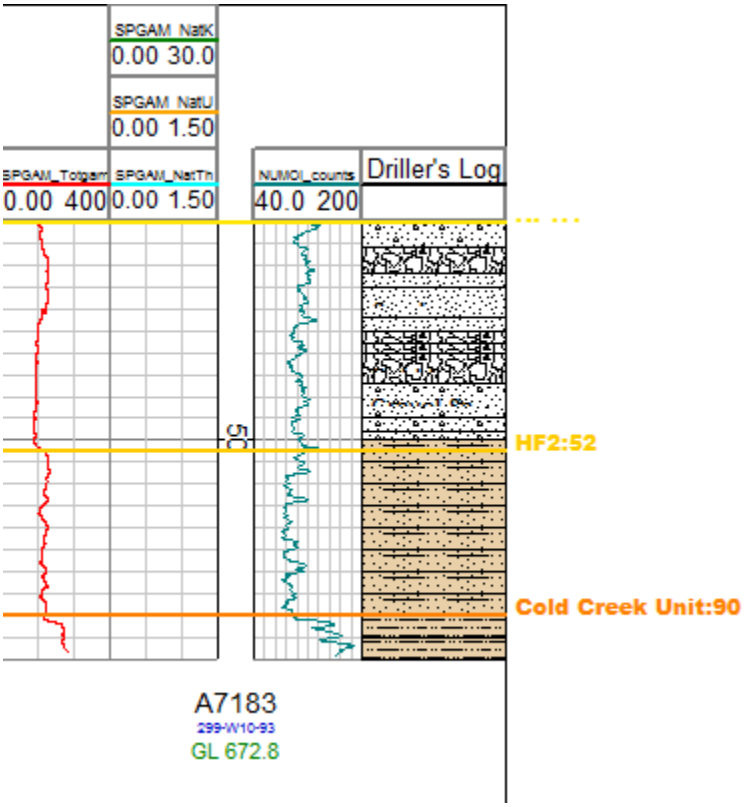

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sandy Gr...
Slightly G...
HF2:47
Silt and S...
Slightly G...
Slightly G...
Cold Creek Unit:92
A7178
299-W10-88
GL 674.7

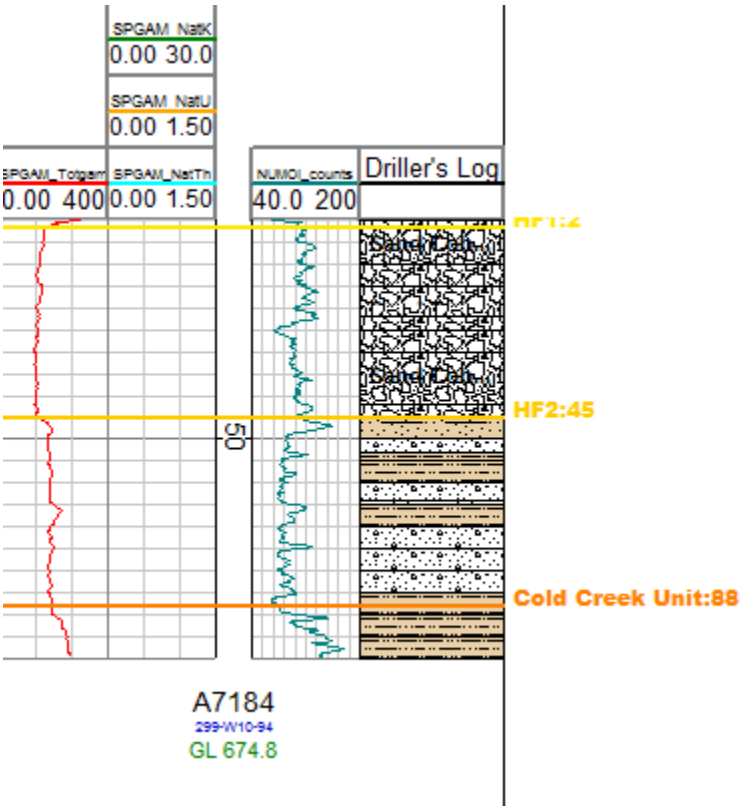

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sandy Gr...
HF2:42
Slightly S...
Cold Creek Unit:91
A7179
299-W10-89
GL 674.3

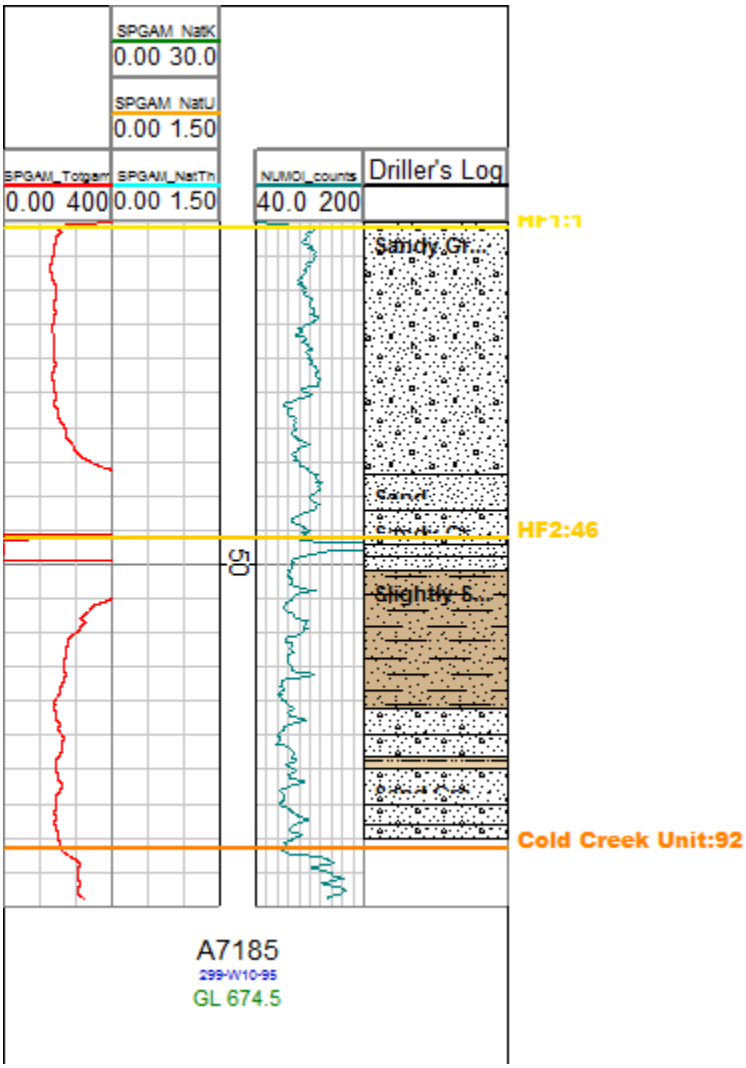

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:54
Sand and...
Cold Creek Unit:90
A7180
299-W10-90
GL 674.0

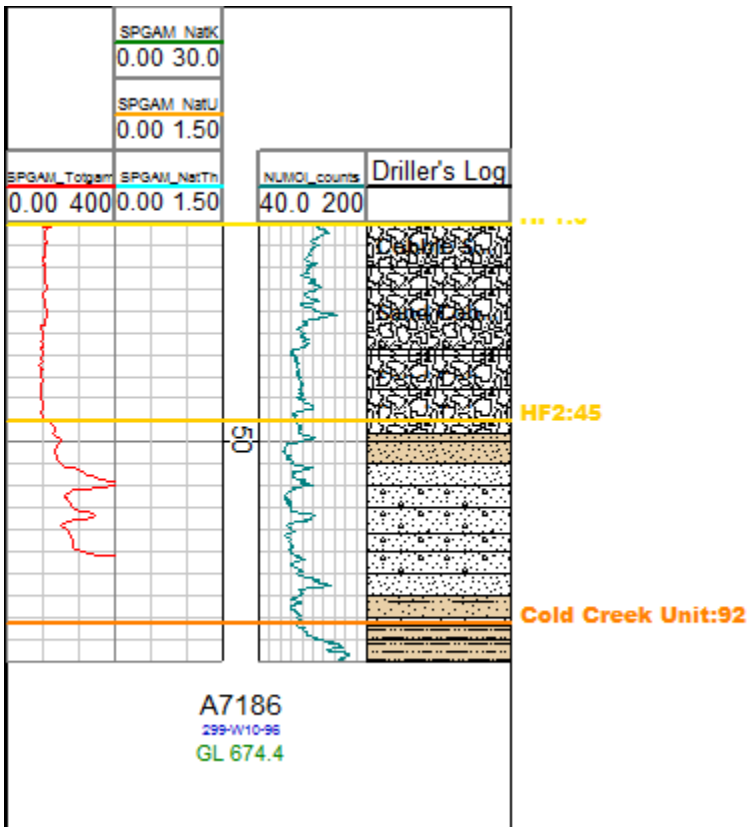

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand/Gravel
Sand/Gravel
Sand/Gravel
HF2:50
Cold Creek Unit:93
A7181
299-W10-91
GL 673.8

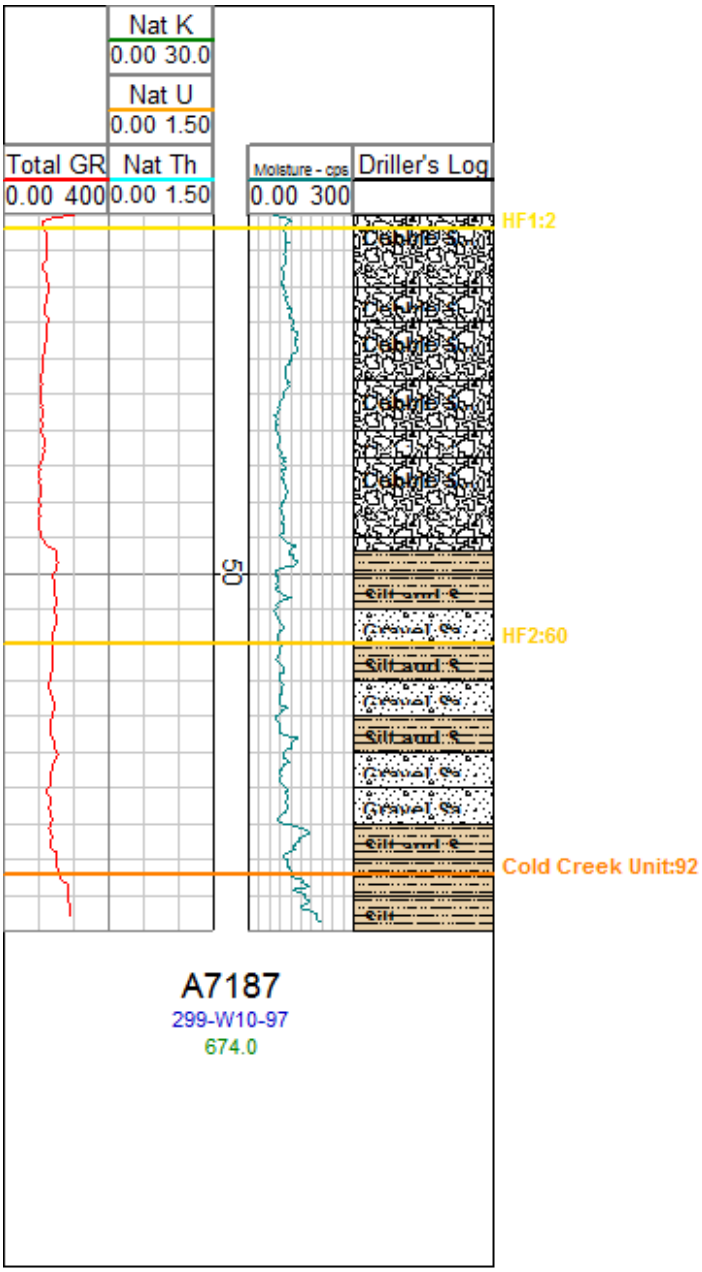

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sand Cob.
Sand Cob.
Sand Cob.
Sand Cob.
50
HF2:54
Cold Creek Unit:95
A7182
299-W10-92
GL 673.8


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF2:52
Cold Creek Unit:90
A7183
299-W10-93
GL 672.8

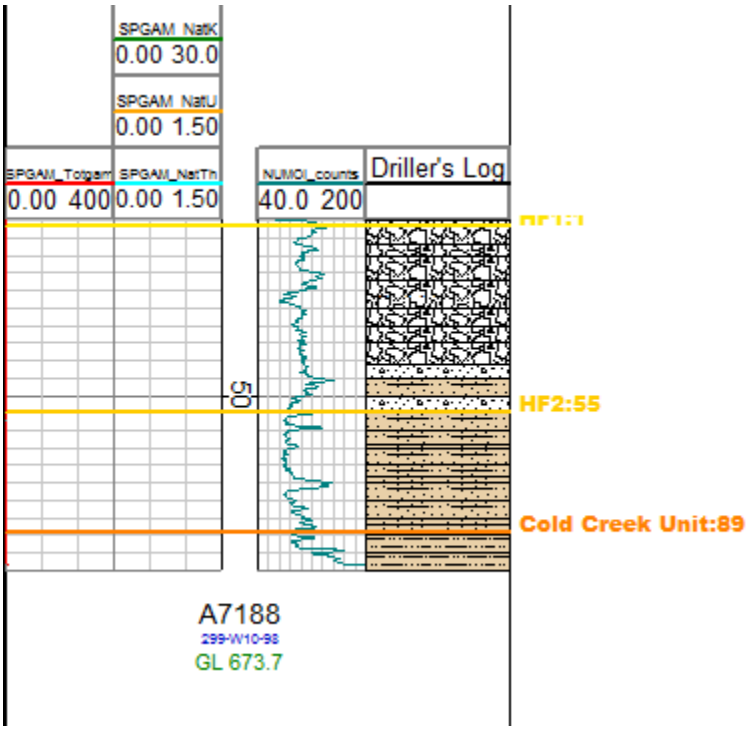

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sand/Calc
Sand/Calc
HF2:45
50
Cold Creek Unit:88
A7184
299-W10-94
GL 674.8

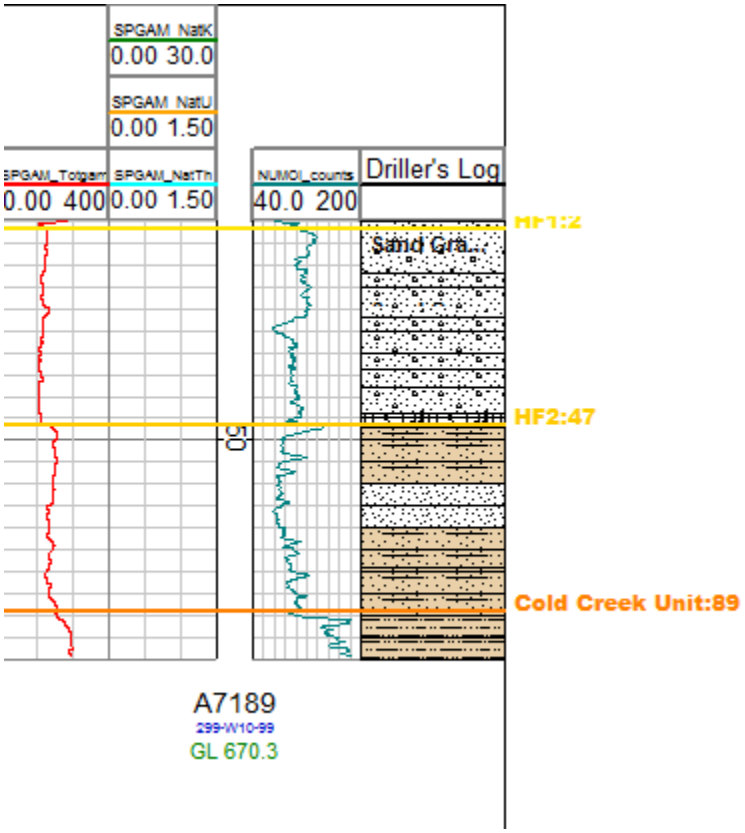

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sandy Gr...
Sand
Slightly S...
HF2:46
Cold Creek Unit:92
A7185
299-W10-95
GL 674.5

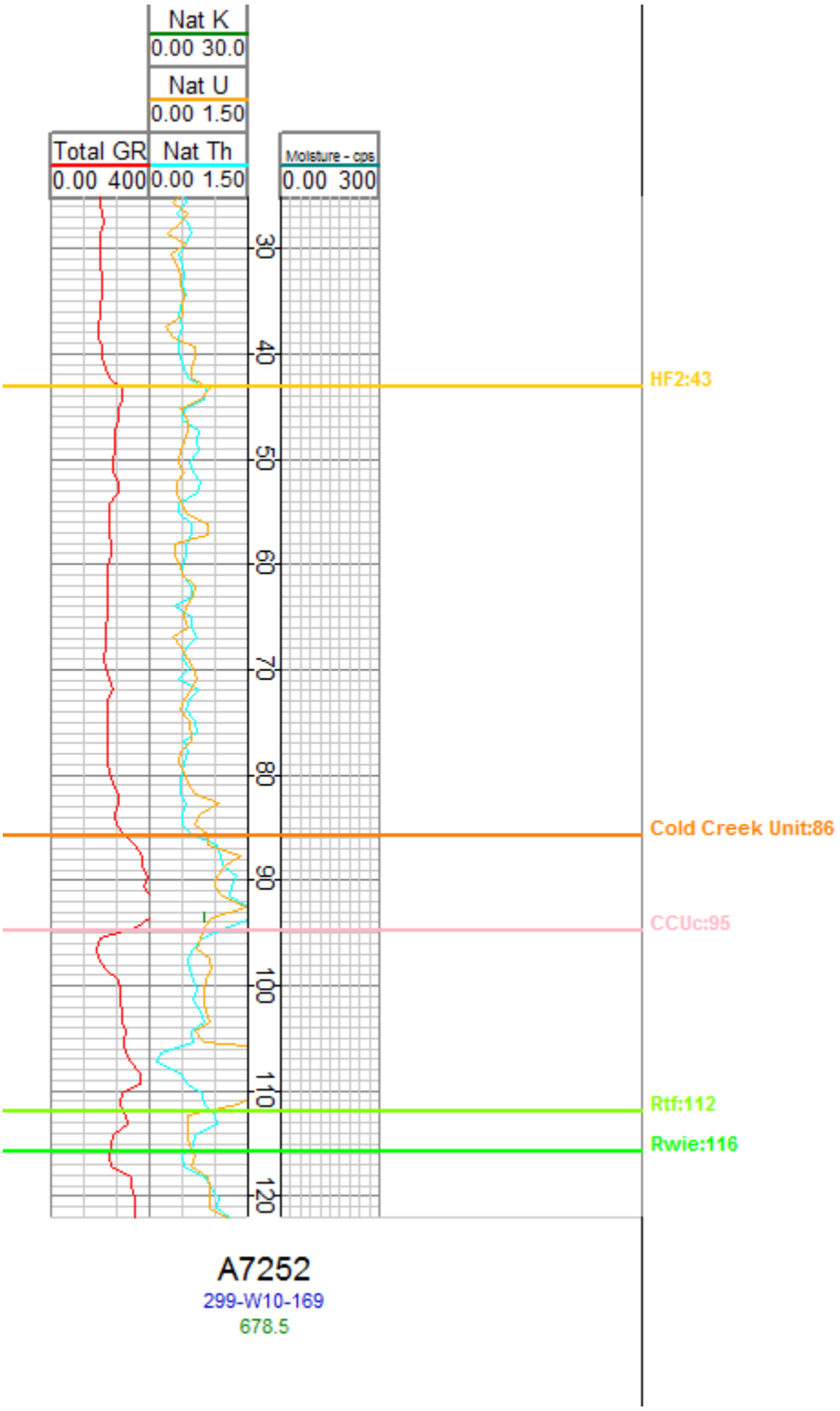

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_TotgamT
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF2:45
Cold Creek Unit:92
A7186
299-W10-96
GL 674.4

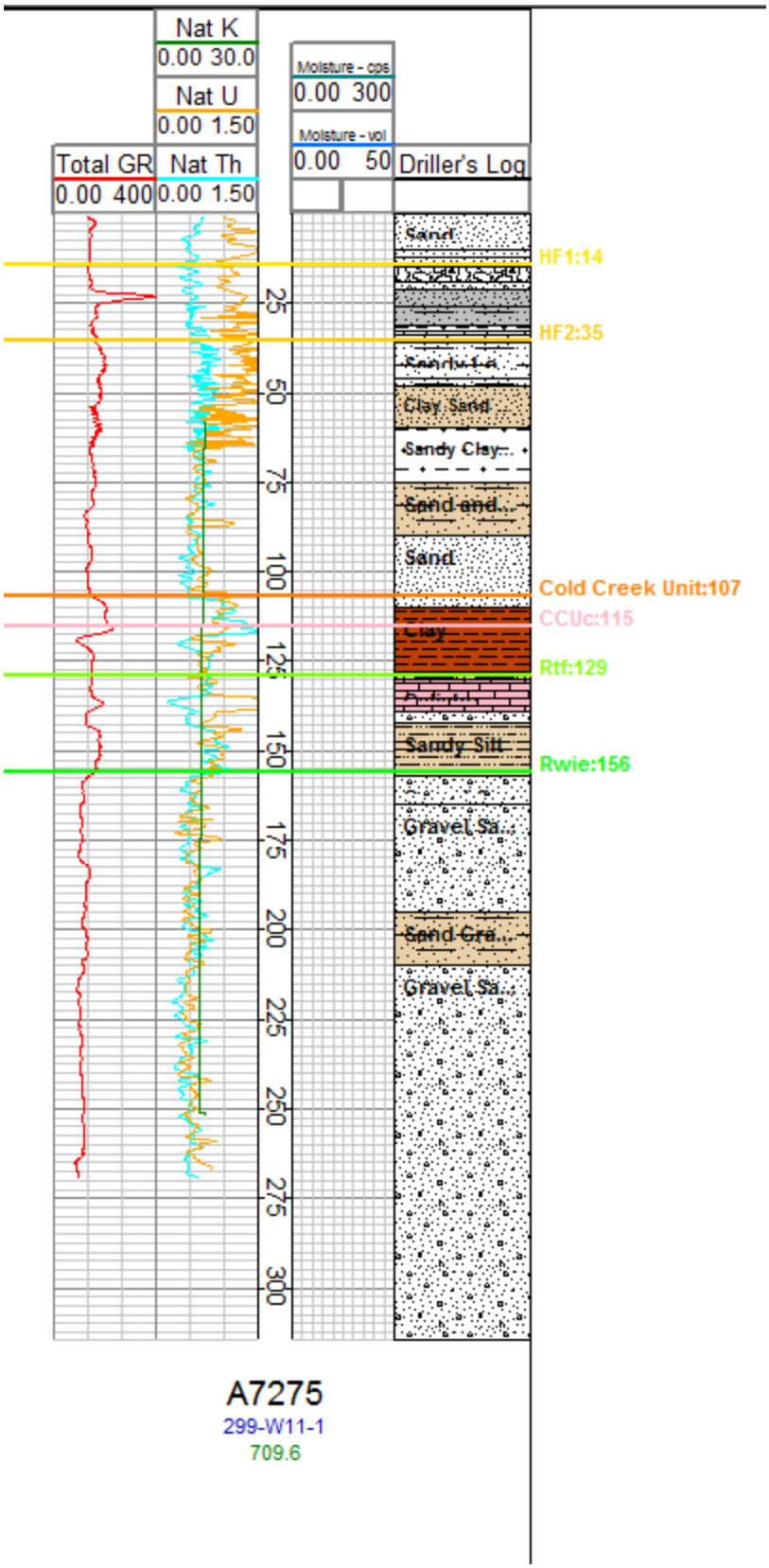

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:2
HF2:60
Cold Creek Unit:92
SO
A7187
299-W10-97
674.0

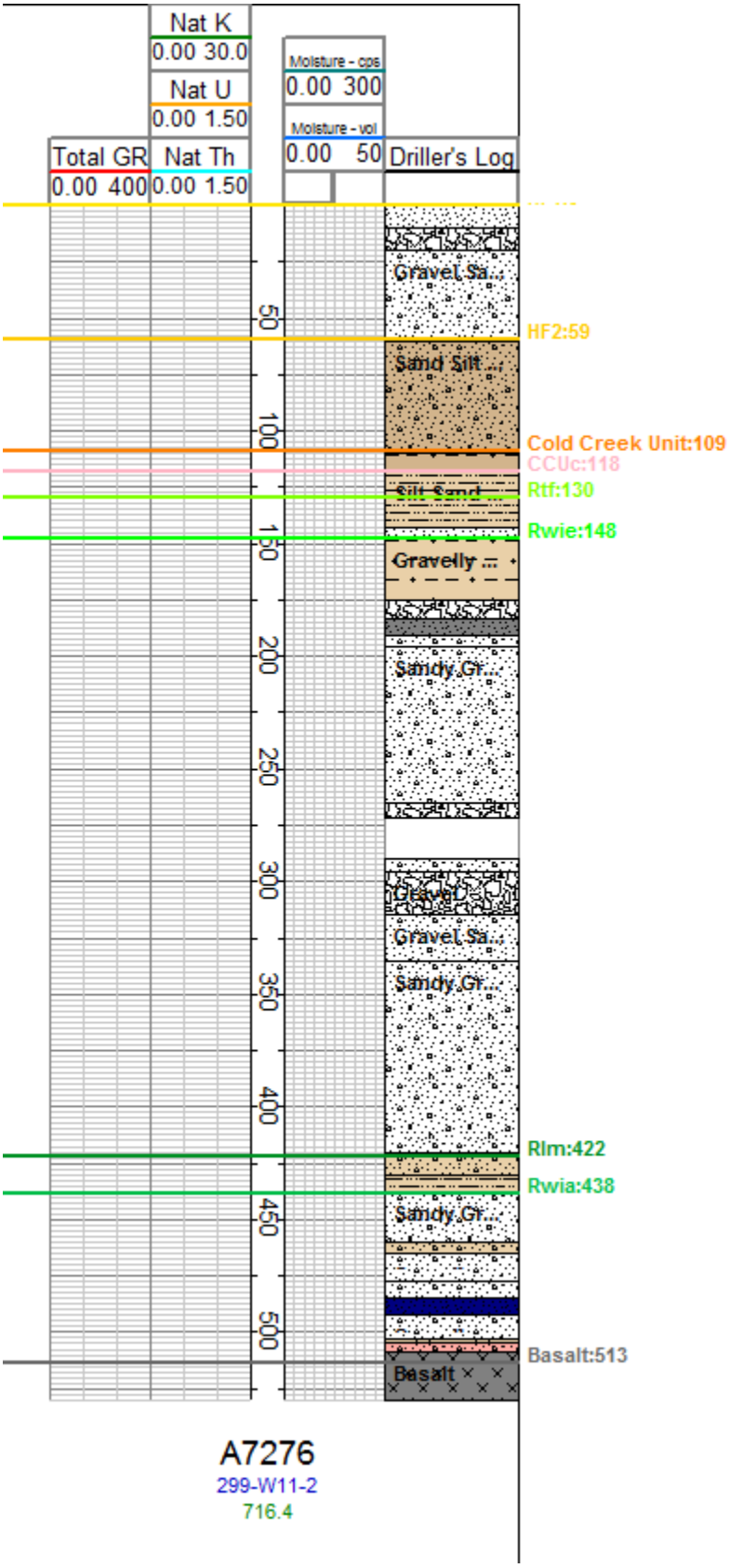
20 ft

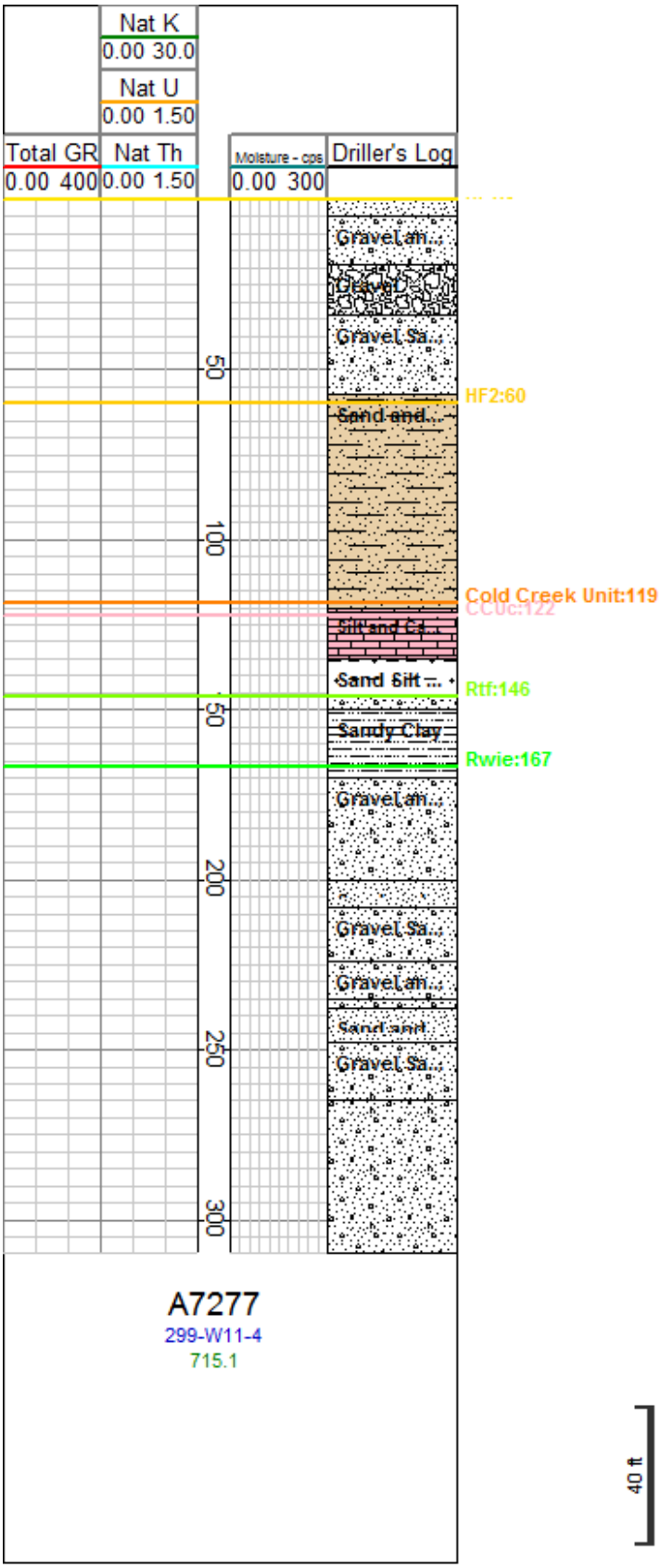

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF2:55
Cold Creek Unit:89
A7188
299-W10-98
GL 673.7

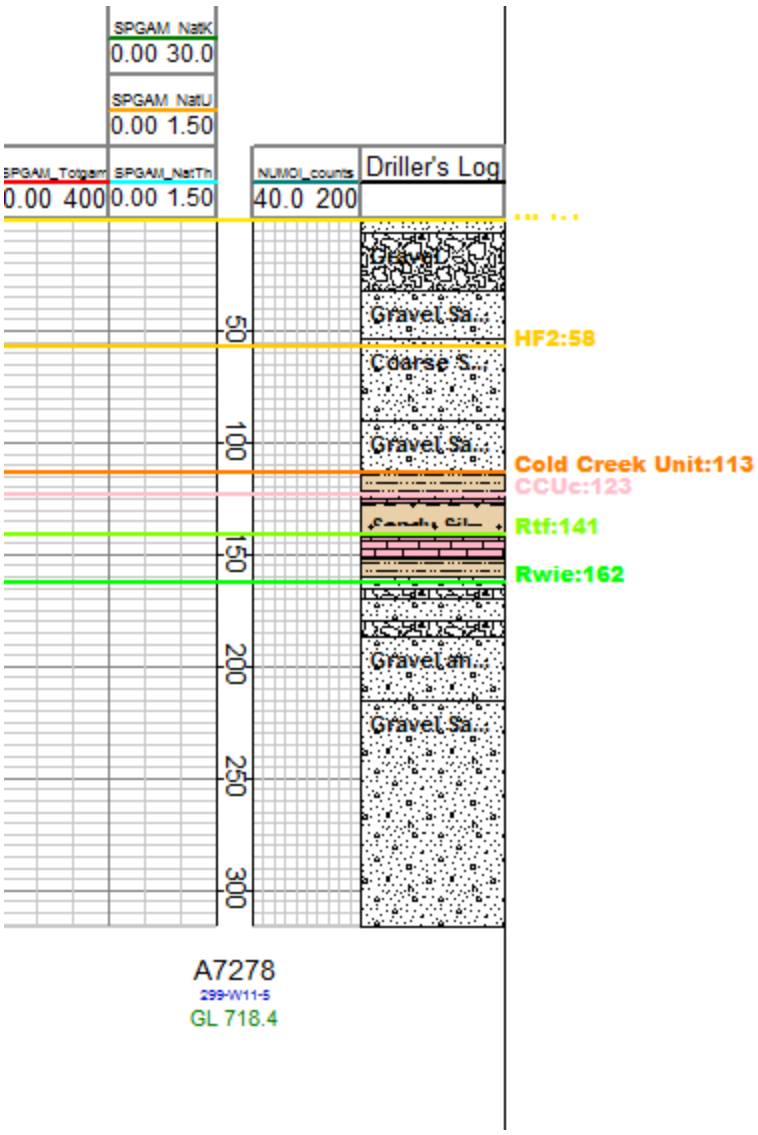

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Sand Gra...
HF2:47
Cold Creek Unit:89
A7189
GL 670.3

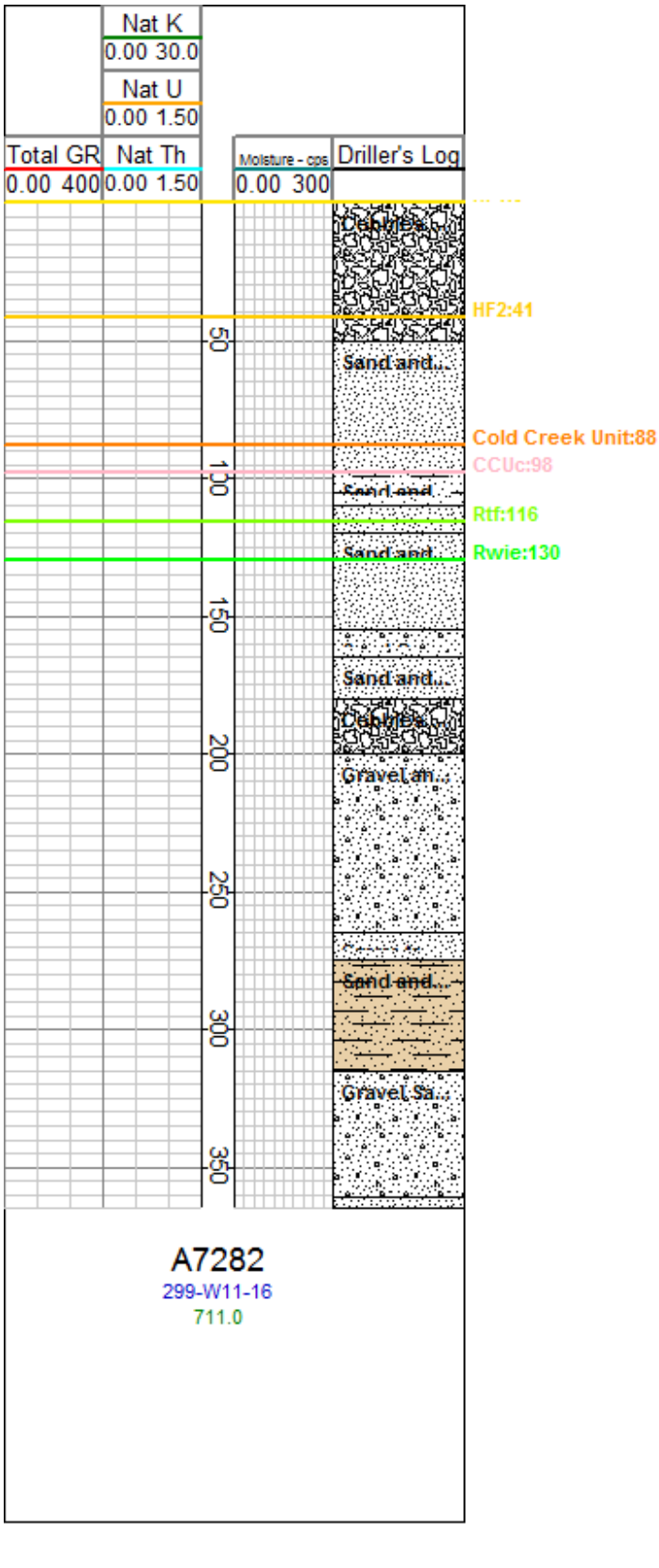

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
30
40
50
60
70
80
90
100
110
120
HF2:43
Cold Creek Unit:86
CCUc:95
Rtf:112
Rwie:116
A7252
299-W10-169
678.5

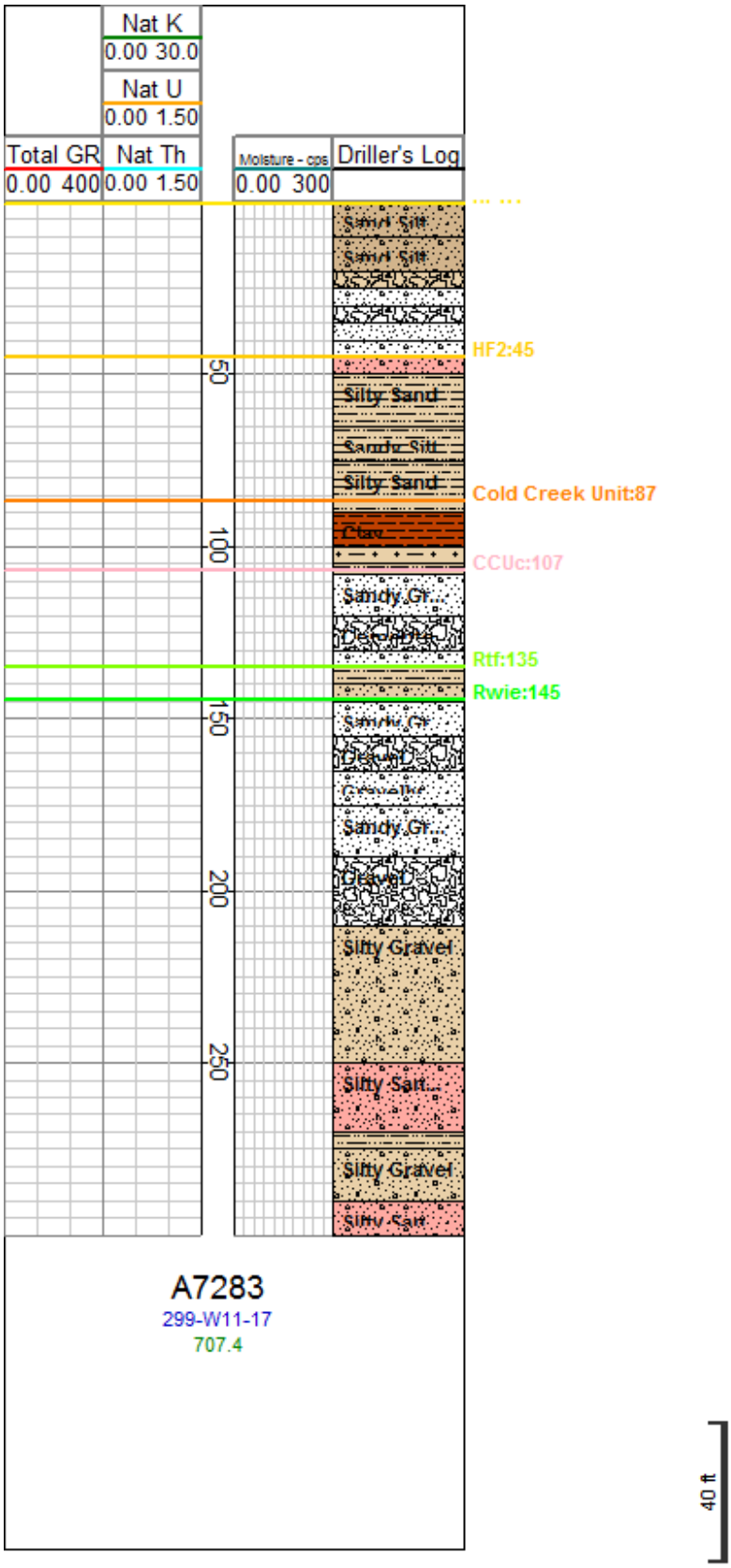

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Sand
HF1:14
HF2:35
Clay Sand
Sandy Clay...
Sand and...
Sand
Cold Creek Unit:107
CCUc:115
Clay
Rtf:129
Sandy Silt
Rwie:156
Gravel Sa...
Sand Gra...
Gravel Sa...
25
50
75
100
125
150
175
200
225
250
275
300
A7275
299-W11-1
709.6

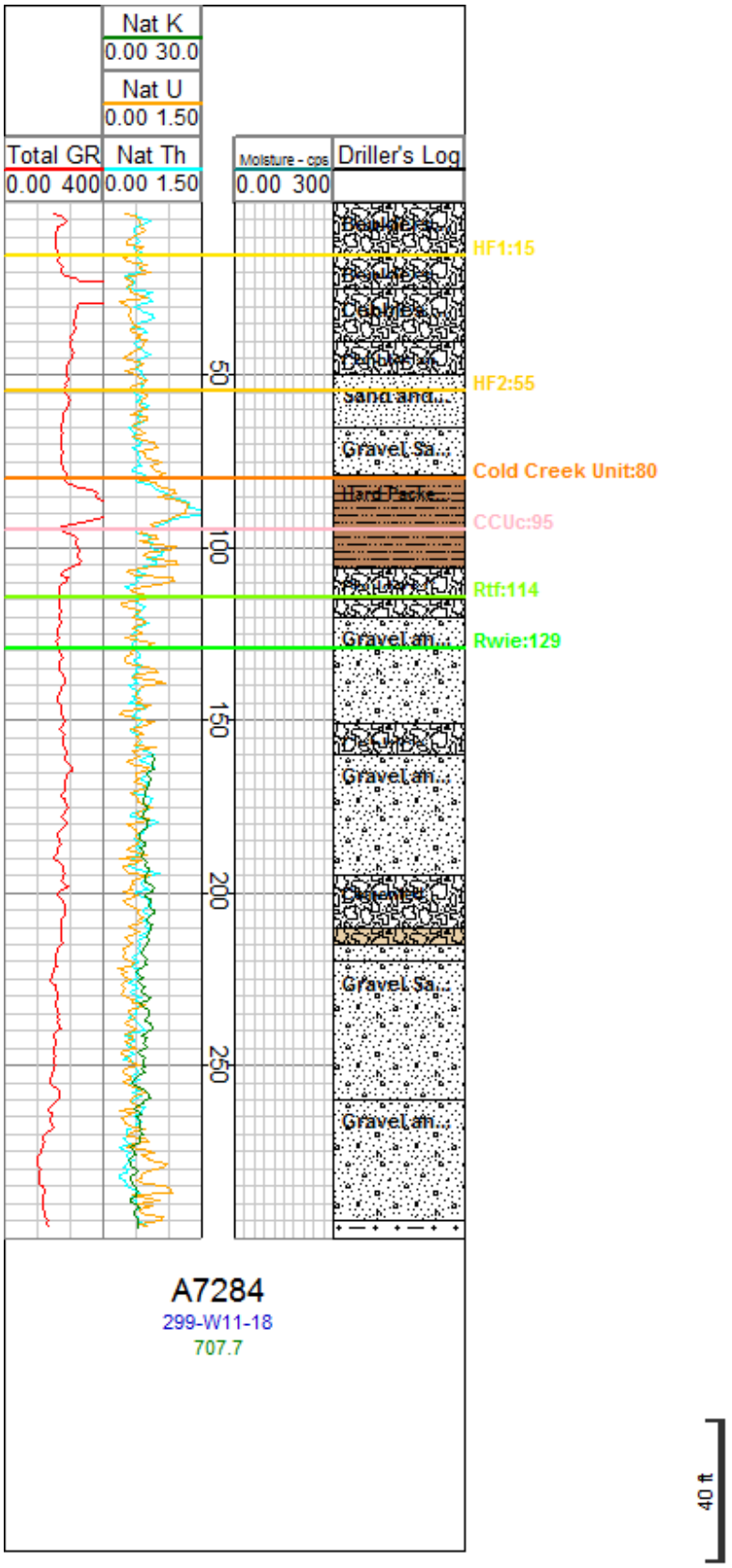

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
50
100
150
200
250
300
350
400
450
500
Gravel Sa...
Sand Silt ...
Silt Sand
Gravelly ...
Sandy Gr...
Gravel
Gravel Sa...
Sandy Gr...
Sandy Gr...
Basalt
HF2:59
Cold Creek Unit:109
CCUc:118
Rtf:130
Rwie:148
Rlm:422
Rwia:438
Basalt:513
A7276
299-W11-2
716.4

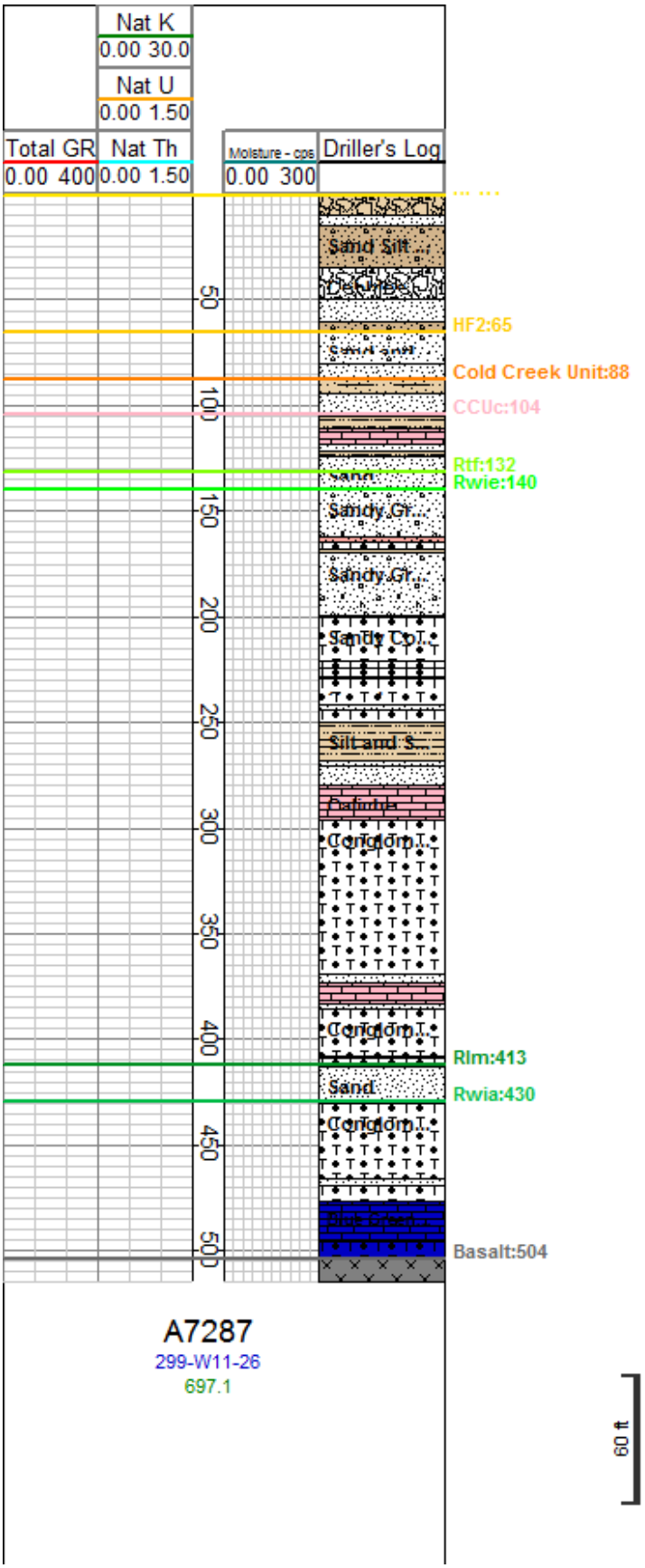

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
50
100
150
200
250
300
HF2:60
Cold Creek Unit:119
CCUc:122
Rtf:146
Rwie:167
Gravel,an...
Gravel,Sa...
Sand and...
Silt and Cl...
Sand Silt ...
Sandy Clay
Gravel,an...
Gravel,Sa...
Gravel,an...
Sand and
Gravel,Sa...
A7277
299-W11-4
715.1
40 ft

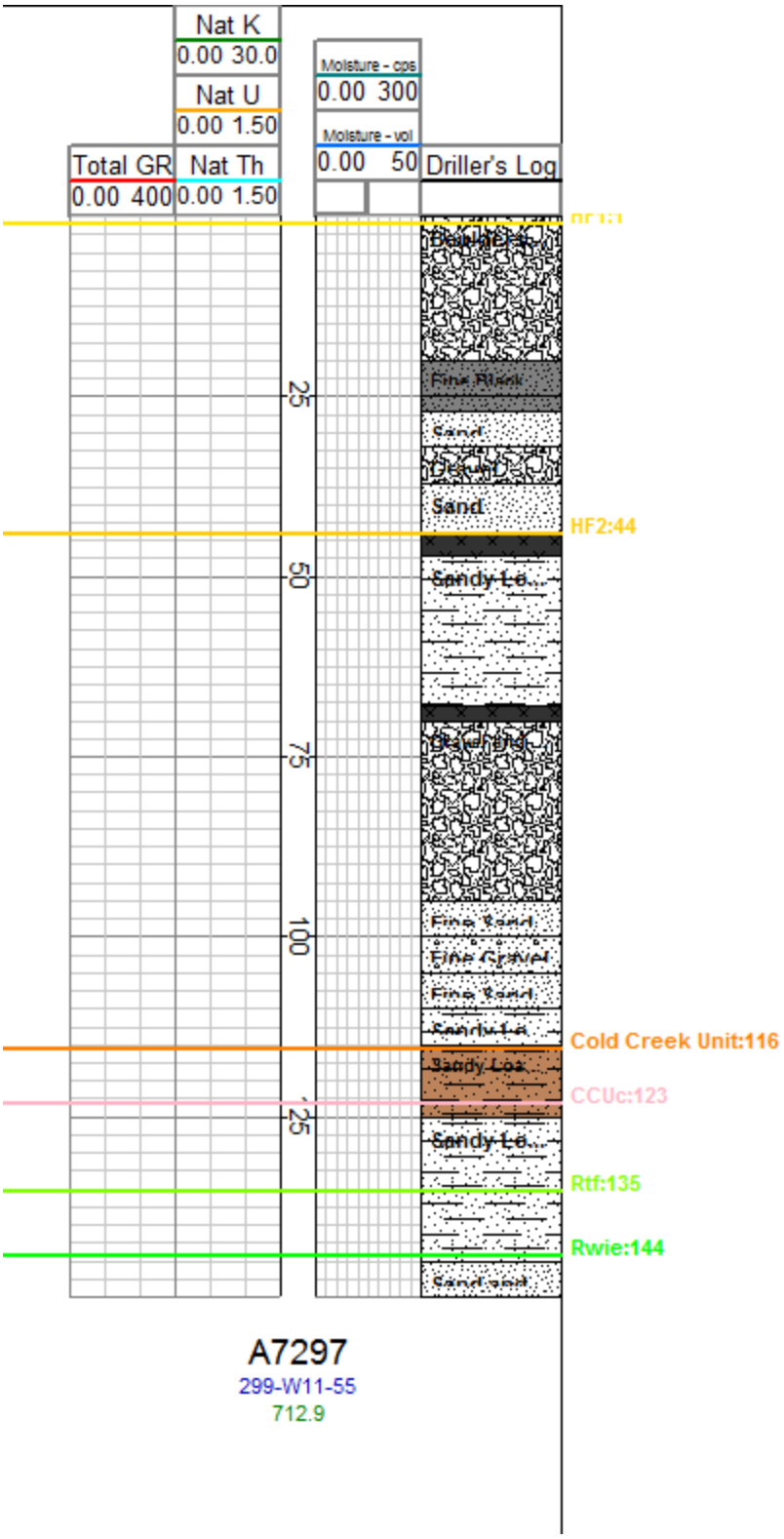

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
50
100
150
200
250
300
Gravel
Gravel Sa..
Coarse S..
Gravel Sa..
Gravel an..
Gravel Sa..
HF2:58
Cold Creek Unit:113
CCUc:123
Rtf:141
Rwie:162
A7278
299-W11-5
GL 718.4

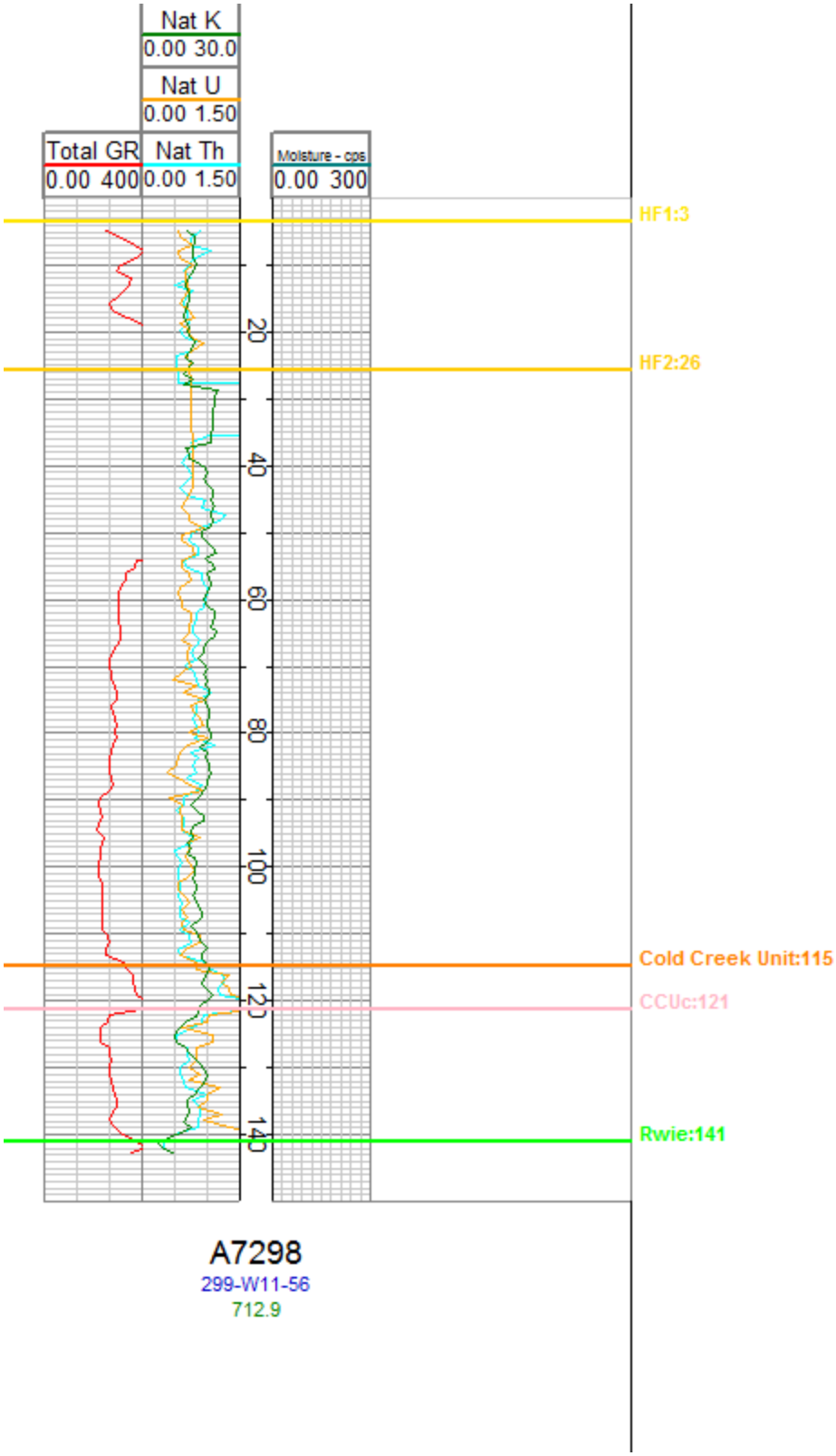

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:41
Cold Creek Unit:88
CCUc:98
Rtf:116
Rwie:130
50
100
150
200
250
300
350
A7282
299-W11-16
711.0
50 ft

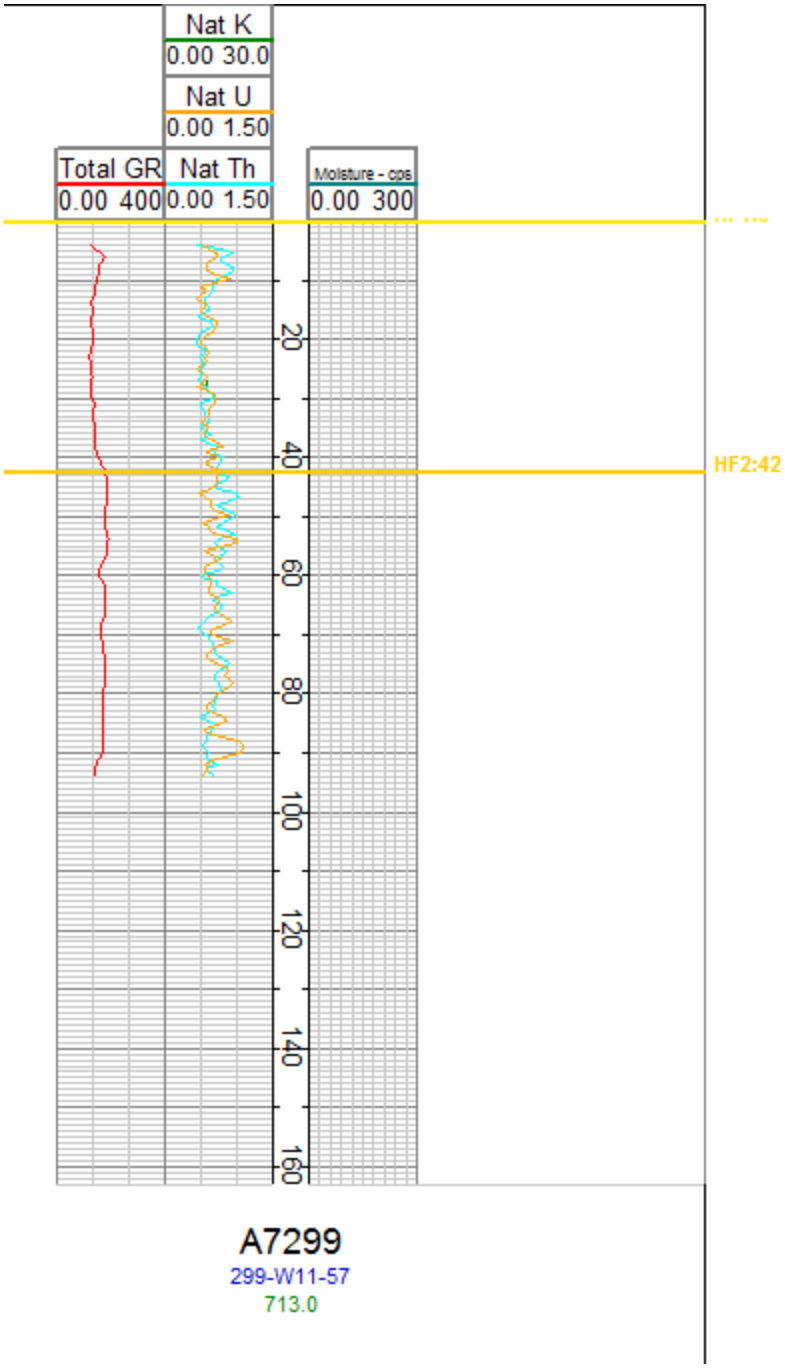

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:45
Silty Sand
Sandy Silt
Silty Sand
Cold Creek Unit:87
Clay
CCUc:107
Sandy Gr...
Rtf:135
Rwie:145
Sandy Gr...
Silty Gravel
Silty San...
Silty Gravel
50
100
150
200
250
A7283
299-W11-17
707.4
40 ft

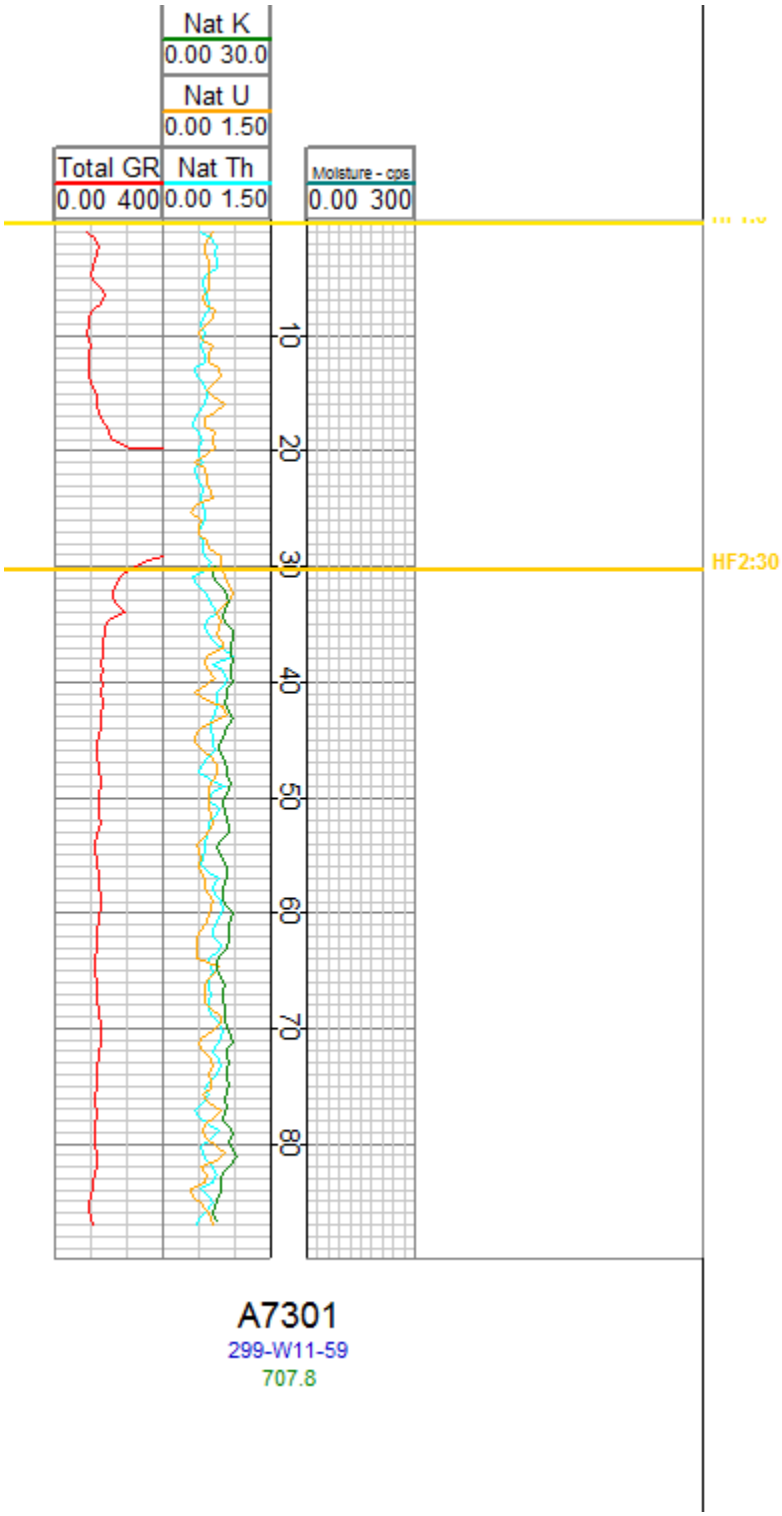

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:15
HF2:55
Cold Creek Unit:80
CCUc:95
Rtf:114
Rwie:129
50
100
150
200
250
A7284
299-W11-18
707.7
40 ft

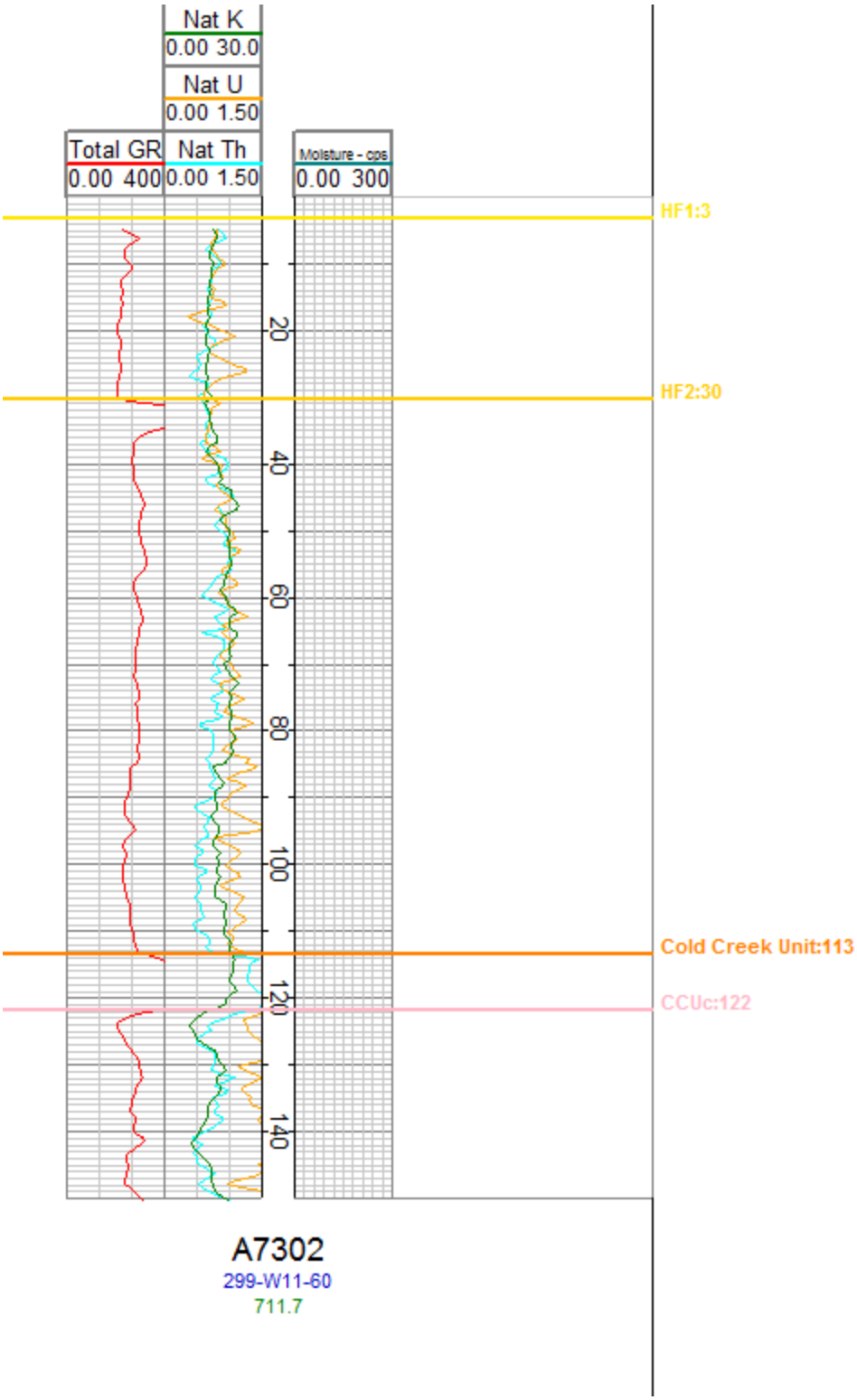

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
50
100
150
200
250
300
350
400
450
500
HF2:65
Cold Creek Unit:88
CCUc:104
Rtf:132
Rwie:140
Rlm:413
Rwia:430
Basalt:504
A7287
299-W11-26
697.1
60 ft

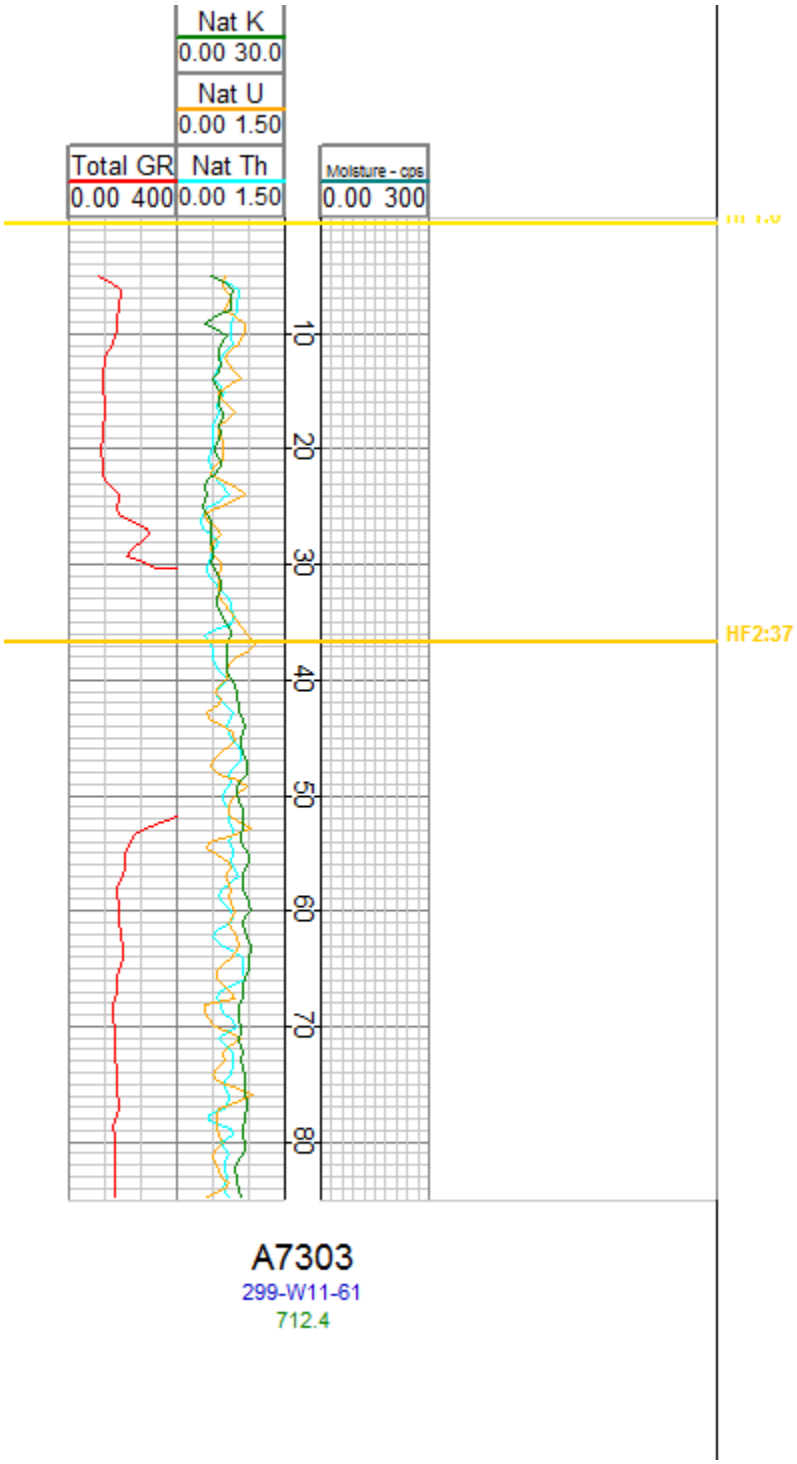

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
25
50
75
100
125
Sand
HF2:44
Cold Creek Unit:116
CCUc:123
Rtf:135
Rwie:144
A7297
299-W11-55
712.9

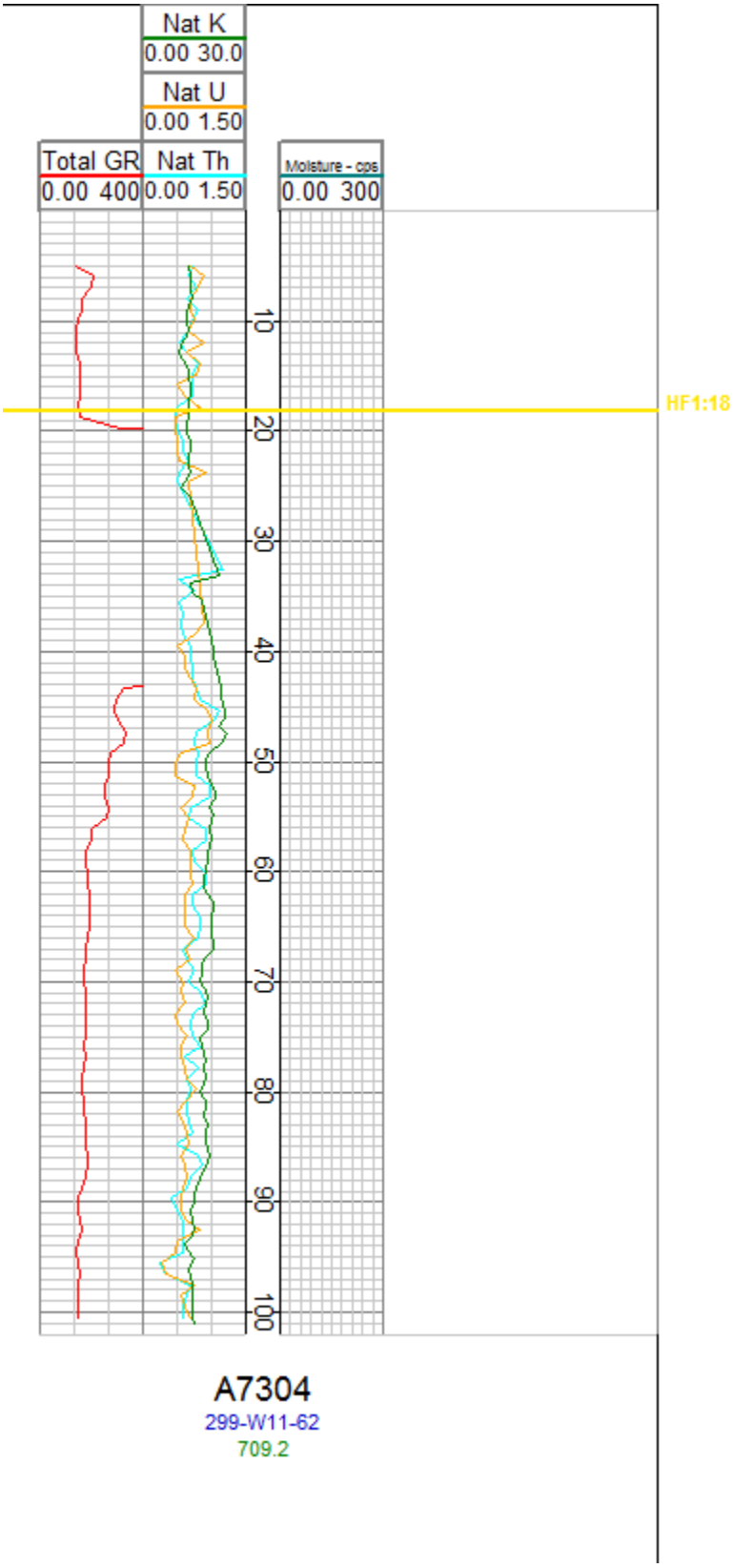

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:3
HF2:26
Cold Creek Unit:115
CCUc:121
Rwie:141
20
40
60
80
100
120
140
A7298
299-W11-56
712.9

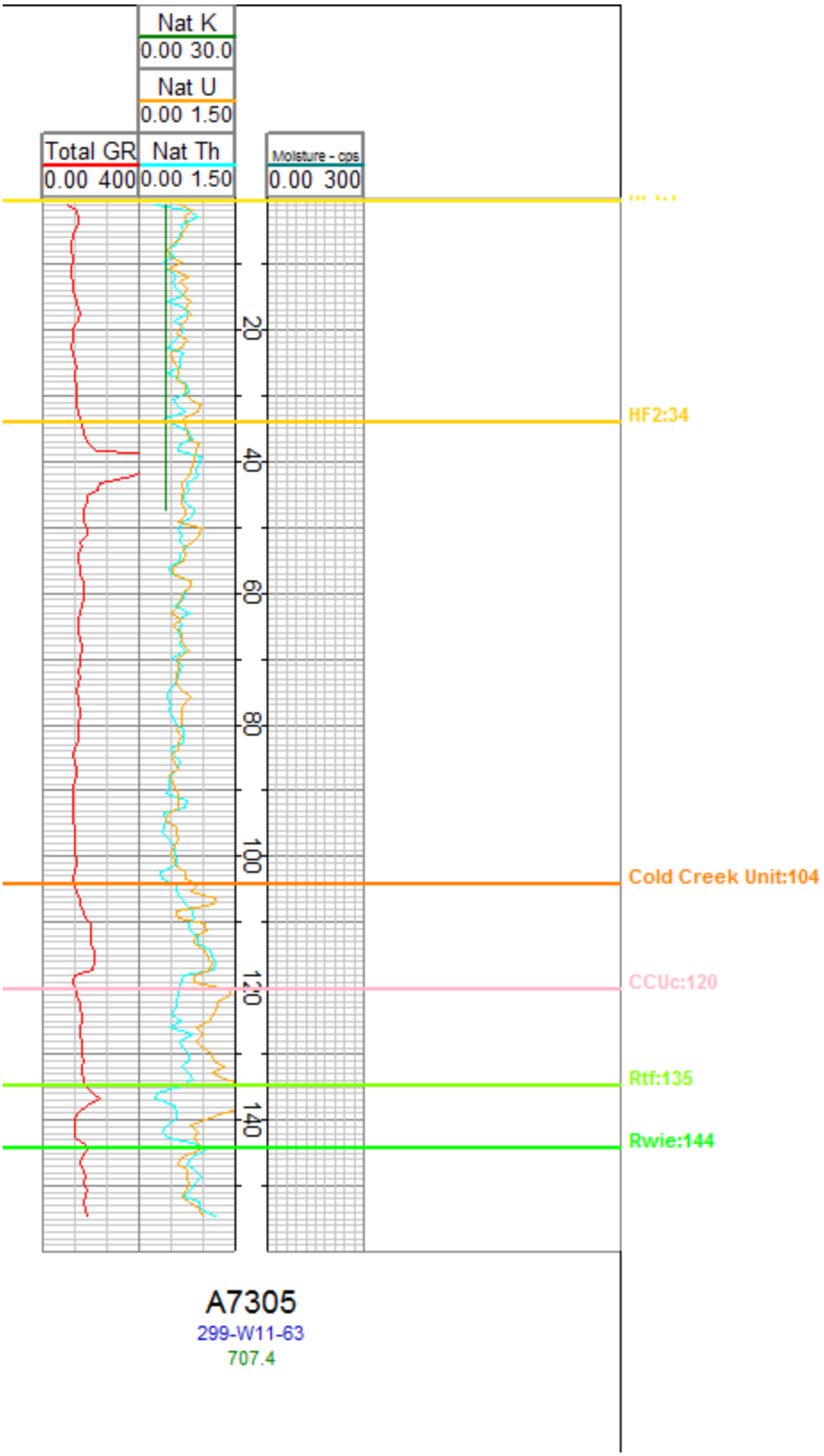

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF2:42
20
40
60
80
100
120
140
160
A7299
299-W11-57
713.0

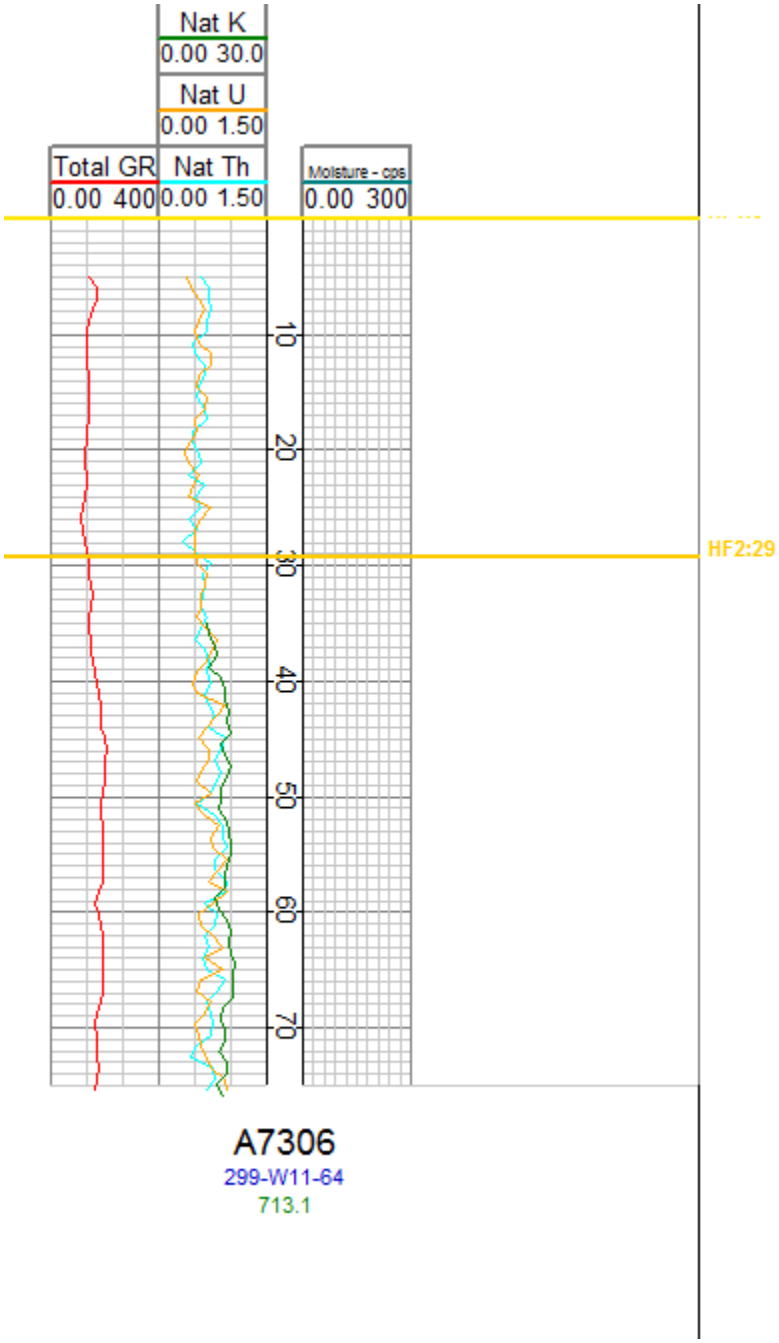

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
80
HF2:30
A7301
299-W11-59
707.8

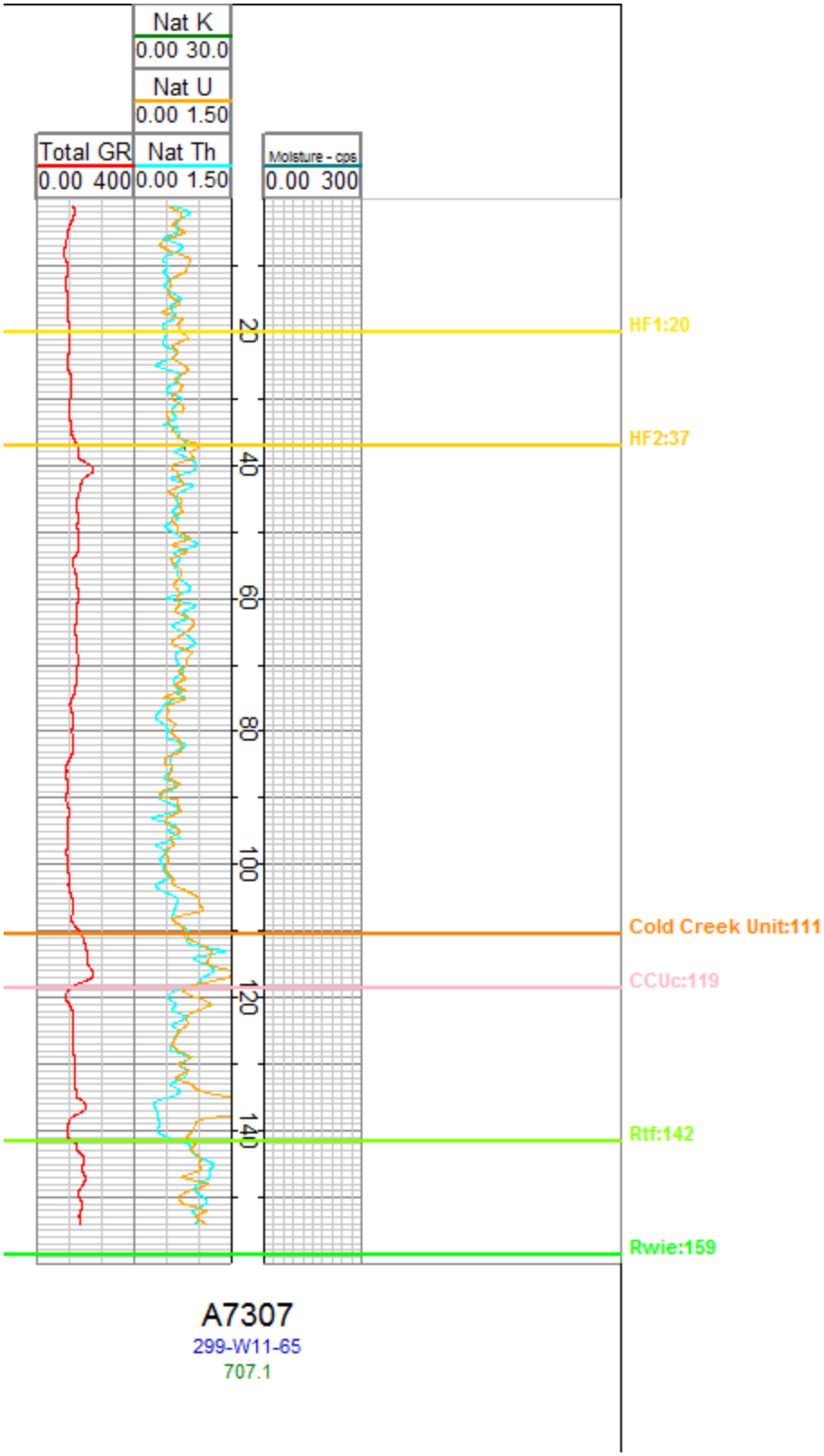

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:3
HF2:30
Cold Creek Unit:113
CCUc:122
20
40
60
80
100
120
140
A7302
299-W11-60
711.7

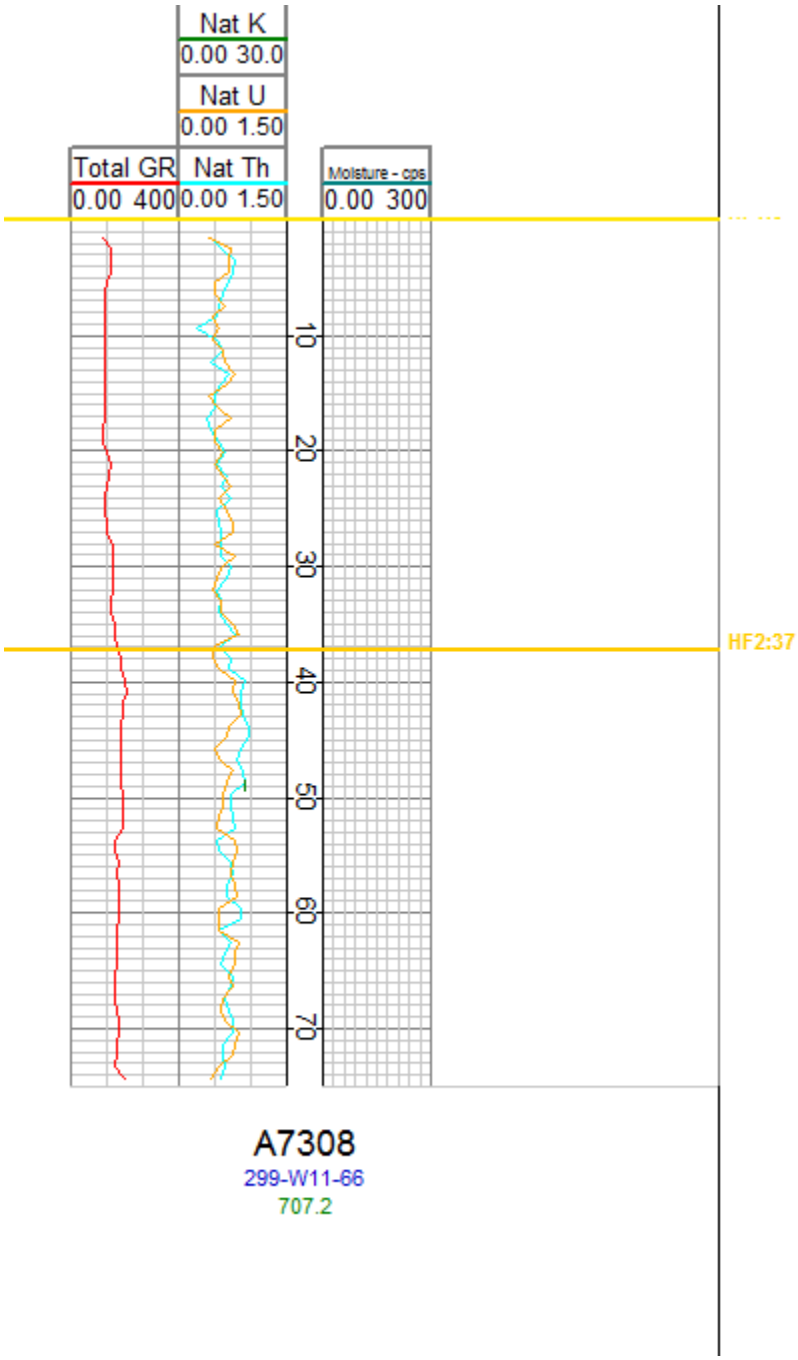

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
80
HF2:37
A7303
299-W11-61
712.4

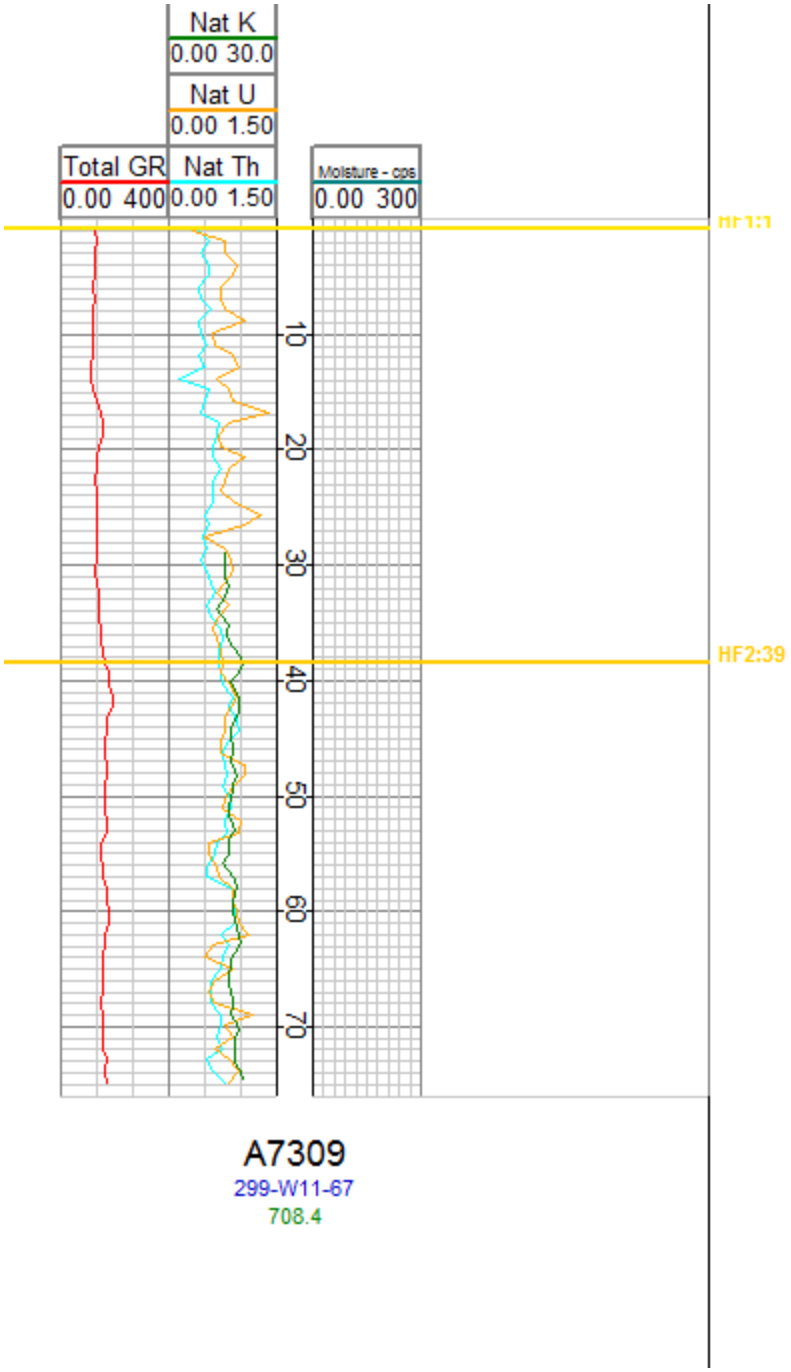

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
80
90
100
HF1:18
A7304
299-W11-62
709.2

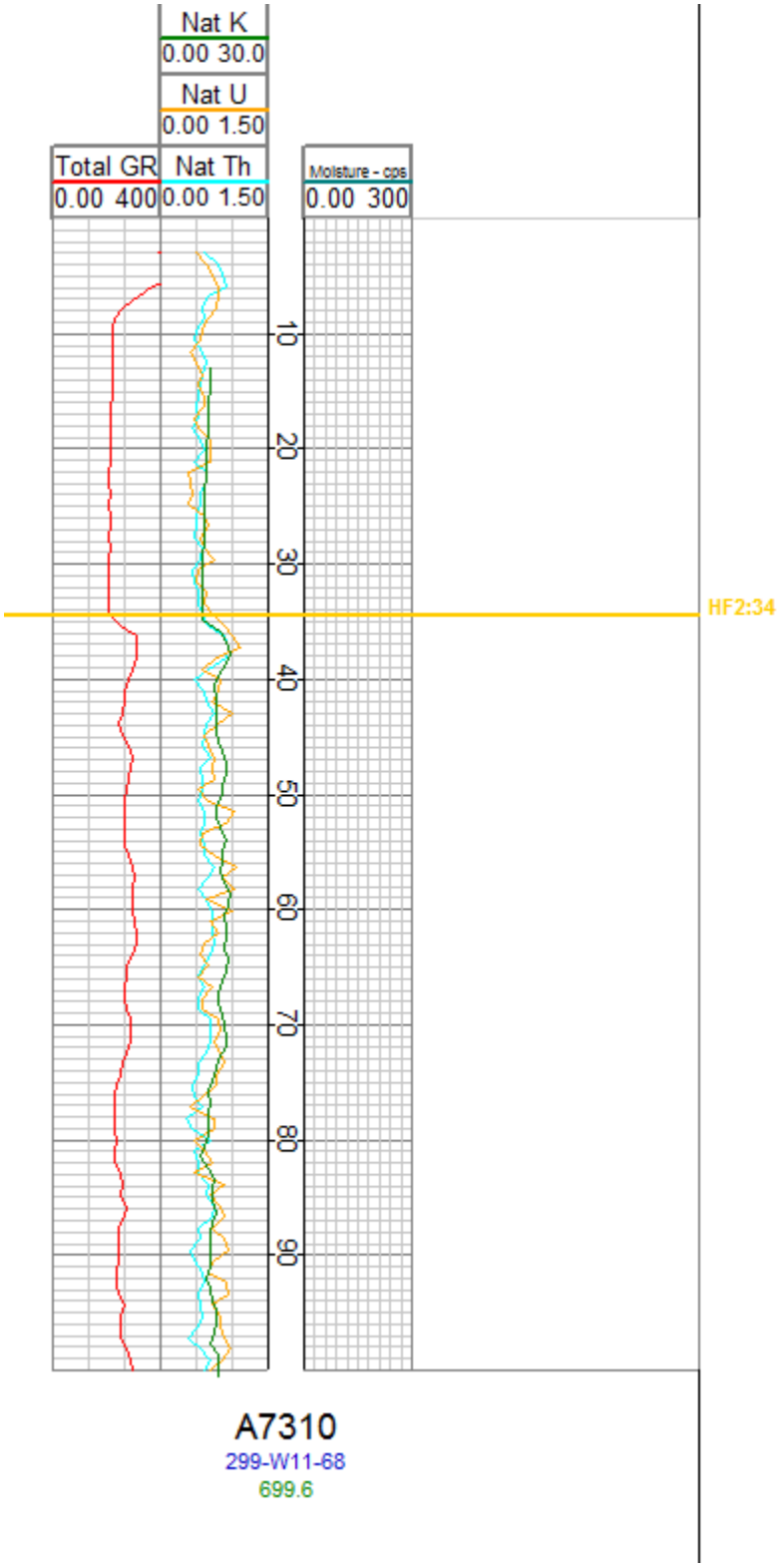

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
HF2:34
Cold Creek Unit:104
CCUc:120
Rtf:135
Rwie:144
A7305
299-W11-63
707.4

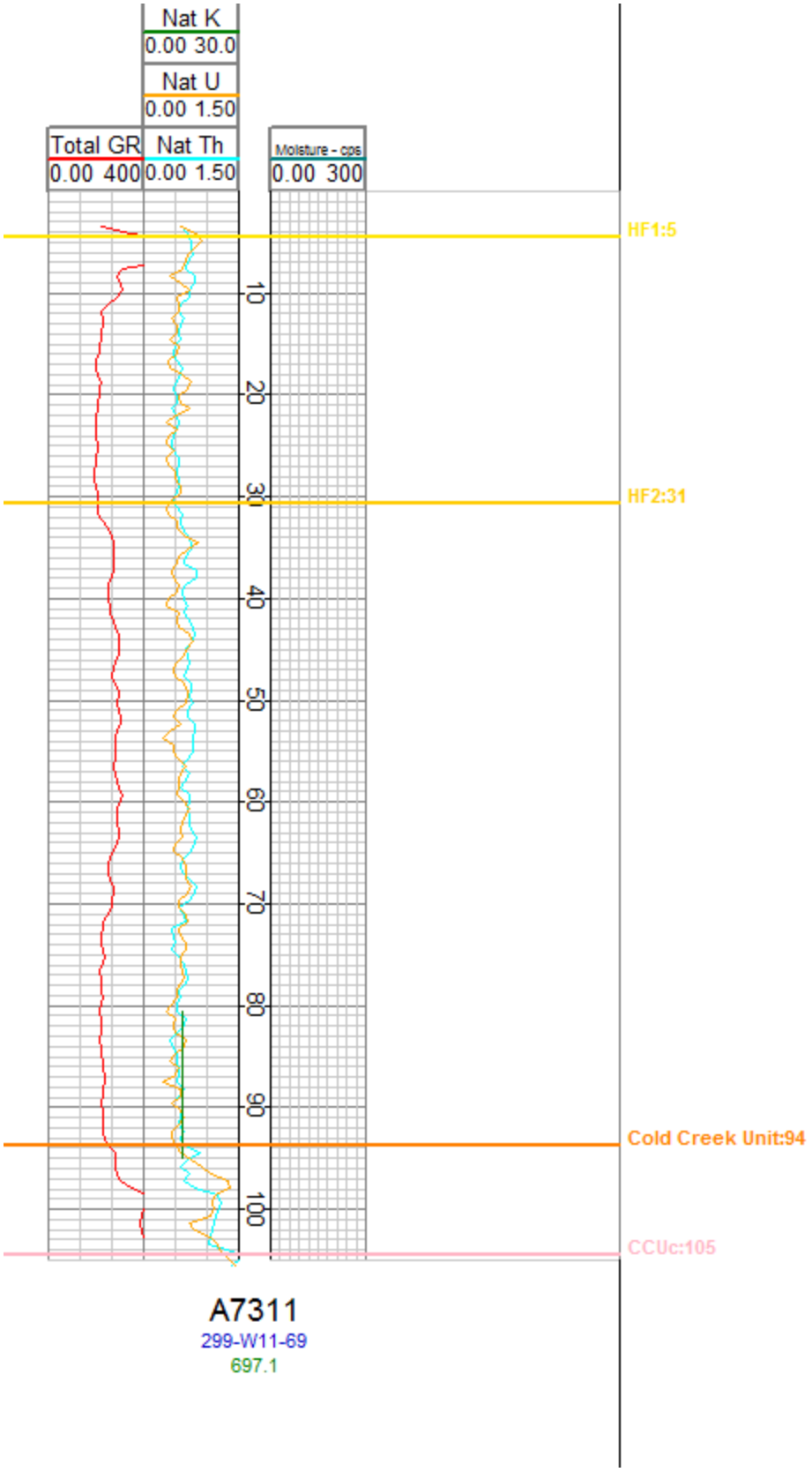

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
HF2:29
A7306
299-W11-64
713.1

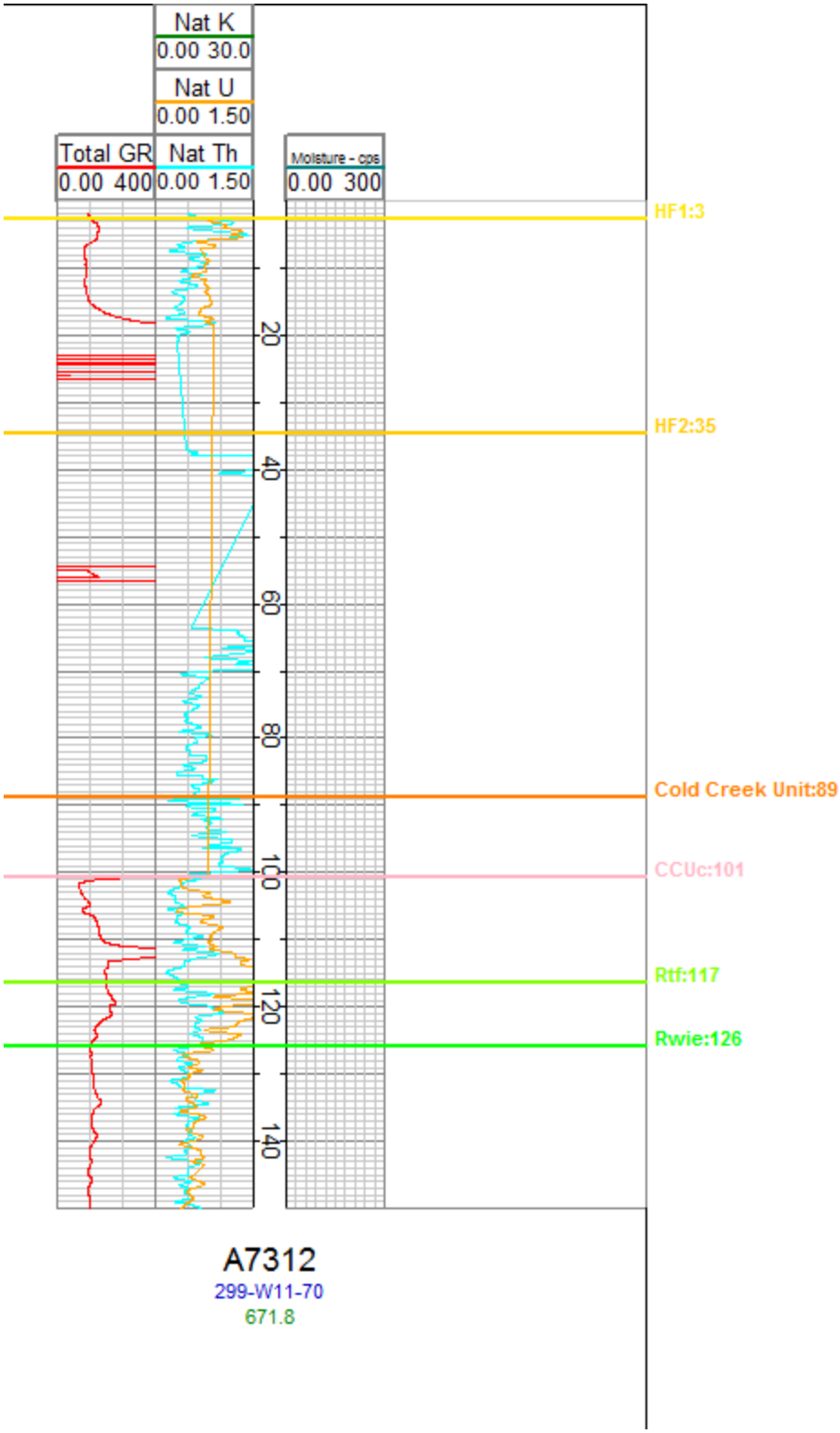

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
HF1:20
HF2:37
Cold Creek Unit:111
CCUc:119
Rtf:142
Rwie:159
A7307
299-W11-65
707.1

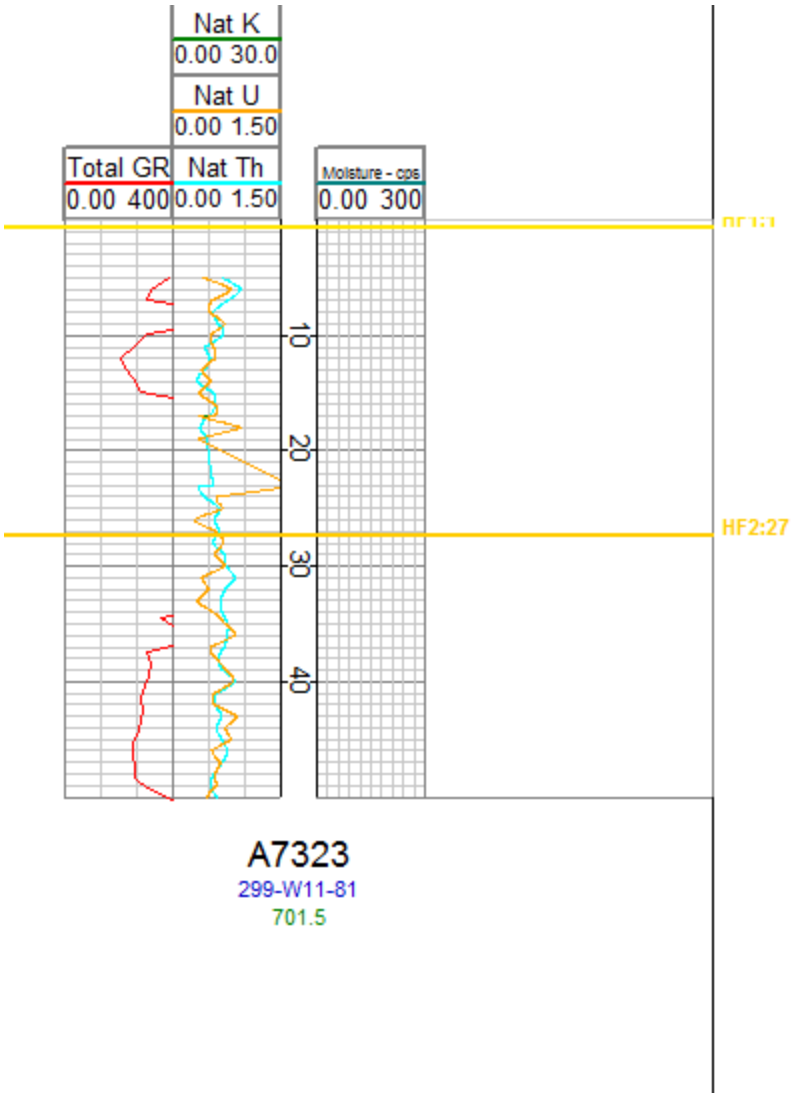

Total GR
0.00 400
Nat K
0.00 30.0
Nat U
0.00 1.50
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
HF2:37
A7308
299-W11-66
707.2

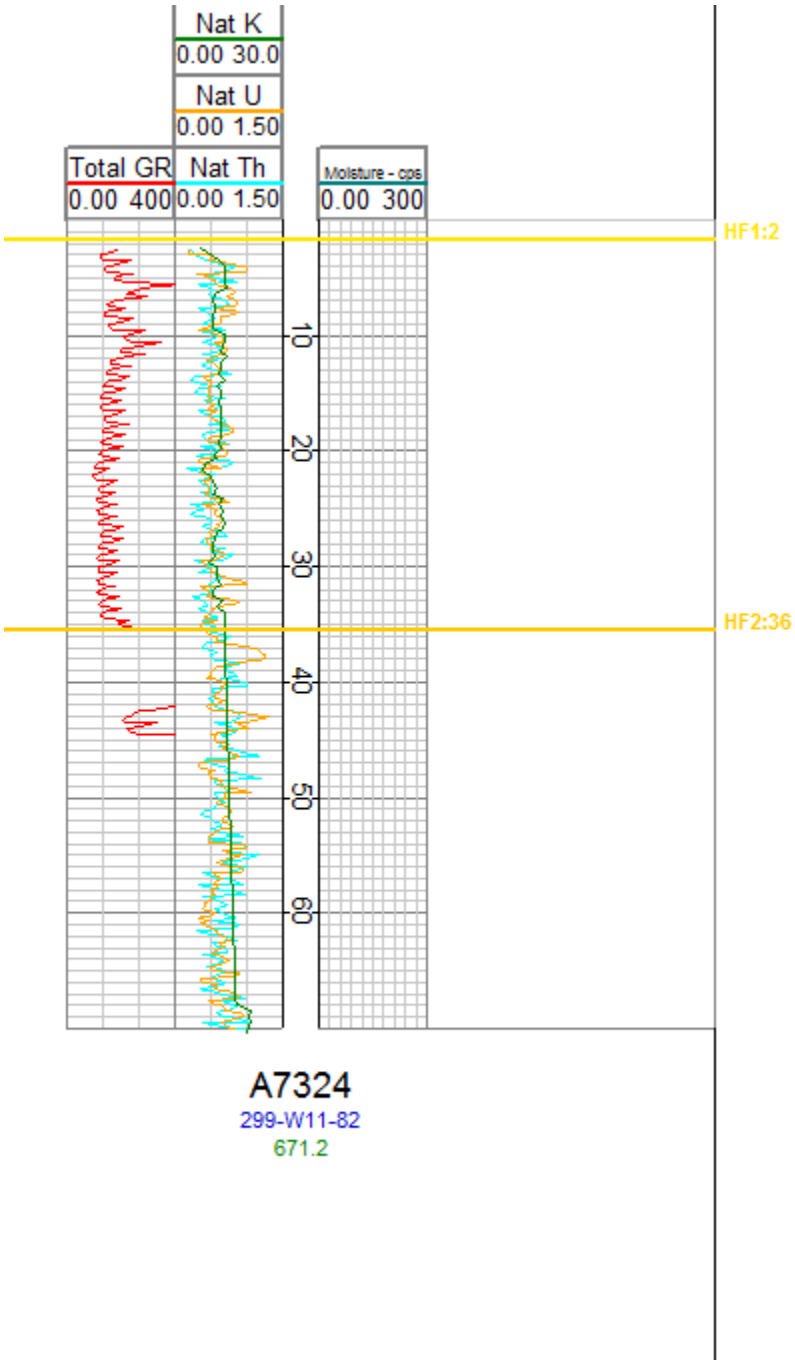

Total GR
0.00 400
Nat K
0.00 30.0
Nat U
0.00 1.50
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:1
HF2:39
10
20
30
40
50
60
70
A7309
299-W11-67
708.4

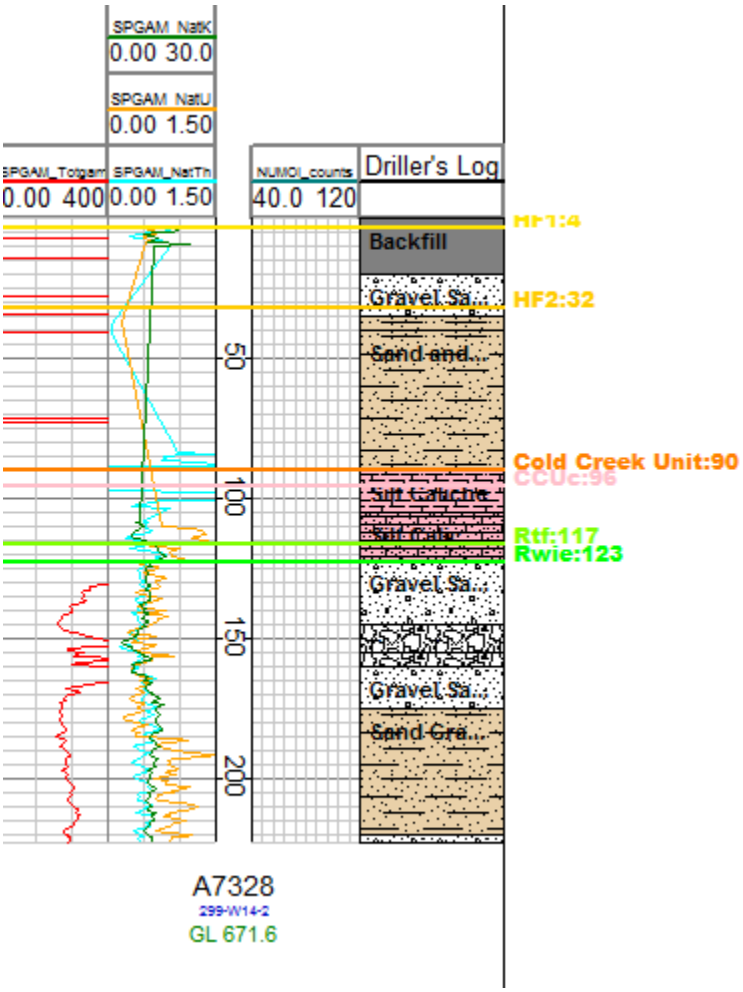

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
50
60
70
80
90
HF2:34
A7310
299-W11-68
699.6

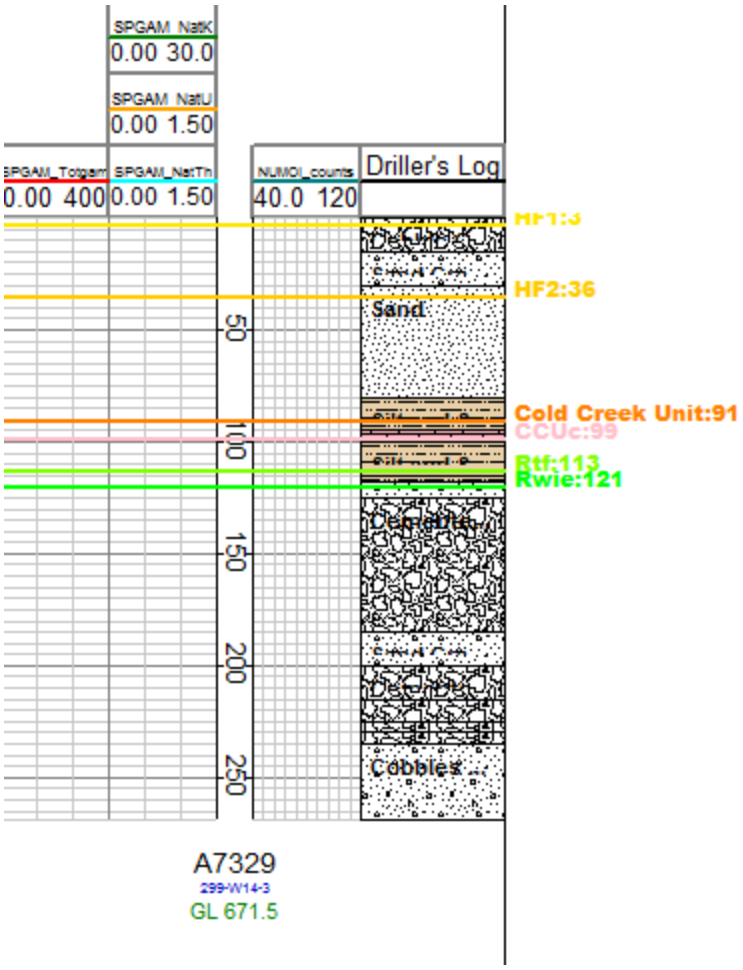

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:5
HF2:31
Cold Creek Unit:94
CCUc:105
10
20
30
40
50
60
70
80
90
100
A7311
299-W11-69
697.1

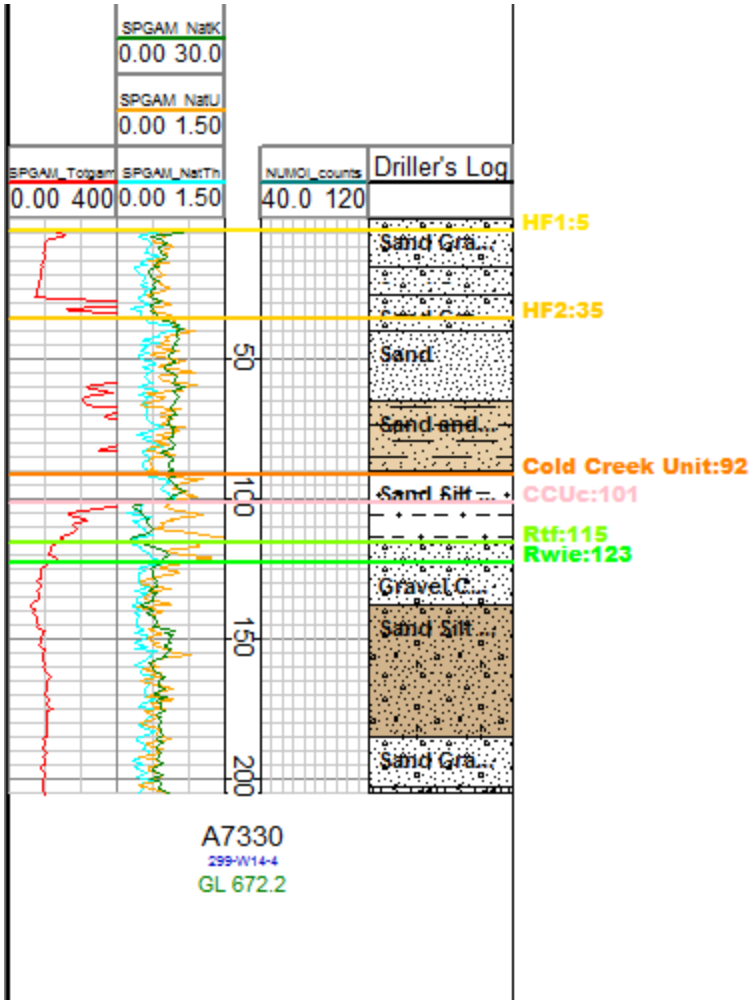

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:3
HF2:35
Cold Creek Unit:89
CCUc:101
Rtf:117
Rwie:126
20
40
60
80
100
120
140
A7312
299-W11-70
671.8

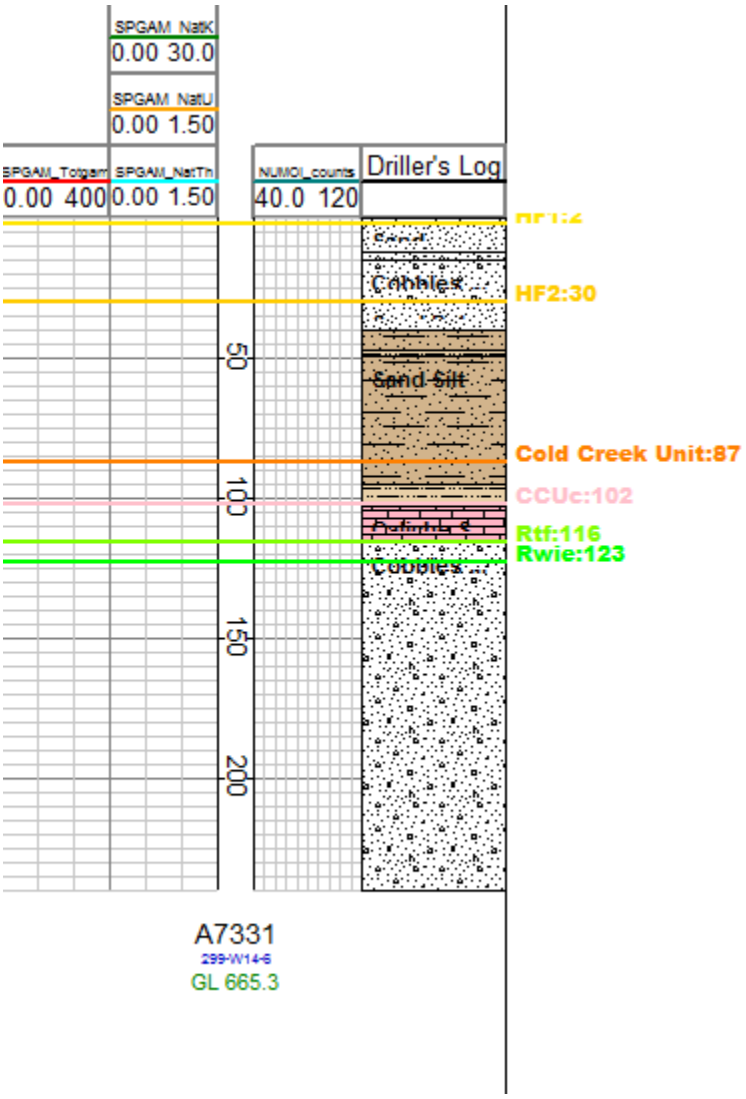

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
10
20
30
40
HF2:27
A7323
299-W11-81
701.5

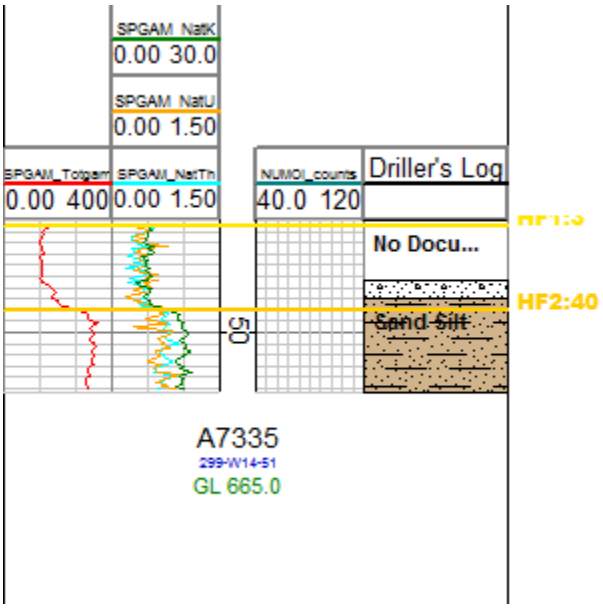

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:2
HF2:36
10
20
30
40
50
60
A7324
299-W11-82
671.2

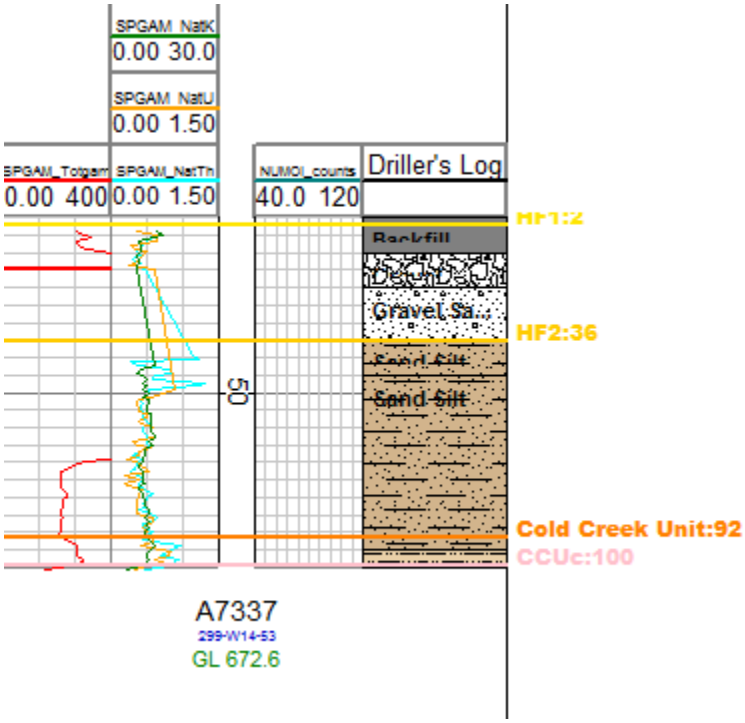

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:4
Backfill
Gravel Sa...
HF2:32
Sand and...
Cold Creek Unit:90
CCUc:96
Silt Caliche
Rtf:117
Rwie:123
Gravel Sa...
Gravel Sa...
Sand Gra...
50
100
150
200
A7328
299-W14-2
GL 671.6

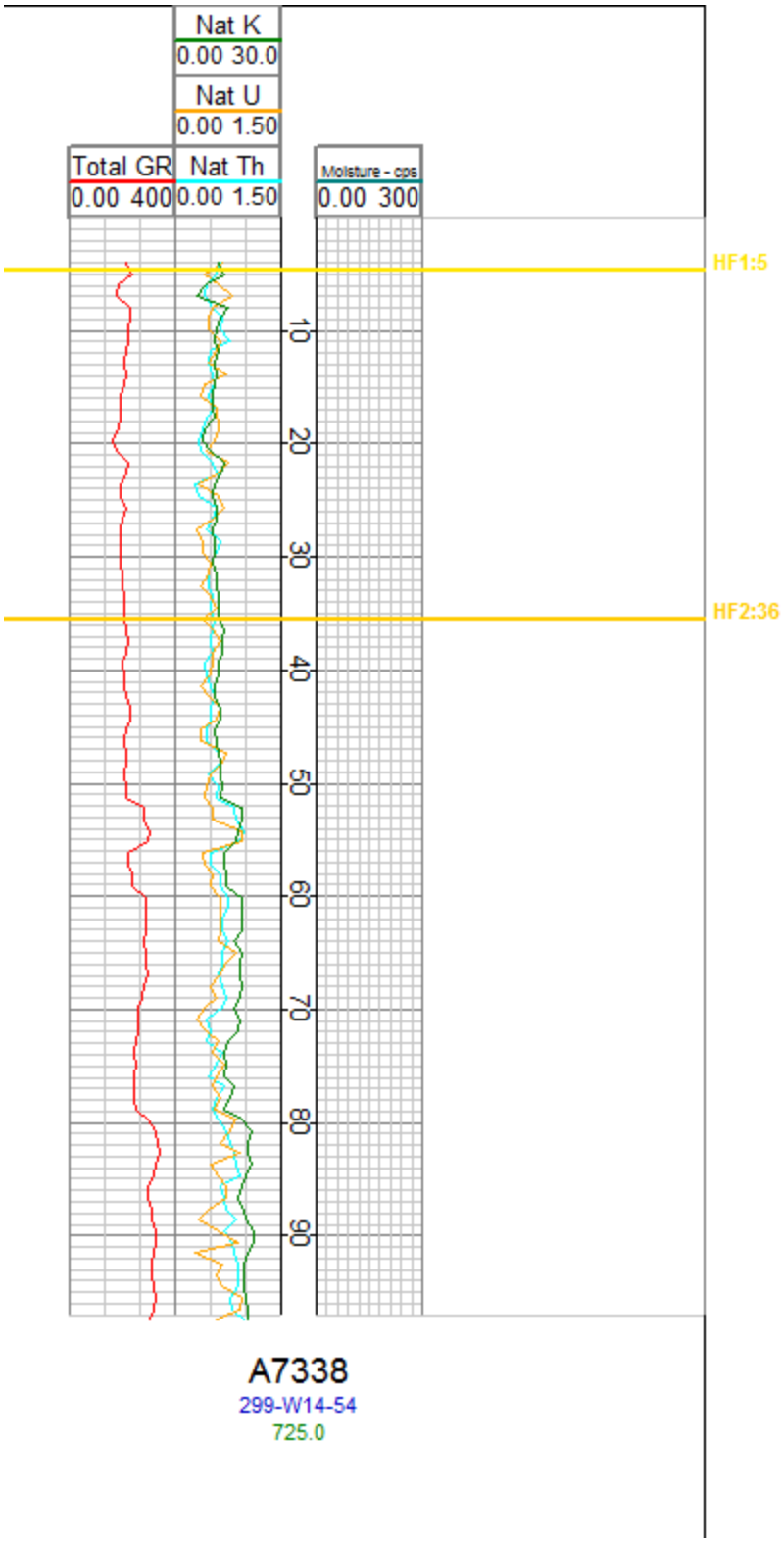

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:36
Sand
Cold Creek Unit:91
CCUc:99
Rtf:113
Rwie:121
Cobbles
50
100
150
200
250
A7329
299-W14-3
GL 671.5

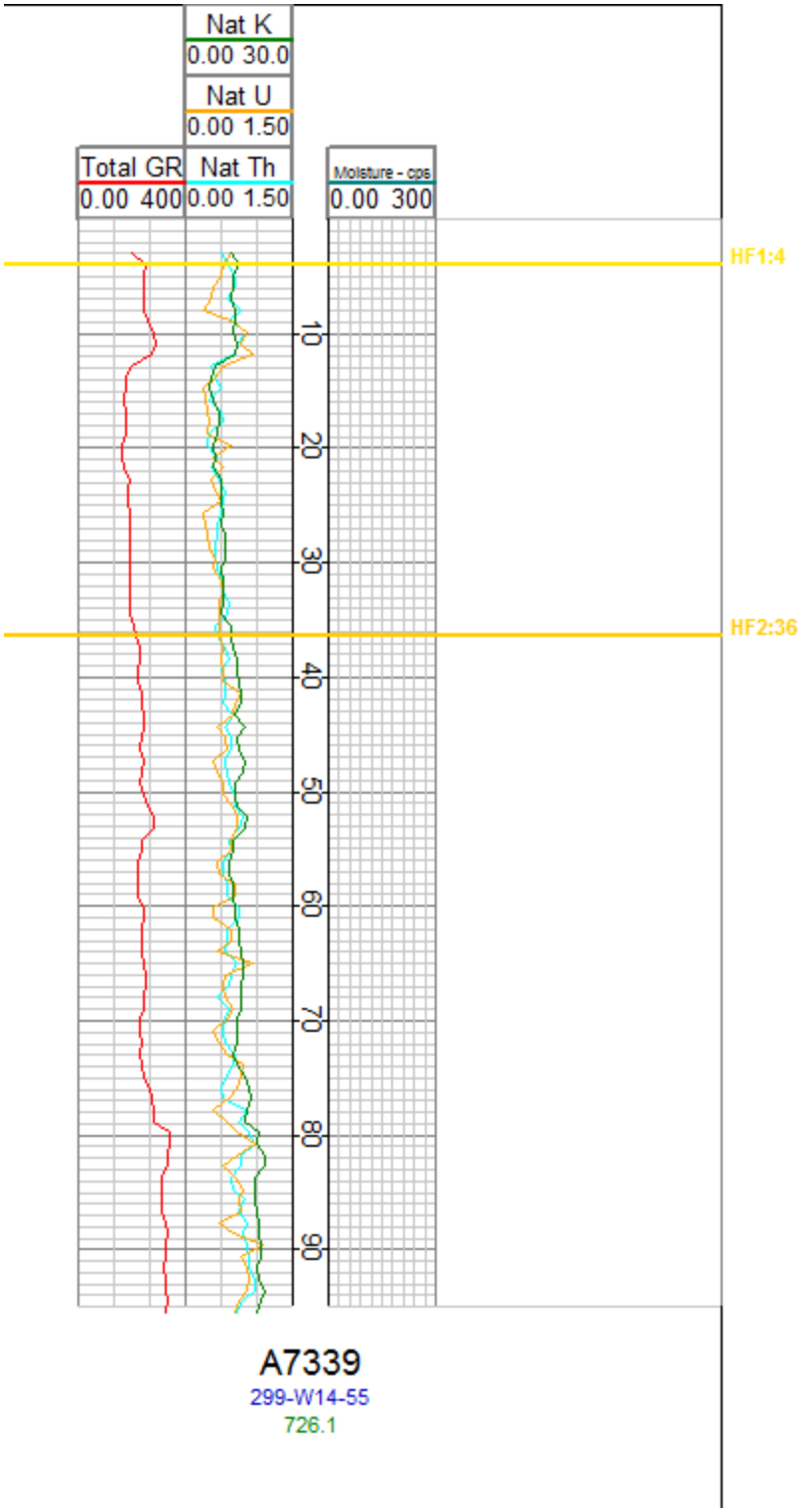

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:5
HF2:35
Cold Creek Unit:92
CCUc:101
Rtf:115
Rwie:123
Sand Gra...
Sand
Sand and...
Sand Silt ...
Gravel C...
Sand Silt ...
Sand Gra...
50
100
150
200
A7330
299-W14-4
GL 672.2

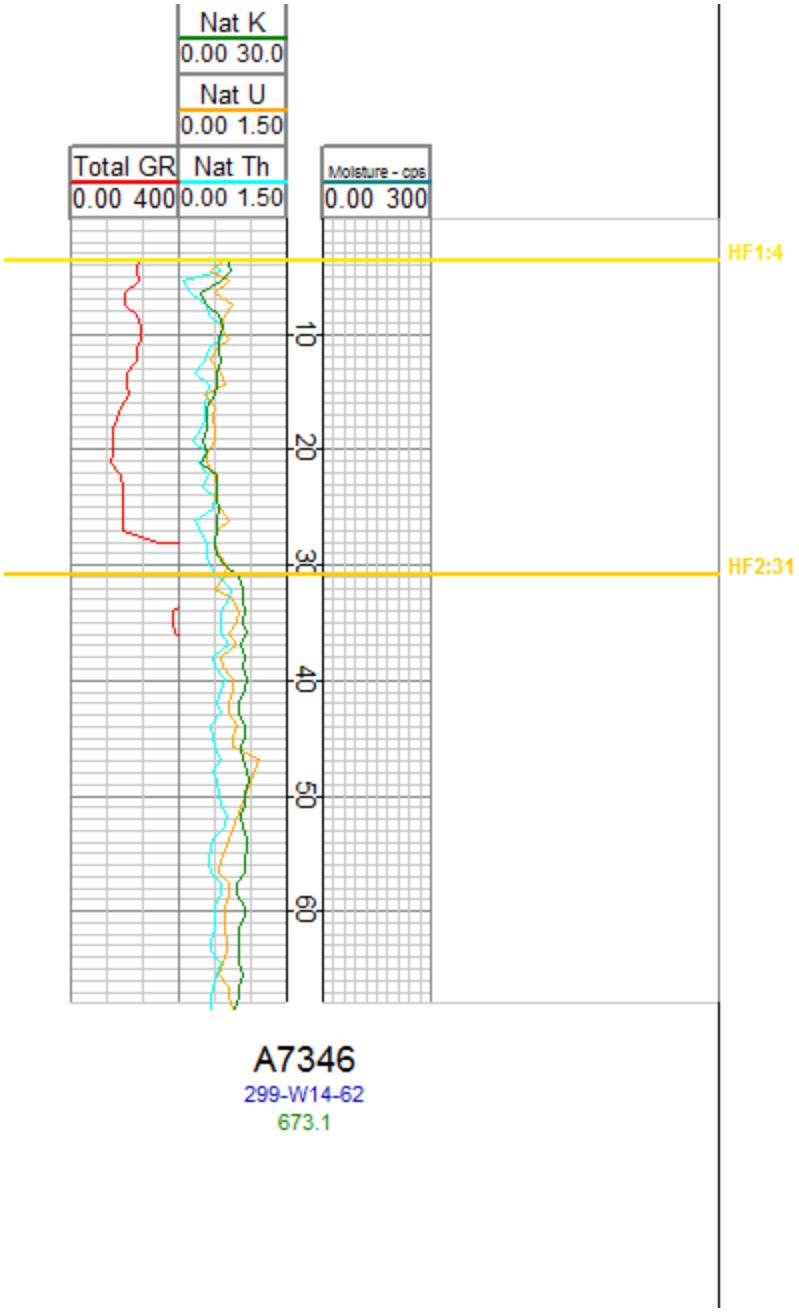

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Cobbles
HF2:30
Sand Silt
Cold Creek Unit:87
CCUc:102
Rtf:116
Rwie:123
Cobbles
50
100
150
200
A7331
299-W14-6
GL 665.3

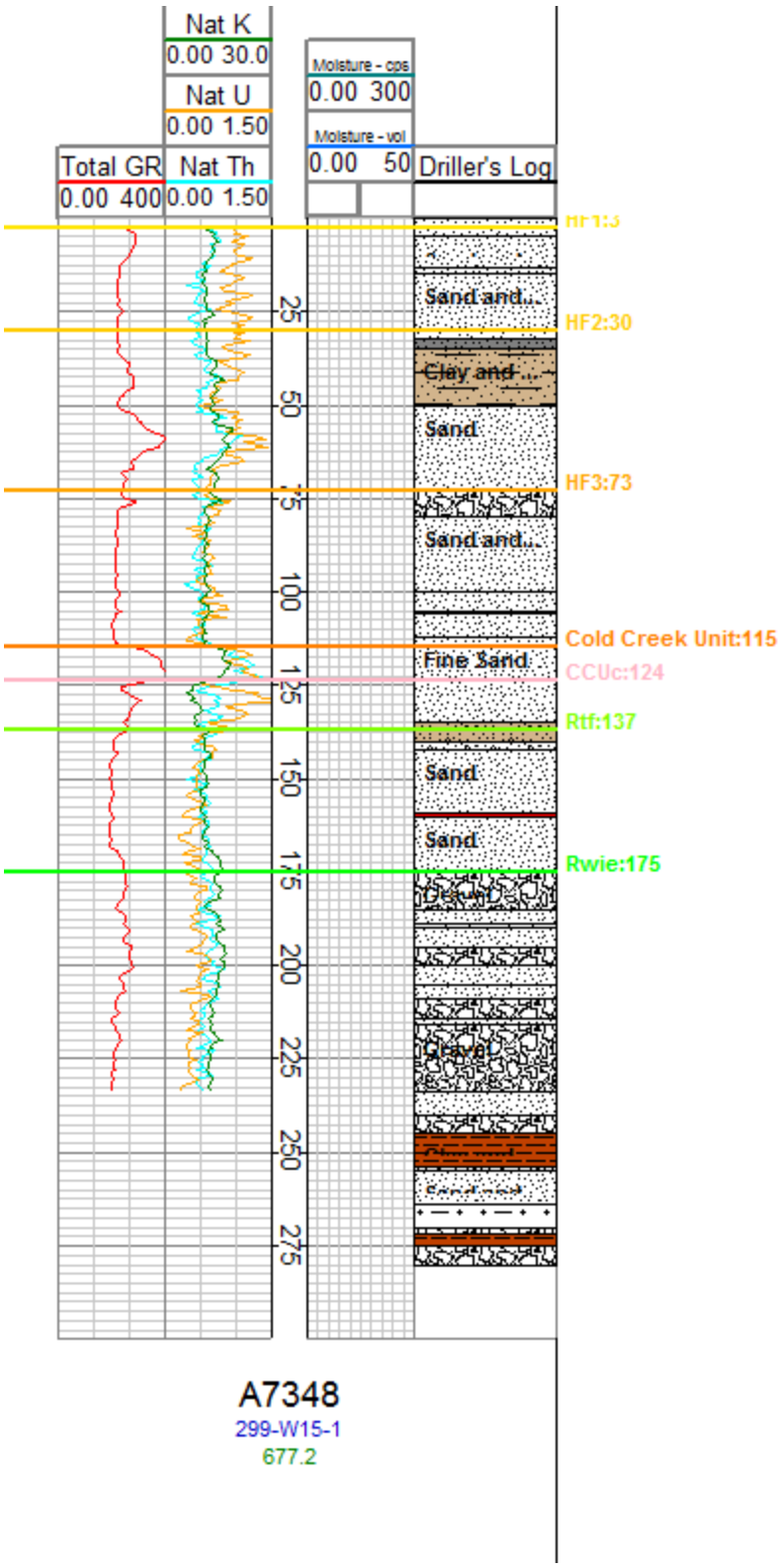

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
No Docu...
HF2:40
Sand Silt
CS
A7335
299-W14-51
GL 665.0

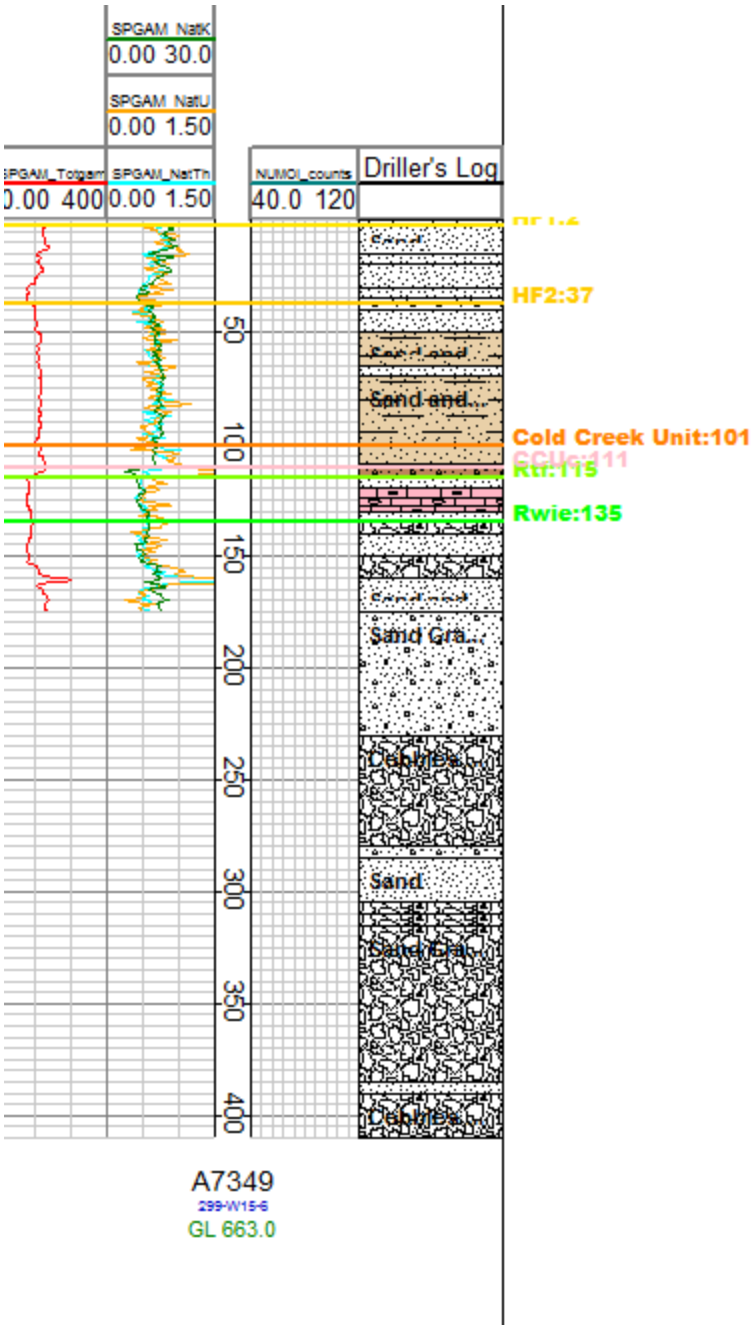

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:2
Backfill
Gravel Sa...
HF2:36
Sand Silt
Cold Creek Unit:92
CCUc:100
A7337
299-W14-53
GL 672.6

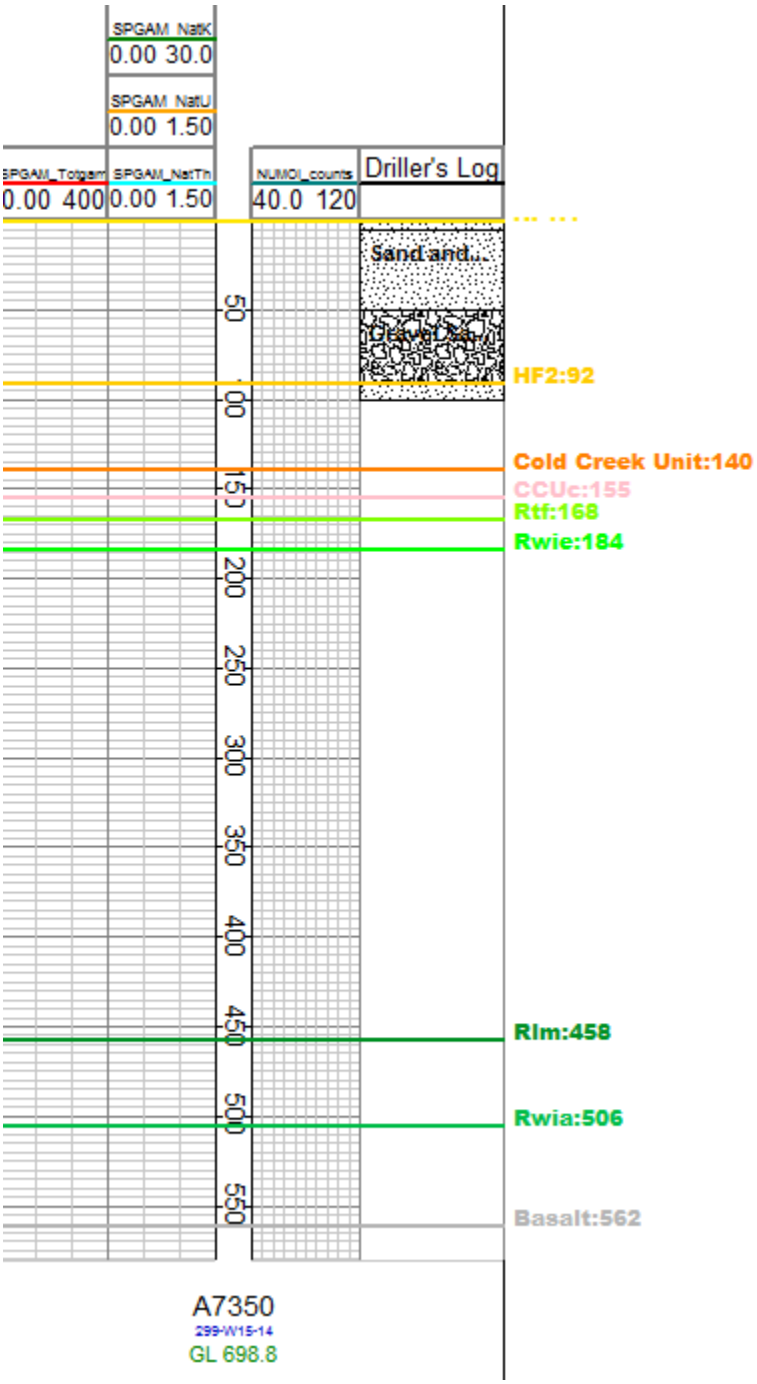

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:5
HF2:36
10
20
30
40
50
60
70
80
90
A7338
299-W14-54
725.0

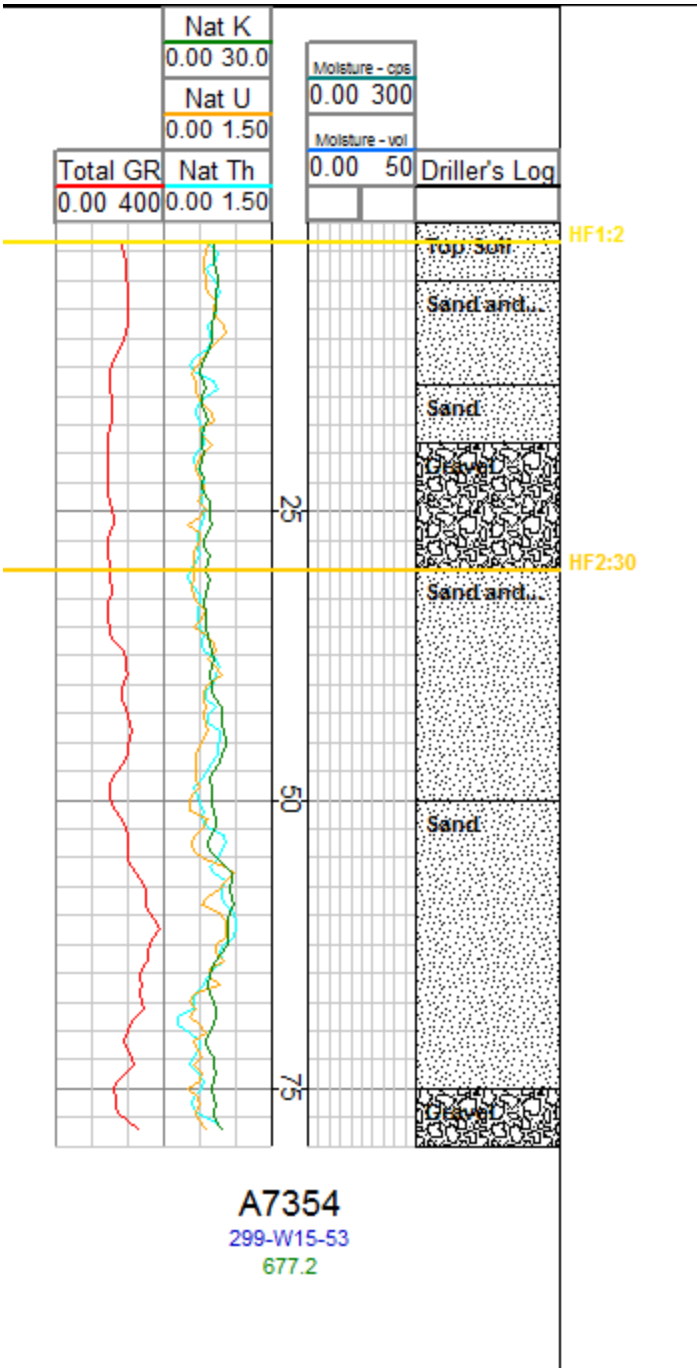

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:4
HF2:36
10
20
30
40
50
60
70
80
90
A7339
299-W14-55
726.1

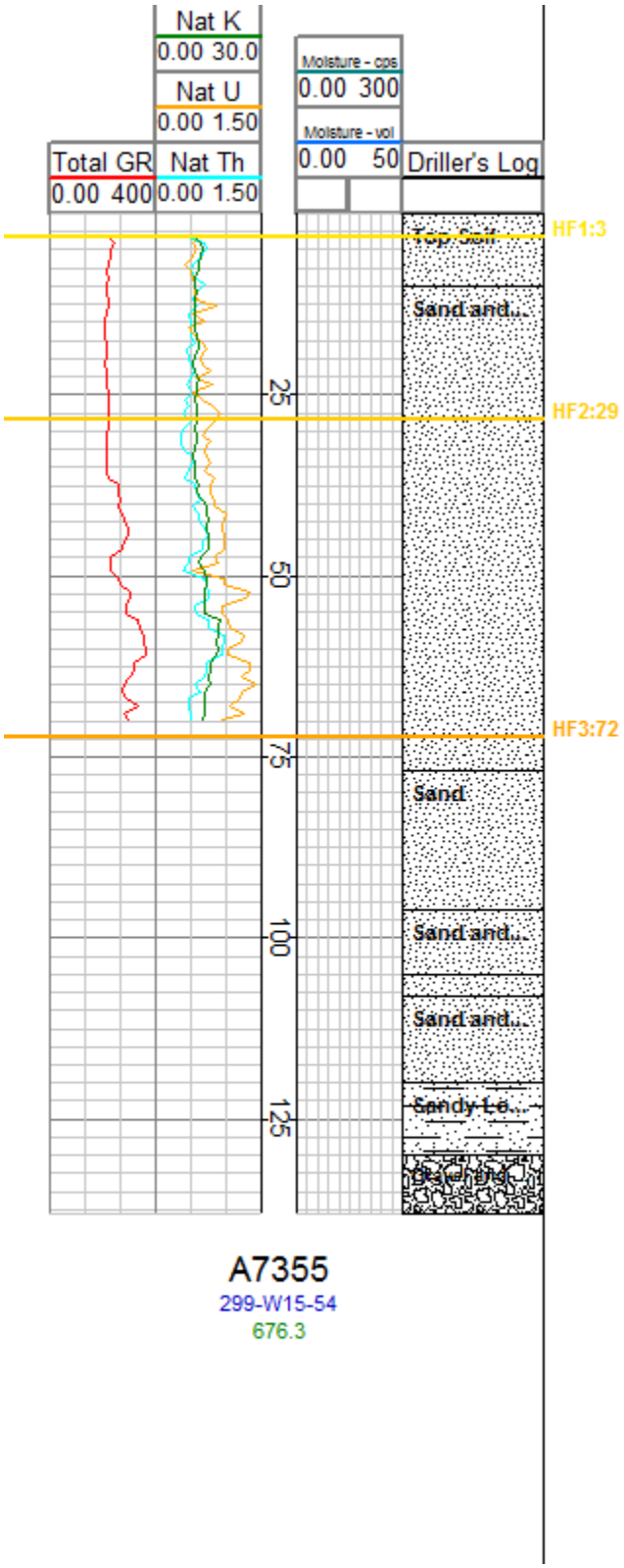

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:4
HF2:31
10
20
30
40
50
60
A7346
299-W14-62
673.1

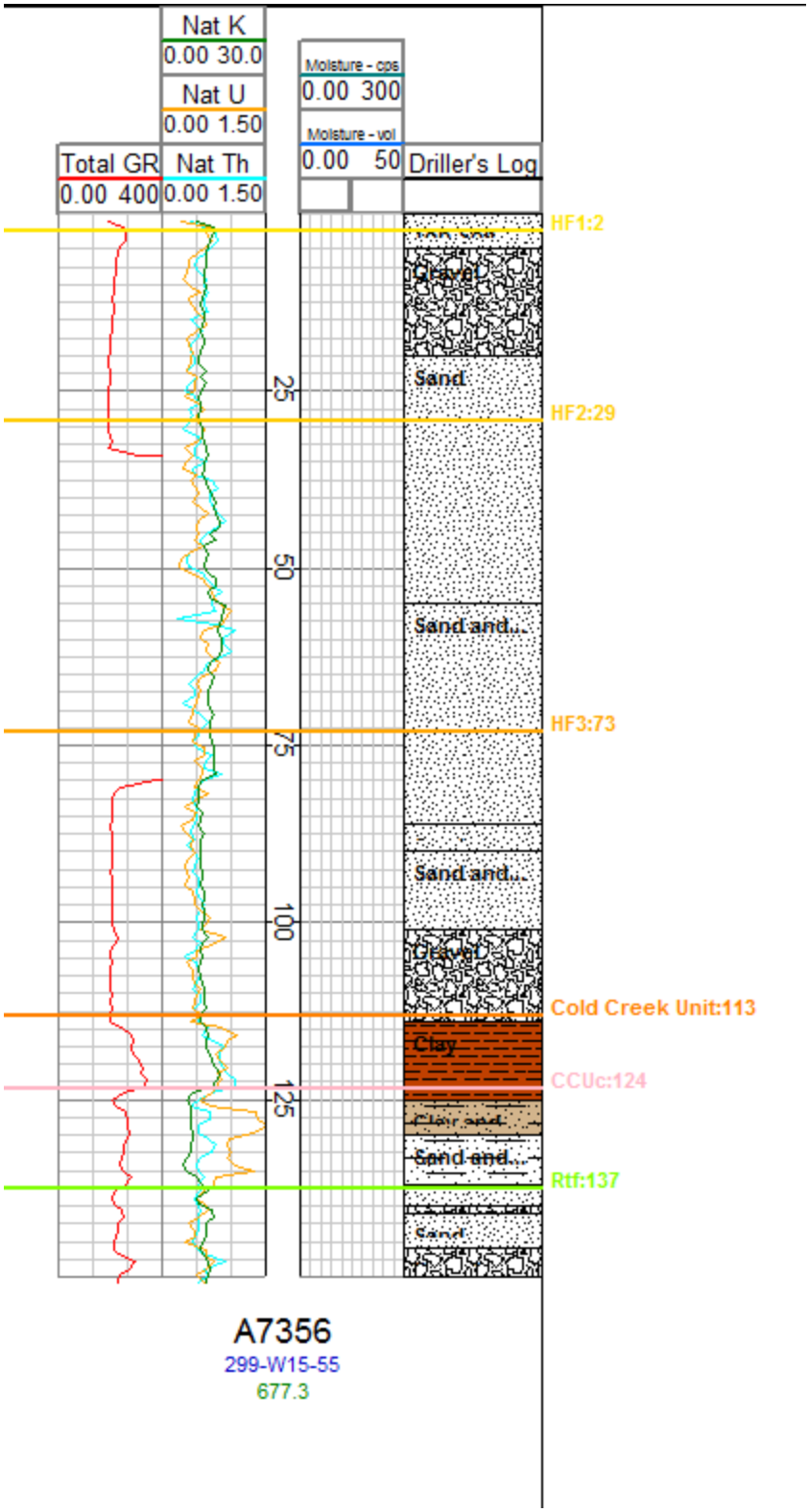

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
25
50
75
100
125
150
175
200
225
250
275
Sand and...
HF2:30
Clay and ...
Sand
HF3:73
Sand and...
Cold Creek Unit:115
Fine Sand
CCUc:124
Rtf:137
Sand
Sand
Rwie:175
Gravel
A7348
299-W15-1
677.2

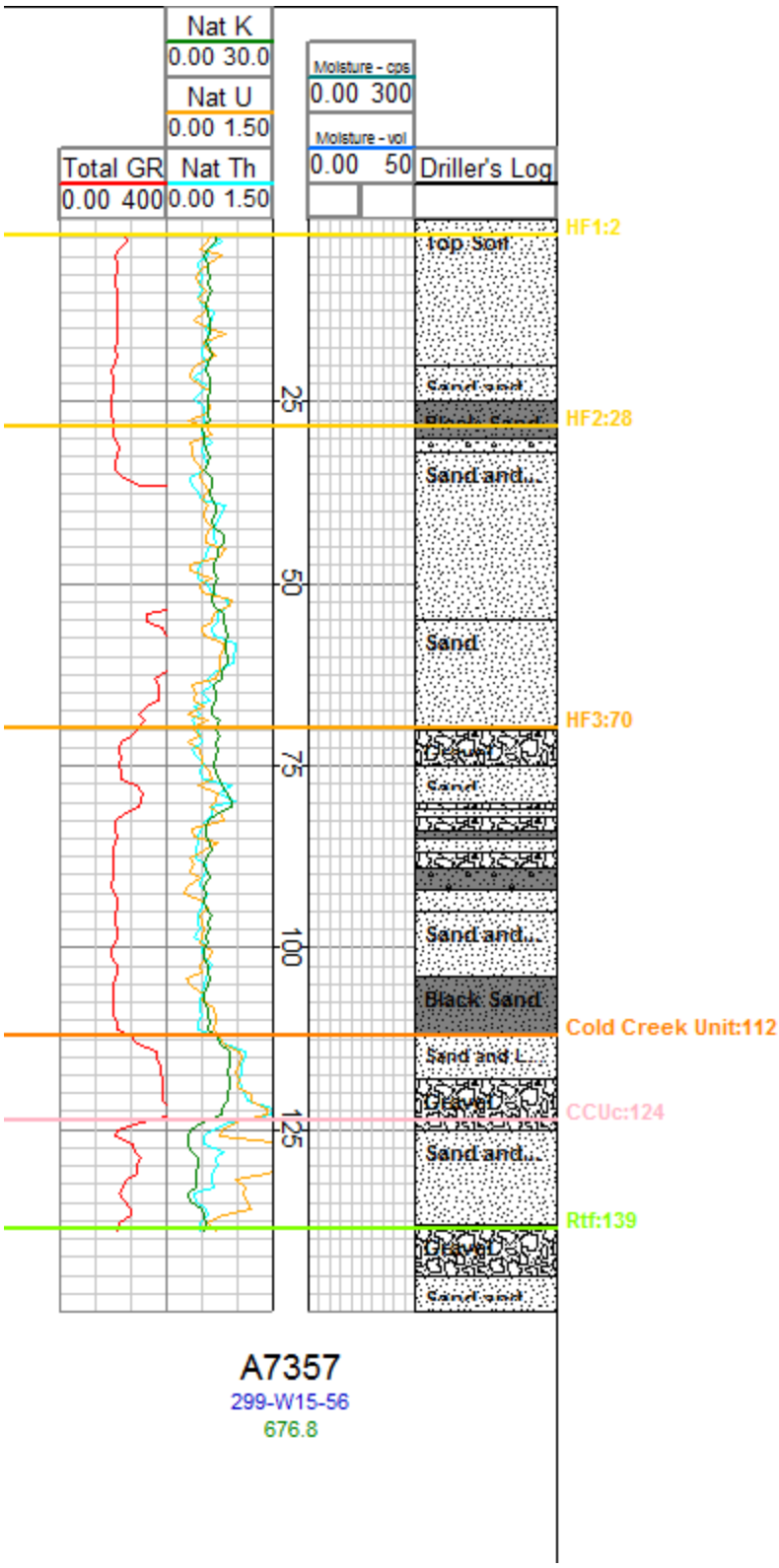

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF2:37
Cold Creek Unit:101
Rwie:135
Sand and...
Sand Gra...
Cobbles
Sand
Sand/Gra...
Cobbles
50
100
150
200
250
300
350
400
A7349
299-W15-6
GL 663.0

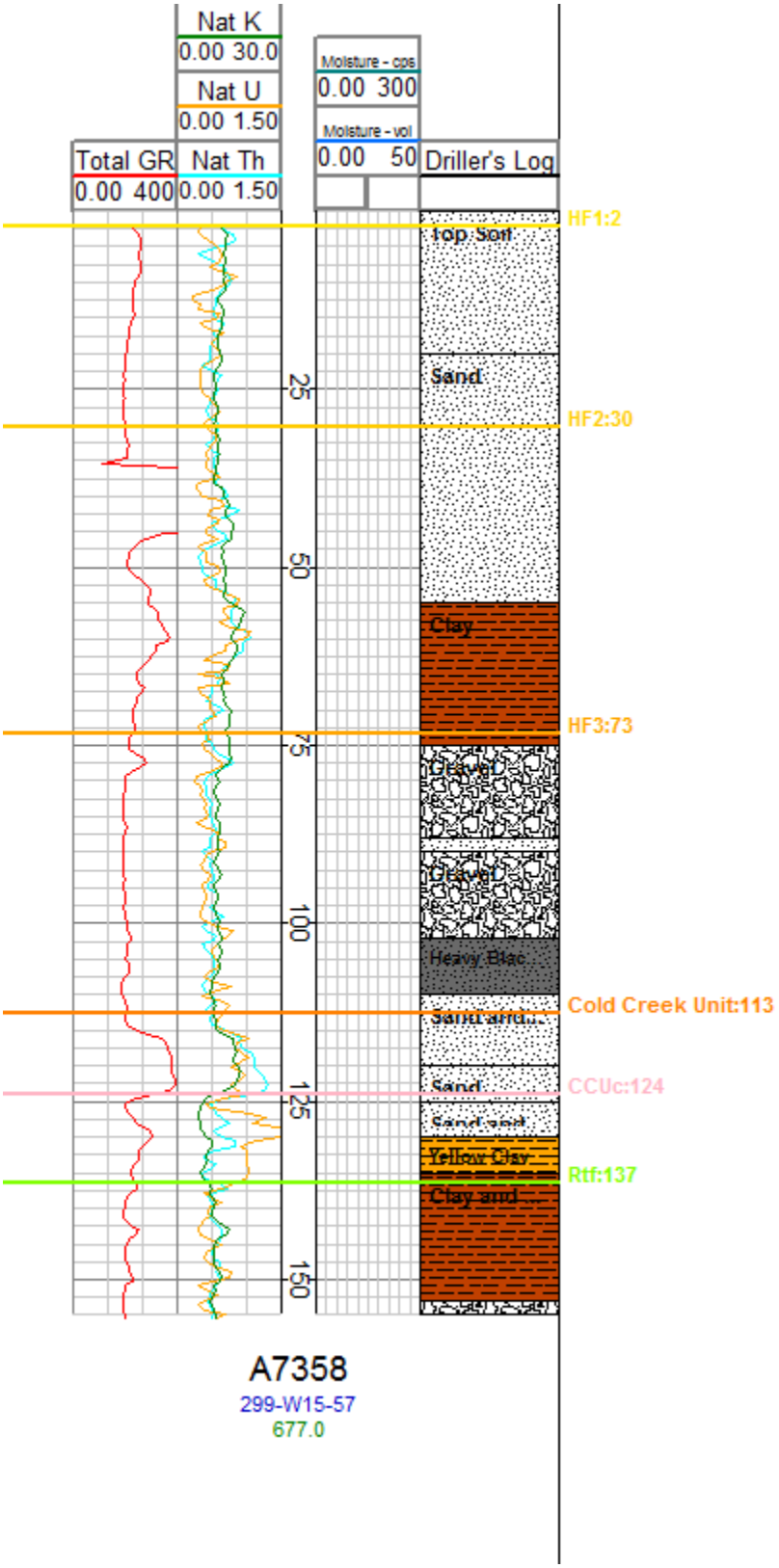

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand and...
Gravel and...
HF2:92
Cold Creek Unit:140
CCUc:155
Rtf:168
Rwie:184
Rlm:458
Rwia:506
Basalt:562
50
100
150
200
250
300
350
400
450
500
550
A7350
299-W15-14
GL 698.8

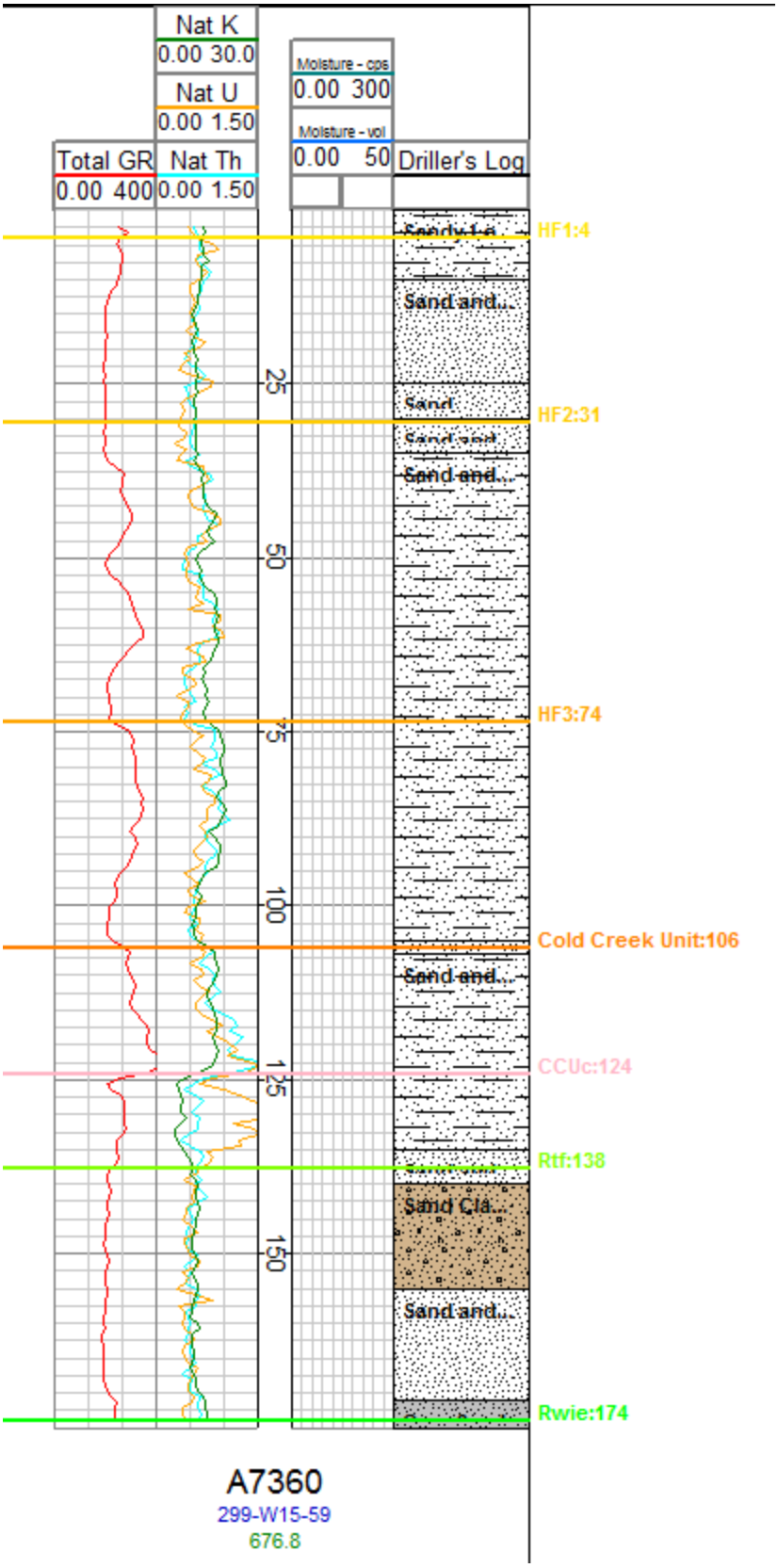

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
Top Soil
Sand and...
Sand
Gravel
25
HF2:30
Sand and...
50
Sand
75
Gravel
A7354
299-W15-53
677.2

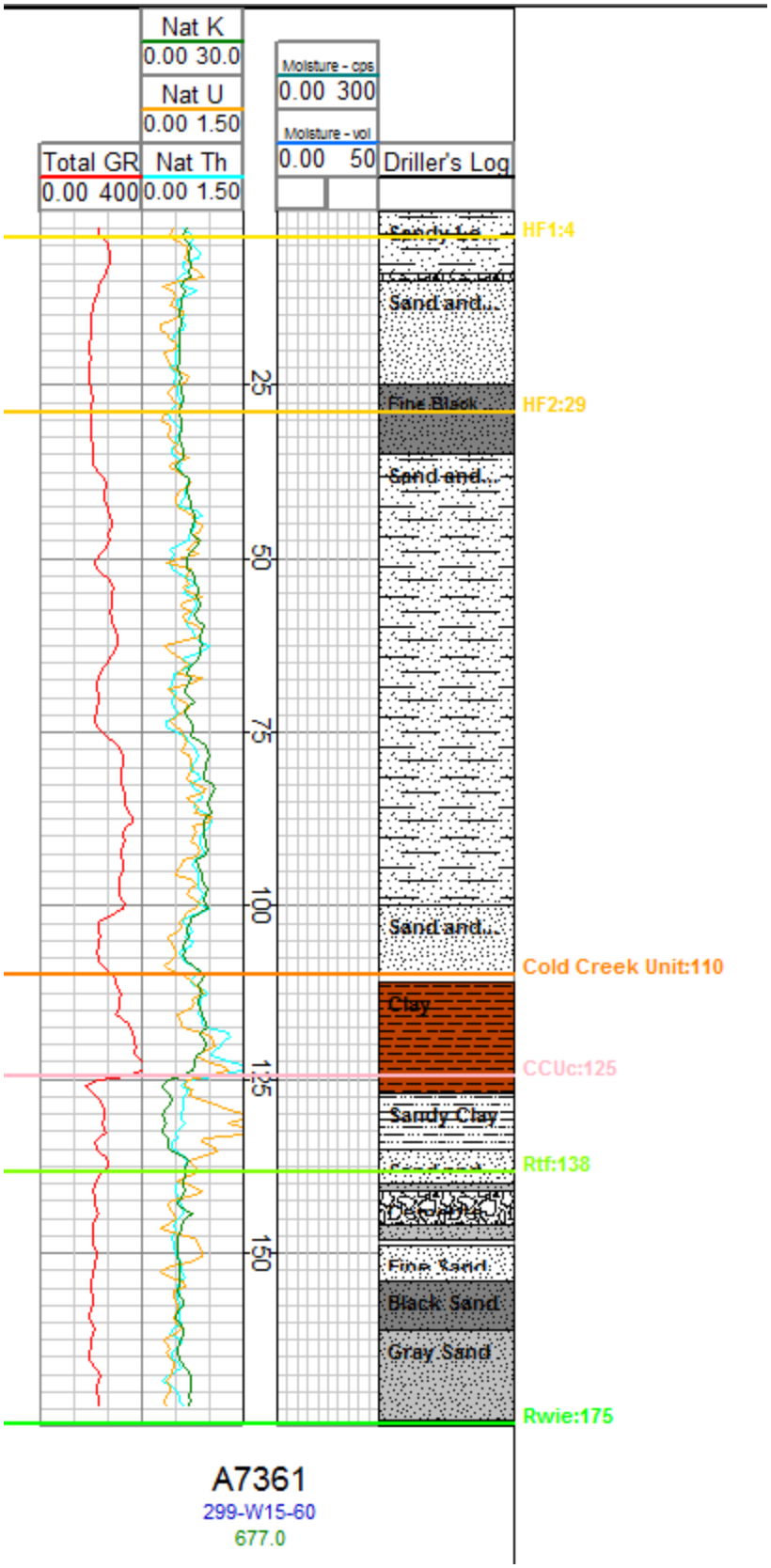

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:3
Top Soil
Sand and...
HF2:29
HF3:72
Sand
Sand and...
Sand and...
Sandy Le...
25
50
75
100
125
A7355
299-W15-54
676.3

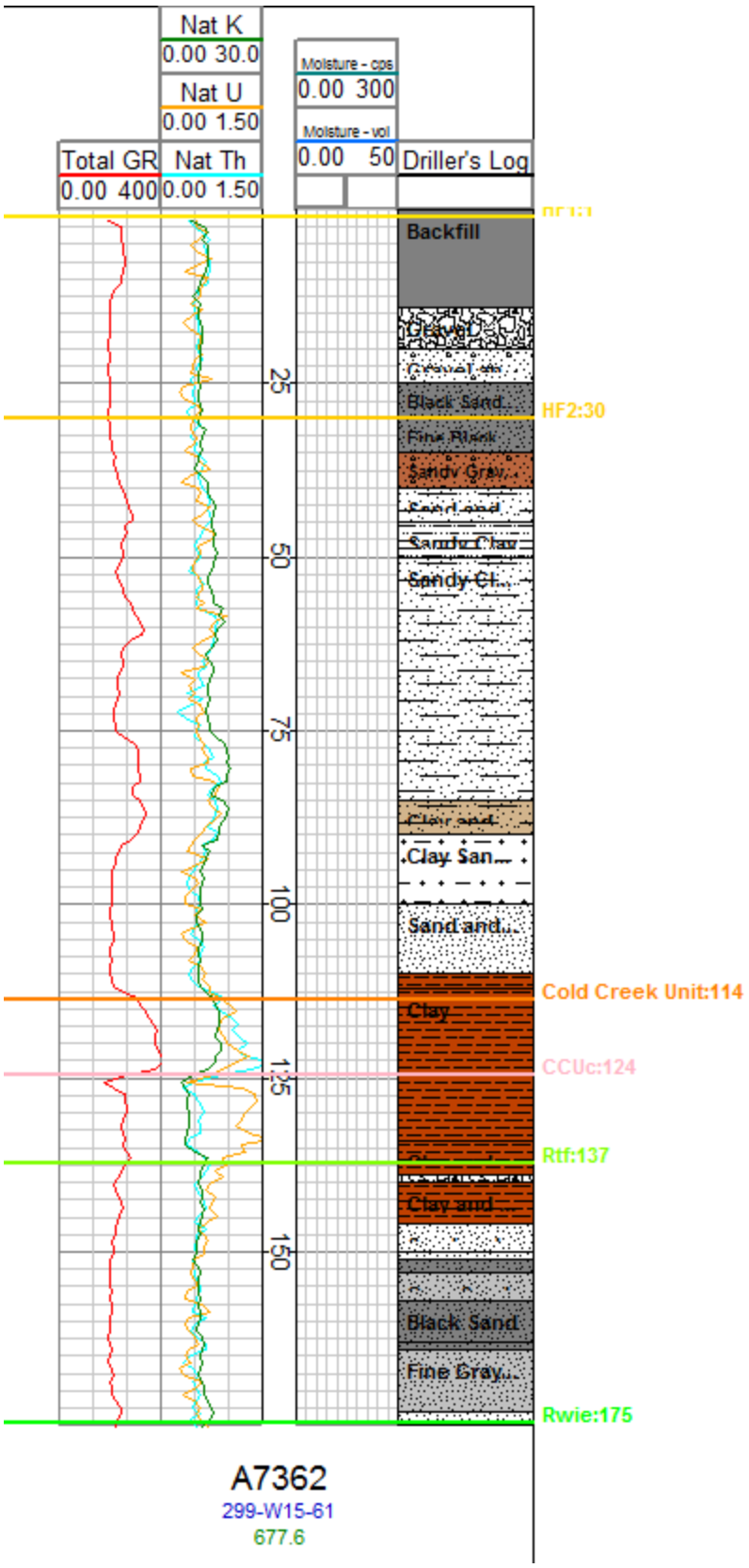

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
Gravel
Sand
HF2:29
Sand and...
HF3:73
Sand and...
Gravel
Cold Creek Unit:113
Clay
CCUc:124
Sand and...
Rtf:137
25
50
75
100
125
A7356
299-W15-55
677.3

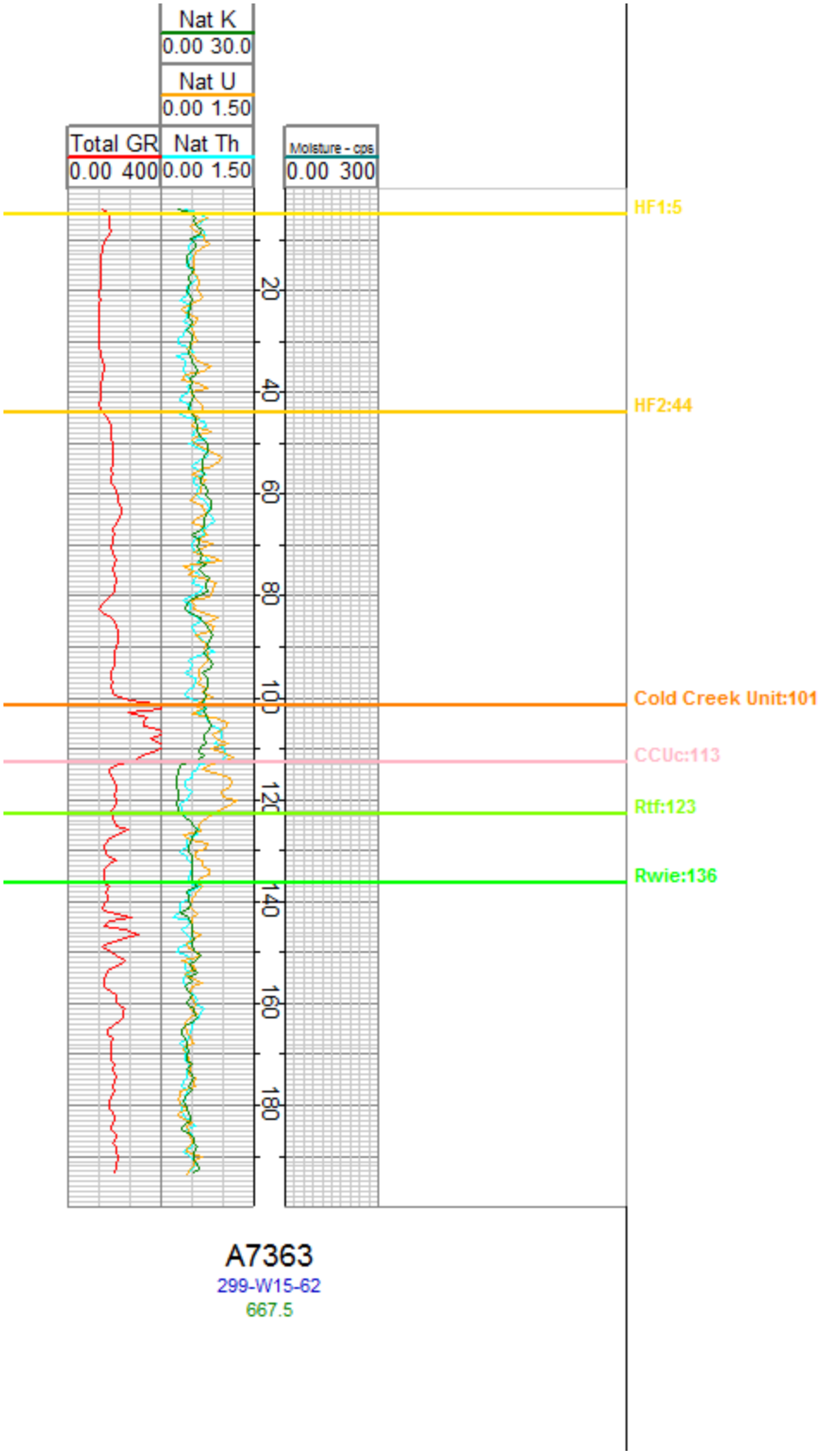

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
Top Soil
HF2:28
Sand and...
HF3:70
Sand
Sand and...
Black Sand
Cold Creek Unit:112
Sand and L...
CCUc:124
Sand and...
Rtf:139
25
50
75
100
125
A7357
299-W15-56
676.8

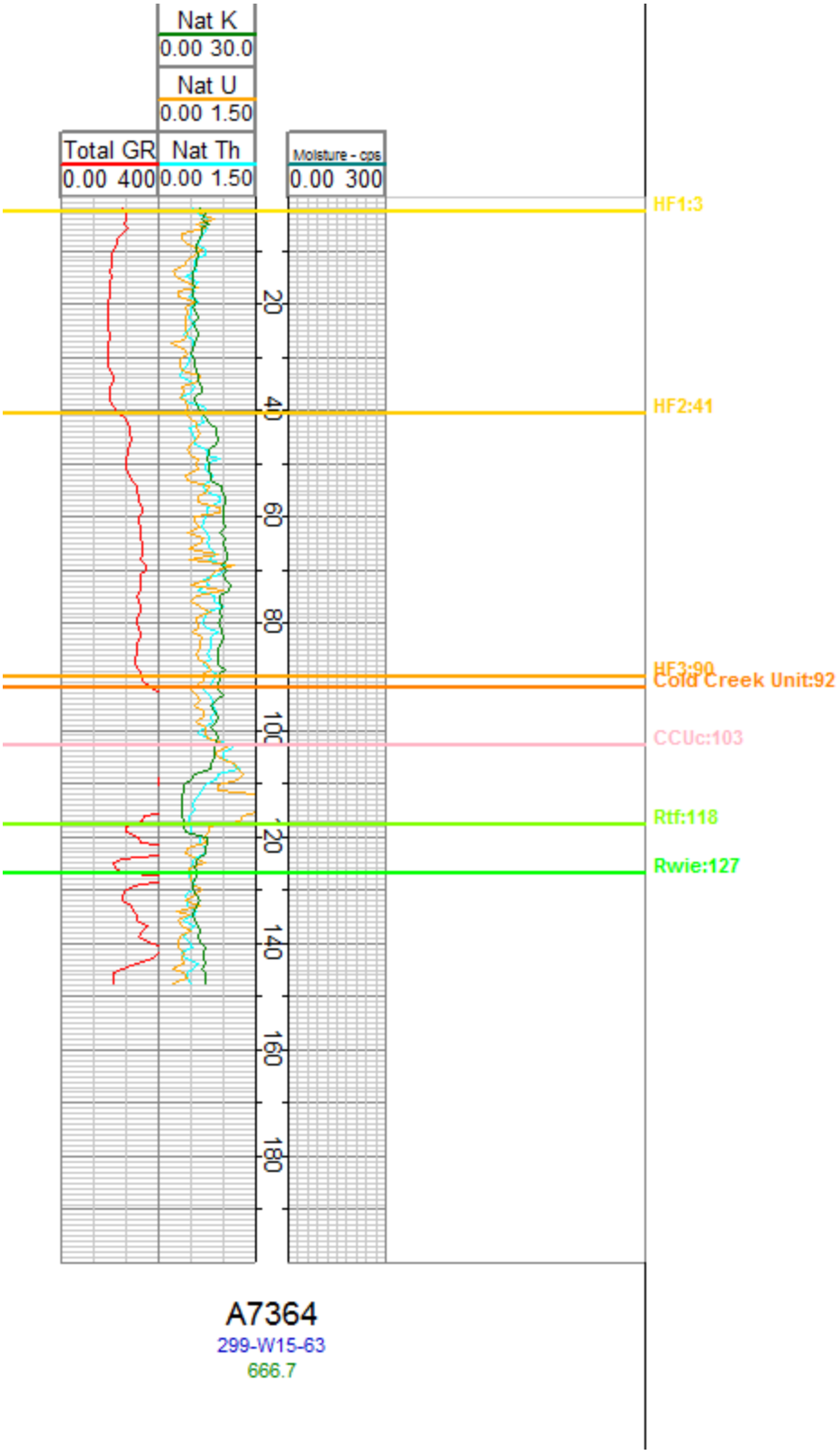

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
Top Soil
Sand
HF2:30
Clay
HF3:73
Gravel
Gravel
Heavy Blac
Cold Creek Unit:113
Sand
CCUc:124
Yellow Clay
Rtf:137
Clay and
25
50
75
100
125
150
A7358
299-W15-57
677.0

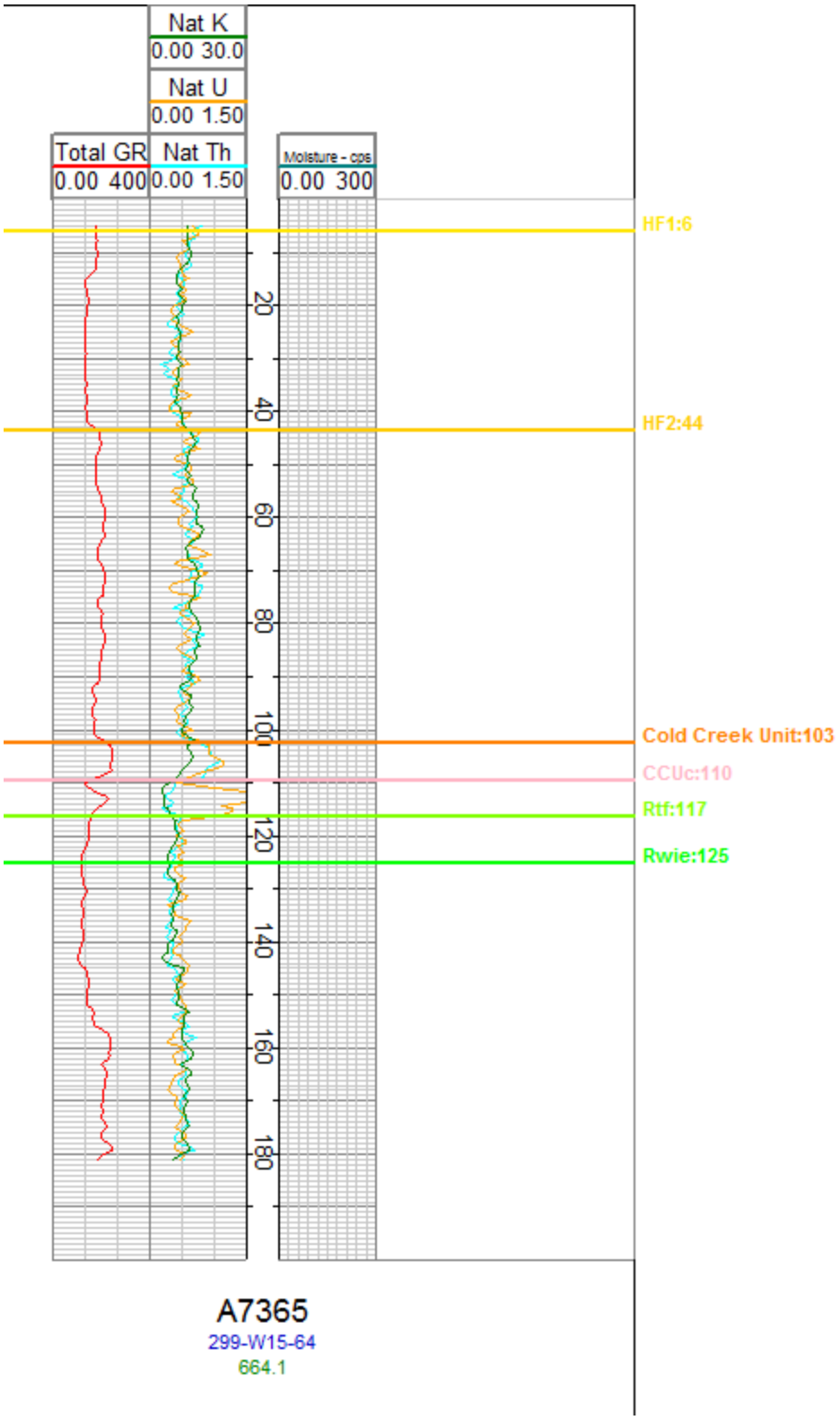

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:4
Sand and...
Sand
HF2:31
Sand and...
HF3:74
Cold Creek Unit:106
Sand and...
CCUc:124
Rtf:138
Sand Cla...
Sand and...
Rwie:174
25
50
75
100
125
150
A7360
299-W15-59
676.8

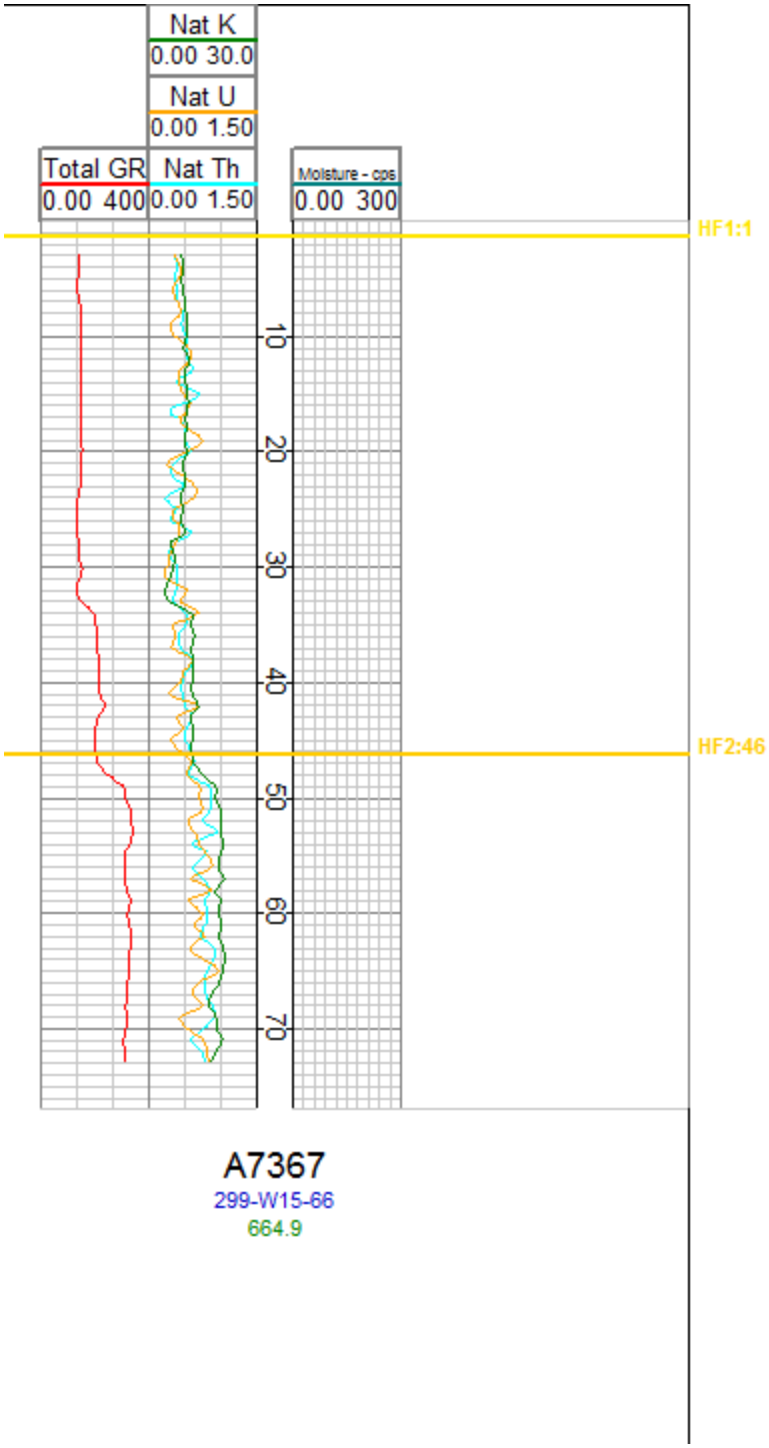

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:4
Sand and...
HF2:29
Fine Black
Sand and...
Sand and...
Cold Creek Unit:110
Clay
CCUc:125
Sandy Clay
Rtf:138
Fine Sand
Black Sand
Gray Sand
Rwie:175
25
50
75
100
125
150
A7361
299-W15-60
677.0

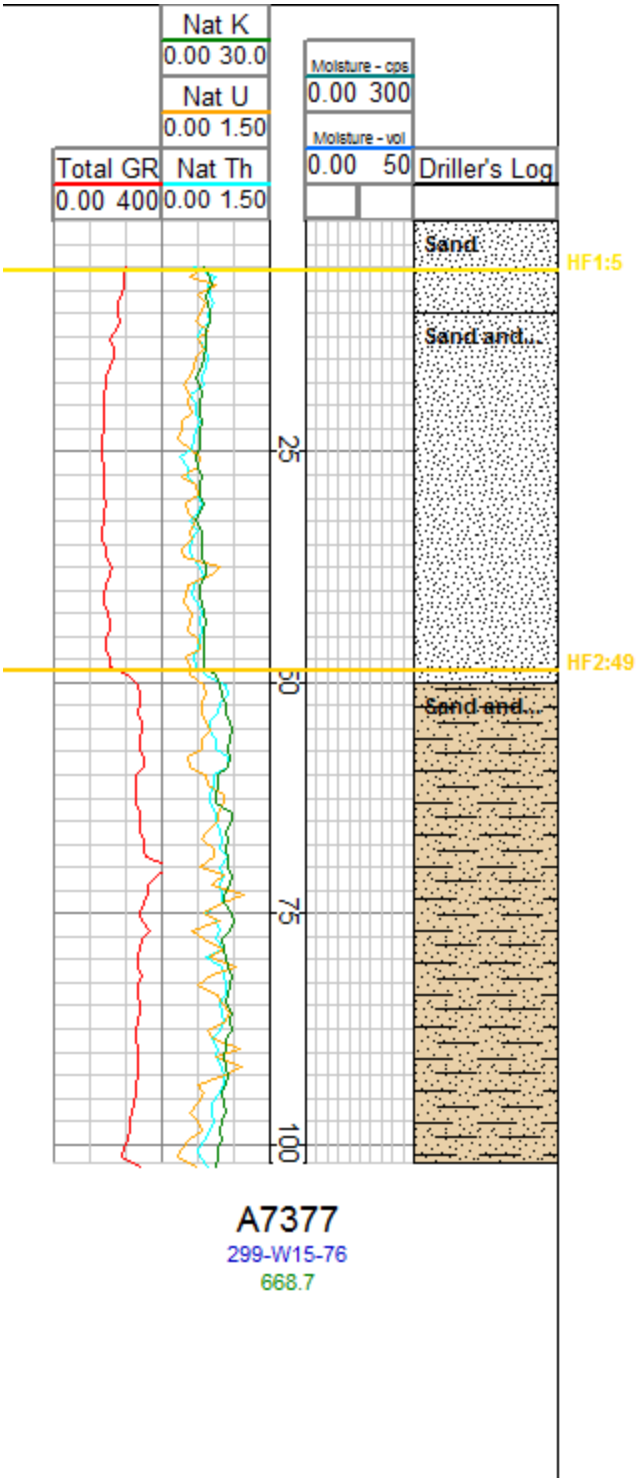

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Backfill
Black Sand
HF2:30
Sandy Clay
Clay San...
Sand and...
Cold Creek Unit:114
Clay
CCUc:124
Rtf:137
Clay and ...
Black Sand
Fine Gray...
Rwie:175
25
50
75
100
125
150
A7362
299-W15-61
677.6

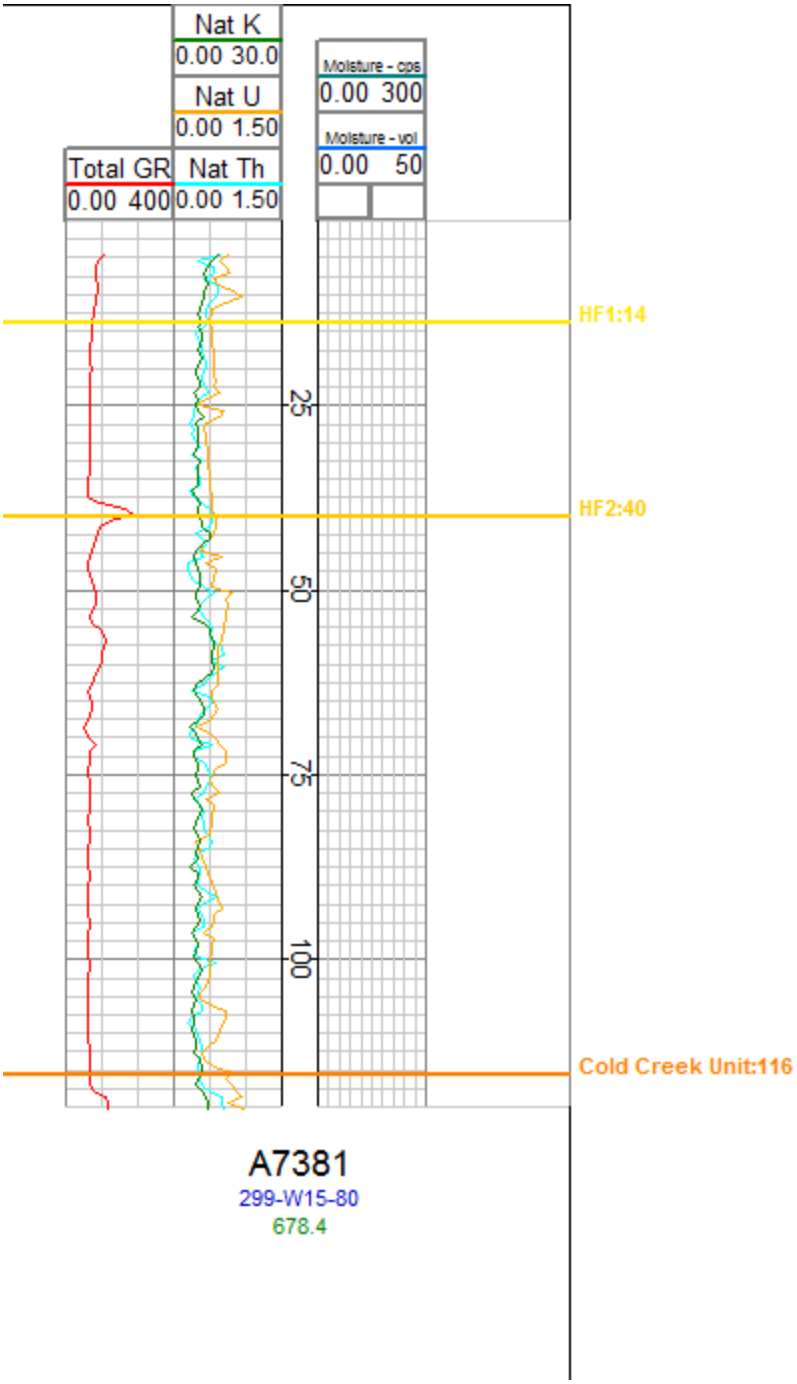

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:5
HF2:44
Cold Creek Unit:101
CCUc:113
Rtf:123
Rwie:136
20
40
60
80
100
120
140
160
180
A7363
299-W15-62
667.5

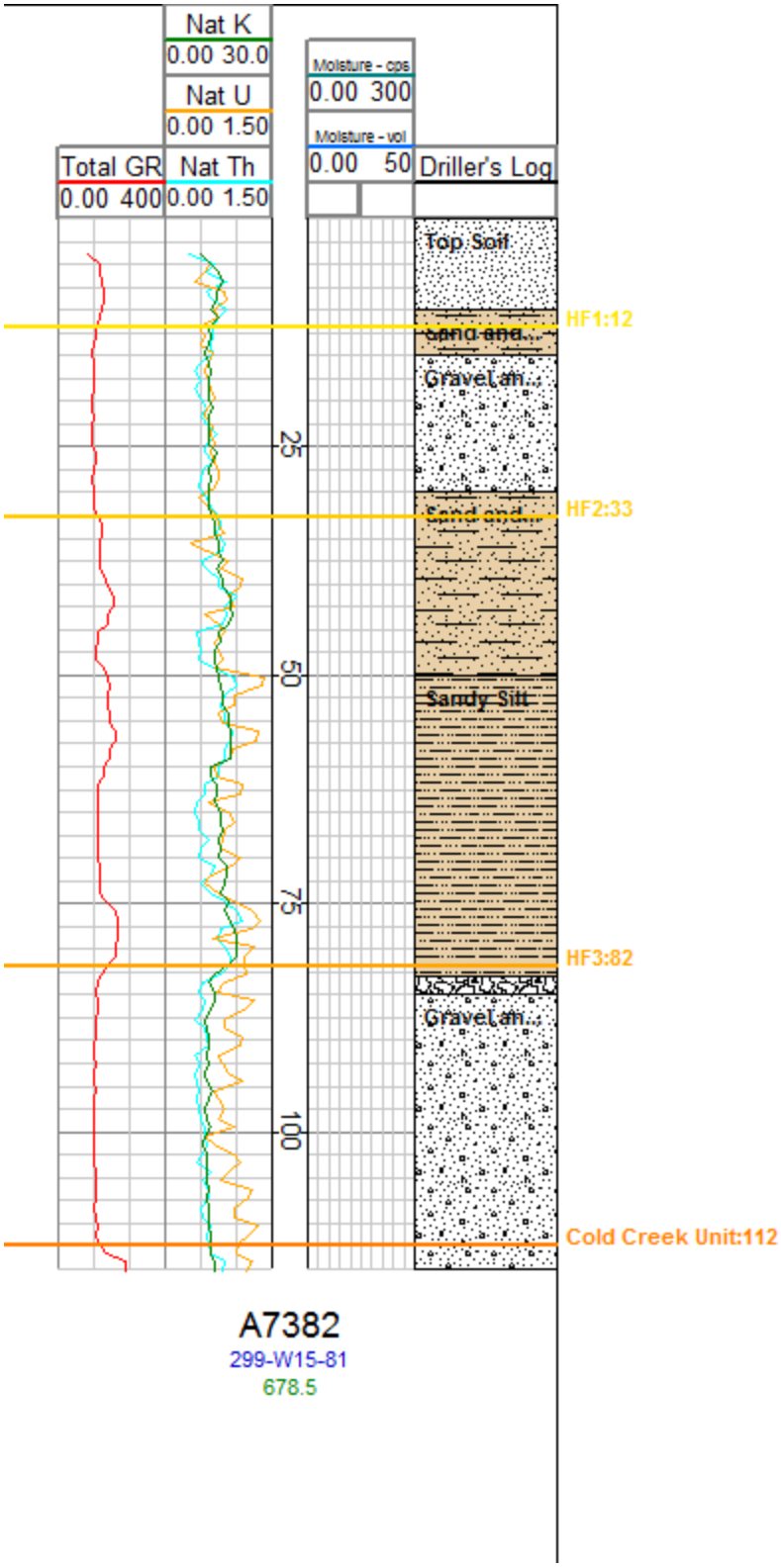

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:3
HF2:41
HF3:90
Cold Creek Unit:92
CCUc:103
Rtf:118
Rwie:127
20
40
60
80
100
120
140
160
180
A7364
299-W15-63
666.7

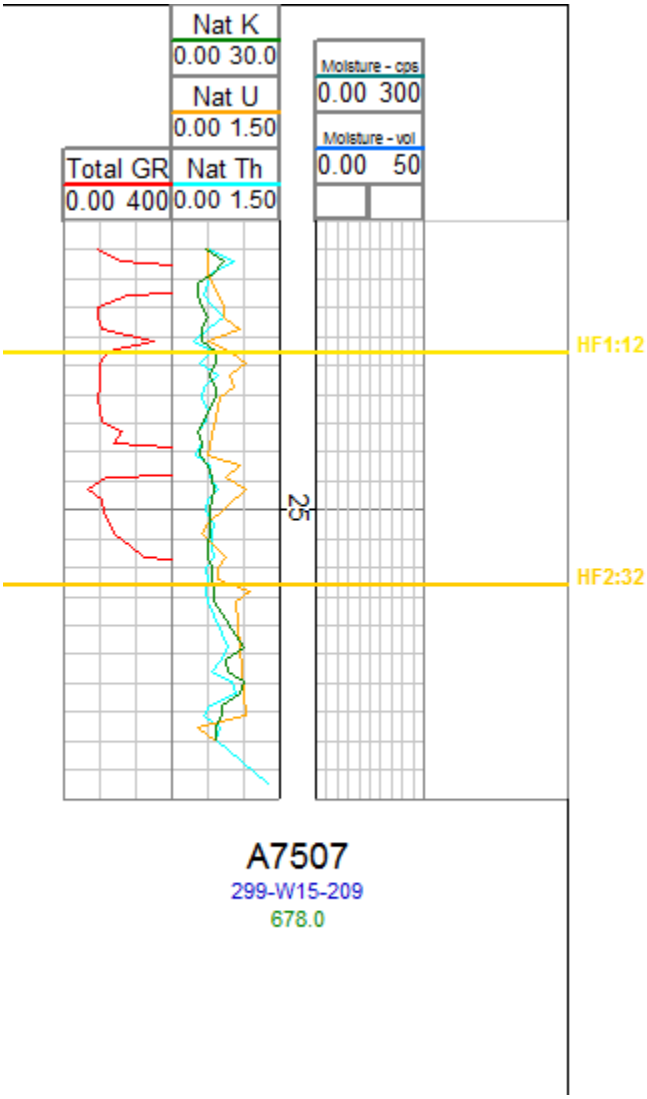

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:6
HF2:44
Cold Creek Unit:103
CCUc:110
Rtf:117
Rwie:125
20
40
60
80
100
120
140
160
180
A7365
299-W15-64
664.1

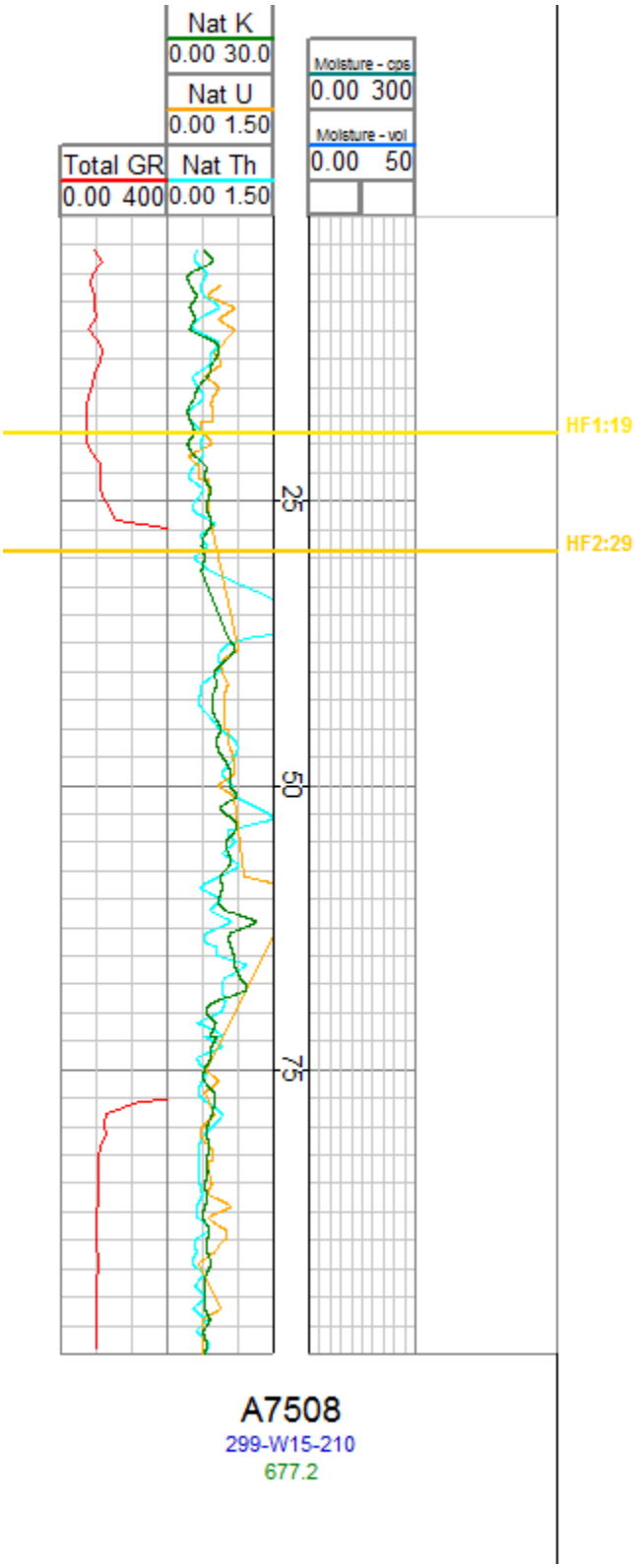

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:1
HF2:46
10
20
30
40
50
60
70
A7367
299-W15-66
664.9

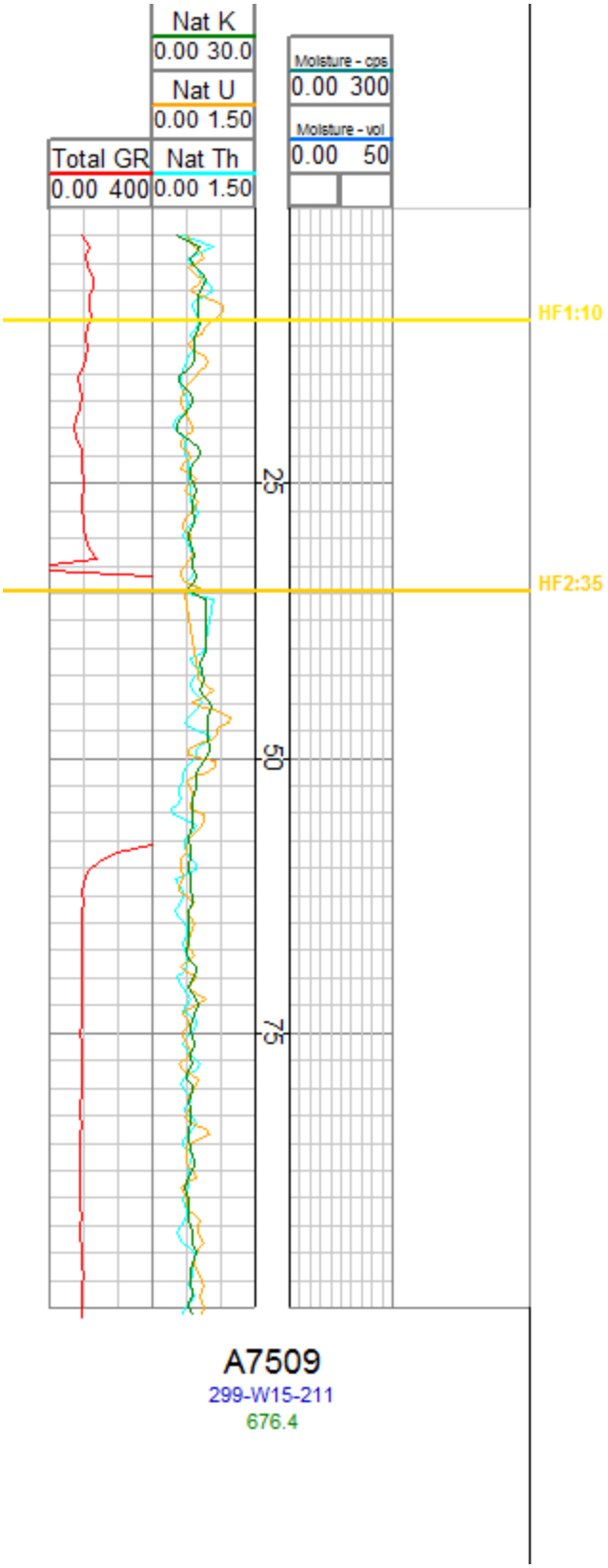

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Sand
HF1:5
Sand and...
25
HF2:49
50
Sand and...
75
100
A7377
299-W15-76
668.7

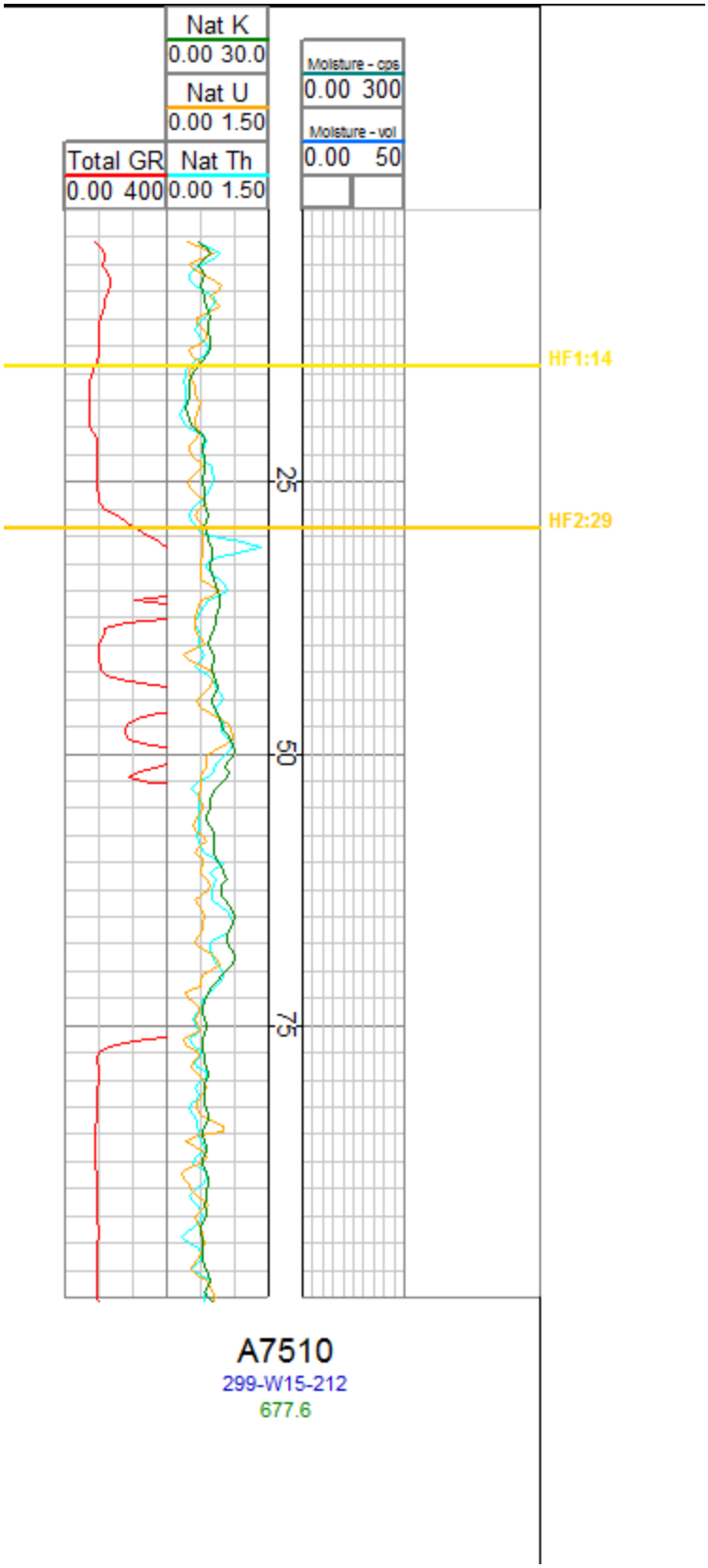

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF1:14
HF2:40
Cold Creek Unit:116
25
50
75
100
A7381
299-W15-80
678.4

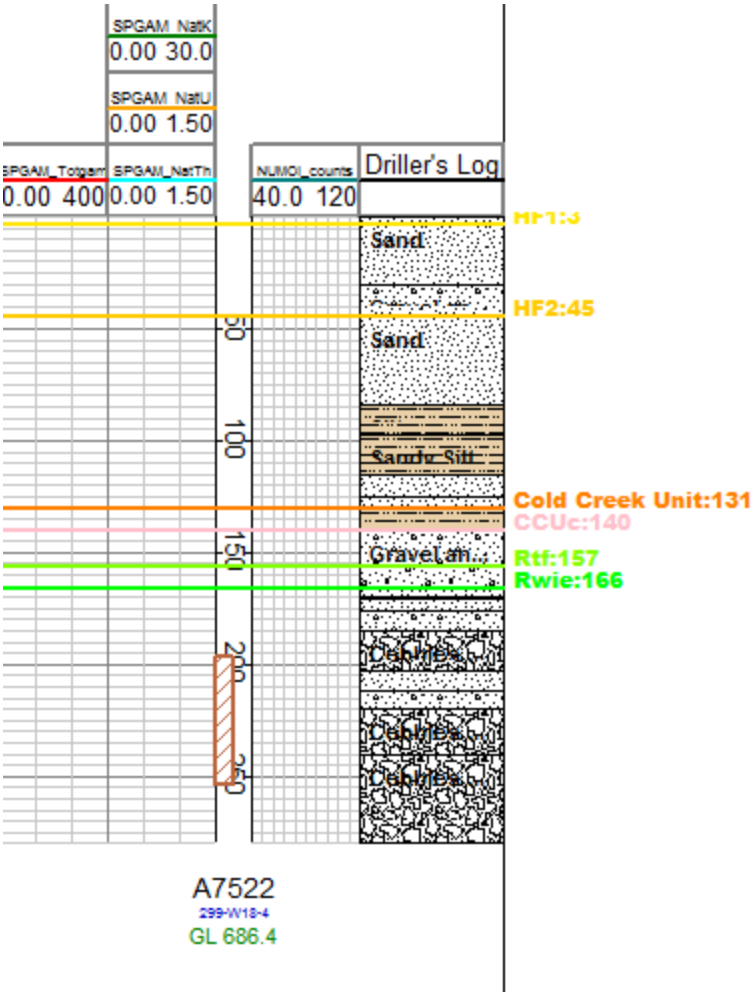

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Top Soil
HF1:12
Gravel,an...
25
HF2:33
50
Sandy Silt
75
HF3:82
Gravel,an...
100
Cold Creek Unit:112
A7382
299-W15-81
678.5

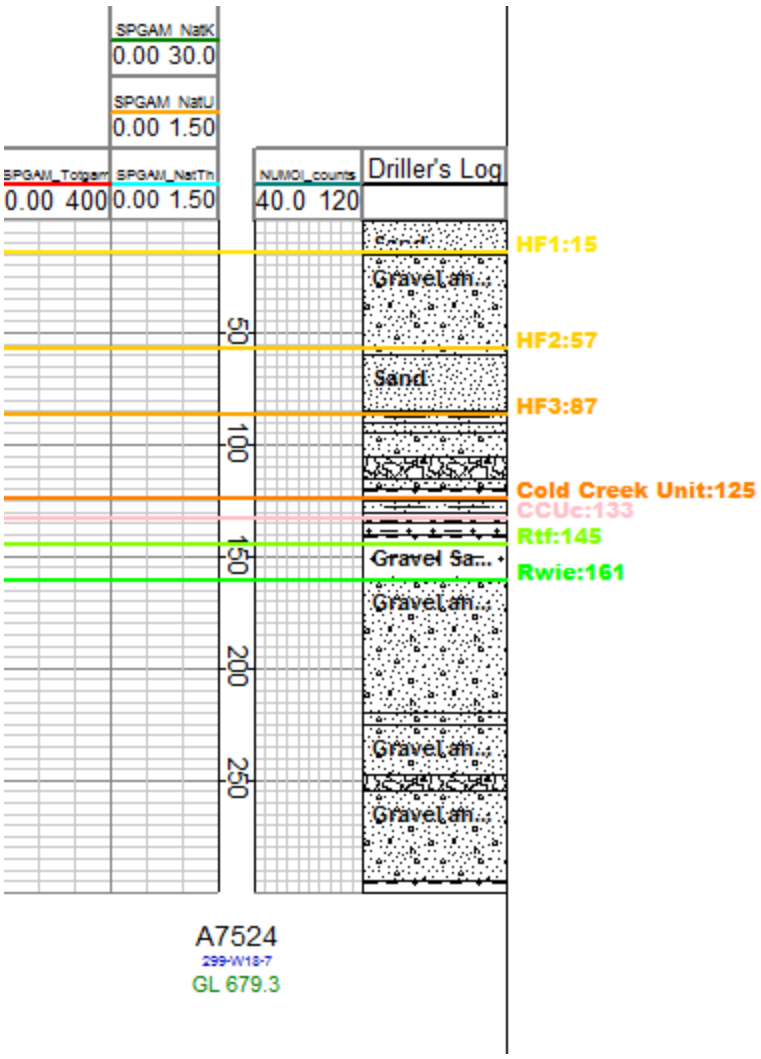

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF1:12
25
HF2:32
A7507
299-W15-209
678.0

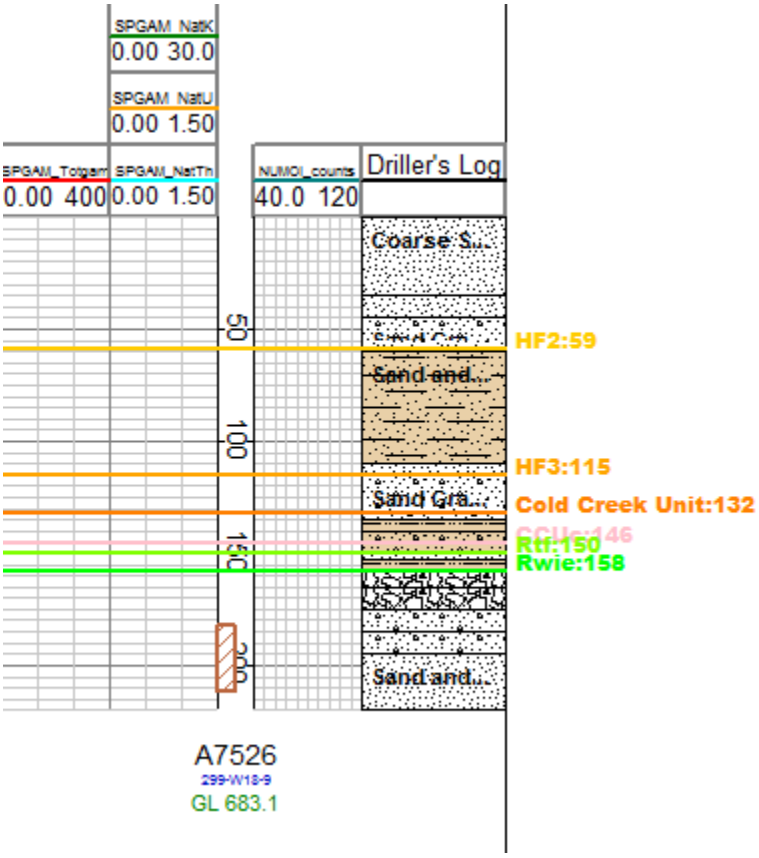

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF1:19
HF2:29
25
50
75
A7508
299-W15-210
677.2

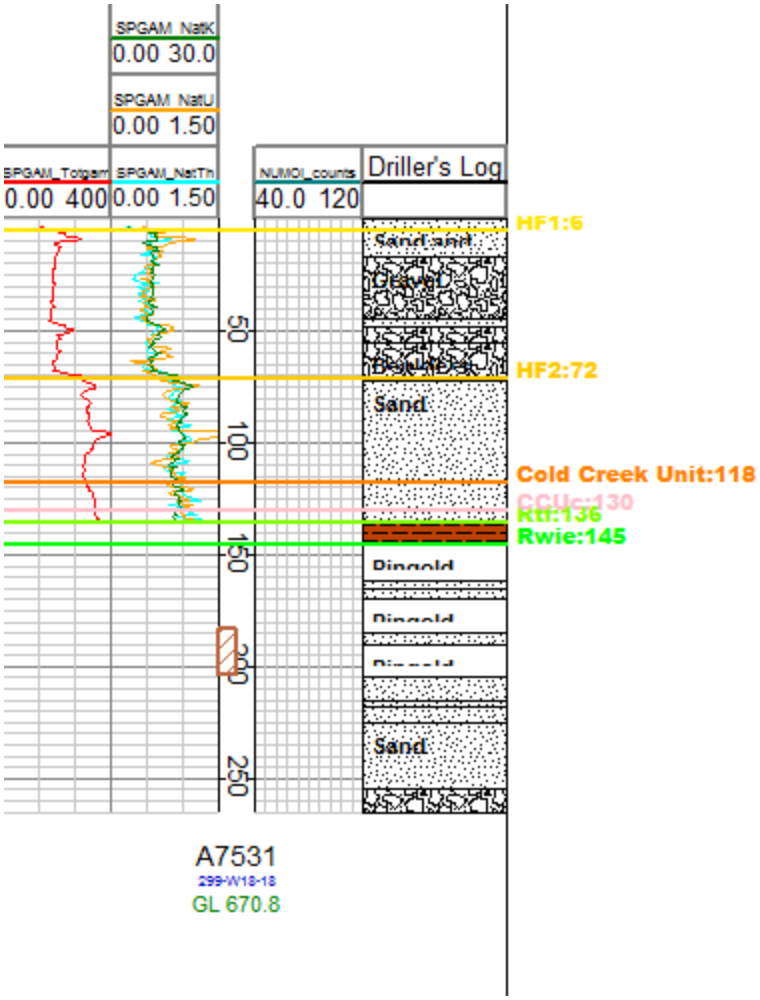

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF1:10
HF2:35
25
50
75
A7509
299-W15-211
676.4

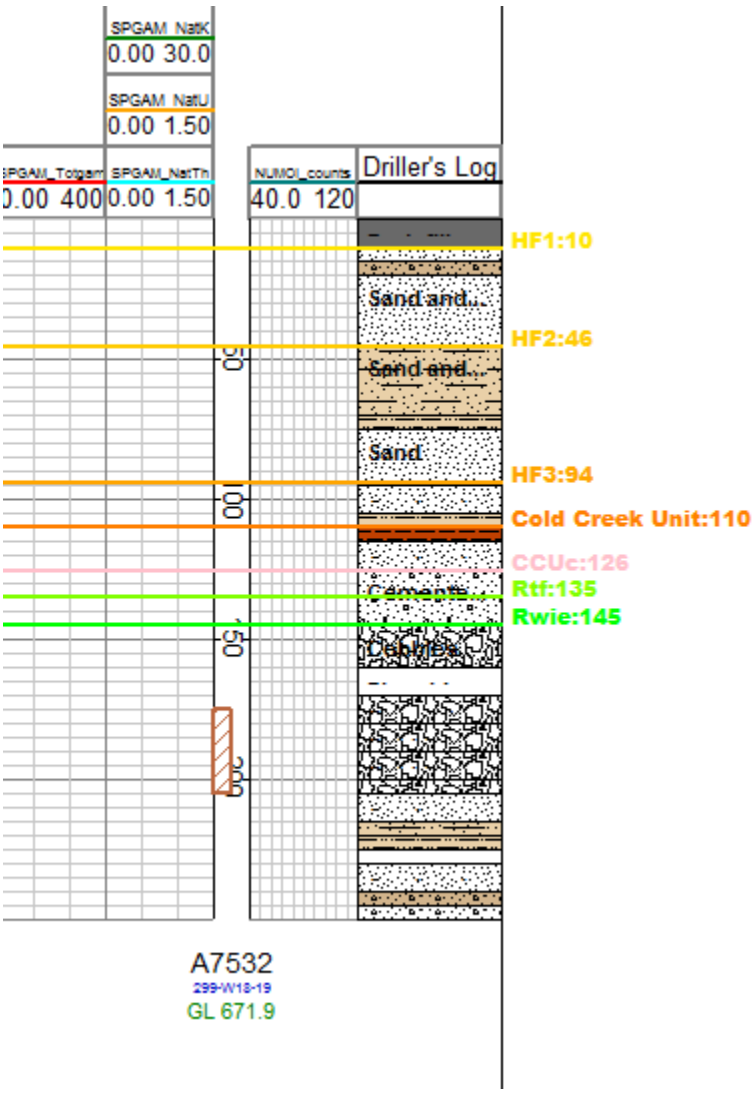

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF1:14
HF2:29
25
50
75
A7510
299-W15-212
677.6

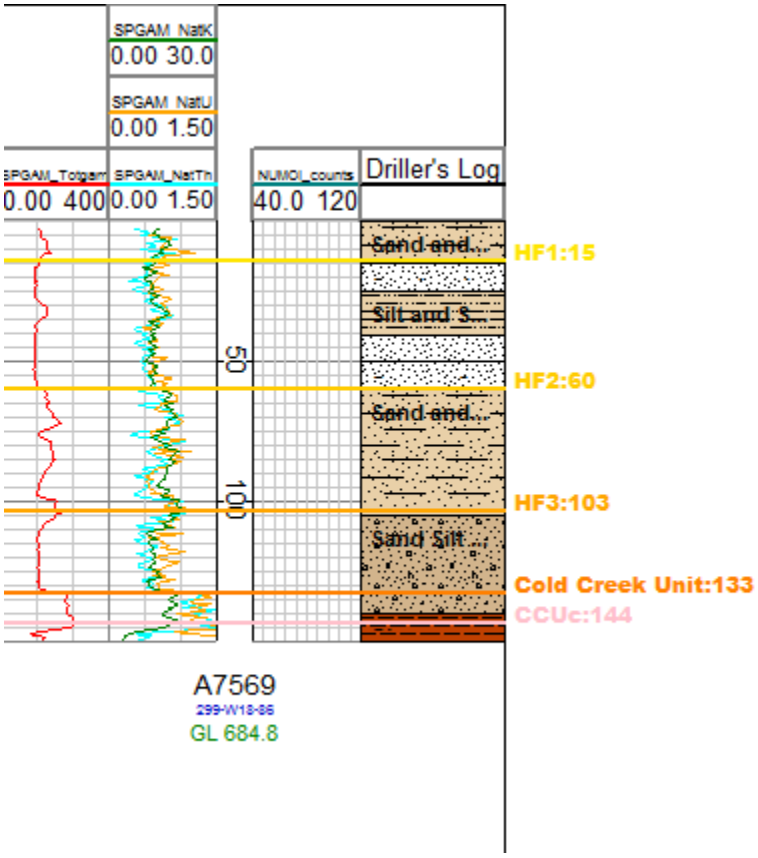

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:3
Sand
HF2:45
Sand
Sandy Silt
Cold Creek Unit:131
CCUc:140
Gravel an...
Rtf:157
Rwie:166
Cobble
Cobble
Cobble
50
100
150
200
250
A7522
299-W18-4
GL 686.4

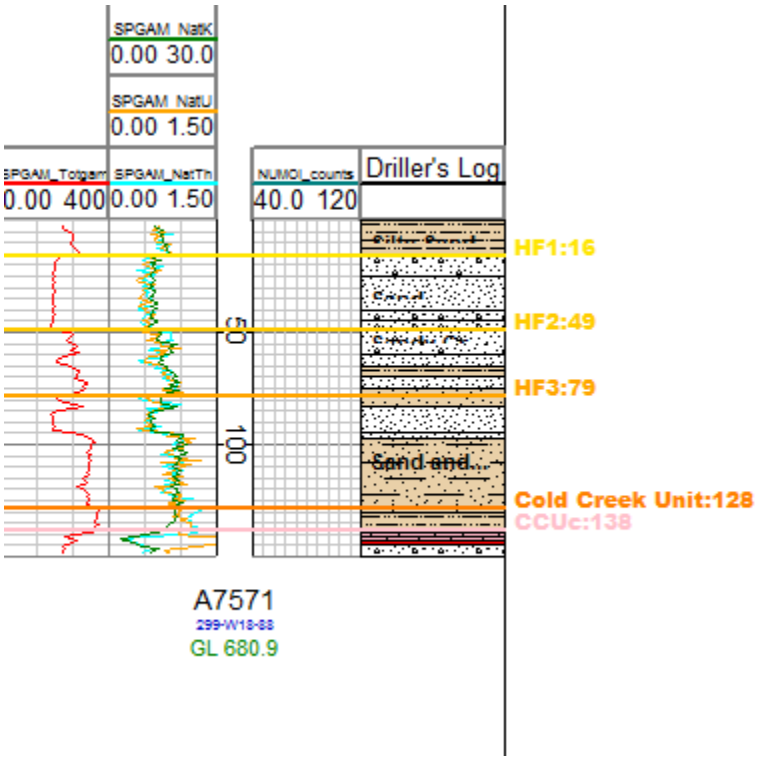

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:15
GravelLah...
HF2:57
Sand
HF3:87
Cold Creek Unit:125
CCUc:133
Rtf:145
Gravel Sa...
Rwie:161
GravelLah...
GravelLah...
GravelLah...
50
100
150
200
250
A7524
299-W18-7
GL 679.3

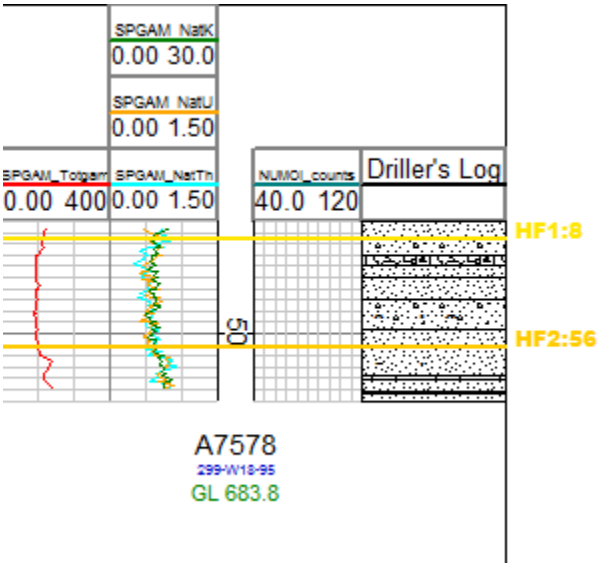

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Coarse S...
HF2:59
Sand and...
HF3:115
Sand Gra...
Cold Creek Unit:132
CCUc:146
Rtf:150
Rwie:158
Sand and...
50
100
150
200
A7526
299-W18-9
GL 683.1

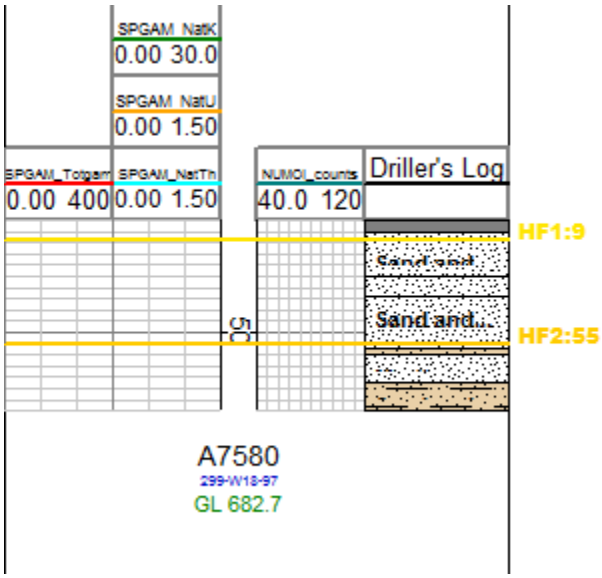

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:6
HF2:72
Sand
Cold Creek Unit:118
CCUc:130
Rtt:136
Rwie:145
Pingold
Sand
50
100
150
200
250
A7531
299-W18-18
GL 670.8

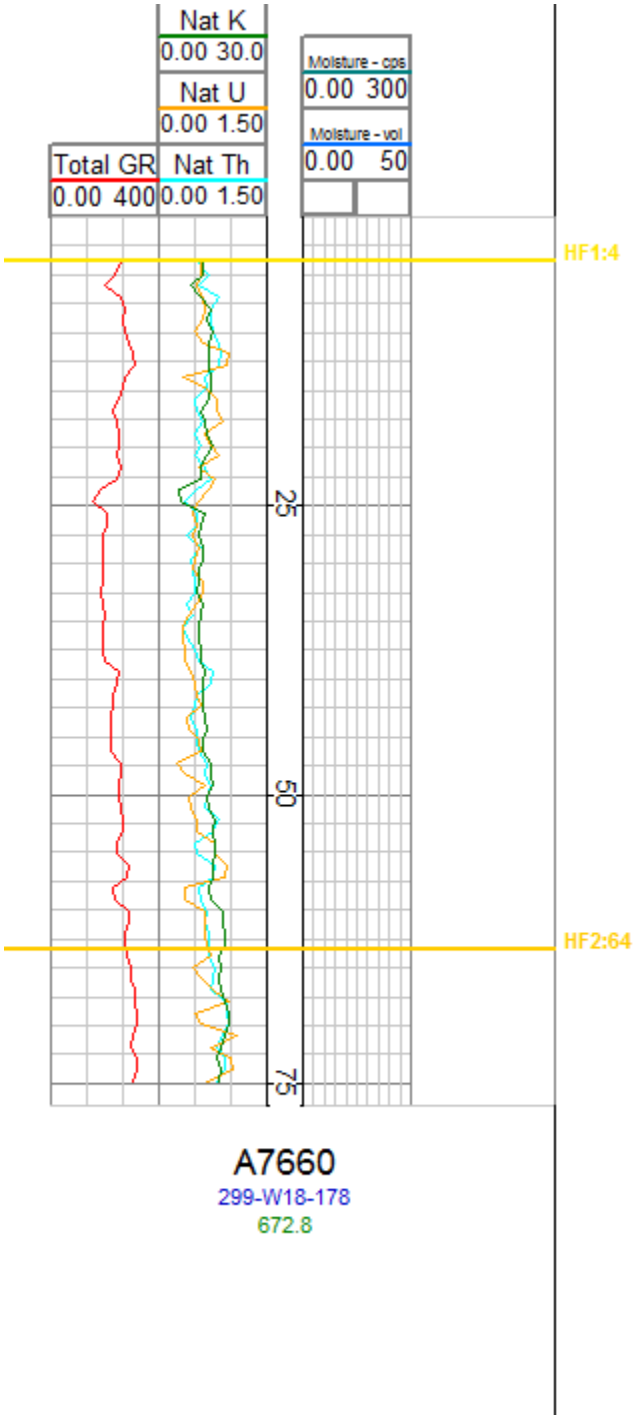

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:10
Sand and...
HF2:46
Sand and...
Sand
HF3:94
Cold Creek Unit:110
CCUc:126
Rtf:135
Rwie:145
Cobbles
A7532
299-W18-19
GL 671.9

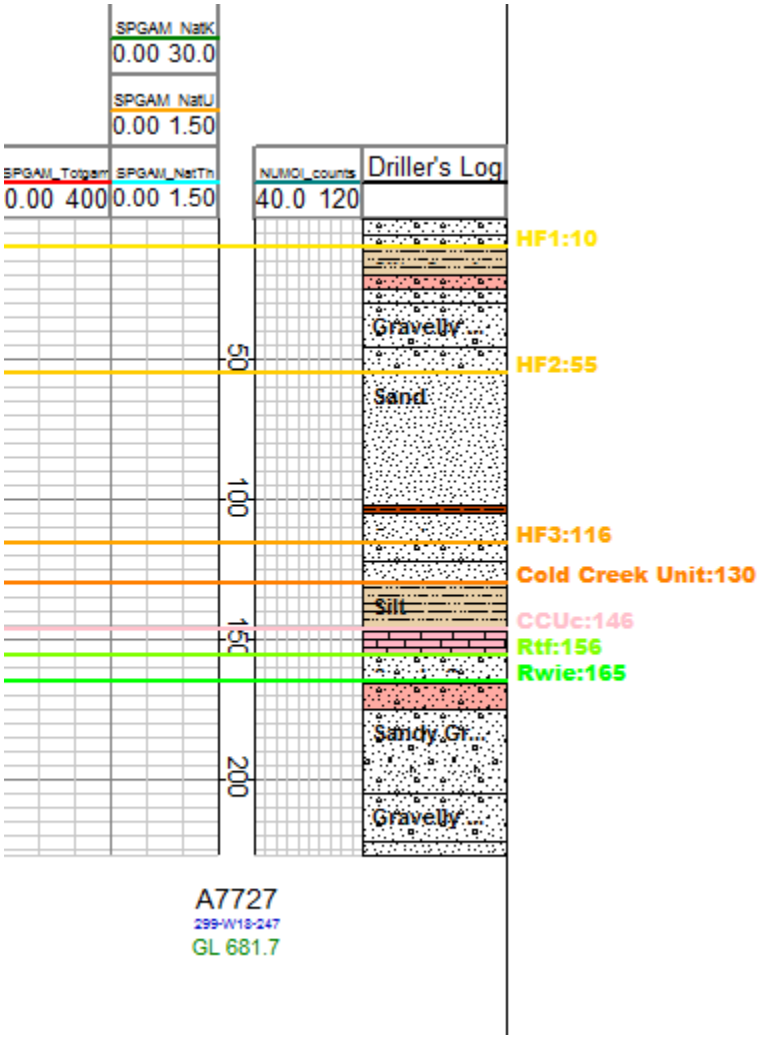

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand and...
Silt and S...
Sand and...
Sand Silt...
HF1:15
HF2:60
HF3:103
Cold Creek Unit:133
CCUc:144
50
100
A7569
299-W18-86
GL 684.8

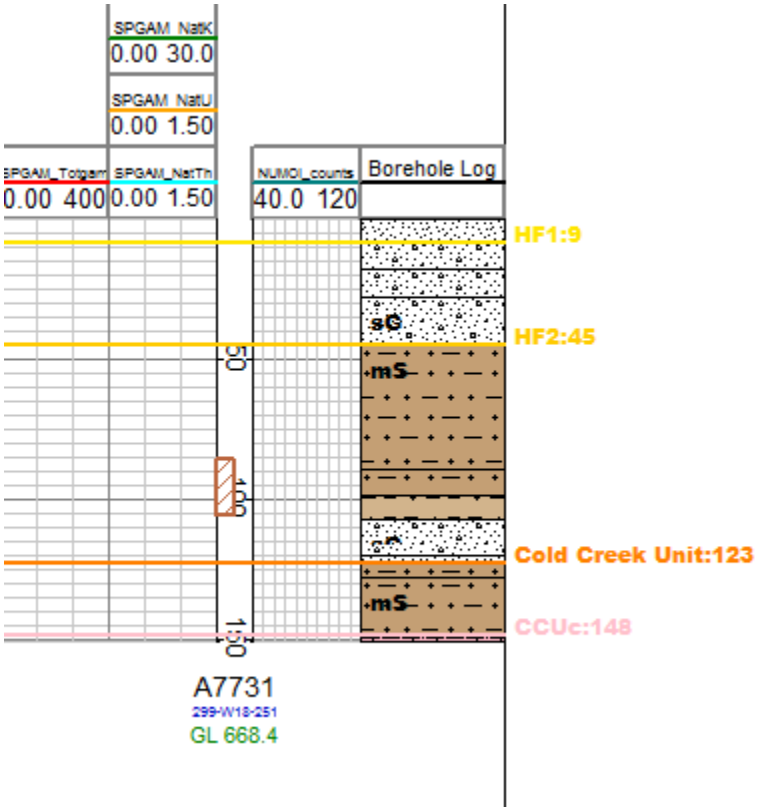

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:16
HF2:49
HF3:79
Cold Creek Unit:128
CCUc:138
50
100
A7571
299-W18-88
GL 680.9

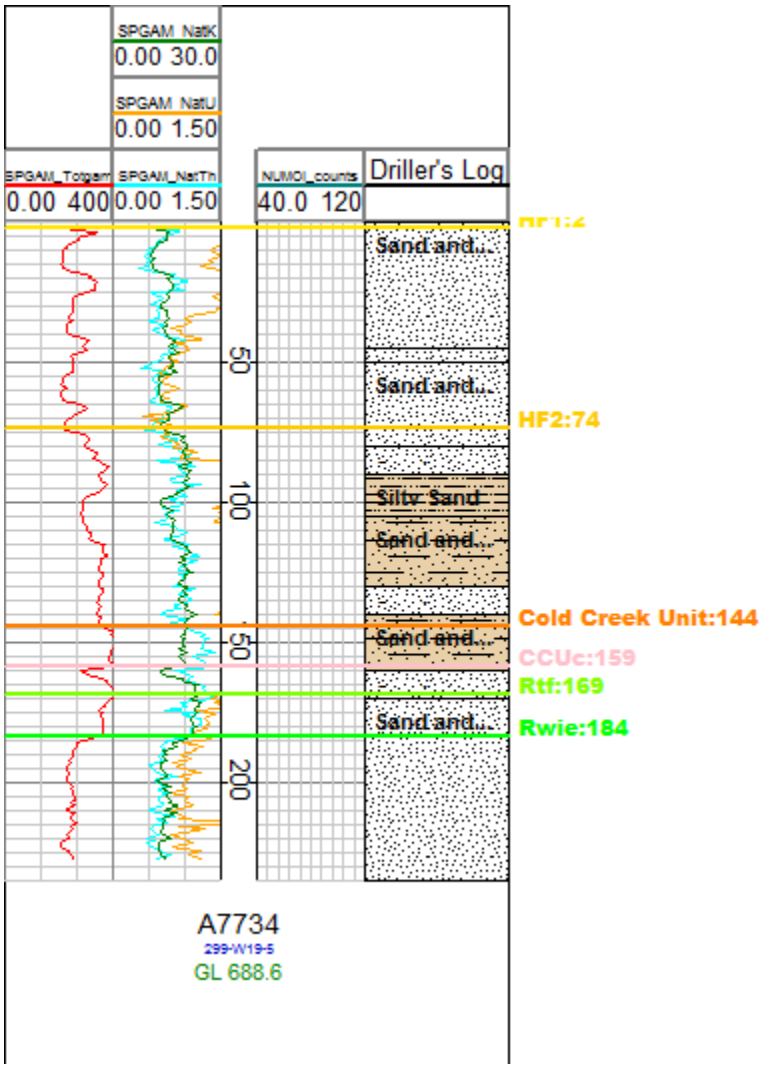

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:8
HF2:56
A7578
299-W18-95
GL 683.8

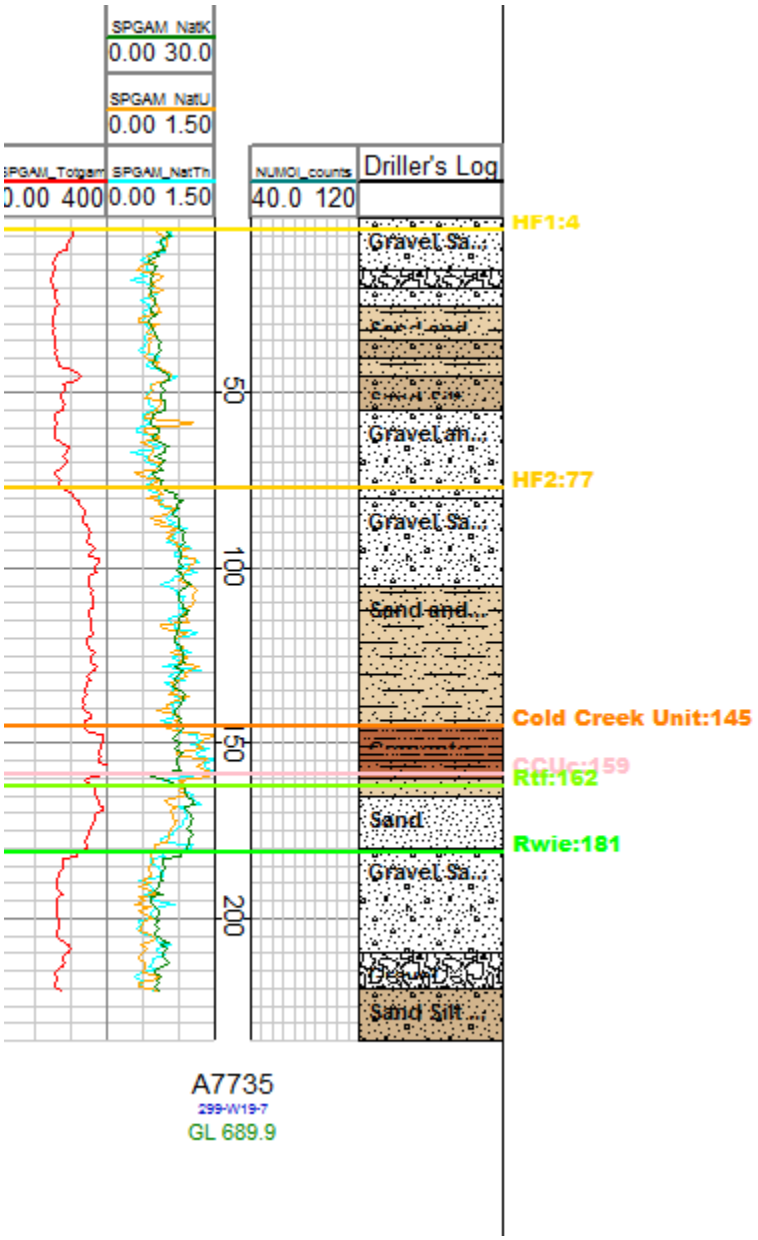

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:9
Sand and...
HF2:55
A7580
299-W18-97
GL 682.7

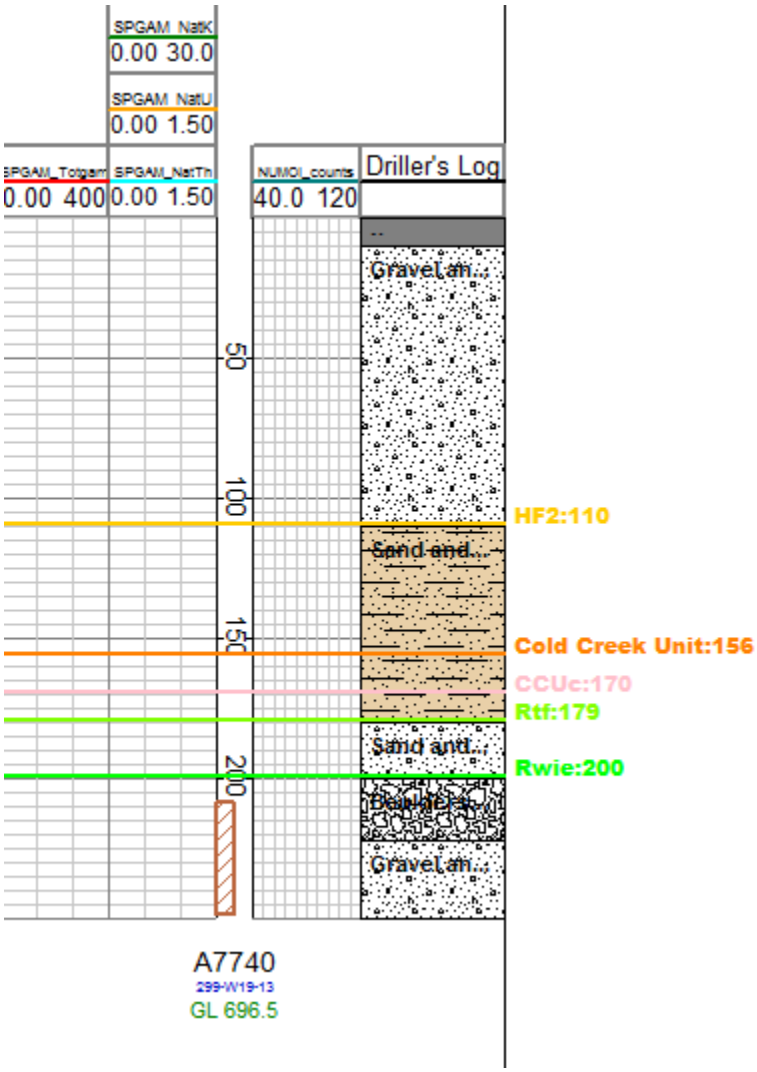

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF1:4
25
50
HF2:64
75
A7660
299-W18-178
672.8

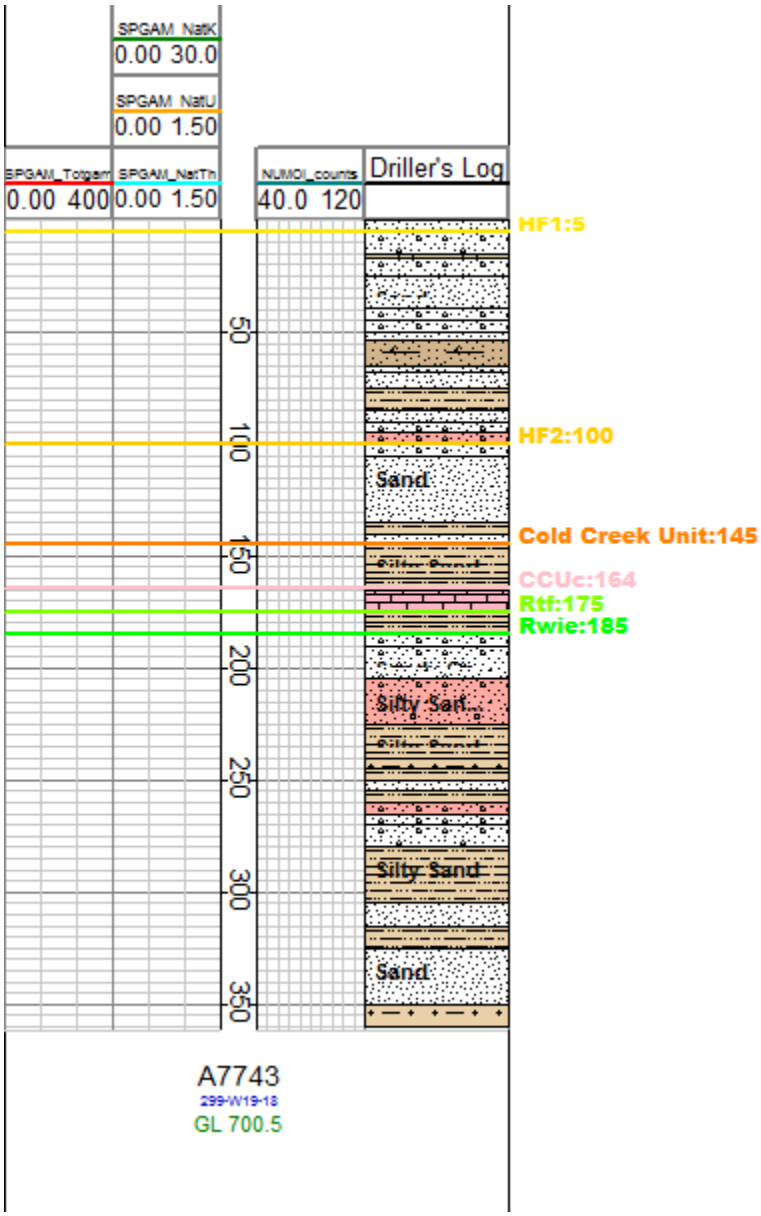

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:10
Gravelly ...
HF2:55
Sand
HF3:116
Cold Creek Unit:130
Silt
CCUc:146
Rtf:156
Rwie:165
Sandy Gr...
Gravelly ...
50
100
150
200
A7727
299-W18-247
GL 681.7

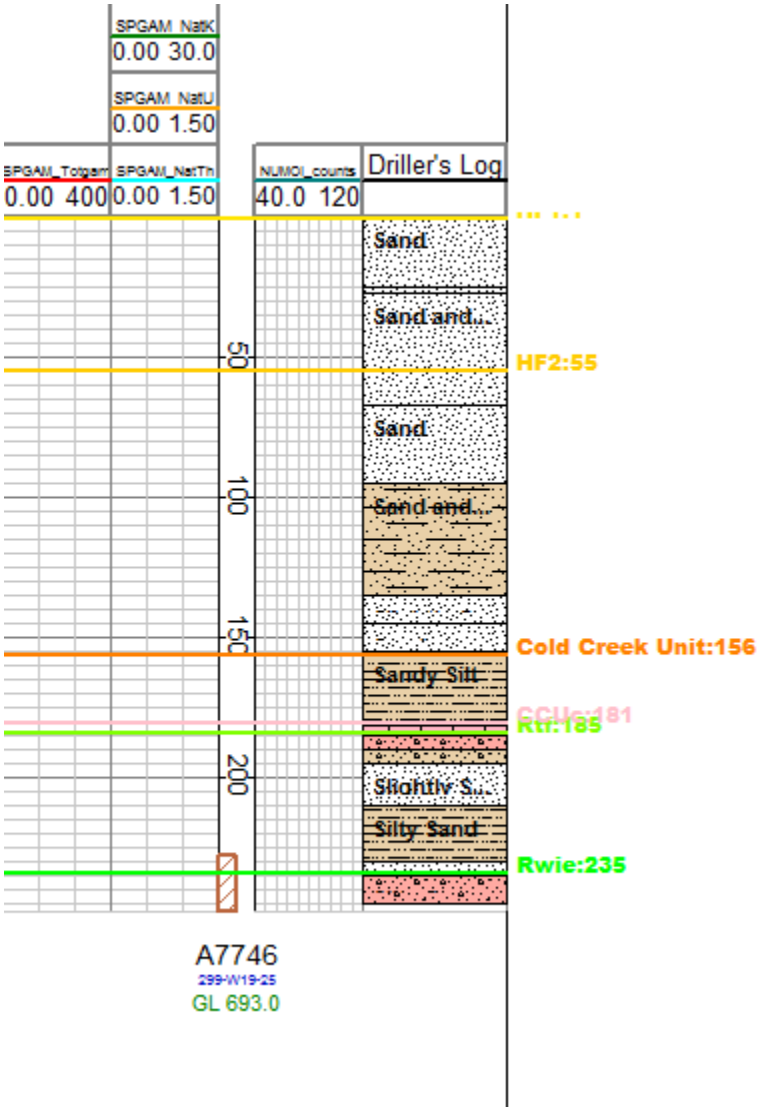

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:9
sG
HF2:45
mS
Cold Creek Unit:123
mS
CCUc:148
50
100
150
A7731
299-W18-251
GL 668.4

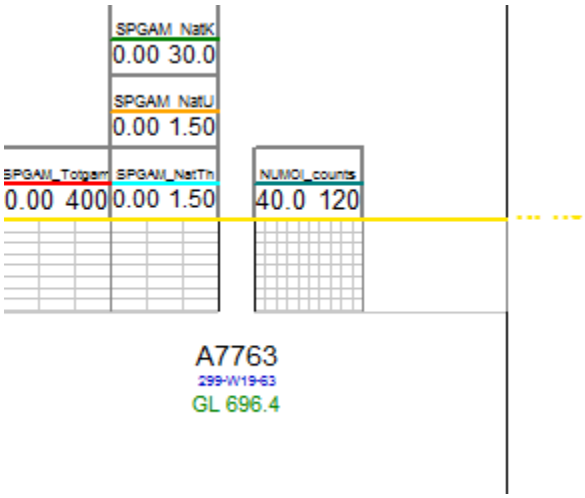

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand and...
Sand and...
HF2:74
Silty Sand
Sand and...
Cold Creek Unit:144
Sand and...
CCUc:159
Rtf:169
Sand and...
Rwie:184
50
100
150
200
A7734
299/W19-5
GL 688.6

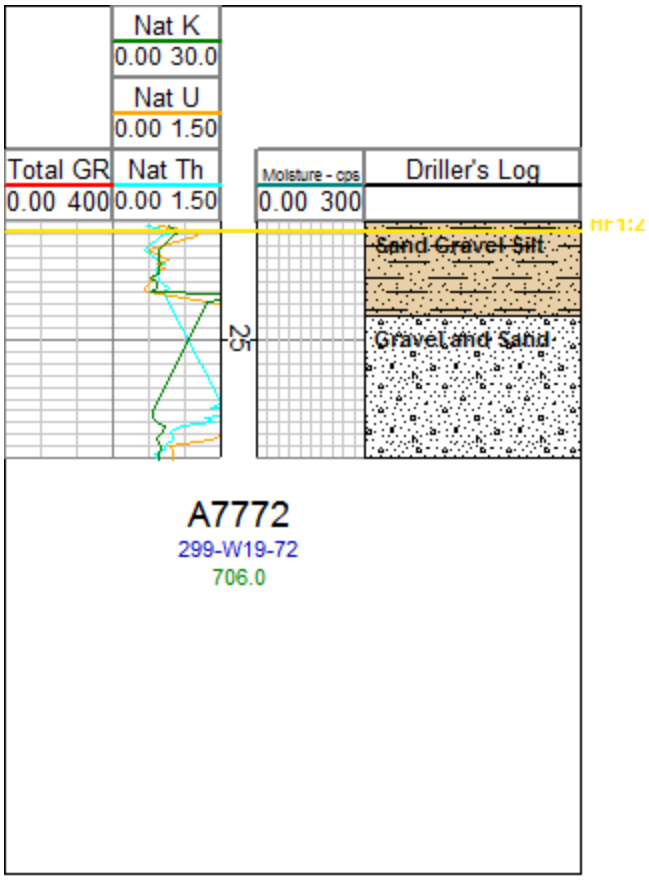

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:4
Gravel Sa...
Gravel an...
HF2:77
Gravel Sa...
Sand and...
Cold Creek Unit:145
CCUc:159
Rtf:162
Sand
Rwie:181
Gravel Sa...
Sand Silt ...
50
100
150
200
A7735
299-W19-7
GL 689.9


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
HF2:110
Cold Creek Unit:156
CCUc:170
Rtf:179
Rwie:200
A7740
299-W19-13
GL 696.5

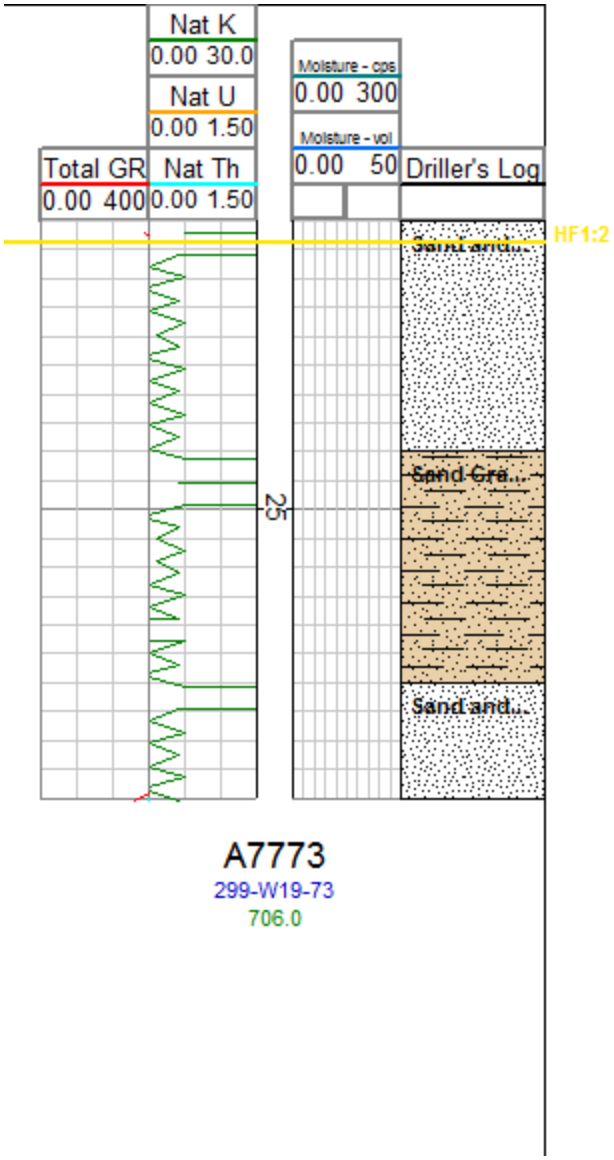

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:5
HF2:100
Sand
Cold Creek Unit:145
CCUc:164
Rtf:175
Rwie:185
Silty Sand
Silty Sand
Sand
50
100
150
200
250
300
350
A7743
299-W19-18
GL 700.5

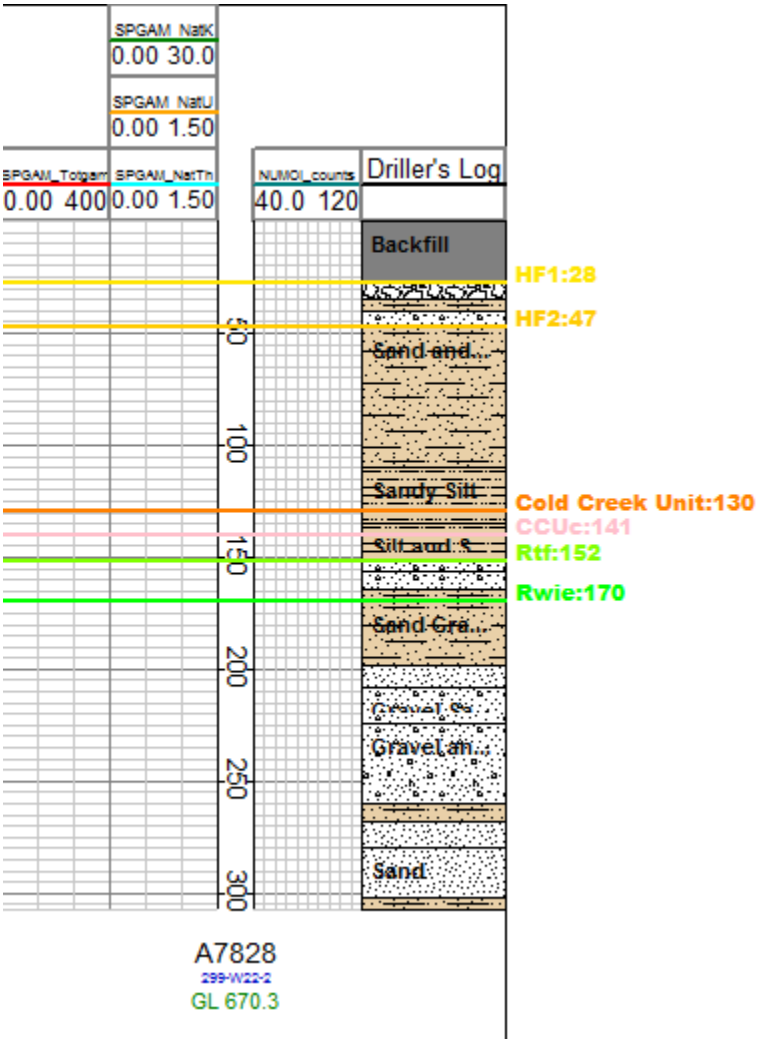

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
Sand and...
Sand
Sand and...
Sandy Silt
Slightly S...
Silty Sand
50
100
150
200
HF2:55
Cold Creek Unit:156
CCUc:181
Rtf:185
Rwie:235
A7746
299-W19-25
GL 693.0

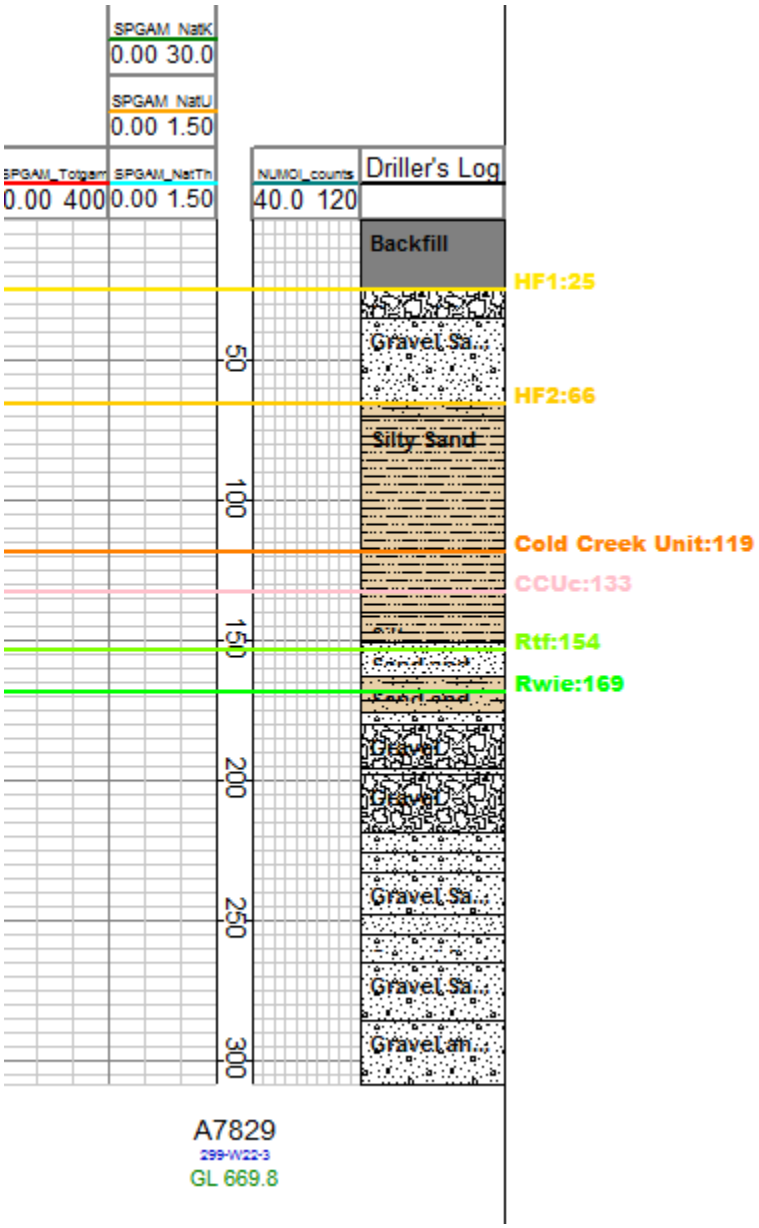

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
A7763
299-W19-63
GL 696.4

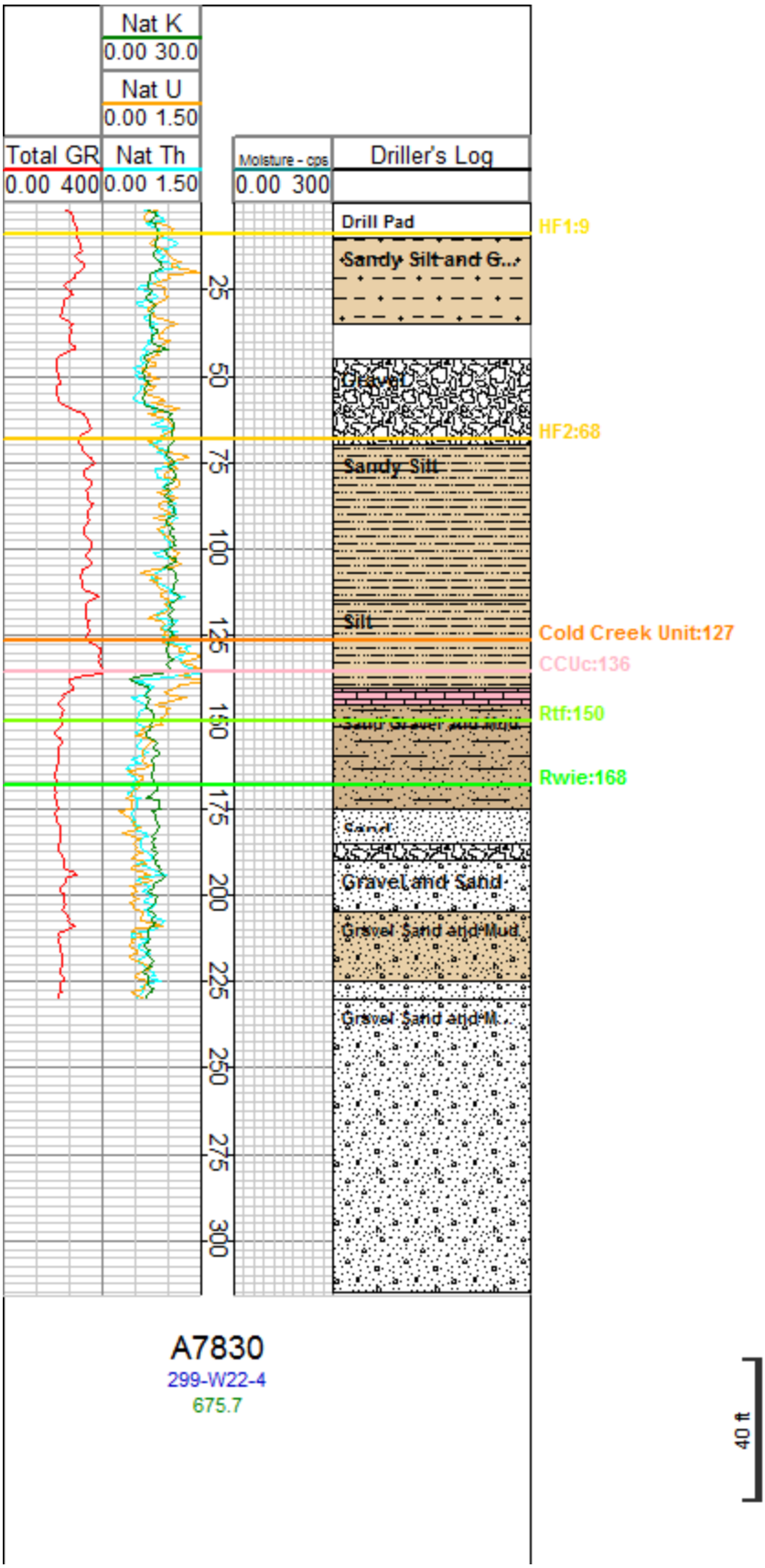

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Sand Gravel Silt
Gravel and Sand
25
A7772
299-W19-72
706.0

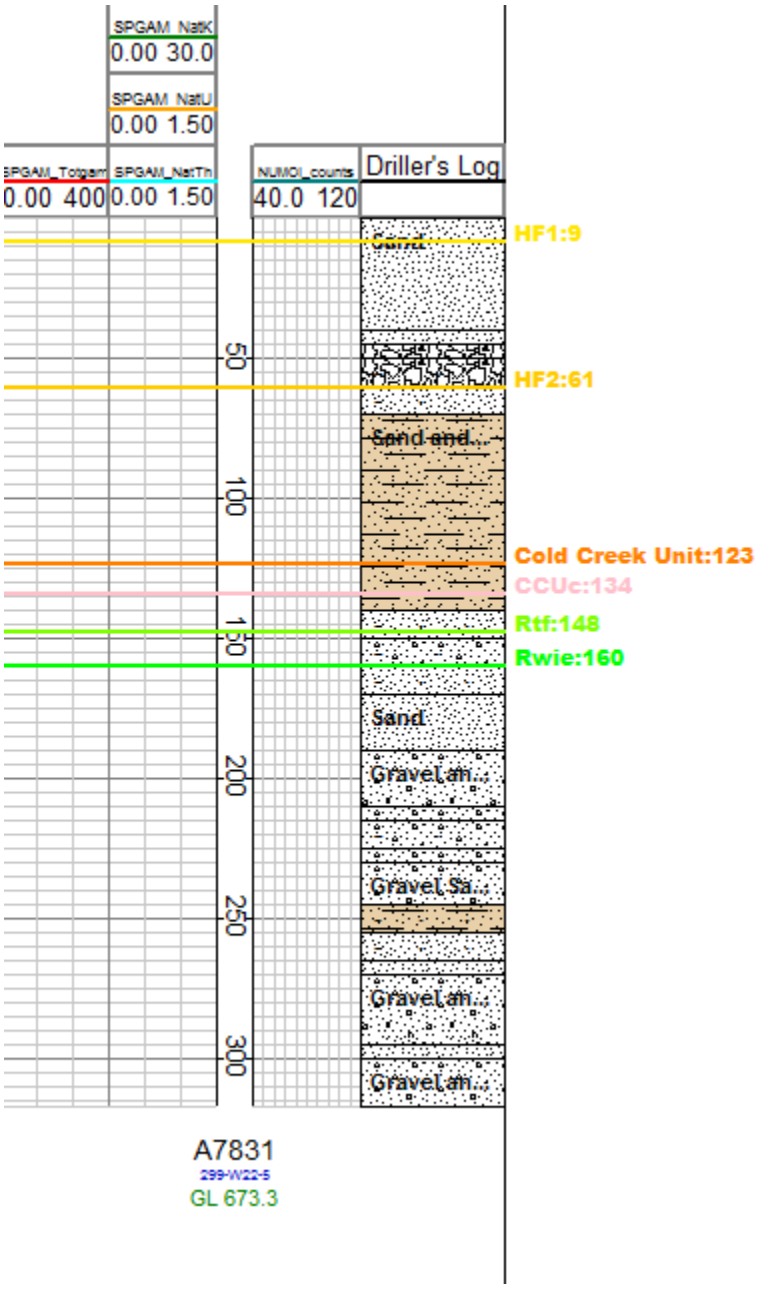
30 ft

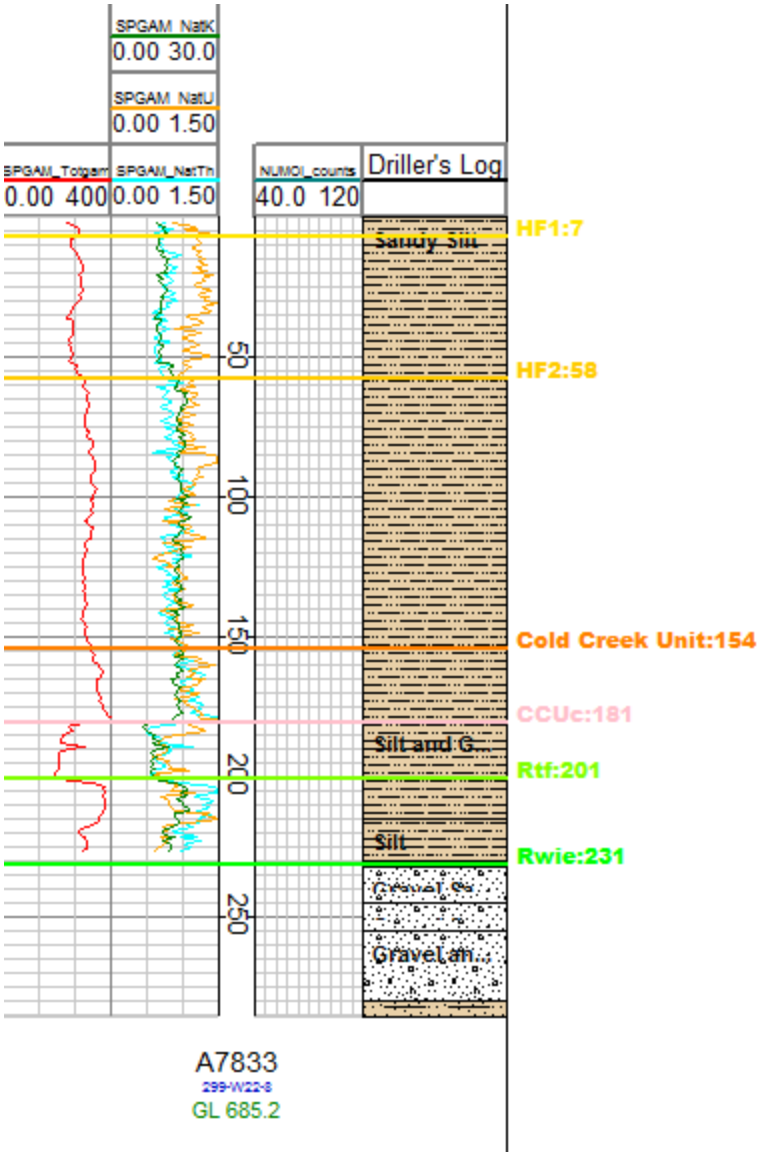

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
Sand and...
Sand Gra...
25
Sand and...
A7773
299-W19-73
706.0

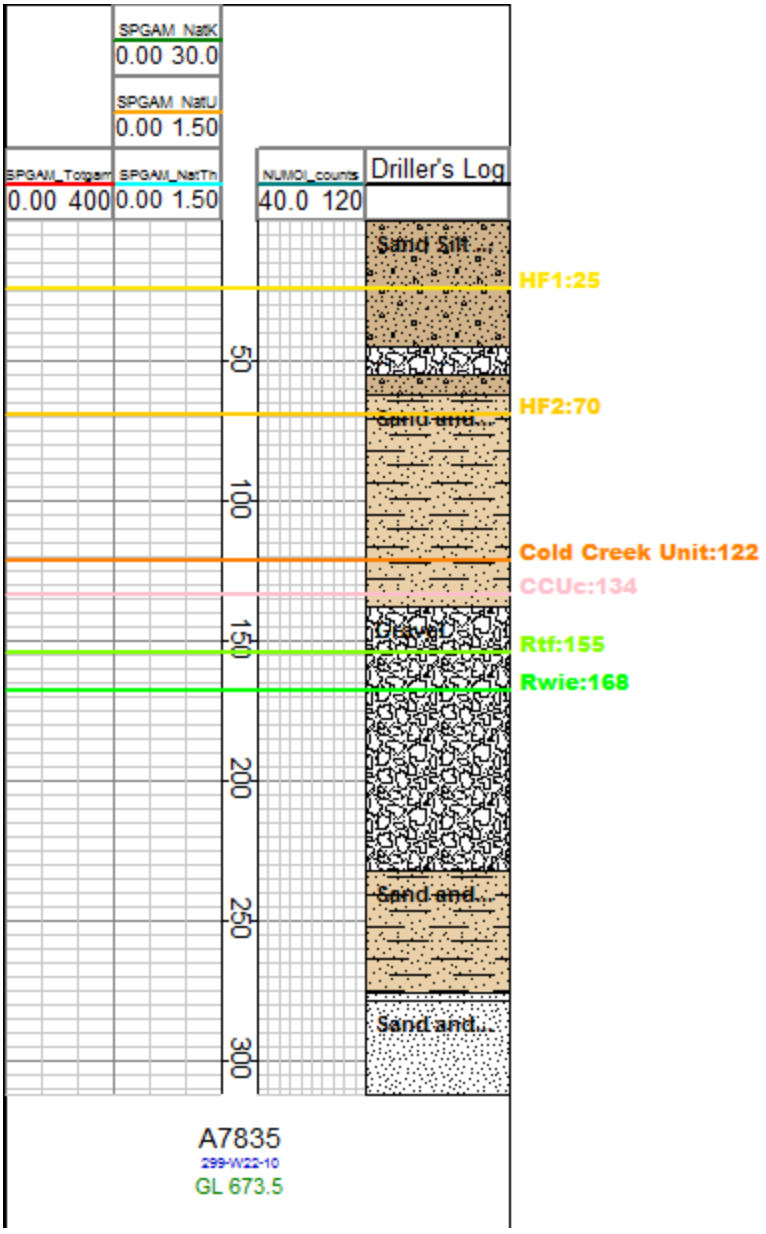

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF1:28
HF2:47
Sand and...
Sandy Silt
Cold Creek Unit:130
CCUc:141
Silt and ?
Rtf:152
Rwie:170
Sand Gra...
Gravel Sa...
Gravel an...
Sand
50
100
150
200
250
300
A7828
299-W22-2
GL 670.3

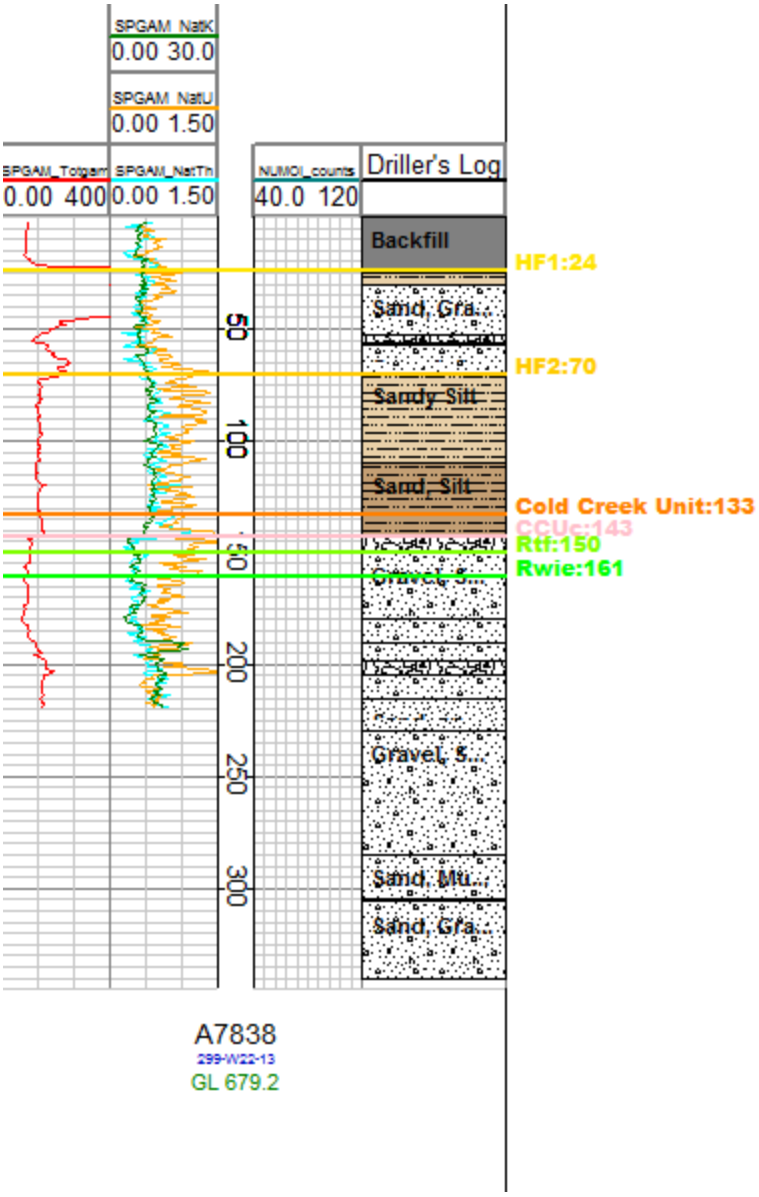

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF1:25
Gravel,Sa..
HF2:66
Silty Sand
Cold Creek Unit:119
CCUc:133
Rtf:154
Rwie:169
Gravel
Gravel
Gravel,Sa..
Gravel,Sa..
Gravel,an..
50
100
150
200
250
300
A7829
299-W22-3
GL 669.8

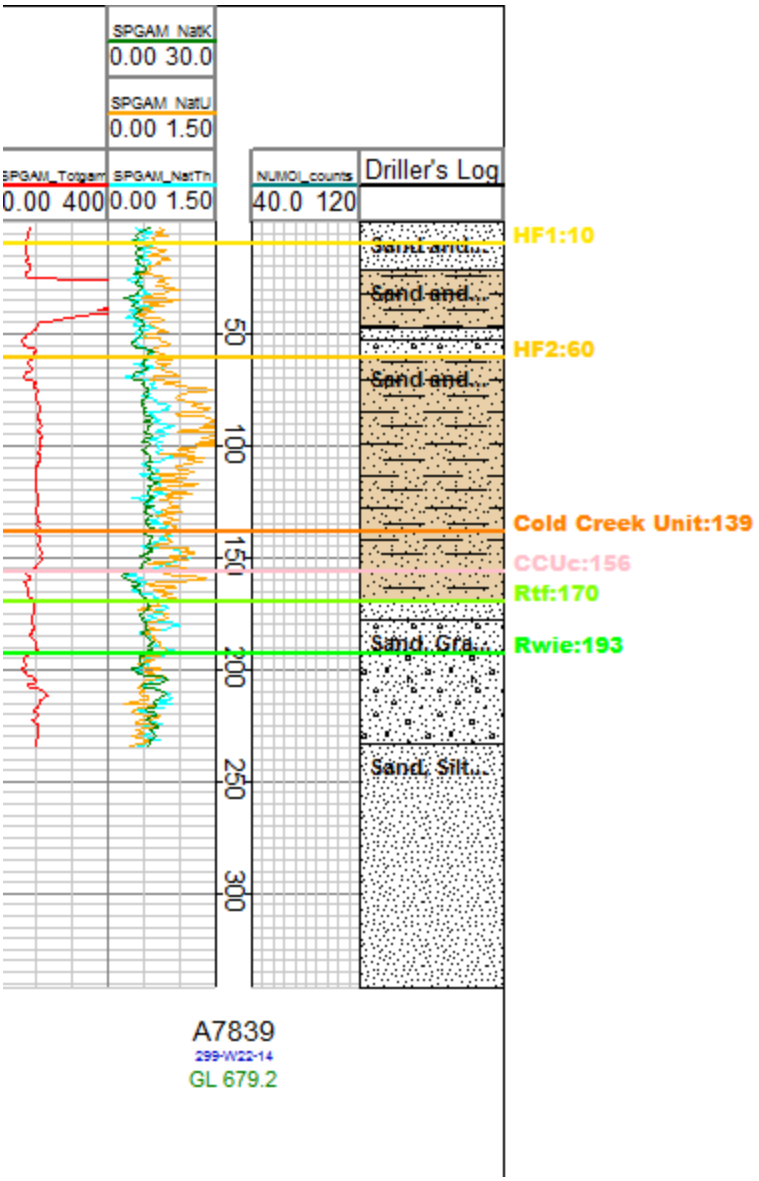

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Drill Pad
HF1:9
Sandy Silt and G...
Gravel
HF2:68
Sandy Silt
Silt
Cold Creek Unit:127
CCUc:136
Rtf:150
Rwie:168
Sand
Gravel and Sand
Gravel Sand and Mud
Gravel Sand and M...
25
50
75
100
125
150
175
200
225
250
275
300
A7830
299-W22-4
675.7
40 ft

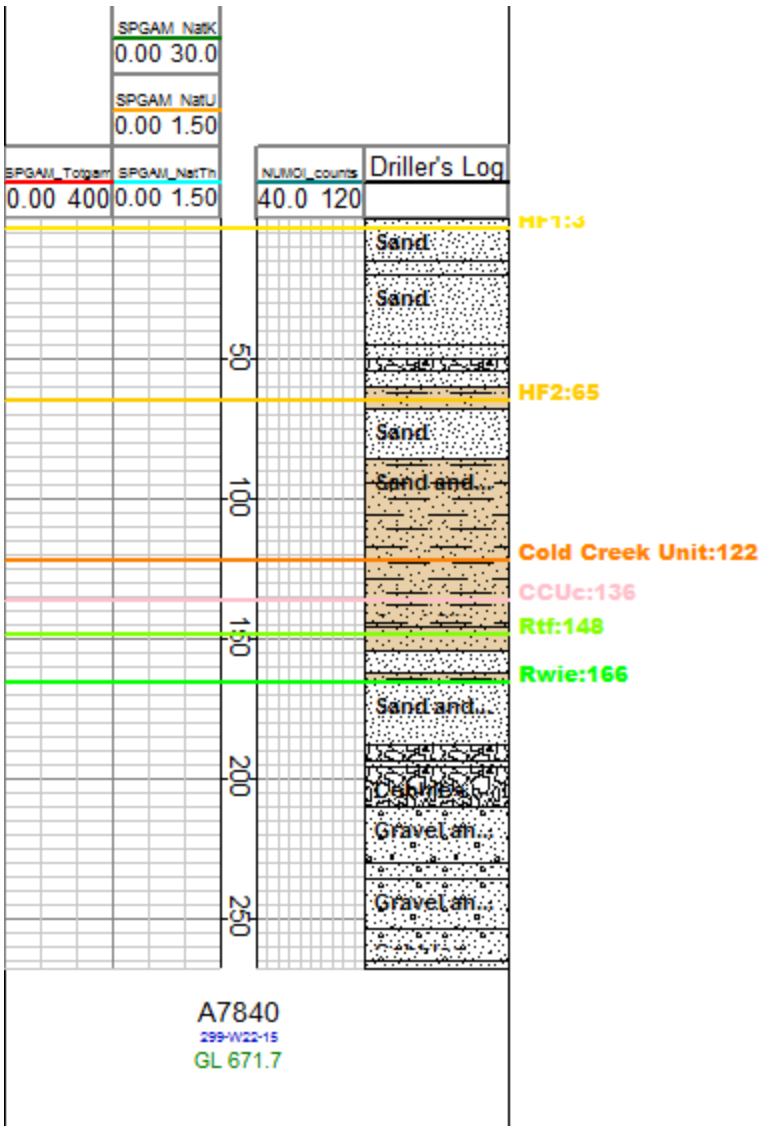

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:9
HF2:61
Sand and...
Cold Creek Unit:123
CCUc:134
Rtf:148
Rwie:160
Sand
Gravel,an...
Gravel,Sa...
Gravel,an...
Gravel,an...
50
100
150
200
250
300
A7831
299-W22-5
GL 673.3

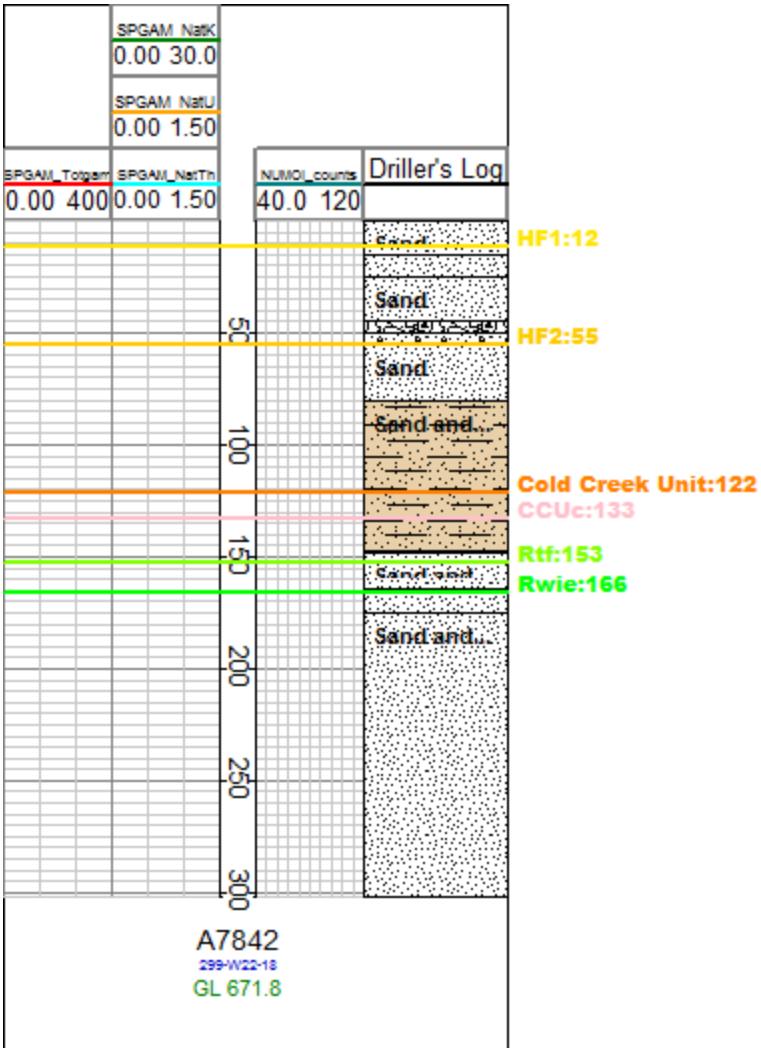

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:7
HF2:58
Cold Creek Unit:154
CCUc:181
Rtf:201
Rwie:231
Silt and G...
Silt
Gravel,an...
50
100
150
200
250
A7833
299-W22-8
GL 685.2

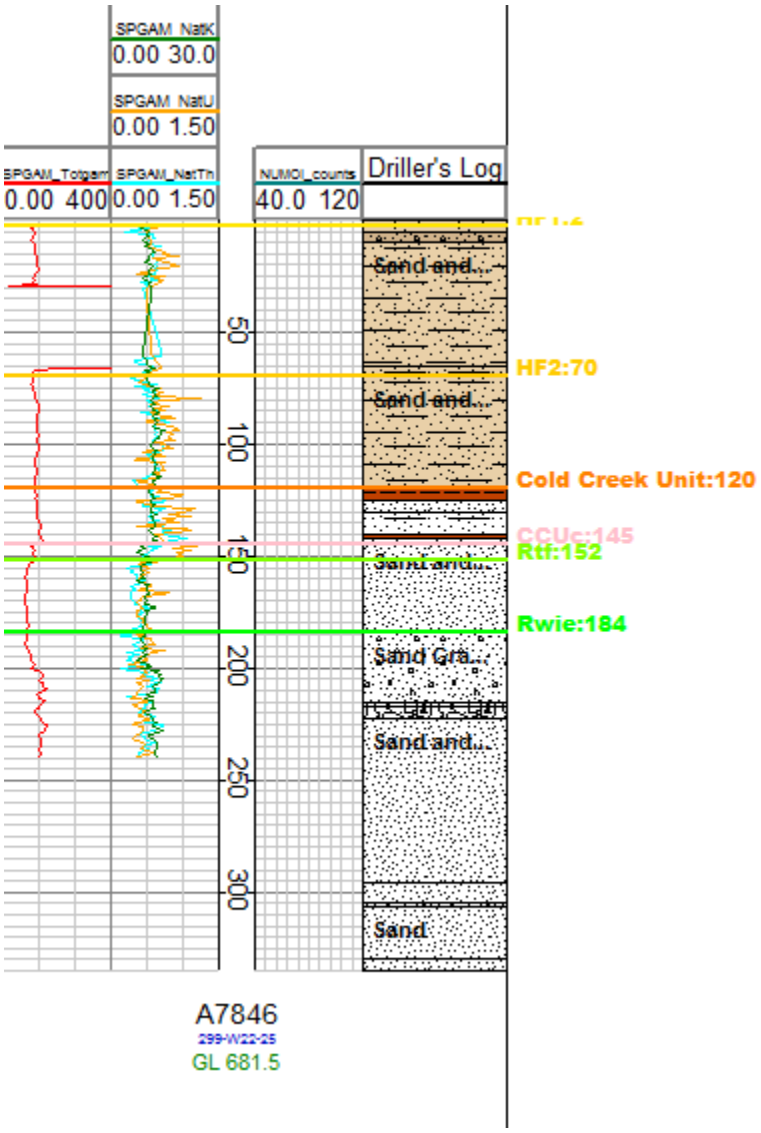

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand Silt...
HF1:25
HF2:70
Cold Creek Unit:122
CCUc:134
Gravel
Rtf:155
Rwie:168
Sand and...
Sand and...
50
100
150
200
250
300
A7835
299-W22-10
GL 673.5

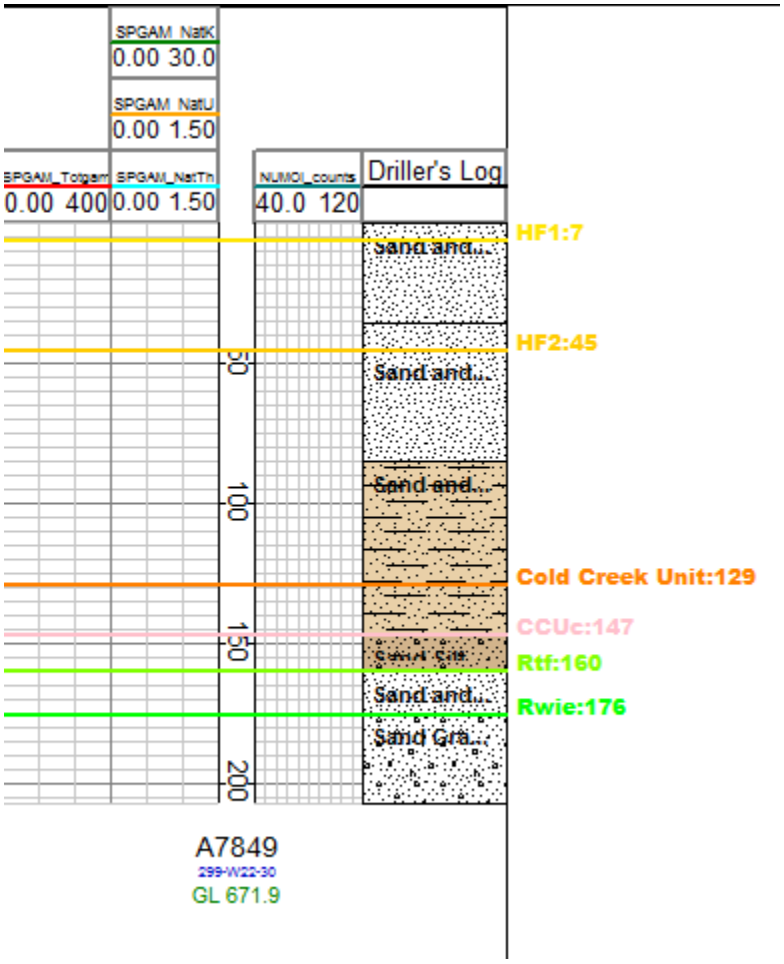

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF1:24
Sand, Gra...
HF2:70
Sandy Silt
Sand, Silt
Cold Creek Unit:133
CCUc:143
Rtf:150
Rwie:161
Gravel, S...
Sand, Mu...
Sand, Gra...
50
100
150
200
250
300
A7838
299-W22-13
GL 679.2

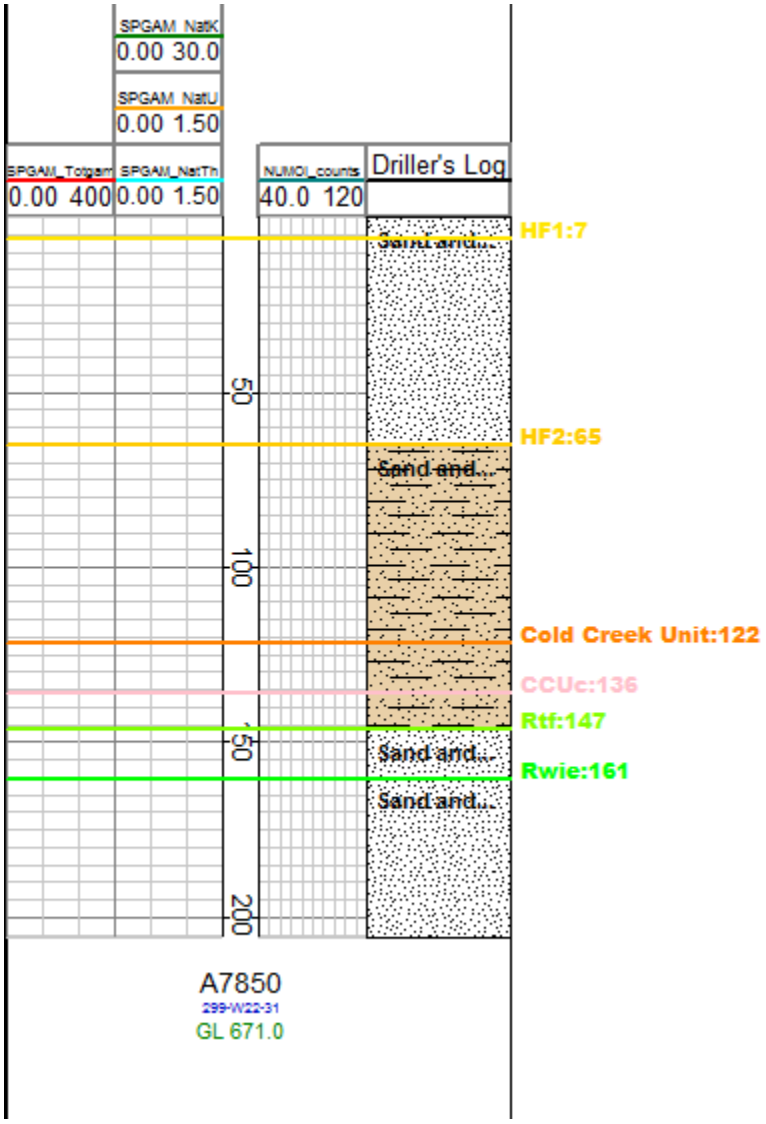

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:10
Sand and...
HF2:60
Cold Creek Unit:139
CCUc:156
Rtf:170
Rwie:193
Sand, Grd...
Sand, Silt...
50
100
150
200
250
300
A7839
299-W22-14
GL 679.2

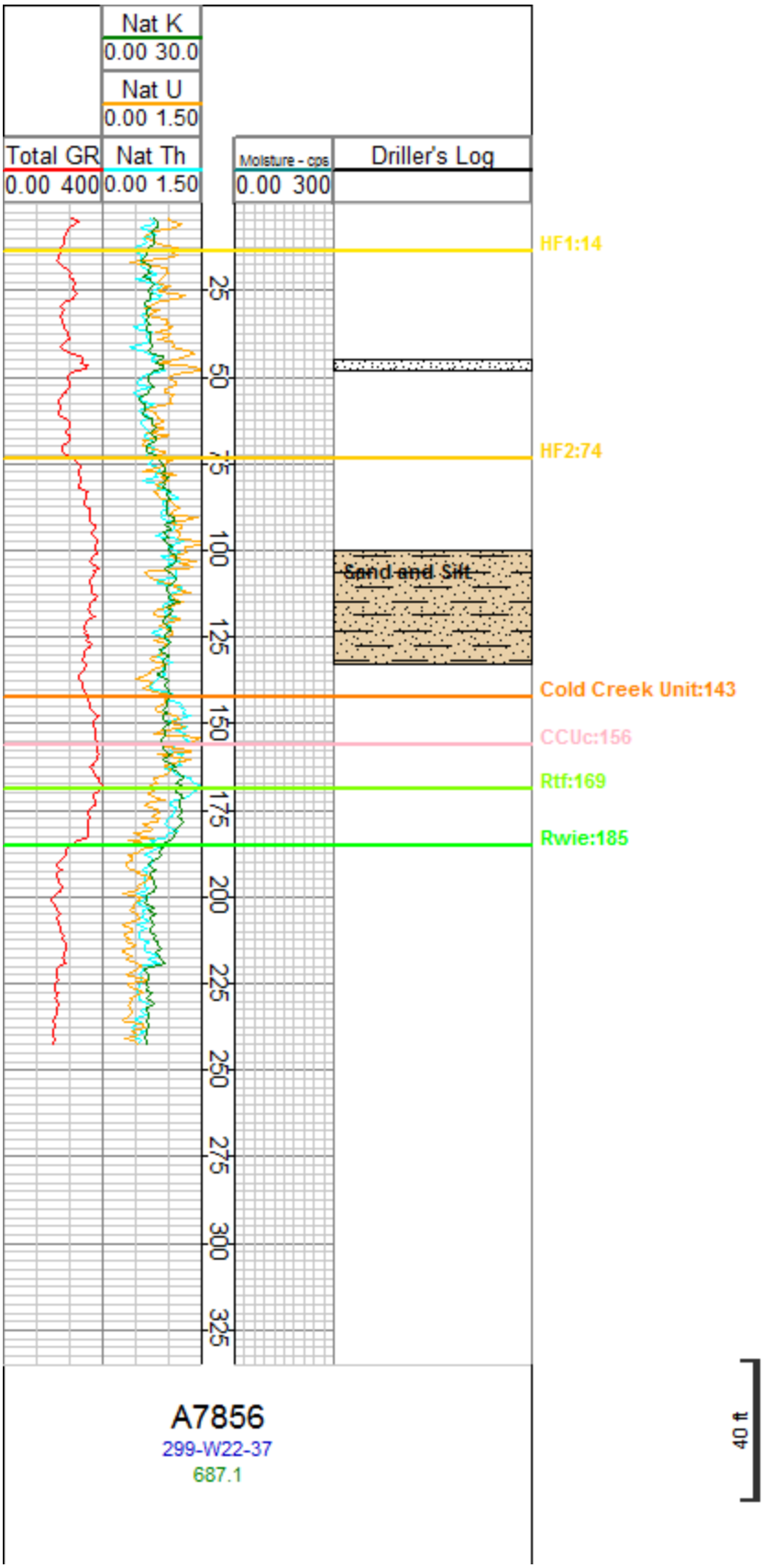

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand
Sand
HF2:65
Sand
Sand and...
Cold Creek Unit:122
CCUc:136
Rtf:148
Rwie:166
Sand and...
Gravel an...
Gravel an...
50
100
150
200
250
A7840
299-W22-15
GL 671.7

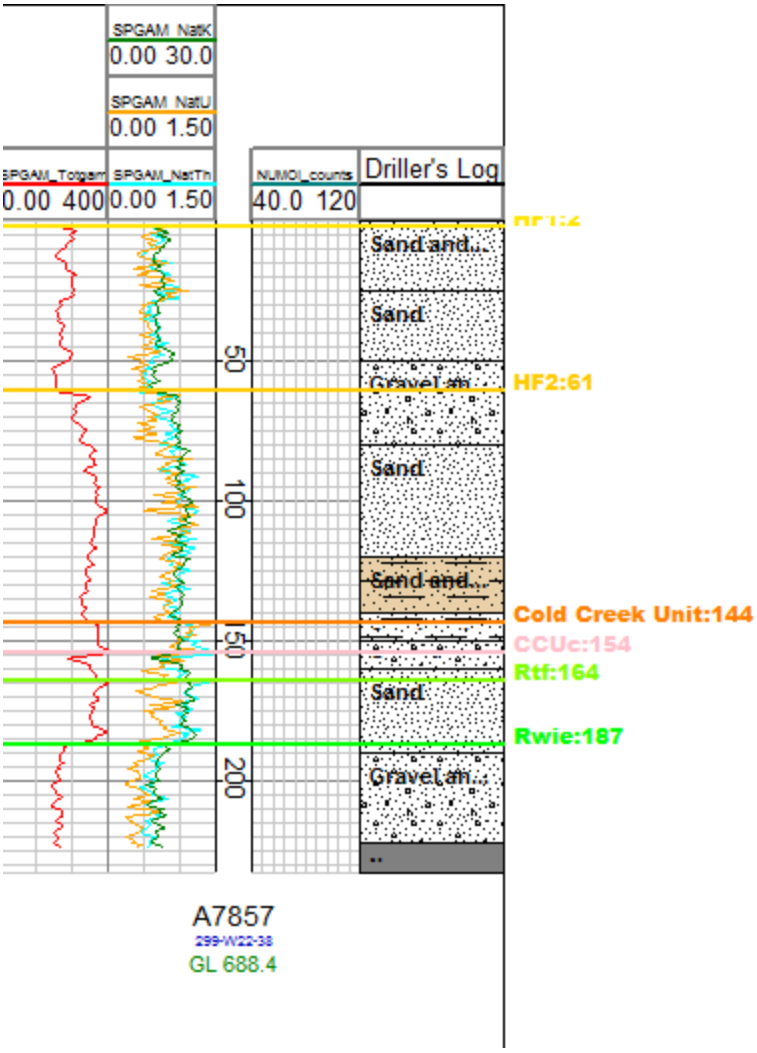

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:12
Sand
HF2:55
Sand
Sand and...
Cold Creek Unit:122
CCUc:133
Rtf:153
Rwie:166
Sand and...
50
100
150
200
250
300
A7842
299-W22-18
GL 671.8

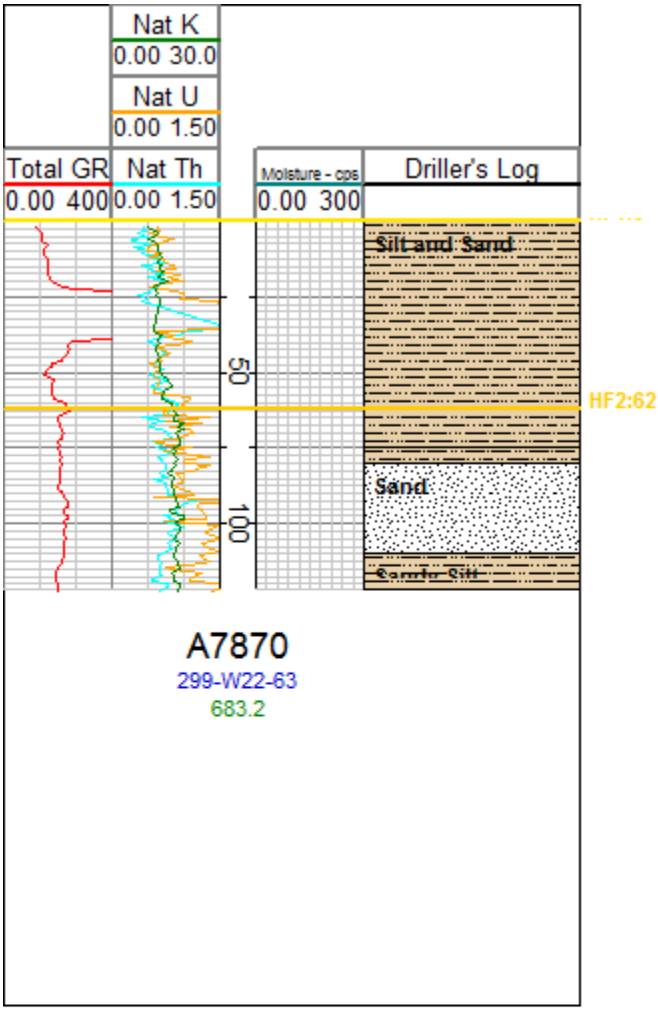

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
50
100
150
200
250
300
Sand and...
Sand and...
HF2:70
Cold Creek Unit:120
CCUc:145
Rtf:152
Rwie:184
Sand Gra...
Sand and...
Sand
A7846
299-W22-25
GL 681.5


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:7
HF2:45
Cold Creek Unit:129
CCUc:147
Rtf:160
Rwie:176
50
100
150
200
A7849
299-W22-30
GL 671.9

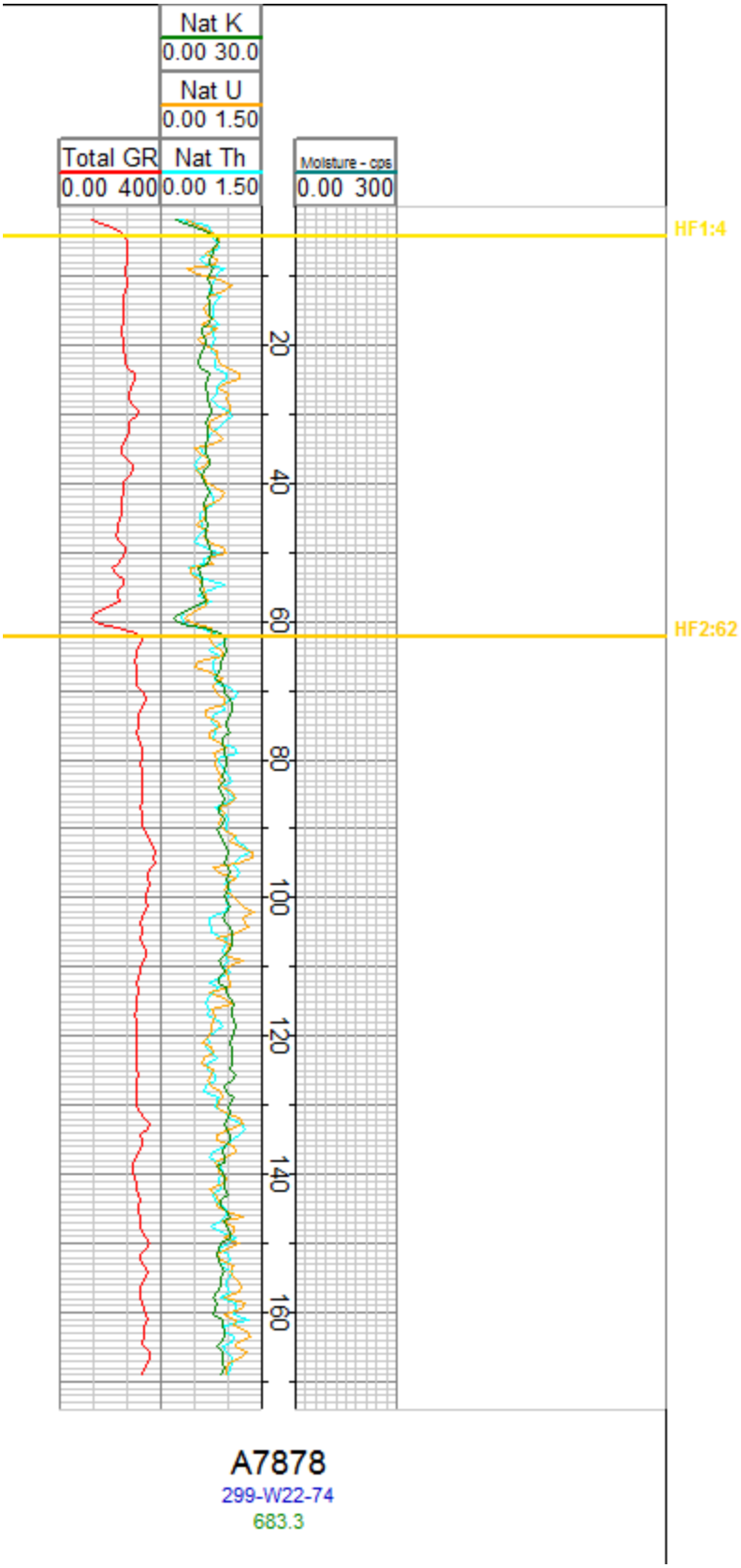

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:7
HF2:65
Sand and...
Cold Creek Unit:122
CCUc:136
Rtf:147
Rwie:161
50
100
150
200
A7850
299-W22-31
GL 671.0

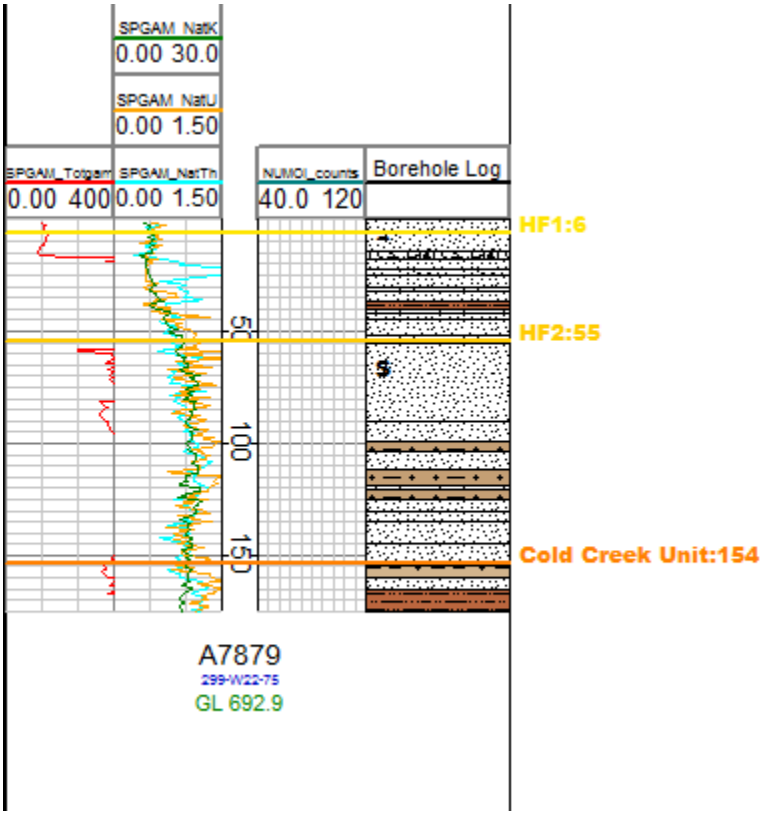

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:14
HF2:74
Sand and Silt
Cold Creek Unit:143
CCUc:156
Rtf:169
Rwie:185
25
50
75
100
125
150
175
200
225
250
275
300
325
A7856
299-W22-37
687.1
40 ft

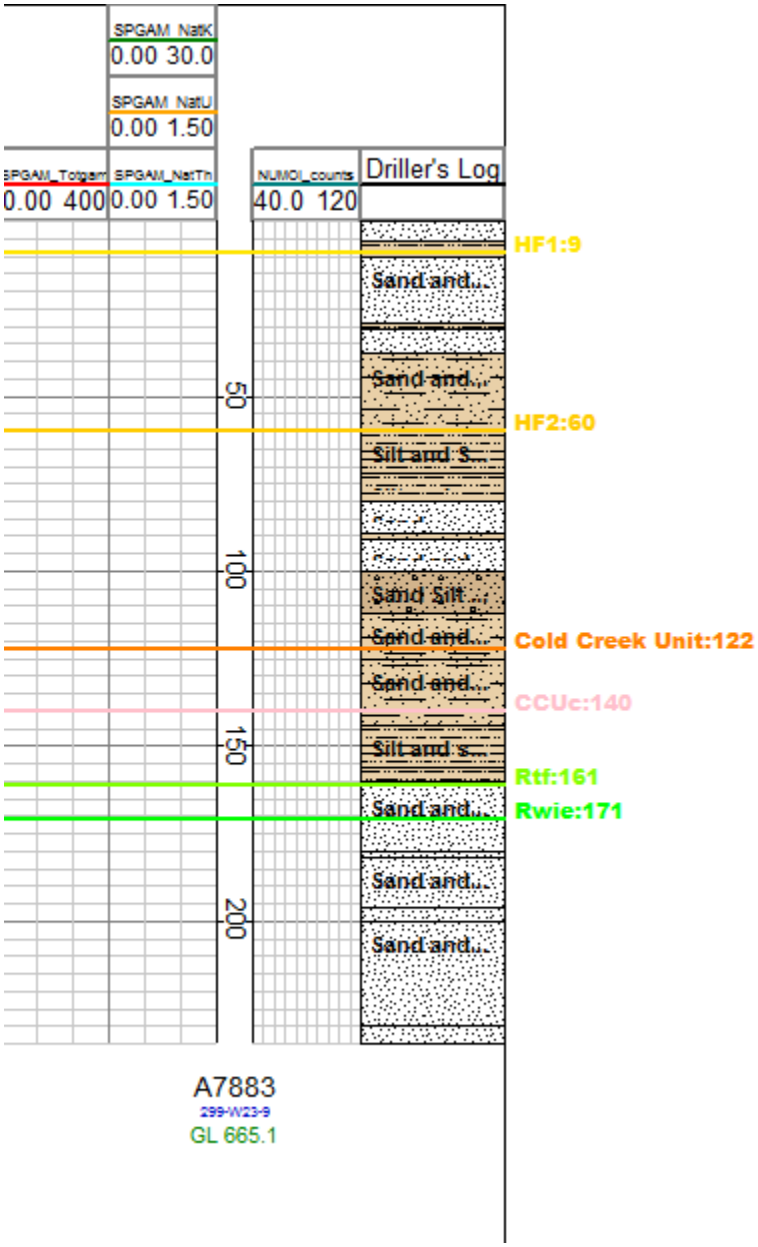

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sand and...
Sand
Gravel an...
Sand
Sand and...
Sand
Gravel an...
50
100
150
200
HF2:61
Cold Creek Unit:144
CCUc:154
Rtf:164
Rwie:187
A7857
299-W22-38
GL 688.4

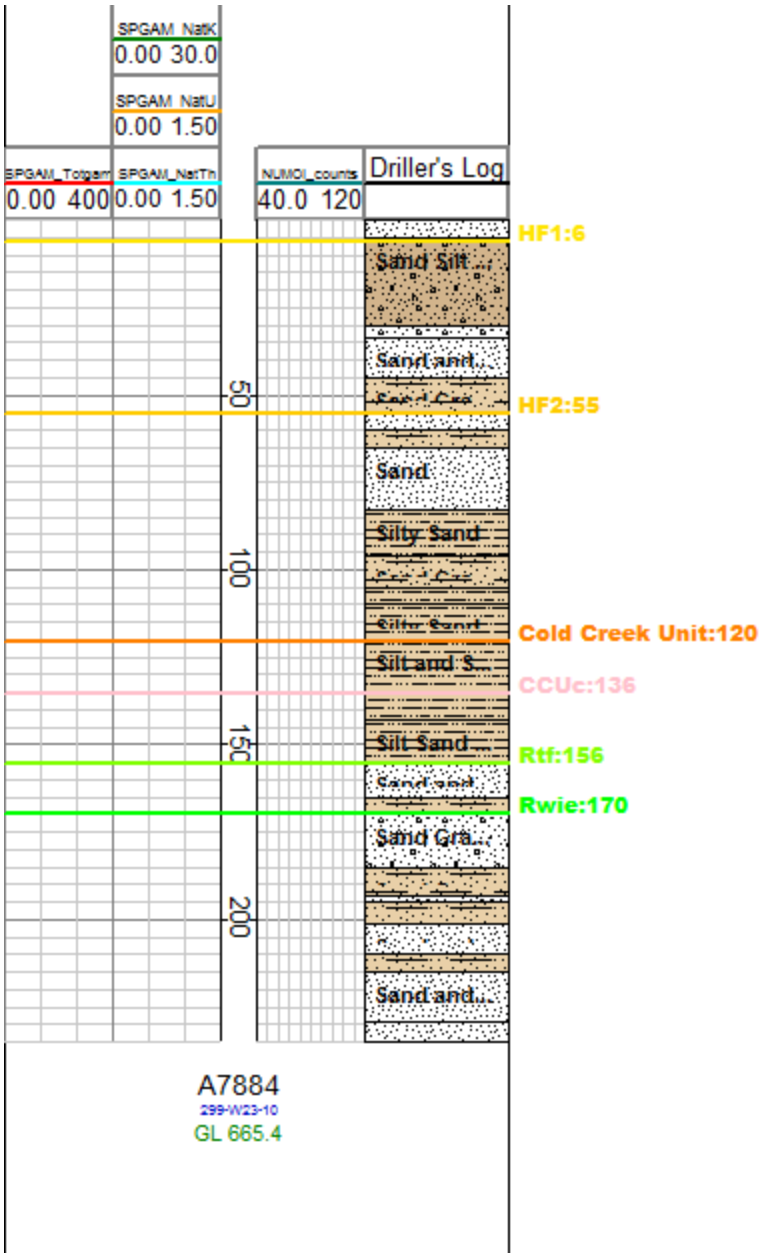

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Silt and Sand
HF2:62
Sand
50
100
A7870
299-W22-63
683.2

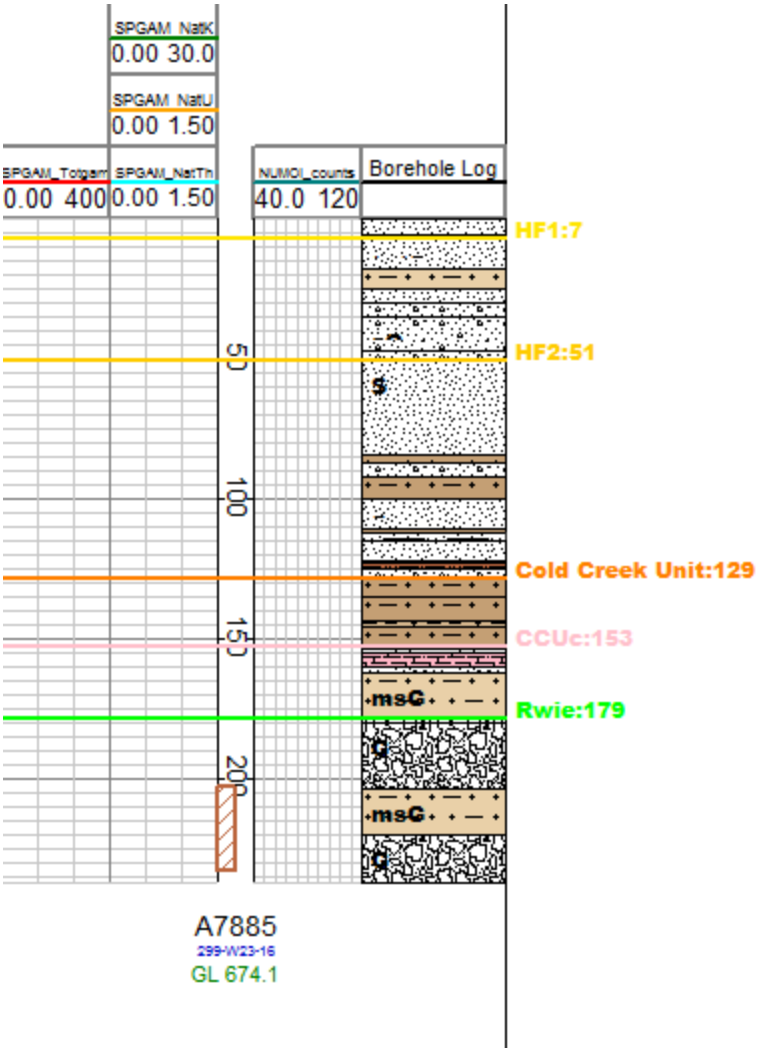
50 ft

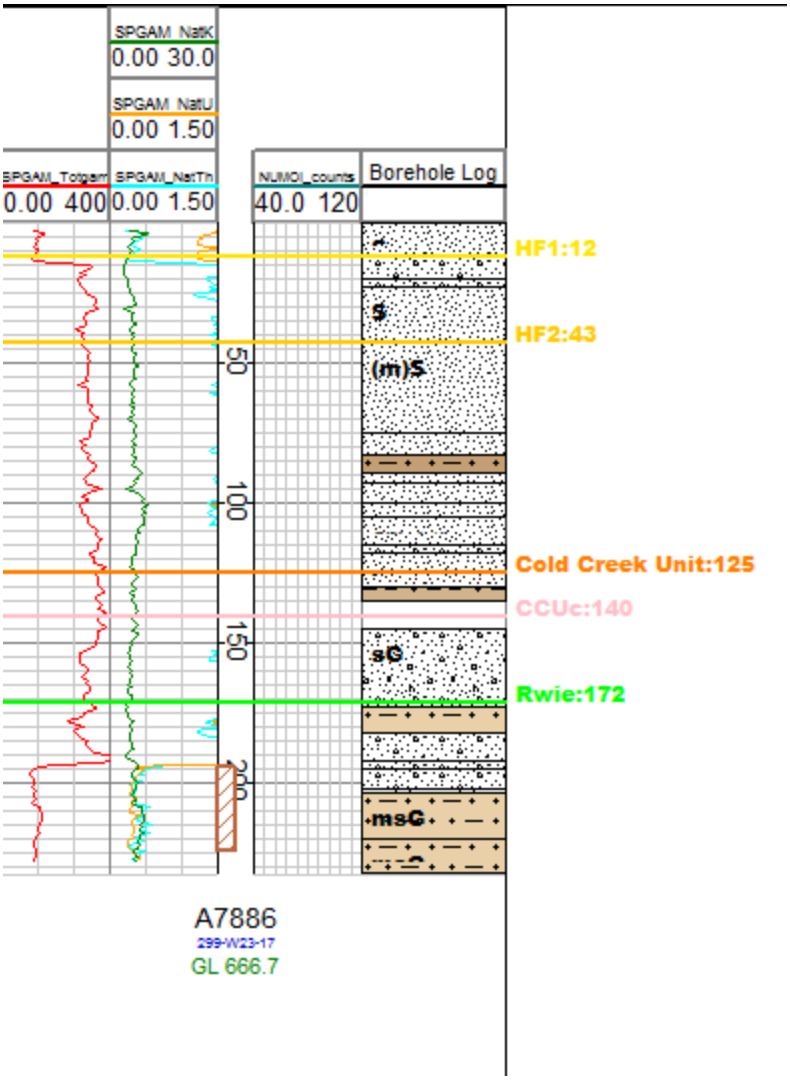

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:4
HF2:62
20
40
60
80
100
120
140
160
A7878
299-W22-74
683.3

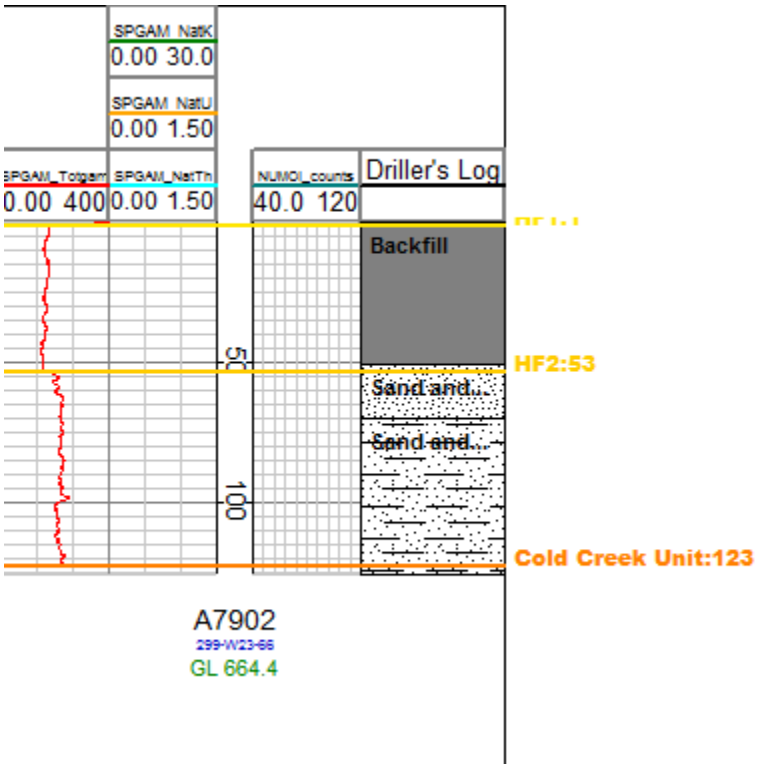

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 120
Borehole Log
HF1:6
HF2:55
Cold Creek Unit:154
50
100
150
A7879
299-W22-75
GL 692.9

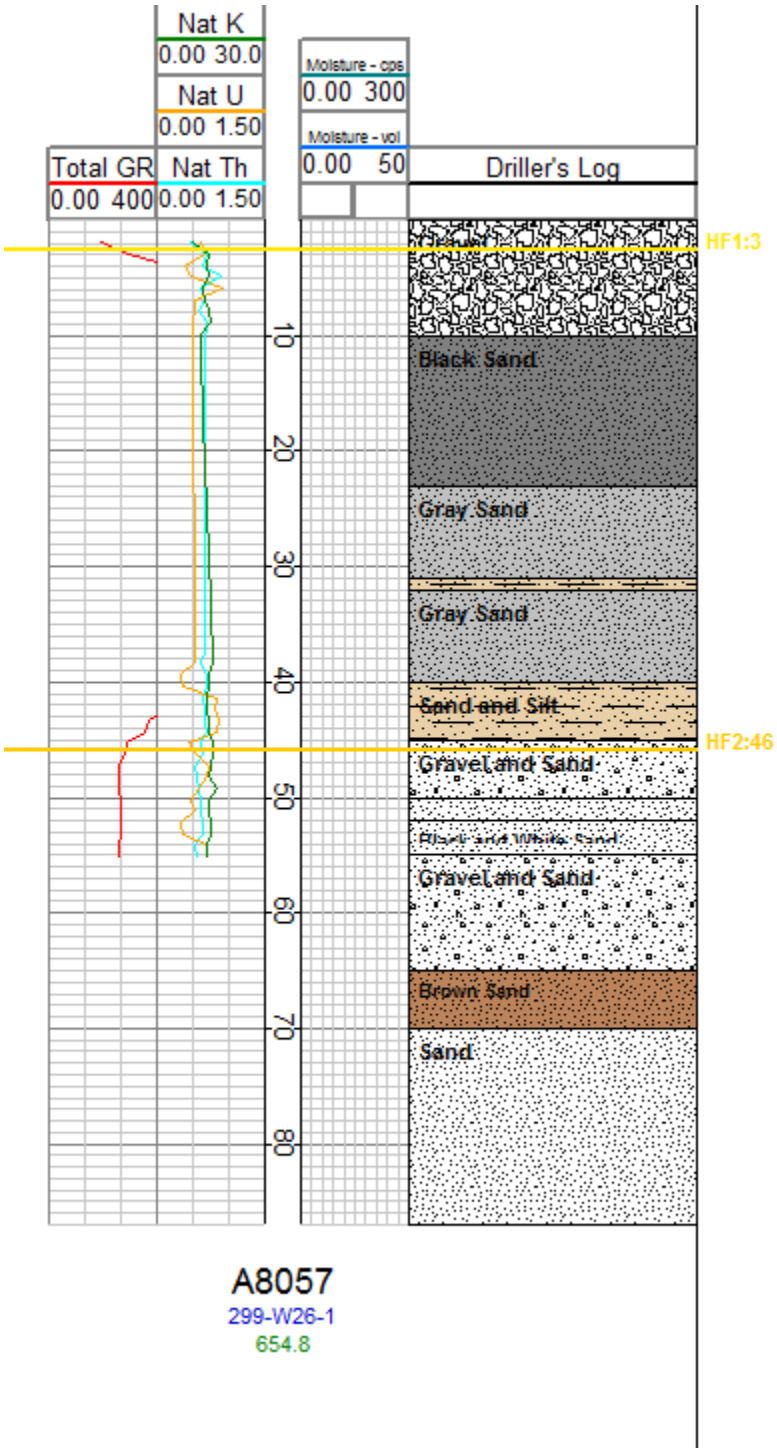

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:9
Sand and...
Sand and...
HF2:60
Silt and S...
Sand Silt...
Sand and...
Cold Creek Unit:122
Sand and...
CCUc:140
Silt and s...
Rtf:161
Sand and...
Rwie:171
Sand and...
Sand and...
50
100
150
200
A7883
299-W23-9
GL 665.1

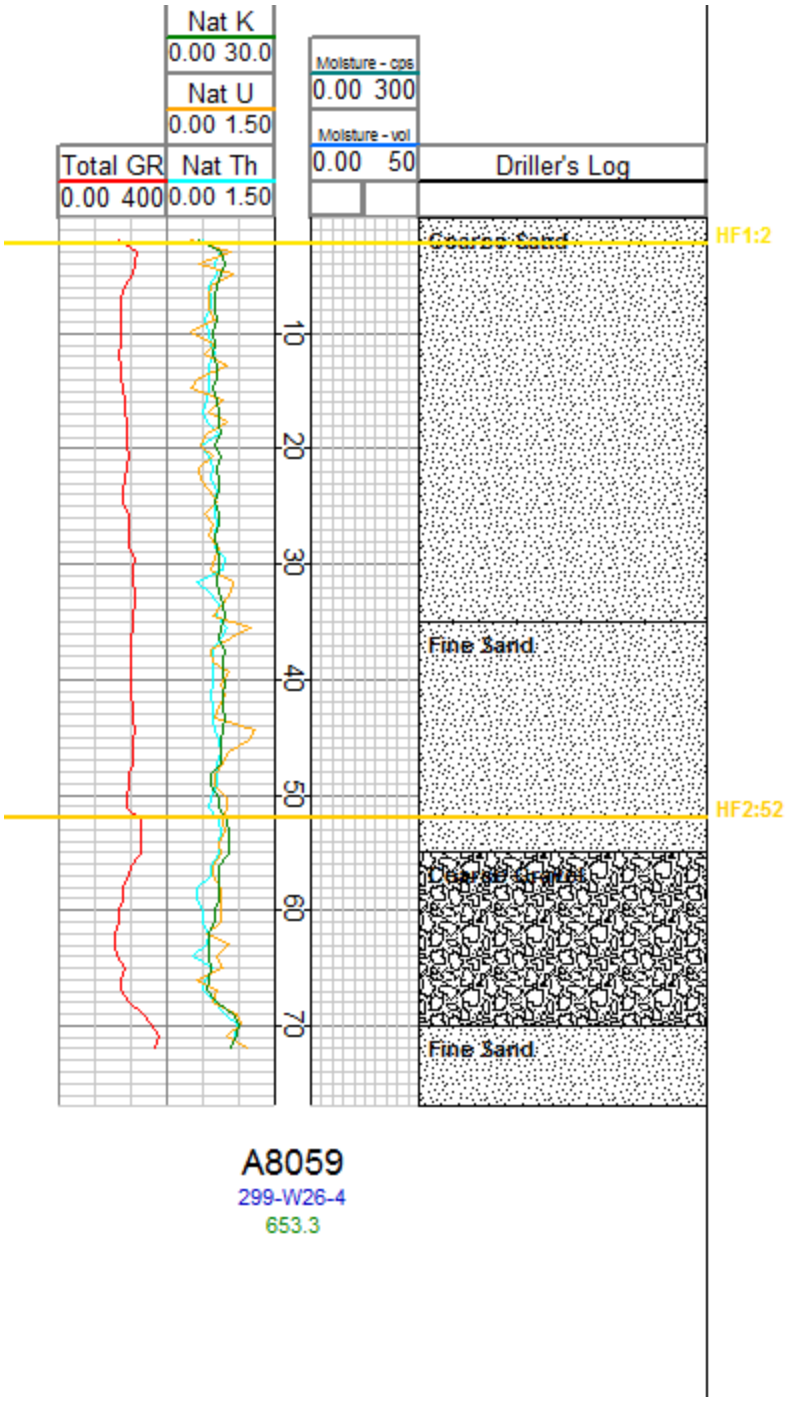

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
HF1:6
Sand Silt
Sand and
HF2:55
Sand
Silty Sand
Cold Creek Unit:120
Silt and S
CCUc:136
Silt Sand
Rtf:156
Rwie:170
Sand Gra
Sand and
50
100
150
200
A7884
299-W23-10
GL 665.4

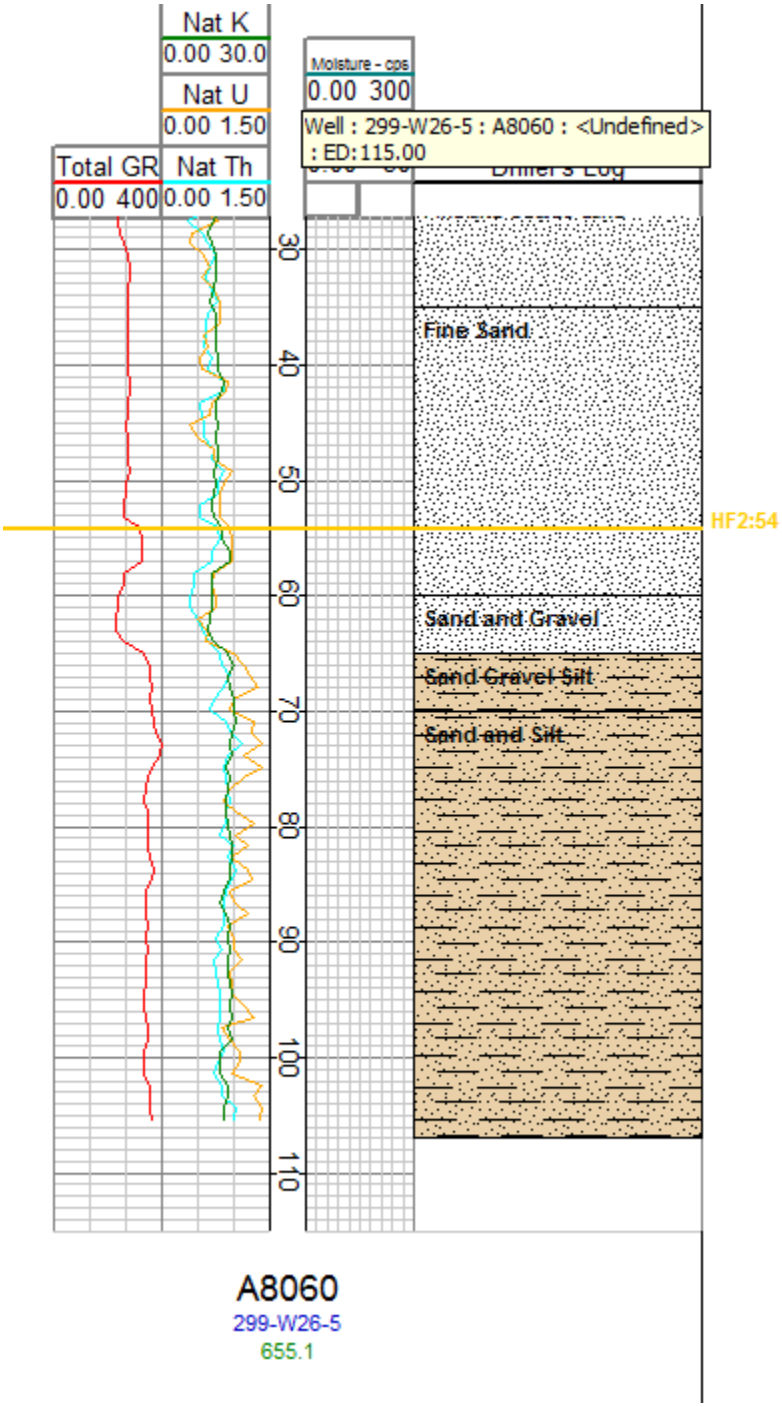

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:7
HF2:51
Cold Creek Unit:129
CCUc:153
Rwie:179
msG
msG
50
100
150
200
A7885
299-W23-16
GL 674.1

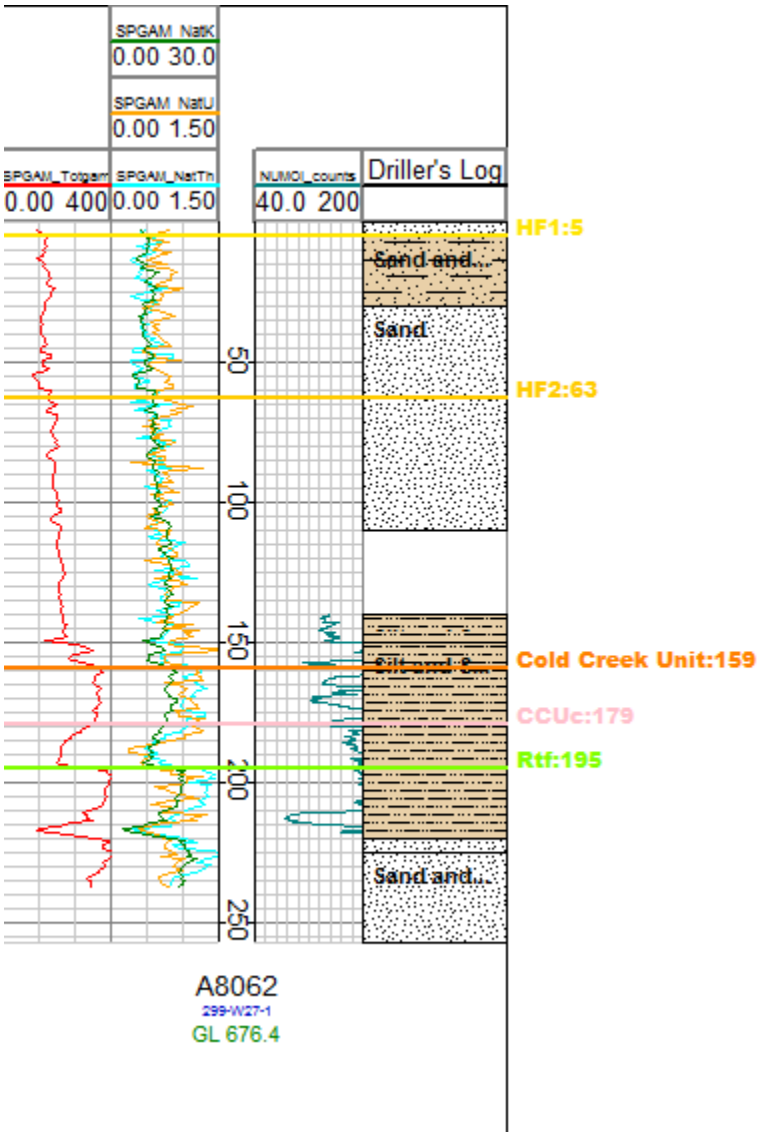

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:12
HF2:43
Cold Creek Unit:125
CCUc:140
Rwie:172
50
100
150
200
(m)S
sG
msG
A7886
299-W23-17
GL 666.7

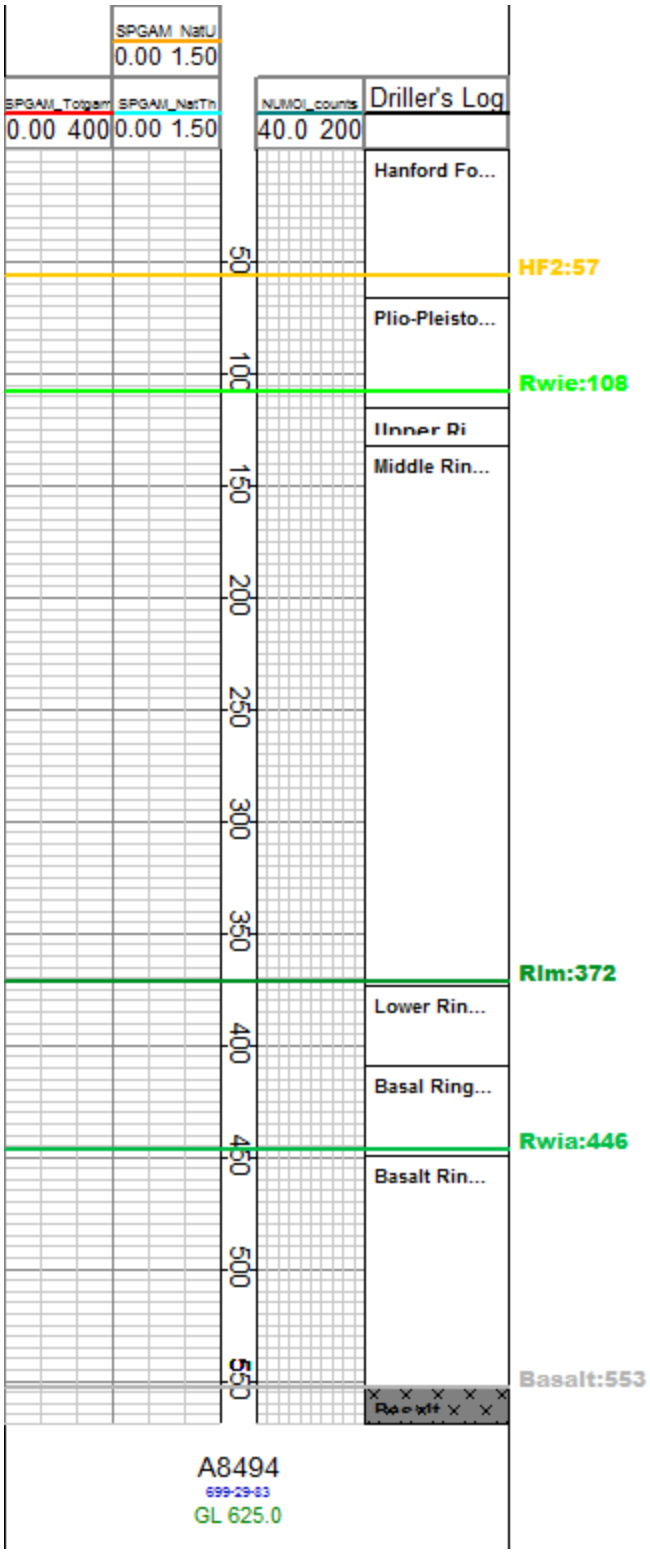

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Backfill
HF2:53
Sand and...
Sand and...
Cold Creek Unit:123
50
100
A7902
299-W23-66
GL 664.4

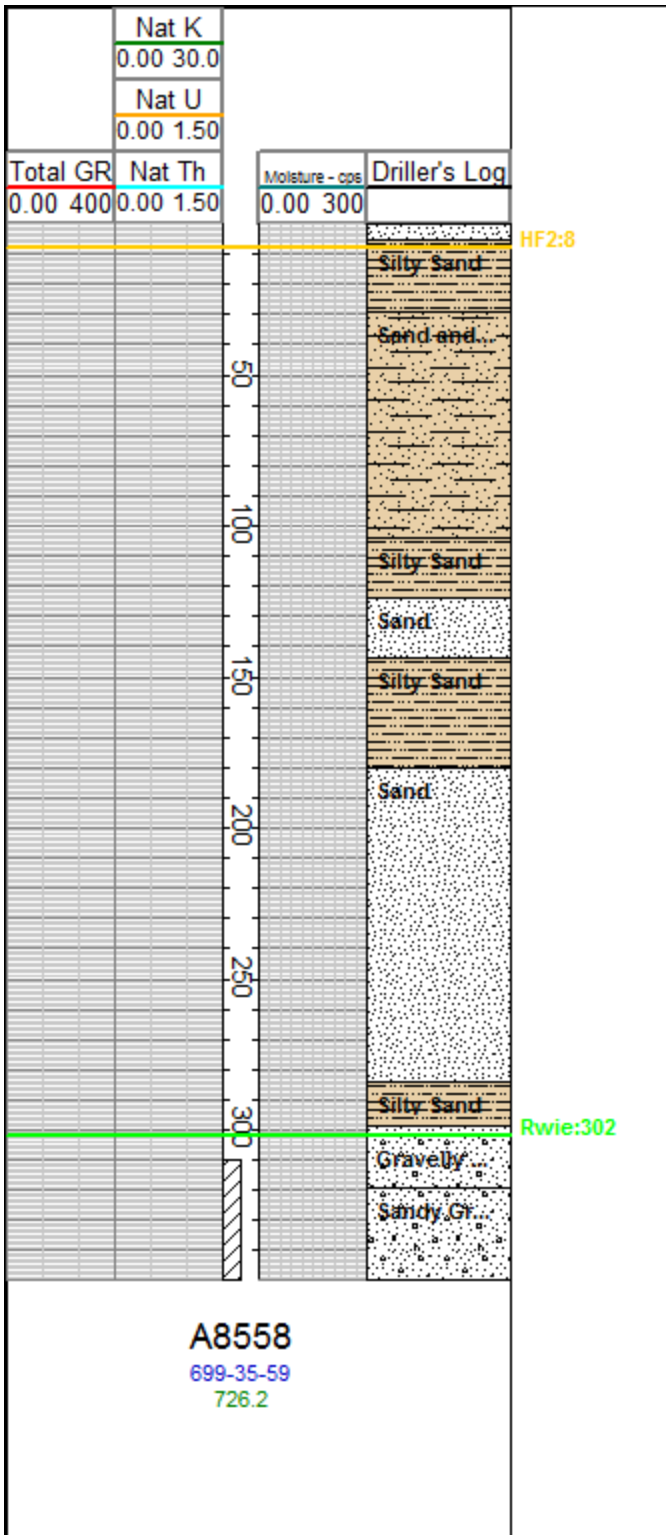

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:3
HF2:46
10
20
30
40
50
60
70
80
Black Sand
Gray Sand
Gray Sand
Sand and Silt
Gravel and Sand
Gravel and Sand
Brown Sand
Sand
A8057
299-W26-1
654.8

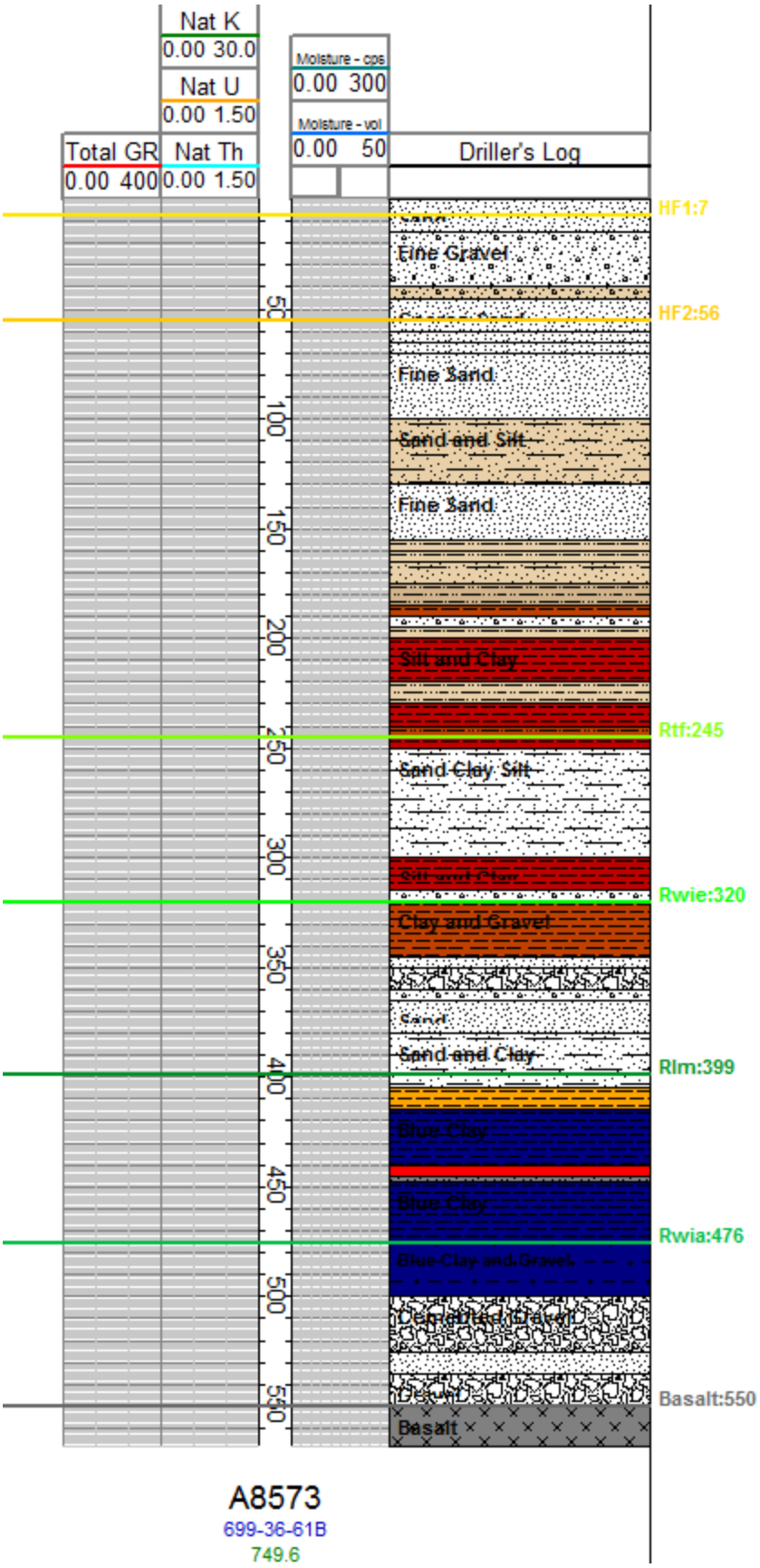

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:2
Coarse Sand
10
20
30
40
50
60
70
Fine Sand
HF2:52
Coarse Gravel
Fine Sand
A8059
299-W26-4
653.3

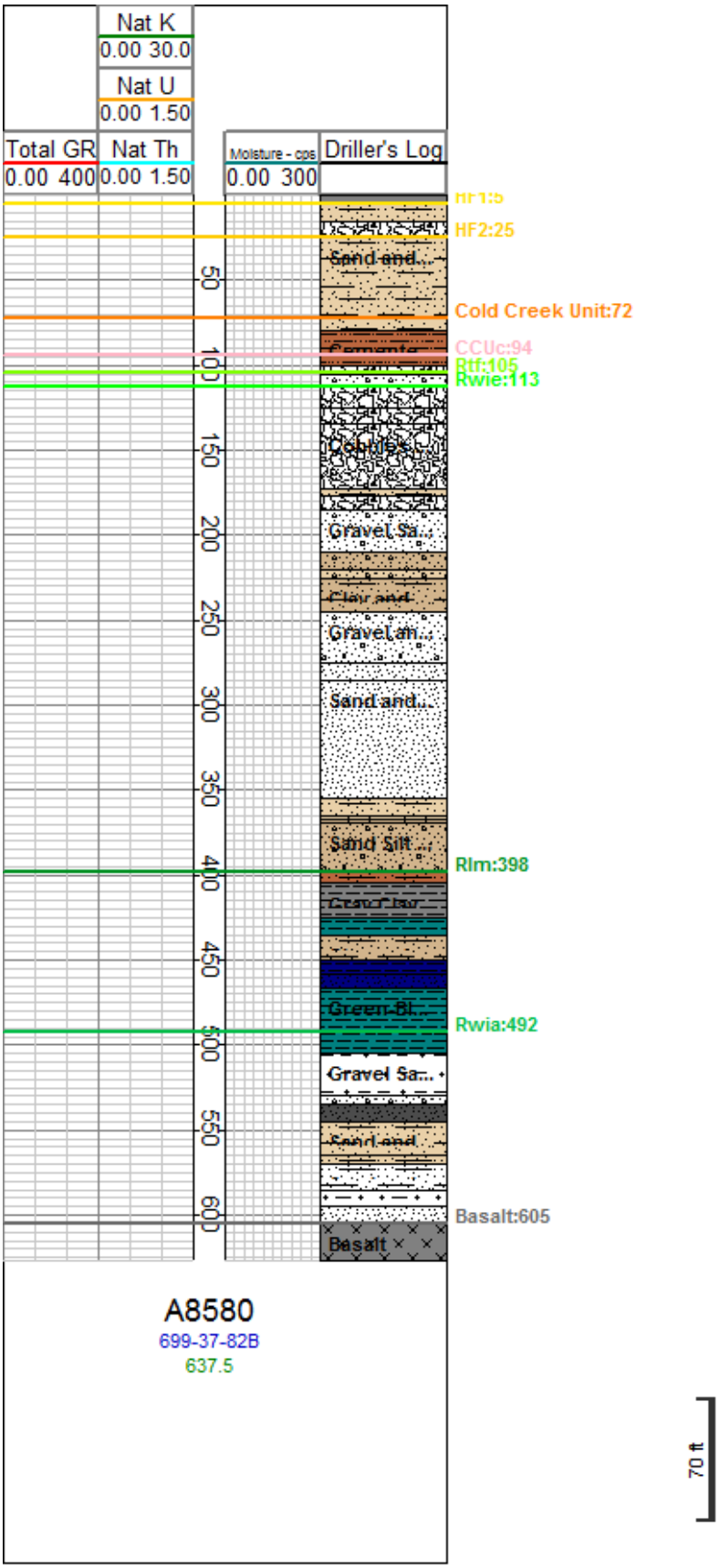

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Well : 299-W26-5 : A8060 : <Undefined>
: ED:115.00
Driller's Log
30
40
50
60
70
80
90
100
110
Fine Sand
HF2:54
Sand and Gravel
Sand Gravel Silt
Sand and Silt
A8060
299-W26-5
655.1

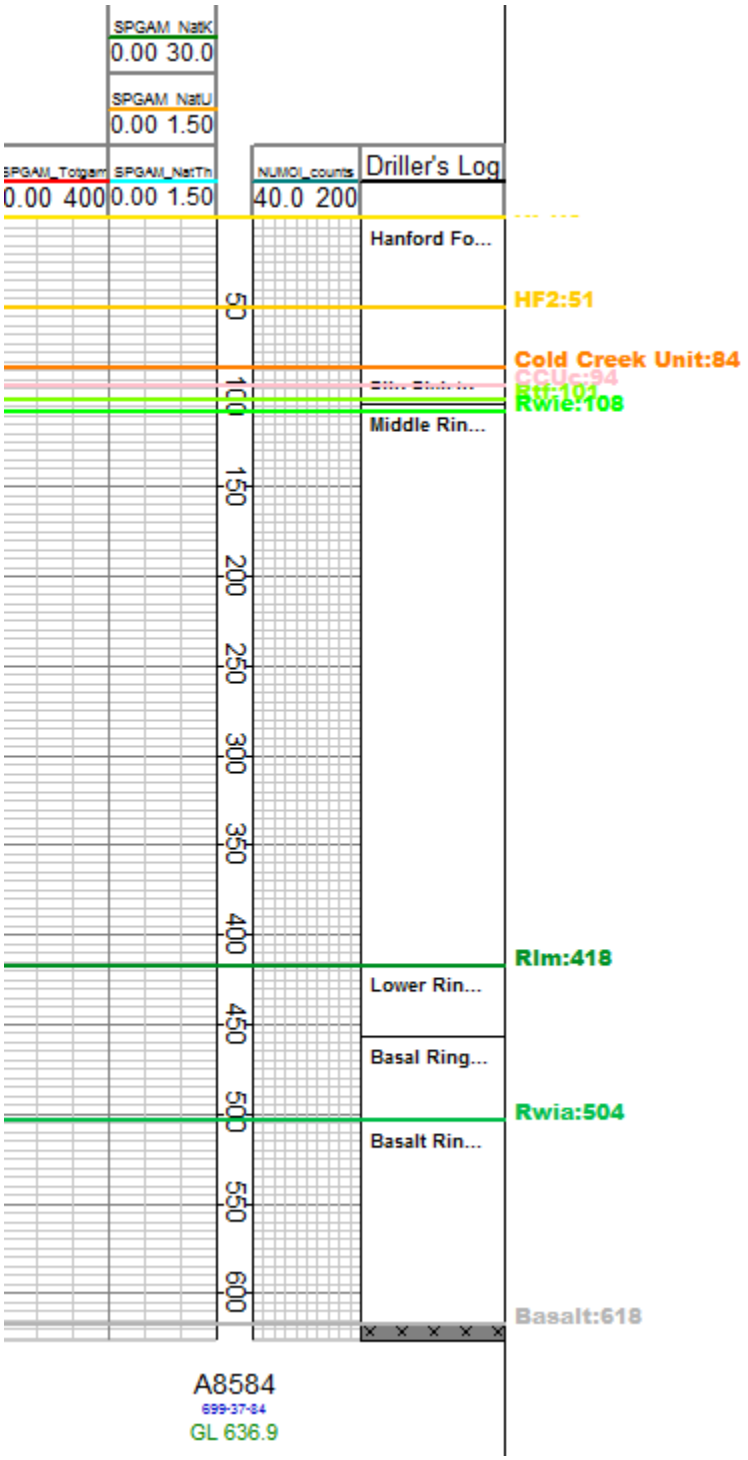

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF1:5
Sand and...
Sand
HF2:63
Cold Creek Unit:159
CCUc:179
Rtf:195
Sand and...
50
100
150
200
250
A8062
299-W27-1
GL 676.4

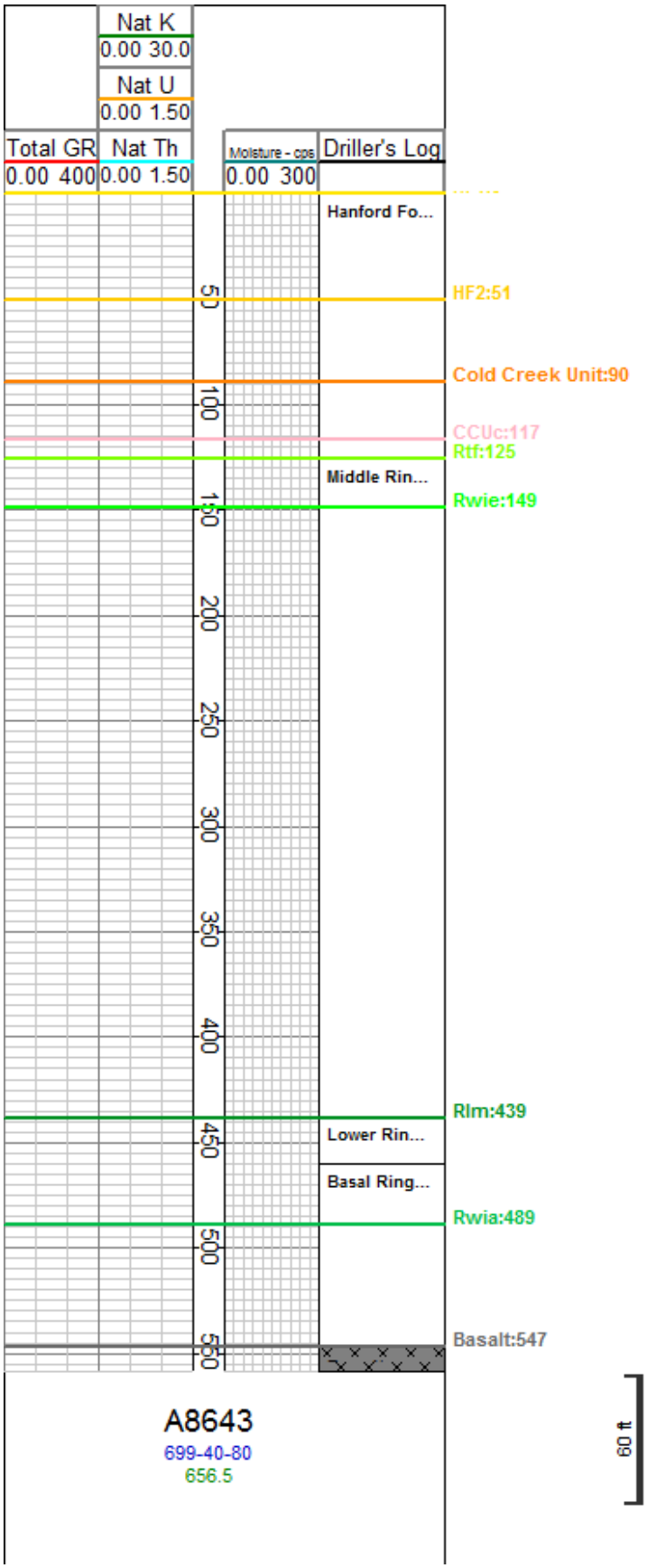

SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Hanford Fo...
HF2:57
Plio-Pleisto...
Rwie:108
Upper Ri
Middle Rin...
Rlm:372
Lower Rin...
Basal Ring...
Rwia:446
Basalt Rin...
Basalt:553
50
100
150
200
250
300
350
400
450
500
550
A8494
699-29-63
GL 625.0

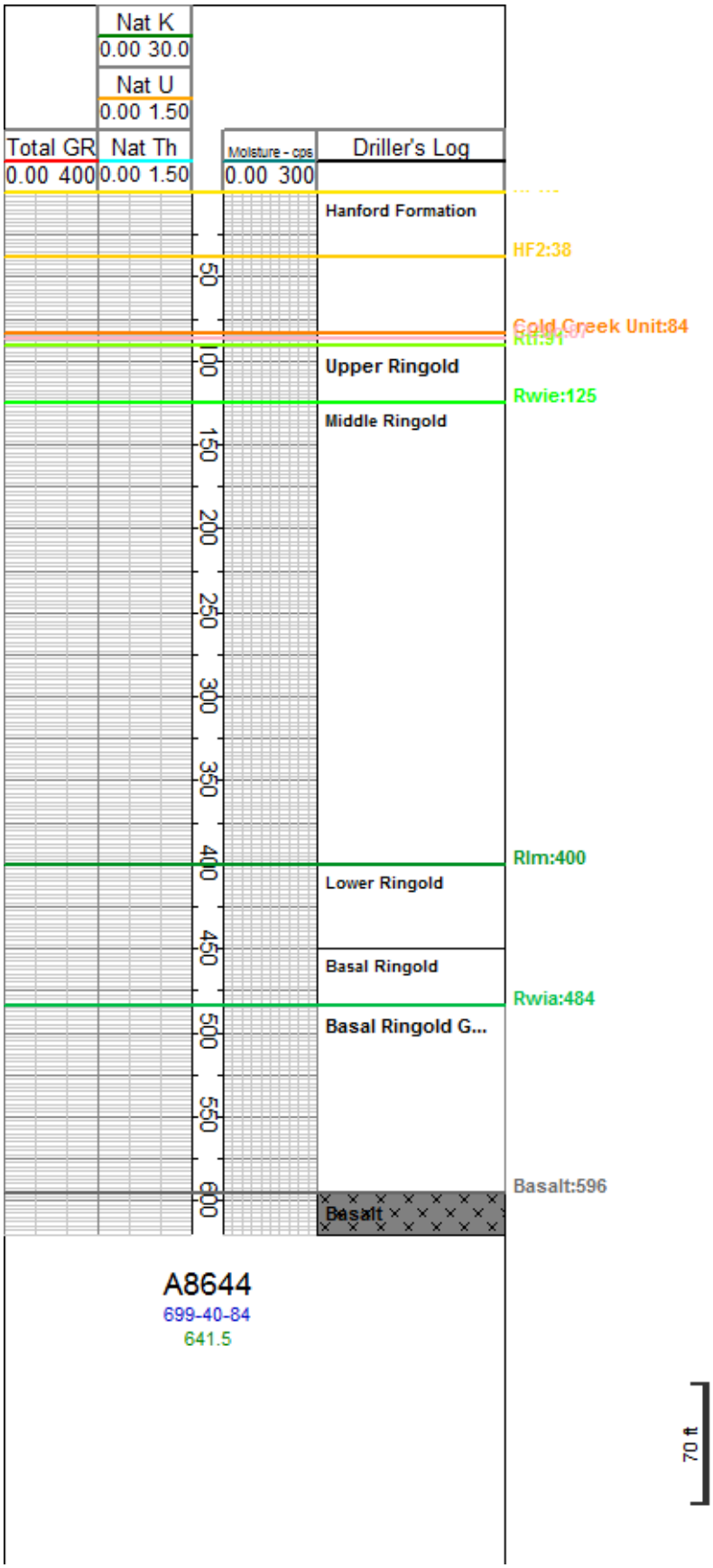

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF2:8
Silty Sand
Sand and...
Silty Sand
Sand
Silty Sand
Sand
Silty Sand
Rwie:302
Gravelly ...
Sandy Gr...
50
100
150
200
250
300
A8558
699-35-59
726.2

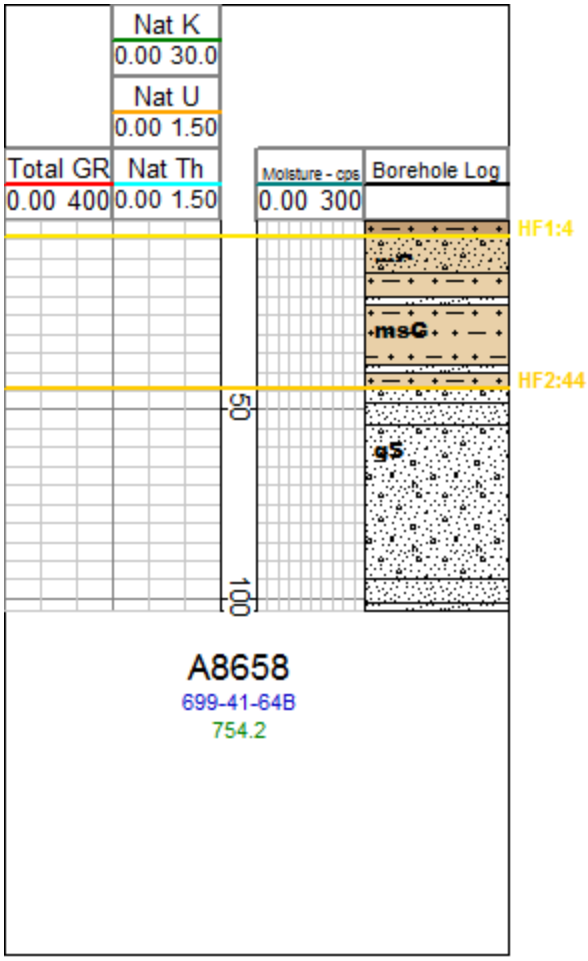

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF1:7
Fine Gravel
HF2:56
Fine Sand
Sand and Silt
Fine Sand
Silt and Clay
Rtf:245
Sand Clay Silt
Silt and Clay
Rwie:320
Clay and Gravel
Sand
Sand and Clay
Rlm:399
Blue Clay
Blue Clay
Rwia:476
Blue Clay and Gravel
Basalt:550
Basalt
50
100
150
200
250
300
350
400
450
500
550
A8573
699-36-61B
749.6


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
HF1:5
HF2:25
Sand and...
Cold Creek Unit:72
CCUc:94
Rtf:105
Rwie:113
Gravel Sa...
Clay and...
Gravel an...
Sand and...
Sand Silt...
Rlm:398
Green Bl...
Rwia:492
Gravel Sa...
Sand and...
Basalt:605
Basalt
50
100
150
200
250
300
350
400
450
500
550
600
A8580
699-37-82B
637.5
70 ft

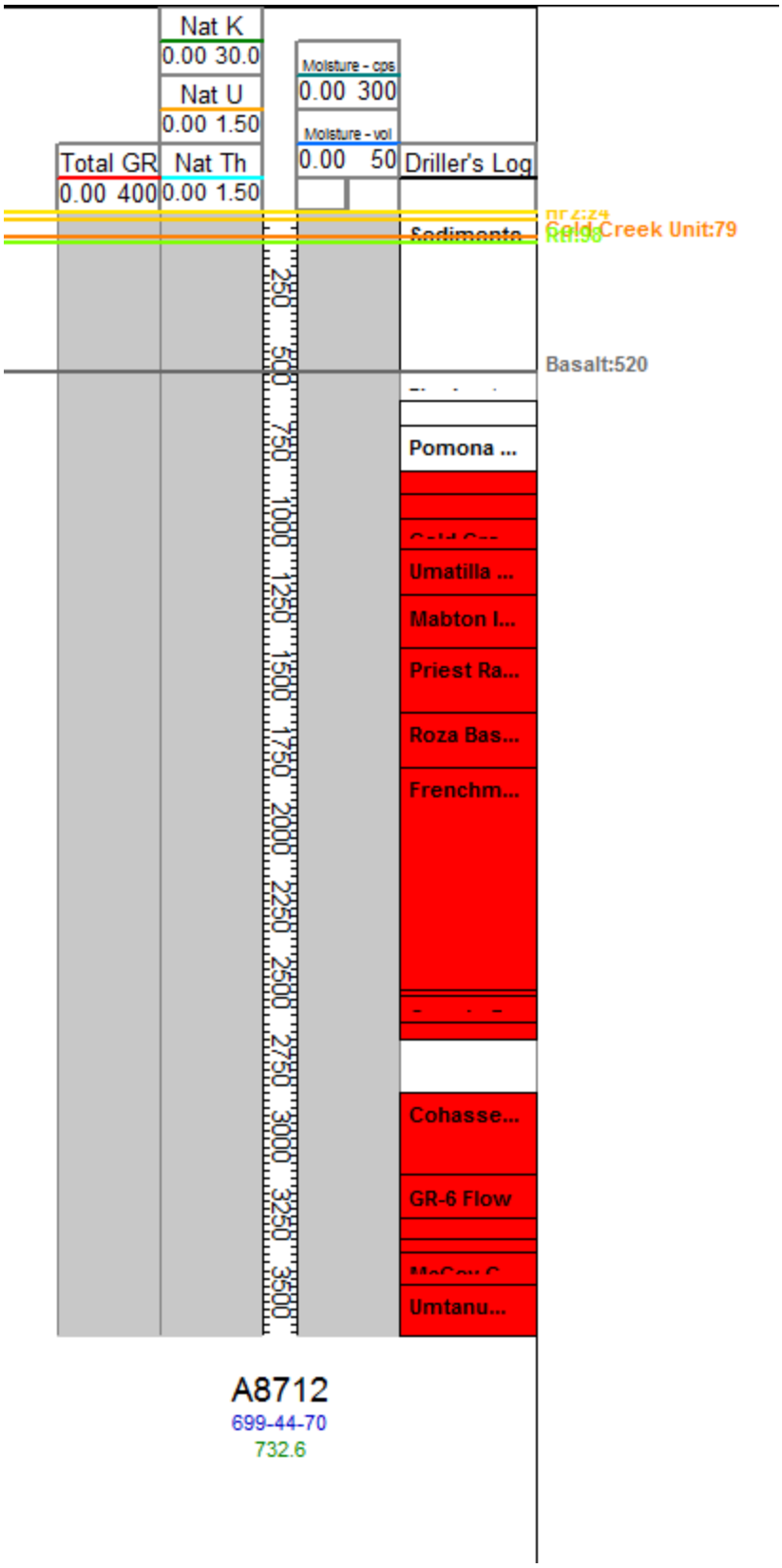

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
Hanford Fo...
HF2:51
Cold Creek Unit:84
CCUc:94
Rwie:108
Middle Rin...
Rlm:418
Lower Rin...
Basal Ring...
Rwia:504
Basalt Rin...
Basalt:618
50
100
150
200
250
300
350
400
450
500
550
600
A8584
699-37-84
GL 636.9

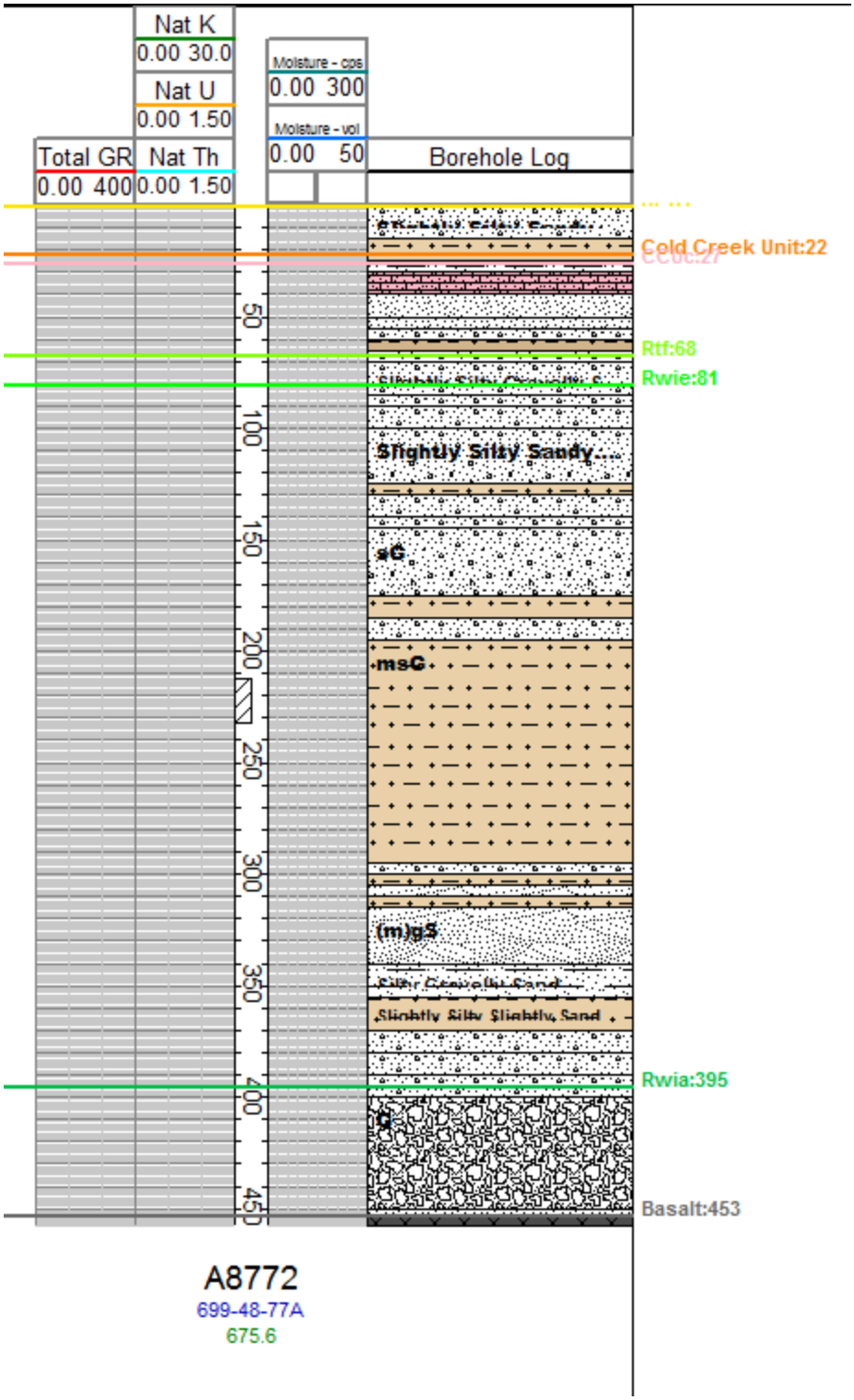

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Hanford Fo...
HF2:51
Cold Creek Unit:90
CCUc:117
Rtf:125
Middle Rin...
Rwie:149
Rlm:439
Lower Rin...
Basal Ring...
Rwia:489
Basalt:547
50
100
150
200
250
300
350
400
450
500
550
A8643
699-40-80
656.5
60 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Driller's Log
Hanford Formation
HF2:38
Cold Creek Unit:84
Upper Ringold
Rwie:125
Middle Ringold
Rlm:400
Lower Ringold
Basal Ringold
Rwia:484
Basal Ringold G...
Basalt:596
Basalt
50
100
150
200
250
300
350
400
450
500
550
600
A8644
699-40-84
641.5
70 ft

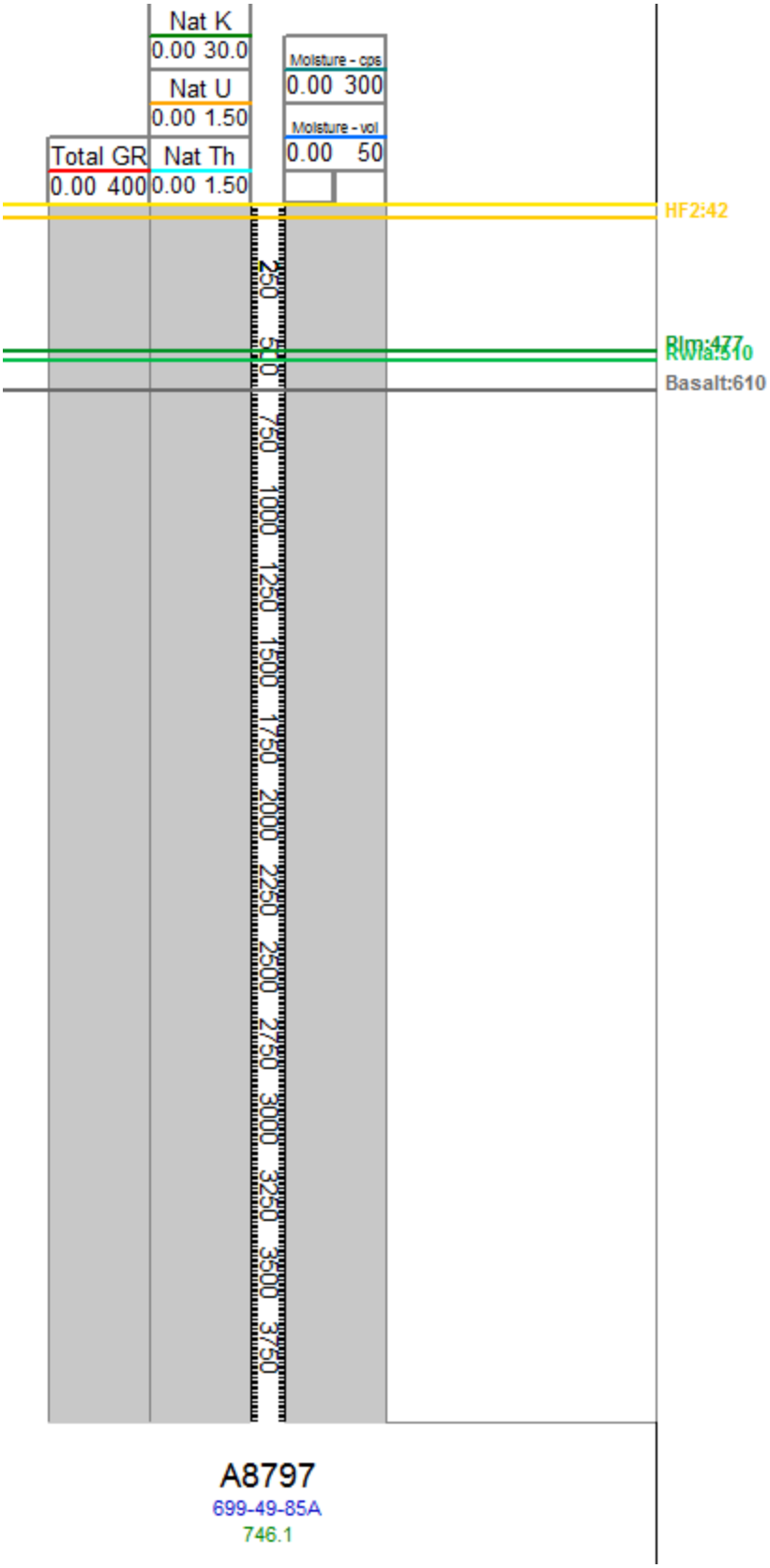

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:4
msG
HF2:44
50
gS
100
A8658
699-41-64B
754.2

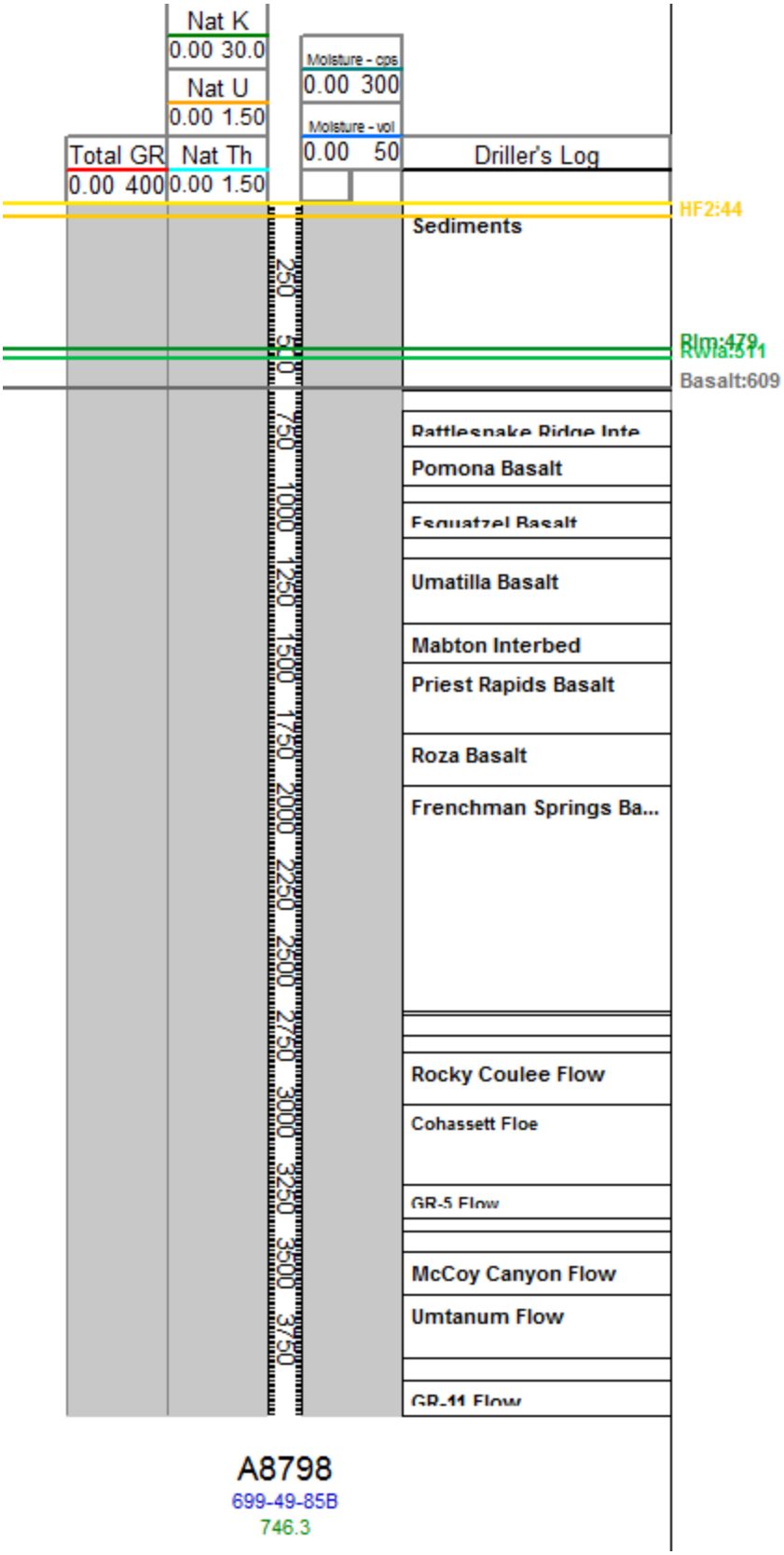
40 ft

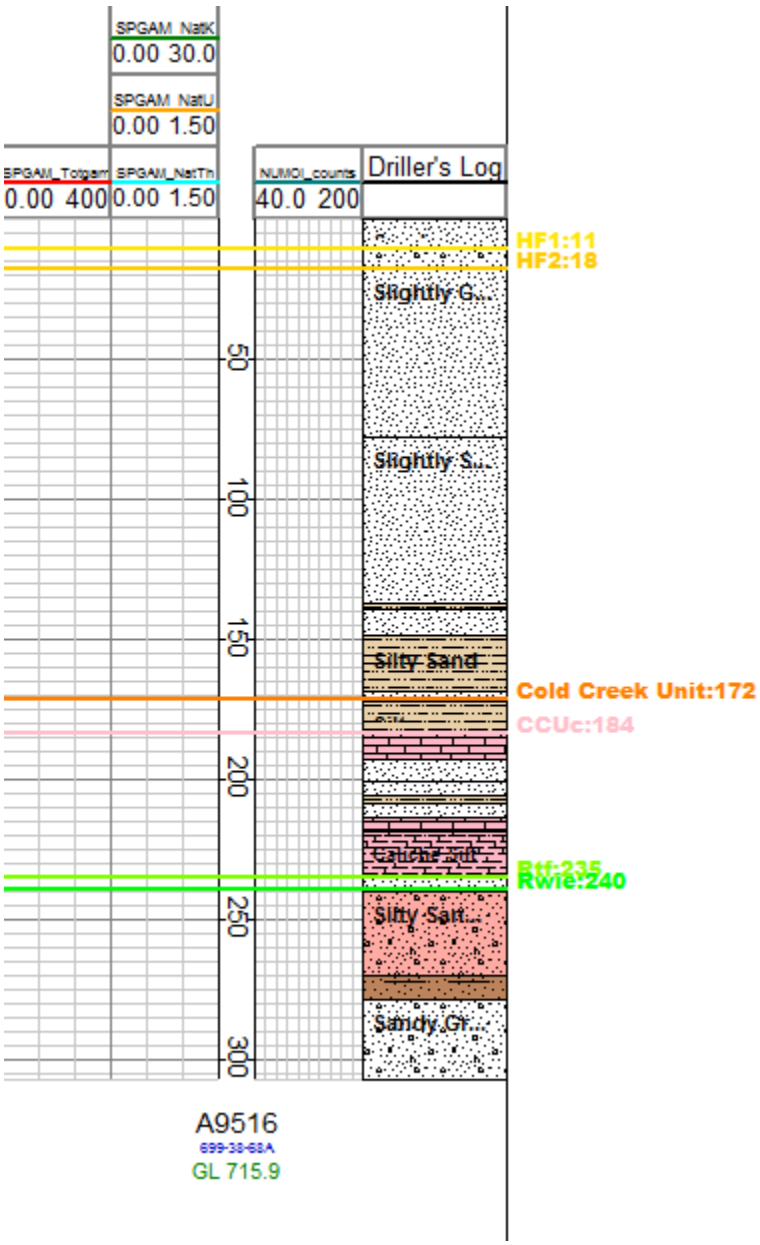

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
Gold Creek Unit:79
Basalt:520
Pomona ...
Umatilla ...
Mabton I...
Priest Ra...
Roza Bas...
Frenchm...
Cohasse...
GR-6 Flow
Umtanu...
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
A8712
699-44-70
732.6

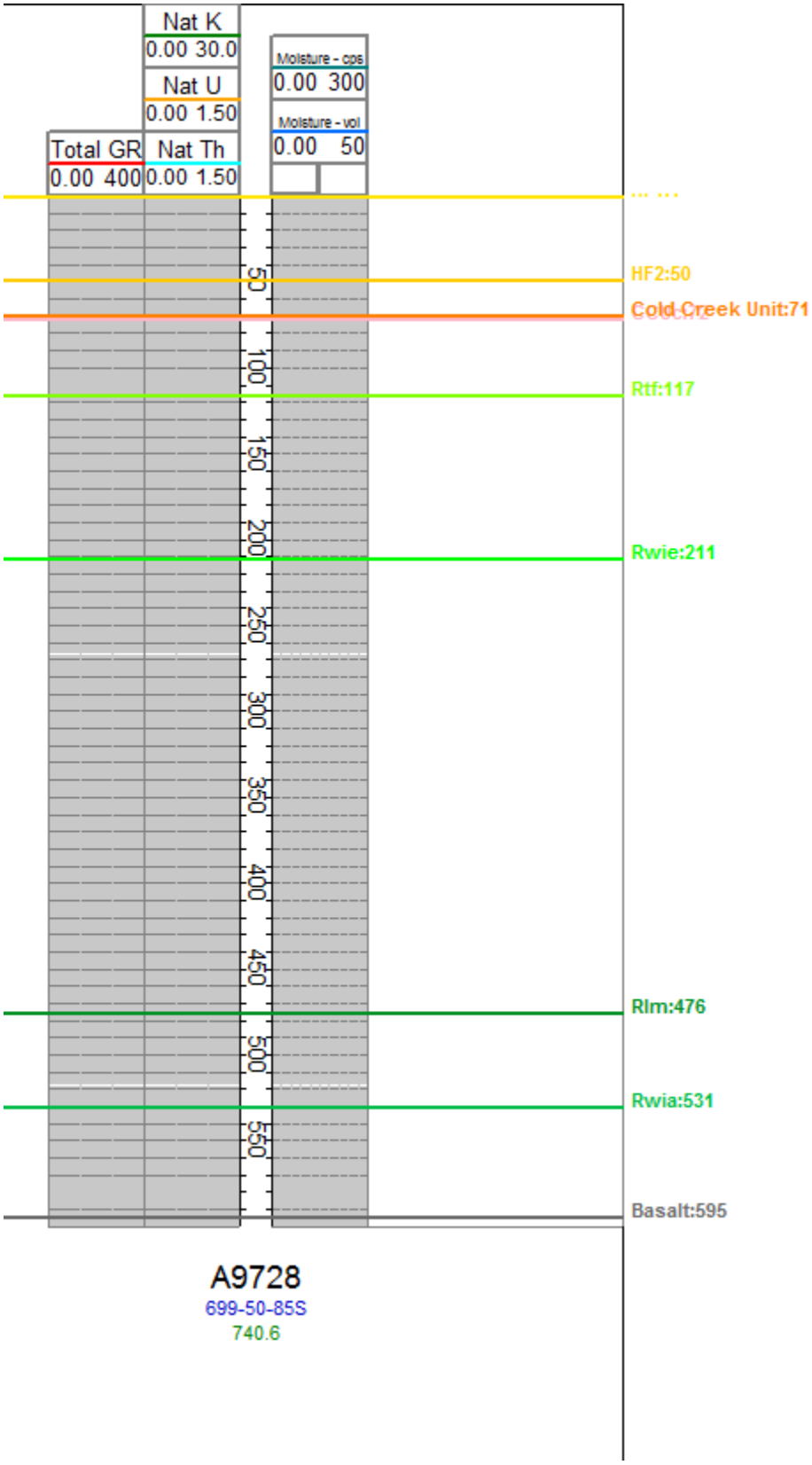

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
Cold Creek Unit:22
Rtf:68
Rwie:81
Slightly Silty Sandy...
sG
msG
(m)gS
Slightly Silty Slightly Sand
Rwia:395
G
Basalt:453
50
100
150
200
250
300
350
400
450
A8772
699-48-77A
675.6

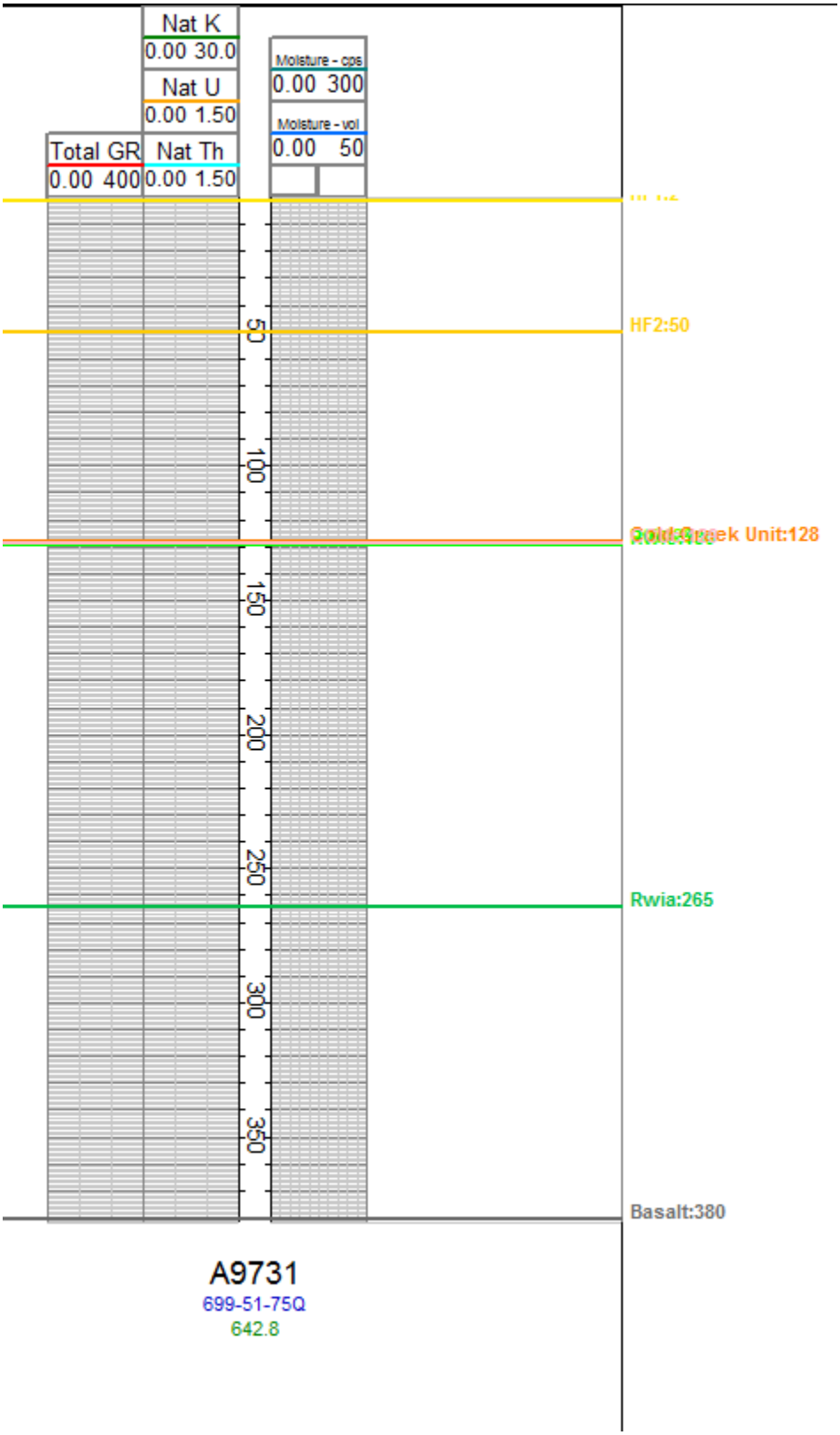
Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
Cold Creek Unit:20
Rtf:62
Rwie:82
Rwia:340
Basalt:431
50
100
150
200
250
300
350
400
A8774
699-48-77C
675.4

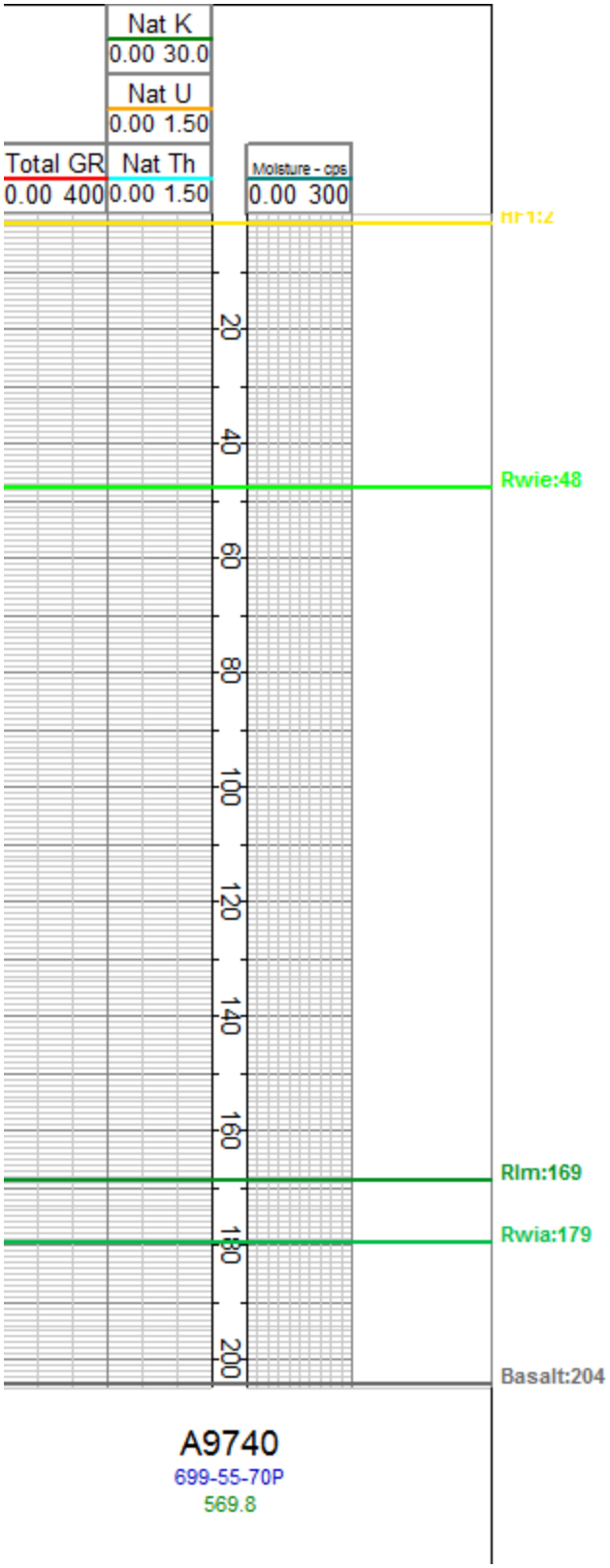

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
HF2:42
Blm:477
RWla:510
Basalt:610
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
A8797
699-49-85A
746.1

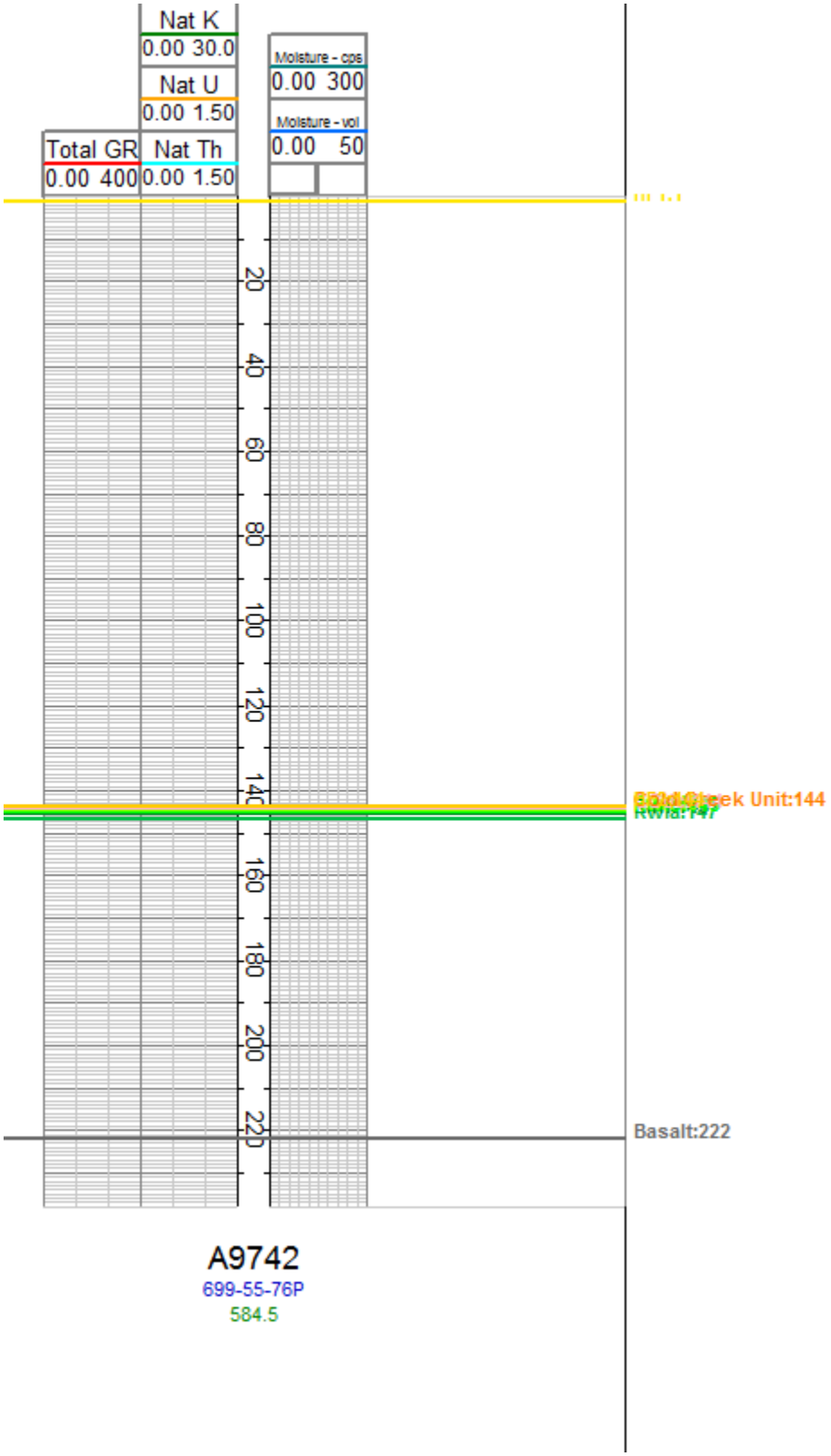

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Driller's Log
HF2:44
Sediments
Rlm:479
RWla:511
Basalt:609
Rattlesnake Ridge Inte
Pomona Basalt
Esquatzel Basalt
Umatilla Basalt
Mabton Interbed
Priest Rapids Basalt
Roza Basalt
Frenchman Springs Ba...
Rocky Coulee Flow
Cohassett Floe
GR-5 Flow
McCoy Canyon Flow
Umtanum Flow
GR-11 Flow
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
A8798
699-49-85B
746.3

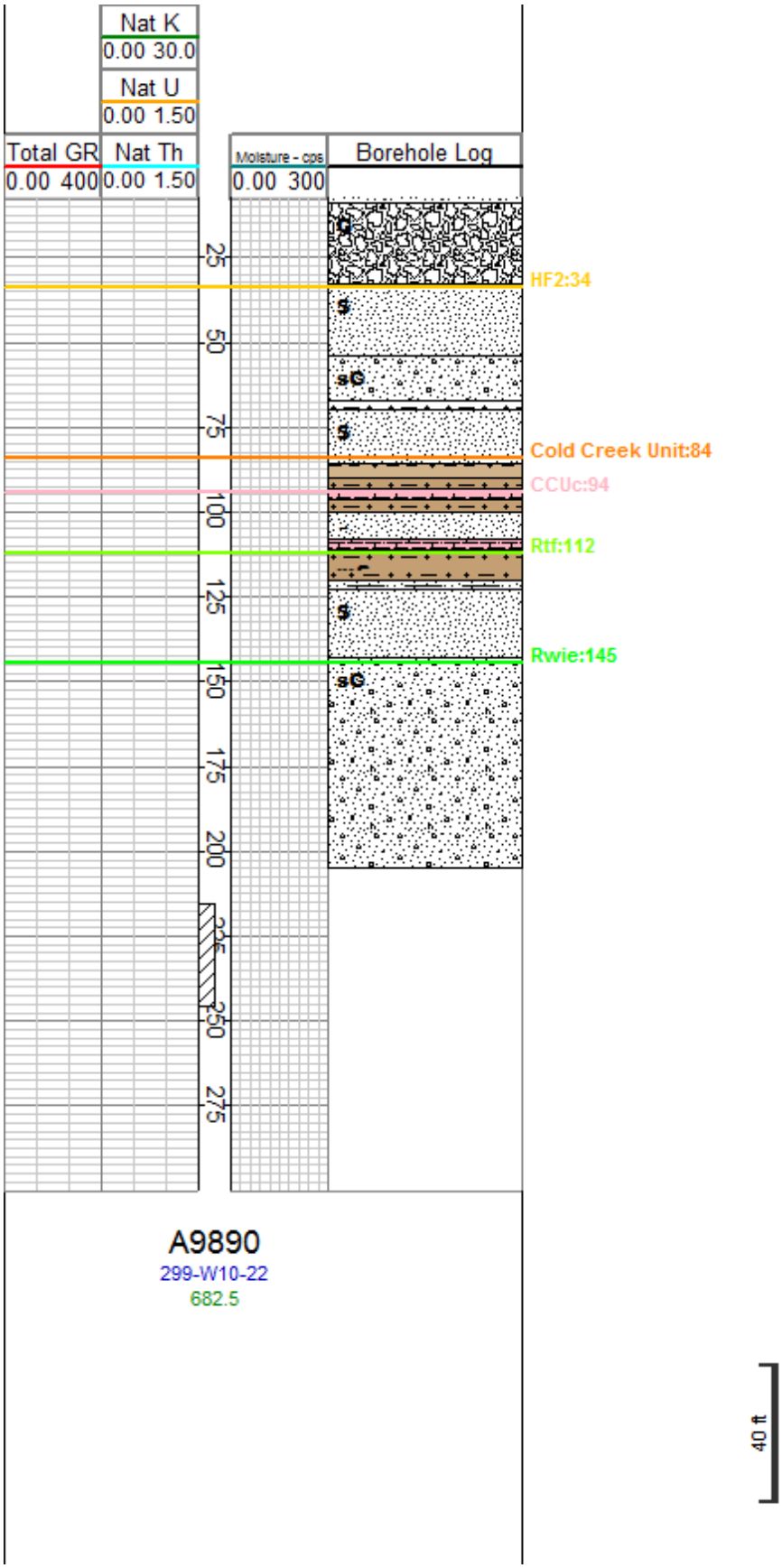

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF1:11
HF2:18
Slightly G...
Slightly S...
Silty Sand
Cold Creek Unit:172
CCUc:184
Caliche Silt
Rtf:235
Rwie:240
Silty Salt...
Sandy Gr...
50
100
150
200
250
300
A9516
699-38-68A
GL 715.9

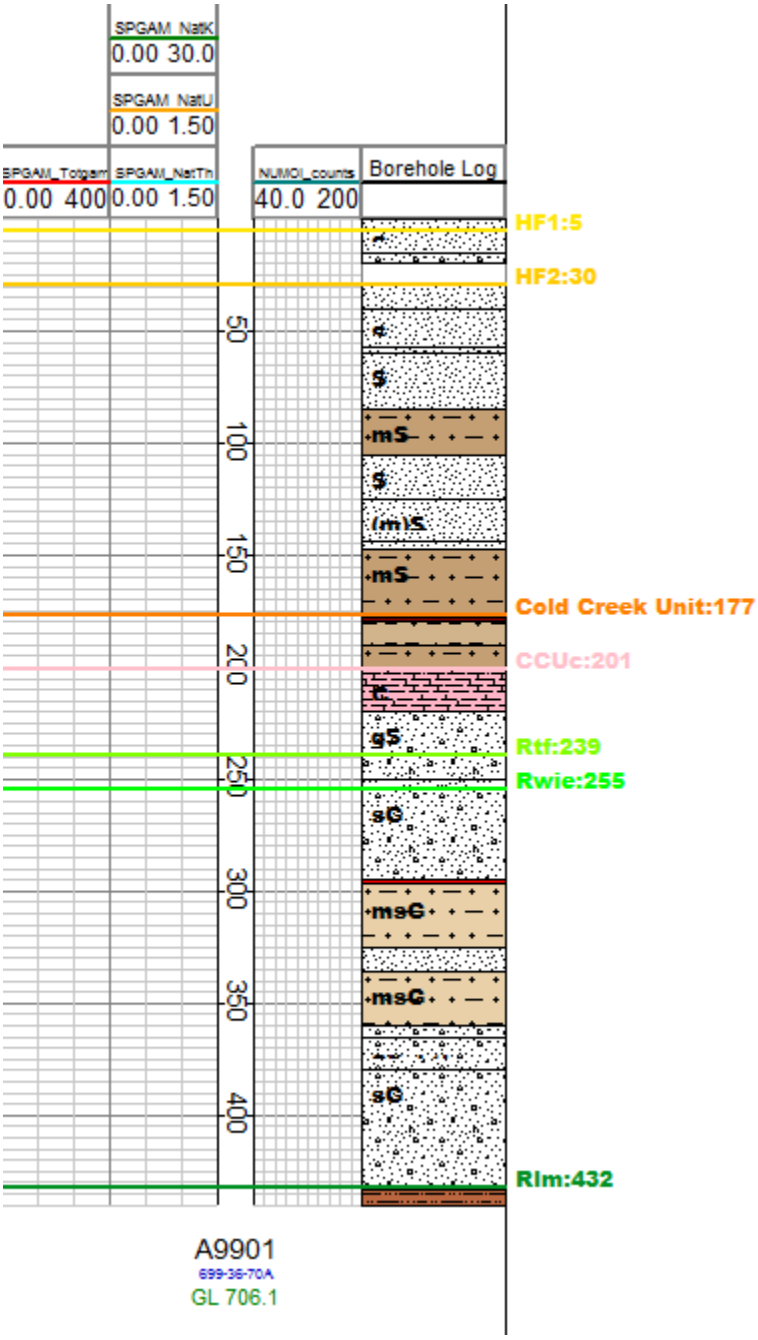

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
50
100
150
200
250
300
350
400
450
500
550
HF2:50
Cold Creek Unit:71
Rtf:117
Rwie:211
Rlm:476
Rwia:531
Basalt:595
A9728
699-50-85S
740.6

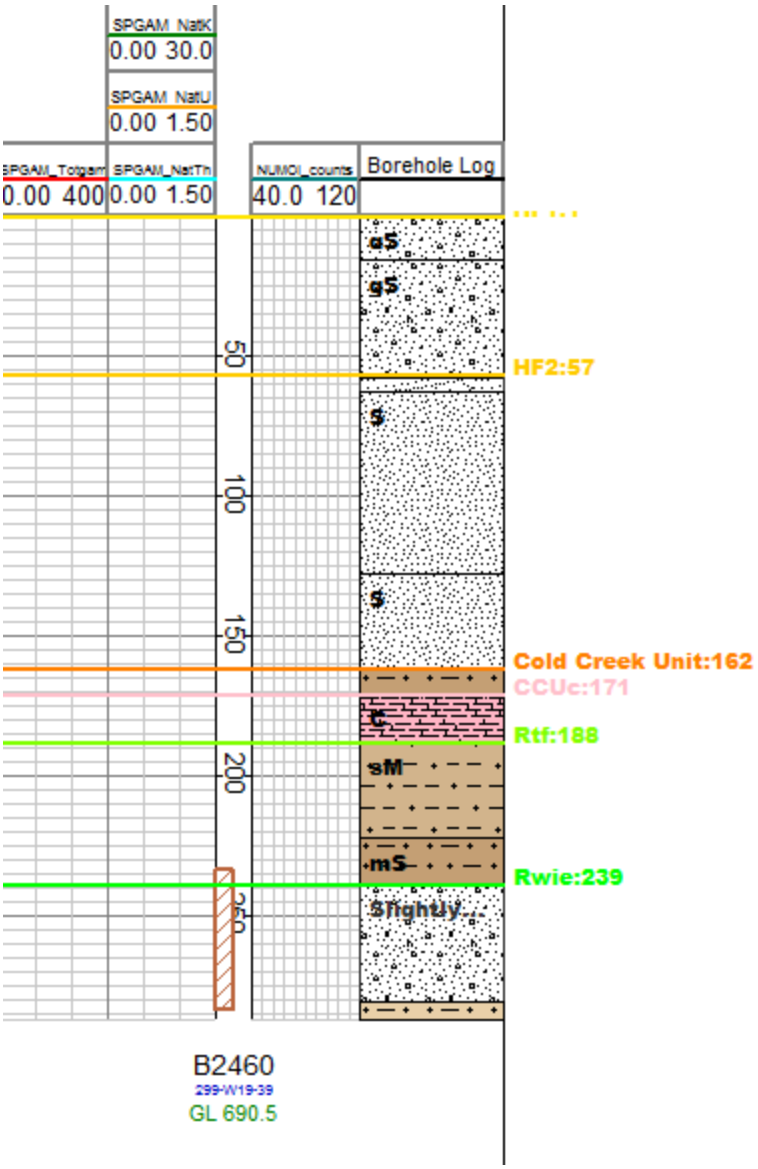

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
50
100
150
200
250
300
350
HF2:50
Rwia:265
Basalt:380
A9731
699-51-75Q
642.8

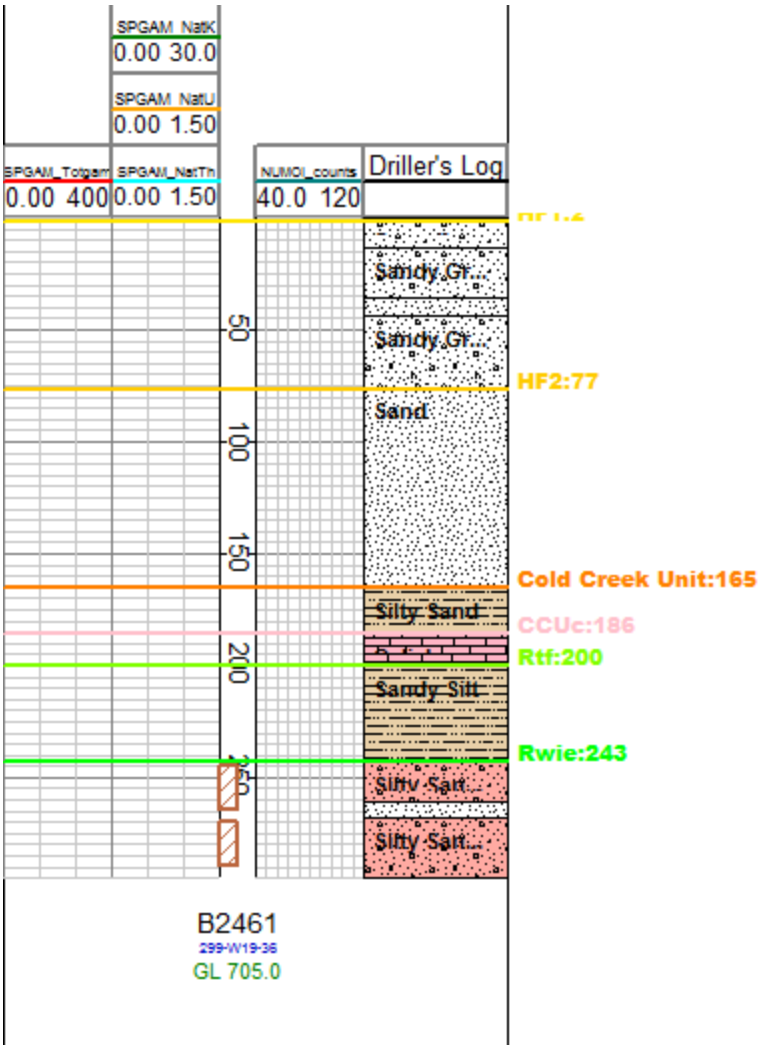

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
20
40
60
80
100
120
140
160
180
200
Rwie:48
Rlm:169
Rwia:179
Basalt:204
A9740
699-55-70P
569.8

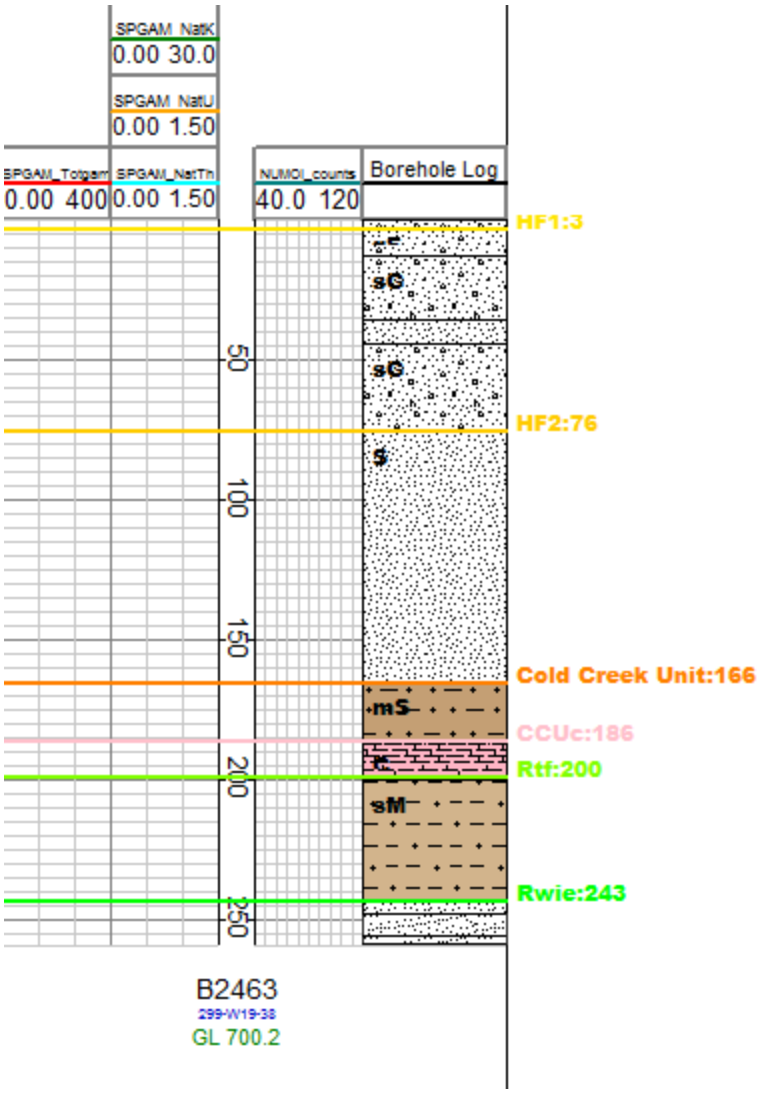

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
20
40
60
80
100
120
140
160
180
200
220
Unit:144
Basalt:222
A9742
699-55-76P
584.5

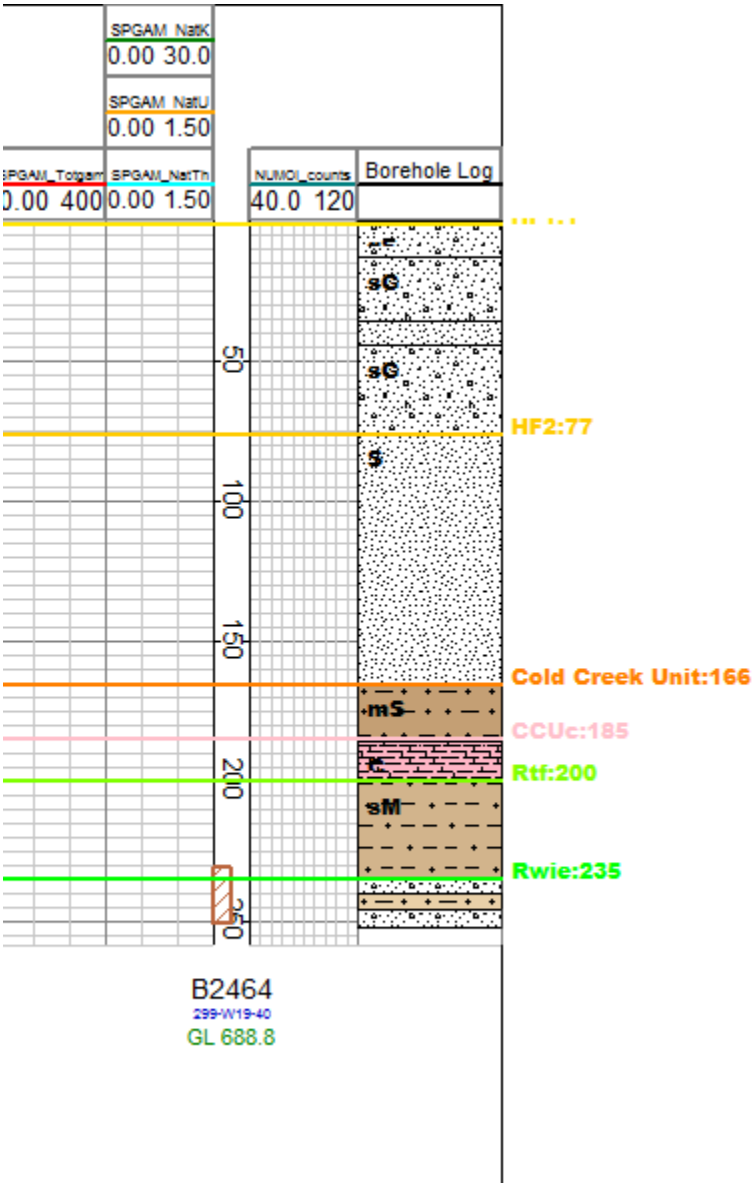

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
25
50
75
100
125
150
175
200
225
250
275
HF2:34
Cold Creek Unit:84
CCUc:94
Rtf:112
Rwie:145
A9890
299-W10-22
682.5
40 ft

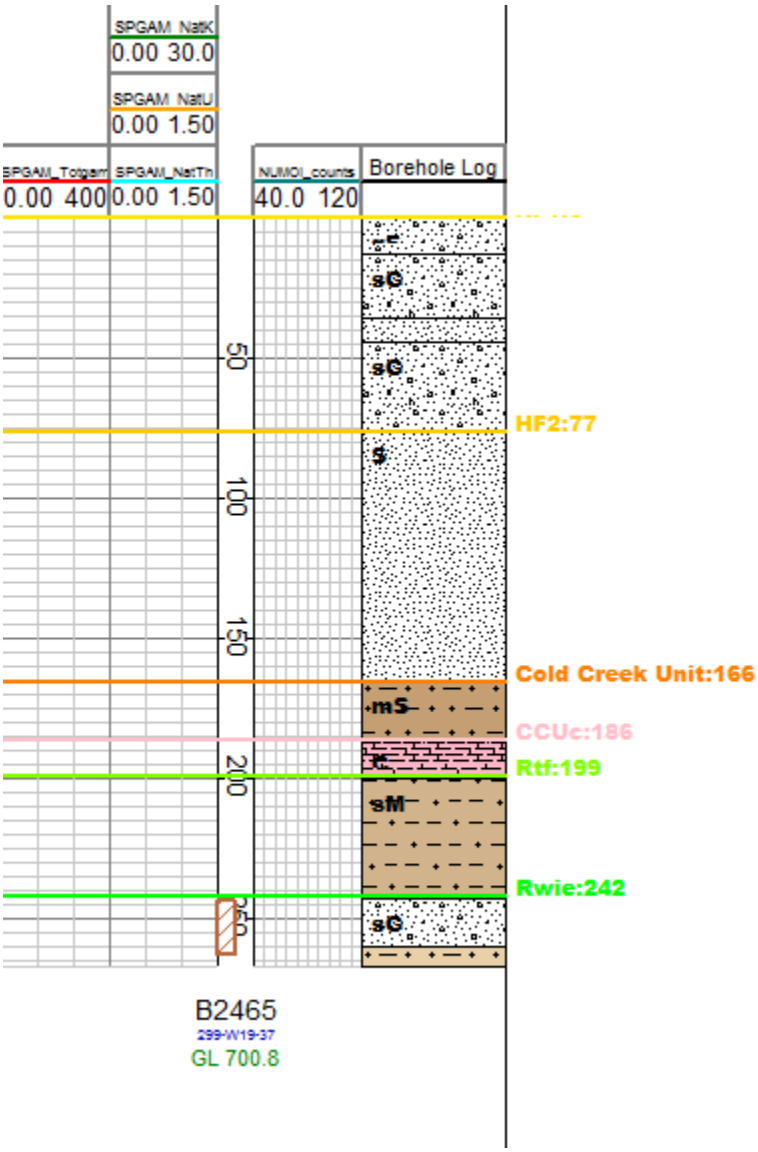

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:5
HF2:30
Cold Creek Unit:177
CCUc:201
Rtf:239
Rwie:255
Rlm:432
50
100
150
200
250
300
350
400
A9901
699-36-70A
GL 706.1

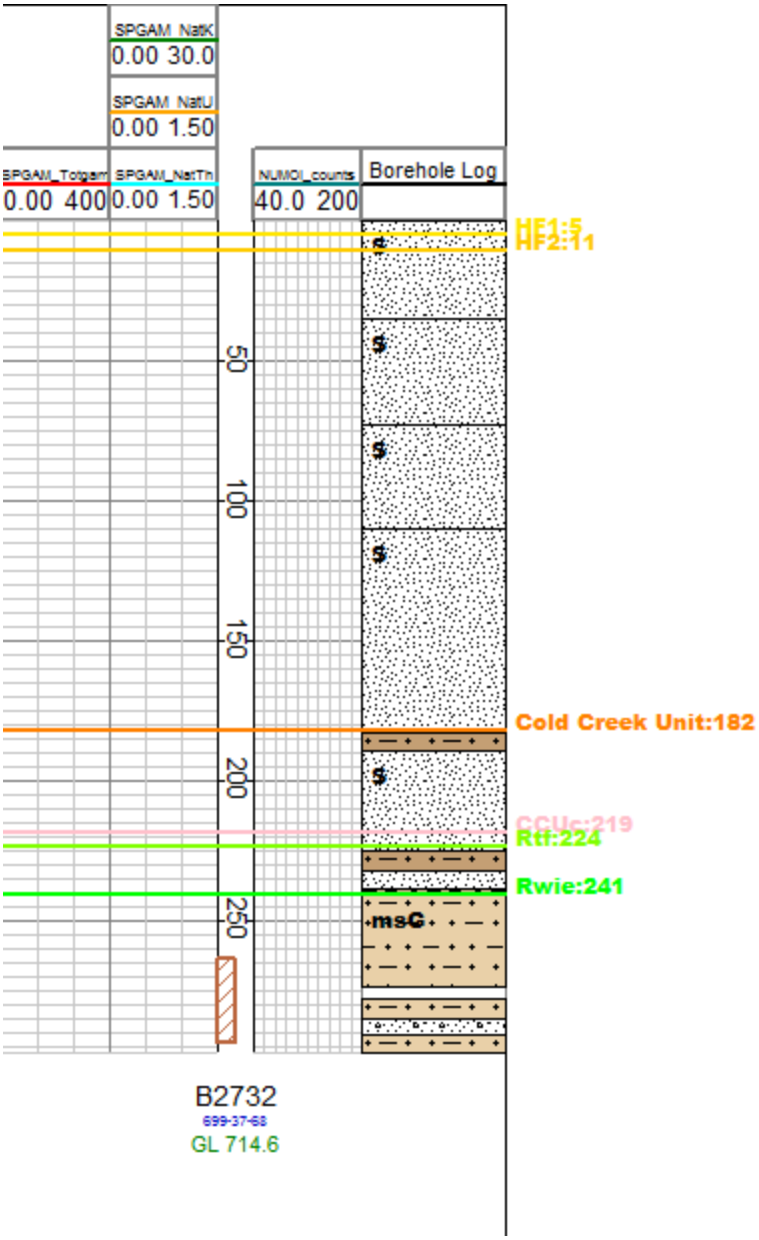

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
gS
gS
S
S
sM
mS
Slightly...
50
100
150
200
250
HF2:57
Cold Creek Unit:162
CCUc:171
Rtf:188
Rwie:239
B2460
299-W19-39
GL 690.5

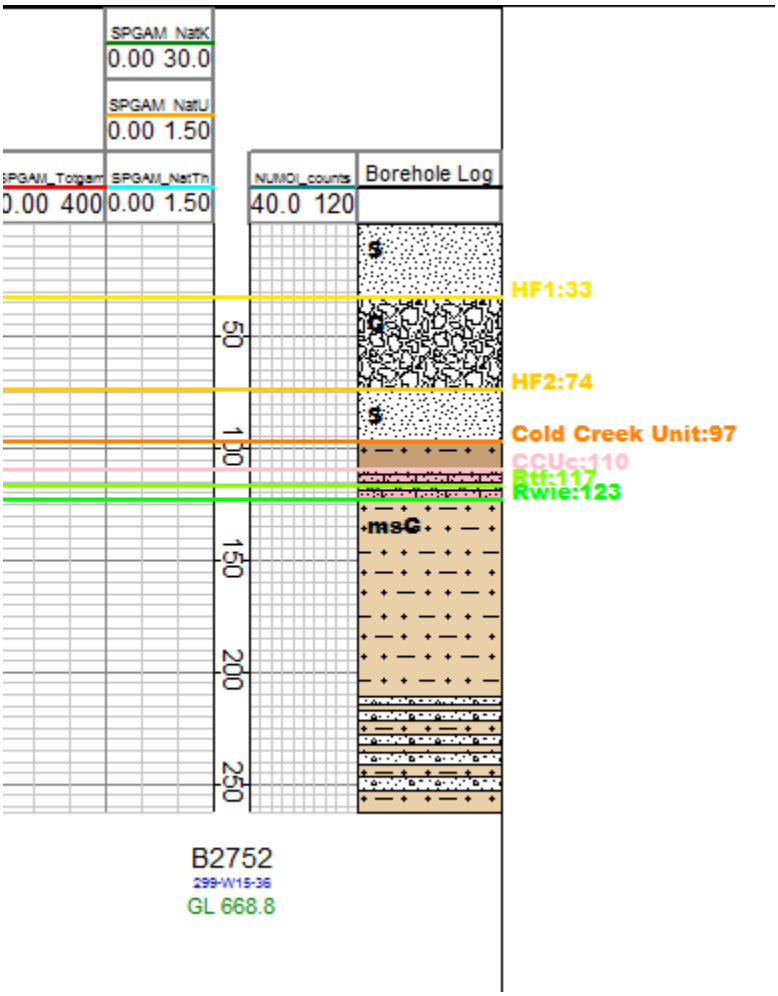

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Driller's Log
Sandy Gr...
Sandy Gr...
HF2:77
Sand
Cold Creek Unit:165
Silty Sand
CCUc:186
Rtf:200
Sandy Silt
Rwie:243
Silty Sand
Silty Sand
50
100
150
200
250
B2461
299-W19-36
GL 705.0

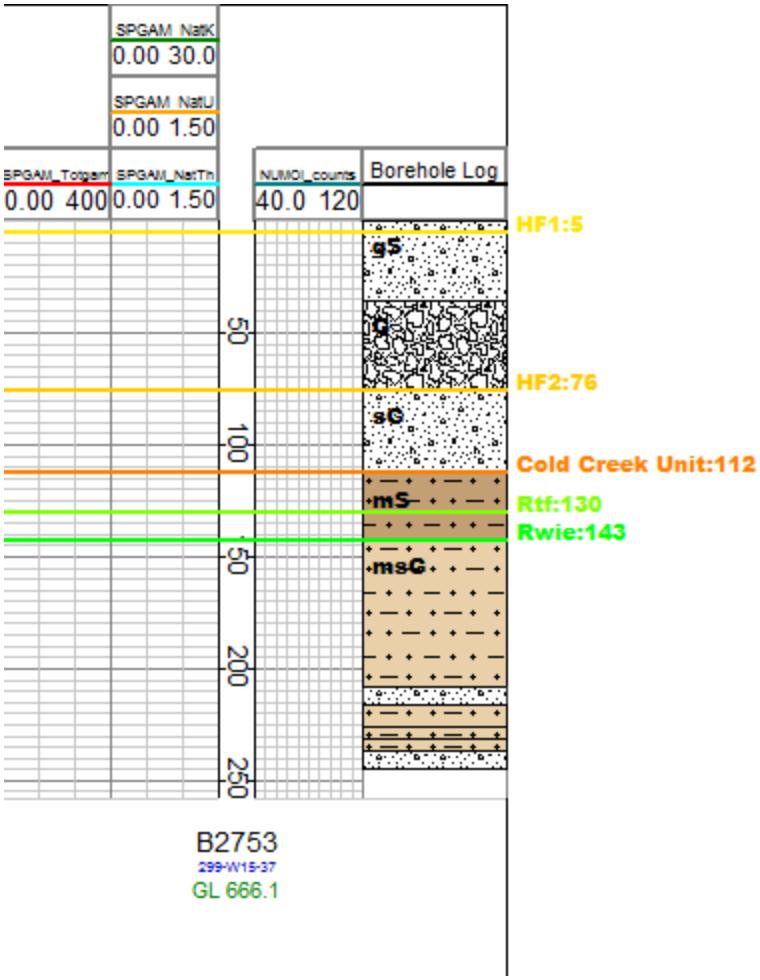

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:3
sG
sG
HF2:76
S
Cold Creek Unit:166
mS
CCUc:186
Rtf:200
sM
Rwie:243
50
100
150
200
250
B2463
299-W19-38
GL 700.2

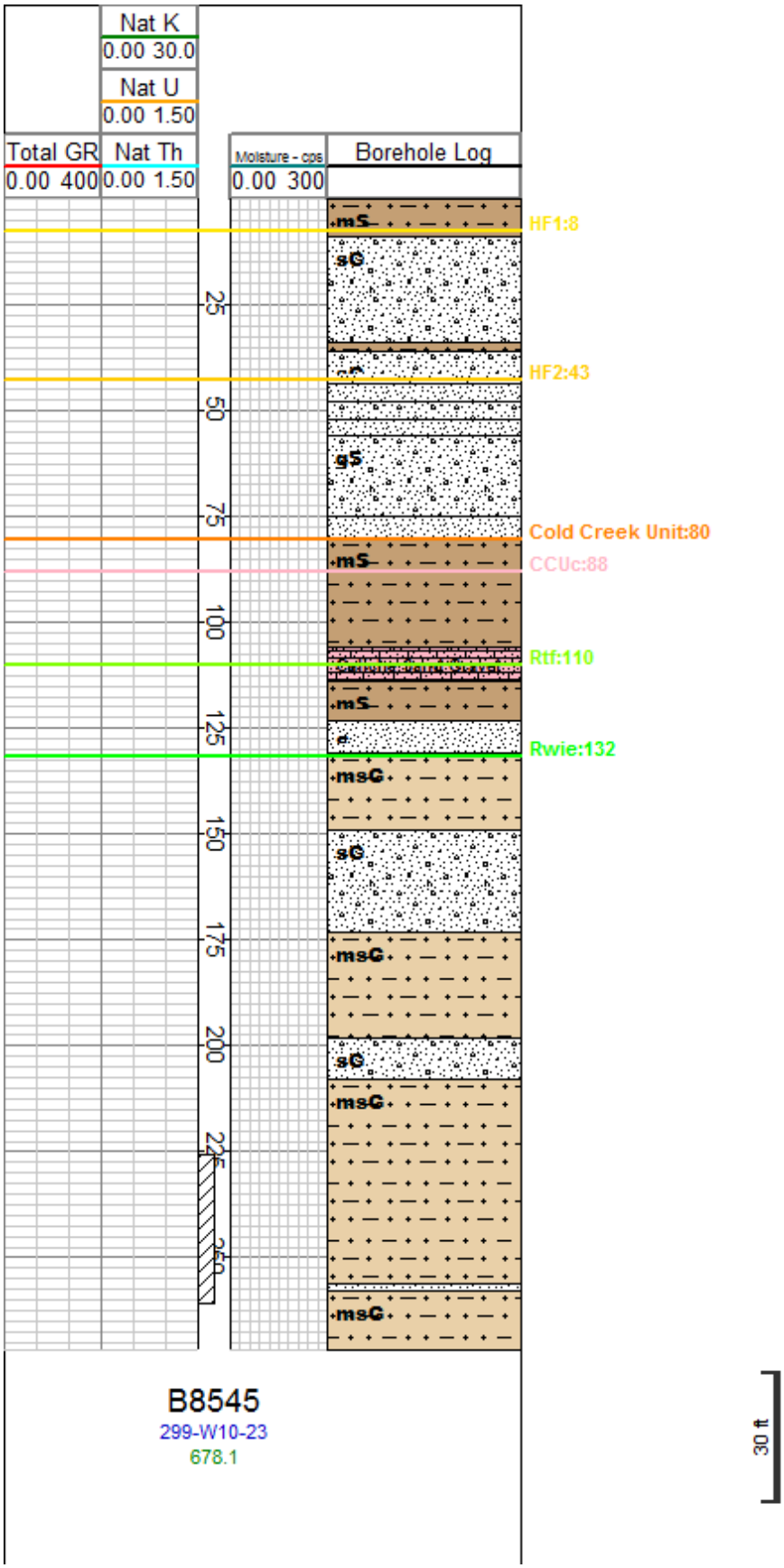

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
HF2:77
Cold Creek Unit:166
CCUc:185
Rtf:200
Rwie:235
B2464
299-W19-40
GL 688.8

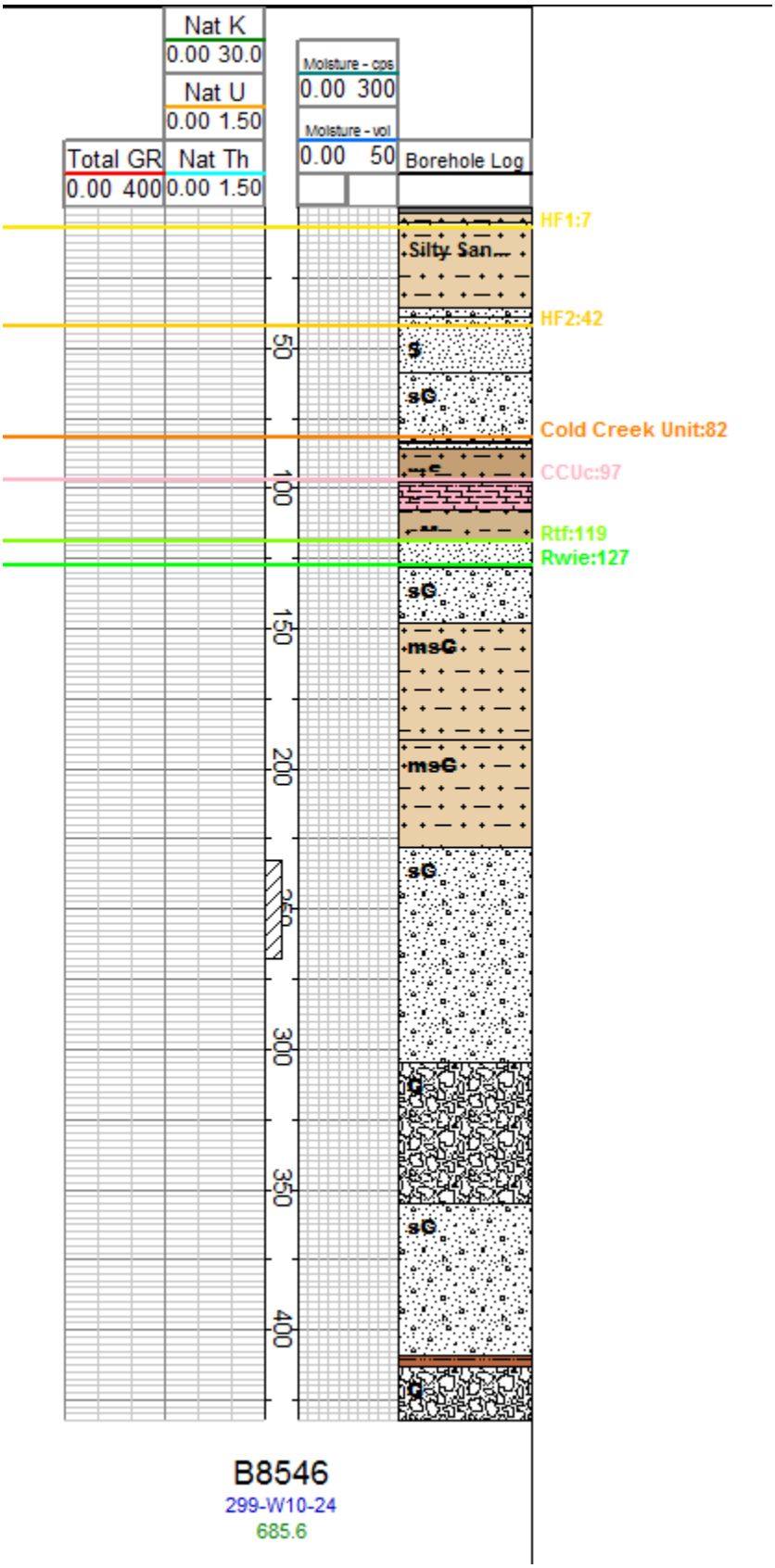

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
sG
sG
S
mS
K
sM
sG
HF2:77
Cold Creek Unit:166
CCUc:186
Rtf:199
Rwie:242
B2465
299-W19-37
GL 700.8

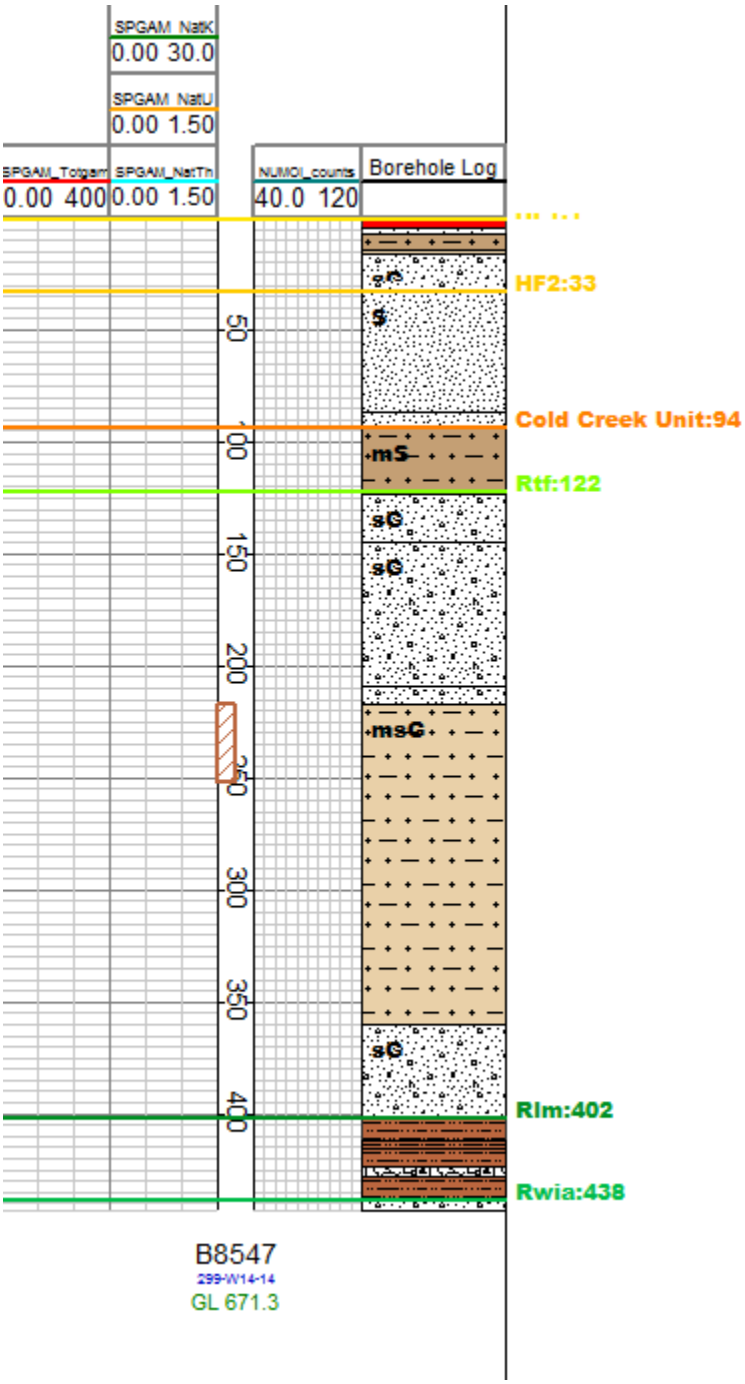

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:5
HF2:11
50
100
150
200
250
Cold Creek Unit:182
CCUc:219
Rtf:224
Rwie:241
msG
B2732
699-37-68
GL 714.6

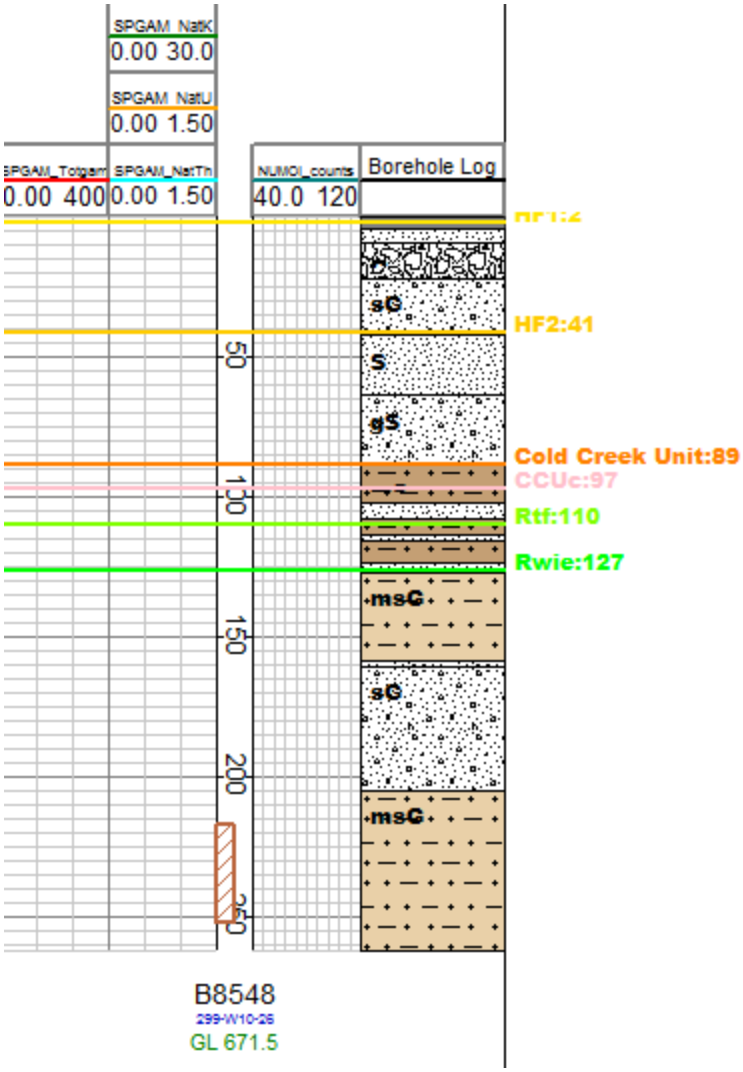

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:33
HF2:74
Cold Creek Unit:97
CCUc:110
Rtf:117
Rwie:123
msG
50
100
150
200
250
B2752
299-W15-36
GL 668.8

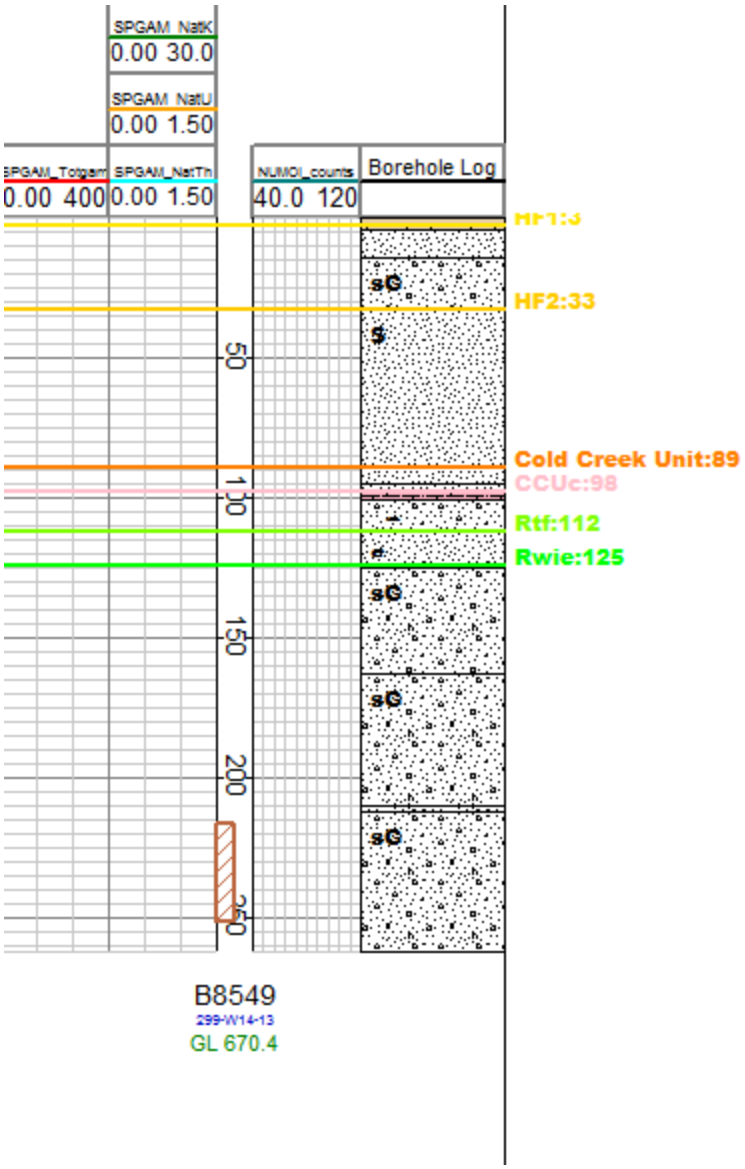

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:5
gS
G
HF2:76
sG
Cold Creek Unit:112
mS
Rtf:130
Rwie:143
msG
50
100
150
200
250
B2753
299-W15-37
GL 666.1

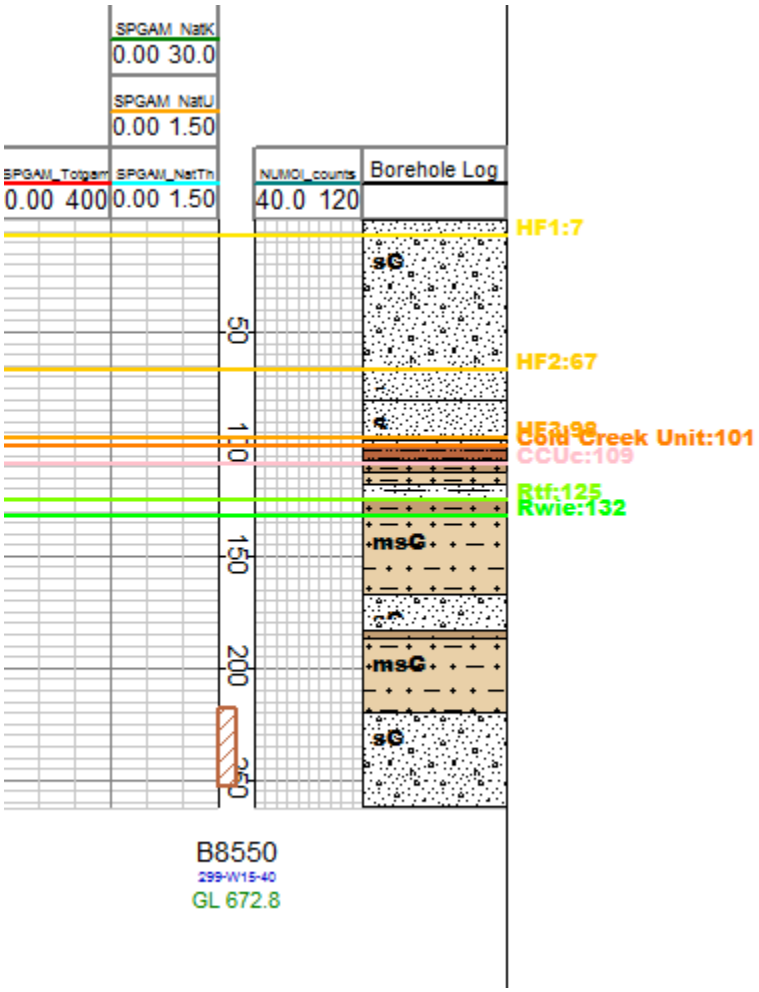

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
25
50
75
100
125
150
175
200
225
250
mS
sG
gS
msG
HF1:8
HF2:43
Cold Creek Unit:80
CCUc:88
Rtf:110
Rwie:132
B8545
299-W10-23
678.1
30 ft

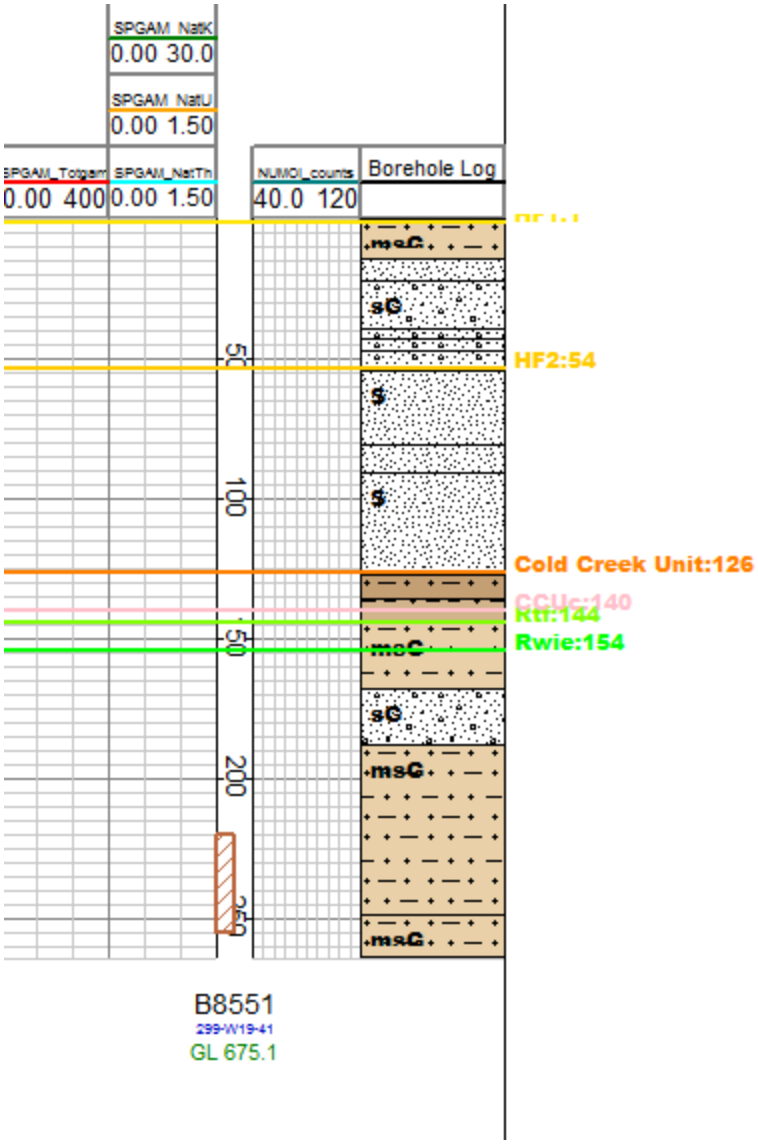

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:7
Silty San...
HF2:42
S
sG
Cold Creek Unit:82
CCUc:97
Rtf:119
Rwie:127
sG
msG
msG
sG
G
sG
G
50
100
150
200
250
300
350
400
B8546
299-W10-24
685.6

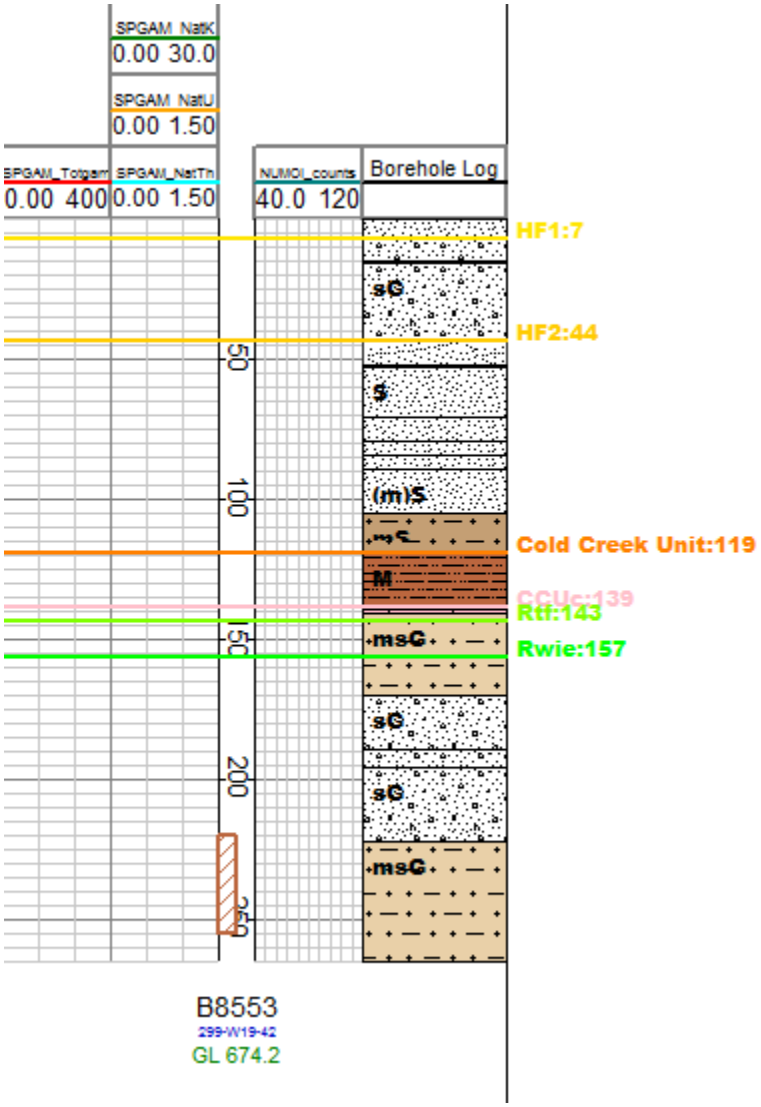

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:33
Cold Creek Unit:94
Rtf:122
Rlm:402
Rwia:438
50
100
150
200
250
300
350
400
B8547
299-W14-14
GL 671.3

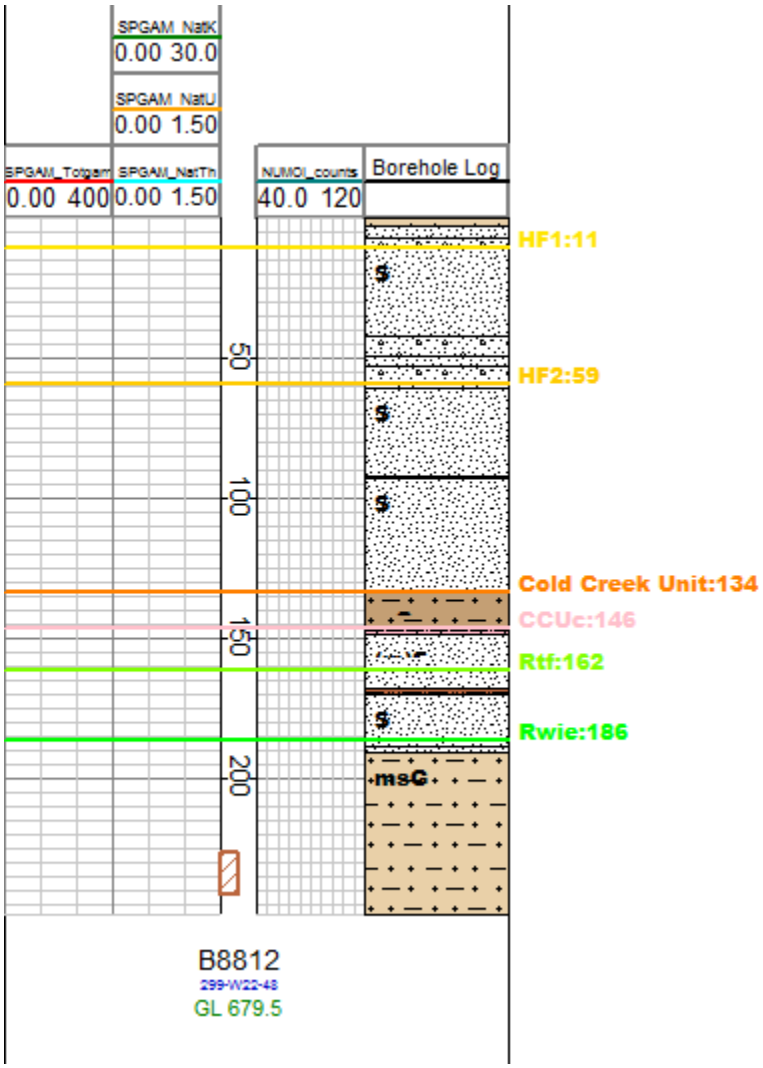

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:41
Cold Creek Unit:89
CCUc:97
Rtf:110
Rwie:127
sG
S
gS
msG
sG
msG
50
100
150
200
250
B8548
299-W10-26
GL 671.5

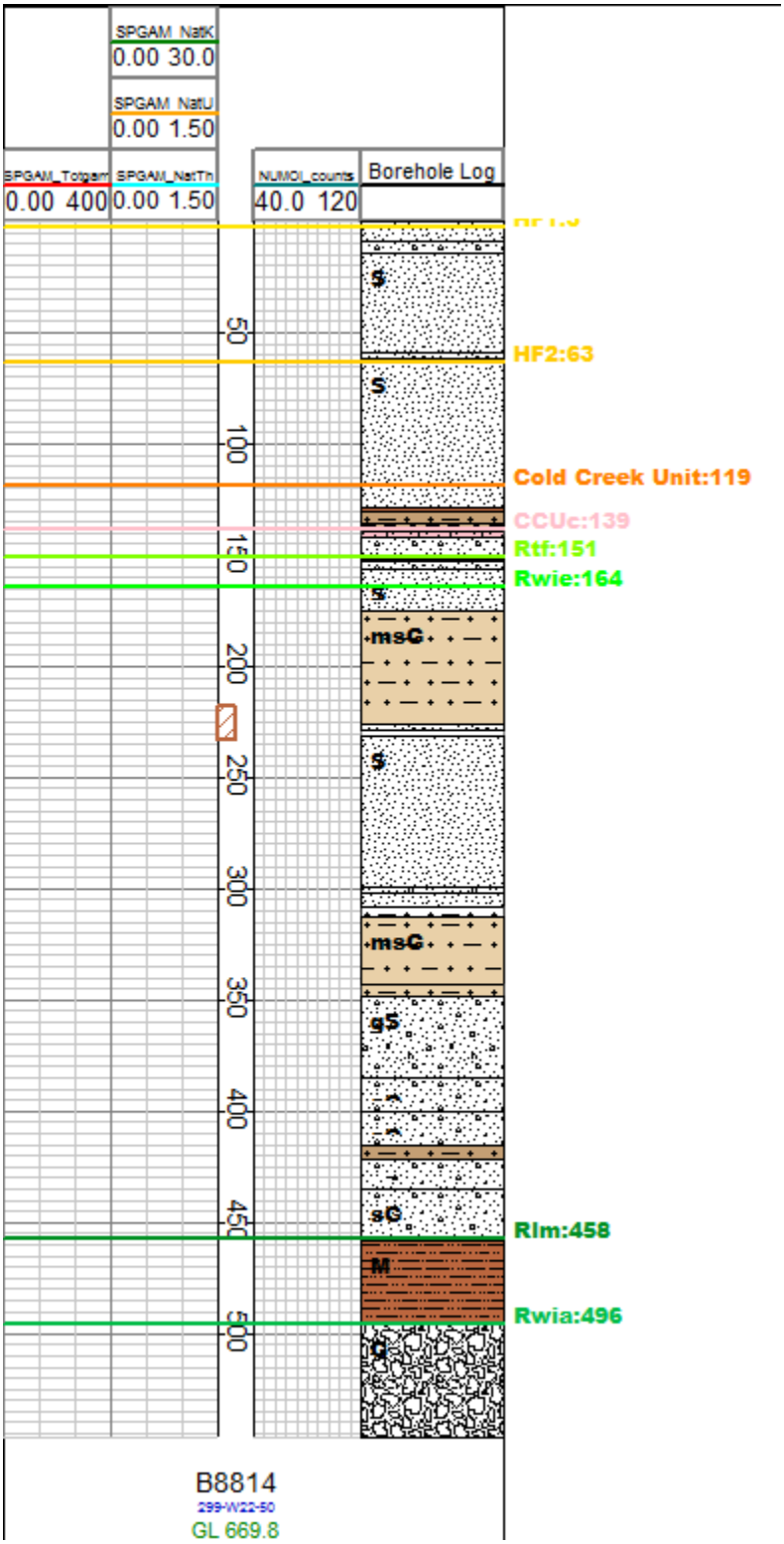

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:33
Cold Creek Unit:89
CCUc:98
Rtf:112
Rwie:125
50
100
150
200
250
B8549
299-W14-13
GL 670.4

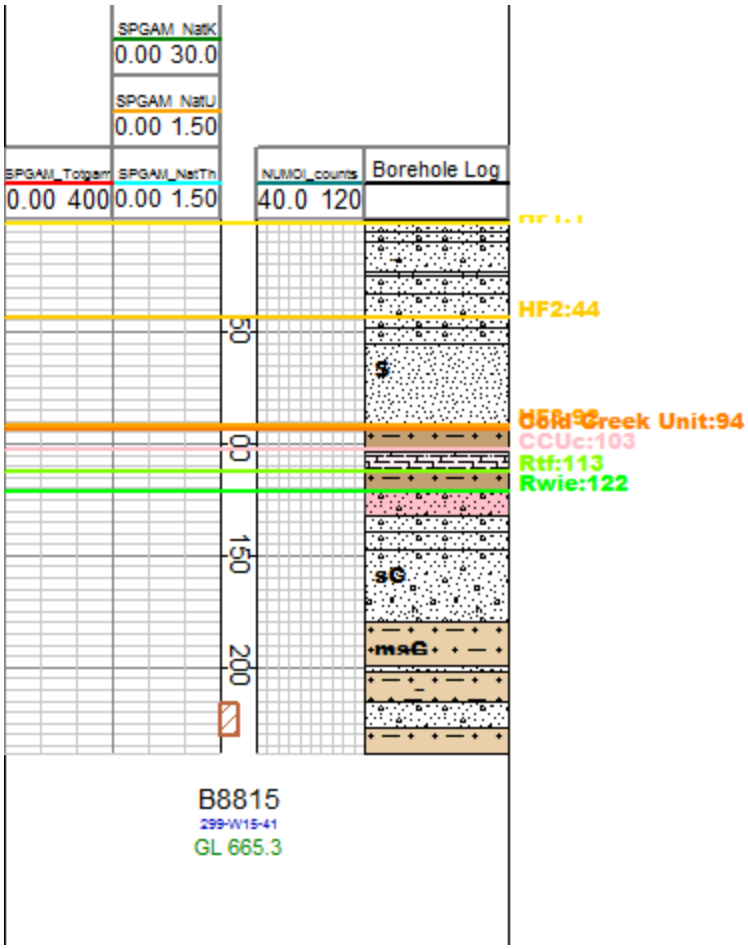

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:7
HF2:67
HF3:98
Cold Creek Unit:101
CCUc:109
Rtf:125
Rwie:132
sG
msG
msG
sG
50
100
150
200
250
B8550
299-W15-40
GL 672.8

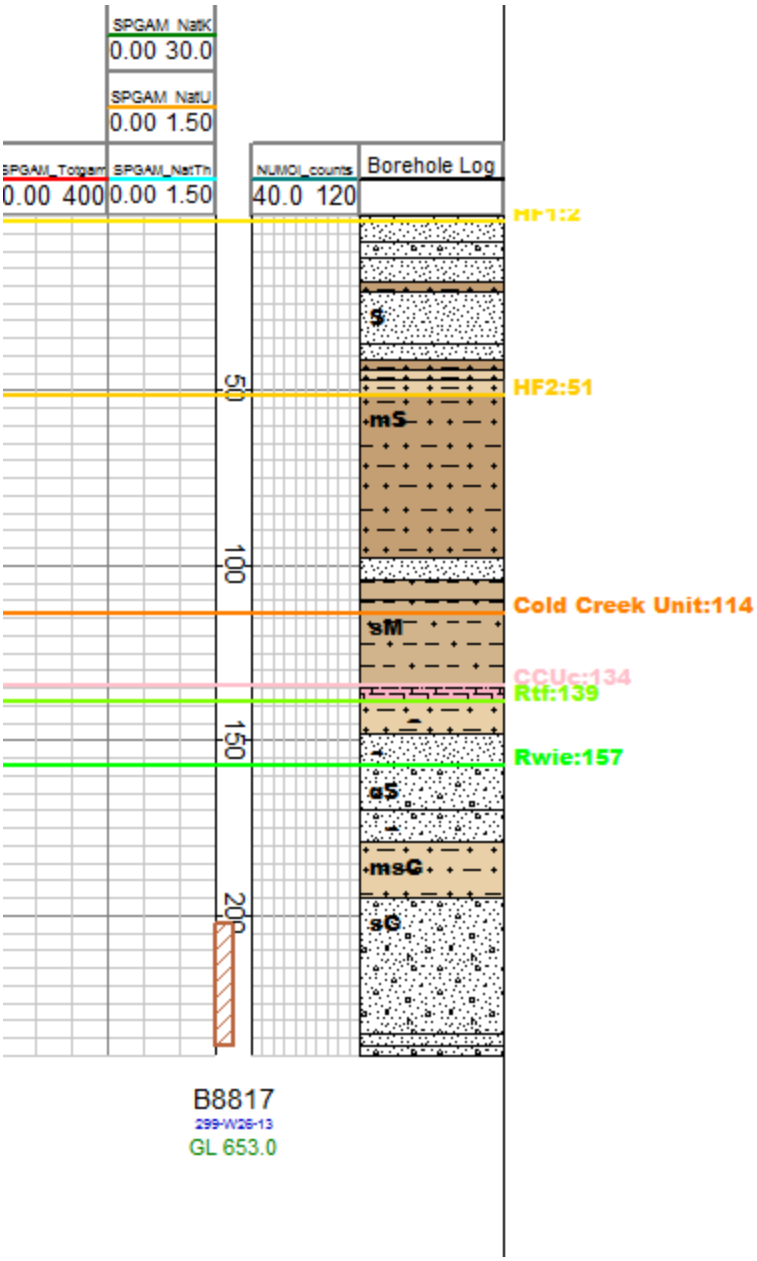

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:54
Cold Creek Unit:126
CCUc:140
Rtf:144
Rwie:154
50
100
150
200
250
B8551
299-W19-41
GL 675.1

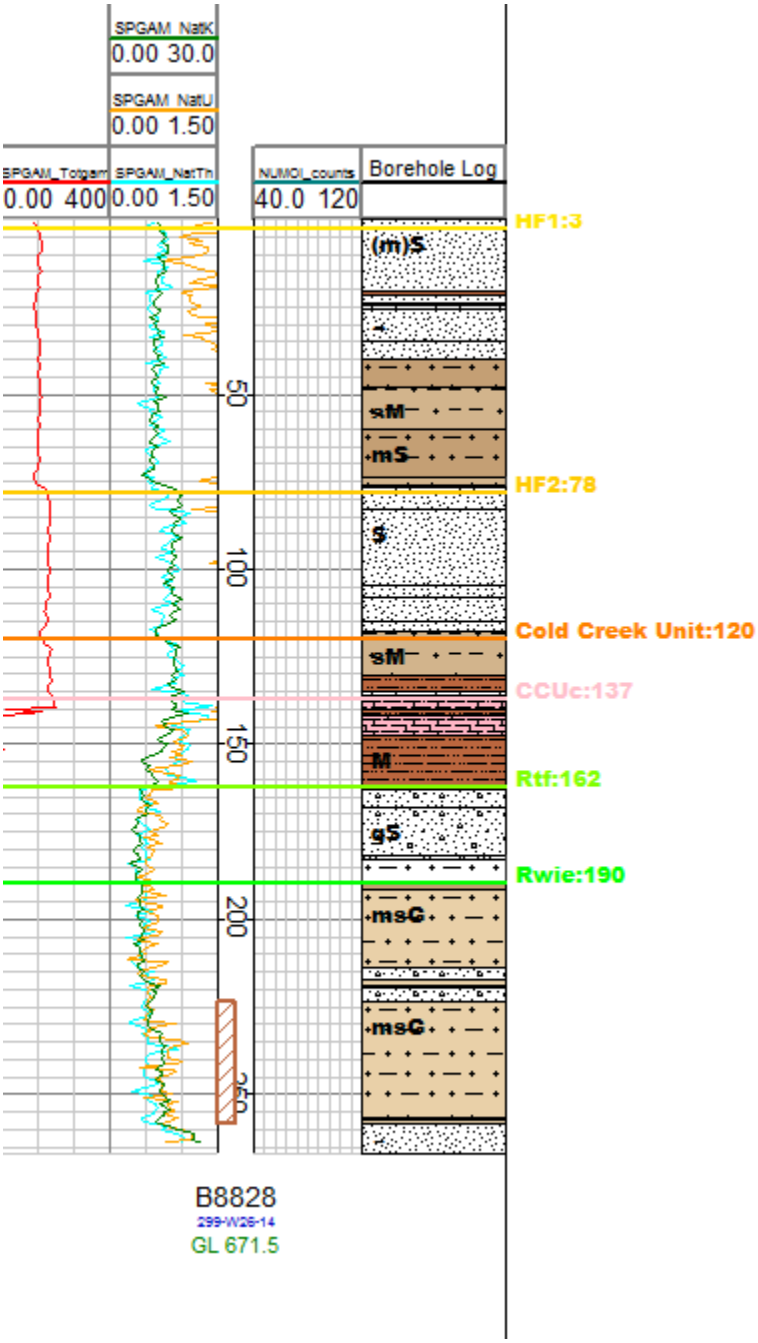

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:7
sG
HF2:44
S
(m)S
msC
Cold Creek Unit:119
M
CCUc:139
Rtf:143
msC
Rwie:157
sG
sG
msC
50
100
150
200
250
B8553
299-W19-42
GL 674.2

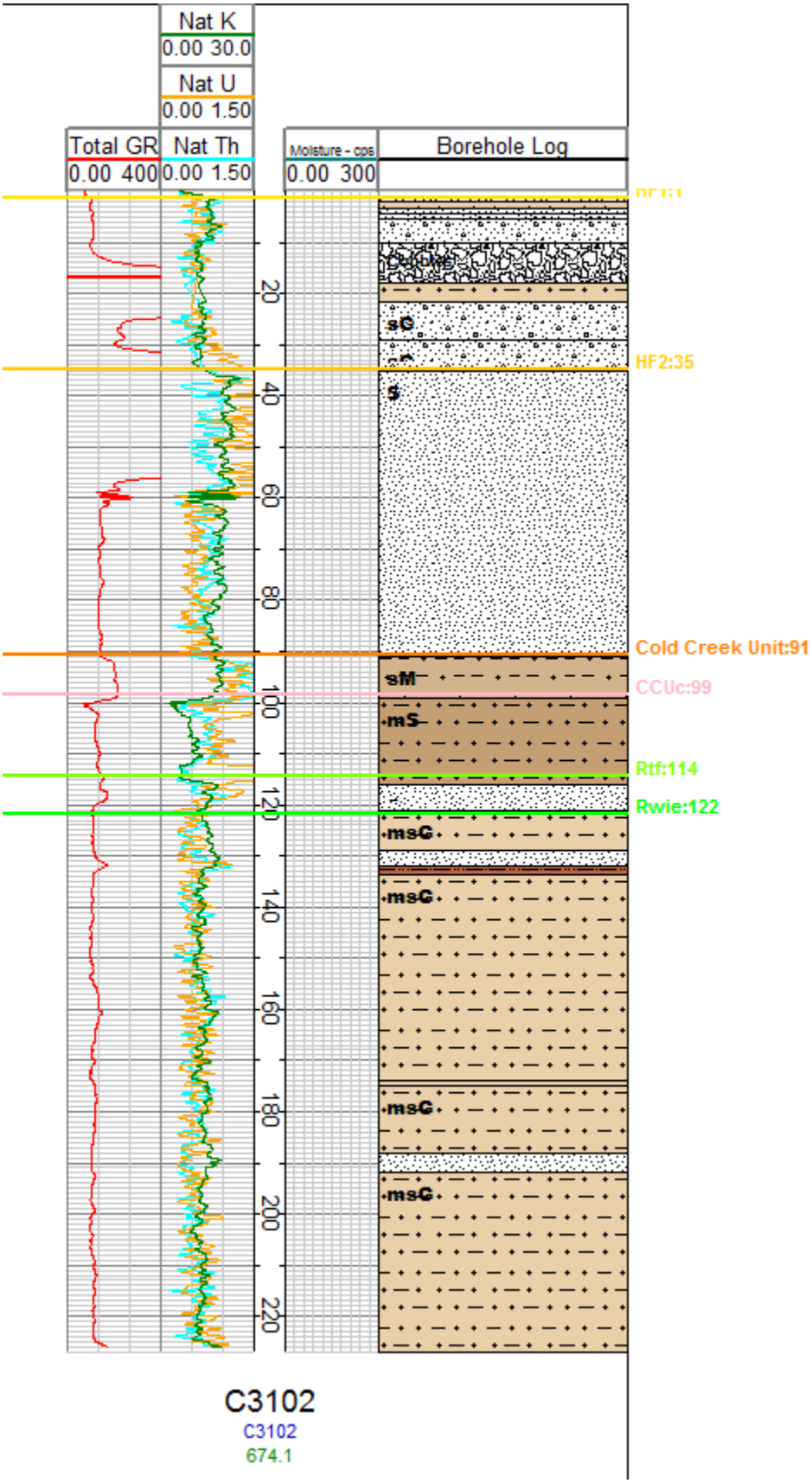

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:11
HF2:59
Cold Creek Unit:134
CCUc:146
Rtf:162
Rwie:186
50
100
150
200
msG
B8812
299-W22-48
GL 679.5

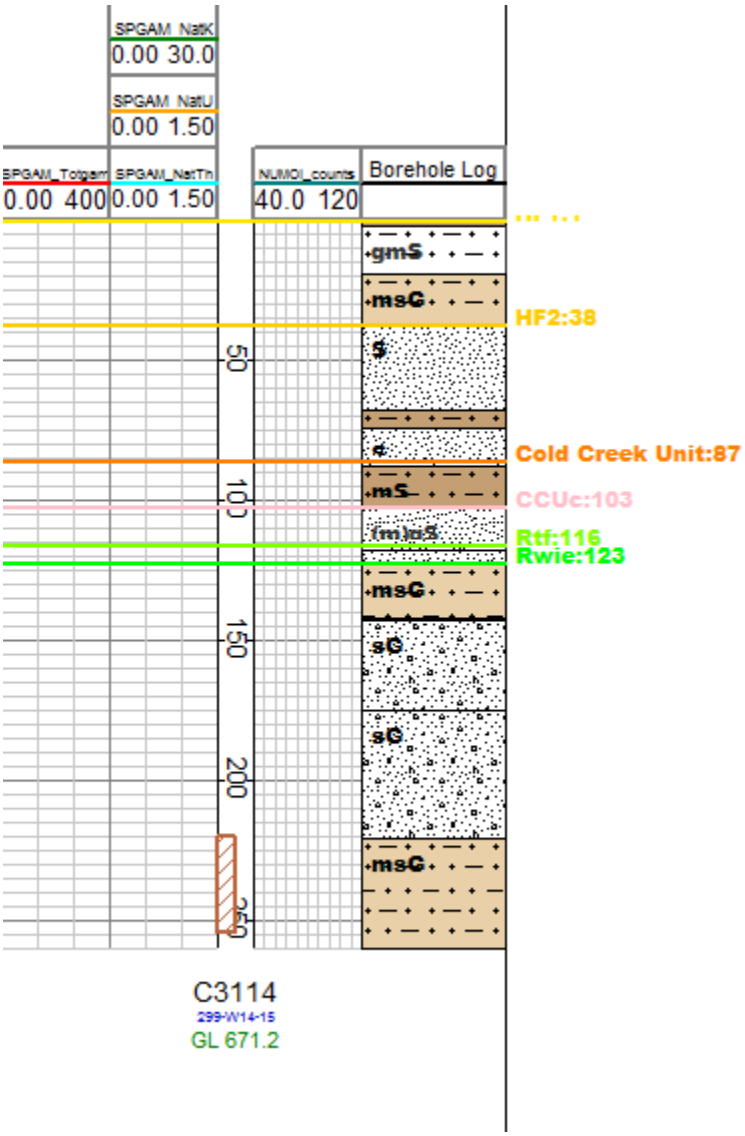

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:63
Cold Creek Unit:119
CCUc:139
Rtf:151
Rwie:164
Rlm:458
Rwia:496
B8814
299-W22-50
GL 669.8

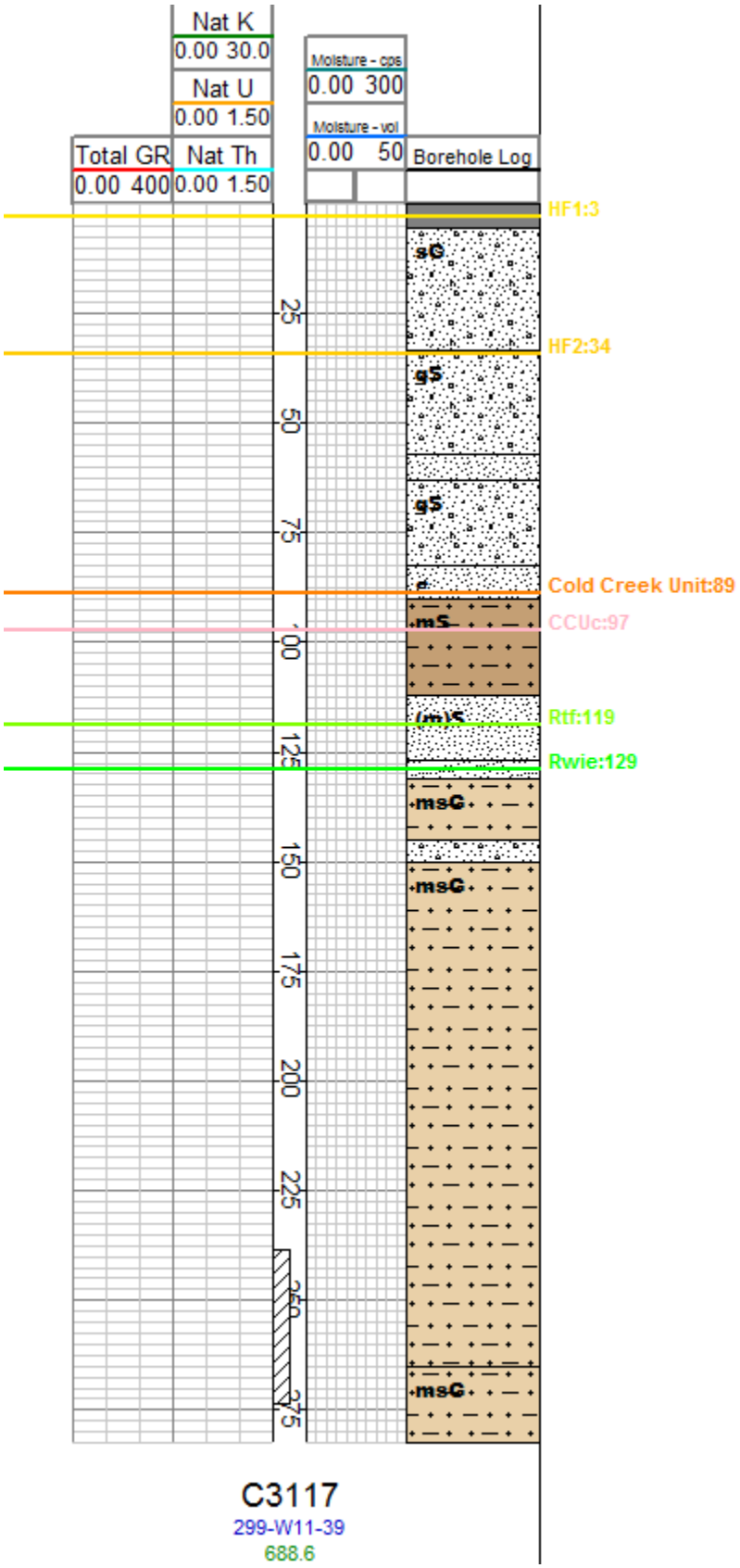

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:44
50
S
Unit:94
CCUc:103
100
Rtf:113
Rwie:122
150
sG
msG
200
B8815
299-W15-41
GL 665.3

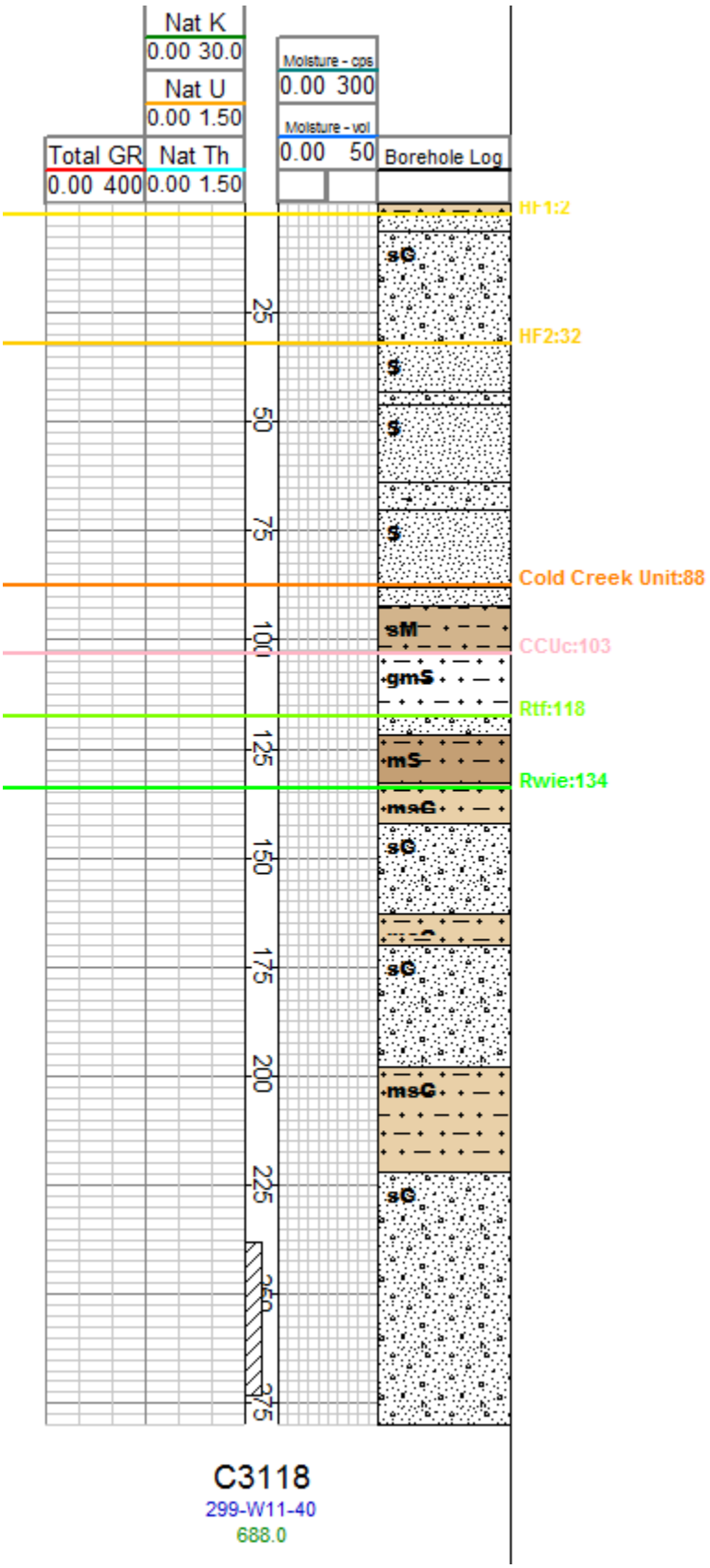

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:2
S
HF2:51
mS
Cold Creek Unit:114
sM
CCUc:134
Rtf:139
Rwie:157
aS
msG
sG
50
100
150
200
B8817
299-W26-13
GL 653.0

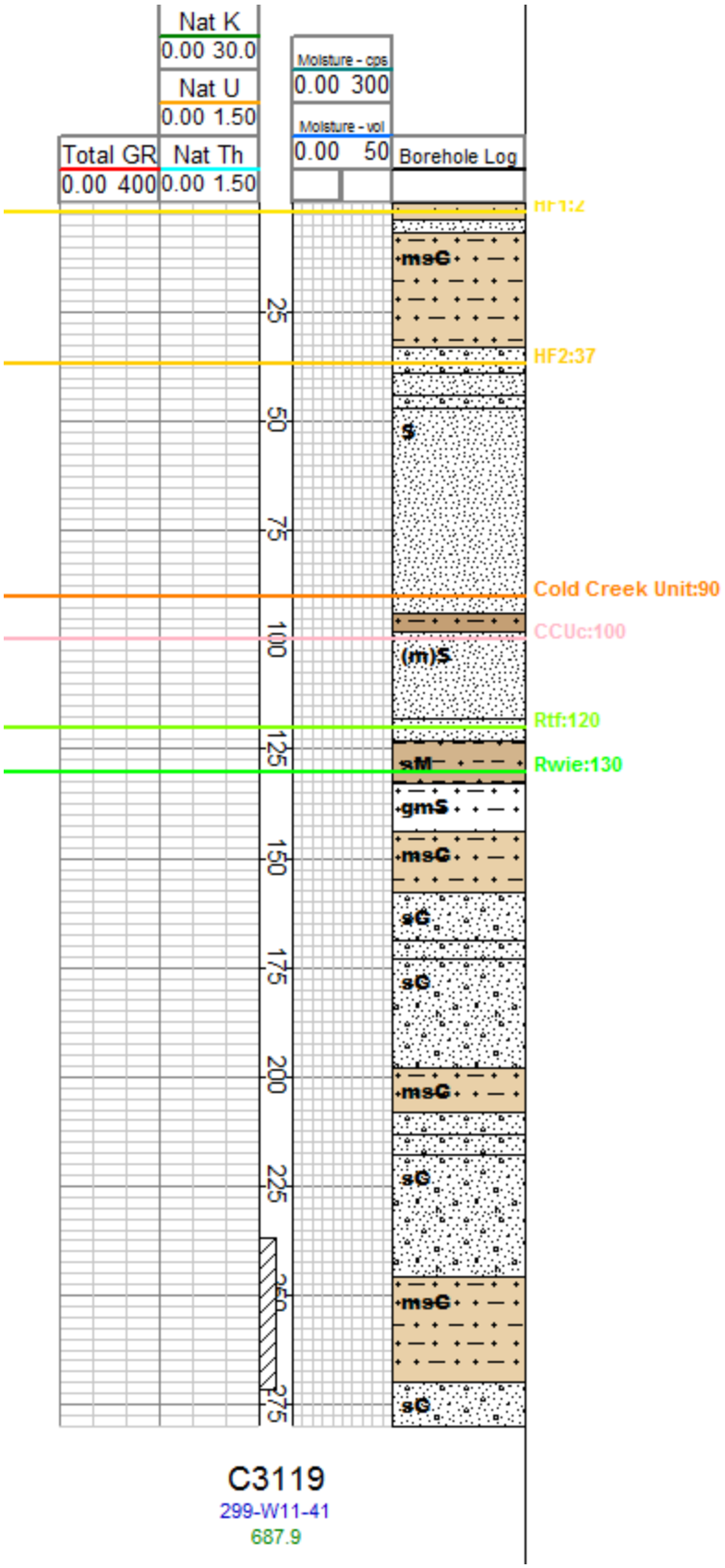

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:3
(m)S
sM
mS
HF2:78
S
Cold Creek Unit:120
sM
CCUc:137
M
Rtf:162
gS
Rwie:190
msG
msG
50
100
150
200
250
B8828
299-W26-14
GL 671.5

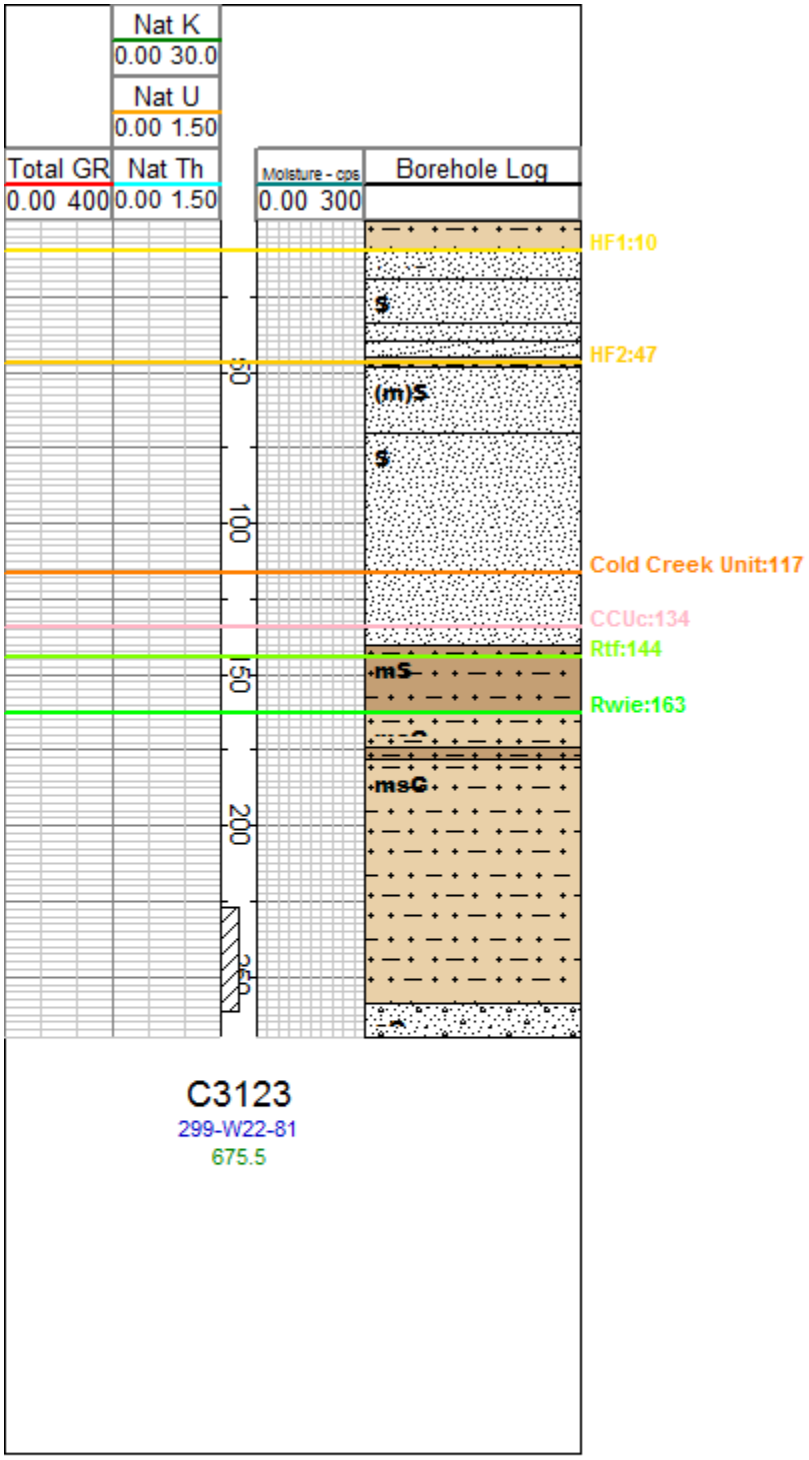

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:35
Cold Creek Unit:91
CCUc:99
Rtf:114
Rwie:122
20
40
60
80
100
120
140
160
180
200
220
C3102
C3102
674.1


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
gmS
msG
HF2:38
S
Cold Creek Unit:87
mS
CCUc:103
(m)cS
Rtf:116
Rwie:123
msG
sG
sG
msG
50
100
150
200
250
C3114
299-W14-15
GL 671.2

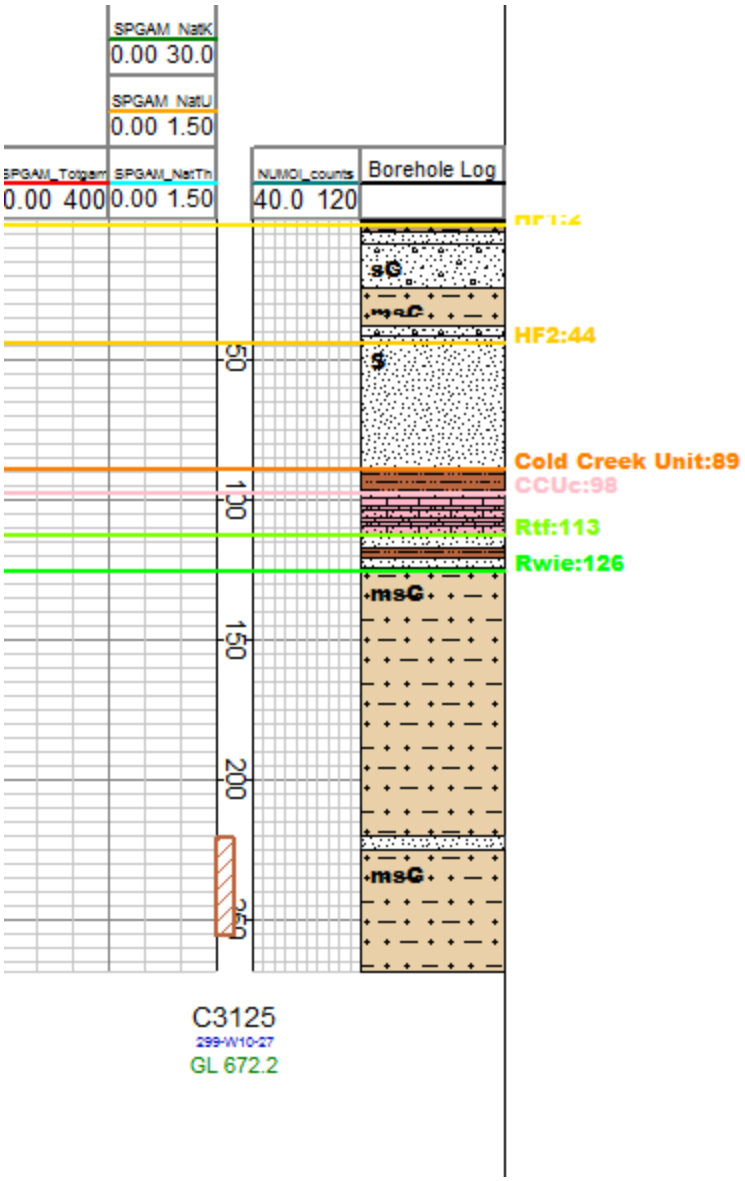

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:3
HF2:34
Cold Creek Unit:89
CCUc:97
Rtf:119
Rwie:129
sG
gS
gS
mS
msG
msG
msG
25
50
75
100
125
150
175
200
225
250
275
C3117
299-W11-39
688.6

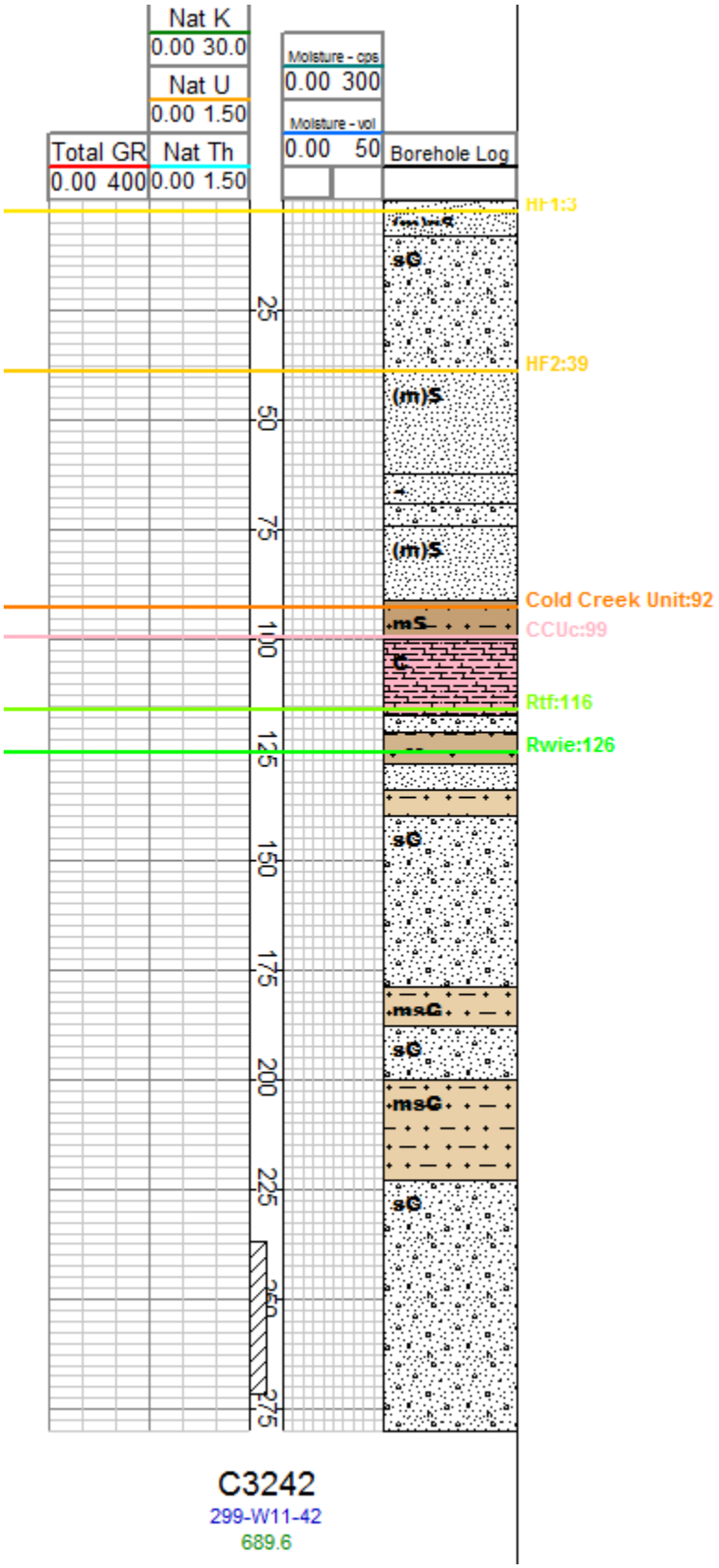

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:2
HF2:32
Cold Creek Unit:88
CCUc:103
Rtf:118
Rwie:134
25
50
75
100
125
150
175
200
225
250
275
sG
S
sM
gmS
mS
msG
C3118
299-W11-40
688.0

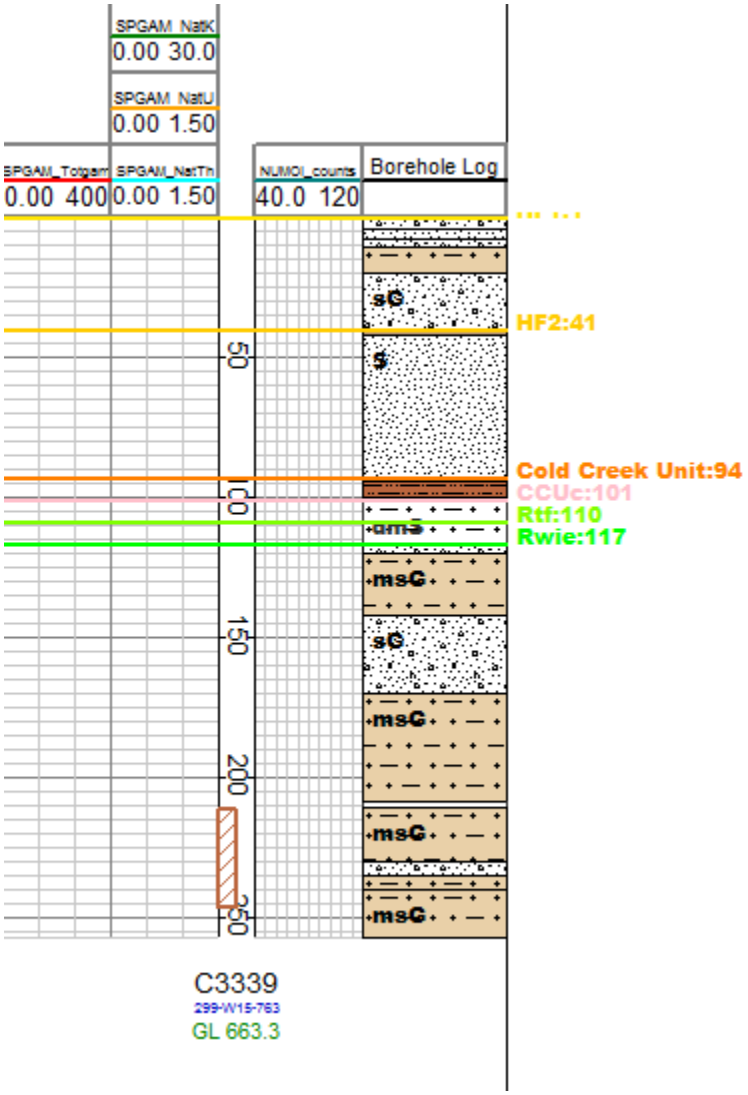

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:2
msG
HF2:37
S
Cold Creek Unit:90
CCUc:100
(m)S
Rtf:120
sM
Rwie:130
gmS
msG
sG
sG
msG
sG
msG
sG
25
50
75
100
125
150
175
200
225
250
275
C3119
299-W11-41
687.9

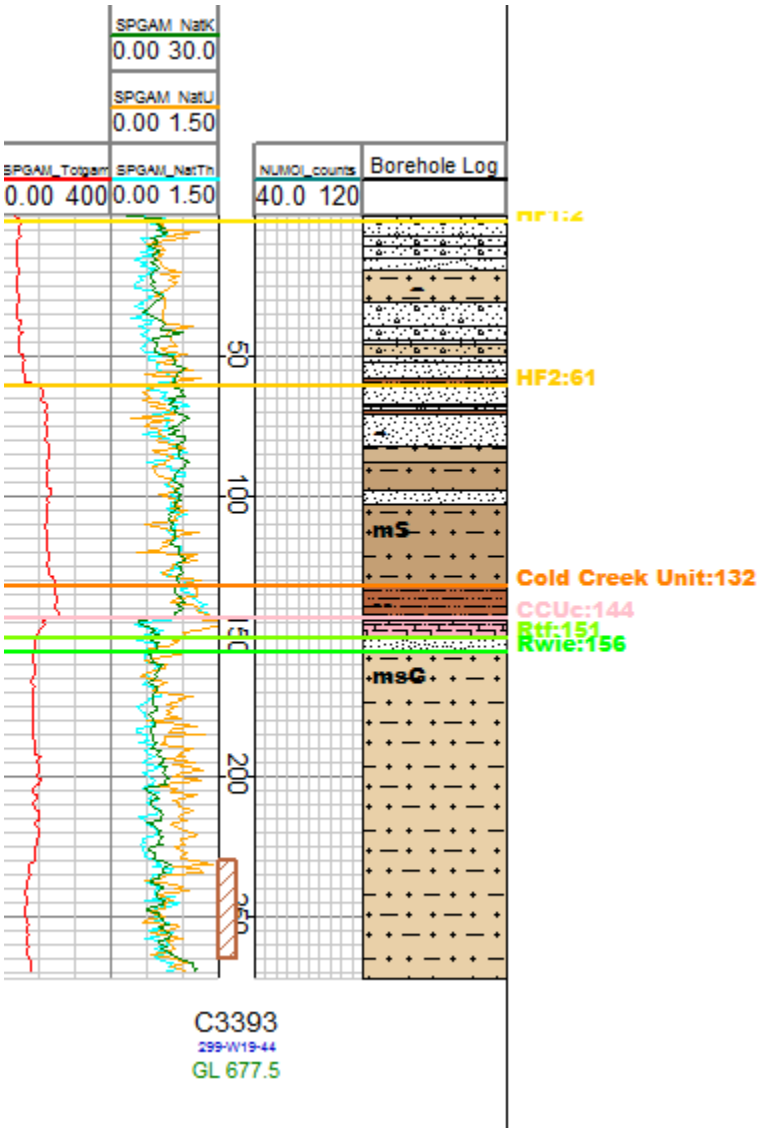

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:10
S
HF2:47
(m)S
S
Cold Creek Unit:117
CCUc:134
Rtf:144
mS
Rwie:163
msG
50
100
150
200
250
C3123
299-W22-81
675.5

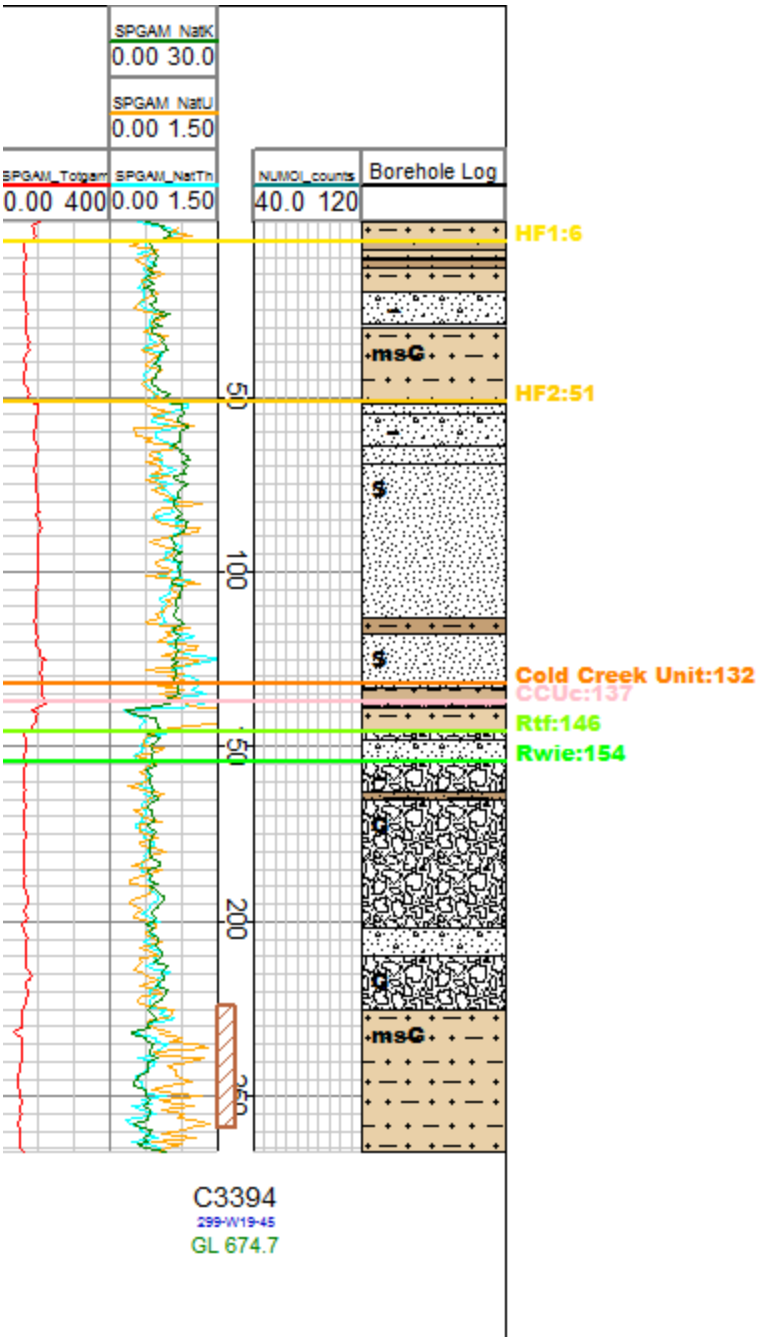
50 ft

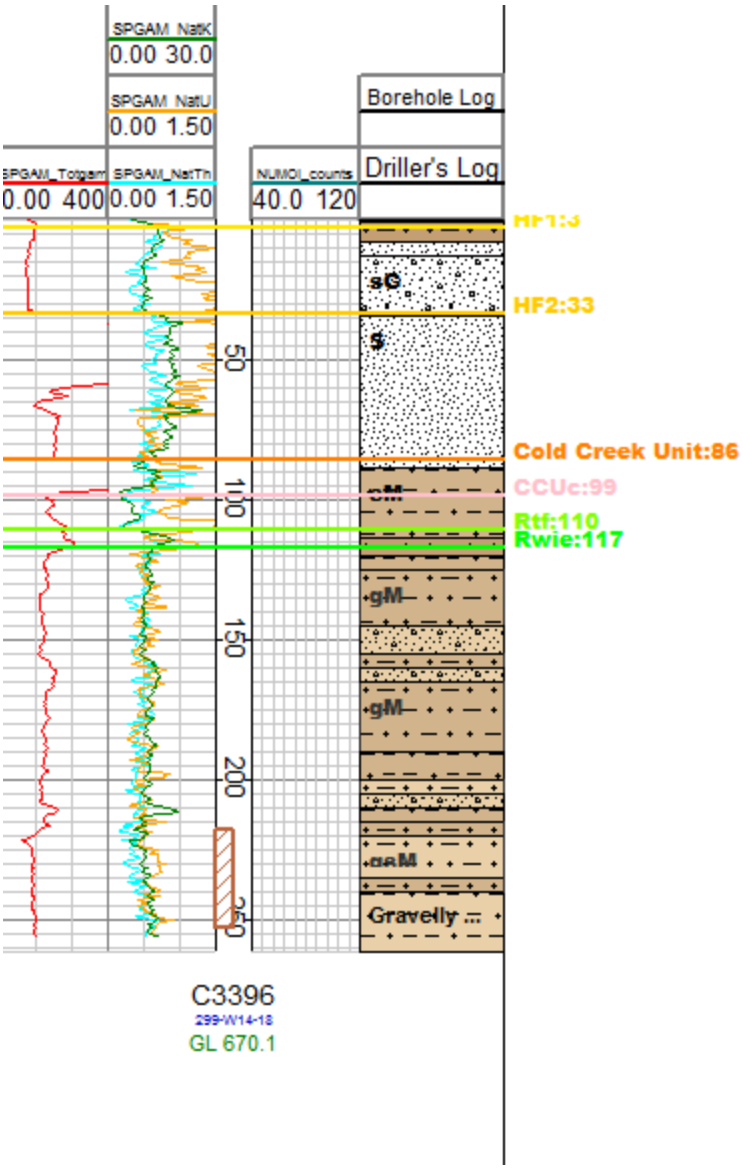

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:44
Cold Creek Unit:89
CCUc:98
Rtf:113
Rwie:126
sG
msG
S
msG
msG
50
100
150
200
250
C3125
299-W10-27
GL 672.2

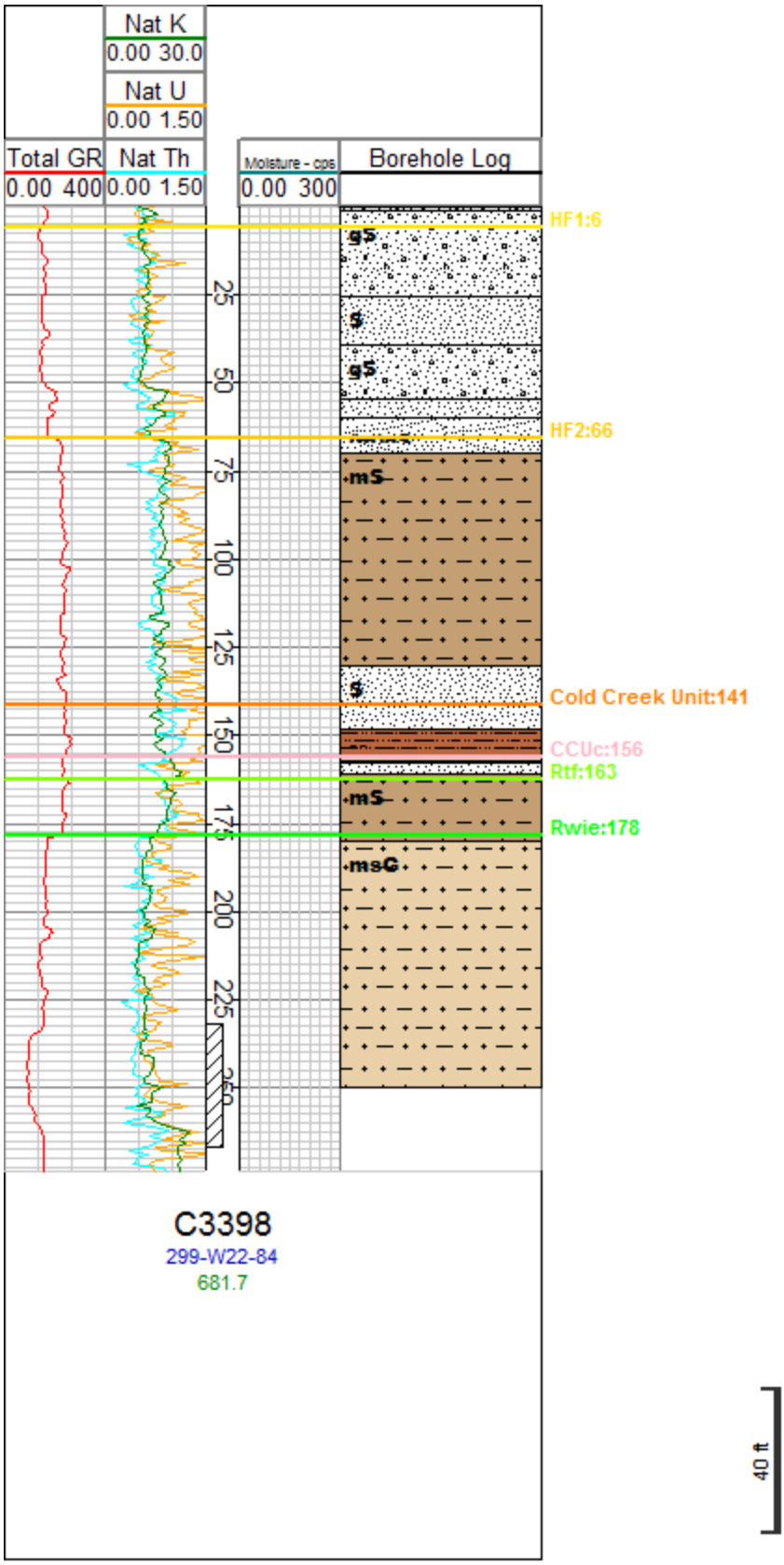

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:3
HF2:39
Cold Creek Unit:92
CCUc:99
Rtf:116
Rwie:126
25
50
75
100
125
150
175
200
225
250
275
sG
(m)S
mS
C
msG
C3242
299-W11-42
689.6

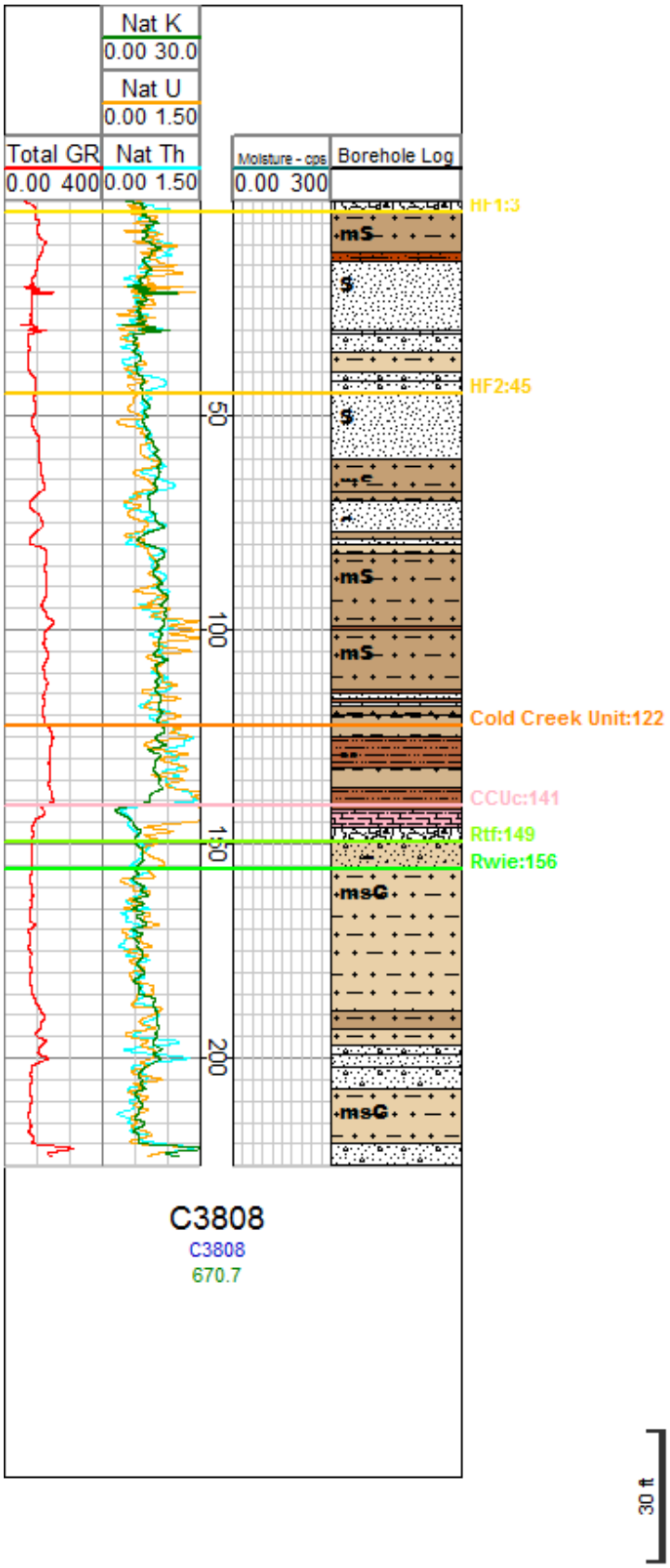

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:41
Cold Creek Unit:94
CCUc:101
Rtf:110
Rwie:117
50
100
150
200
250
C3339
299-W15-763
GL 663.3

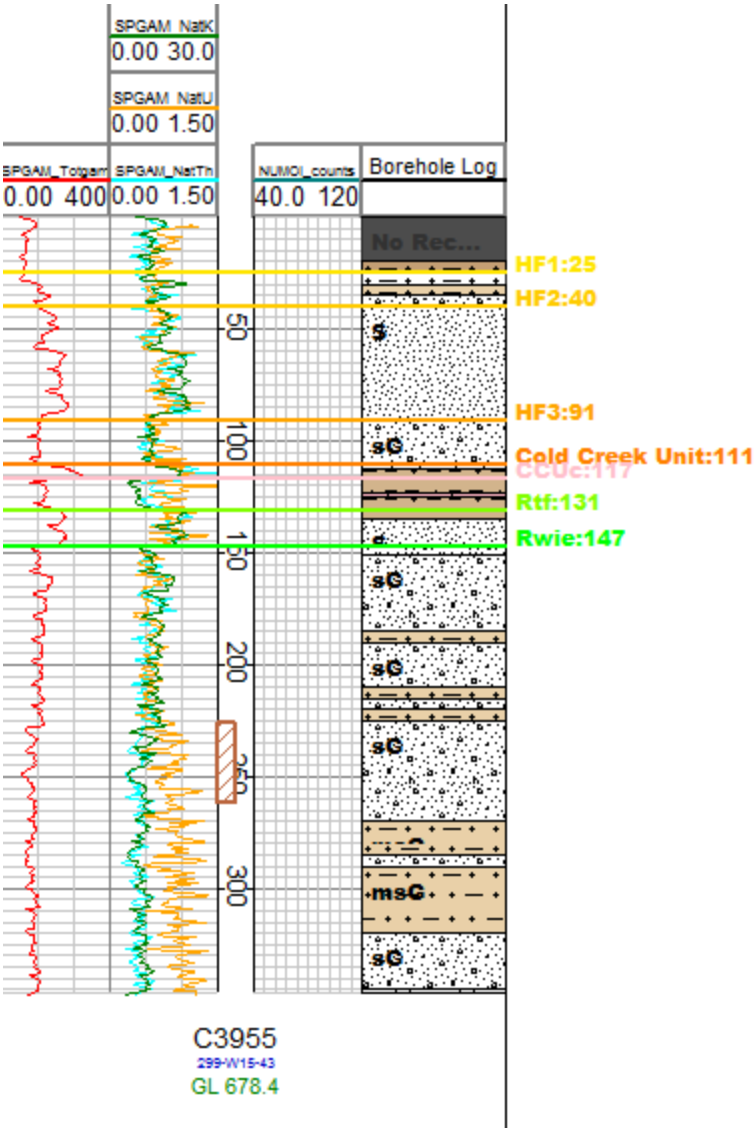

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:61
Cold Creek Unit:132
CCUc:144
Rtf:151
Rwie:156
mS
msG
50
100
150
200
250
C3393
299-W19-44
GL 677.5

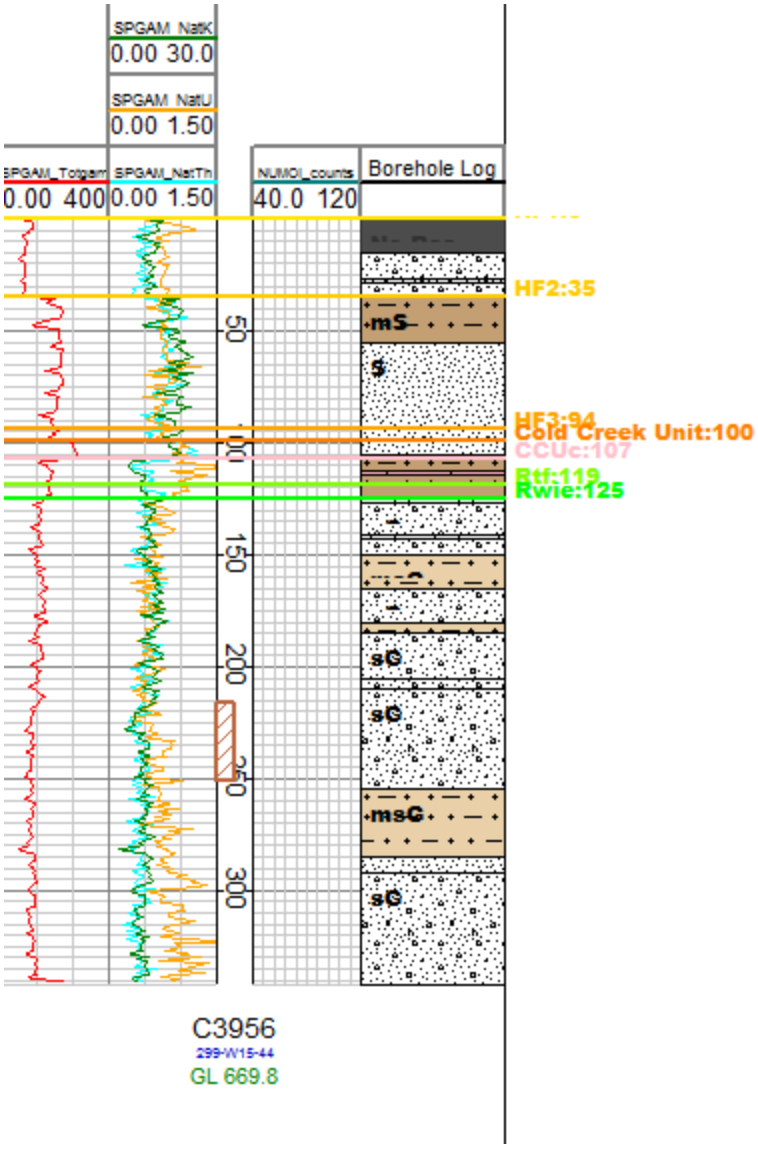

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:6
HF2:51
Cold Creek Unit:132
CCUc:137
Rtf:146
Rwie:154
50
100
150
200
250
msG
S
G
C3394
299-W19-45
GL 674.7

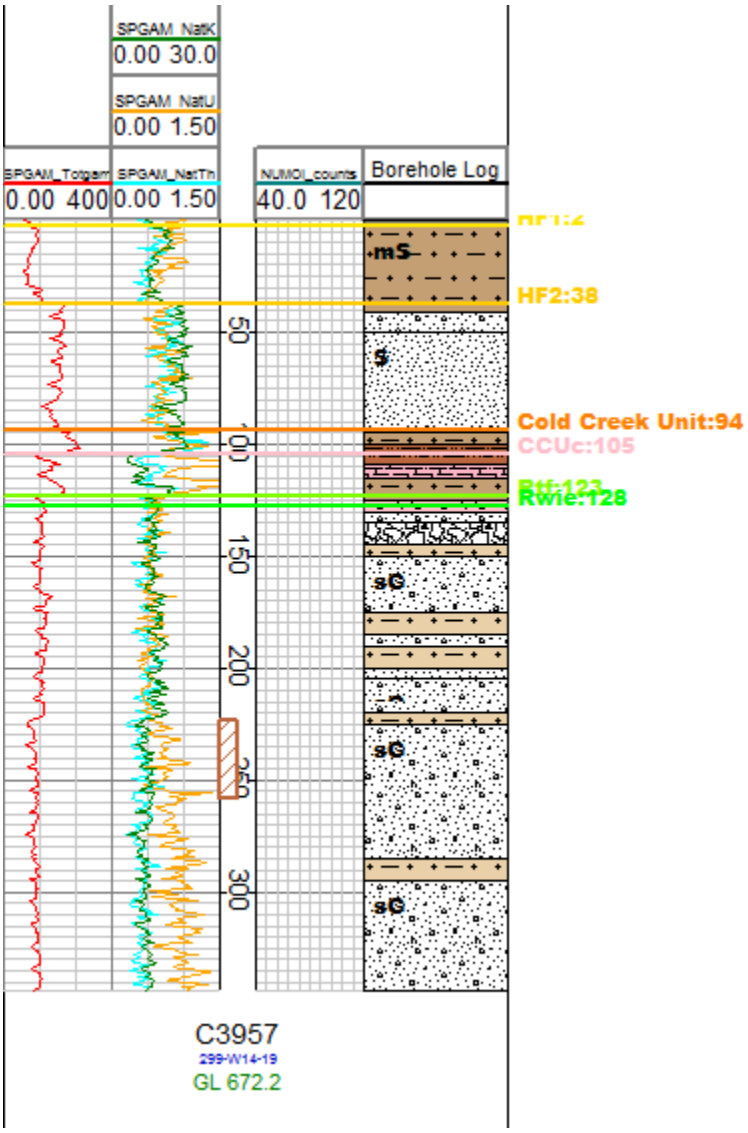

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
Driller's Log
HF2:33
Cold Creek Unit:86
CCUc:99
Rtf:110
Rwie:117
Gravelly ...
50
100
150
200
250
C3396
299-W14-18
GL 670.1


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:6
gS
S
gS
HF2:66
mS
S
Cold Creek Unit:141
CCUc:156
Rtf:163
mS
Rwie:178
msG
25
50
75
100
125
150
175
200
225
250
C3398
299-W22-84
681.7
40 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:3
HF2:45
Cold Creek Unit:122
CCUc:141
Rtf:149
Rwie:156
50
100
150
200
C3808
C3808
670.7
30 ft


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
No Rec...
HF1:25
HF2:40
HF3:91
Cold Creek Unit:111
CCUc:117
Rtf:131
Rwie:147
50
100
150
200
250
300
S
sG
msG
C3955
299-W15-43
GL 678.4


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:35
HF3:94
Cold Creek Unit:100
CCUc:107
Rtf:119
Rwie:125
50
100
150
200
250
300
mS
S
sG
msG
C3956
299-W15-44
GL 669.8


SPGAM_NatK
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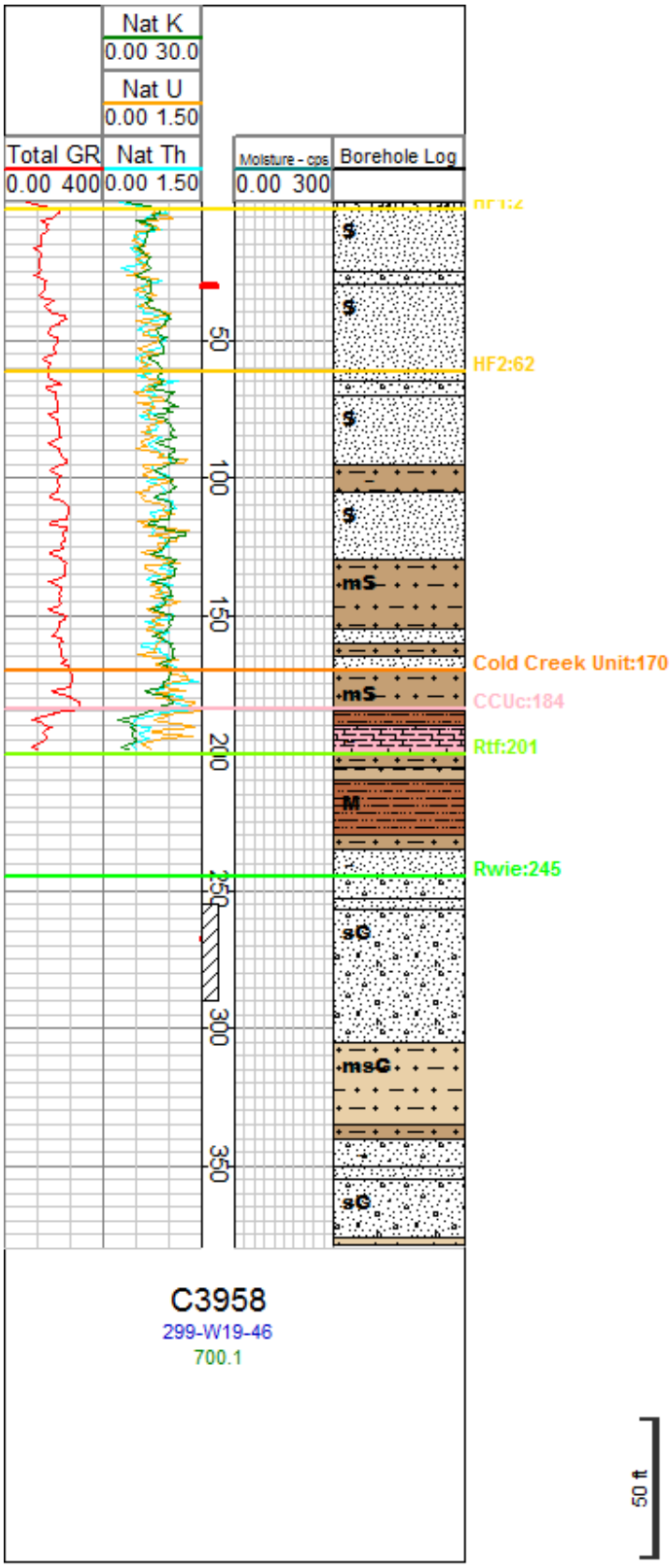
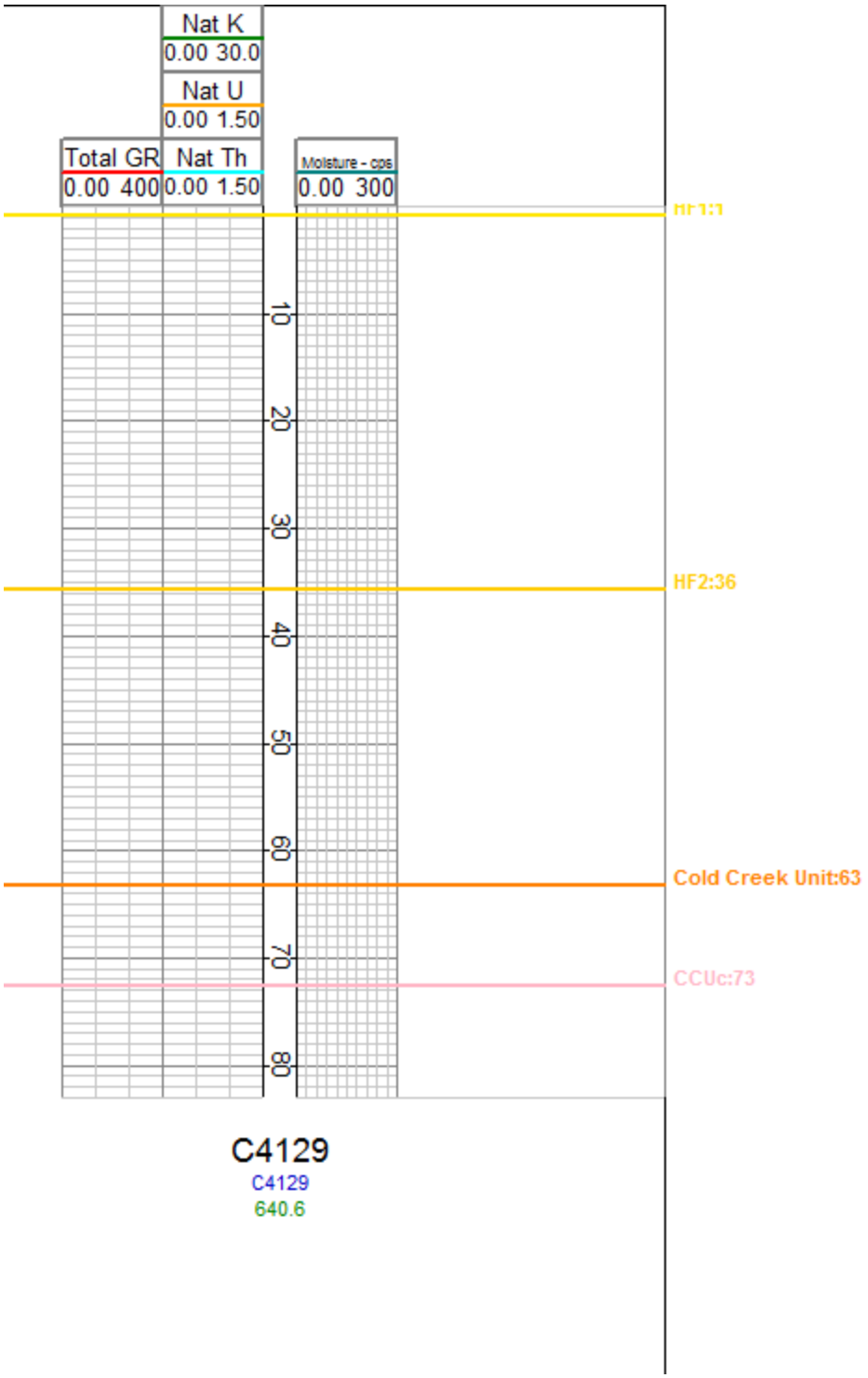
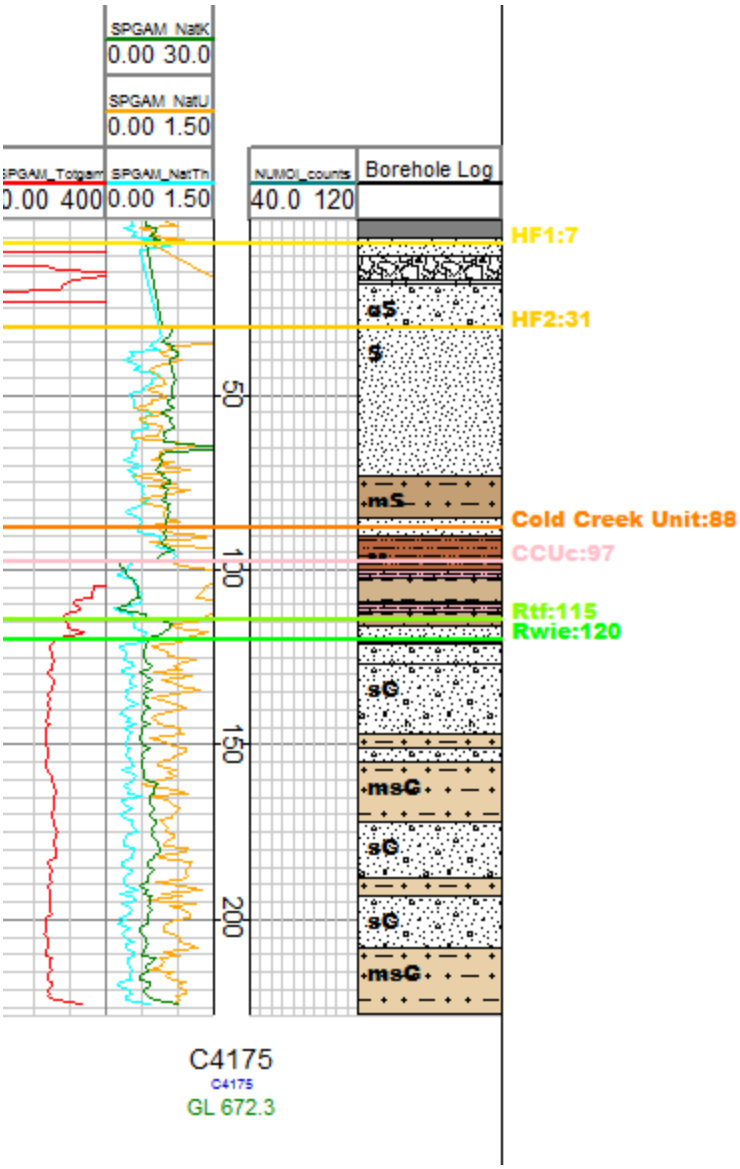
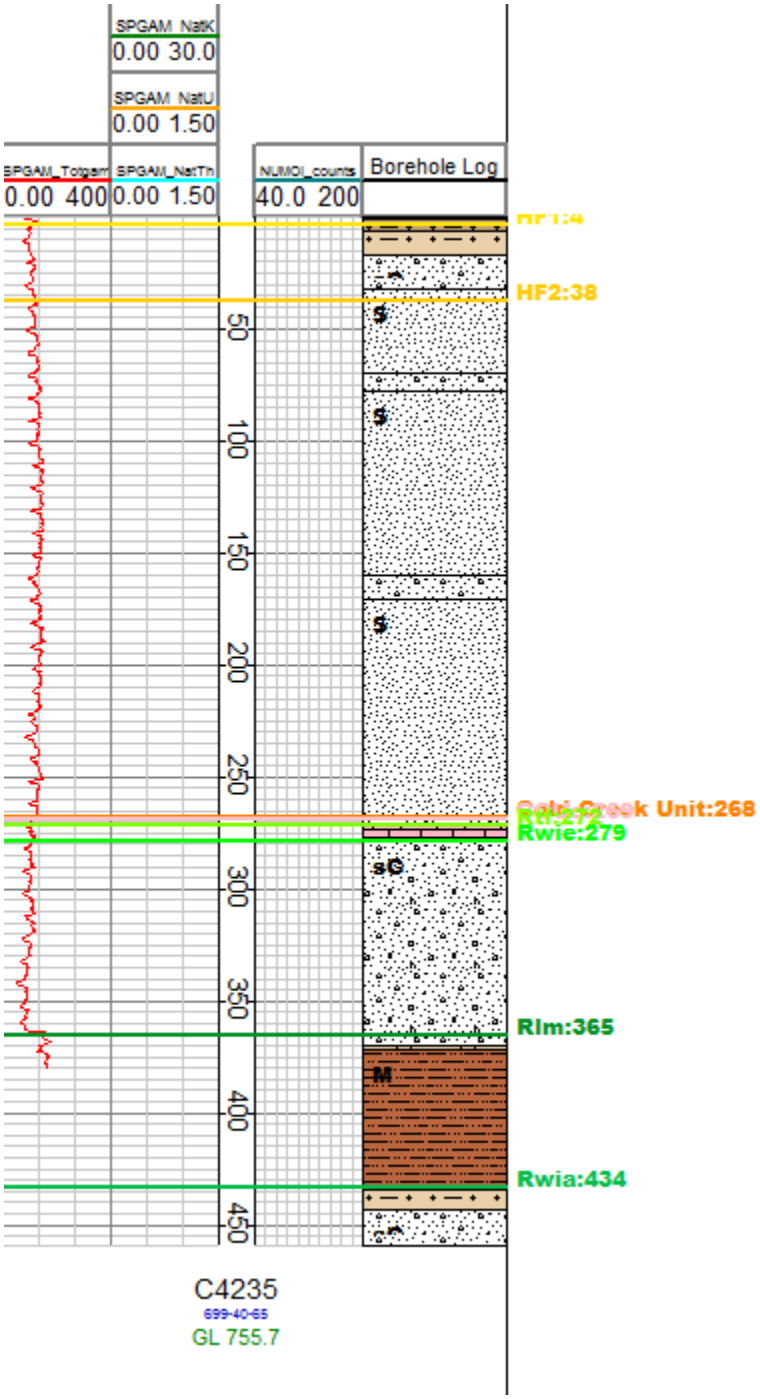
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
mS
HF2:38
S
Cold Creek Unit:94
CCUc:105
Rwie:128
sG
sG
sG
50
100
150
200
250
300
C3957
299-W14-19
GL 672.2


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:62
Cold Creek Unit:170
CCUc:184
Rtf:201
Rwie:245
50
100
150
200
250
300
350
S
mS
M
sG
msG
C3958
299-W19-46
700.1
50 ft


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:1
10
20
30
HF2:36
40
50
60
Cold Creek Unit:63
70
CCUc:73
80
C4129
C4129
640.6


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:7
HF2:31
Cold Creek Unit:88
CCUc:97
Rtf:115
Rwie:120
50
100
150
200
C4175
C4175
GL 672.3


SPGAM_NatK
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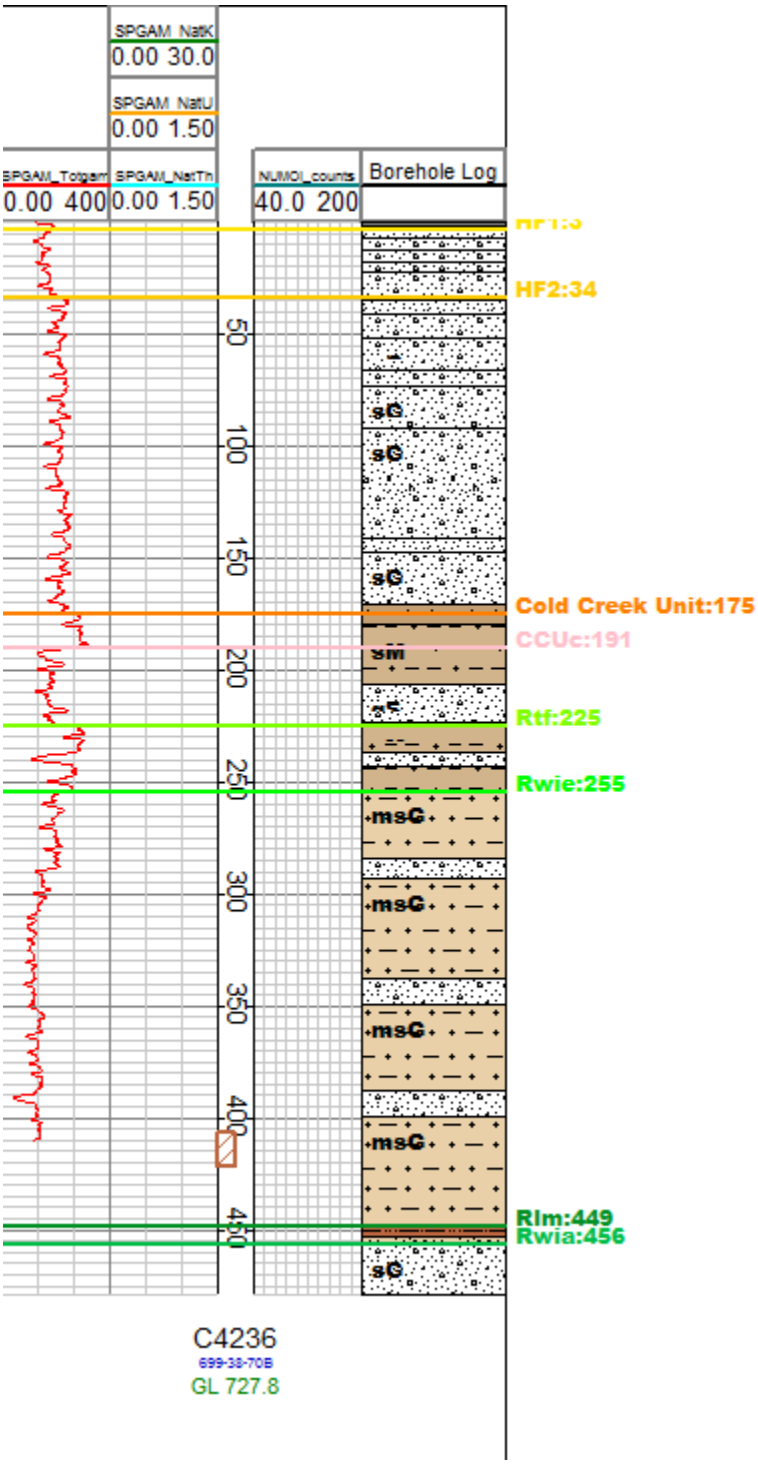
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:38
Unit:268
Rwie:279
Rlm:365
Rwia:434
50
100
150
200
250
300
350
400
450
C4235
699-40-65
GL 755.7


SPGAM_NatK
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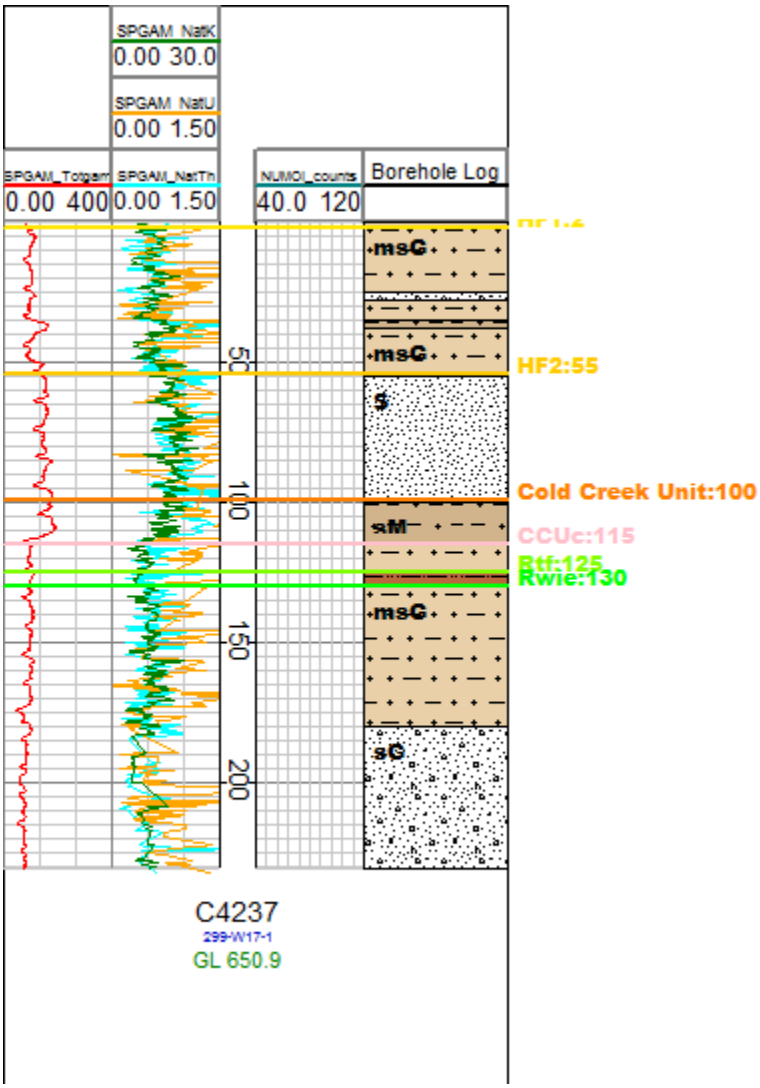
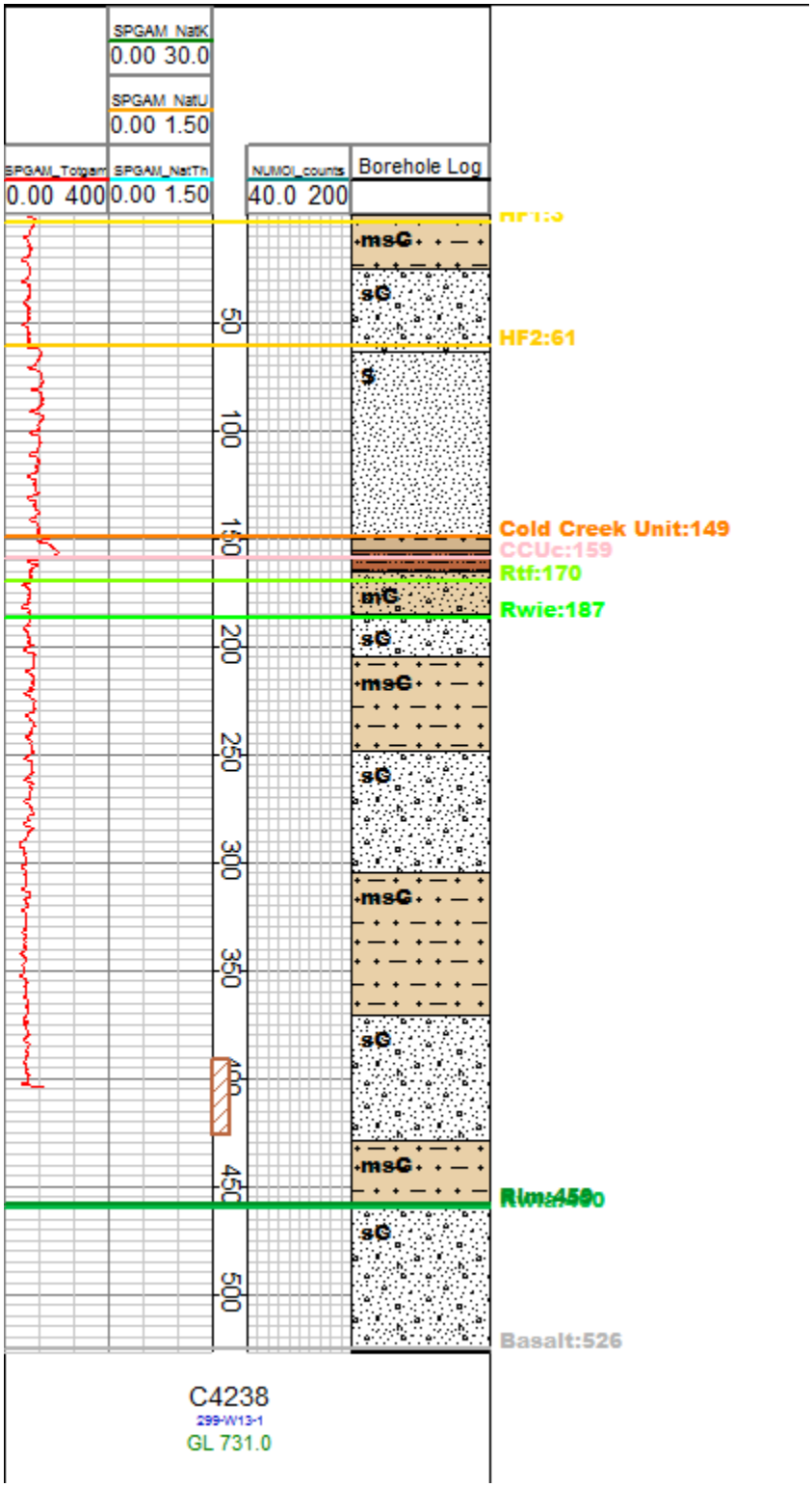
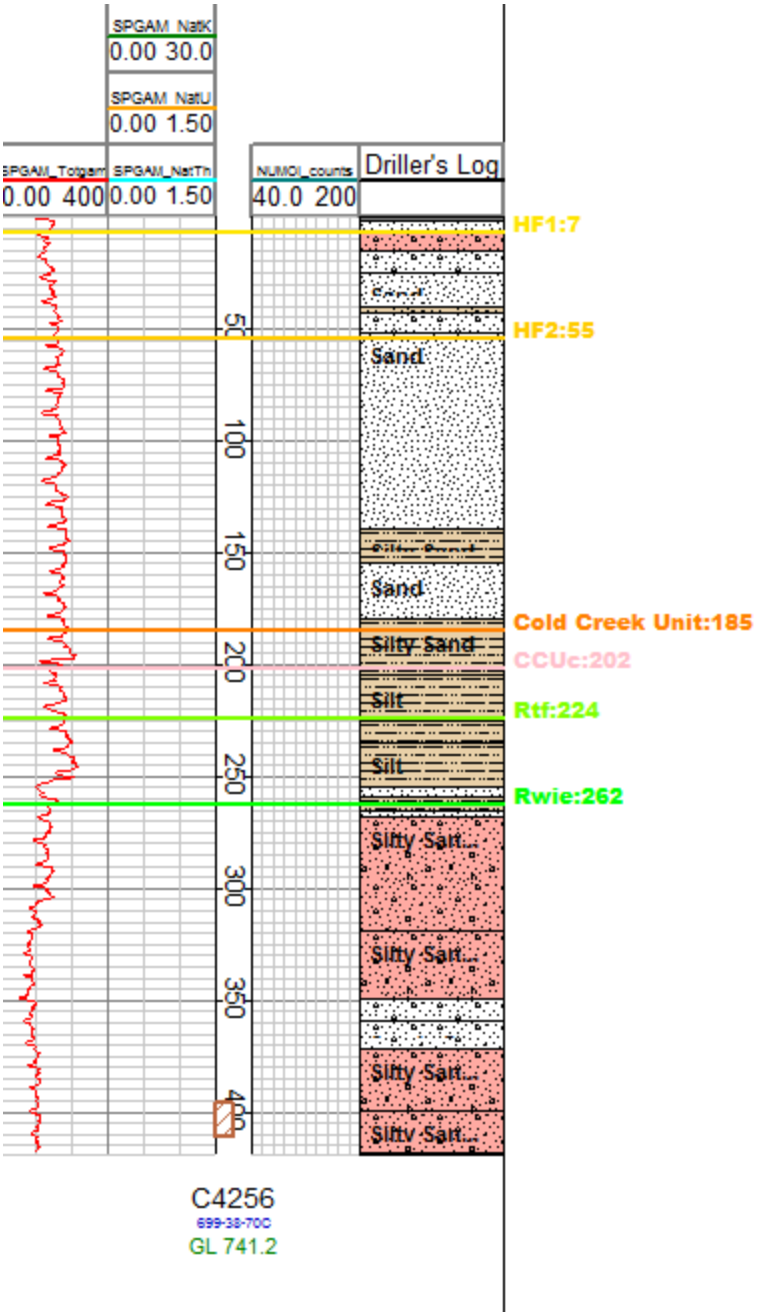
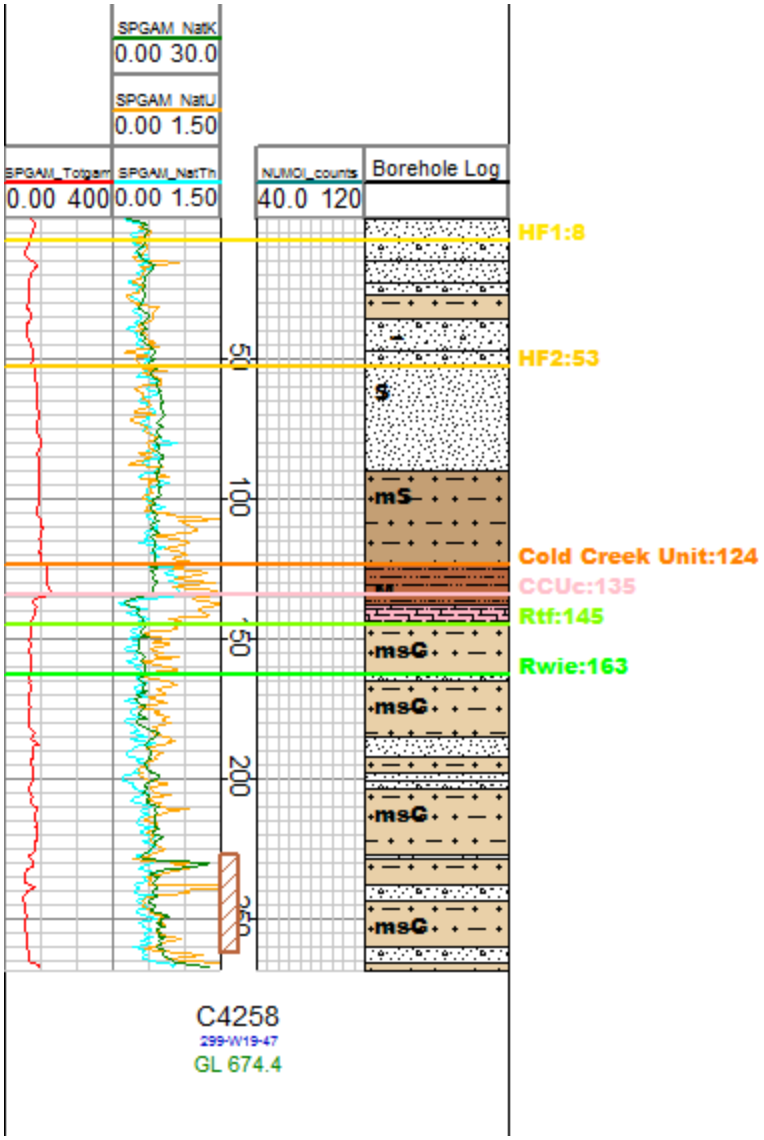
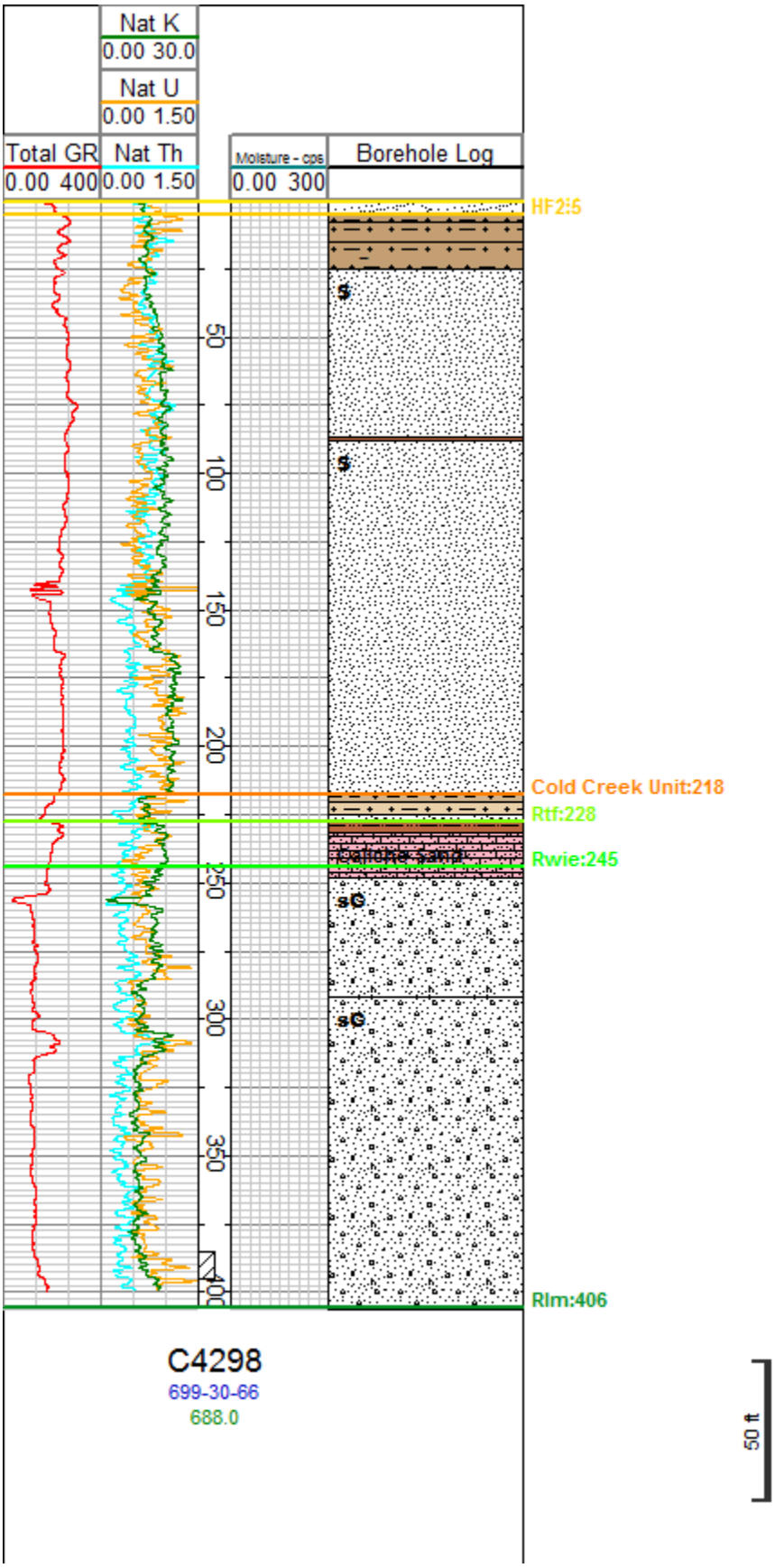
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:34
Cold Creek Unit:175
CCUc:191
Rtf:225
Rwie:255
Rlm:449
Rwia:456
50
100
150
200
250
300
350
400
450
C4236
699-38-70B
GL 727.8

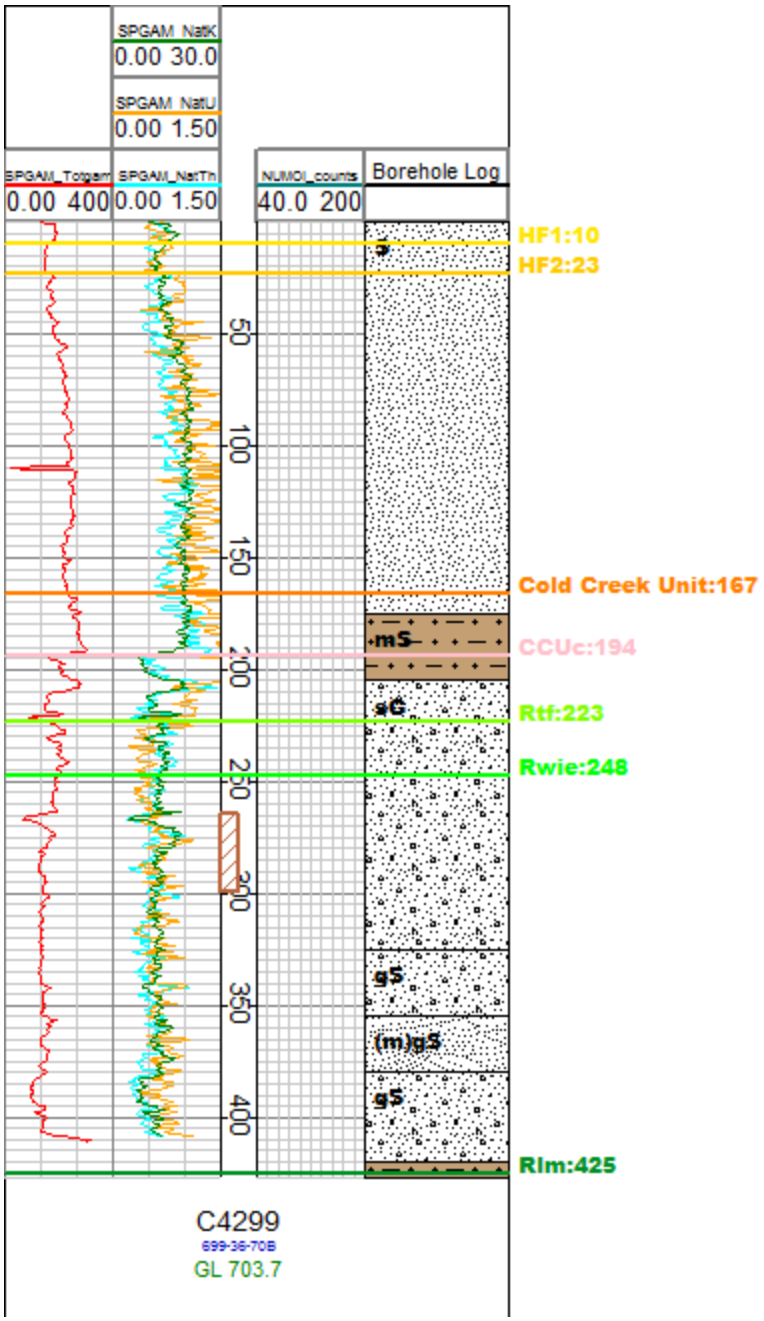

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
msG
msG
HF2:55
S
Cold Creek Unit:100
sM
CCUc:115
Rtf:125
Rwie:130
msG
sG
50
100
150
200
C4237
299-W17-1
GL 650.9

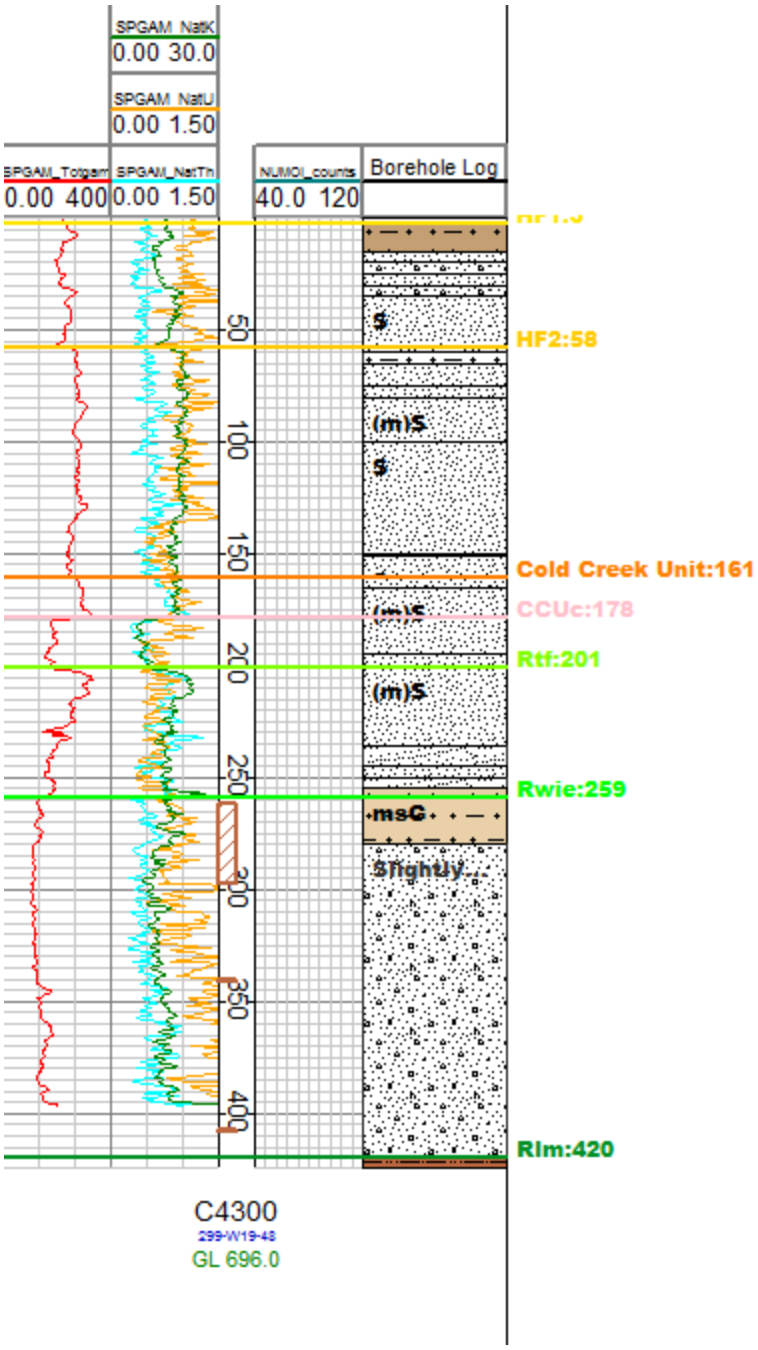

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
msG
sG
S
mG
HF2:61
Cold Creek Unit:149
CCUc:159
Rtf:170
Rwie:187
Basalt:526
C4238
299-W13-1
GL 731.0


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Driller's Log
HF1:7
HF2:55
Sand
Sand
Cold Creek Unit:185
Silty Sand
CCUc:202
Silt
Rtf:224
Silt
Rwie:262
Silty Sand
Silty Sand
Silty Sand
Silty Sand
50
100
150
200
250
300
350
400
C4256
699-38-70C
GL 741.2


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:8
HF2:53
Cold Creek Unit:124
CCUc:135
Rtf:145
Rwie:163
50
100
150
200
250
C4258
299-W19-47
GL 674.4


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF:25
Cold Creek Unit:218
Rtf:228
Rwie:245
Rlm:406
50
100
150
200
250
300
350
400
C4298
699-30-66
688.0
50 ft


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:10
HF2:23
Cold Creek Unit:167
CCUc:194
Rtf:223
Rwie:248
Rlm:425
mS
sG
gS
(m)gS
gS
50
100
150
200
250
300
350
400
C4299
699-36-70B
GL 703.7


SPGAM_NatK
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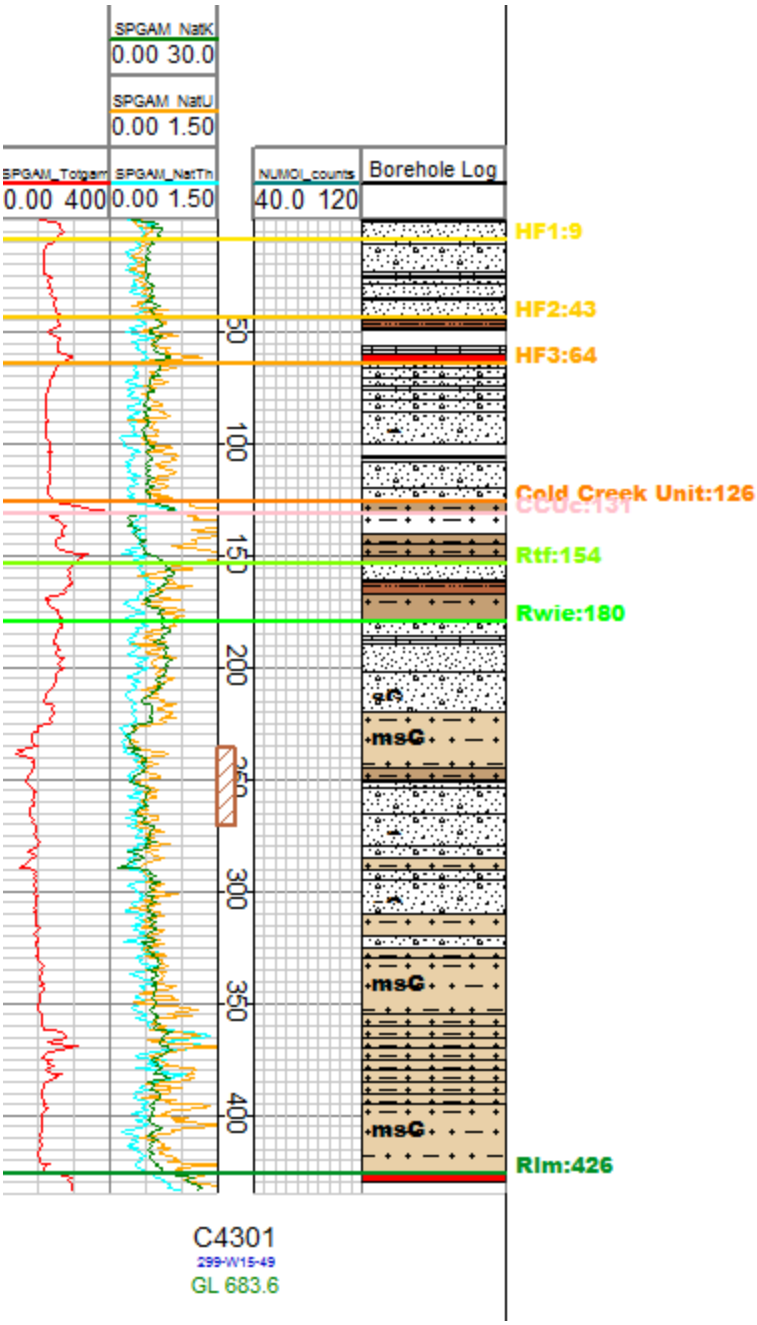
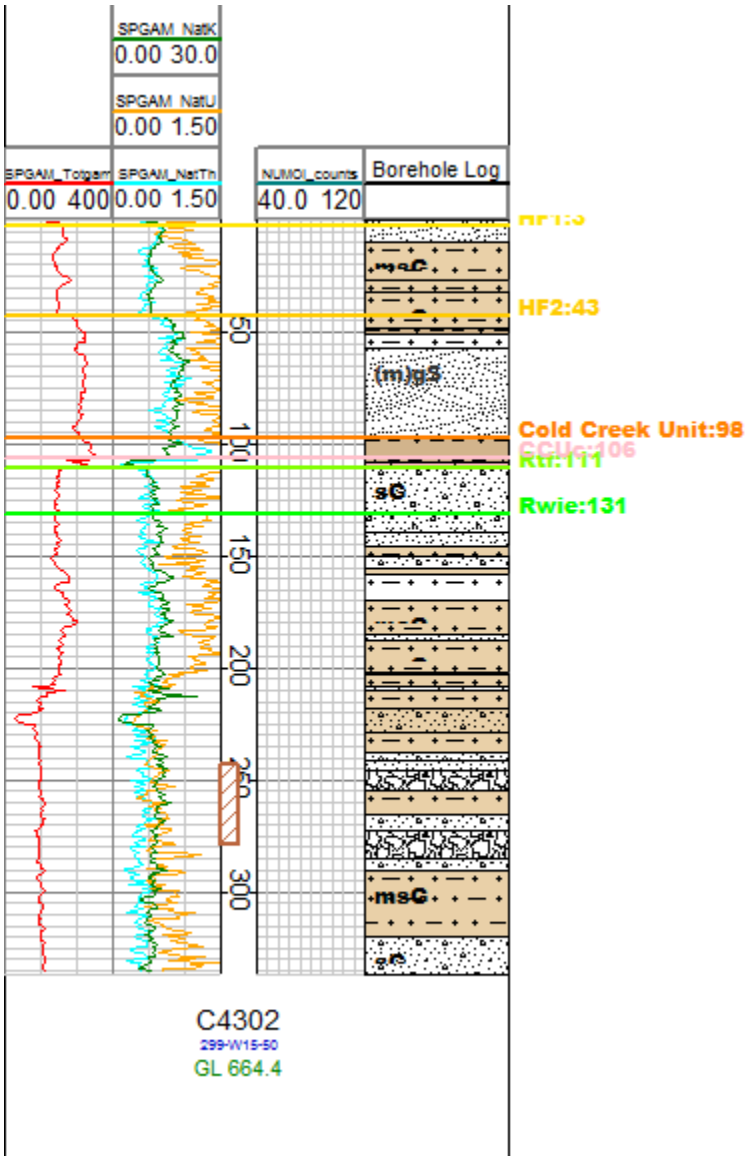
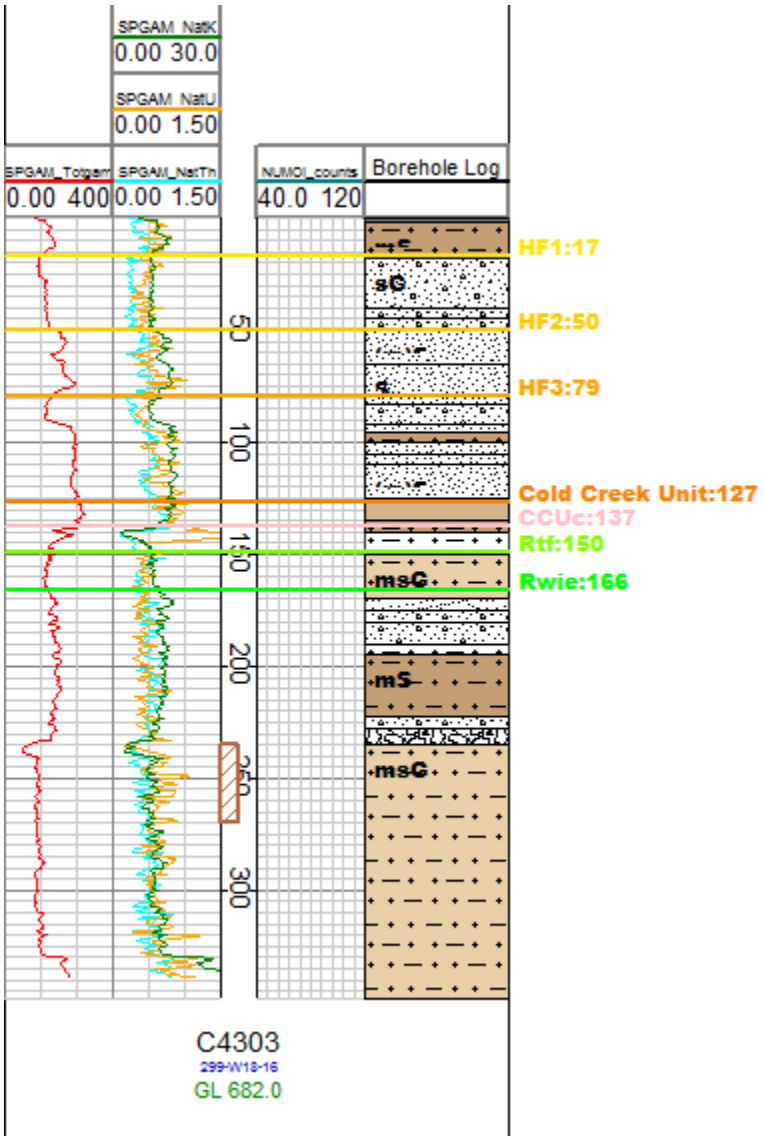
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
300
350
400
HF2:58
Cold Creek Unit:161
CCUc:178
Rtf:201
Rwie:259
Rlm:420
C4300
299-W19-48
GL 696.0


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:9
HF2:43
HF3:64
Cold Creek Unit:126
Rtf:154
Rwie:180
msG
msG
msG
Rlm:426
50
100
150
200
250
300
350
400
C4301
299-W15-49
GL 683.6


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:43
Cold Creek Unit:98
Rwie:131
msC
(m)gS
sC
msC
50
100
150
200
250
300
C4302
299-W15-50
GL 664.4


SPGAM_NatK
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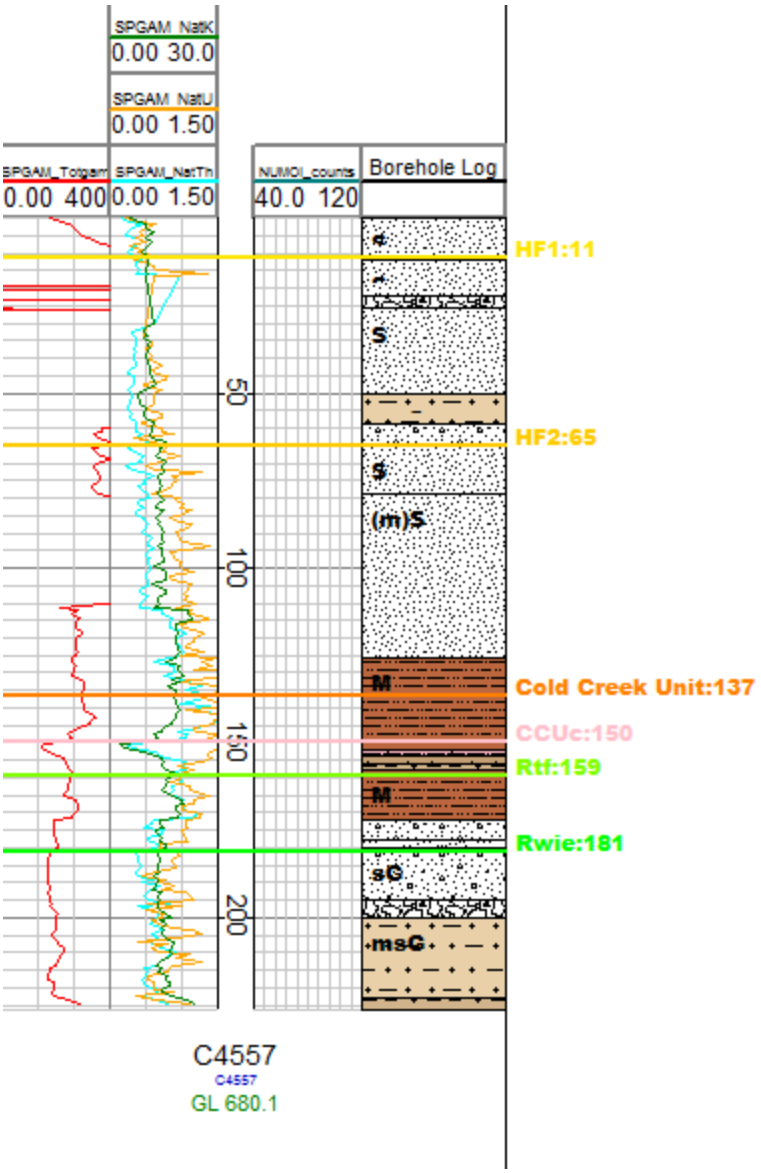
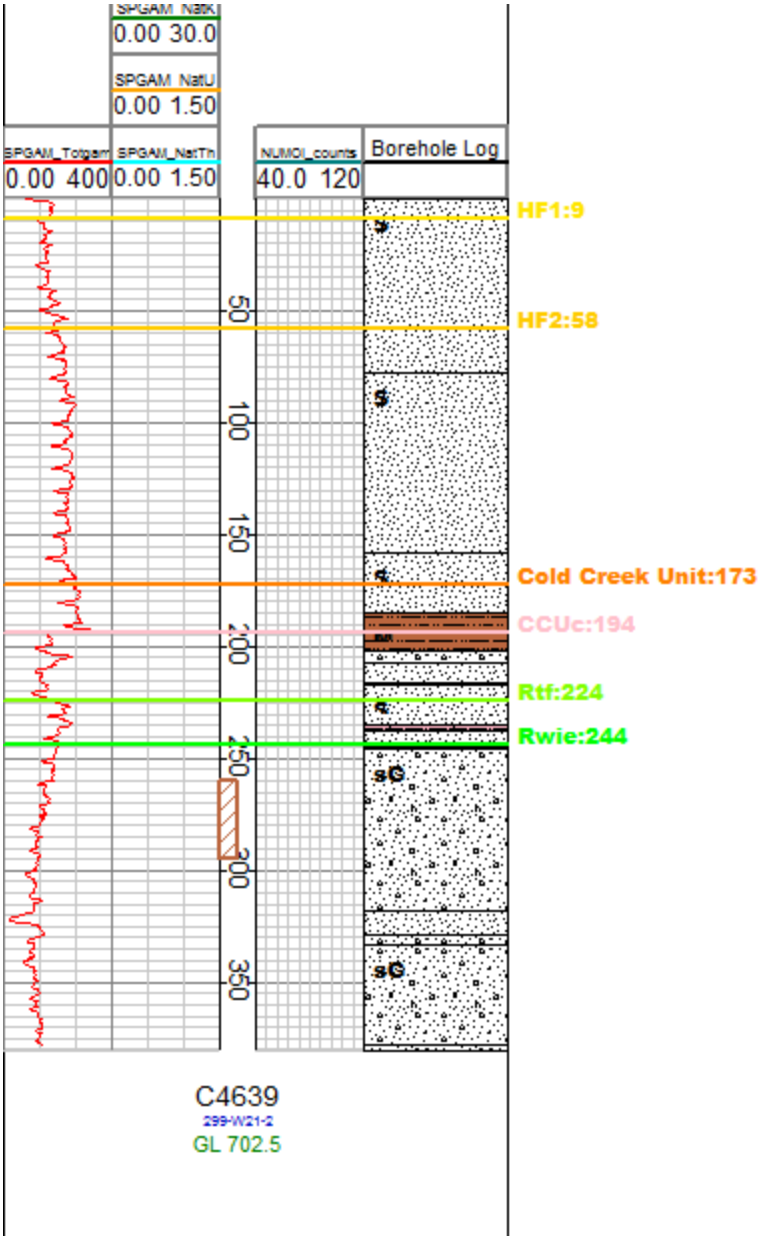
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:17
HF2:50
HF3:79
Cold Creek Unit:127
CCUc:137
Rtf:150
Rwie:166
50
100
150
200
250
300
C4303
299-W18-16
GL 682.0


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:11
HF2:65
Cold Creek Unit:137
CCUc:150
Rtf:159
Rwie:181
S
(m)S
M
sG
msG
50
100
150
200
C4557
C4557
GL 680.1


SPGAM_NatK
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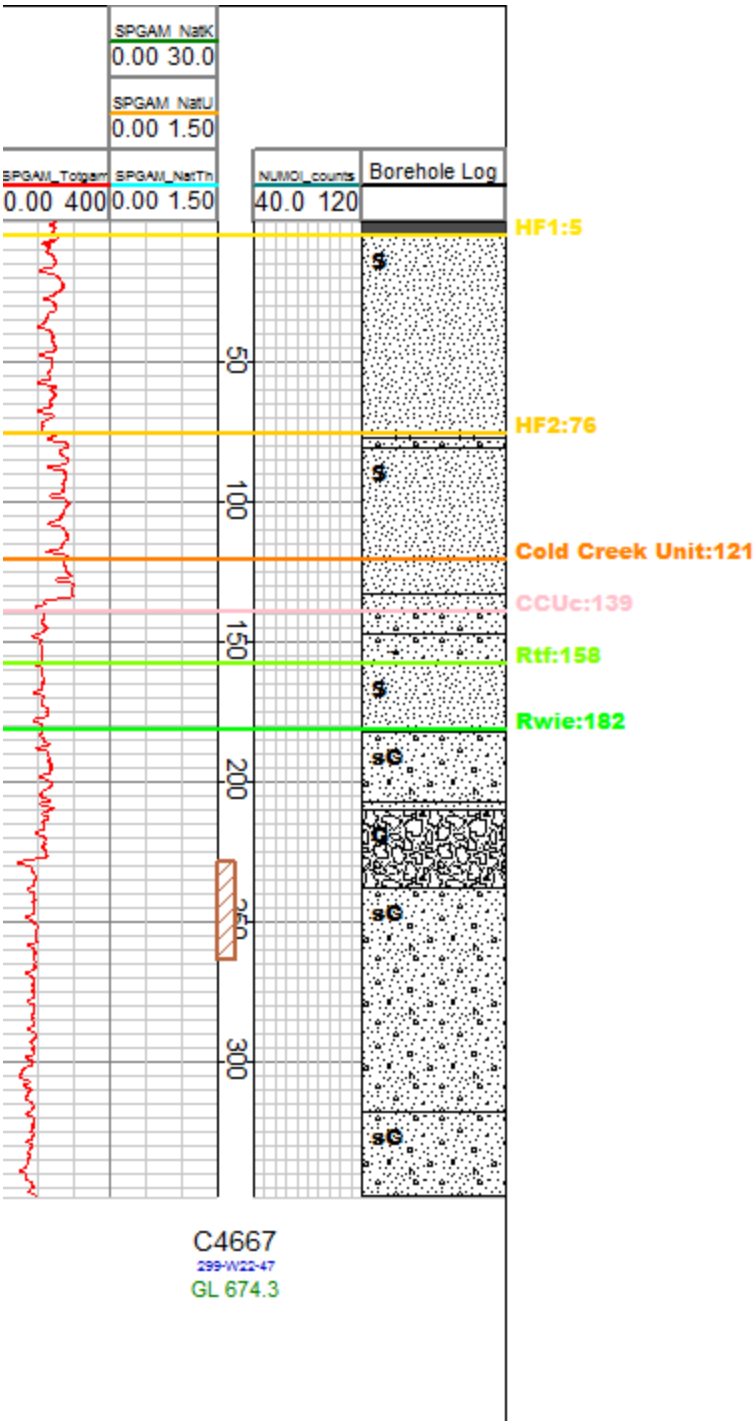
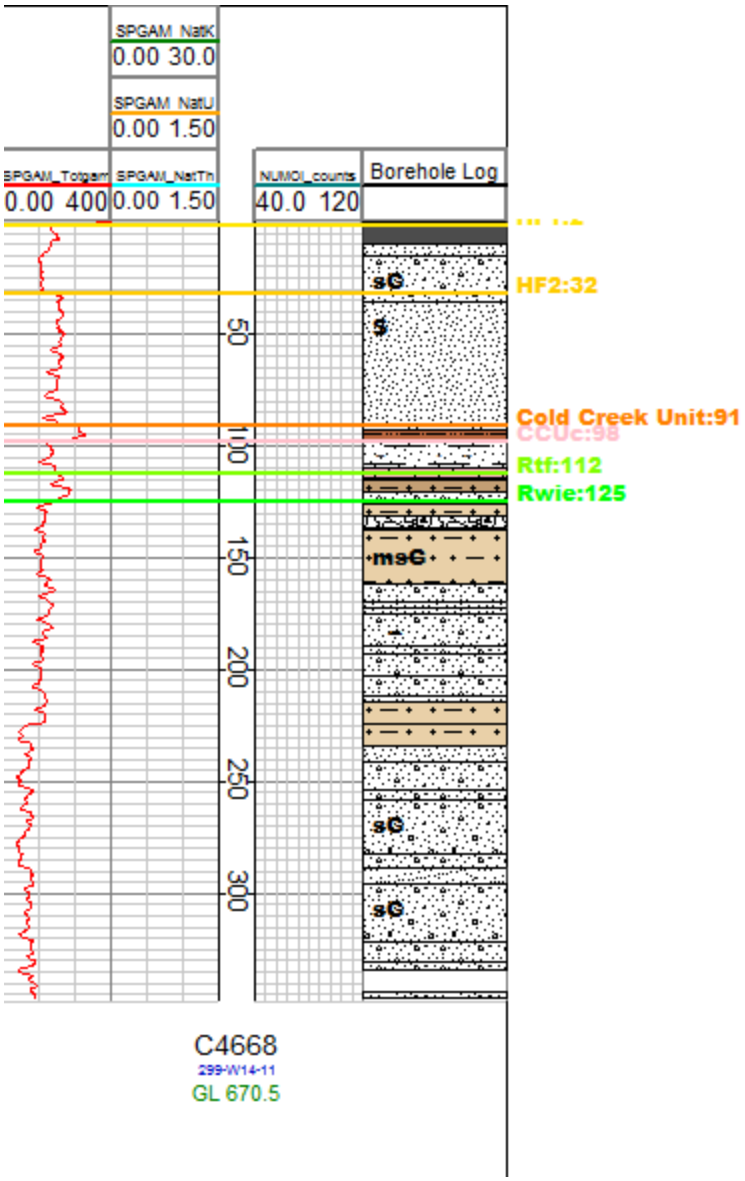
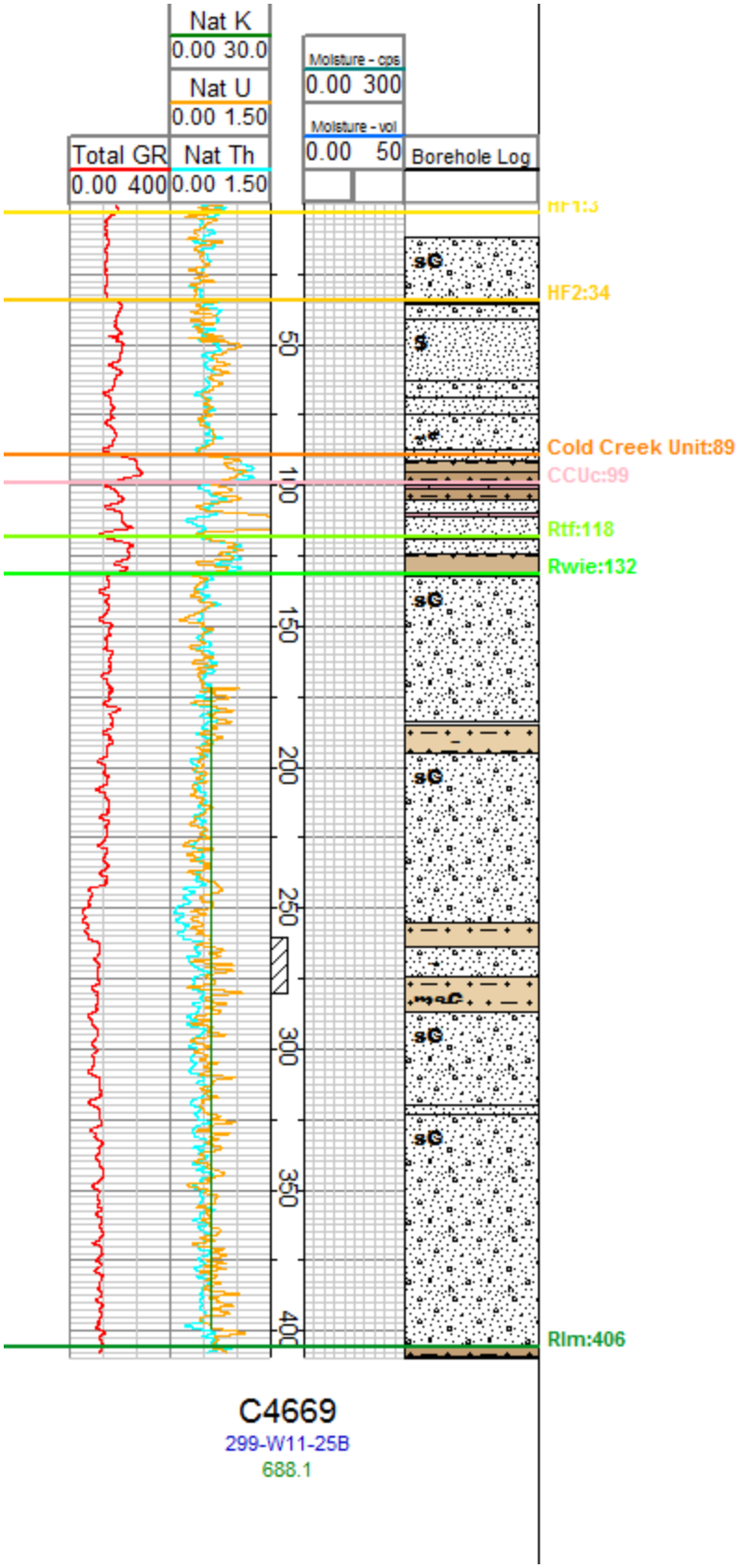
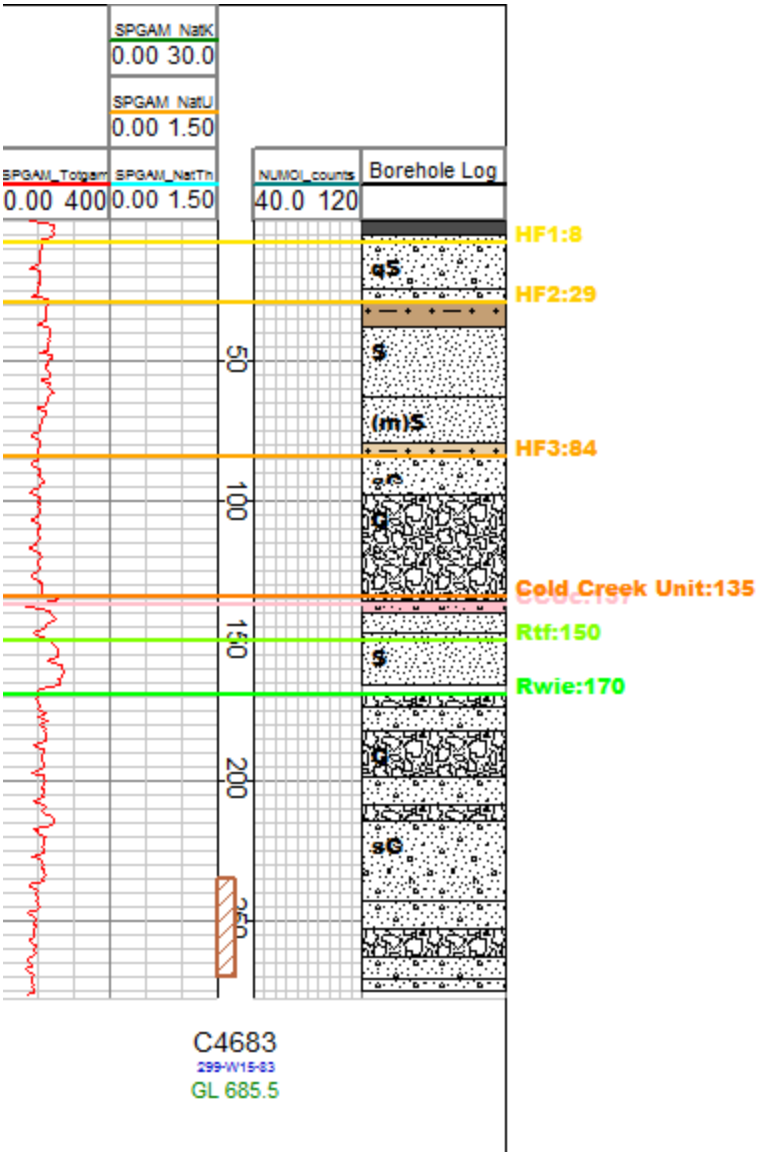
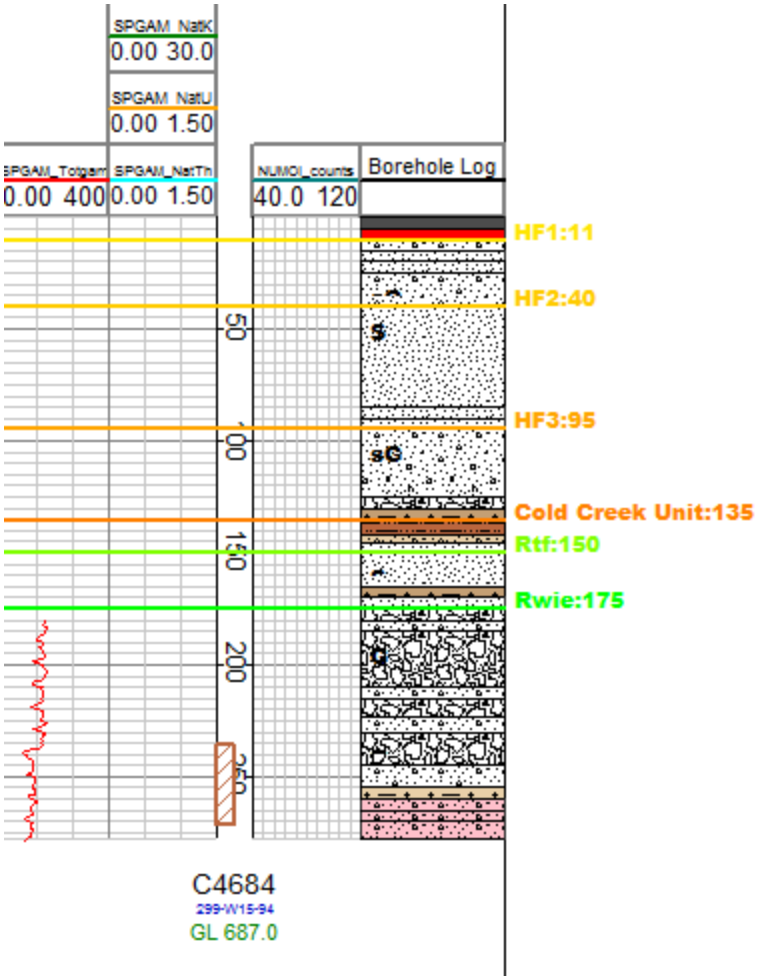
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:9
HF2:58
Cold Creek Unit:173
CCUc:194
Rtf:224
Rwie:244
50
100
150
200
250
300
350
C4639
299-W21-2
GL 702.5

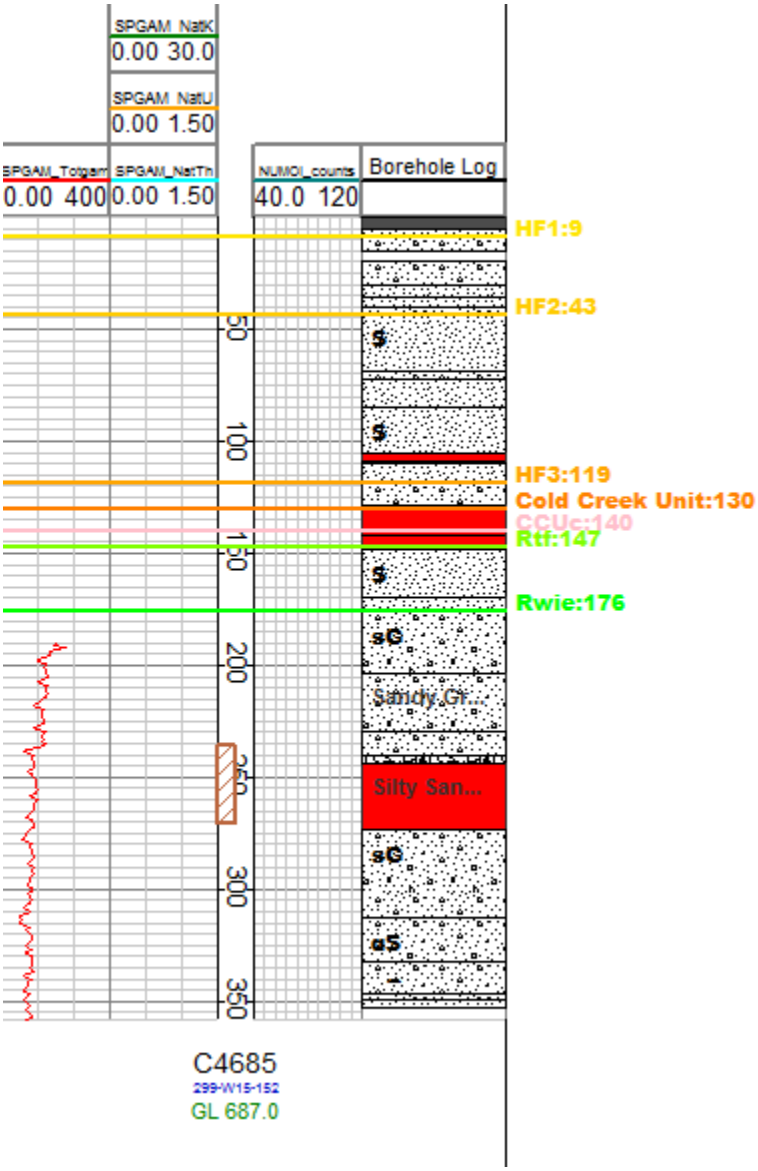

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:5
HF2:76
Cold Creek Unit:121
CCUc:139
Rtf:158
Rwie:182
50
100
150
200
250
300
C4667
299-W22-47
GL 674.3

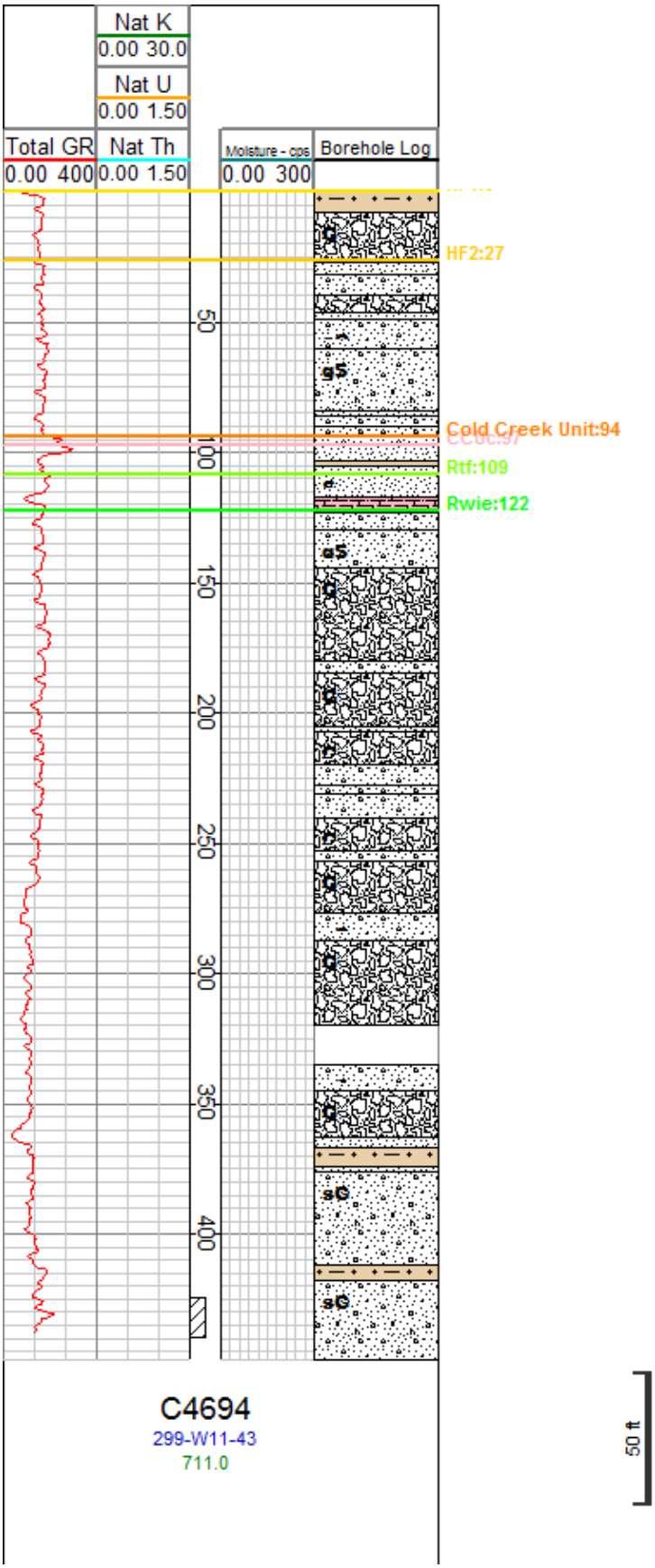

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:32
Cold Creek Unit:91
CCUc:98
Rtf:112
Rwie:125
50
100
150
200
250
300
sG
S
msG
C4668
299-W14-11
GL 670.5

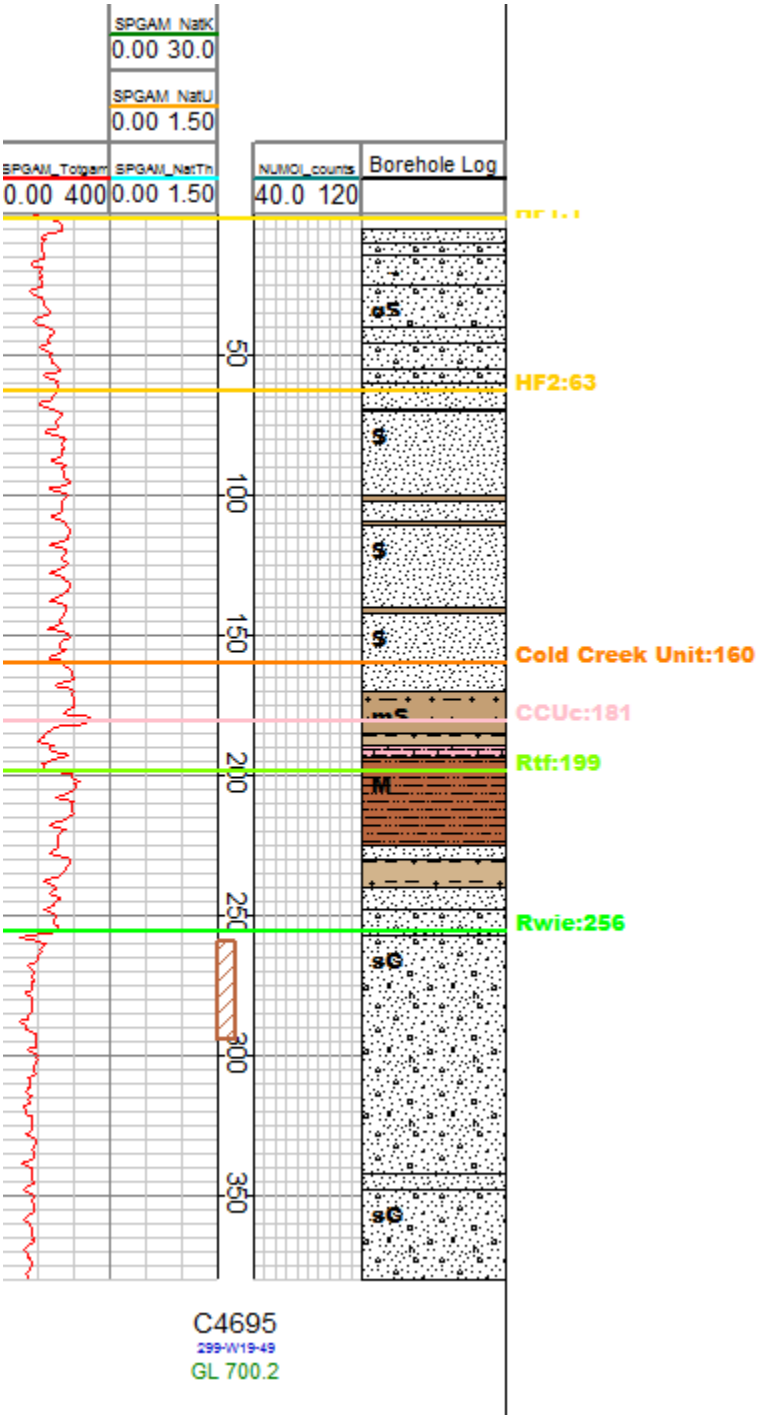

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF2:34
Cold Creek Unit:89
CCUc:99
Rtf:118
Rwie:132
Rlm:406
50
100
150
200
250
300
350
400
C4669
299-W11-25B
688.1

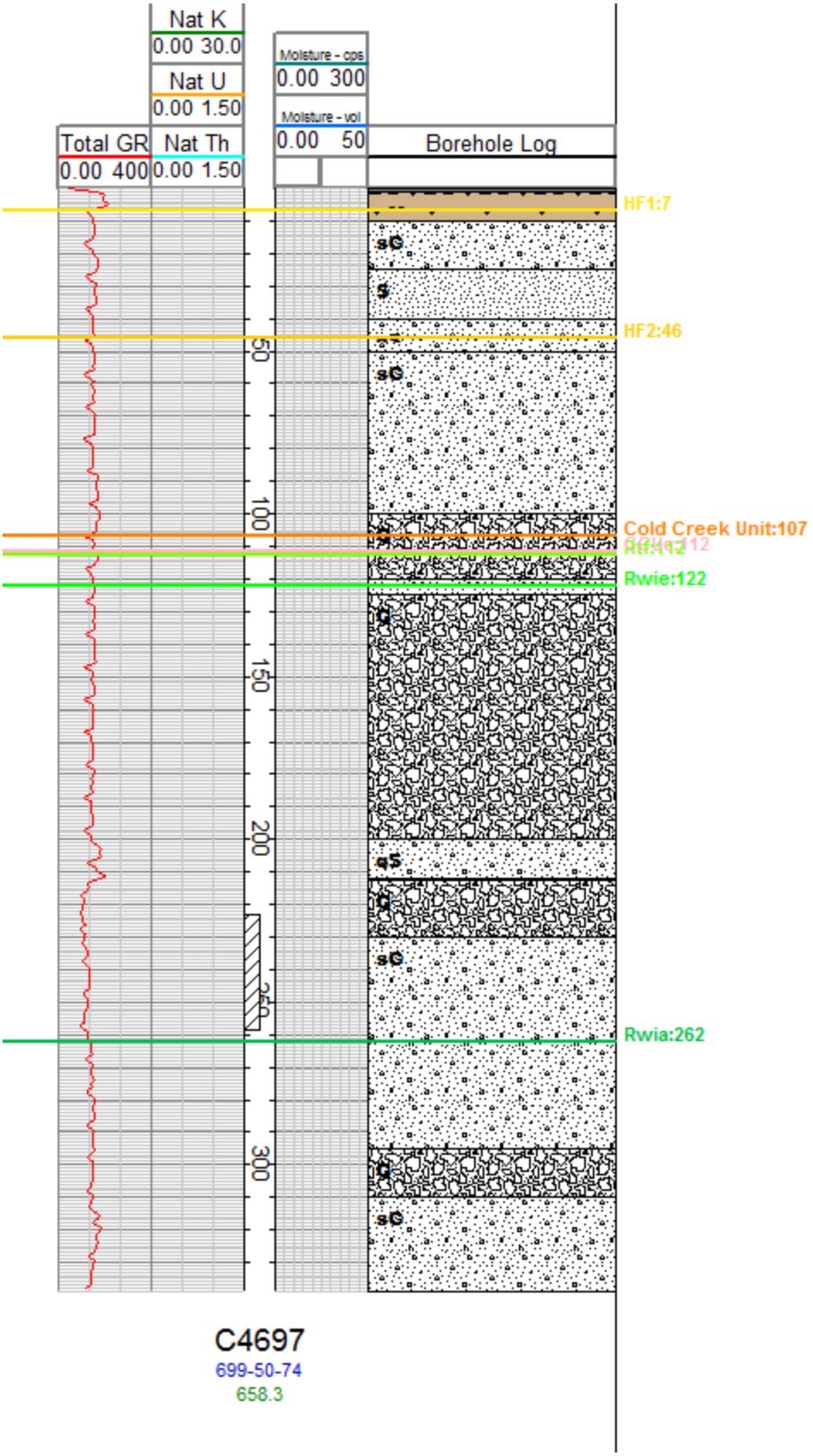

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:8
qS
HF2:29
S
(m)S
HF3:84
sG
G
Cold Creek Unit:135
Rtf:150
S
Rwie:170
G
sG
50
100
150
200
250
C4683
299-W15-83
GL 685.5

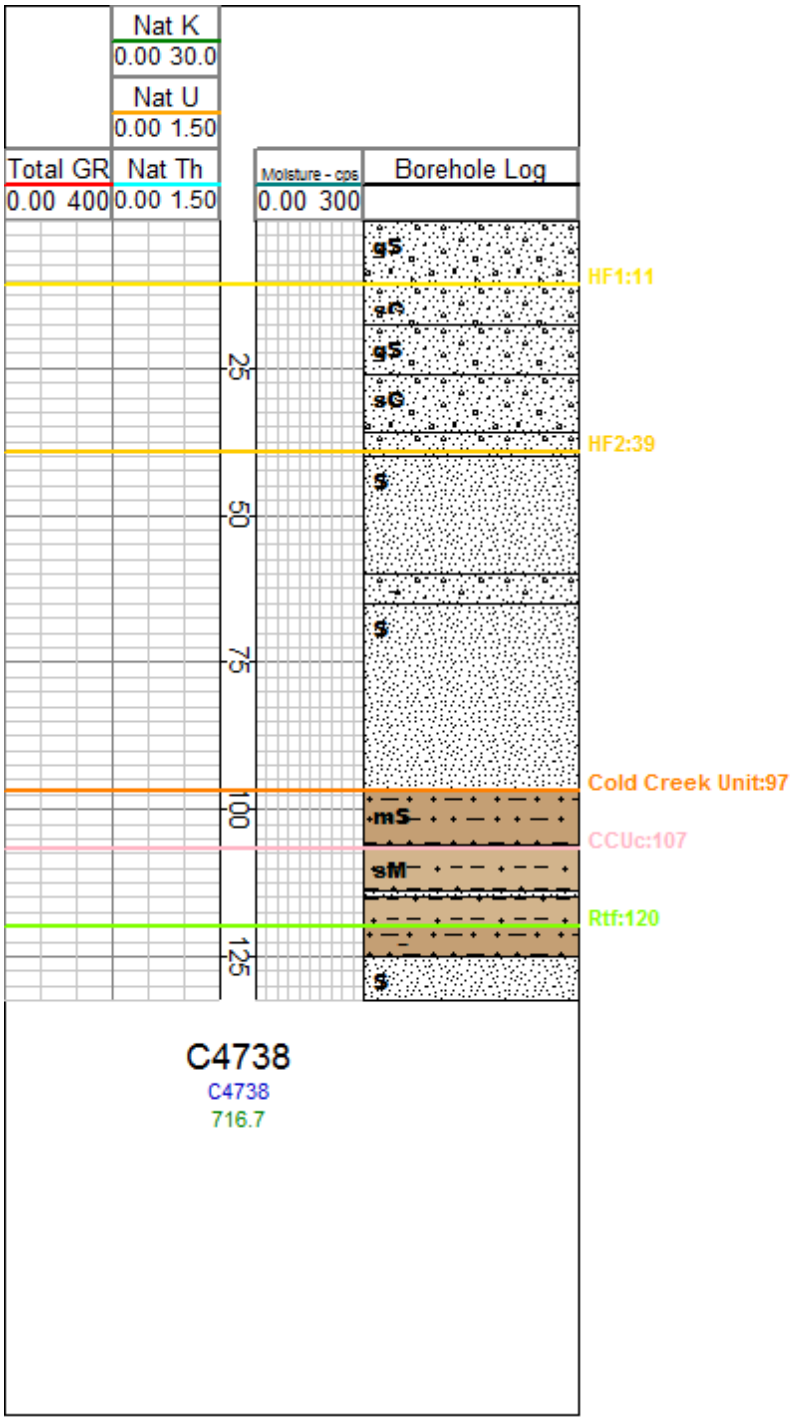

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:11
HF2:40
HF3:95
Cold Creek Unit:135
Rtf:150
Rwie:175
50
100
150
200
250
C4684
299-W15-94
GL 687.0


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:9
HF2:43
HF3:119
Cold Creek Unit:130
CCUc:140
Rtf:147
Rwie:176
50
100
150
200
250
300
350
Sandy Gr...
Silty San...
C4685
299-W15-152
GL 687.0

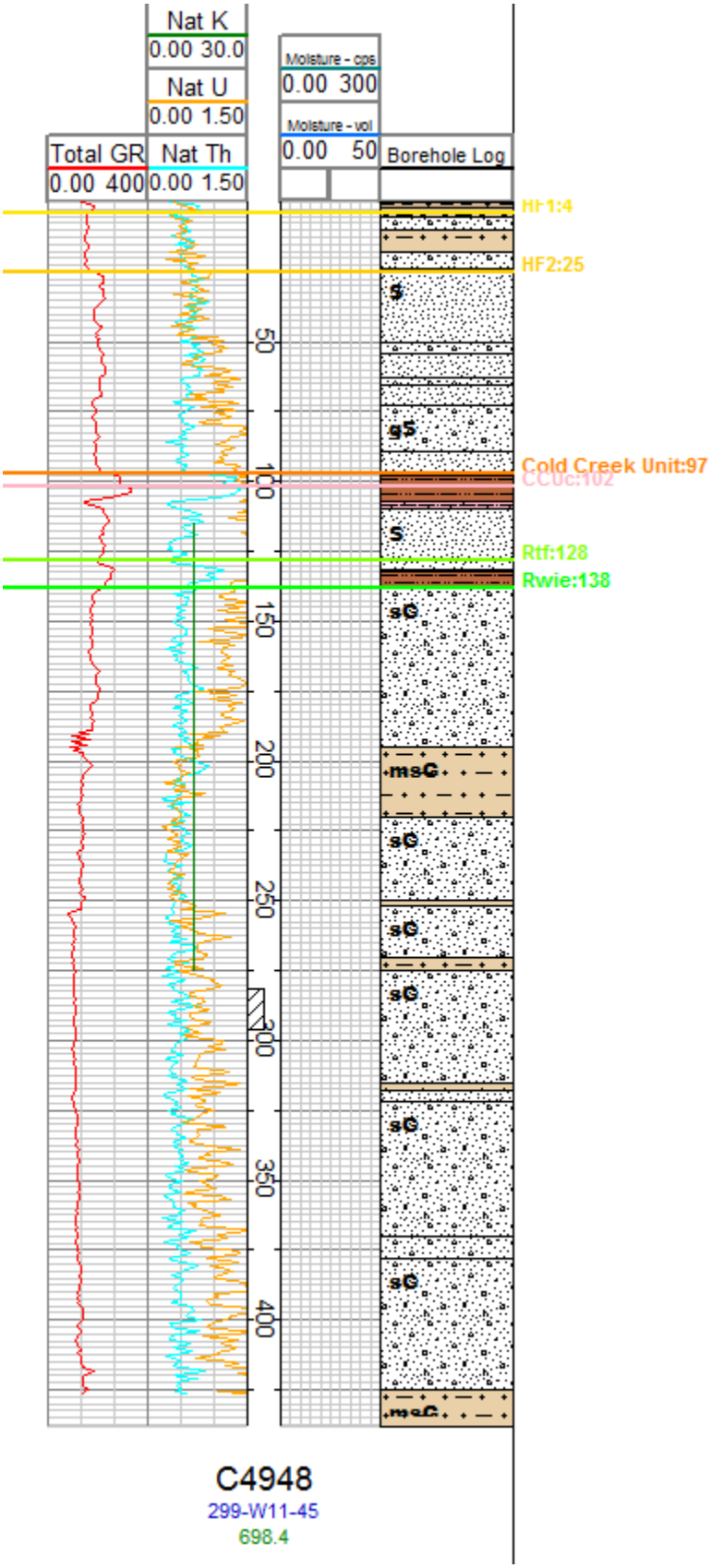

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:27
Cold Creek Unit:94
Rtf:109
Rwie:122
50
100
150
200
250
300
350
400
C4694
299-W11-43
711.0
50 ft

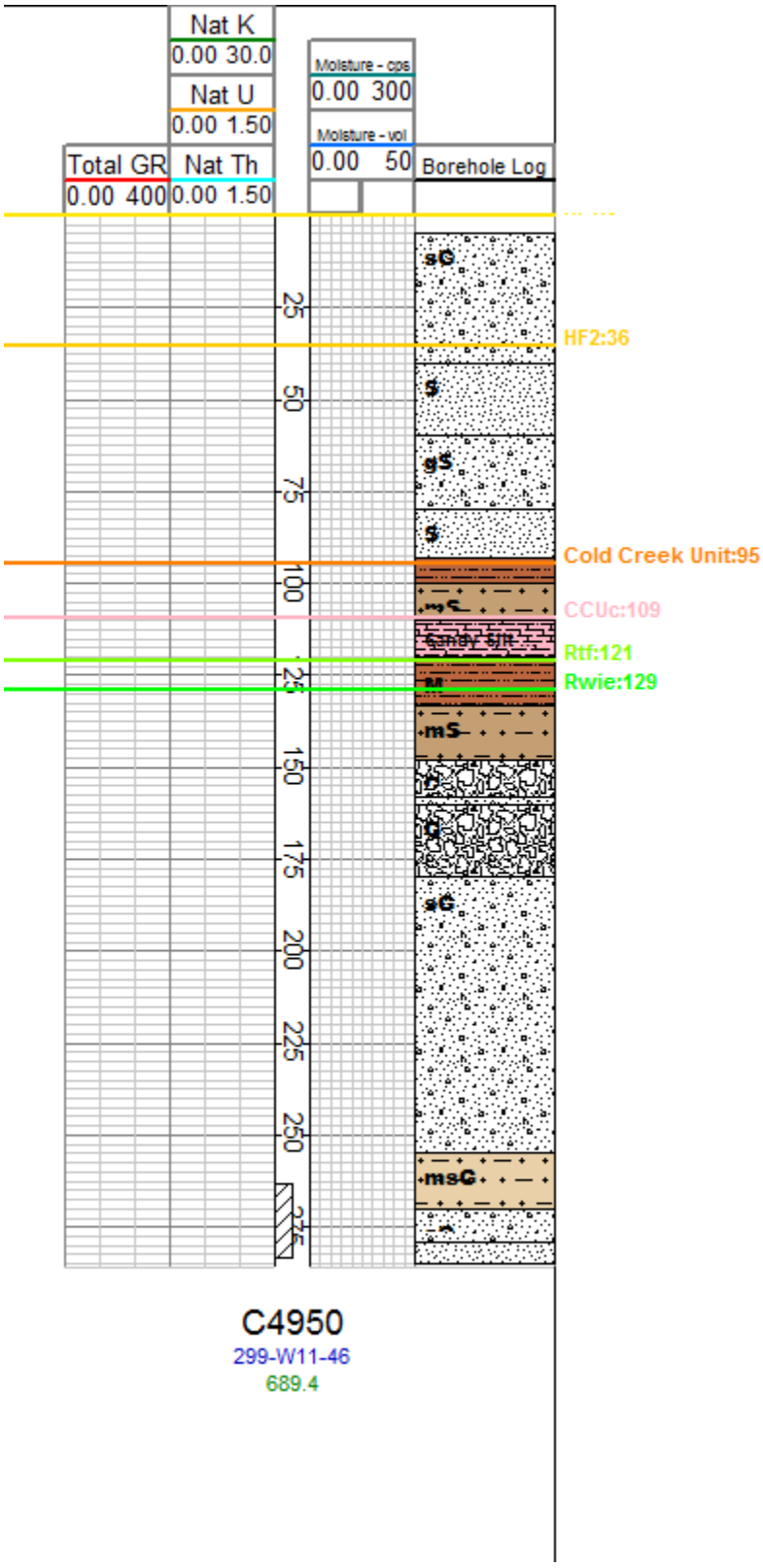

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
300
350
HF2:63
Cold Creek Unit:160
CCUc:181
Rtf:199
Rwie:256
C4695
299-W19-49
GL 700.2


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:7
HF2:46
Cold Creek Unit:107
Rif:112
Rwie:122
Rwia:262
50
100
150
200
250
300
sG
S
G
qS
C4697
699-50-74
658.3

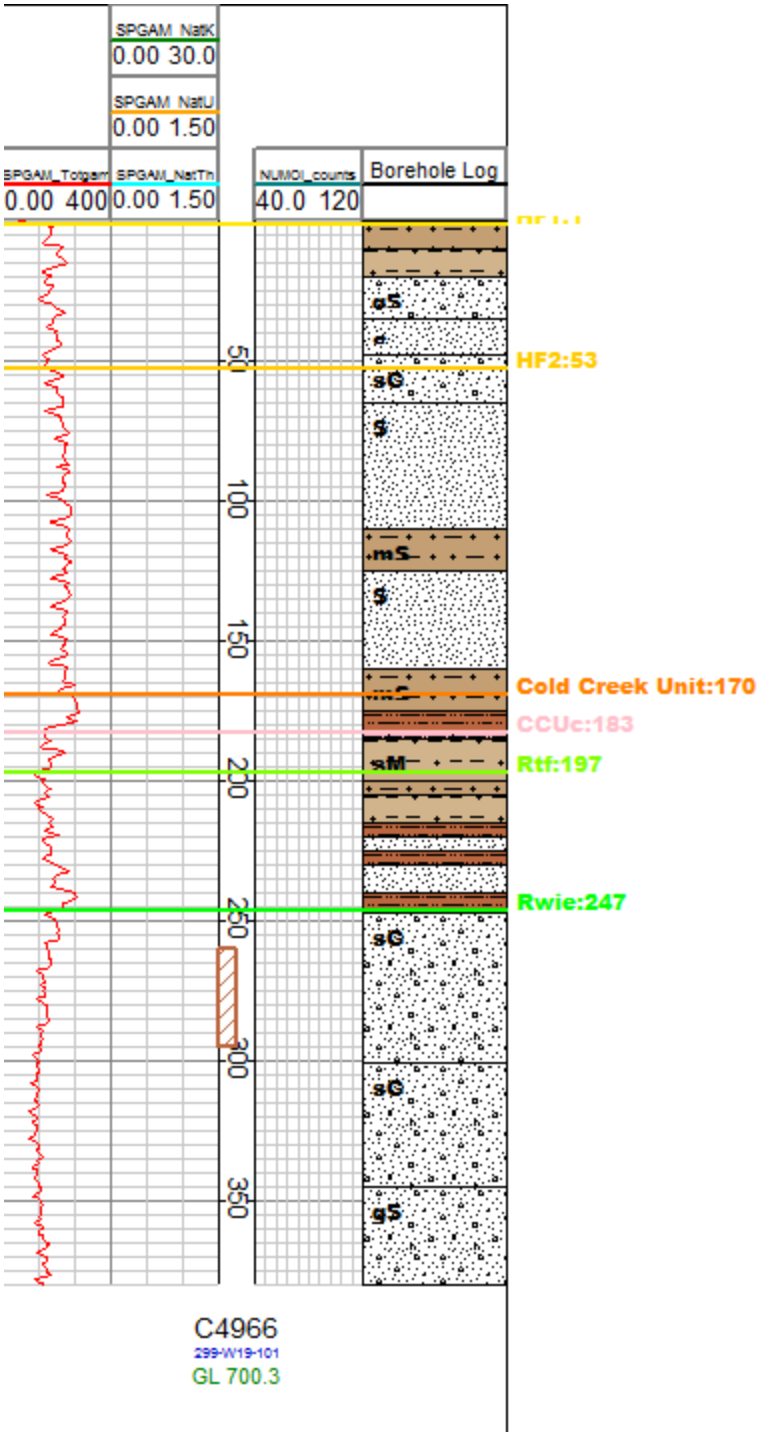

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
gS
sG
gS
sG
S
S
mS
sM
S
HF1:11
HF2:39
Cold Creek Unit:97
CCUc:107
Rtf:120
25
50
75
100
125
C4738
C4738
716.7

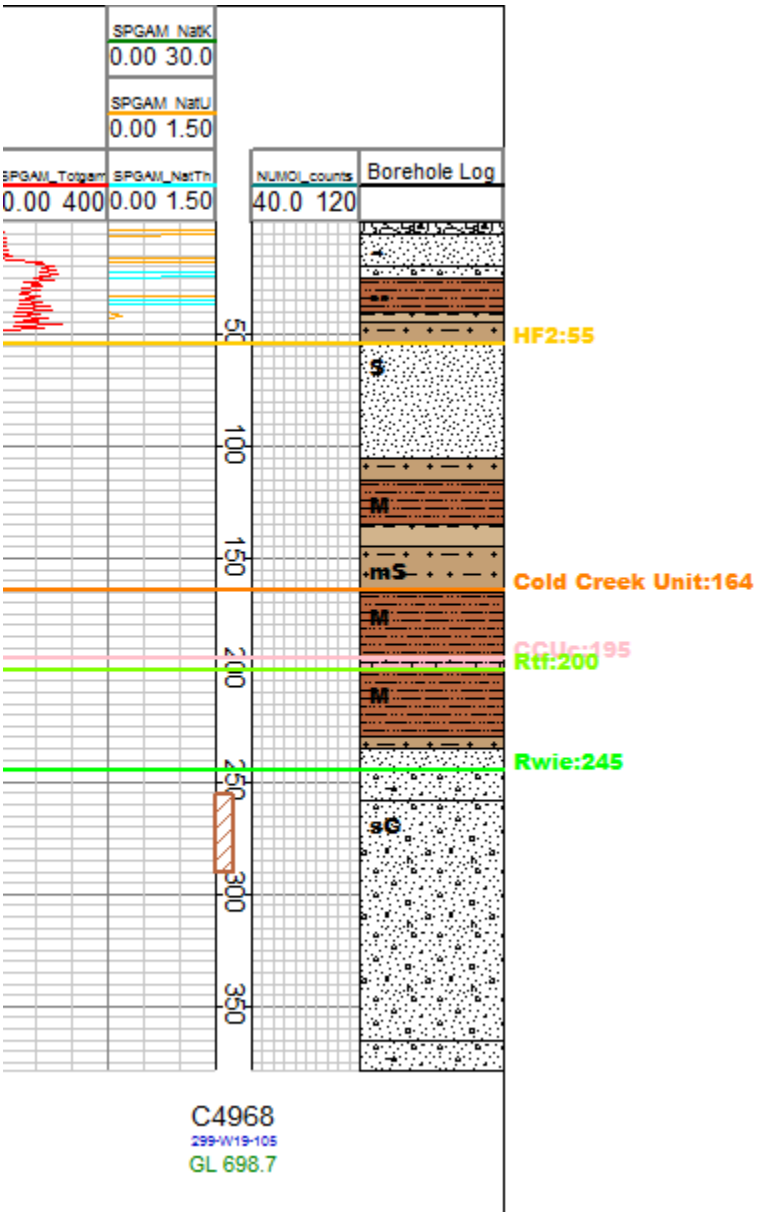
20 ft

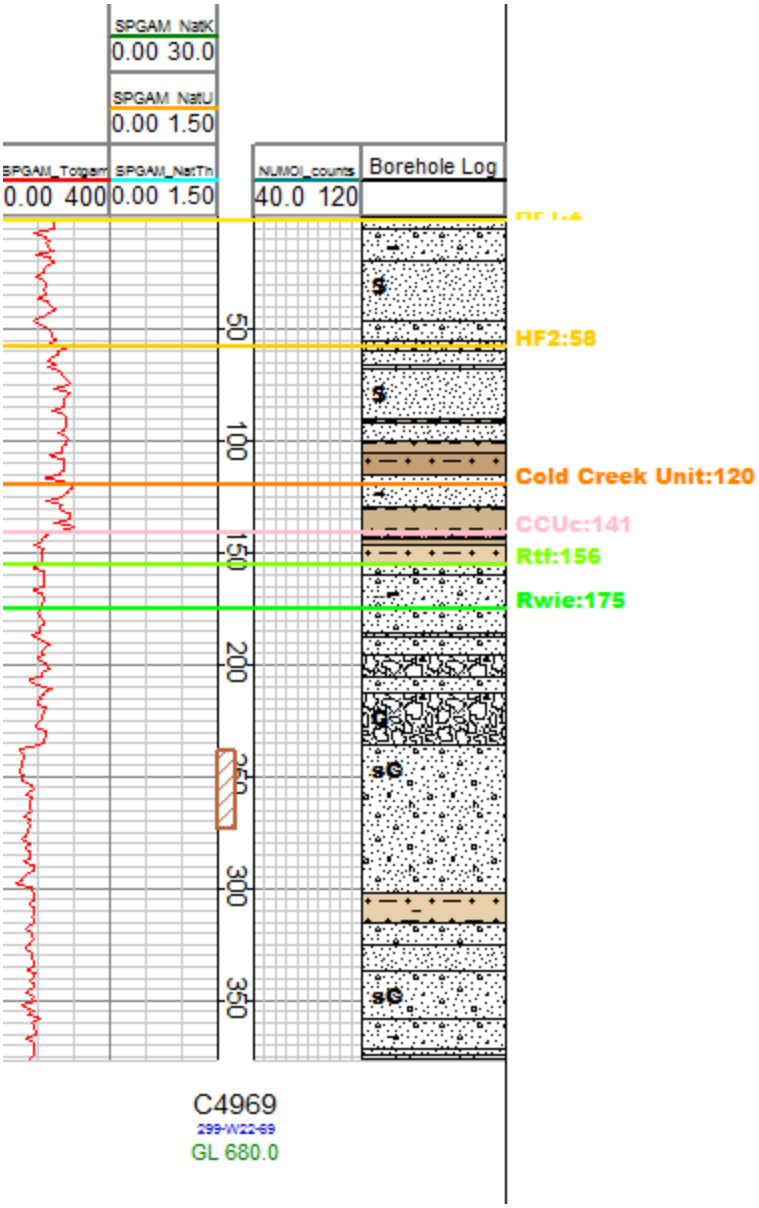

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:4
HF2:25
Cold Creek Unit:97
CCUc:102
Rtf:128
Rwie:138
50
100
150
200
250
300
350
400
C4948
299-W11-45
698.4

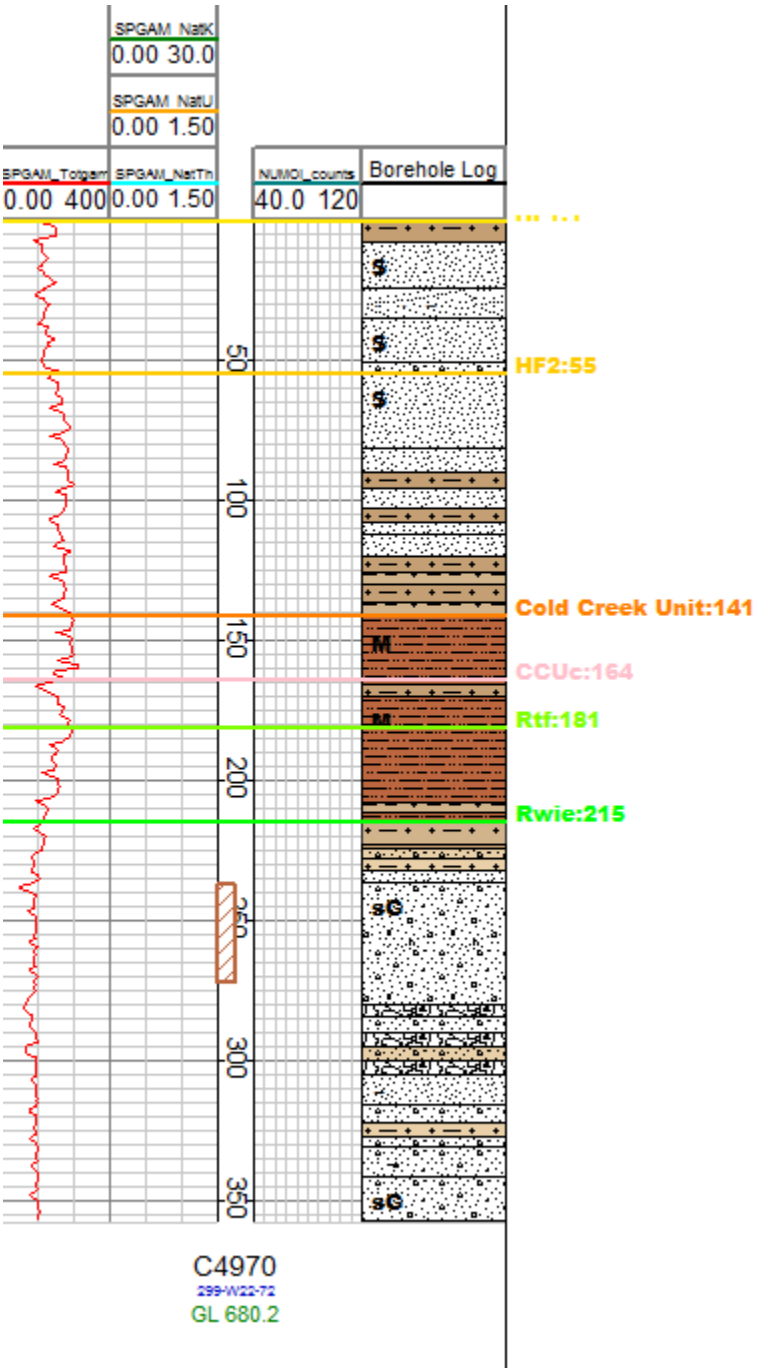


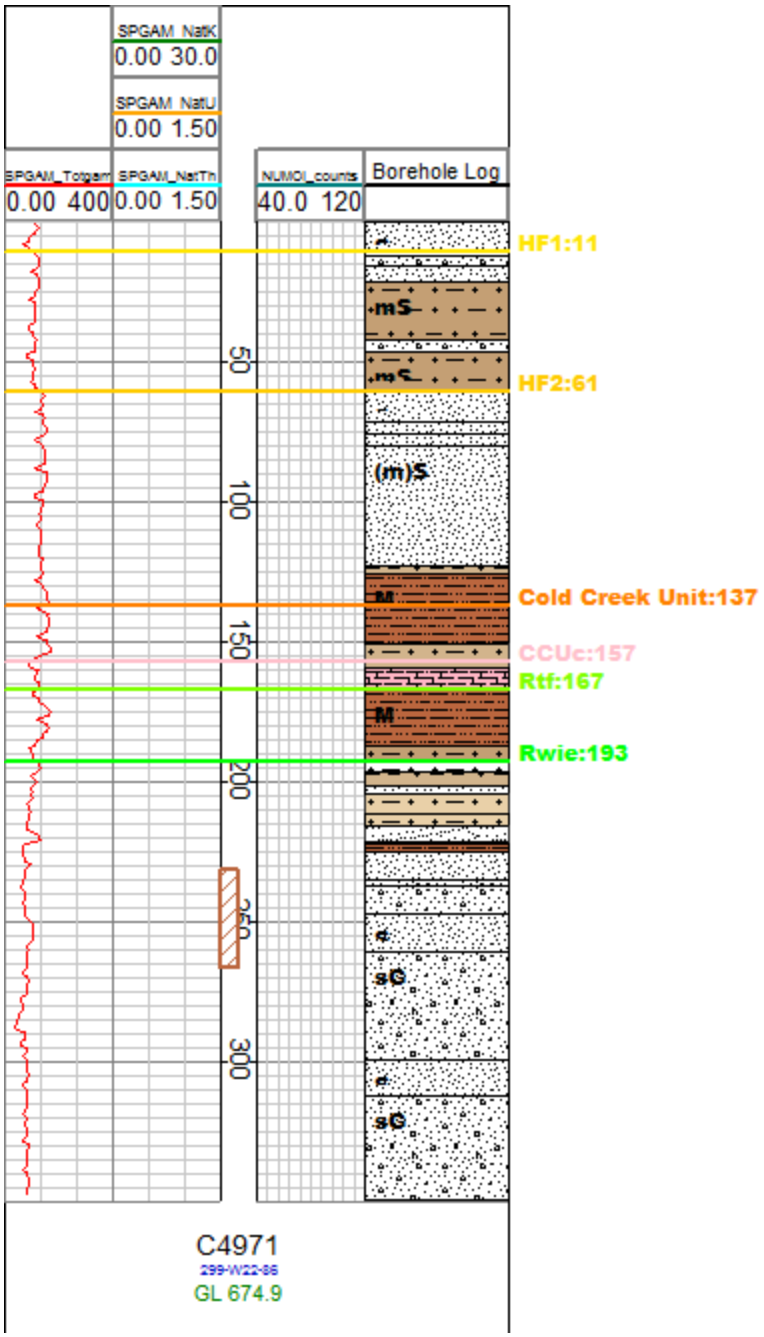
C4950
299-W11-46
689.4

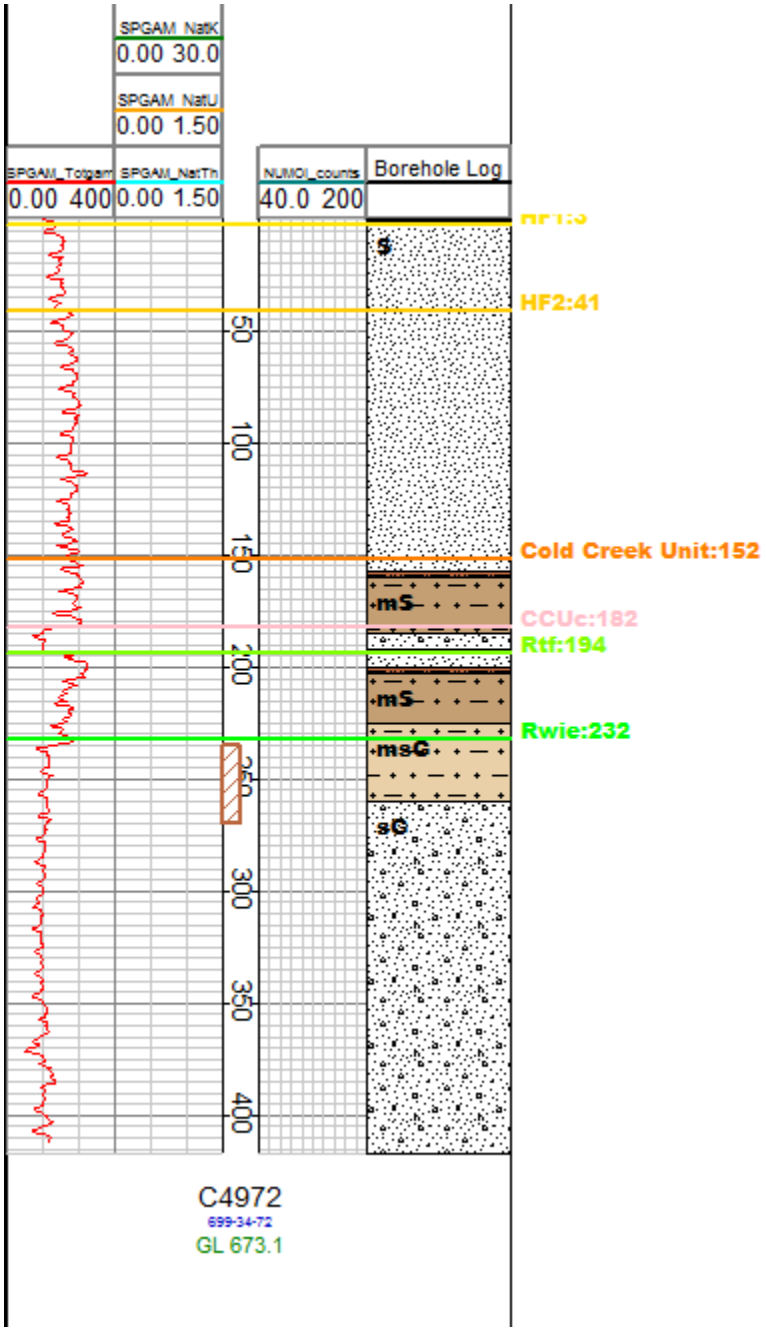

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:53
Cold Creek Unit:170
CCUc:183
Rtf:197
Rwie:247
50
100
150
200
250
300
350
C4966
299-W19-101
GL 700.3

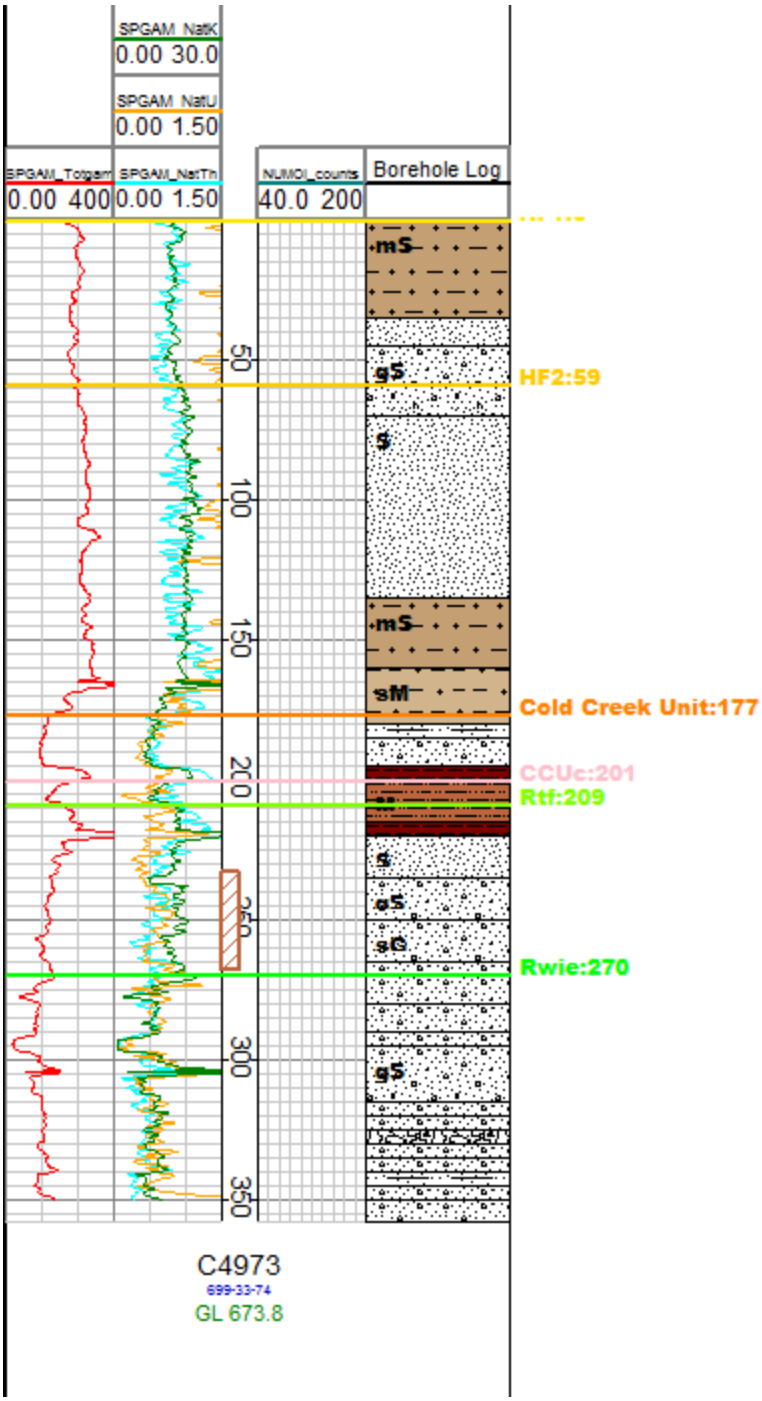

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
300
350
HF2:55
Cold Creek Unit:164
CCUc:195
Rtf:200
Rwie:245
S
M
mS
M
M
sG
C4968
299-W19-105
GL 698.7

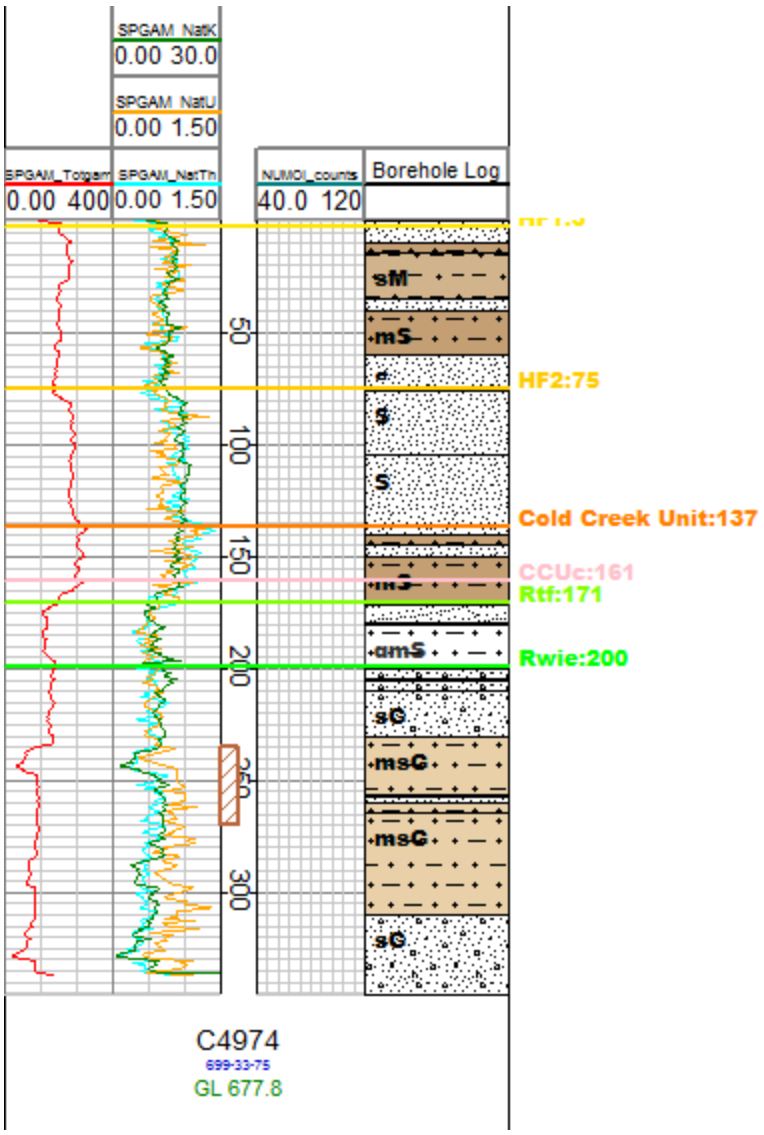

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:58
Cold Creek Unit:120
CCUc:141
Rtf:156
Rwie:175
50
100
150
200
250
300
350
C4969
299-W22-69
GL 680.0

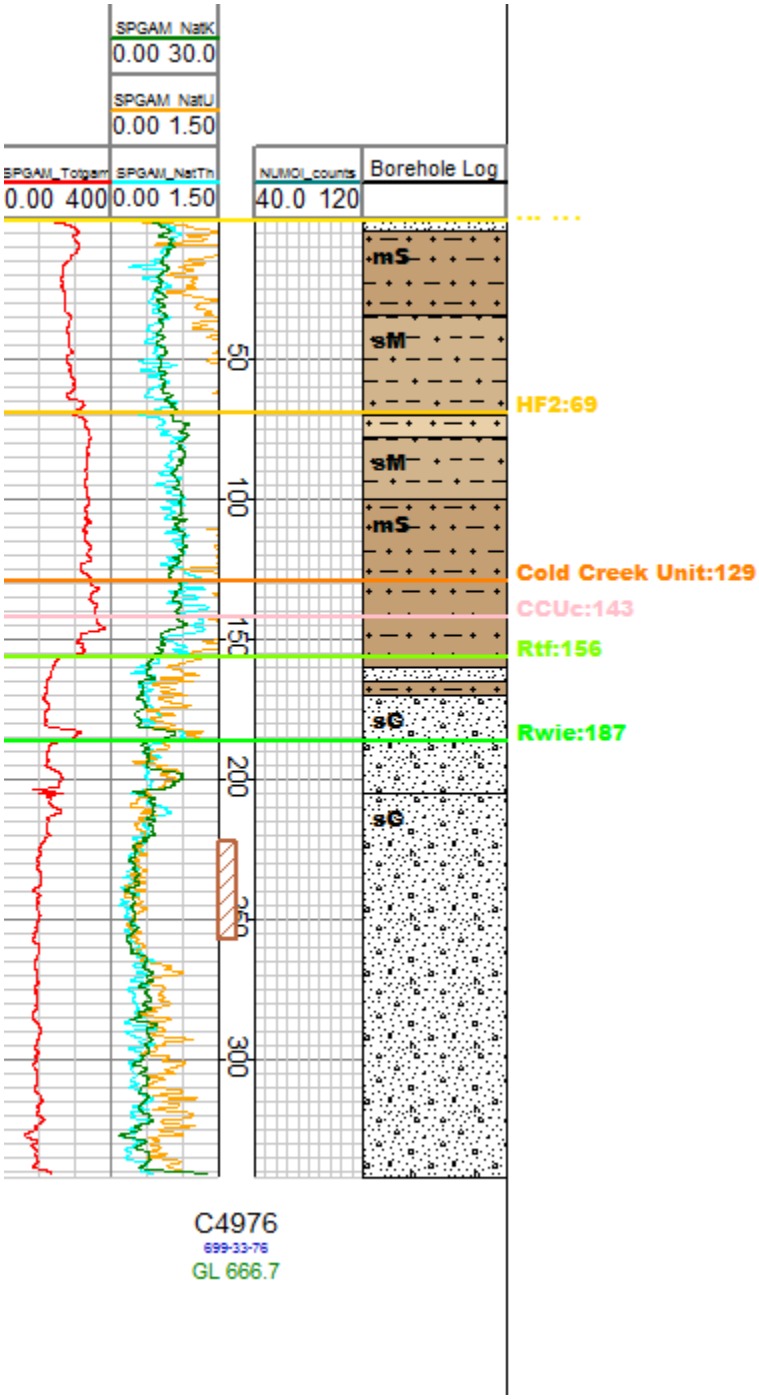

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 120
Borehole Log
50
100
150
200
250
300
350
HF2:55
Cold Creek Unit:141
CCUc:164
Rtf:181
Rwie:215
C4970
299-W22-72
GL 680.2

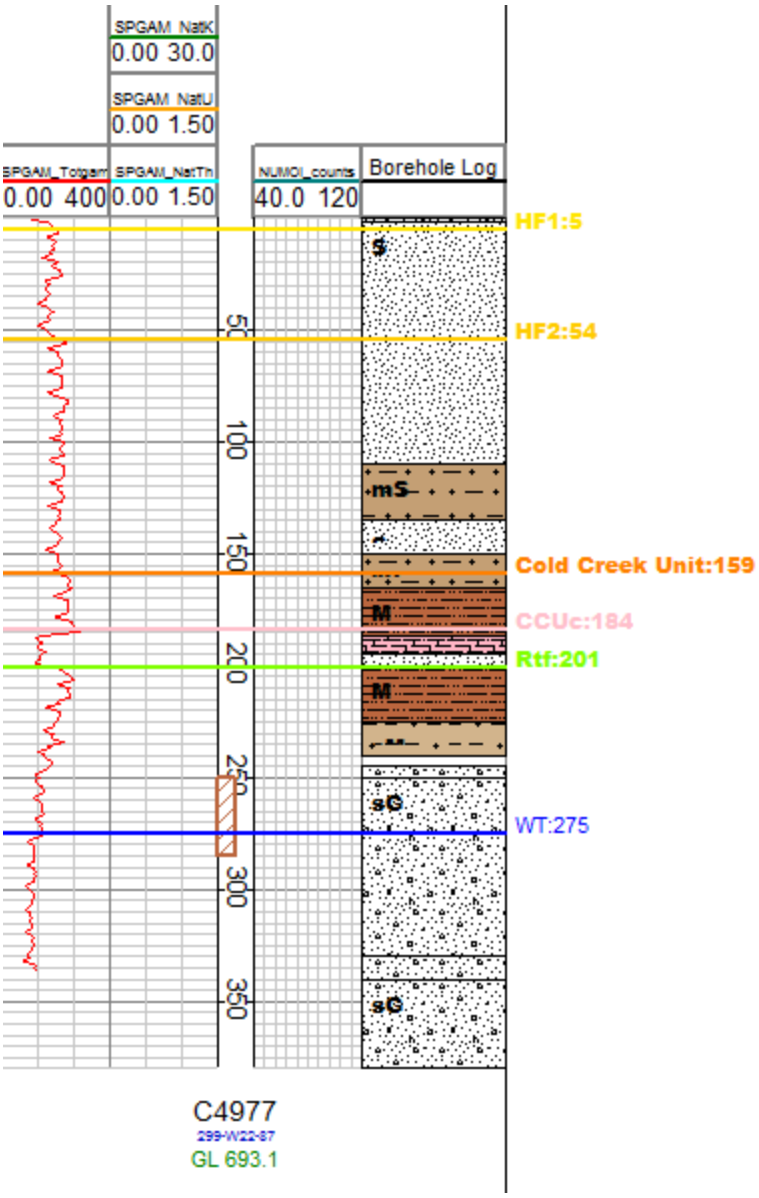

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:11
HF2:61
Cold Creek Unit:137
CCUc:157
Rtf:167
Rwie:193
50
100
150
200
250
300
C4971
299-W22-86
GL 674.9

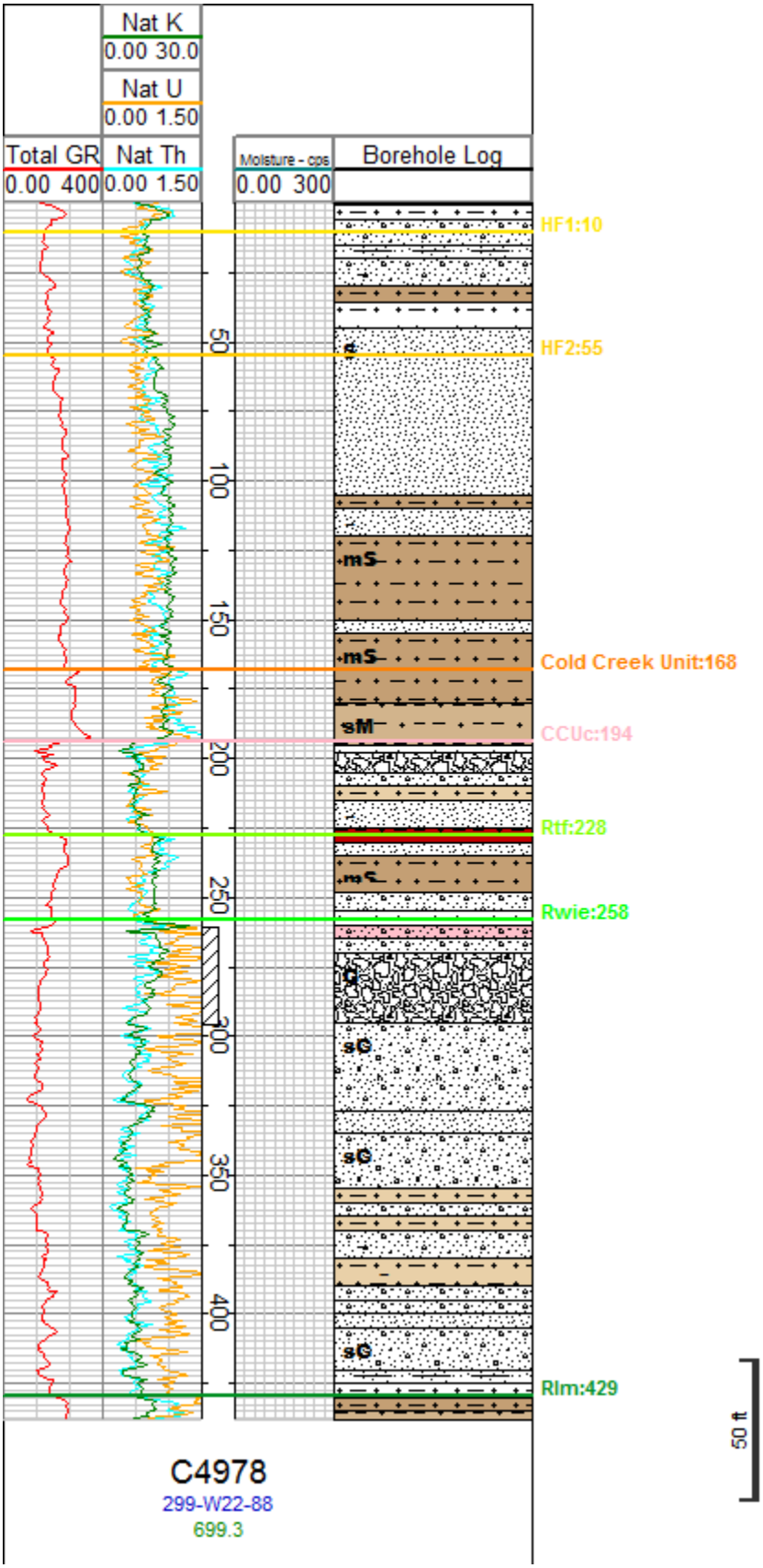

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:41
Cold Creek Unit:152
CCUc:182
Rtf:194
Rwie:232
S
mS
mS
msG
sG
50
100
150
200
250
300
350
400
C4972
699-34-72
GL 673.1

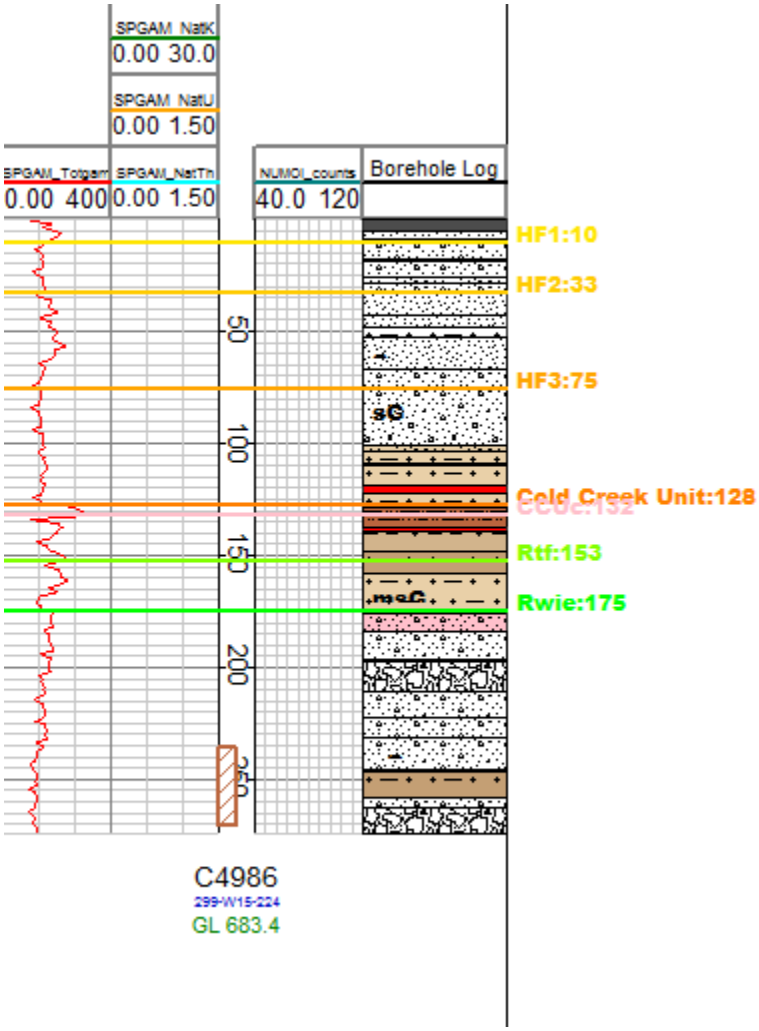

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
50
100
150
200
250
300
350
mS
gS
S
mS
sM
S
oS
sG
gS
HF2:59
Cold Creek Unit:177
CCUc:201
Rtf:209
Rwie:270
C4973
699-33-74
GL 673.8

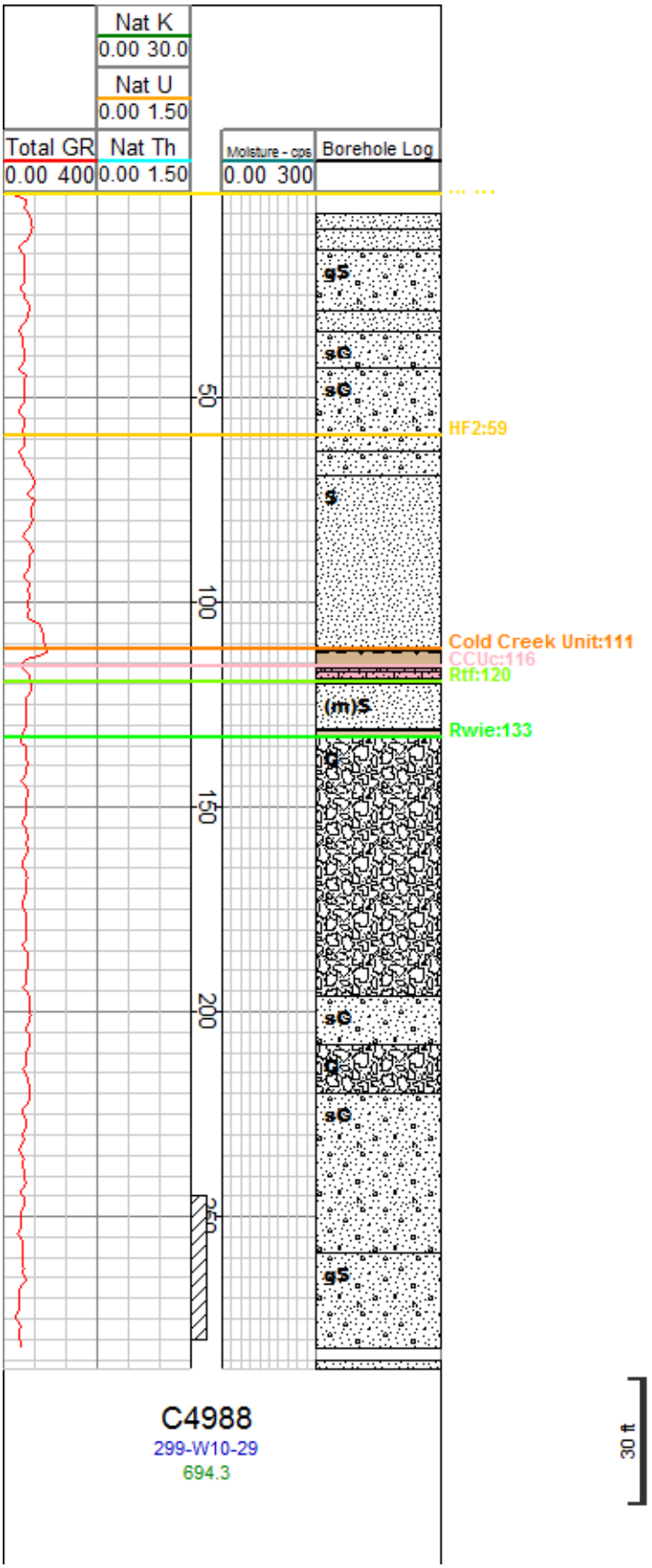

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
300
sM
mS
HF2:75
S
S
Cold Creek Unit:137
CCUc:161
Rtf:171
amS
Rwie:200
sG
msG
msG
sG
C4974
699-33-75
GL 677.8

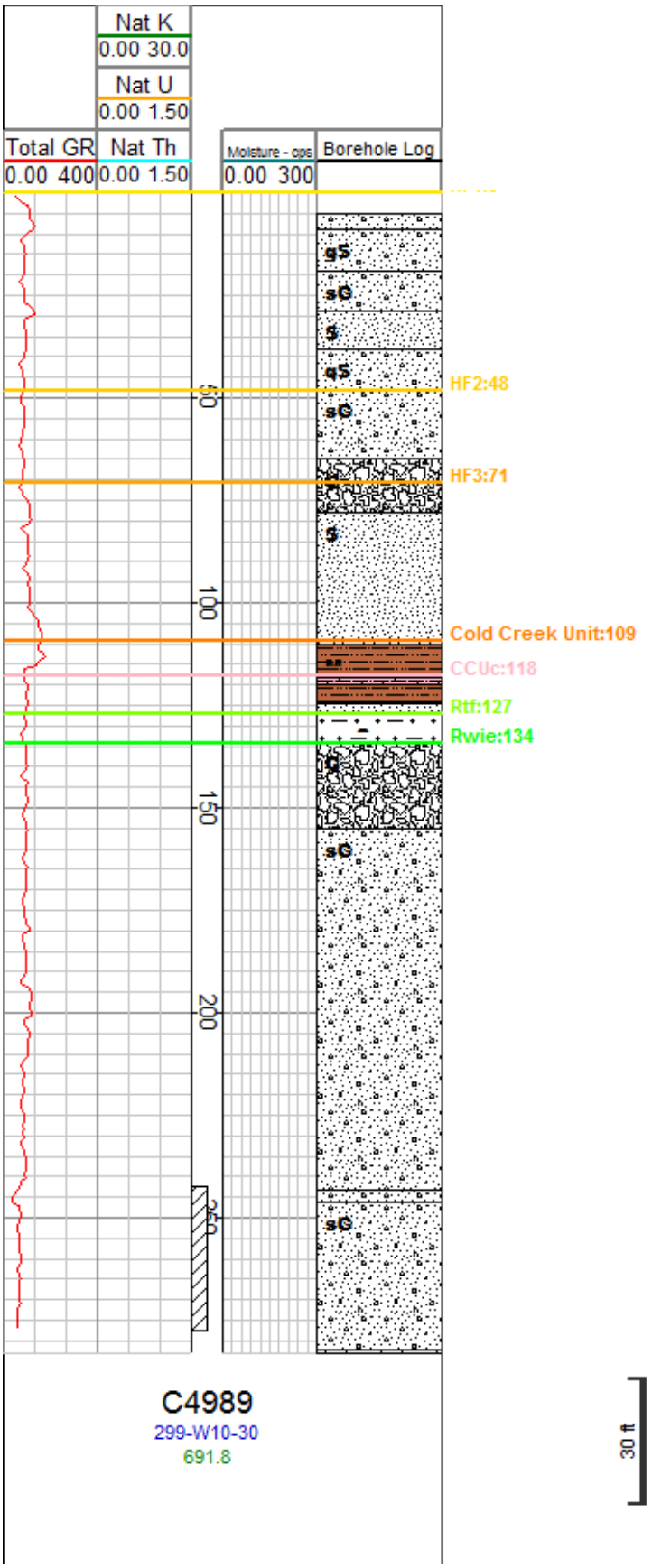

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
mS
sM
HF2:69
sM
mS
Cold Creek Unit:129
CCUc:143
Rtf:156
sG
Rwie:187
sG
50
100
150
200
250
300
C4976
699-33-76
GL 666.7

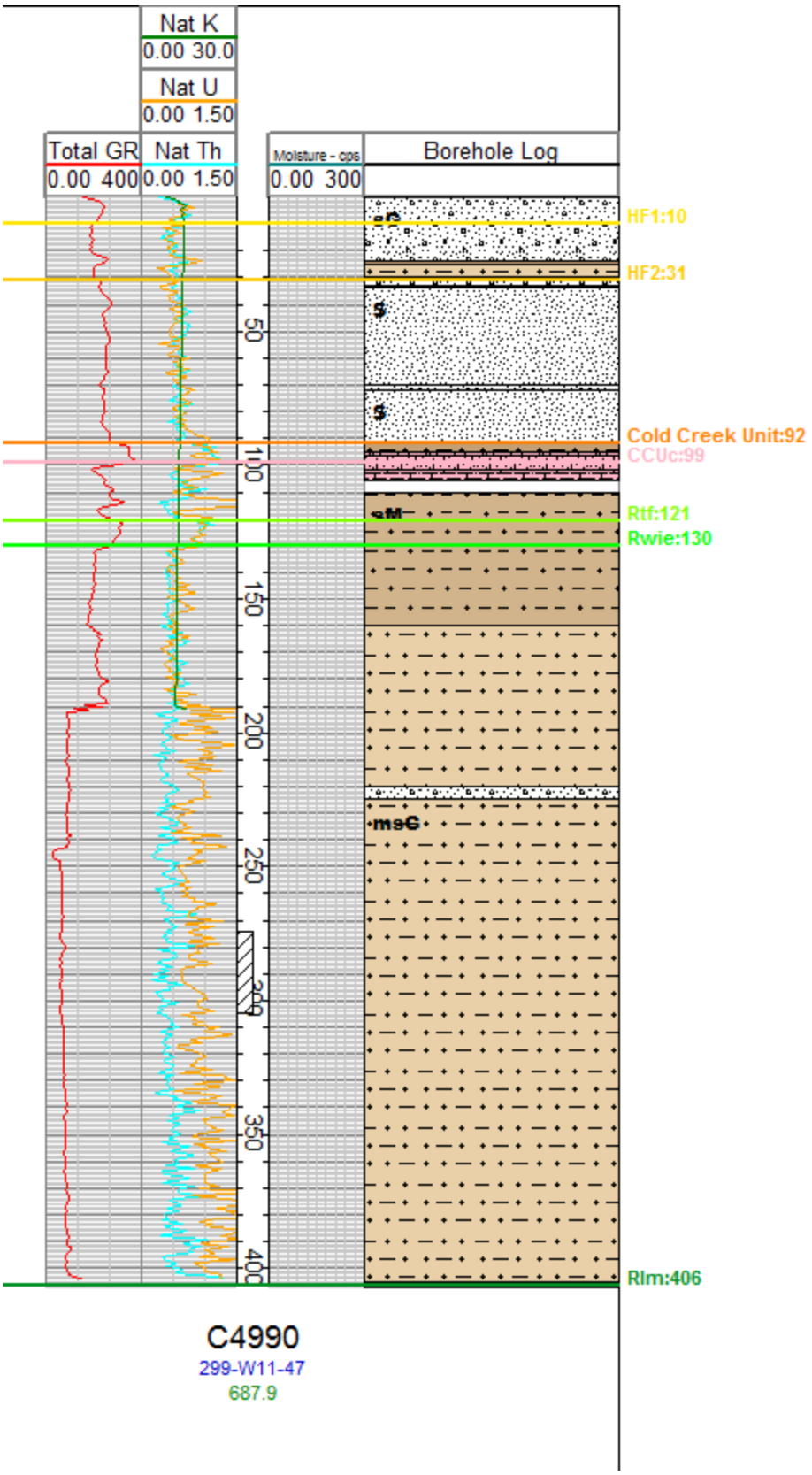

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:5
HF2:54
Cold Creek Unit:159
CCUc:184
Rtf:201
WT:275
50
100
150
200
250
300
350
C4977
299-W22-87
GL 693.1

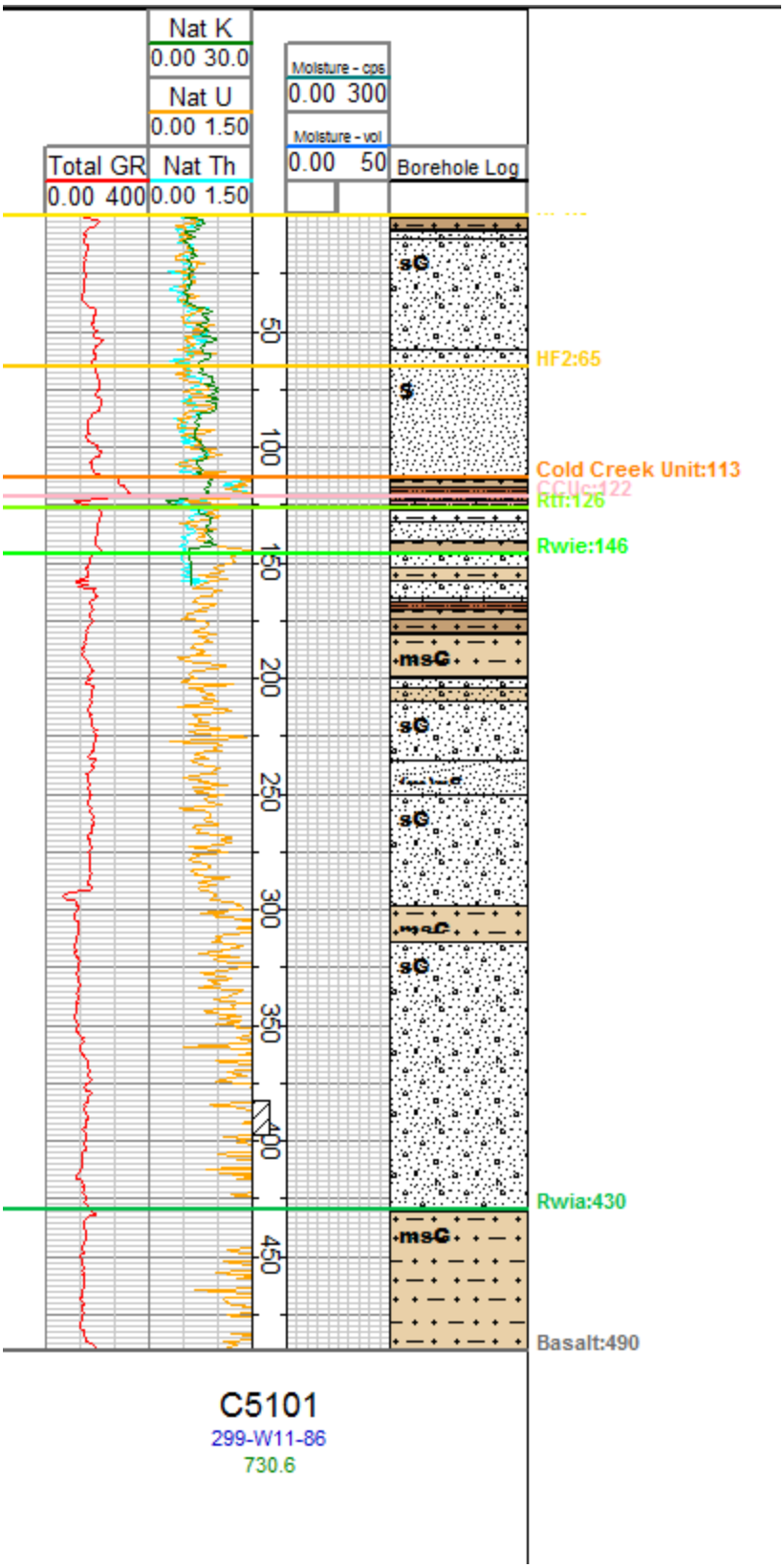

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:10
HF2:55
Cold Creek Unit:168
CCUc:194
Rtf:228
Rwie:258
Rlm:429
50
100
150
200
250
300
350
400
mS
sM
sG
C4978
299-W22-88
699.3
50 ft


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:10
HF2:33
HF3:75
Cold Creek Unit:128
Rtf:153
Rwie:175
50
100
150
200
250
C4986
299-W15-224
GL 683.4

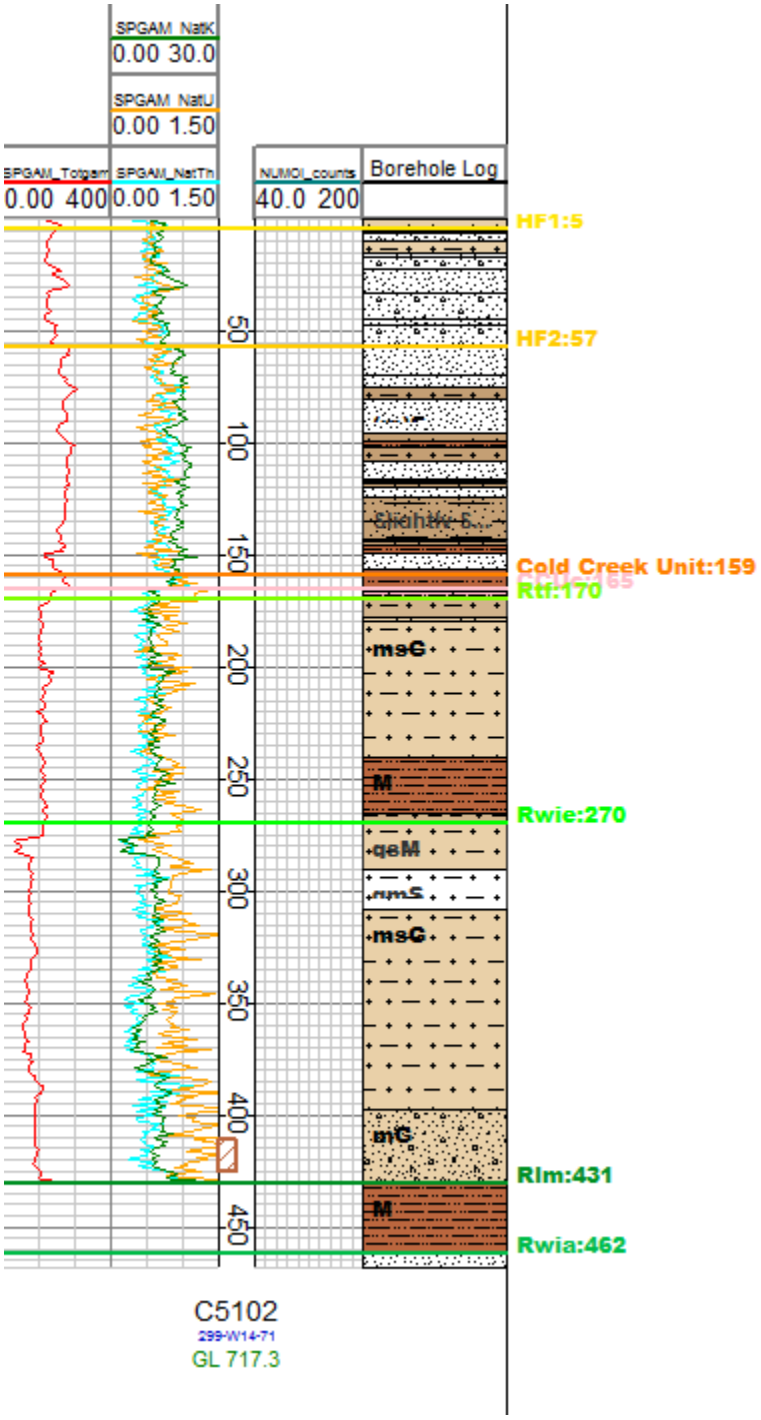

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
gS
sG
sG
S
(m)S
G
sG
G
sG
gS
HF2:59
Cold Creek Unit:111
CCUc:116
Rtf:120
Rwie:133
C4988
299-W10-29
694.3
30 ft

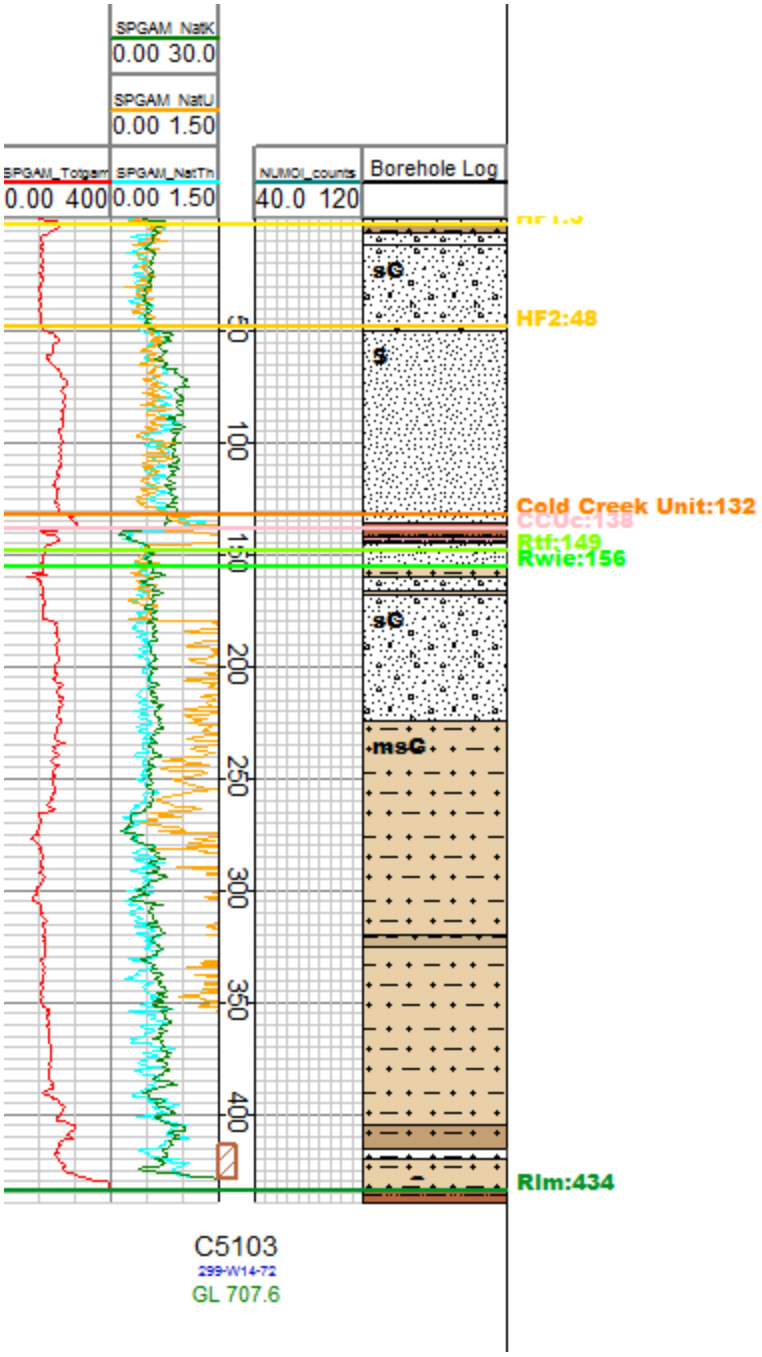

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
HF2:48
HF3:71
Cold Creek Unit:109
CCUc:118
Rtf:127
Rwie:134
C4989
299-W10-30
691.8
30 ft

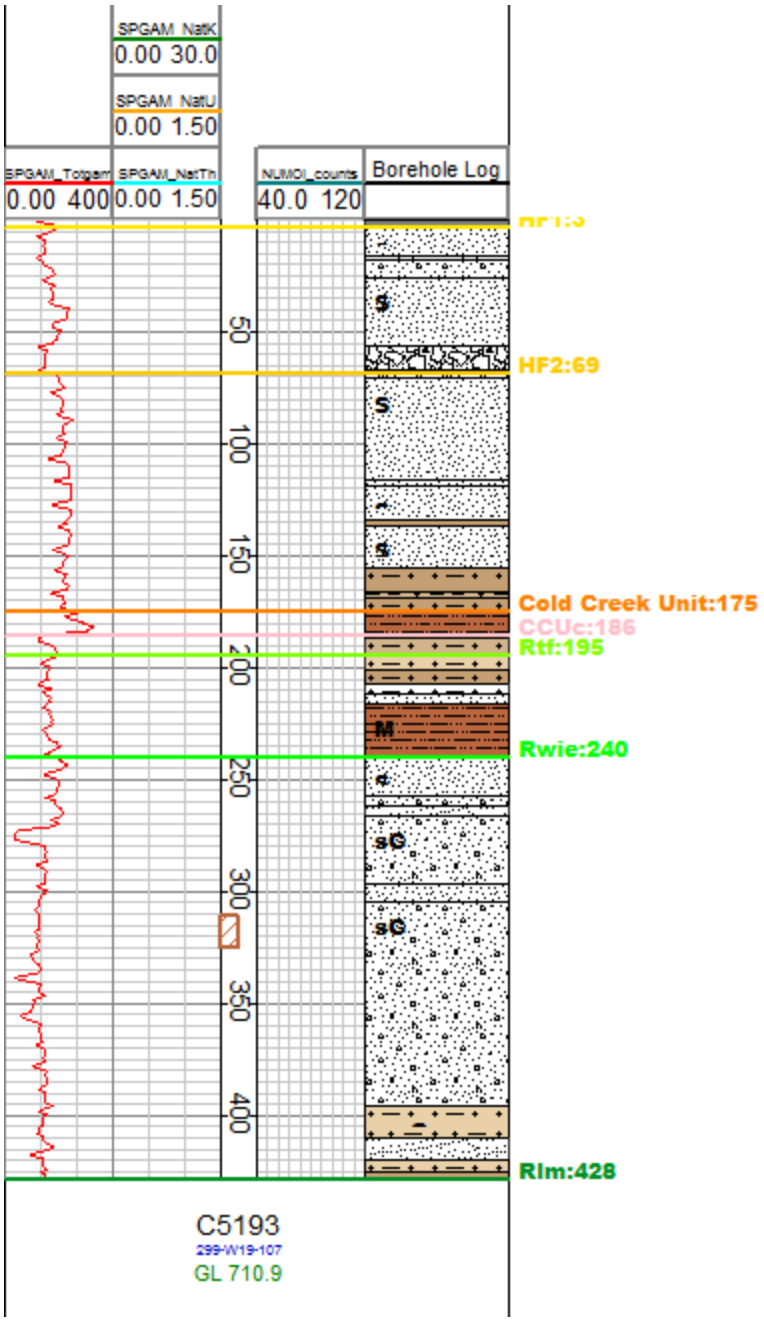

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:10
HF2:31
Cold Creek Unit:92
CCUc:99
Rtf:121
Rwie:130
Rlm:406
50
100
150
200
250
300
350
400
C4990
299-W11-47
687.9

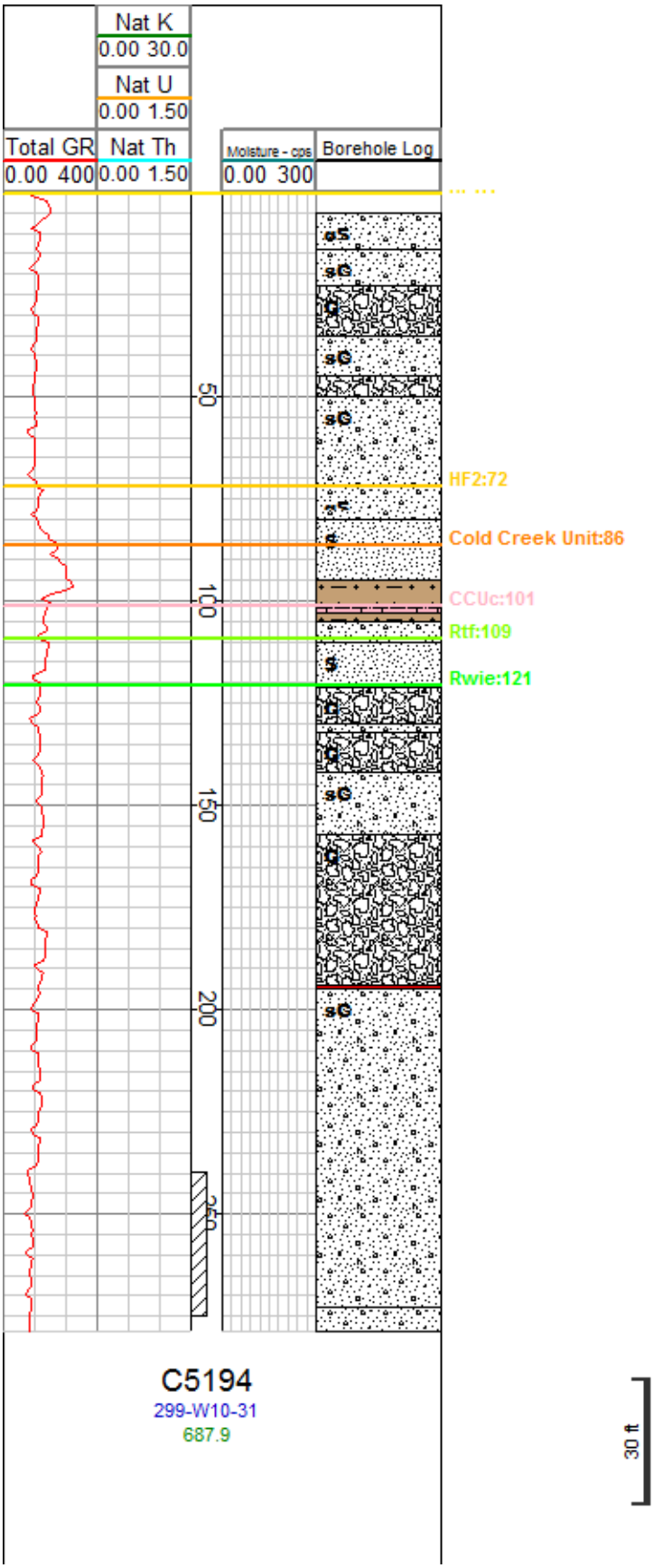


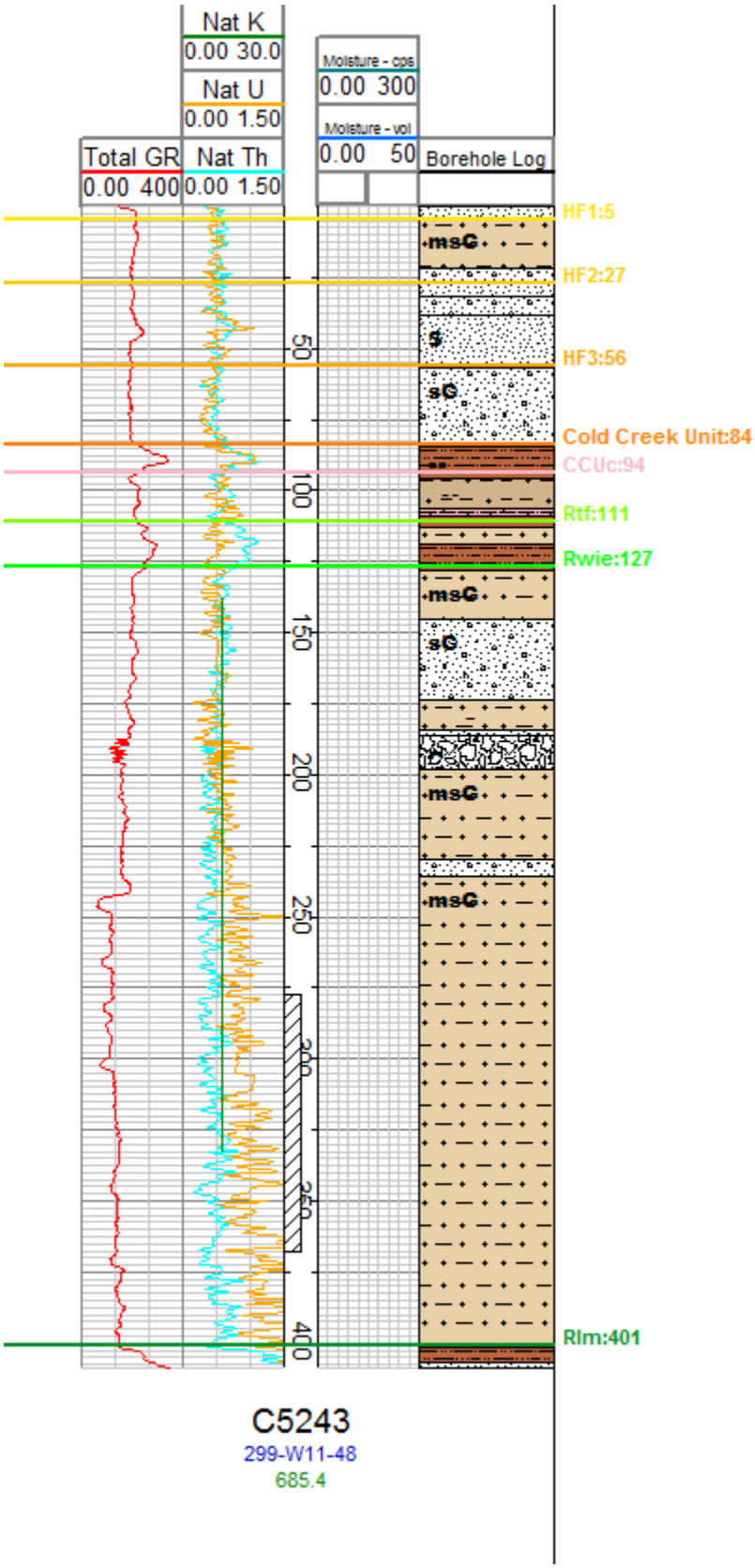
C5101
299-W11-86
730.6

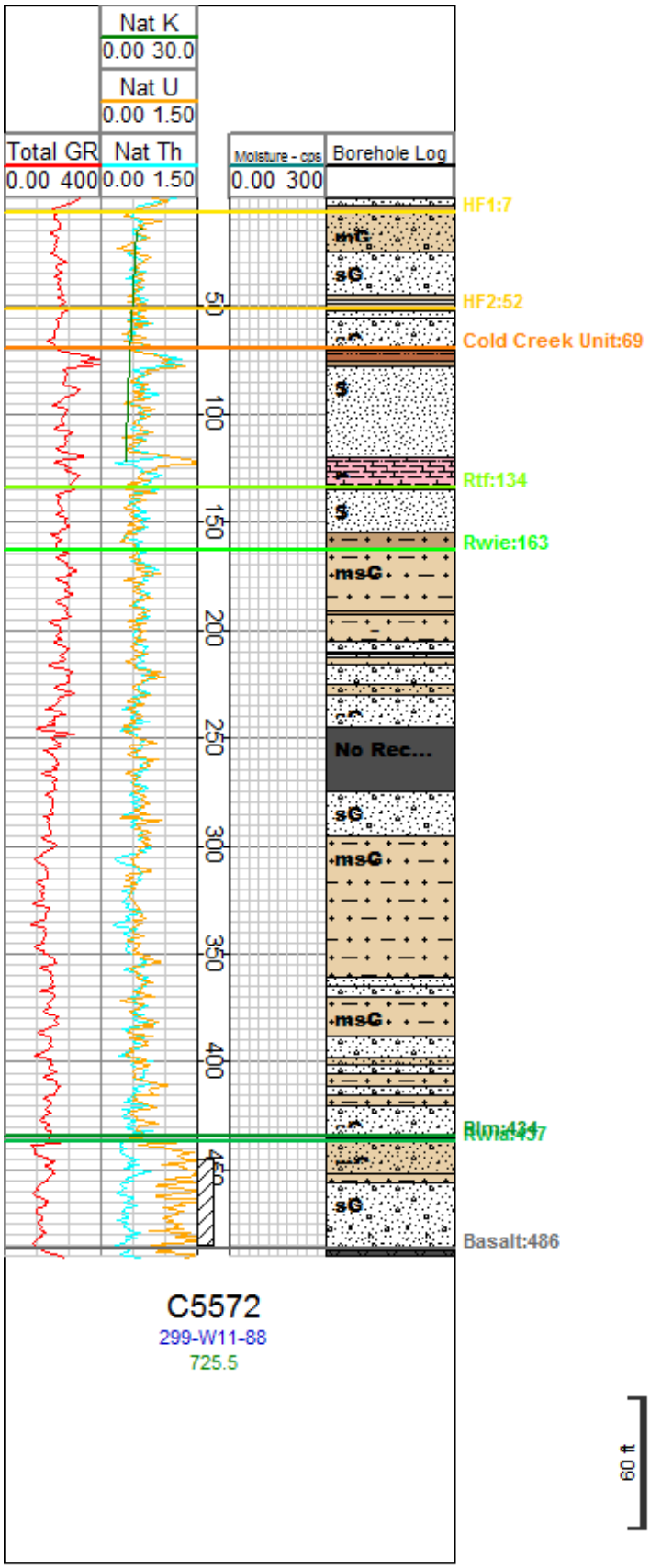

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:5
HF2:57
Cold Creek Unit:159
Rtf:170
msG
M
Rwie:270
qsM
msG
mG
Rlm:431
M
Rwia:462
50
100
150
200
250
300
350
400
450
C5102
299-W14-71
GL 717.3

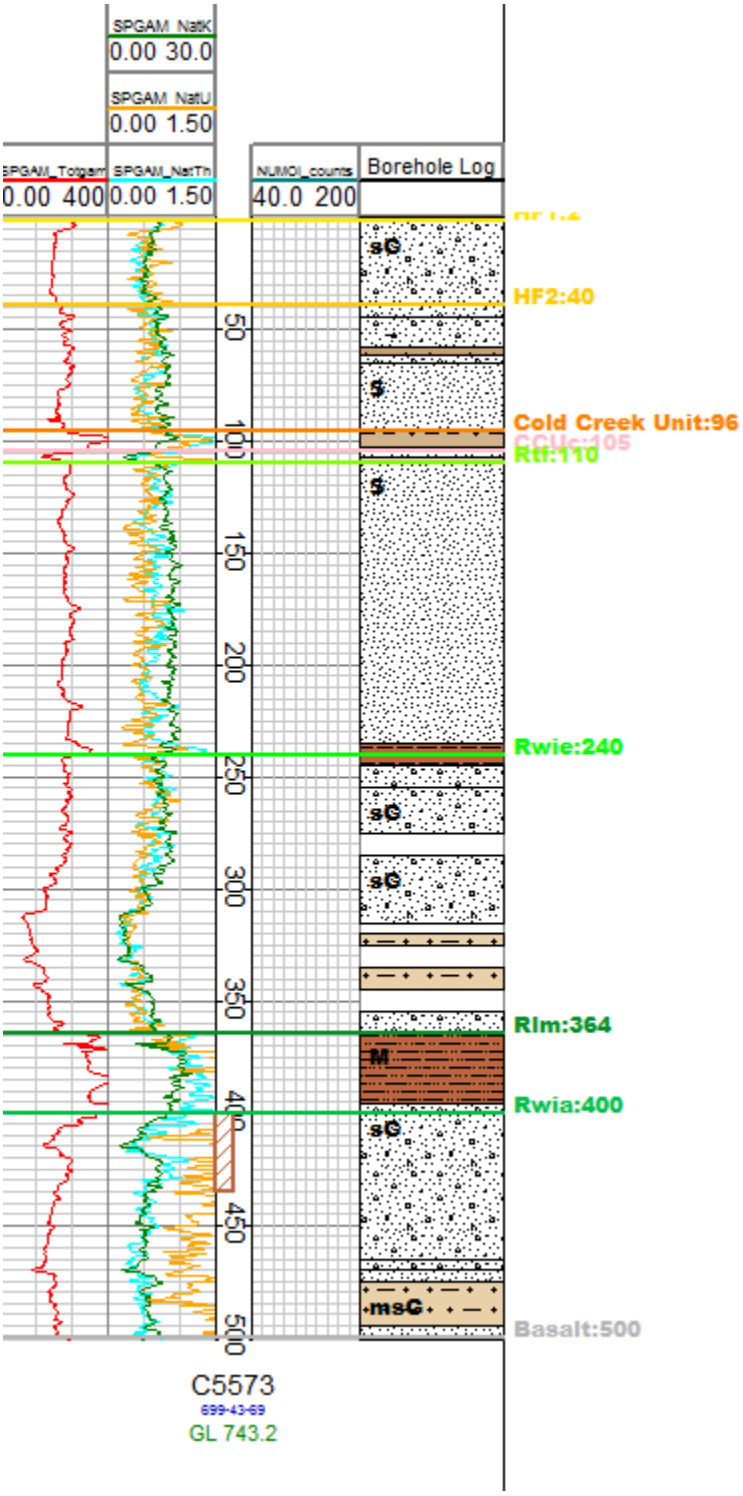

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:48
Cold Creek Unit:132
Rtf:149
Rwie:156
Rlm:434
sG
S
msG
50
100
150
200
250
300
350
400
C5103
299-W14-72
GL 707.6

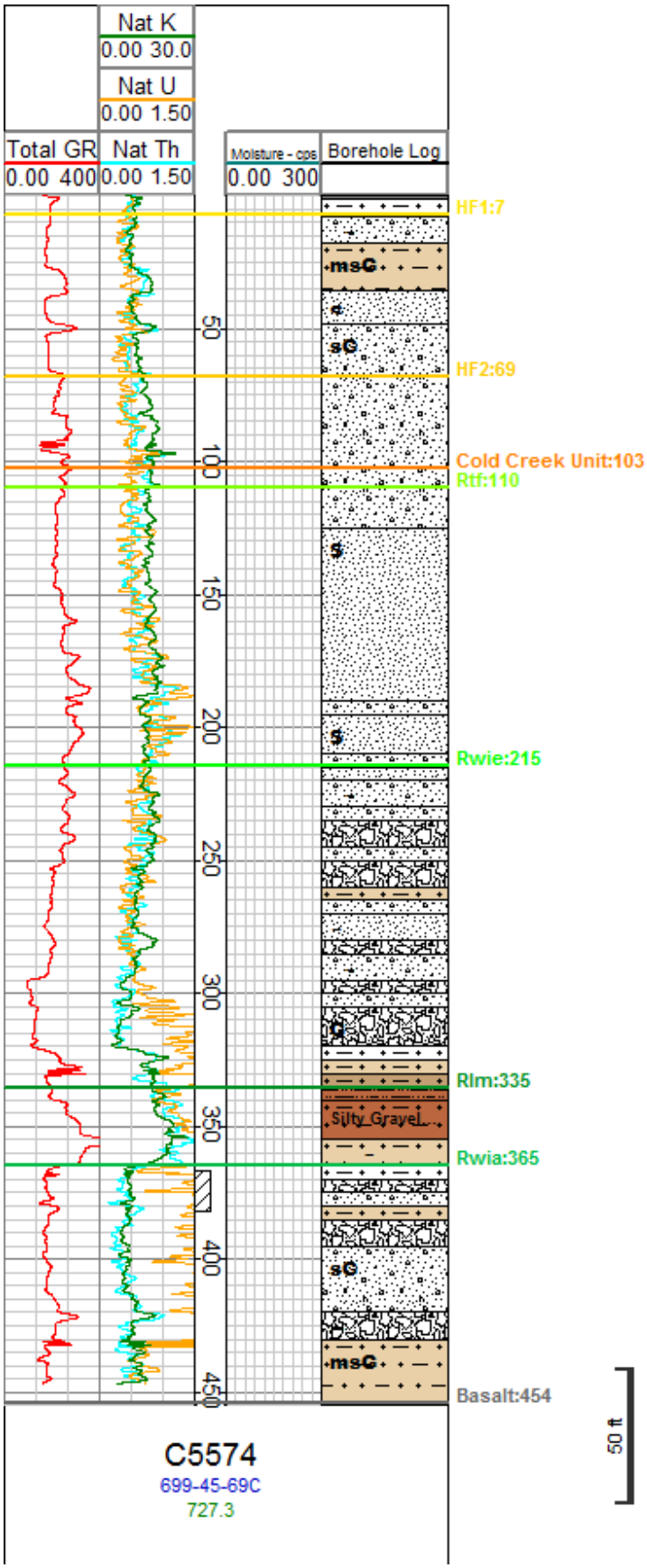

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:69
Cold Creek Unit:175
CCUc:186
Rtf:195
Rwie:240
Rlm:428
50
100
150
200
250
300
350
400
C5193
299-W19-107
GL 710.9

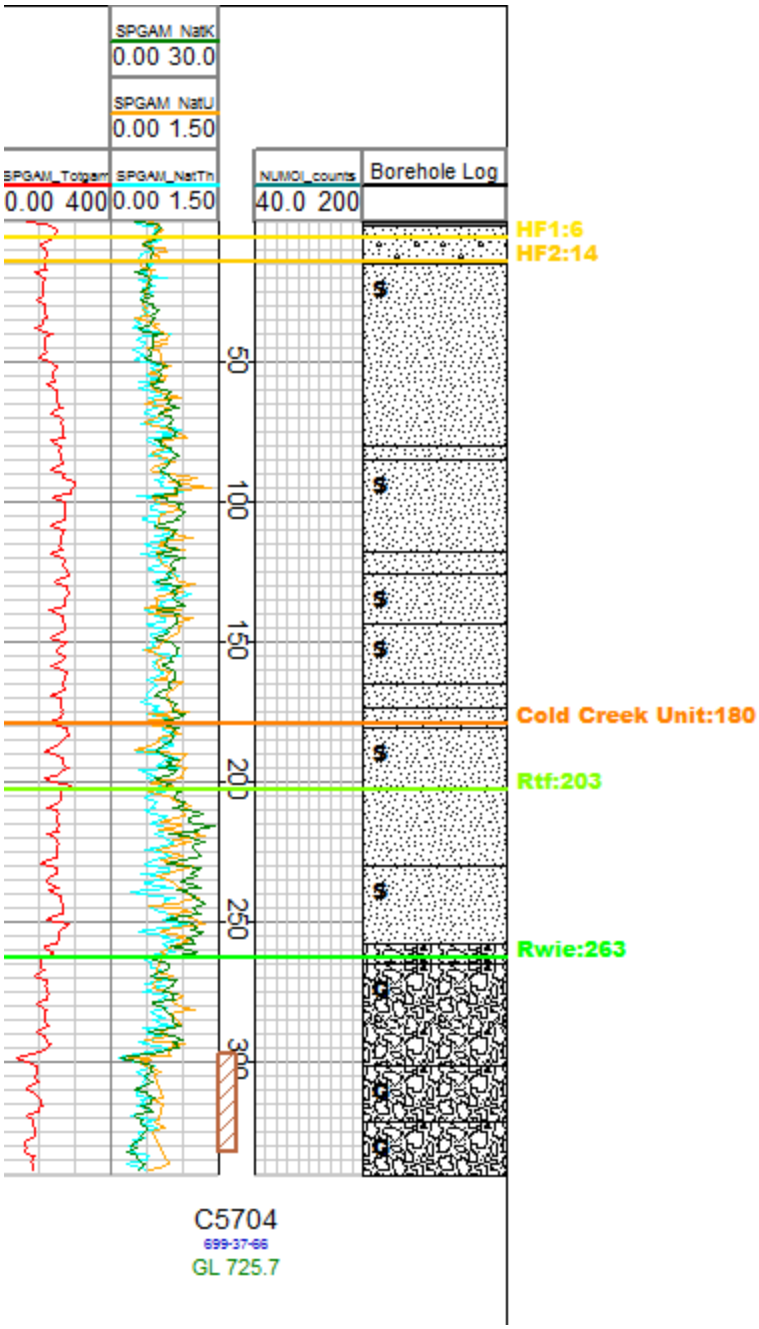

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
HF2:72
Cold Creek Unit:86
CCUc:101
Rtf:109
Rwie:121
C5194
299-W10-31
687.9
30 ft

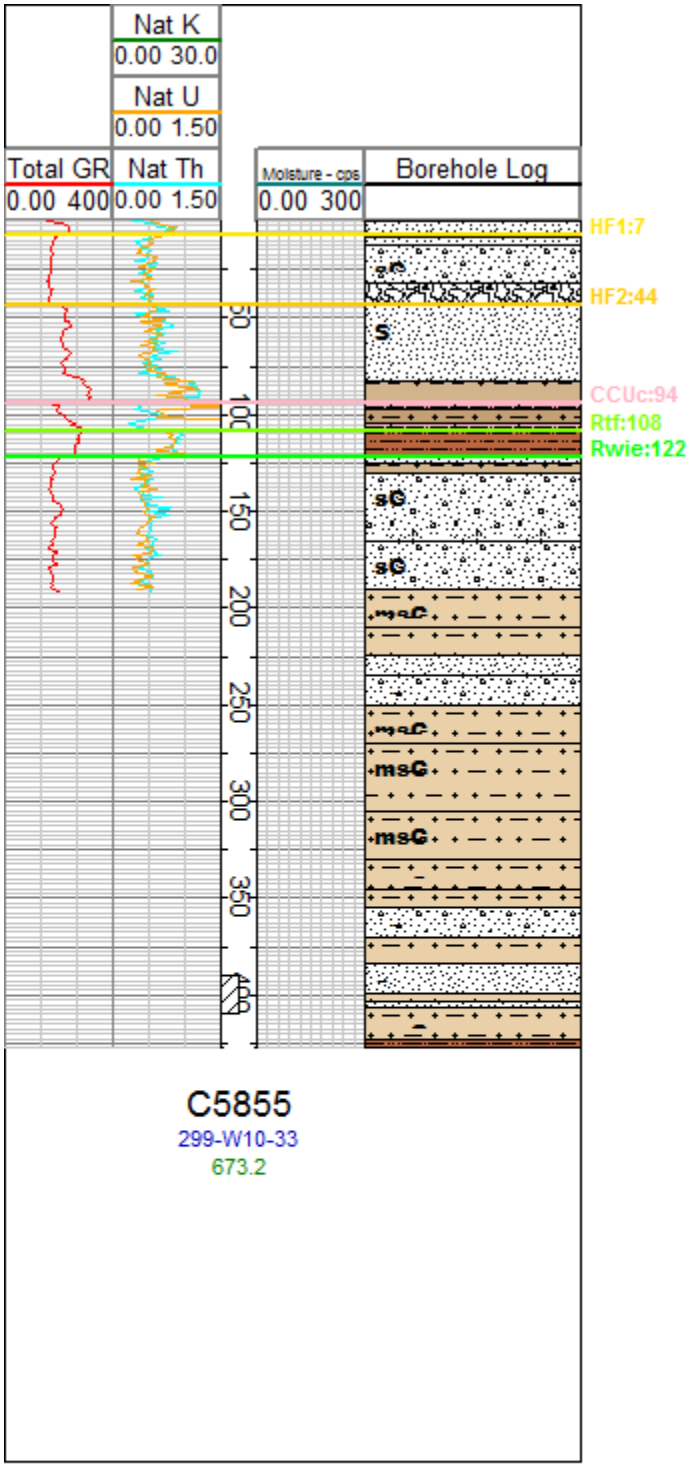

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF1:5
HF2:27
HF3:56
Cold Creek Unit:84
CCUc:94
Rtf:111
Rwie:127
Rlm:401
msG
sG
S
50
100
150
200
250
300
350
400
C5243
299-W11-48
685.4


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:7
HF2:52
Cold Creek Unit:69
Rtf:134
Rwie:163
Rlm:434
Rwia:457
Basalt:486
No Rec...
50
100
150
200
250
300
350
400
450
C5572
299-W11-88
725.5
60 ft

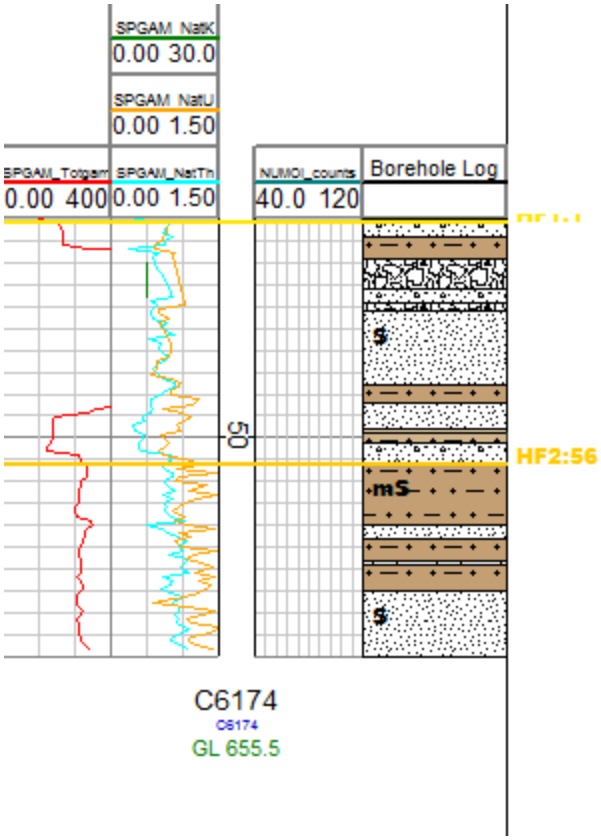

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:40
Cold Creek Unit:96
CCUc:105
Rtf:110
Rwie:240
Rlm:364
Rwia:400
Basalt:500
sG
S
M
msG
50
100
150
200
250
300
350
400
450
500
C5573
699-43-69
GL 743.2

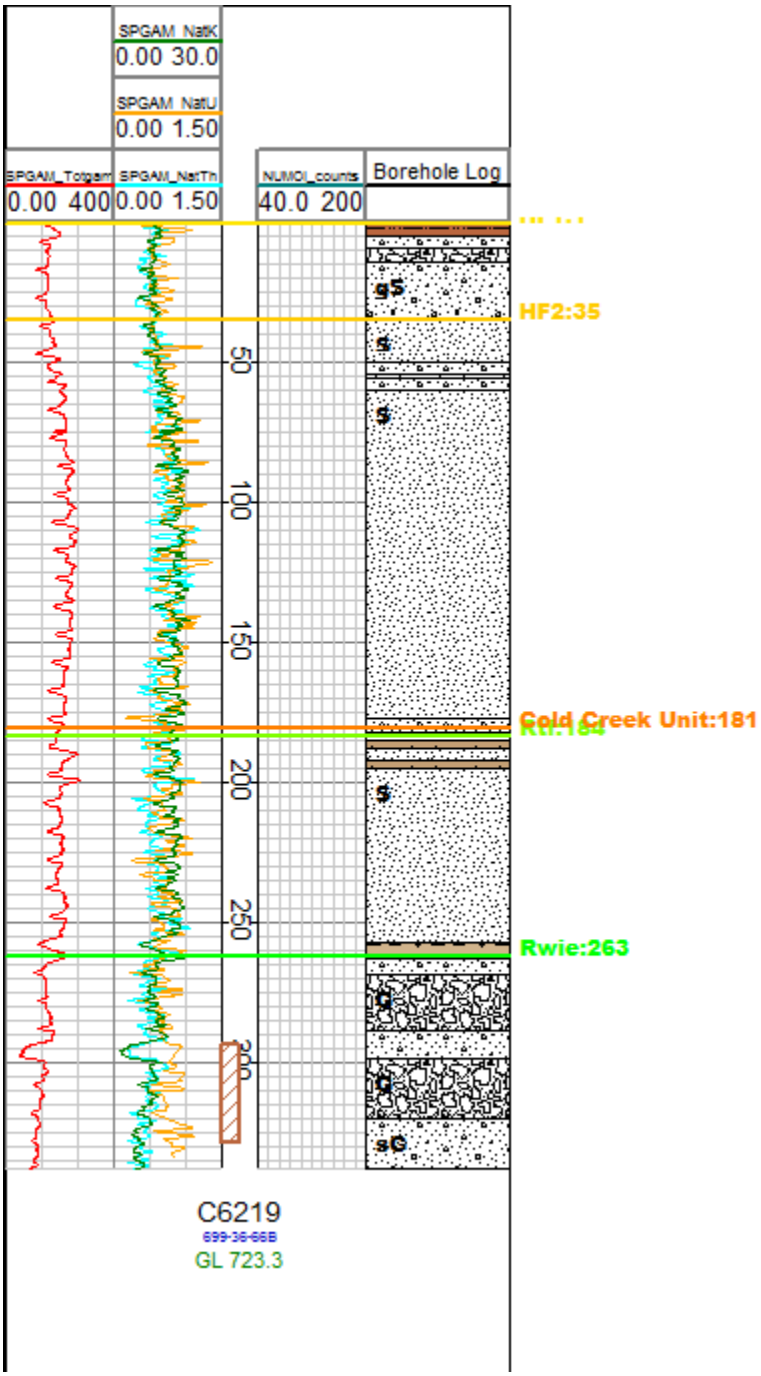

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:7
msG
sG
HF2:69
Cold Creek Unit:103
Rtf:110
S
Rwie:215
Rlm:335
Silty Gravel
Rwia:365
msG
Basalt:454
50
100
150
200
250
300
350
400
450
C5574
699-45-69C
727.3
50 ft

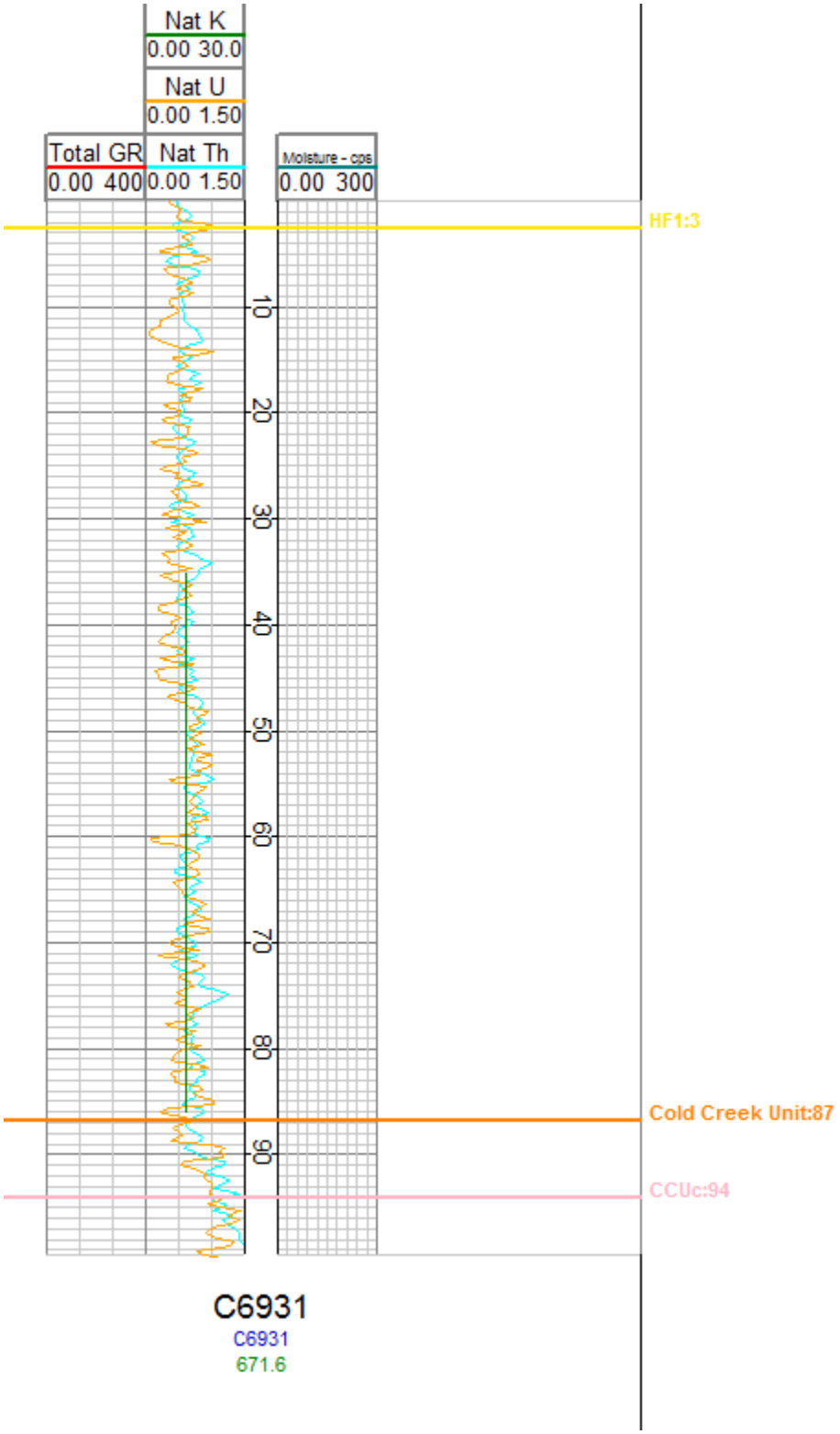

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:6
HF2:14
Cold Creek Unit:180
Rtf:203
Rwie:263
50
100
150
200
250
300
C5704
699-37-66
GL 725.7

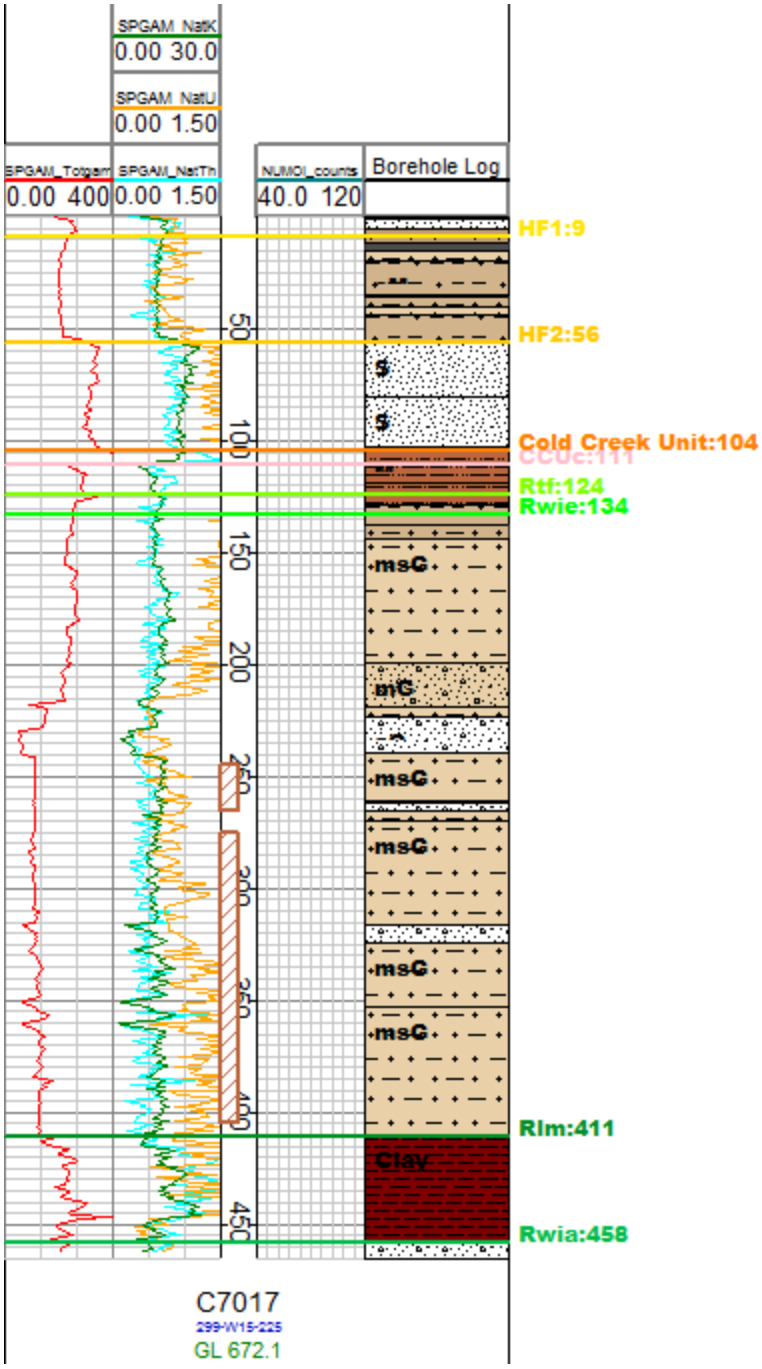

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:7
HF2:44
CCUc:94
Rtf:108
Rwie:122
50
100
150
200
250
300
350
400
C5855
299-W10-33
673.2

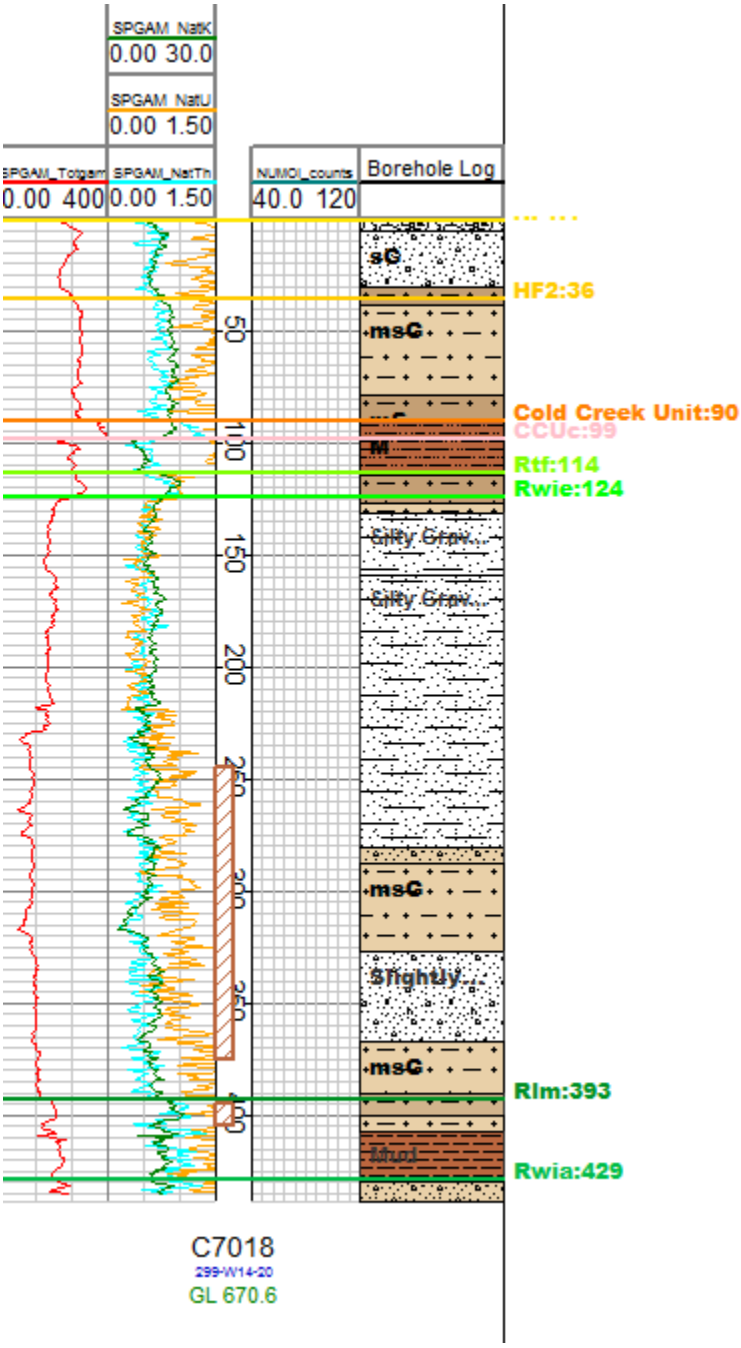
70 ft

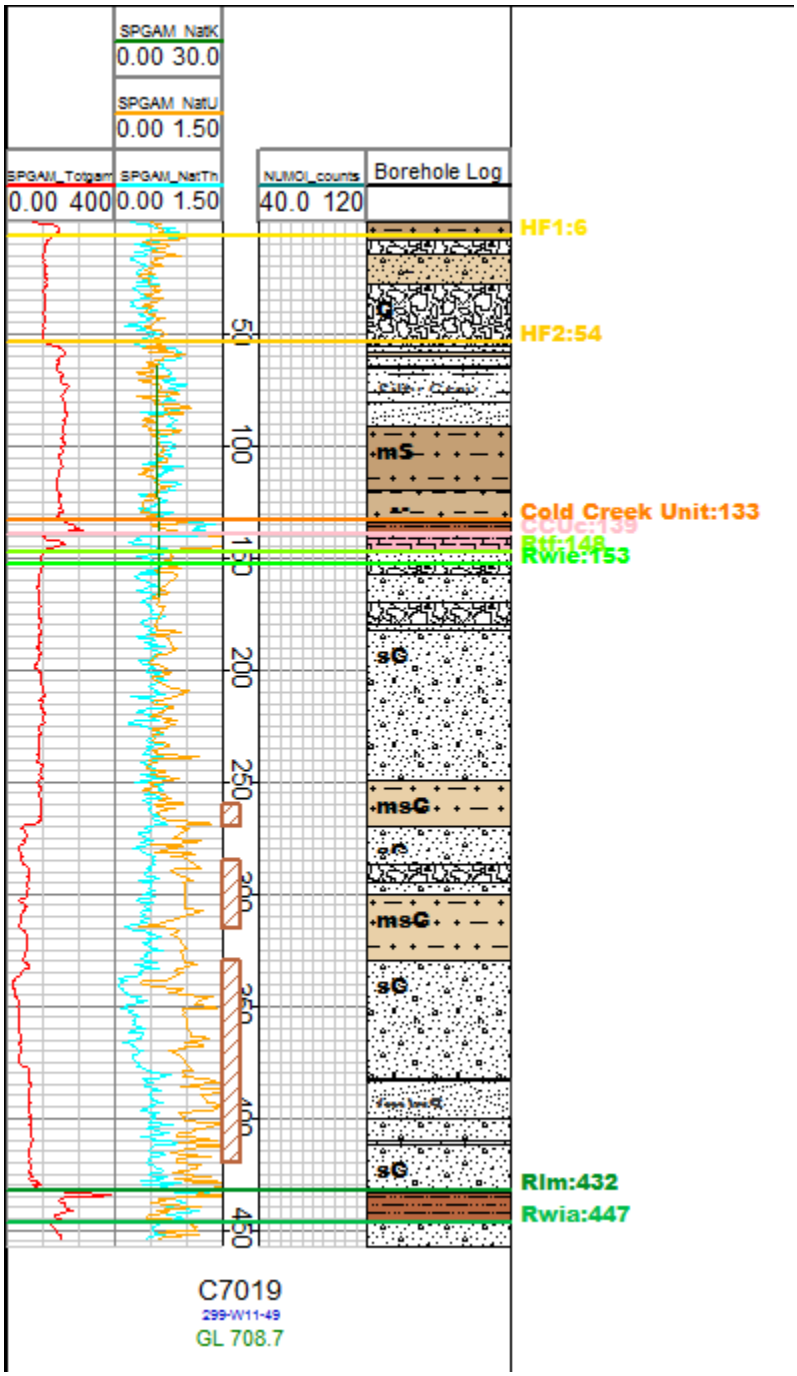

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:56
C6174
C6174
GL 655.5

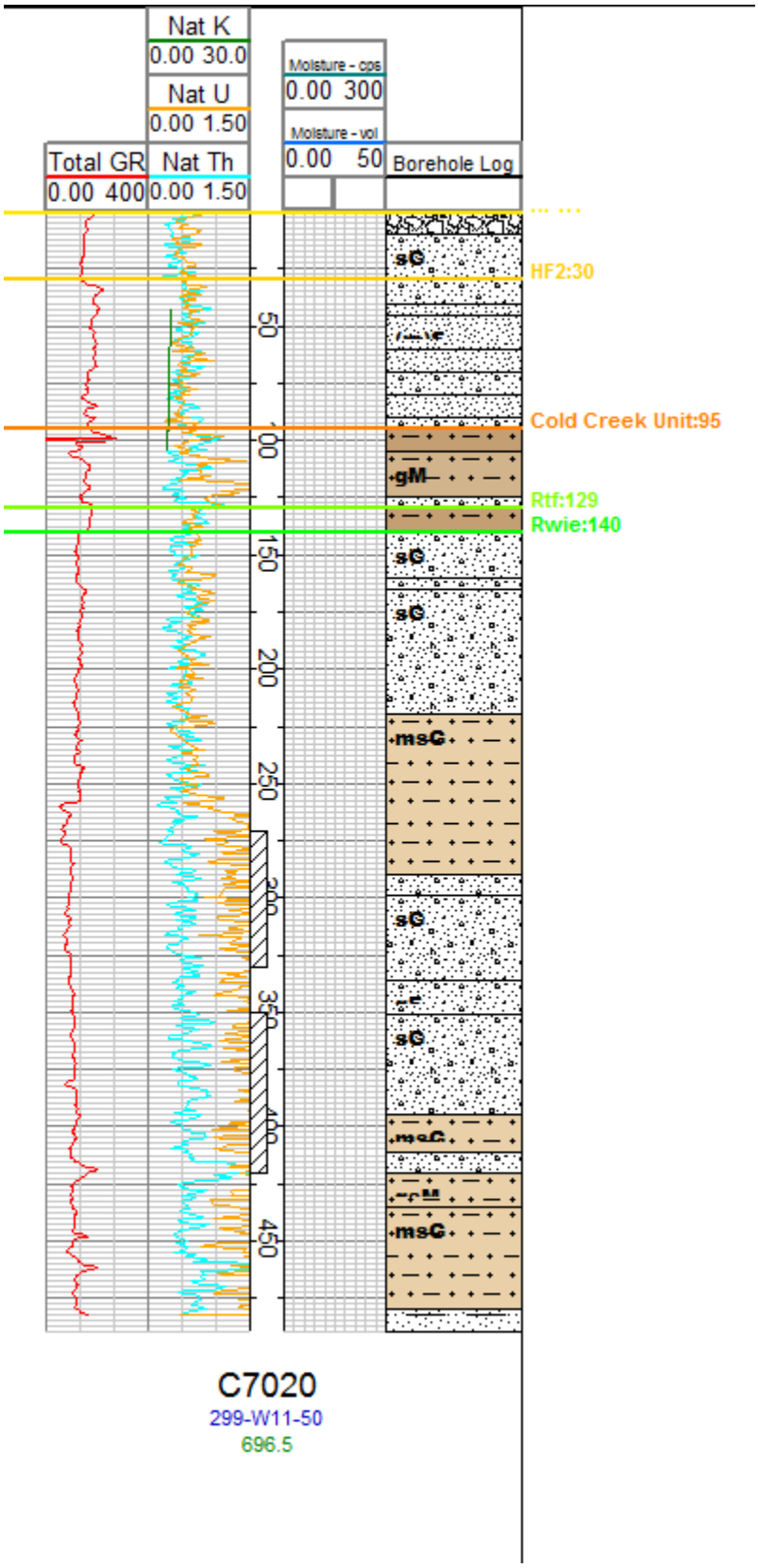

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:35
Cold Creek Unit:181
Rwie:263
50
100
150
200
250
300
C6219
699-36-66B
GL 723.3

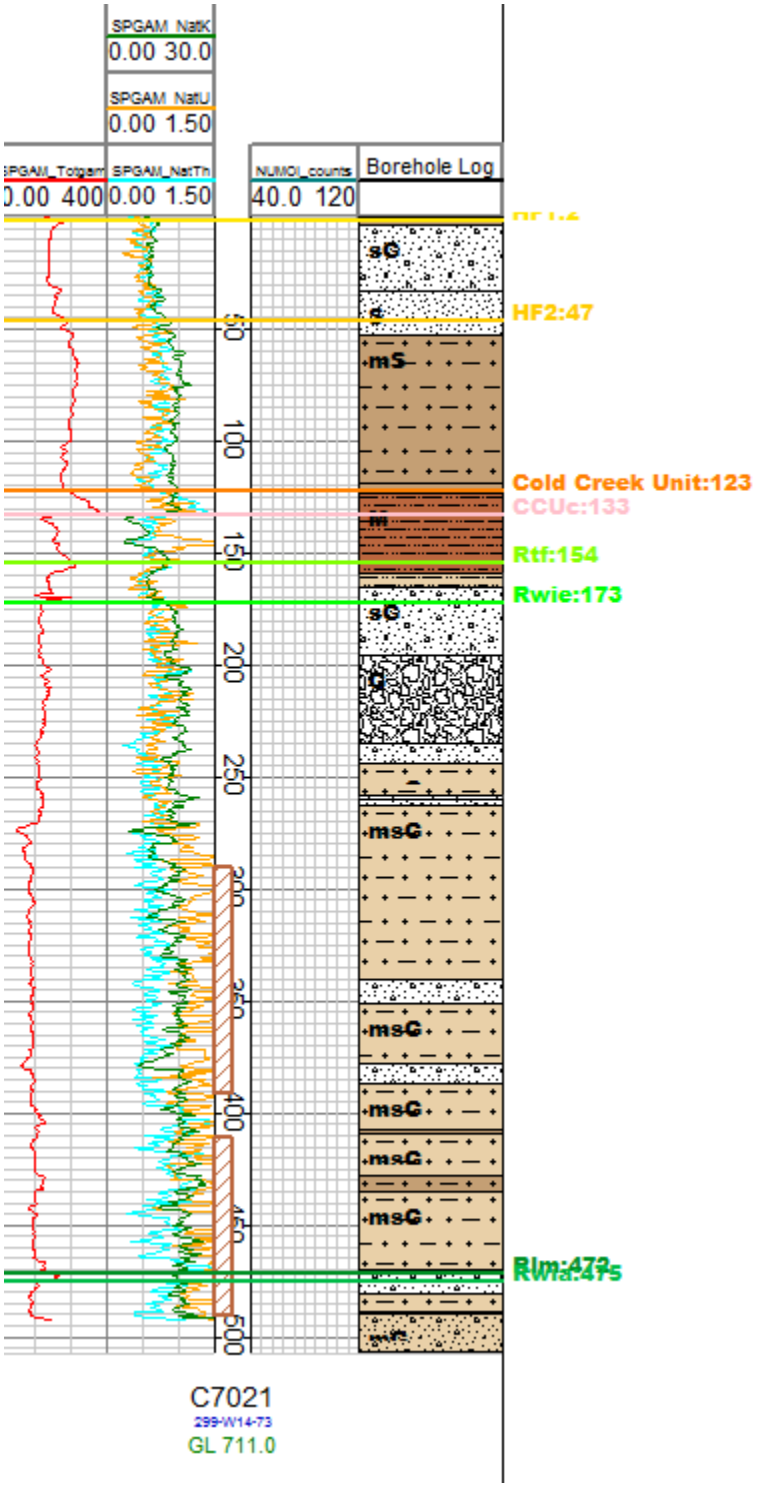

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
HF1:3
10
20
30
40
50
60
70
80
90
Cold Creek Unit:87
CCUc:94
C6931
C6931
671.6

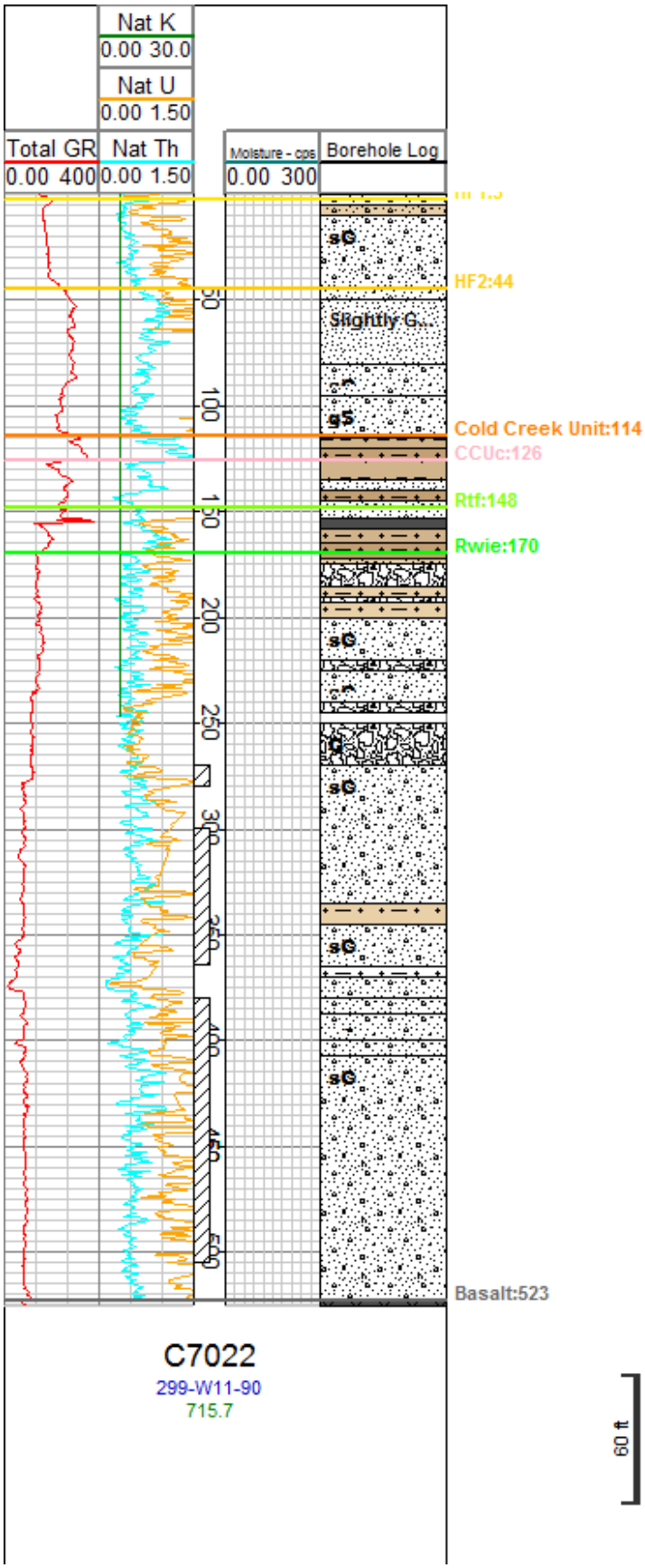

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:9
HF2:56
Cold Creek Unit:104
Rtf:124
Rwie:134
msG
mG
Rlm:411
Clay
Rwia:458
50
100
150
200
250
300
350
400
450
C7017
299-W15-225
GL 672.1

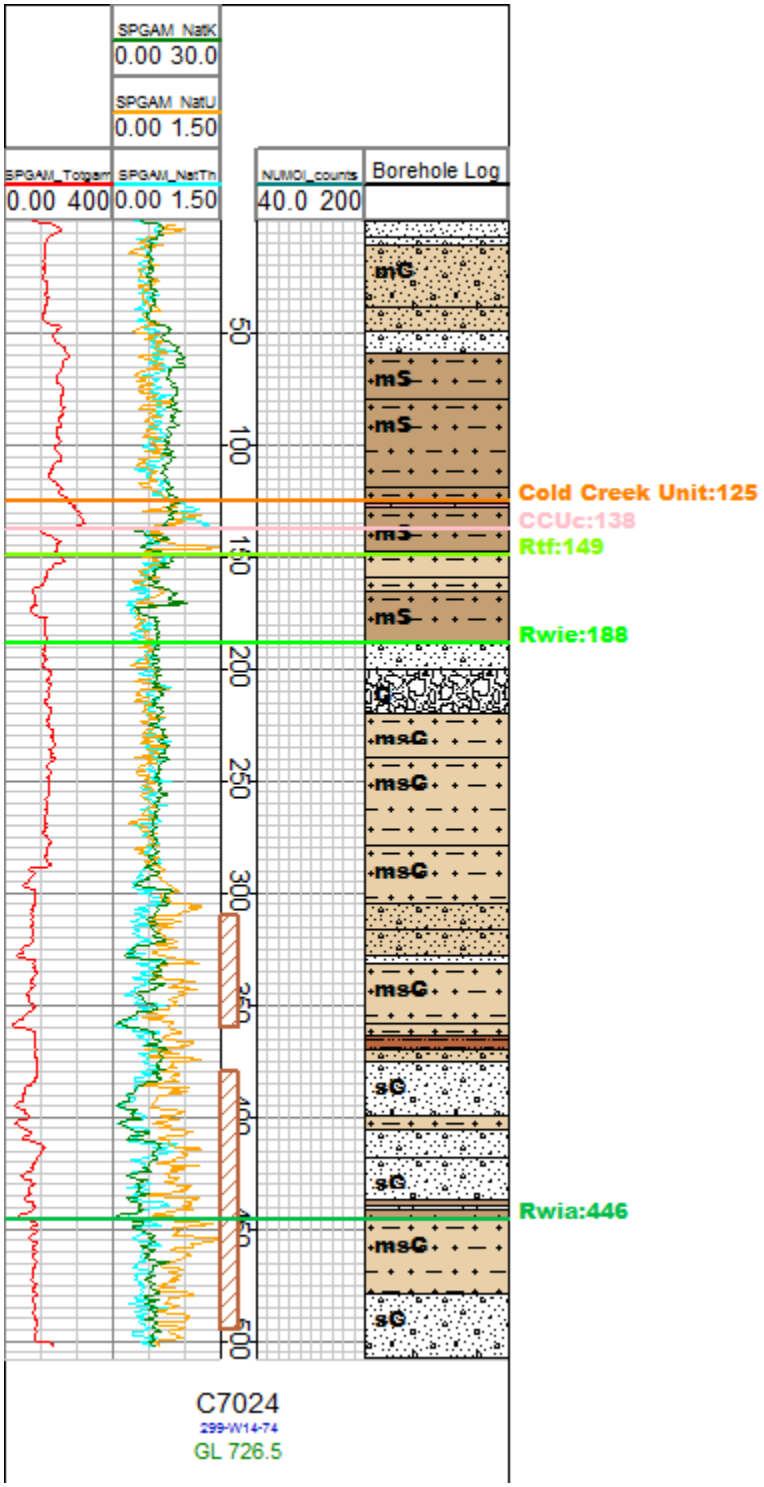

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
sG
msG
Silty Grav...
Silty Grav...
msG
Slightly...
msG
Mud
HF2:36
Cold Creek Unit:90
CCUc:99
Rtf:114
Rwie:124
Rlm:393
Rwia:429
50
100
150
200
250
300
350
400
C7018
299-W14-20
GL 670.6

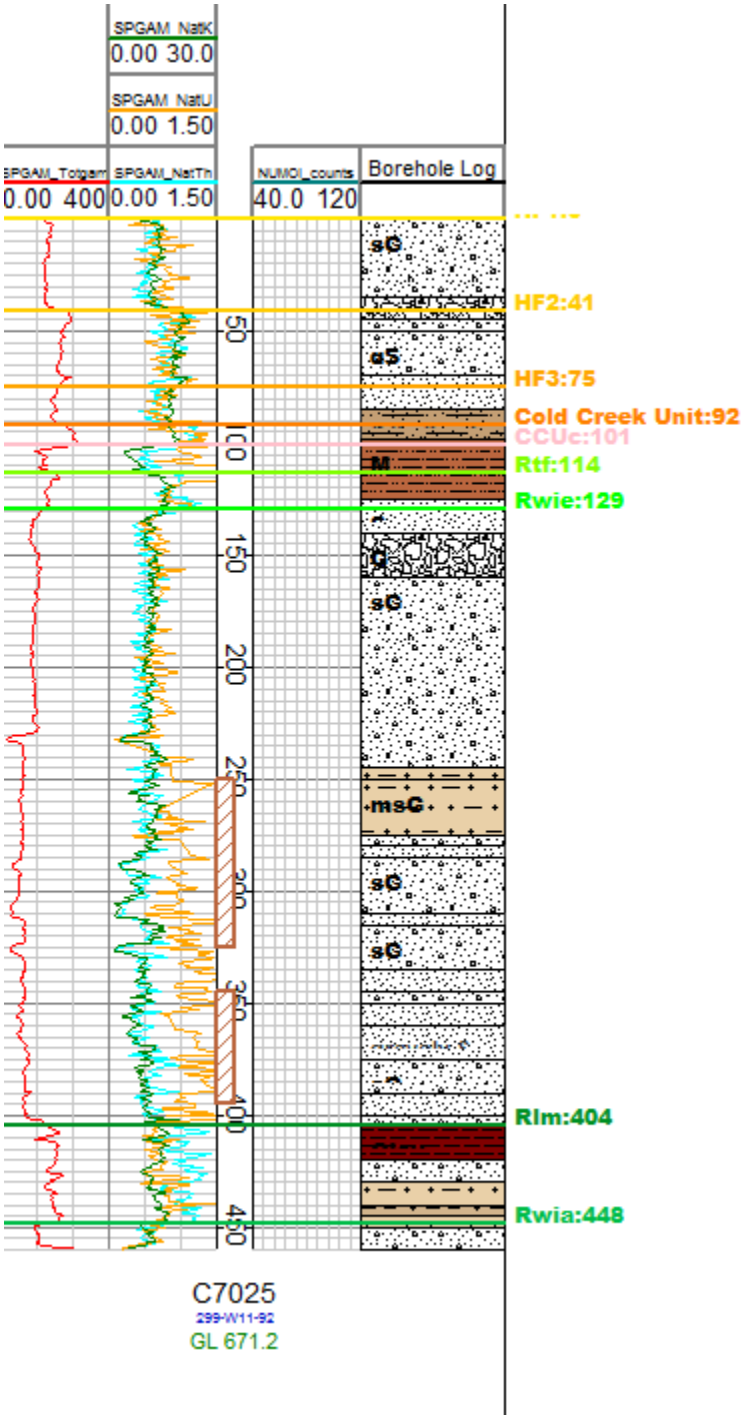

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:6
HF2:54
Cold Creek Unit:133
Rwie:153
Rlm:432
Rwia:447
50
100
150
200
250
300
350
400
450
C7019
299-W11-49
GL 708.7

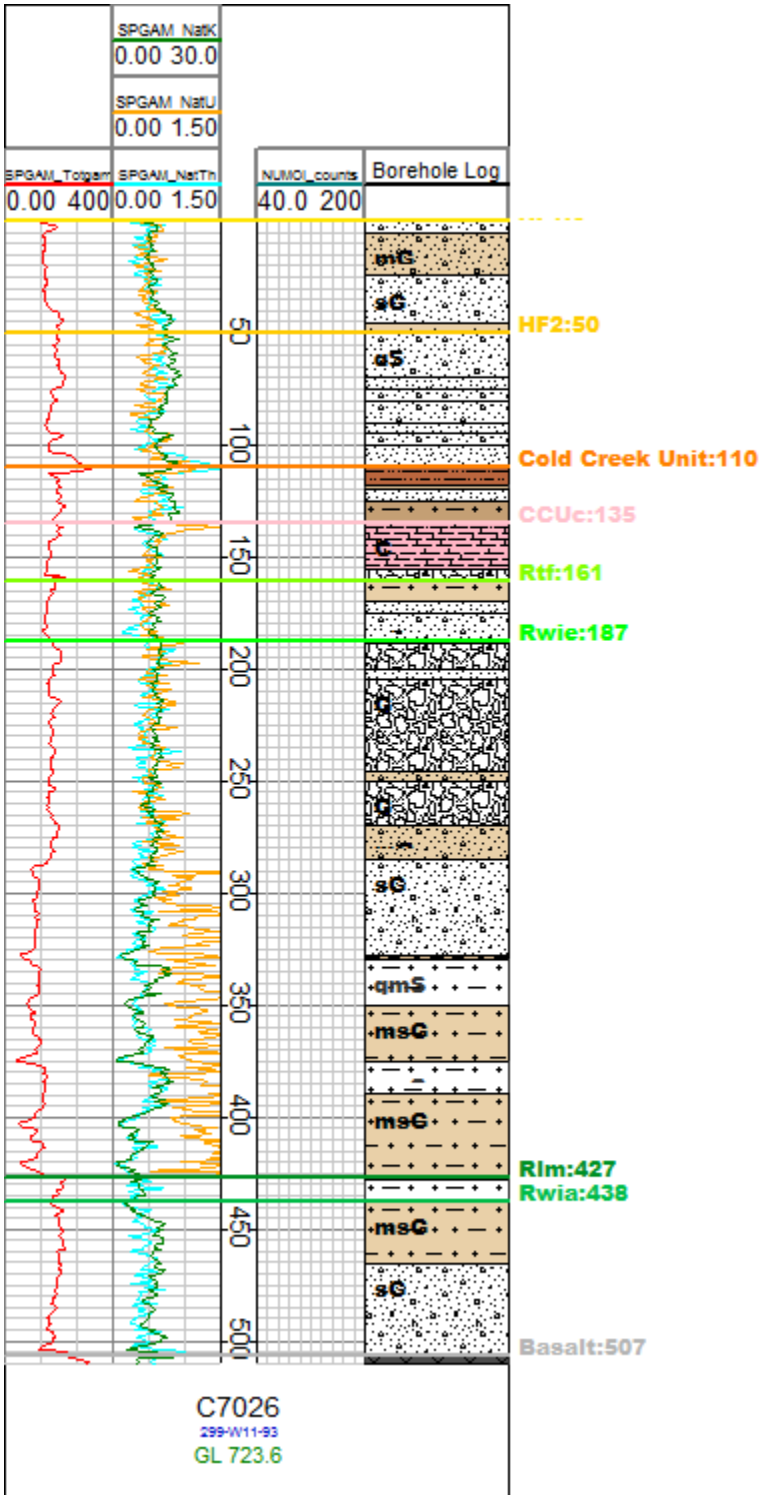

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
Borehole Log
HF2:30
Cold Creek Unit:95
Rtf:129
Rwie:140
50
100
150
200
250
300
350
400
450
sG
gM
msG
C7020
299-W11-50
696.5

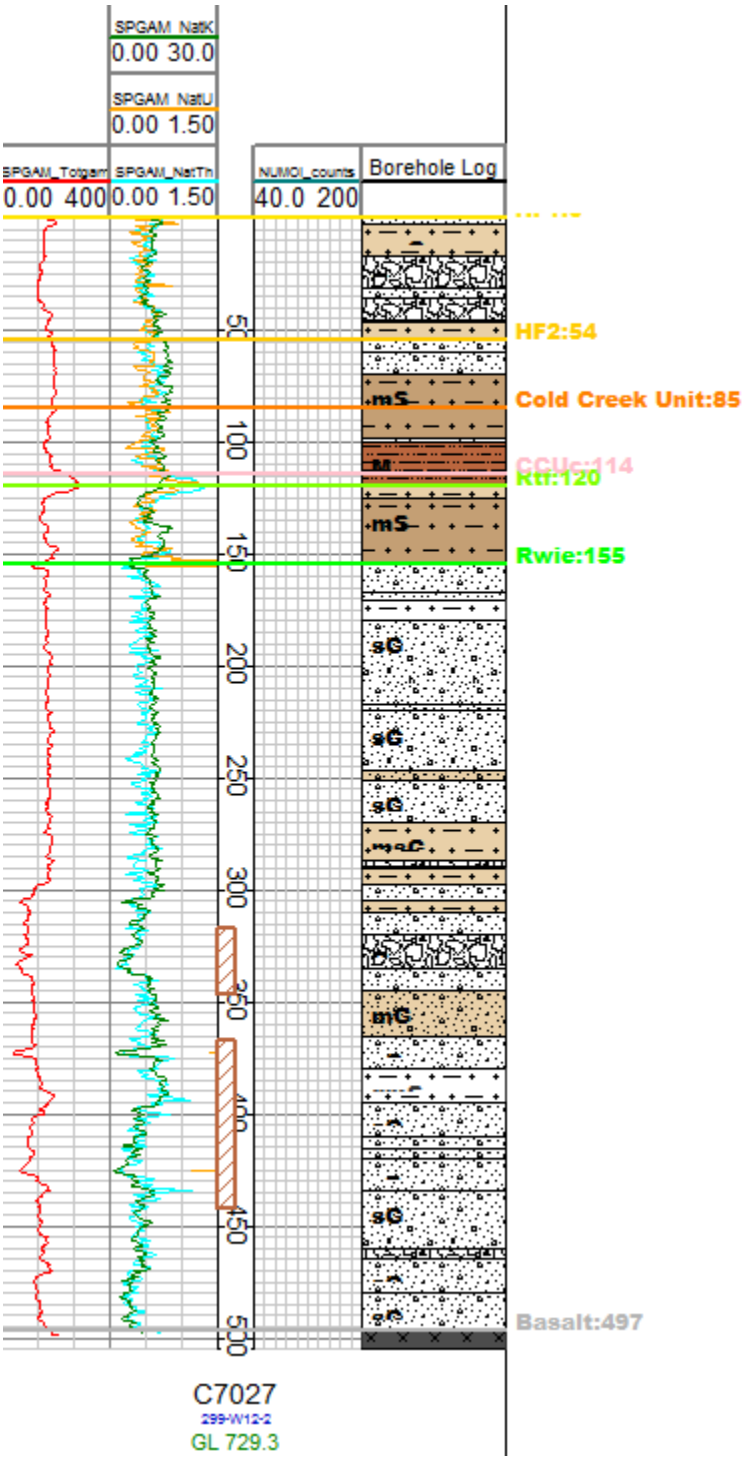

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:47
Cold Creek Unit:123
CCUc:133
Rtf:154
Rwie:173
Rlm:472
Rwia:475
50
100
150
200
250
300
350
400
450
500
C7021
299/W14-73
GL 711.0

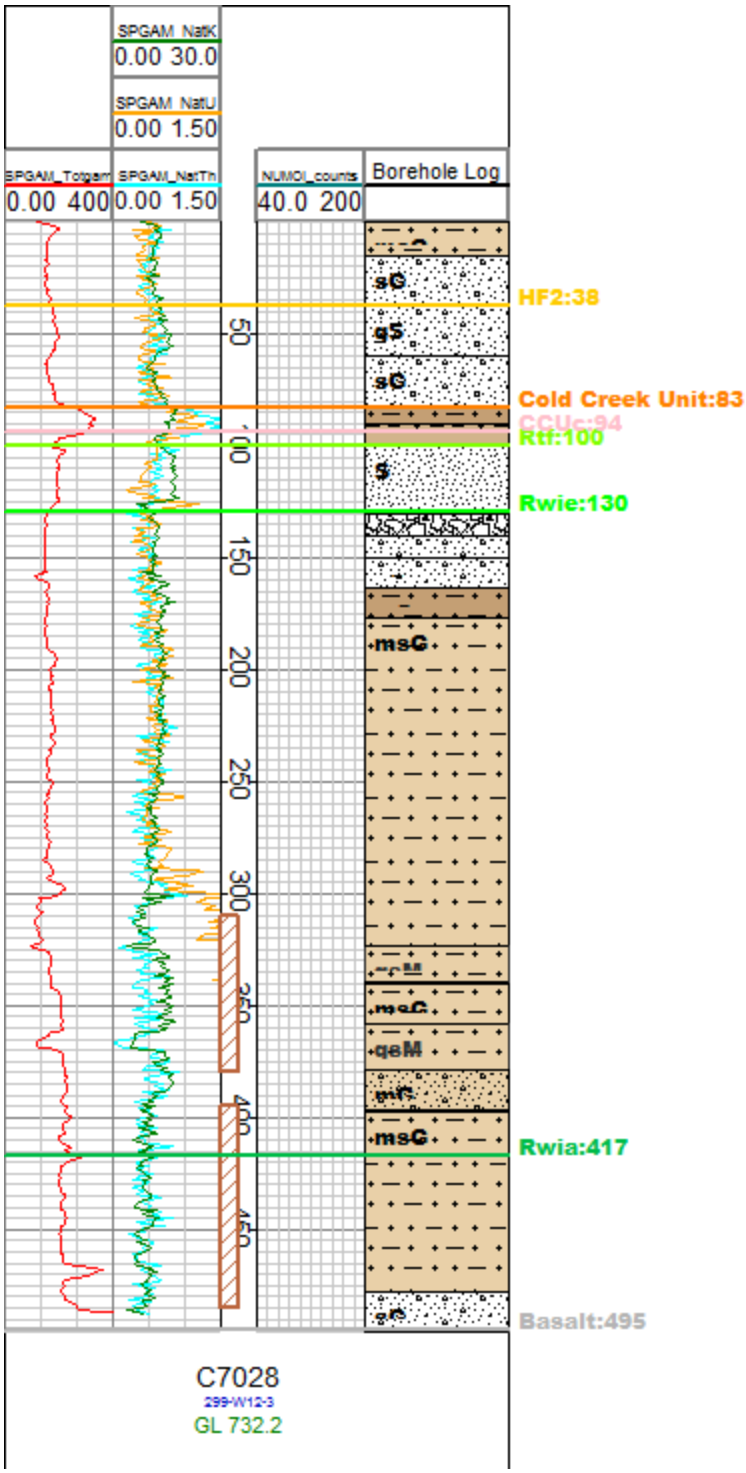

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:44
Slightly G...
Cold Creek Unit:114
CCUc:126
Rtf:148
Rwie:170
Basalt:523
C7022
299-W11-90
715.7
60 ft

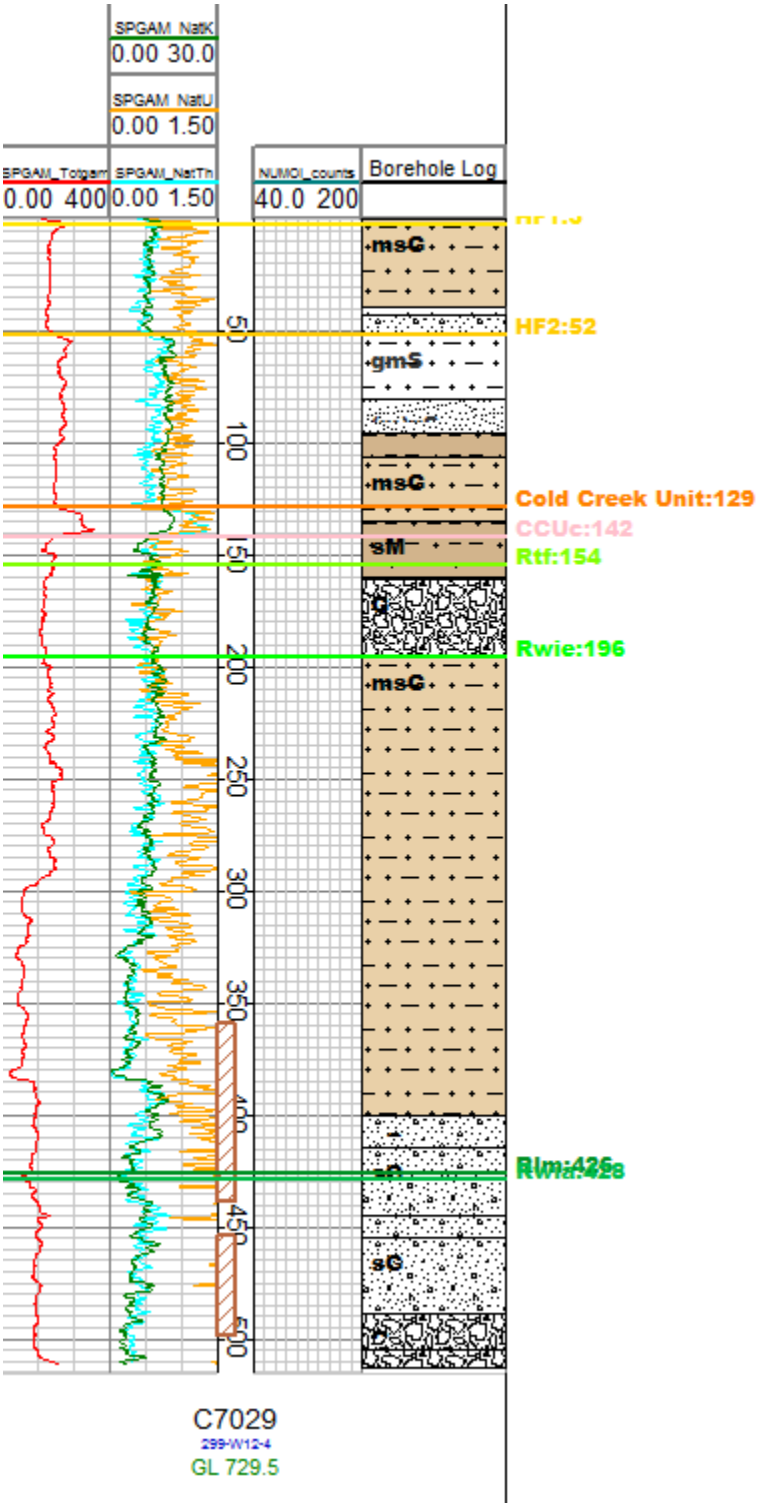

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 200
Borehole Log
mG
mS
Cold Creek Unit:125
CCUc:138
Rtf:149
Rwie:188
G
msG
sG
Rwia:446
50
100
150
200
250
300
350
400
450
500
C7024
299-W14-74
GL 726.5

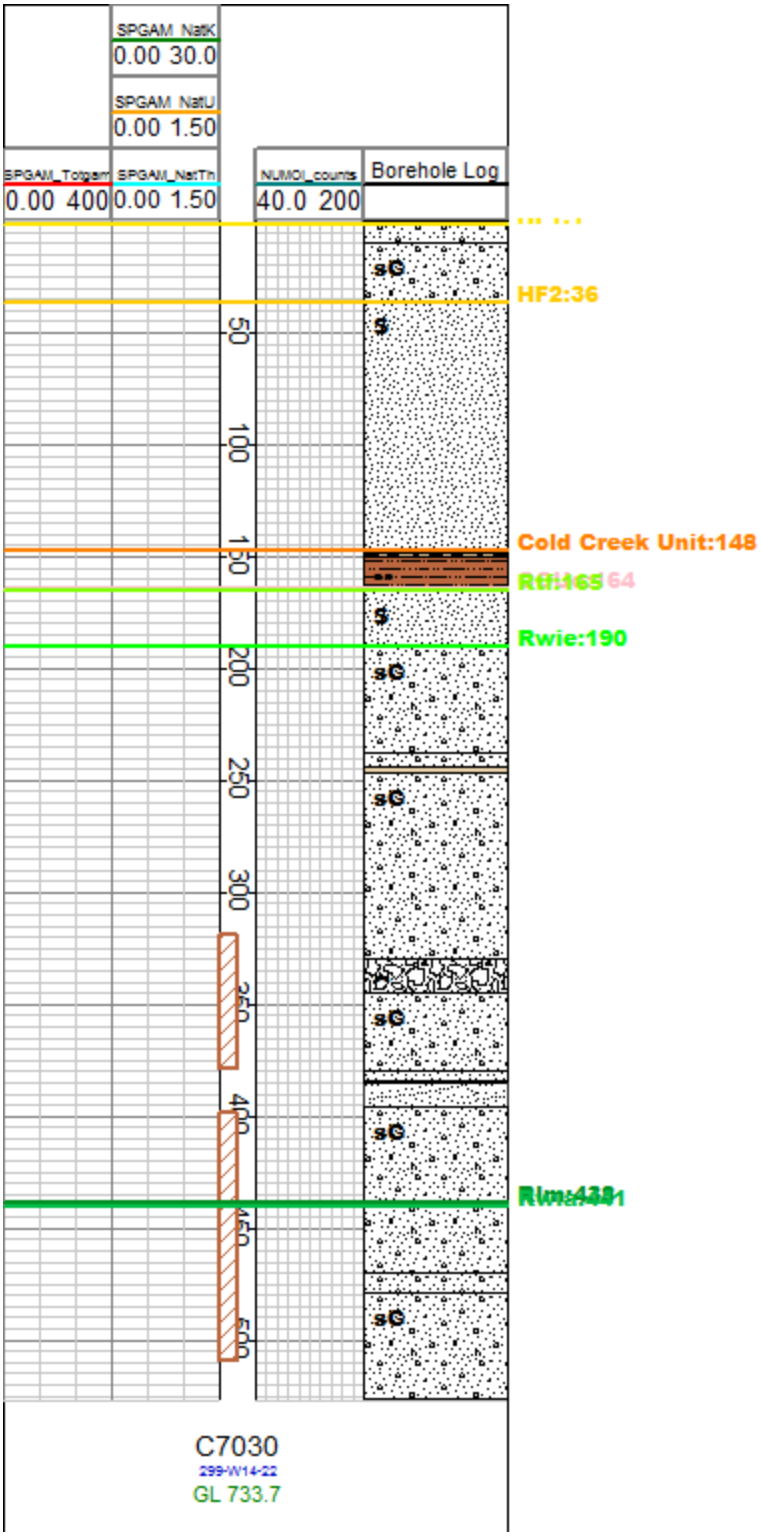

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:41
HF3:75
Cold Creek Unit:92
CCUc:101
Rtf:114
Rwie:129
Rlm:404
Rwia:448
50
100
150
200
250
300
350
400
450
C7025
299-W11-92
GL 671.2

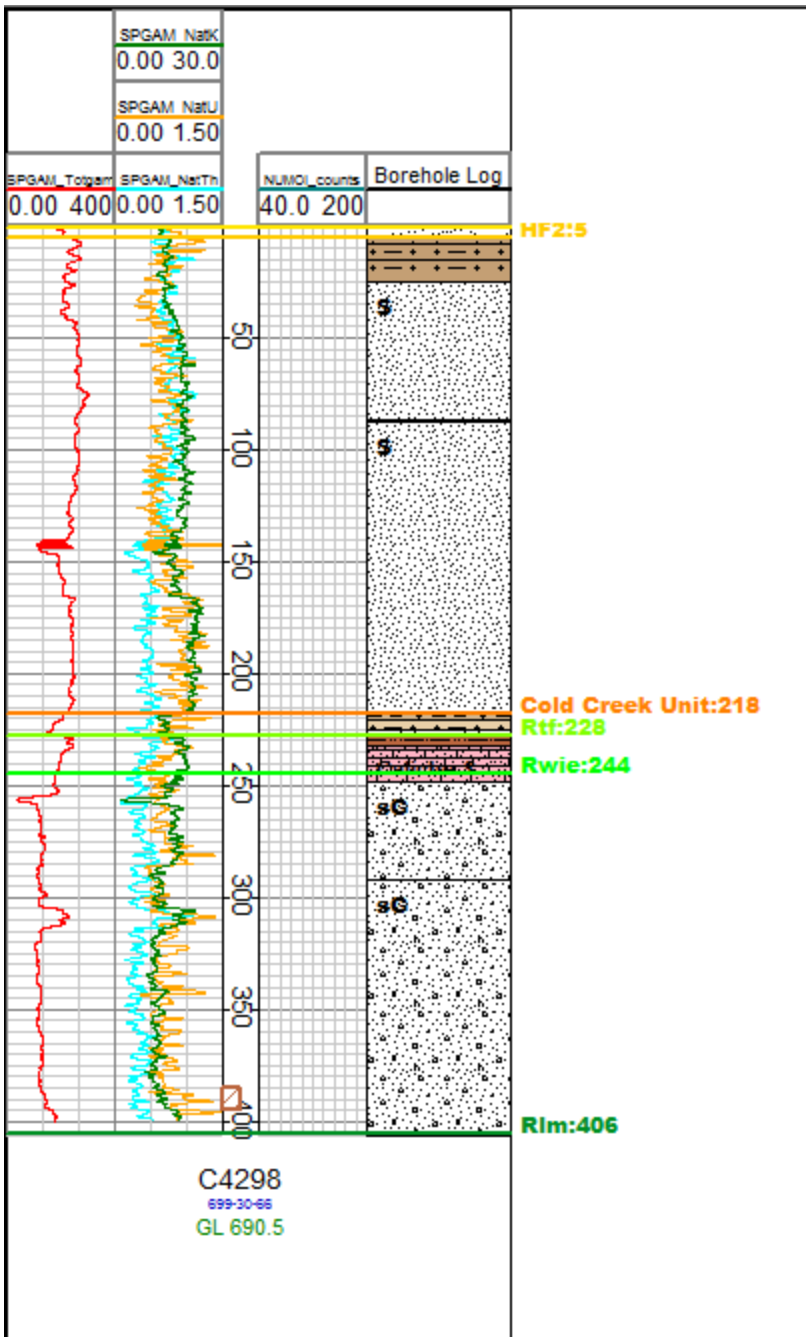

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
mG
sG
gS
HF2:50
Cold Creek Unit:110
CCUc:135
Rtf:161
Rwie:187
C
sG
qmS
msG
msG
Rlm:427
Rwia:438
msG
sG
Basalt:507
50
100
150
200
250
300
350
400
450
500
C7026
299-W11-93
GL 723.6

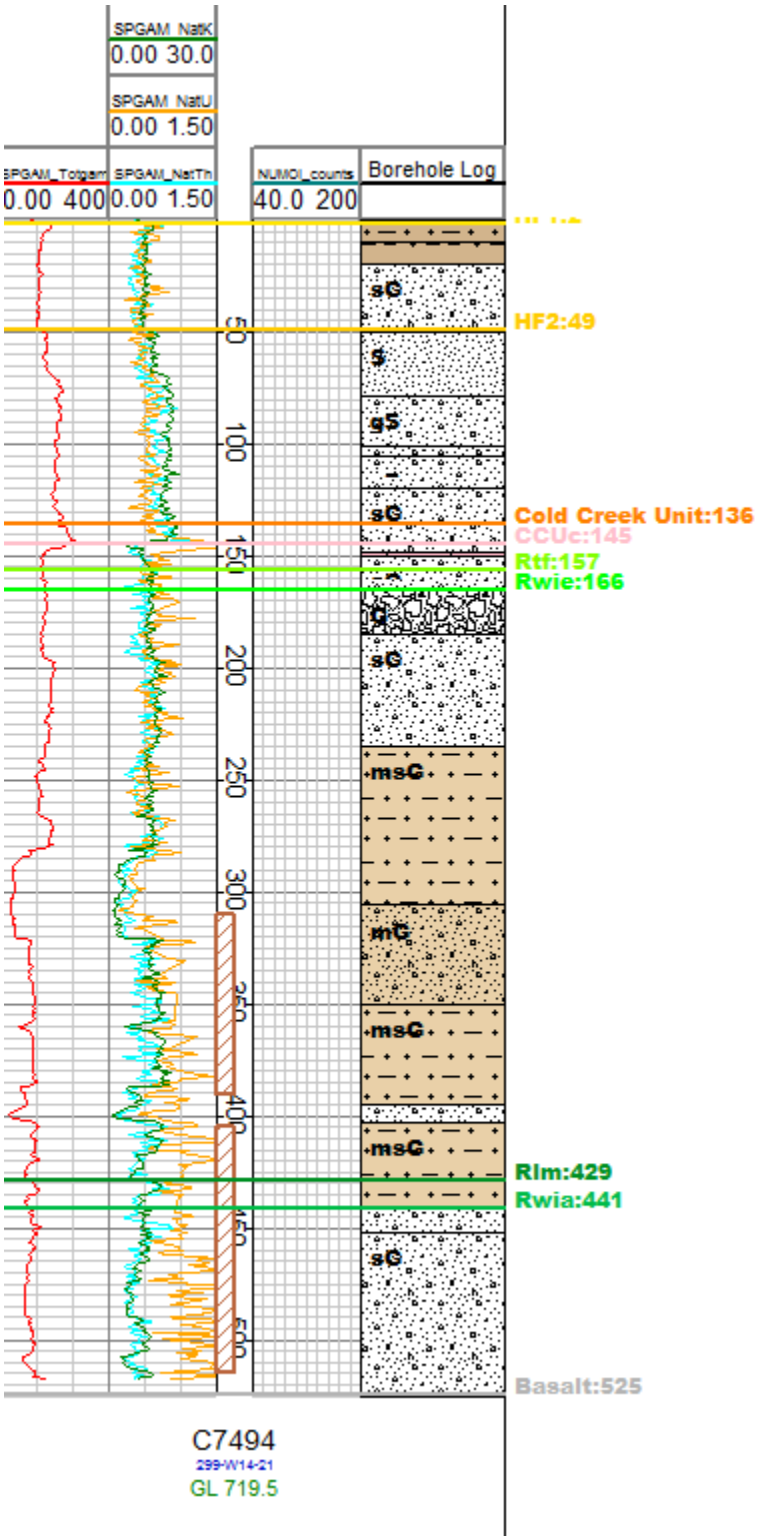

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:54
Cold Creek Unit:85
CCUc:114
Rtf:120
Rwie:155
Basalt:497
C7027
GL 729.3

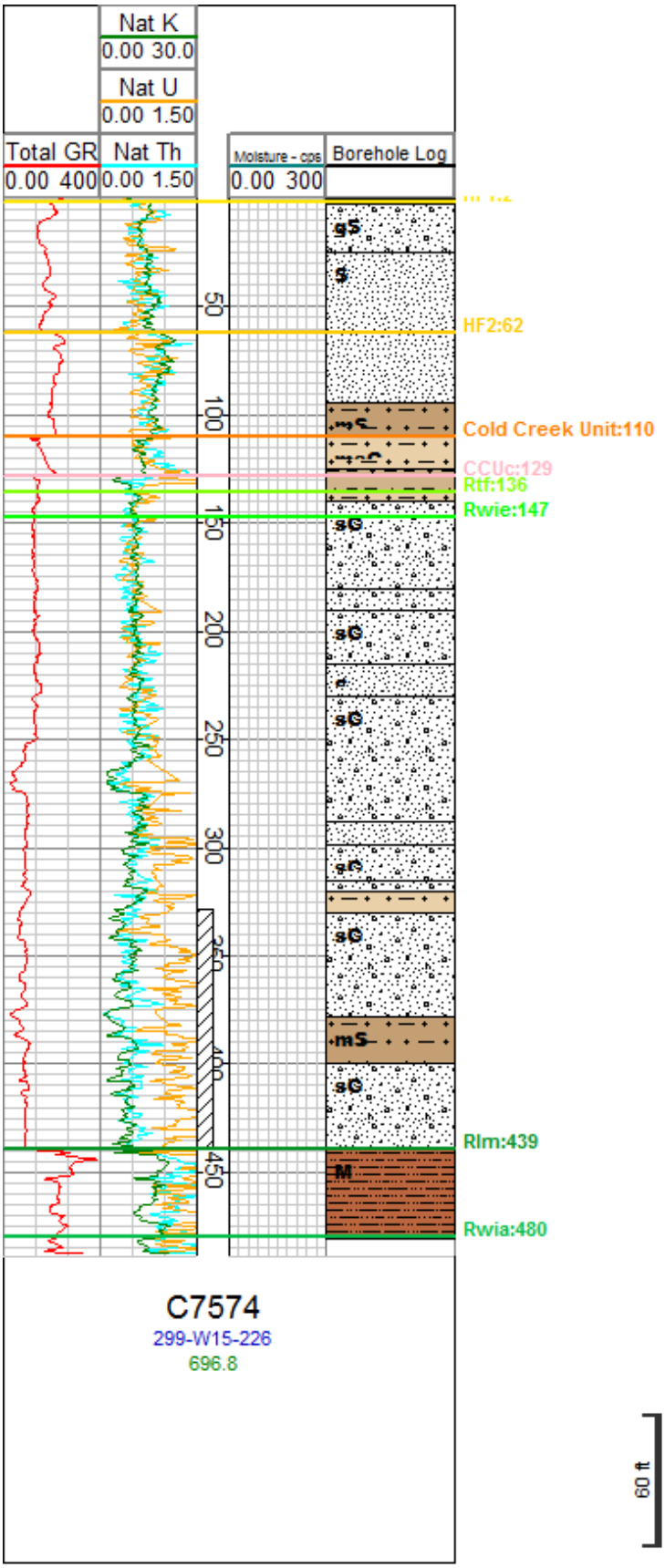

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:38
Cold Creek Unit:83
CCUc:94
Rtf:100
Rwie:130
Rwia:417
Basalt:495
C7028
299-W12-3
GL 732.2

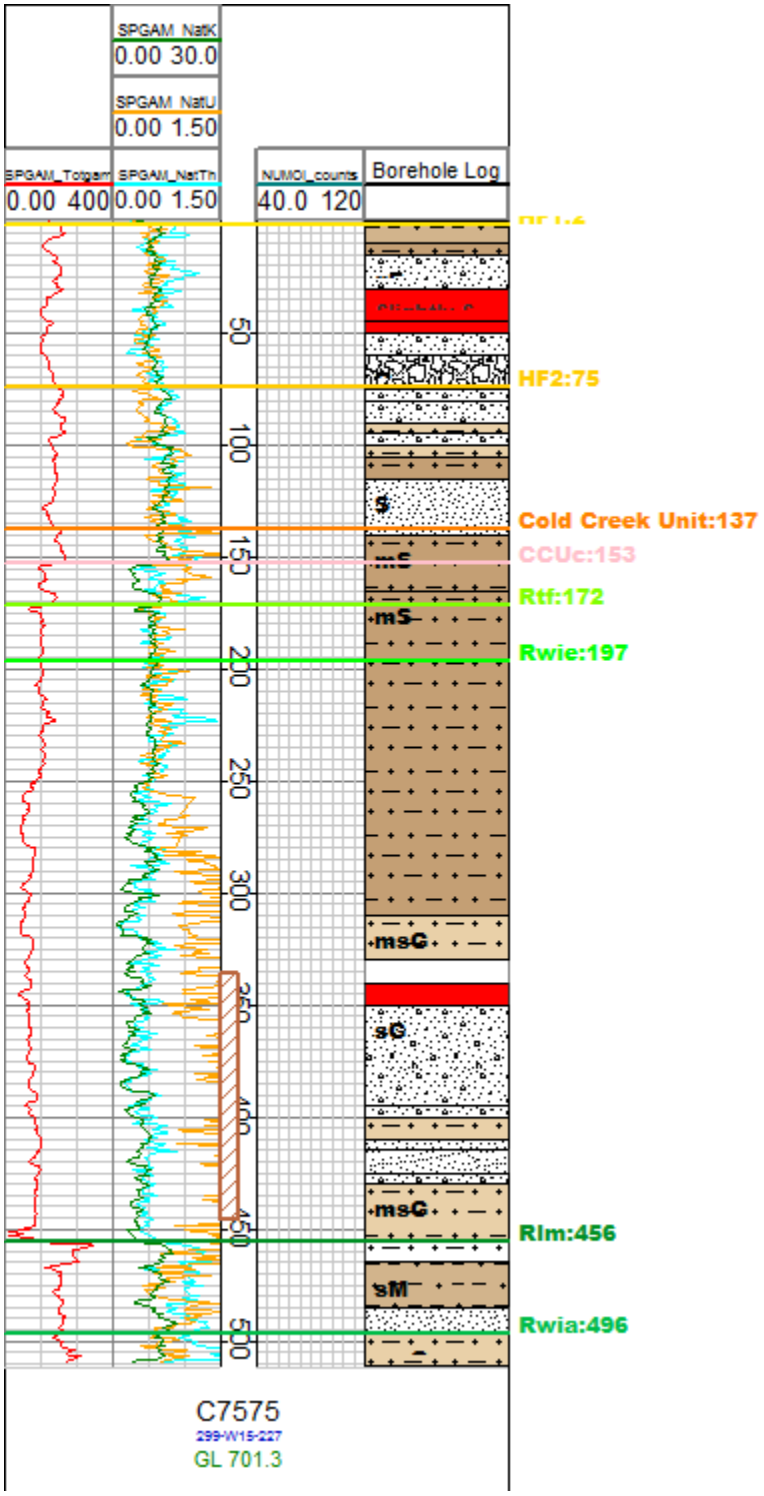

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
msG
HF2:52
gmS
msG
Cold Creek Unit:129
CCUc:142
sM
Rtf:154
Rwie:196
msG
Rlm:426
sG
50
100
150
200
250
300
350
400
450
500
C7029
299-W12-4
GL 729.5

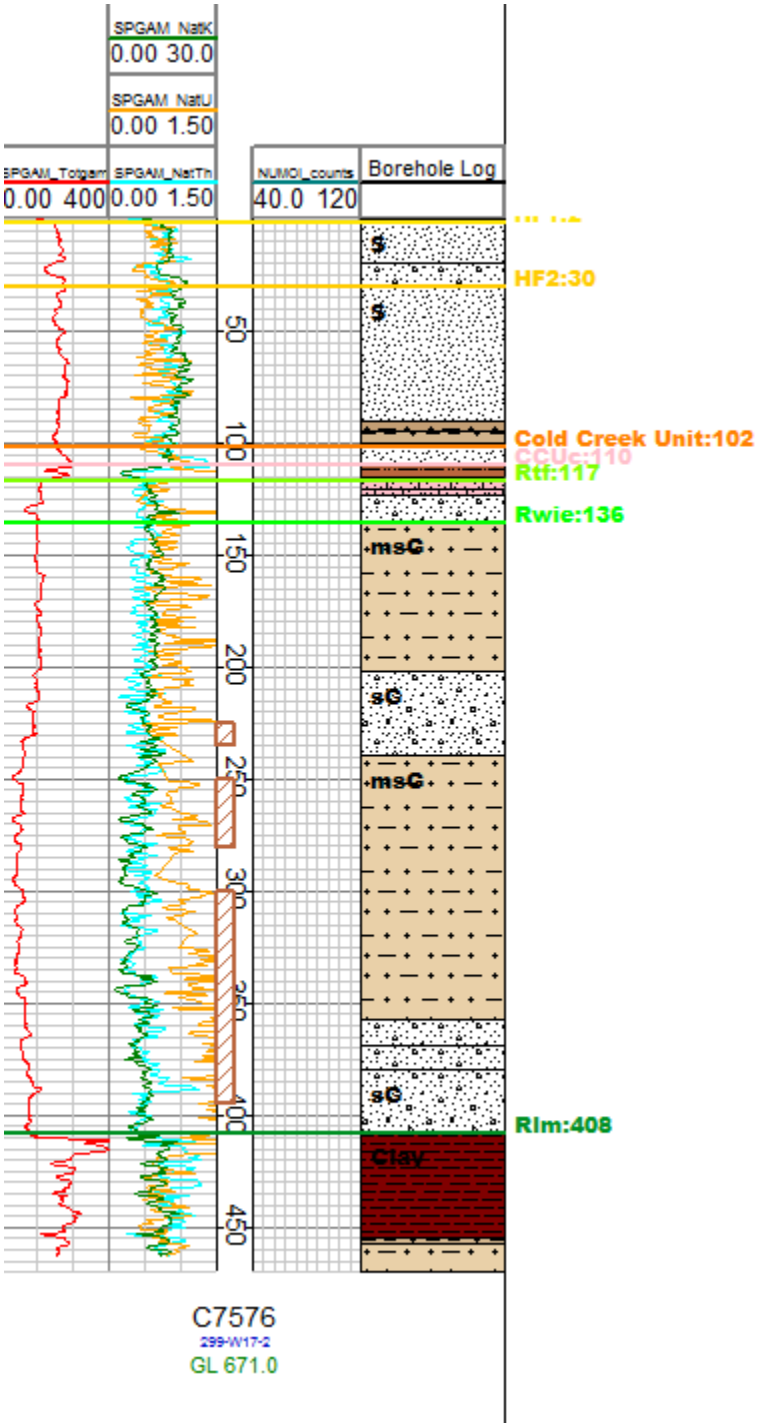

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:36
Cold Creek Unit:148
Rtf:165
Rwie:190
C7030
299-W14-22
GL 733.7

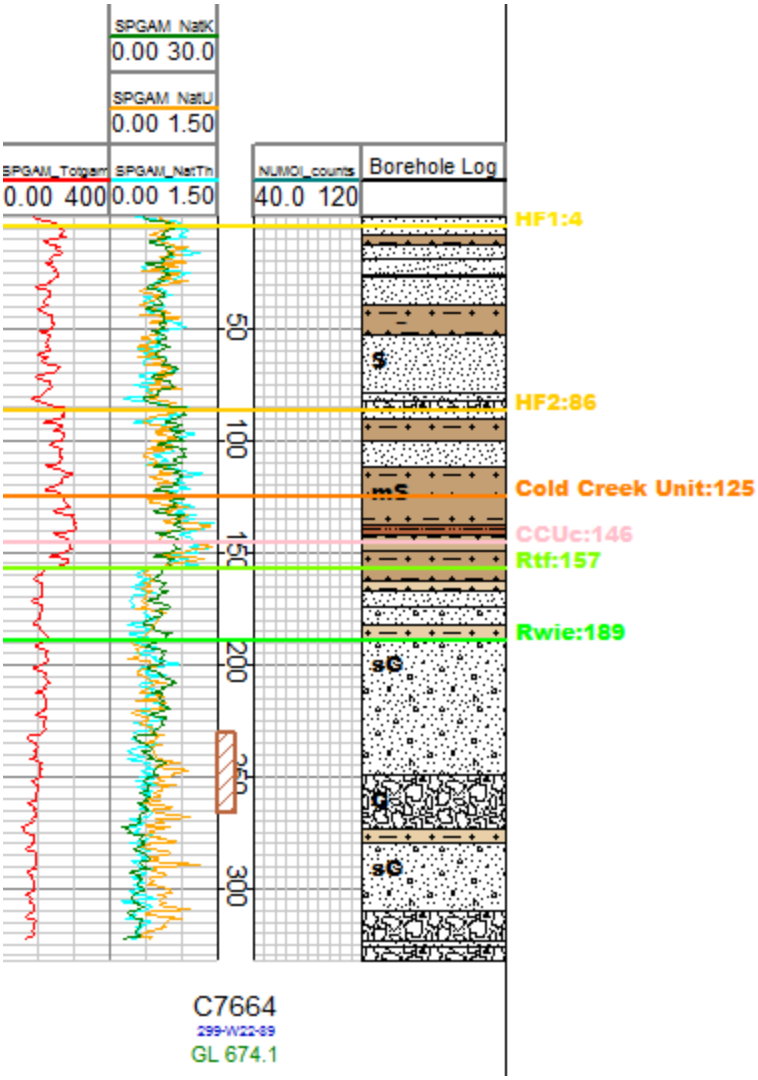

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:5
Cold Creek Unit:218
Rtf:228
Rwie:244
Rlm:406
50
100
150
200
250
300
350
400
C4298
699-30-66
GL 690.5

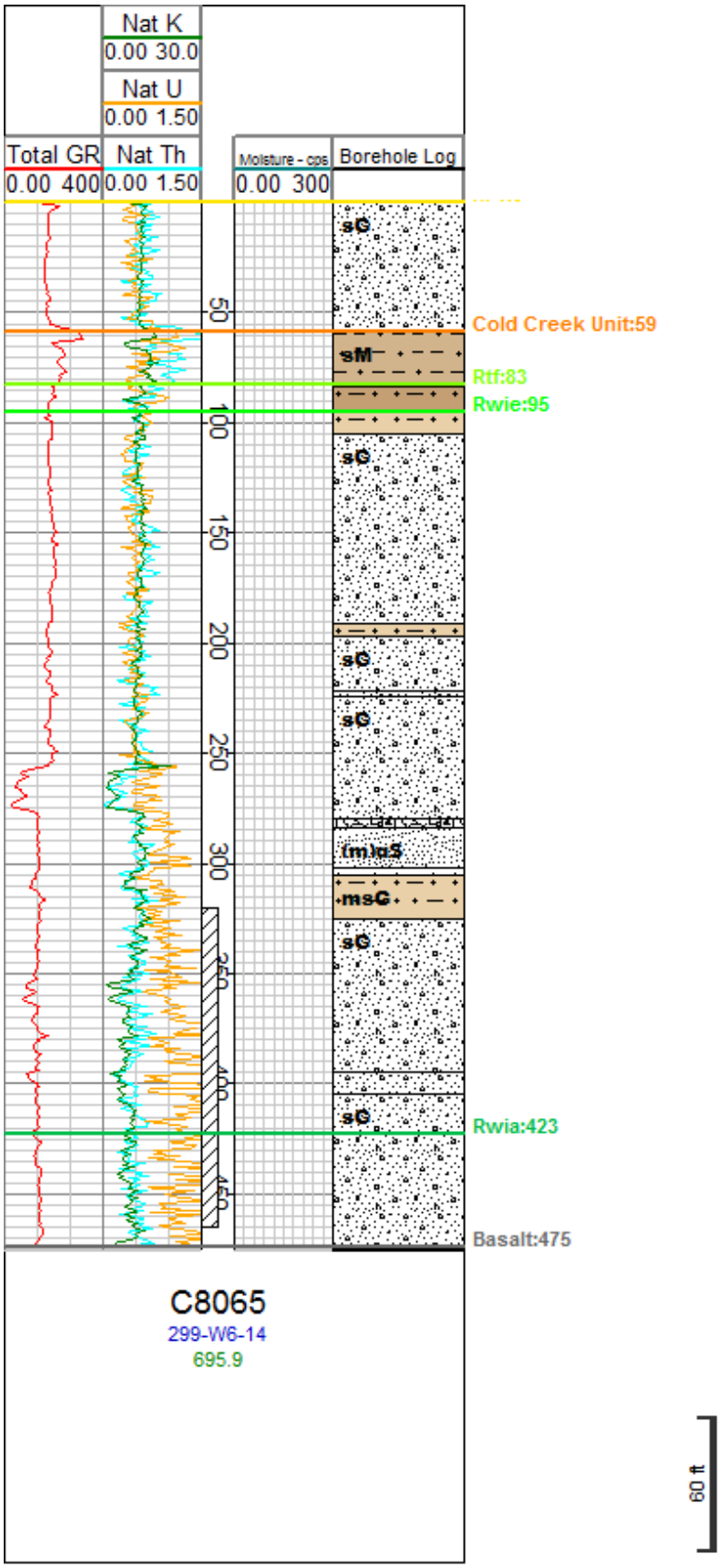

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:49
Cold Creek Unit:136
CCUc:145
Rtf:157
Rwie:166
Rlm:429
Rwia:441
Basalt:525
C7494
299-W14-21
GL 719.5

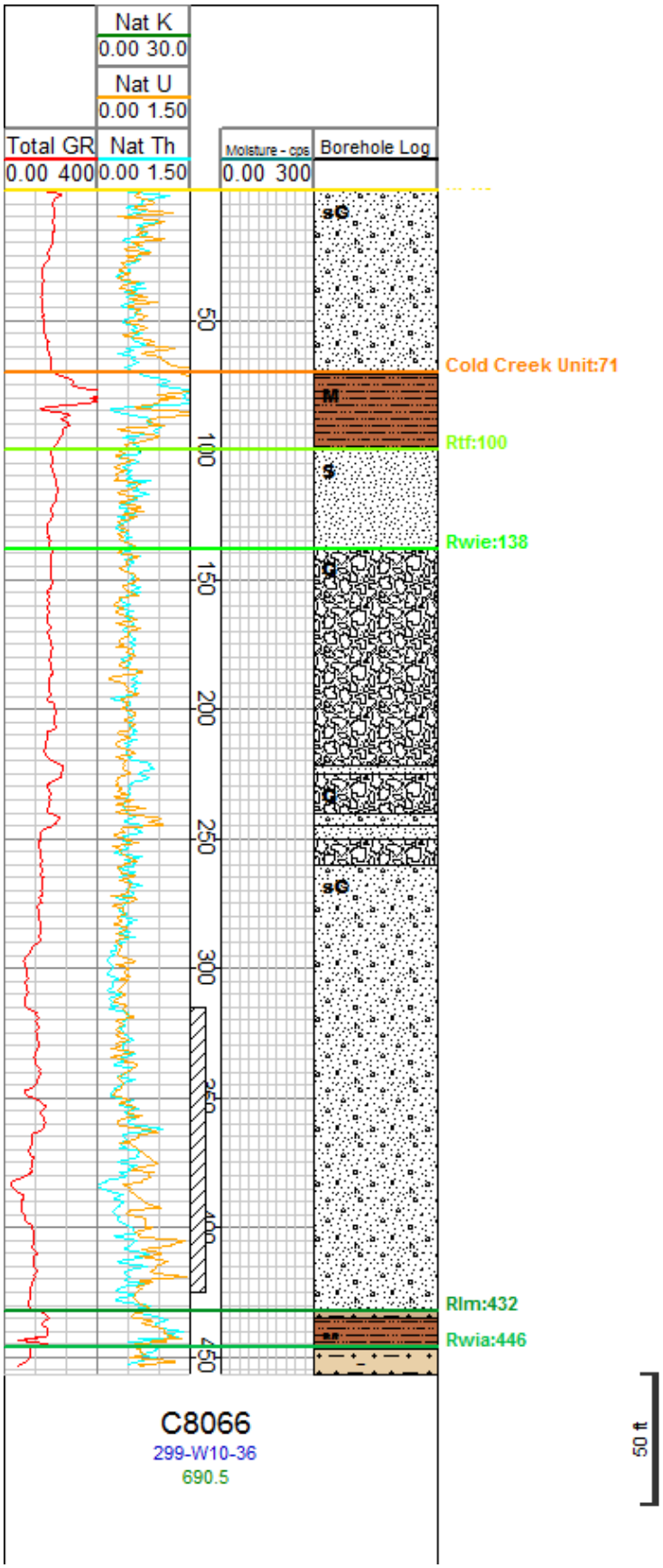

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
450
HF2:62
Cold Creek Unit:110
CCUc:129
Rtf:136
Rwie:147
Rlm:439
Rwia:480
C7574
299-W15-226
696.8
60 ft

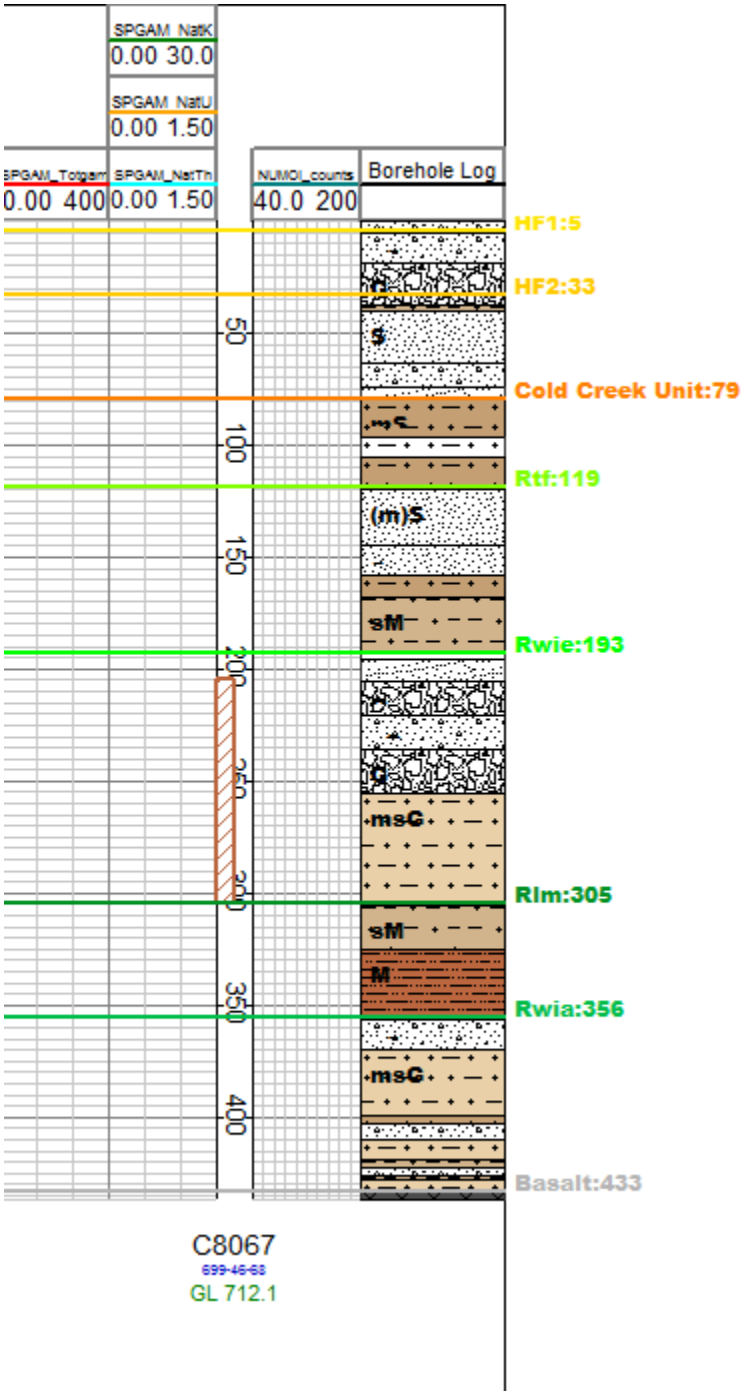

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:75
Cold Creek Unit:137
CCUc:153
Rtf:172
Rwie:197
Rlm:456
Rwia:496
C7575
299-W15-227
GL 701.3

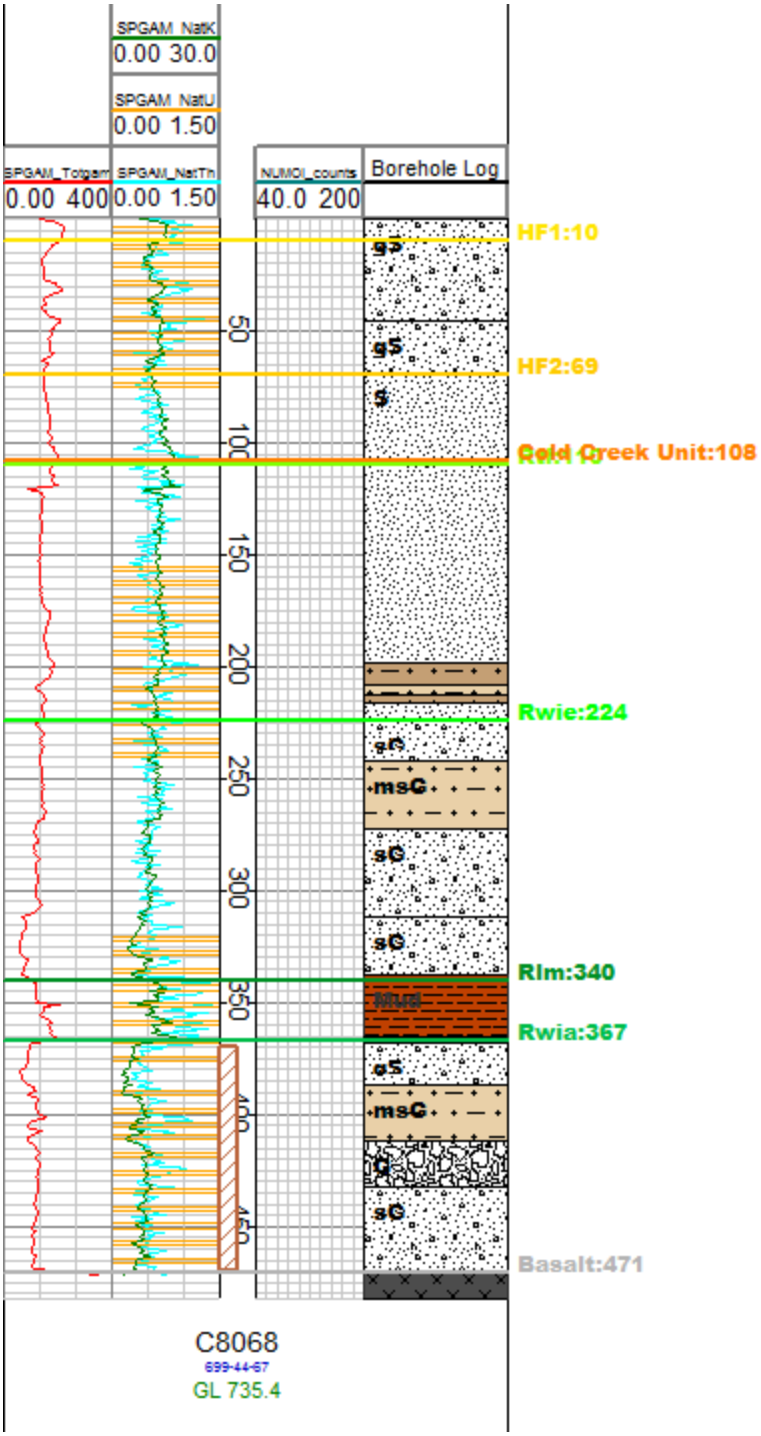

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 120
Borehole Log
HF2:30
Cold Creek Unit:102
CCUc:110
Rtf:117
Rwie:136
Rlm:408
msG
sG
Clay
50
100
150
200
250
300
350
400
450
C7576
299-W17-2
GL 671.0

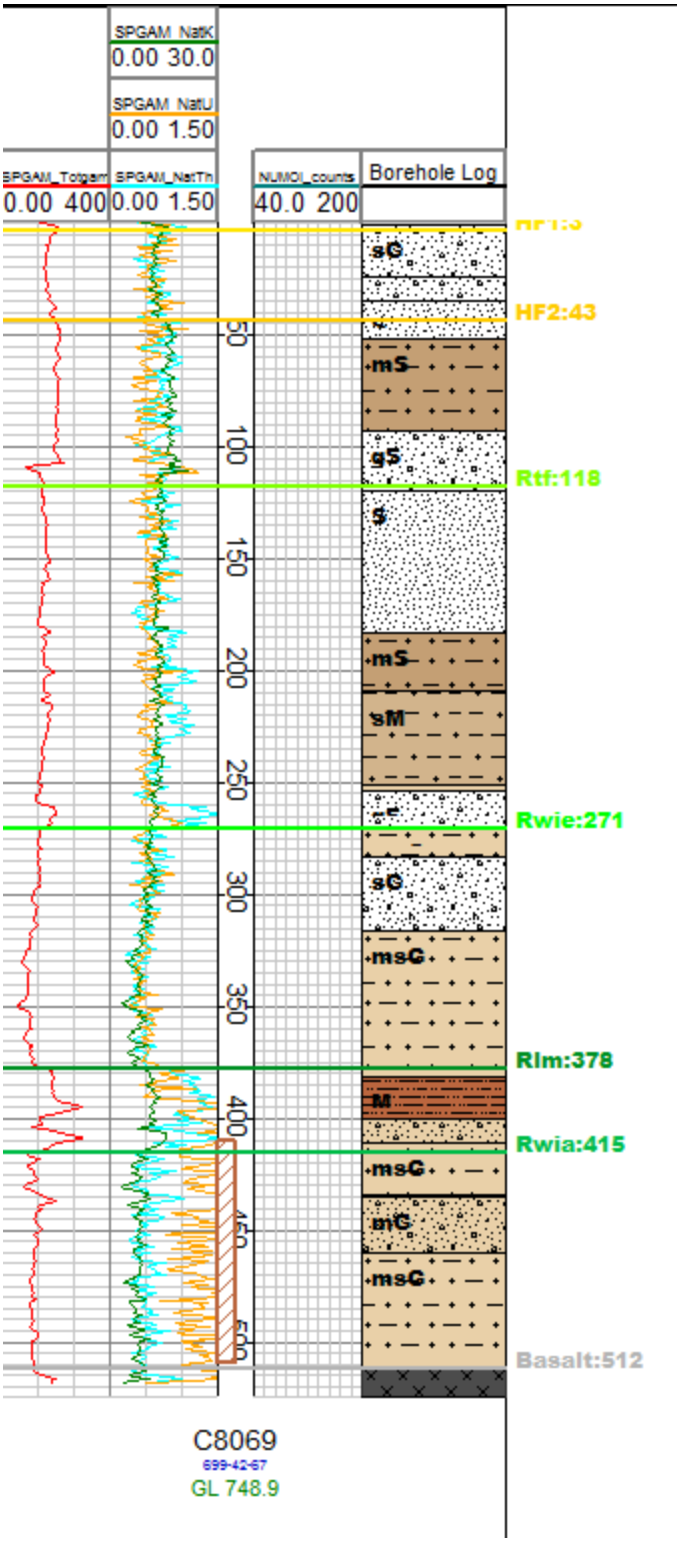

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:4
HF2:86
Cold Creek Unit:125
CCUc:146
Rtf:157
Rwie:189
50
100
150
200
250
300
C7664
299-W22-89
GL 674.1

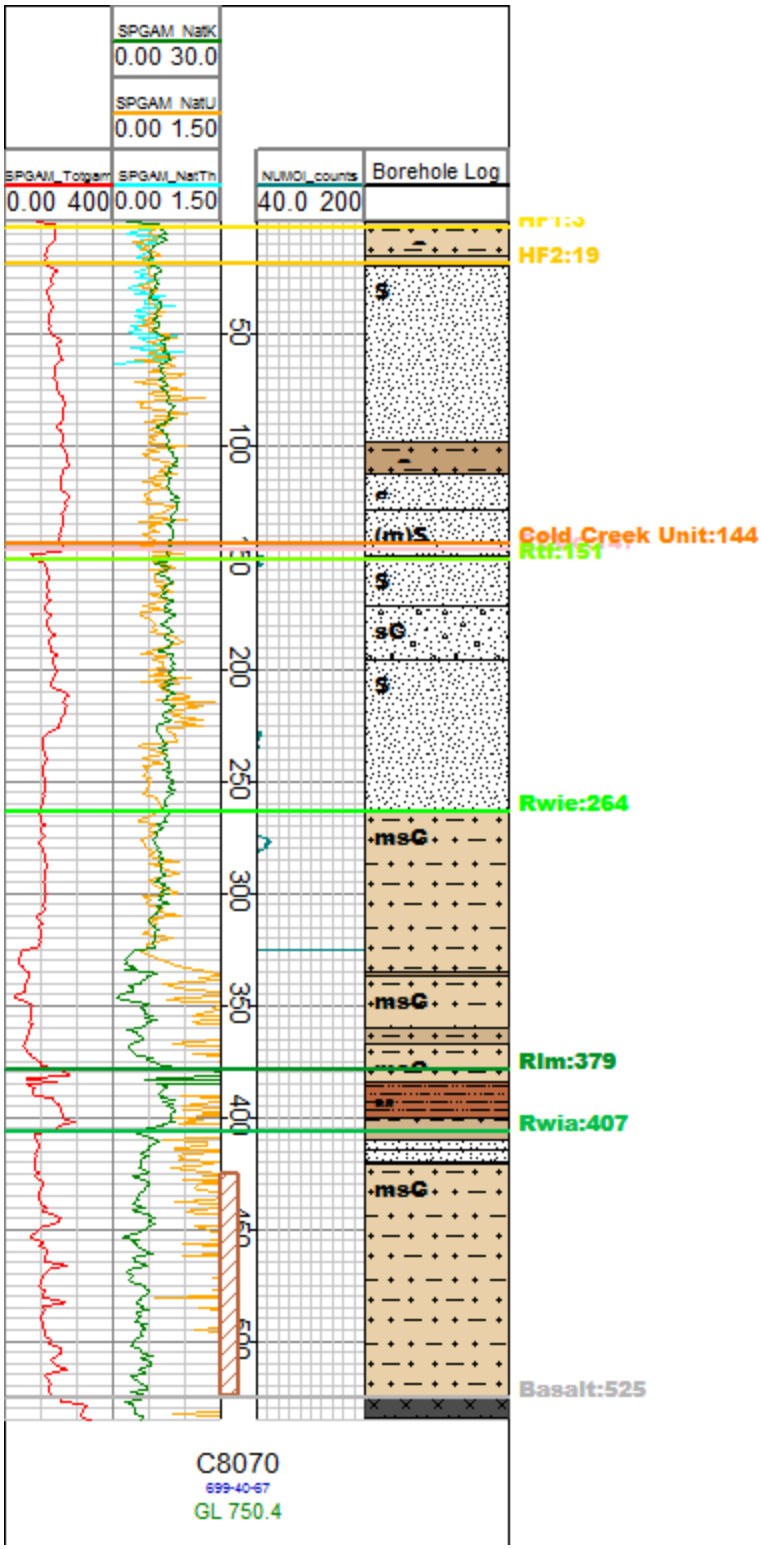

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
450
sG
sM
(m)gS
msG
Cold Creek Unit:59
Rtf:83
Rwie:95
Rwia:423
Basalt:475
C8065
299-W6-14
695.9
60 ft

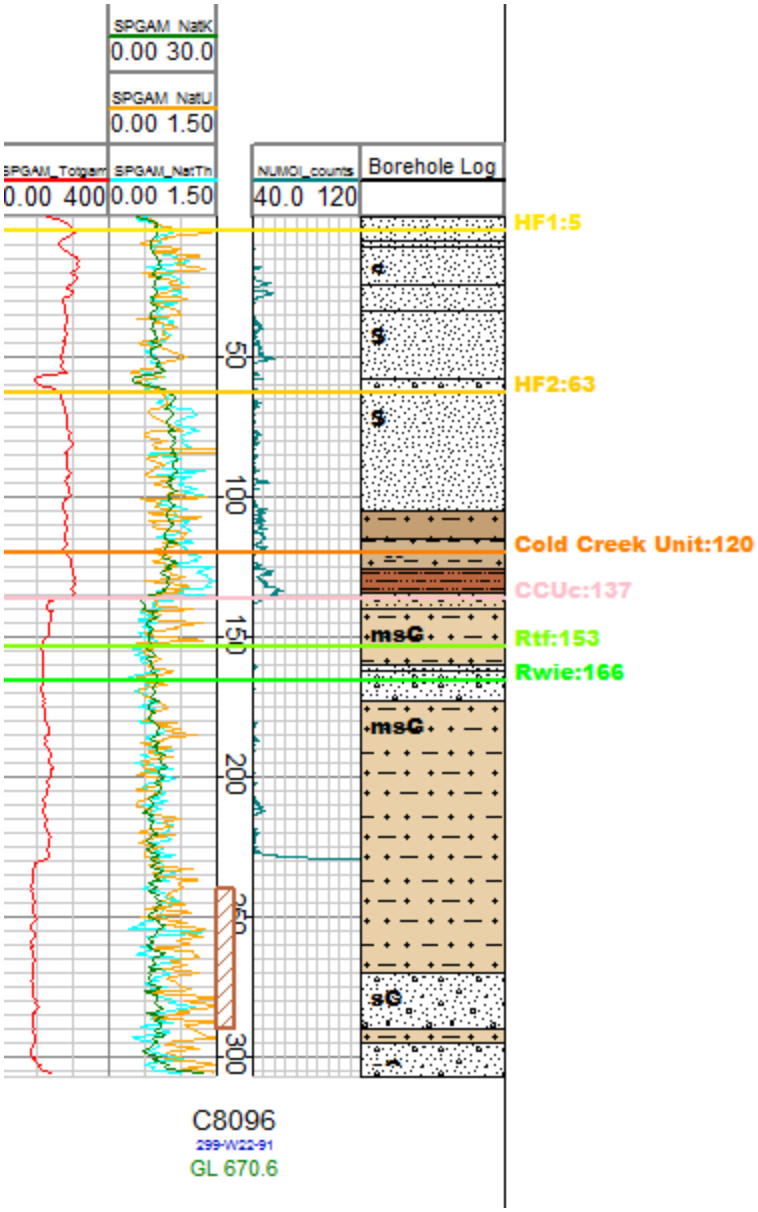

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
450
Cold Creek Unit:71
Rtf:100
Rwie:138
Rlm:432
Rwia:446
C8066
299-W10-36
690.5
50 ft

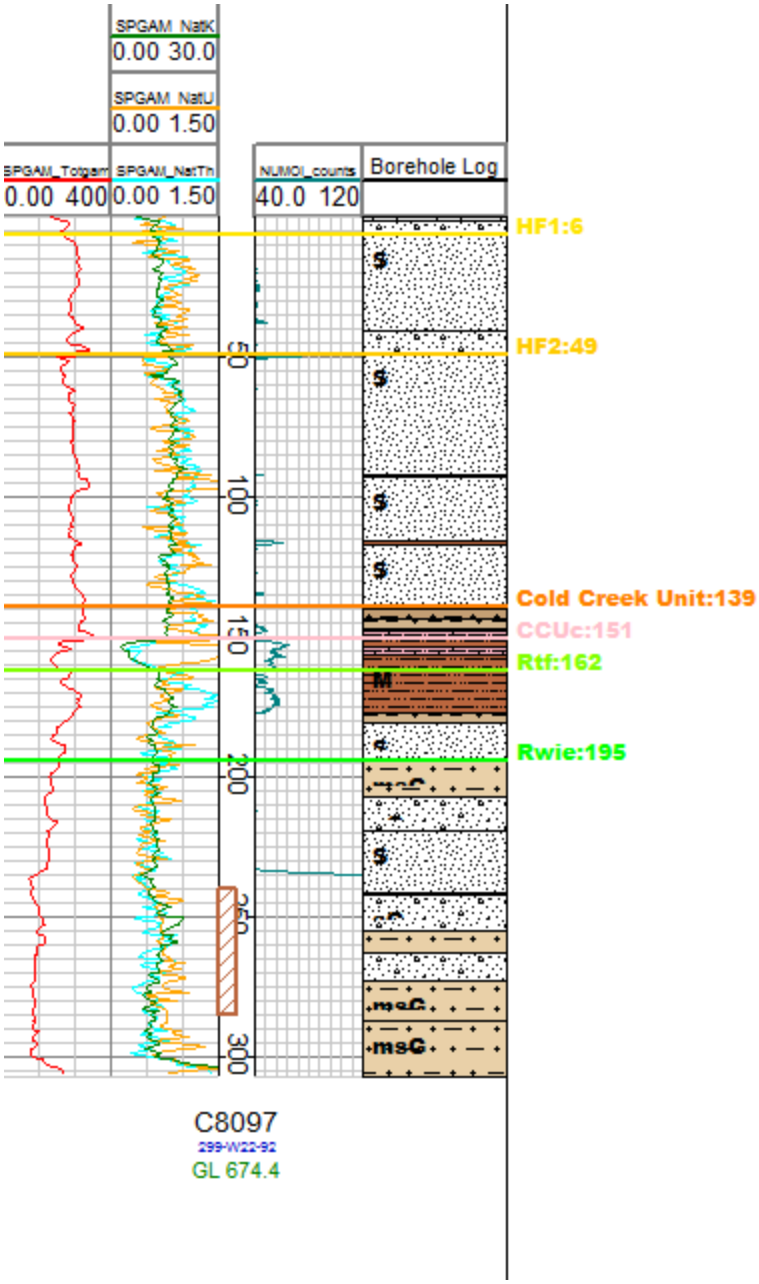

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:5
HF2:33
Cold Creek Unit:79
Rtf:119
Rwie:193
Rlm:305
Rwia:356
Basalt:433
50
100
150
200
250
300
350
400
C8067
699-46-68
GL 712.1

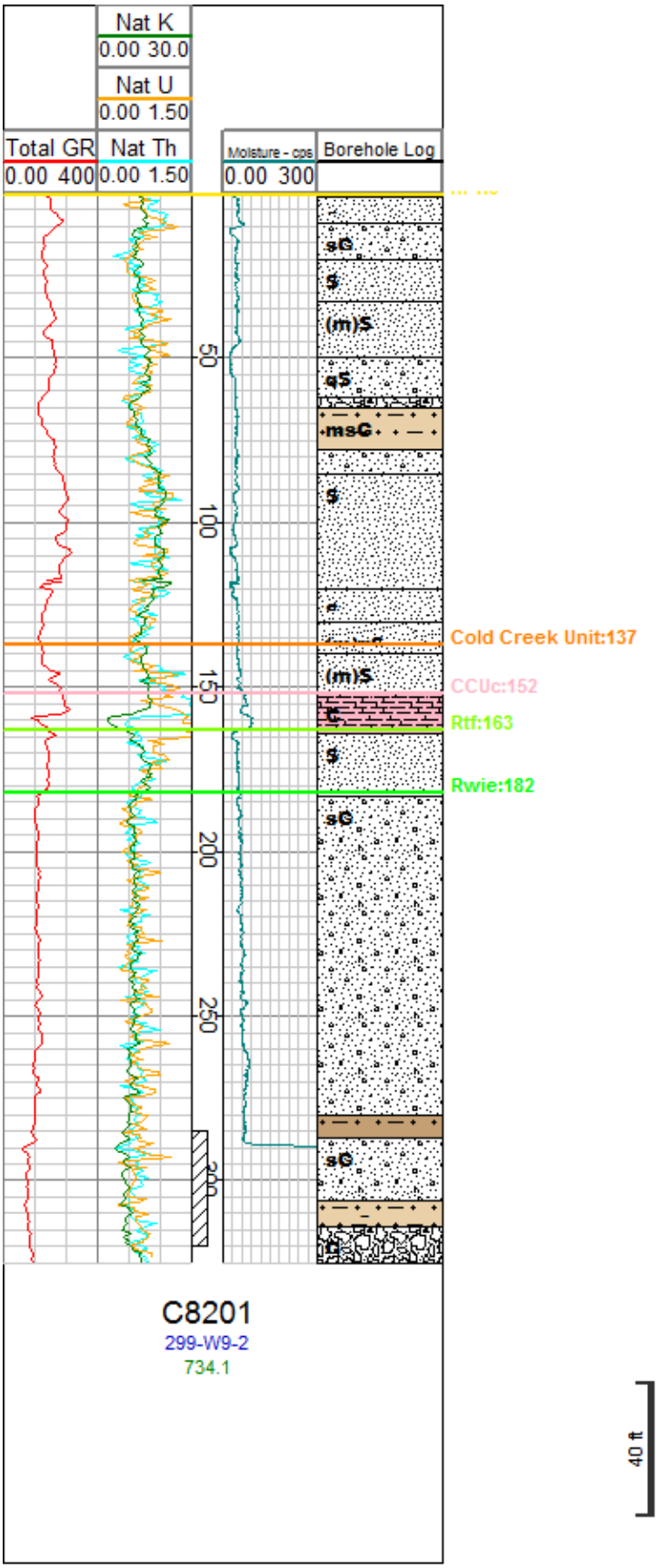

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:10
HF2:69
Cold Creek Unit:108
Rwie:224
Rlm:340
Rwia:367
Basalt:471
50
100
150
200
250
300
350
400
450
C8068
699-44-67
GL 735.4

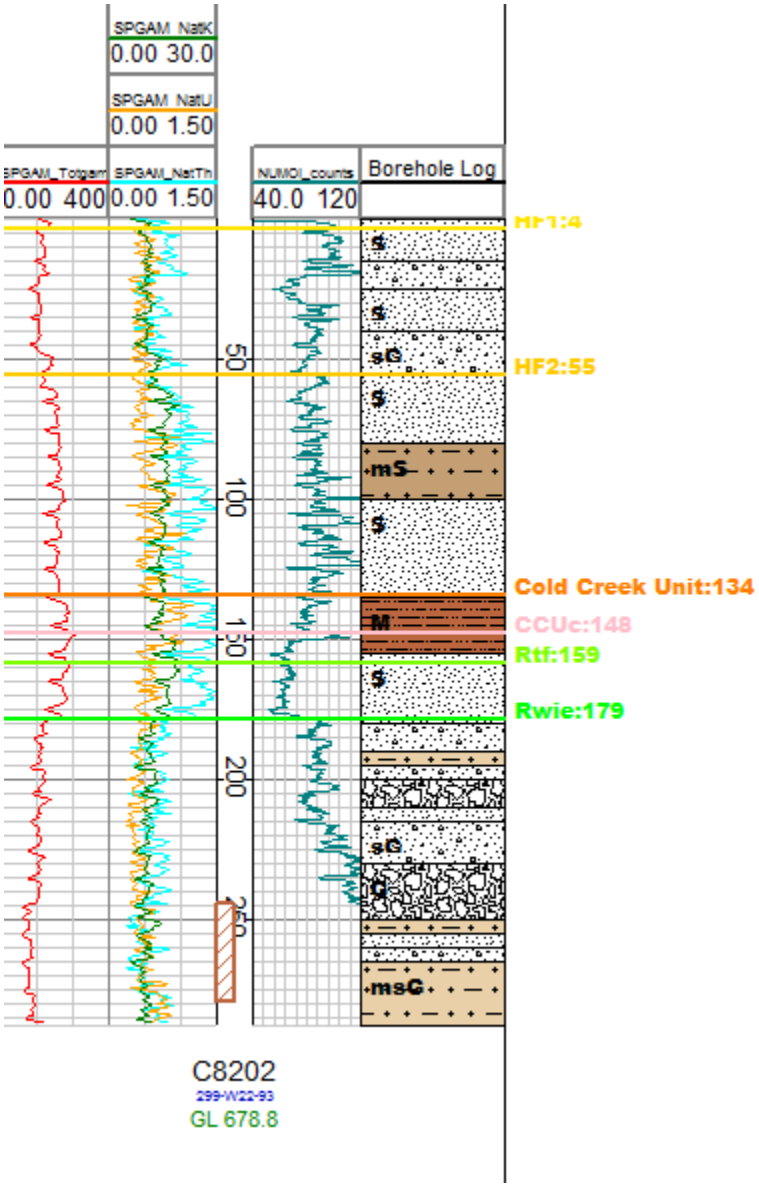

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:43
Rtf:118
Rwie:271
Rlm:378
Rwia:415
Basalt:512
50
100
150
200
250
300
350
400
450
500
C8069
699-42-67
GL 748.9

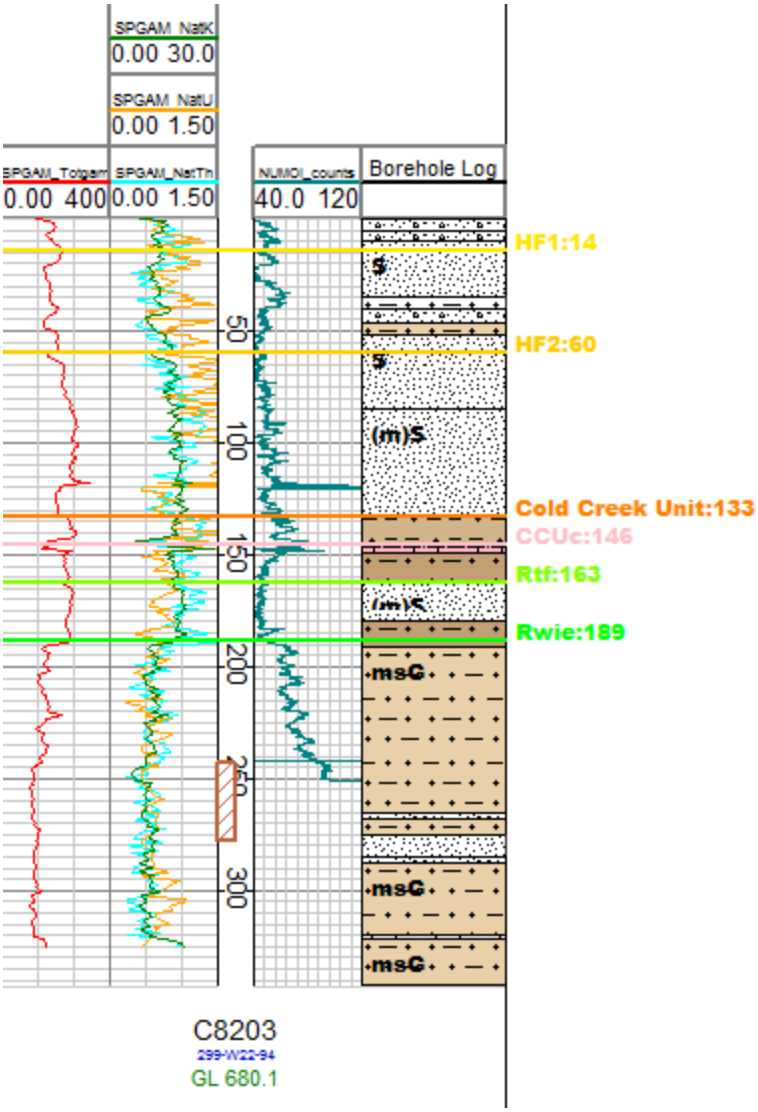

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:19
Cold Creek Unit:144
Rtf:151
Rwie:264
Rlm:379
Rwia:407
Basalt:525
50
100
150
200
250
300
350
400
450
500
C8070
699-40-67
GL 750.4

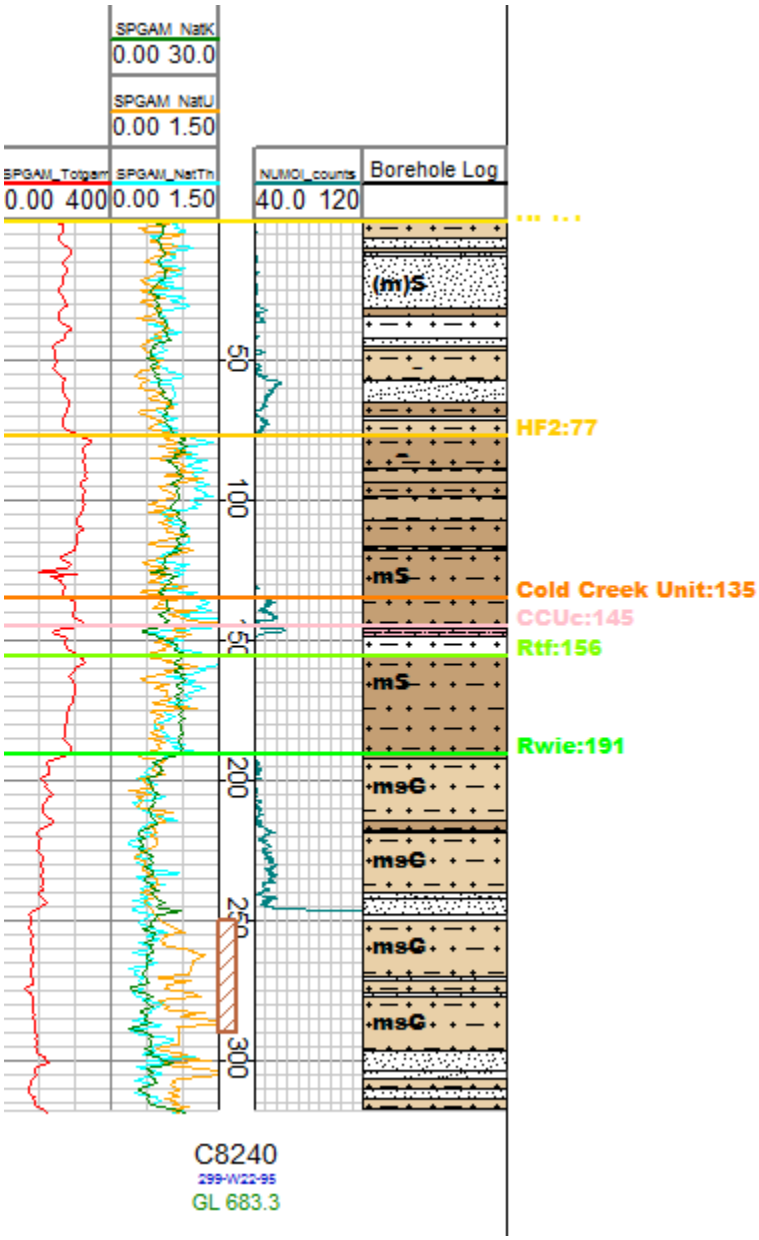

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:5
HF2:63
Cold Creek Unit:120
CCUc:137
Rtf:153
Rwie:166
msG
msG
sG
50
100
150
200
250
300
C8096
299-W22-91
GL 670.6

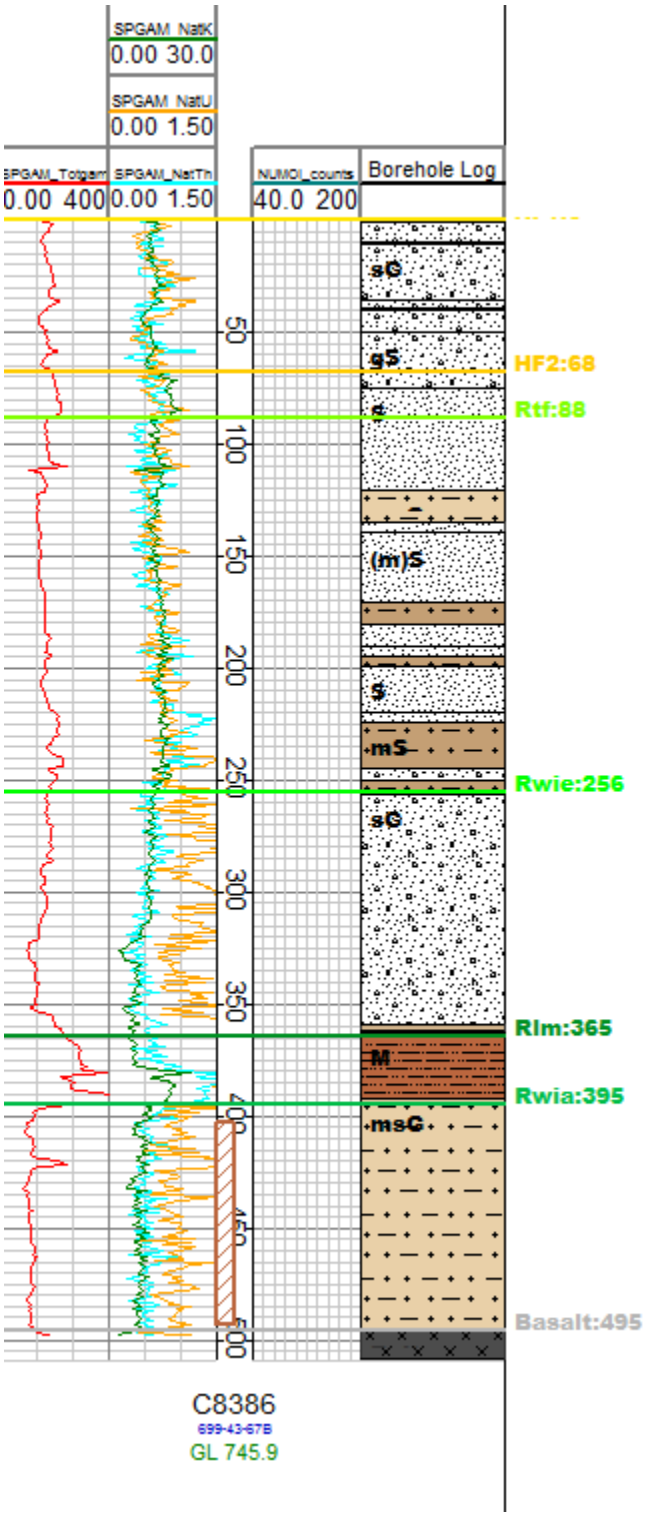

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:6
HF2:49
Cold Creek Unit:139
CCUc:151
Rtf:162
Rwie:195
50
100
150
200
250
300
msG
C8097
299-W22-92
GL 674.4

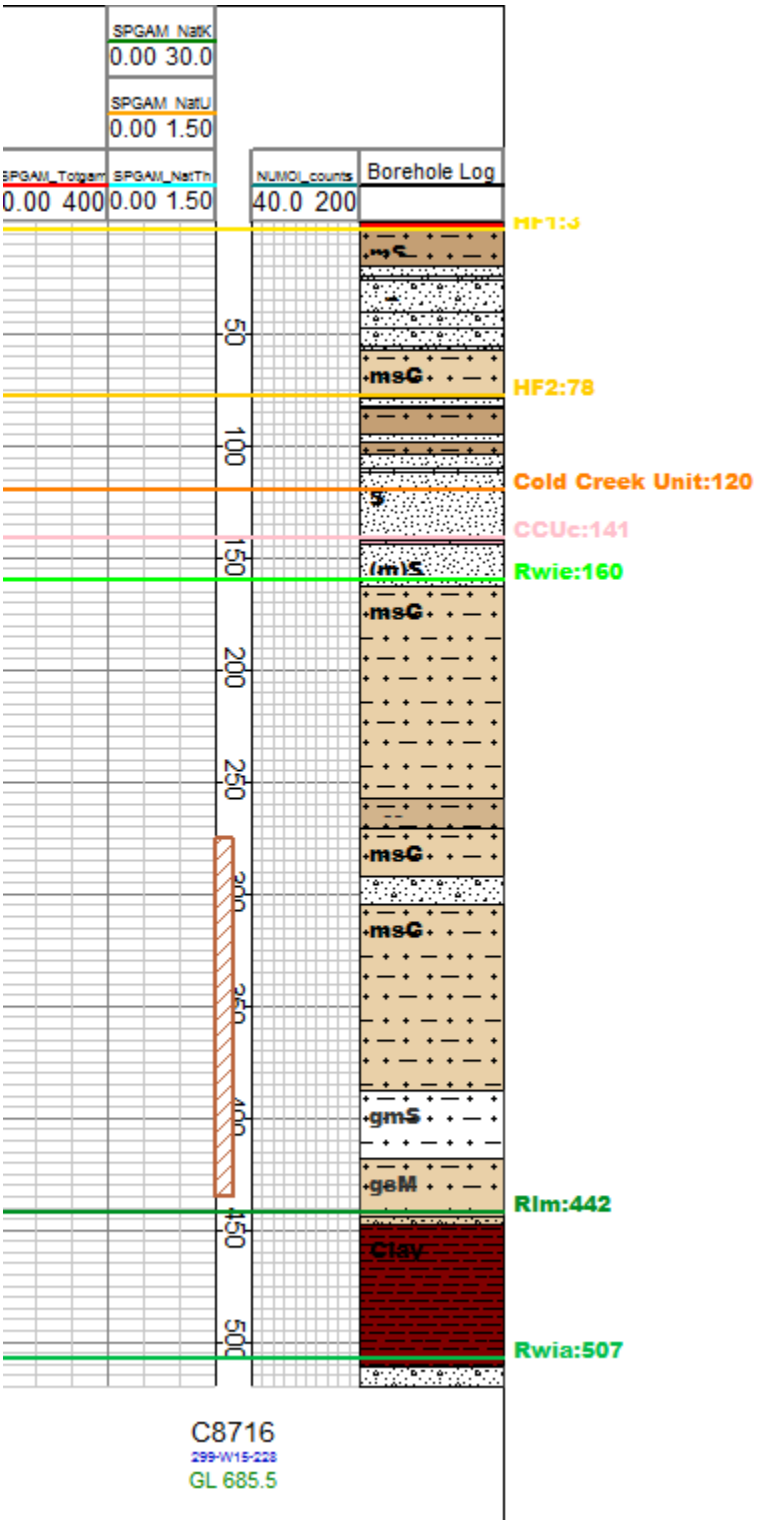

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
sG
S
(m)S
qS
msG
S
(m)S
S
sG
sG
50
100
150
200
250
300
Cold Creek Unit:137
CCUc:152
Rtf:163
Rwie:182
C8201
299-W9-2
734.1
40 ft

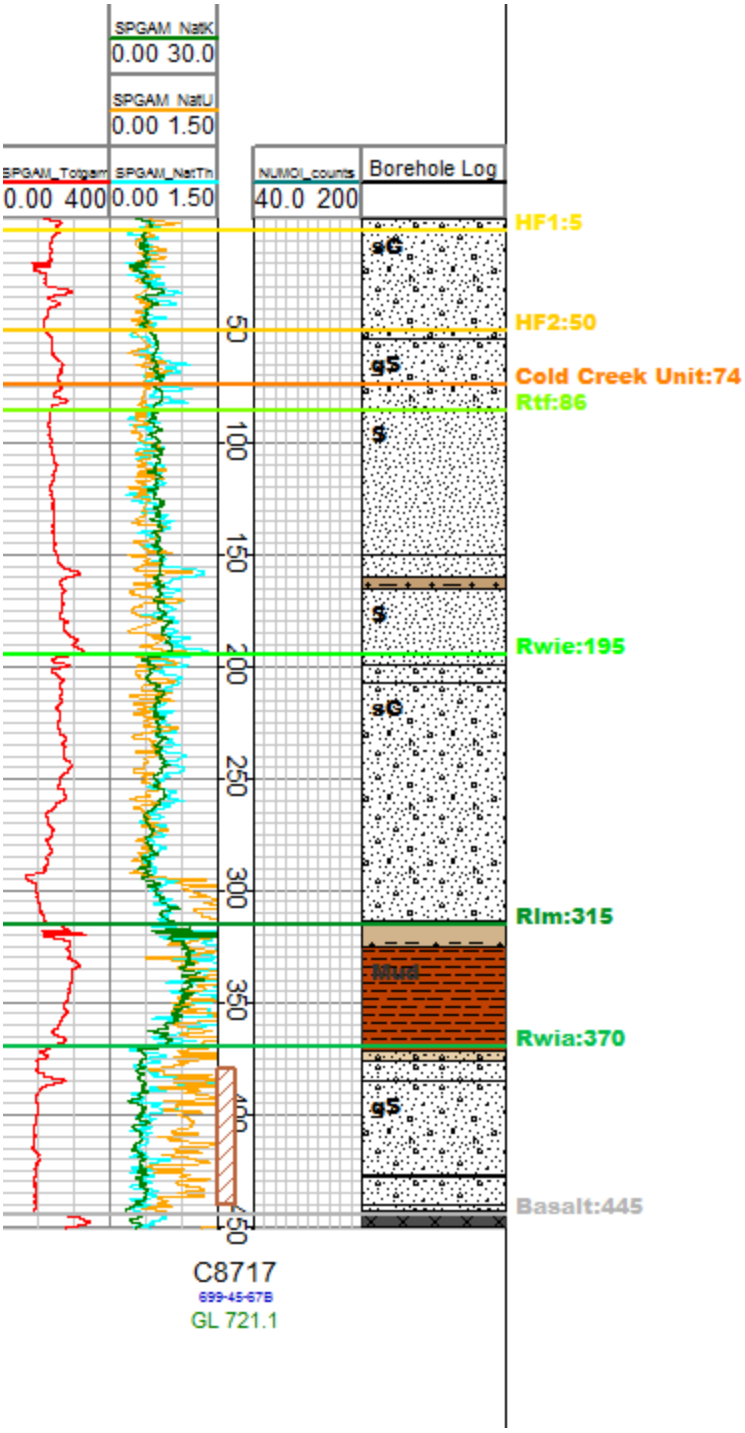

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:4
HF2:55
Cold Creek Unit:134
CCUc:148
Rtf:159
Rwie:179
50
100
150
200
250
S
sG
mS
M
msG
C8202
299-W22-93
GL 678.8

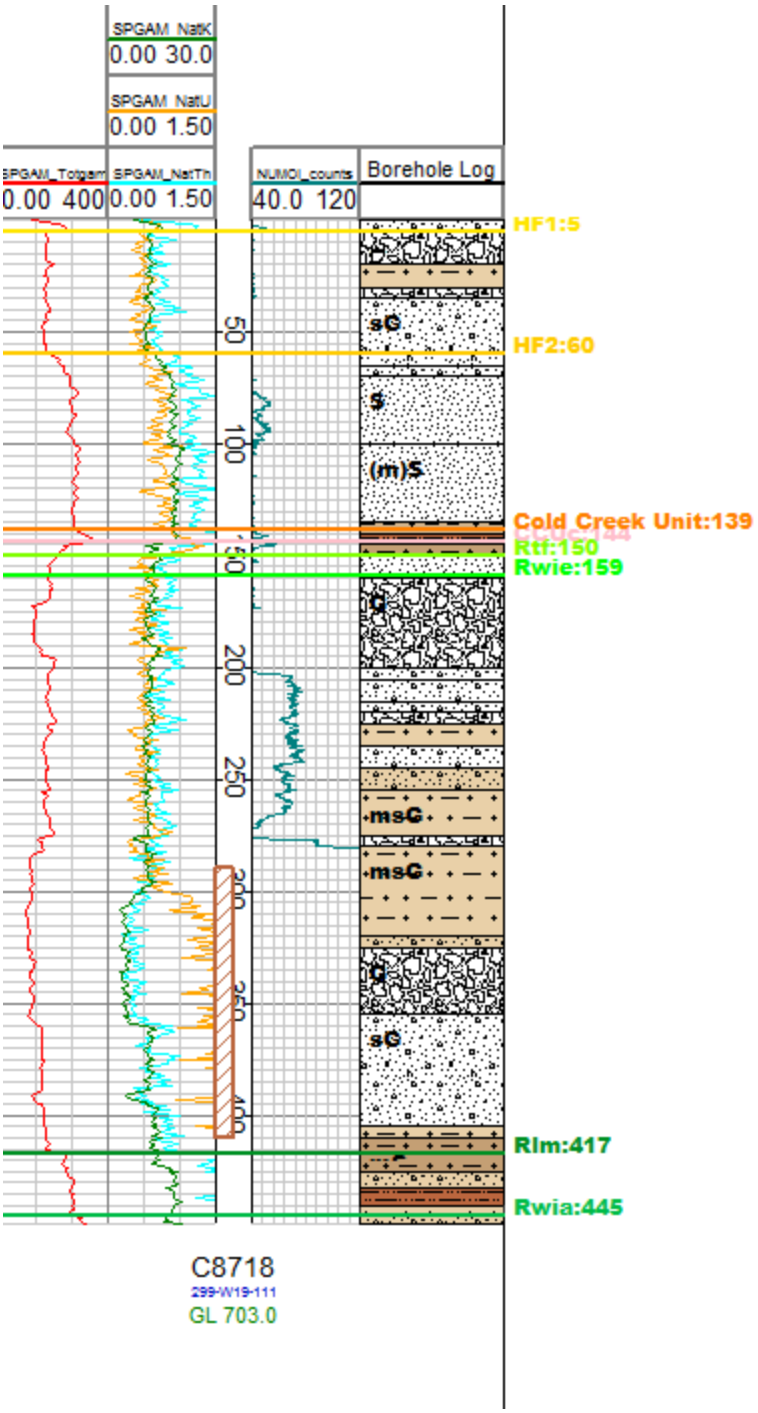

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:14
HF2:60
Cold Creek Unit:133
CCUc:146
Rtf:163
Rwie:189
S
(m)S
msG
50
100
150
200
250
300
C8203
299-W22-94
GL 680.1

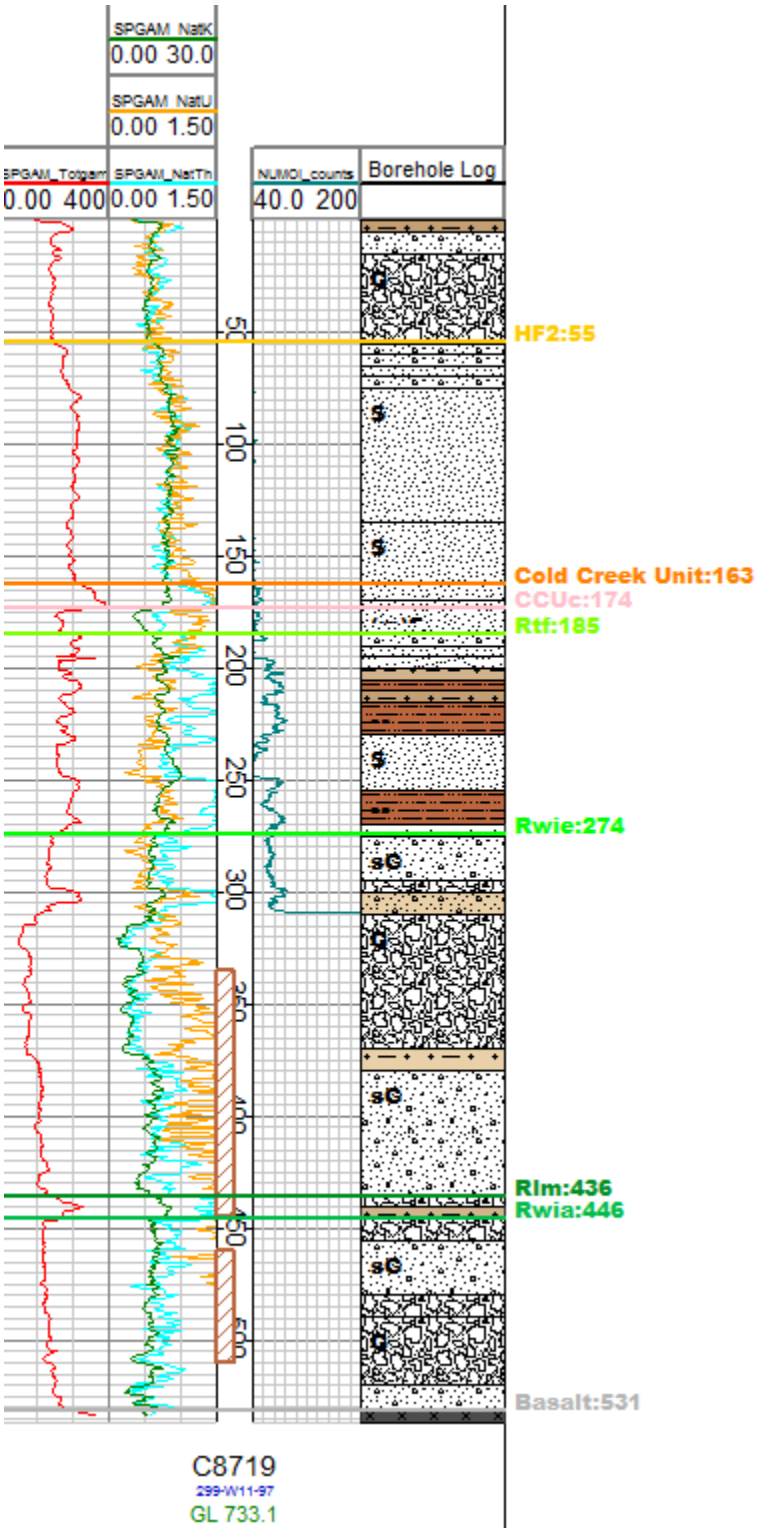

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
(m)S
HF2:77
mS
Cold Creek Unit:135
CCUc:145
Rtf:156
mS
Rwie:191
msG
msG
msG
msG
50
100
150
200
250
300
C8240
299-W22-95
GL 683.3

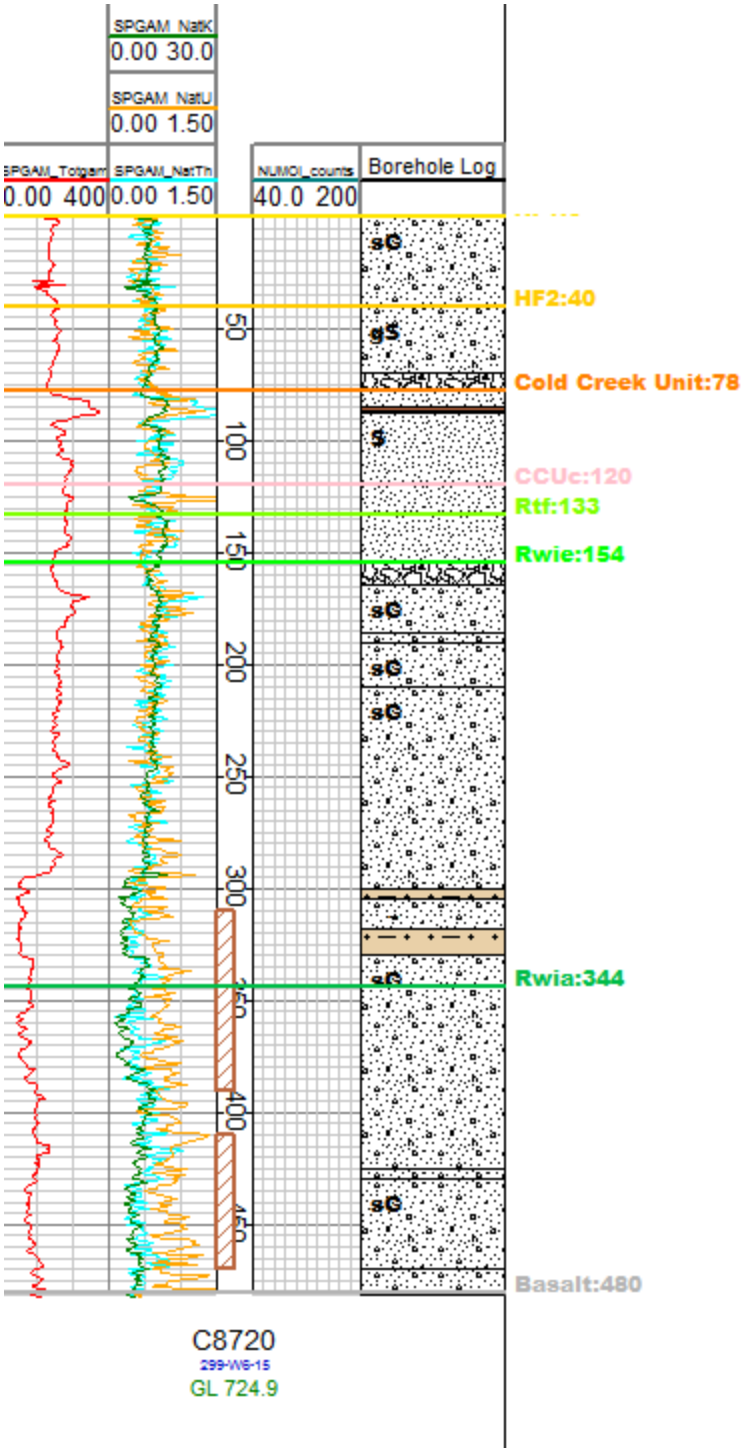

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
sG
gS
HF2:68
Rtf:88
(m)S
S
mS
Rwie:256
sG
Rlm:365
M
Rwia:395
msG
Basalt:495
50
100
150
200
250
300
350
400
450
500
C8386
699-43-67B
GL 745.9

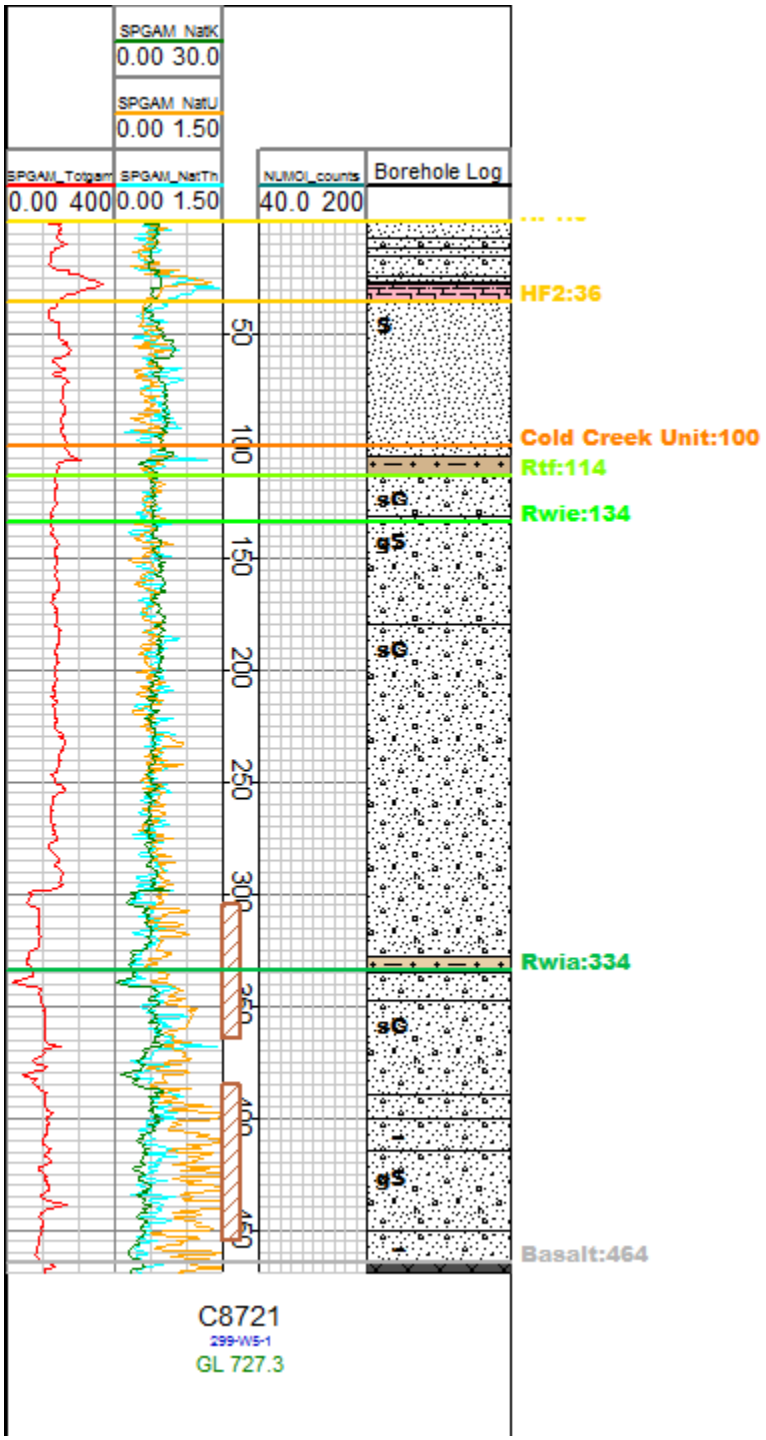

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:3
msC
HF2:78
Cold Creek Unit:120
CCUc:141
Rwie:160
msC
msC
msC
gmS
geM
Rlm:442
Clay
Rwia:507
50
100
150
200
250
300
350
400
450
500
C8716
299-W15-228
GL 685.5

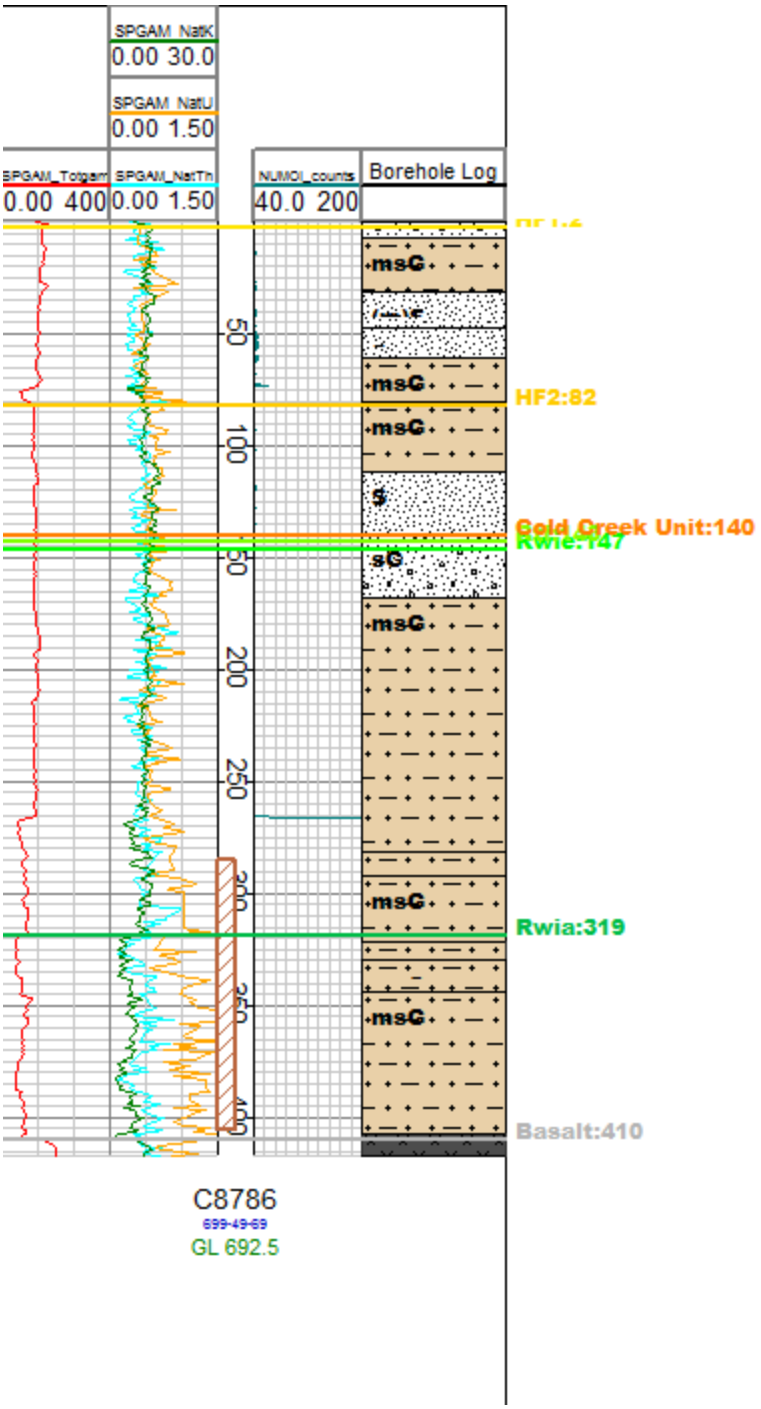

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:5
HF2:50
Cold Creek Unit:74
Rtf:86
Rwie:195
Rlm:315
Rwia:370
Basalt:445
sG
gS
S
S
sG
Mud
gS
50
100
150
200
250
300
350
400
450
C8717
699-45-67B
GL 721.1

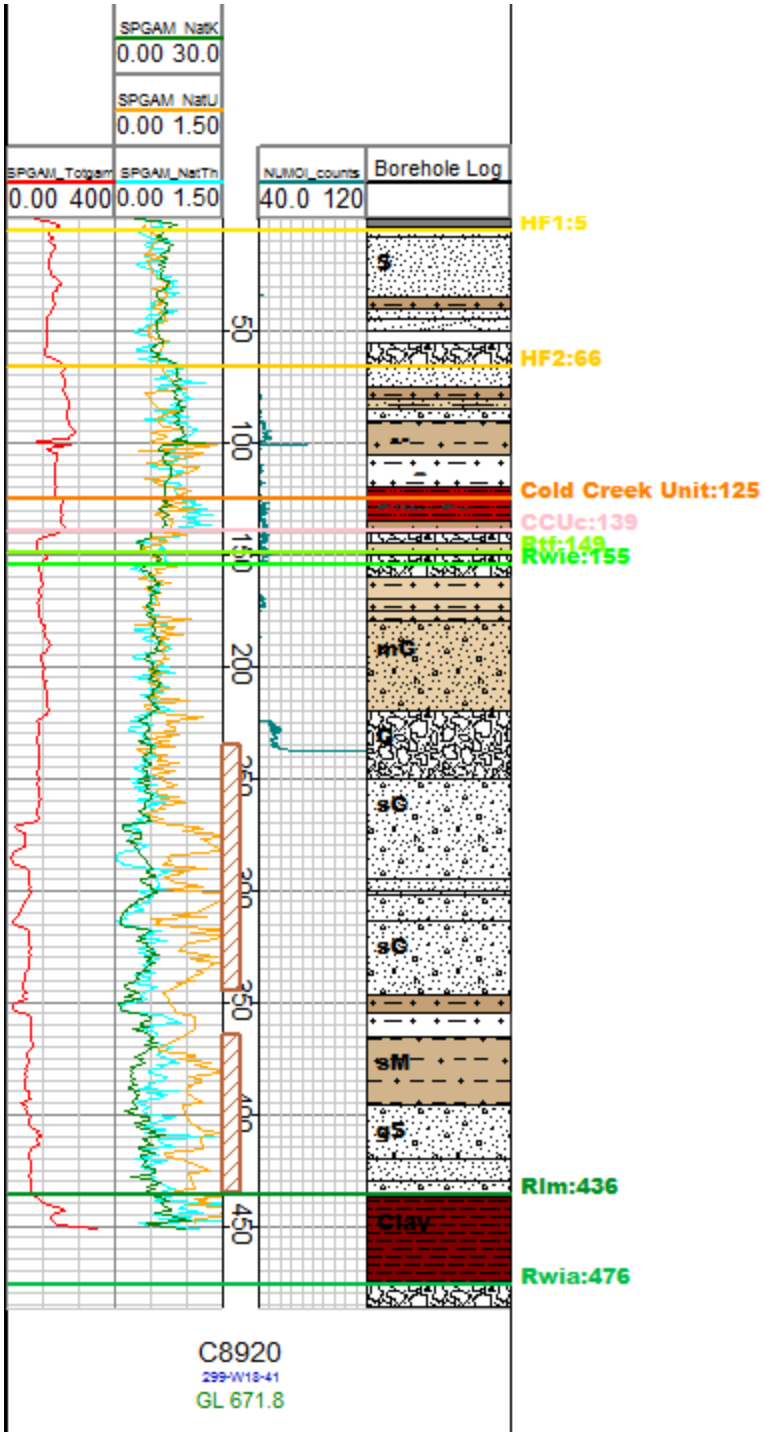

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:5
HF2:60
Cold Creek Unit:139
Rtf:150
Rwie:159
Rlm:417
Rwia:445
sG
S
(m)S
G
msG
msG
G
sG
50
100
150
200
250
300
350
400
C8718
299-W19-111
GL 703.0

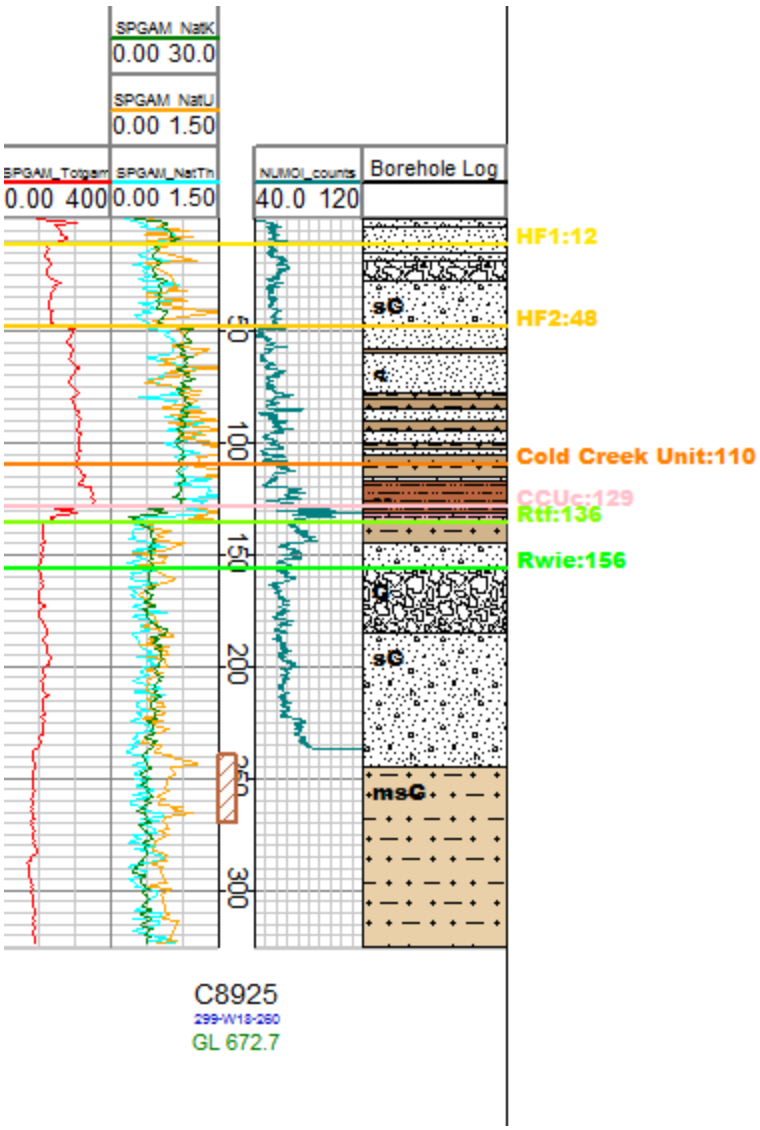

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
50
100
150
200
250
300
350
400
450
500
HF2:55
Cold Creek Unit:163
CCUc:174
Rtf:185
Rwie:274
Rlm:436
Rwia:446
Basalt:531
C8719
299-W11-97
GL 733.1

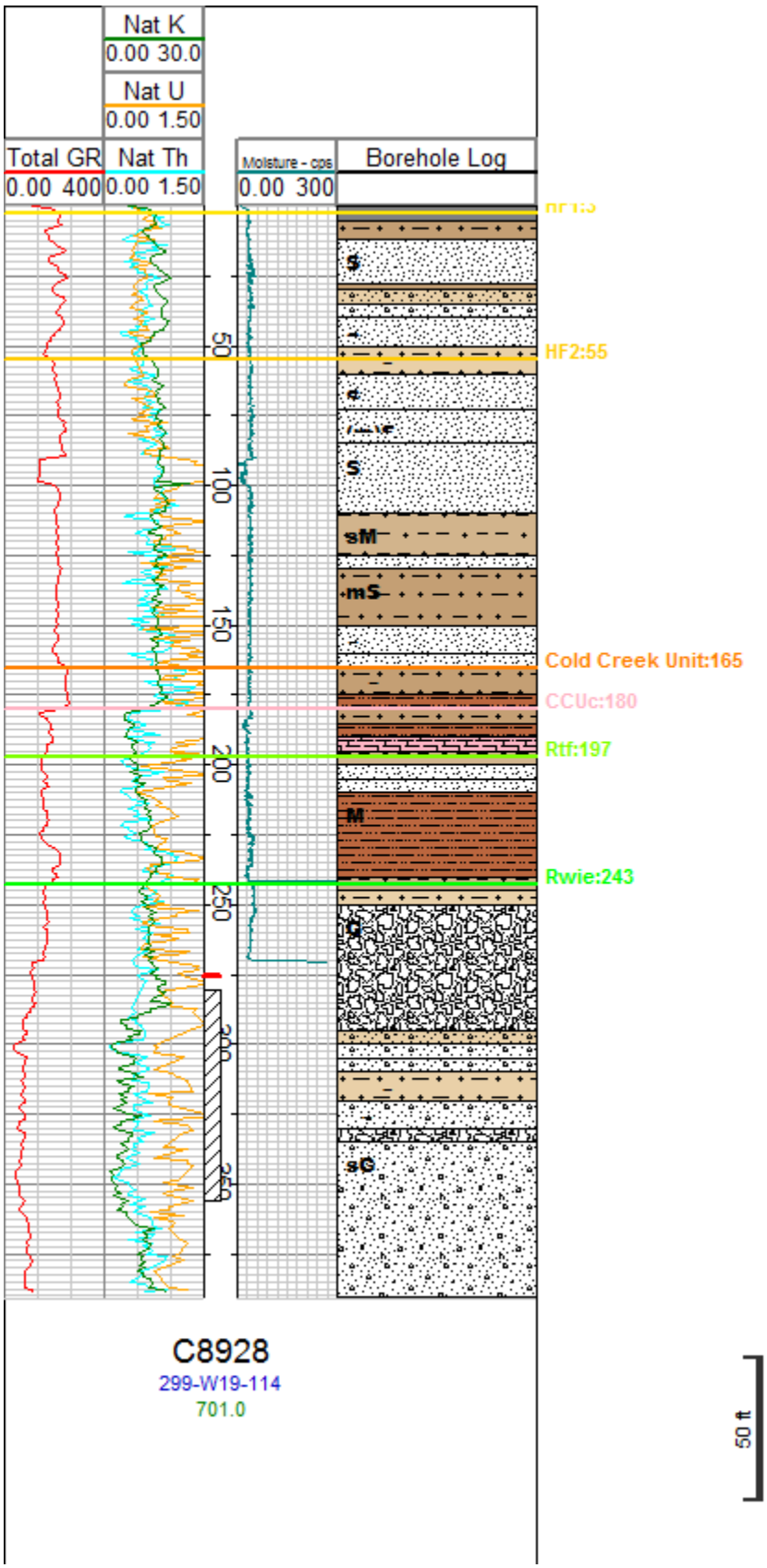

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:40
Cold Creek Unit:78
CCUc:120
Rtf:133
Rwie:154
Rwia:344
Basalt:480
50
100
150
200
250
300
350
400
450
C8720
299-W6-15
GL 724.9

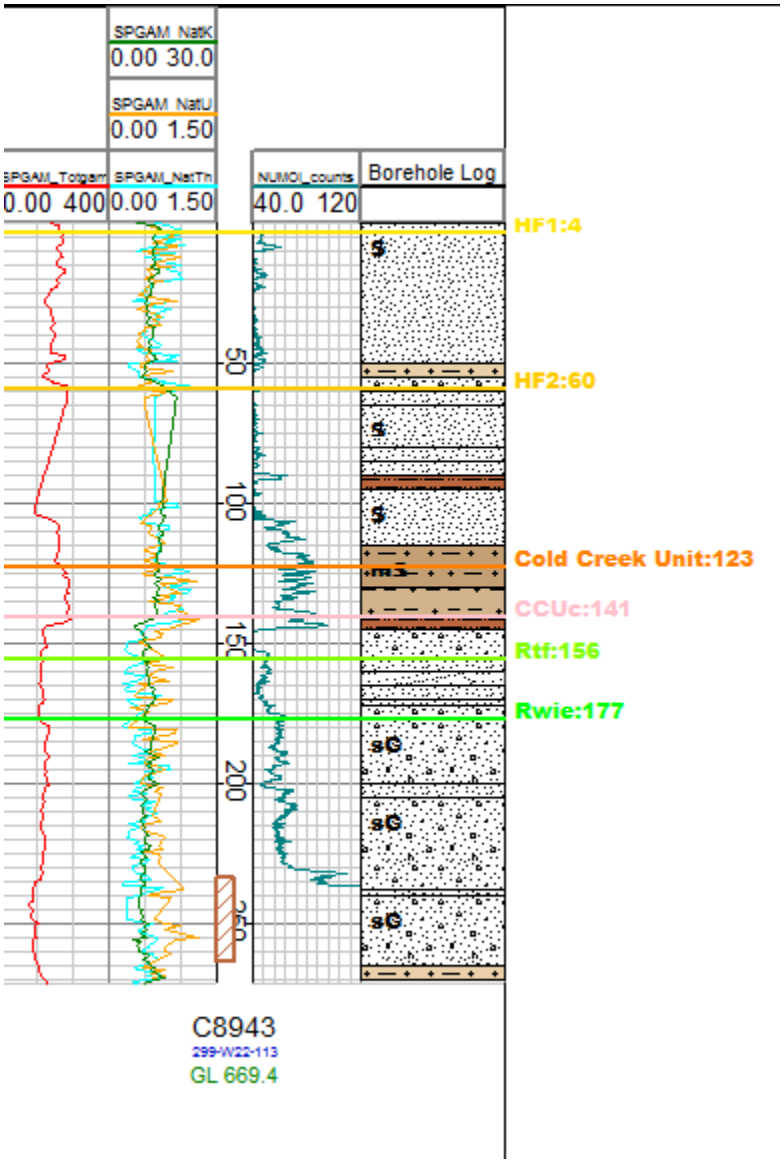

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:36
Cold Creek Unit:100
Rtf:114
Rwie:134
Rwia:334
Basalt:464
50
100
150
200
250
300
350
400
450
C8721
299-W5-1
GL 727.3

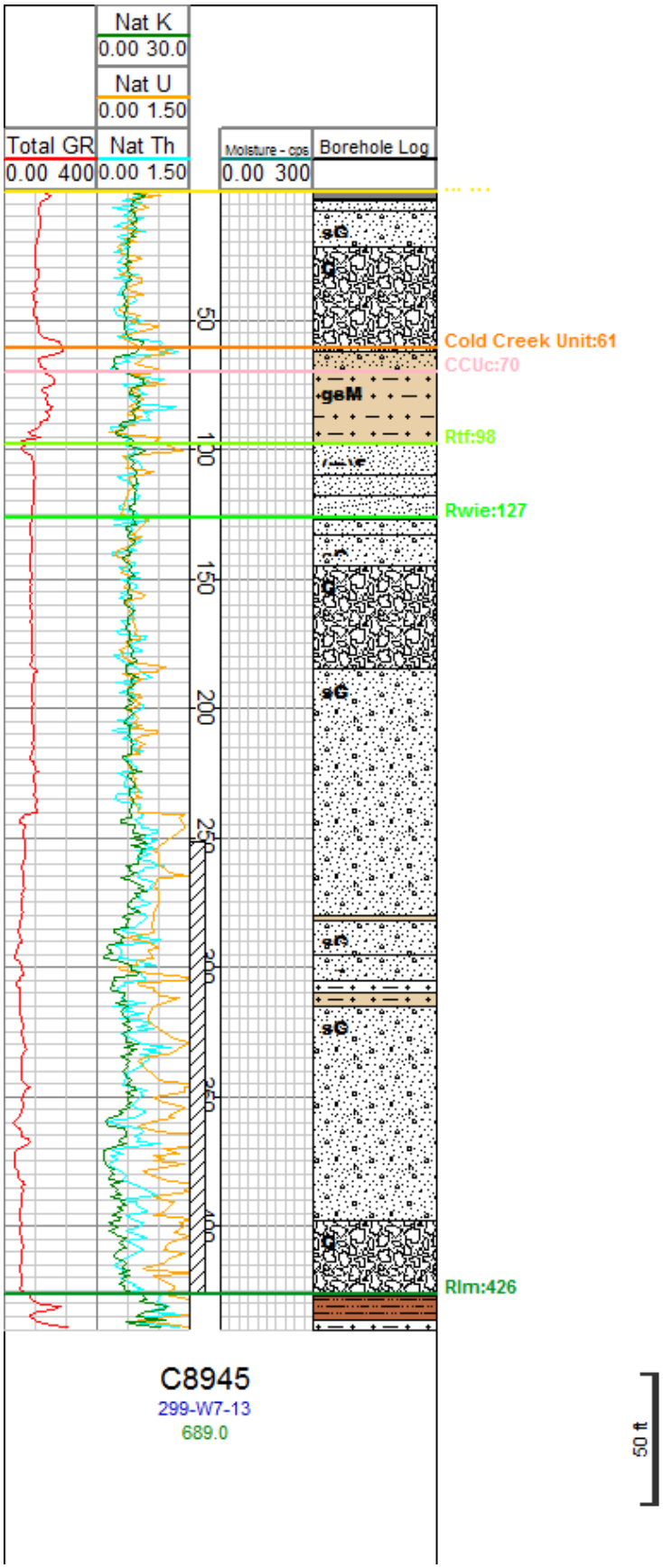

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
msC
HF2:82
Gold Creek Unit:140
Rwia:319
Basalt:410
50
100
150
200
250
300
350
400
C8786
699-49-69
GL 692.5

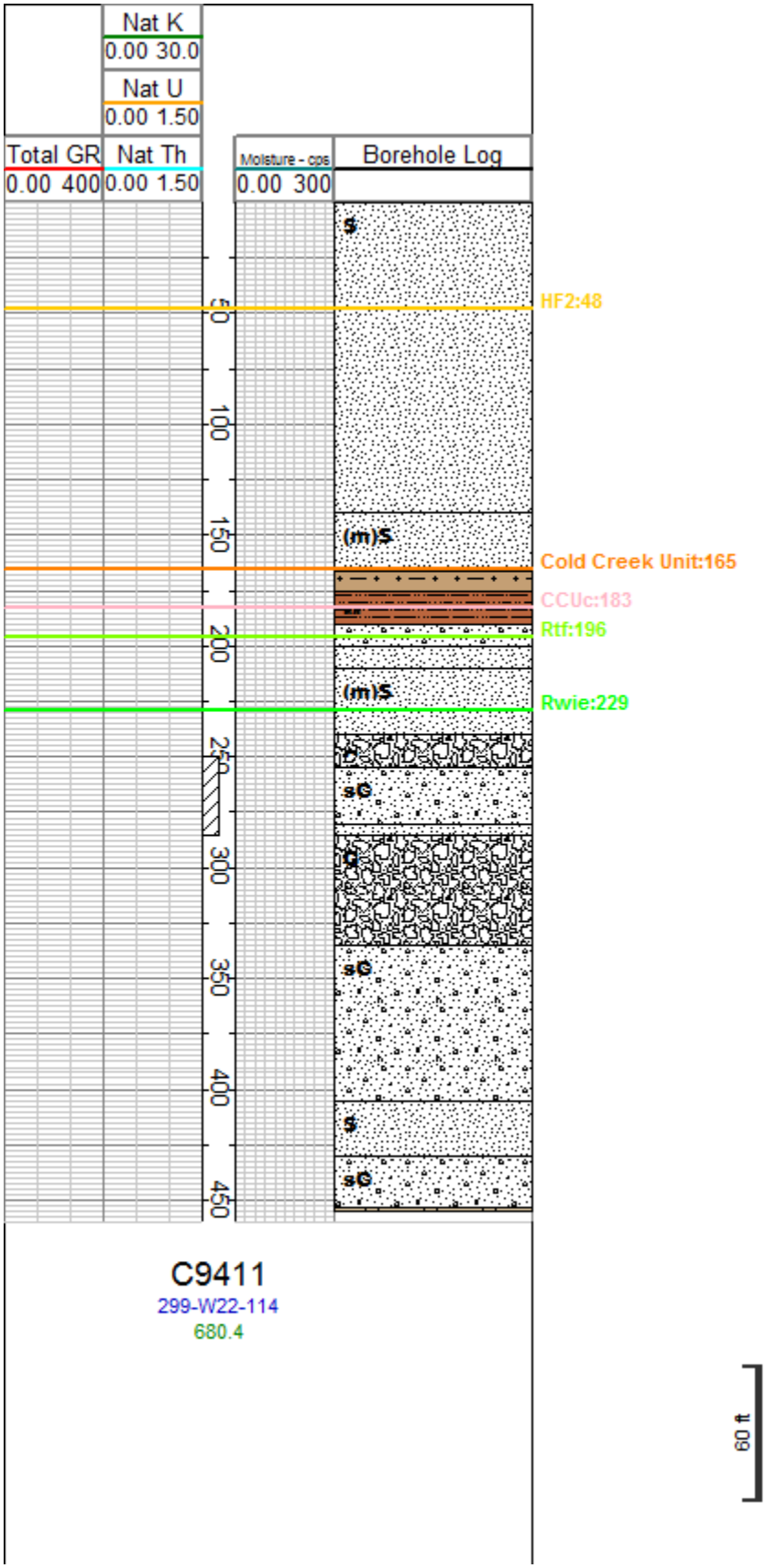

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:5
HF2:66
Cold Creek Unit:125
CCUc:139
Btf:149
Rwie:155
Rlm:436
Rwia:476
S
mG
G
sG
sG
sM
gS
Clay
50
100
150
200
250
300
350
400
450
C8920
299-W18-41
GL 671.8

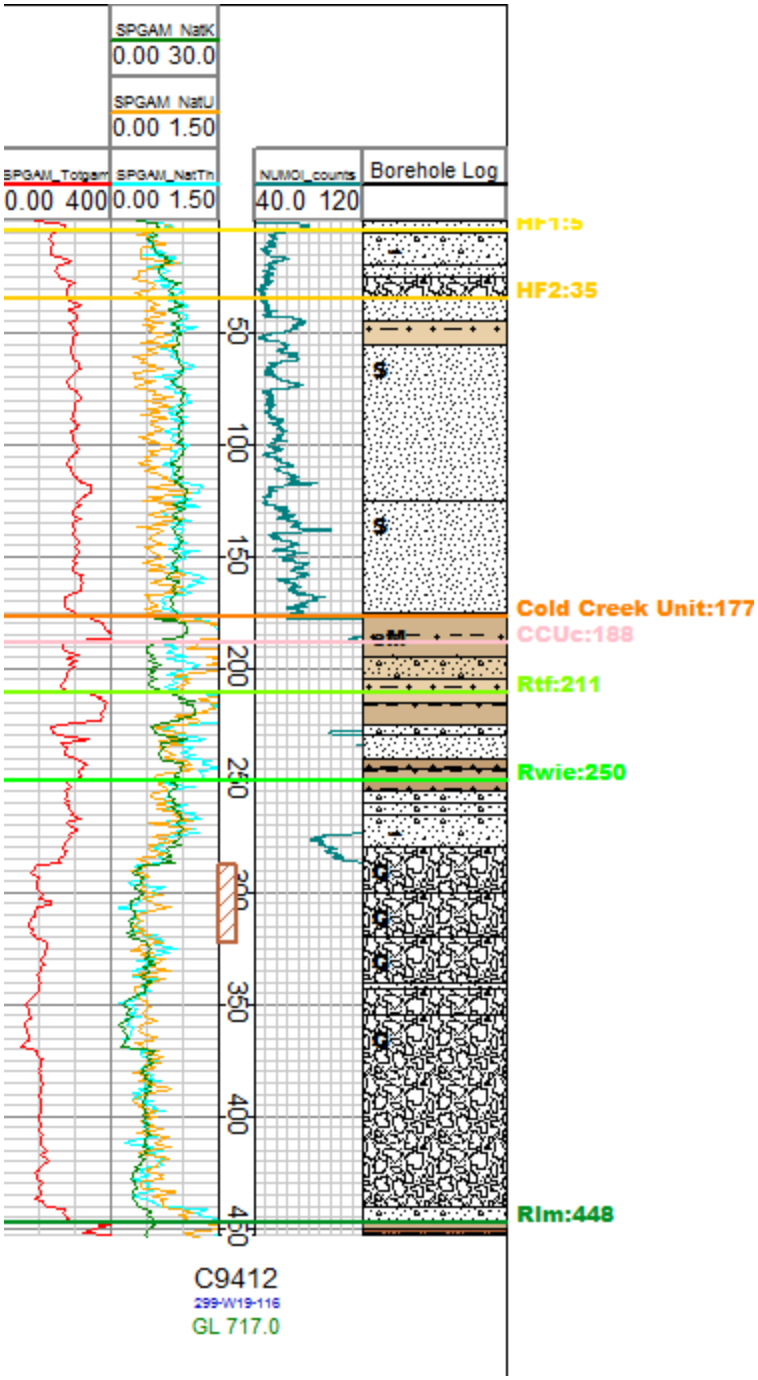

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:12
HF2:48
Cold Creek Unit:110
CCUc:129
Rtf:136
Rwie:156
sG
msG
0
100
150
200
250
300
C8925
299-W18-260
GL 672.7

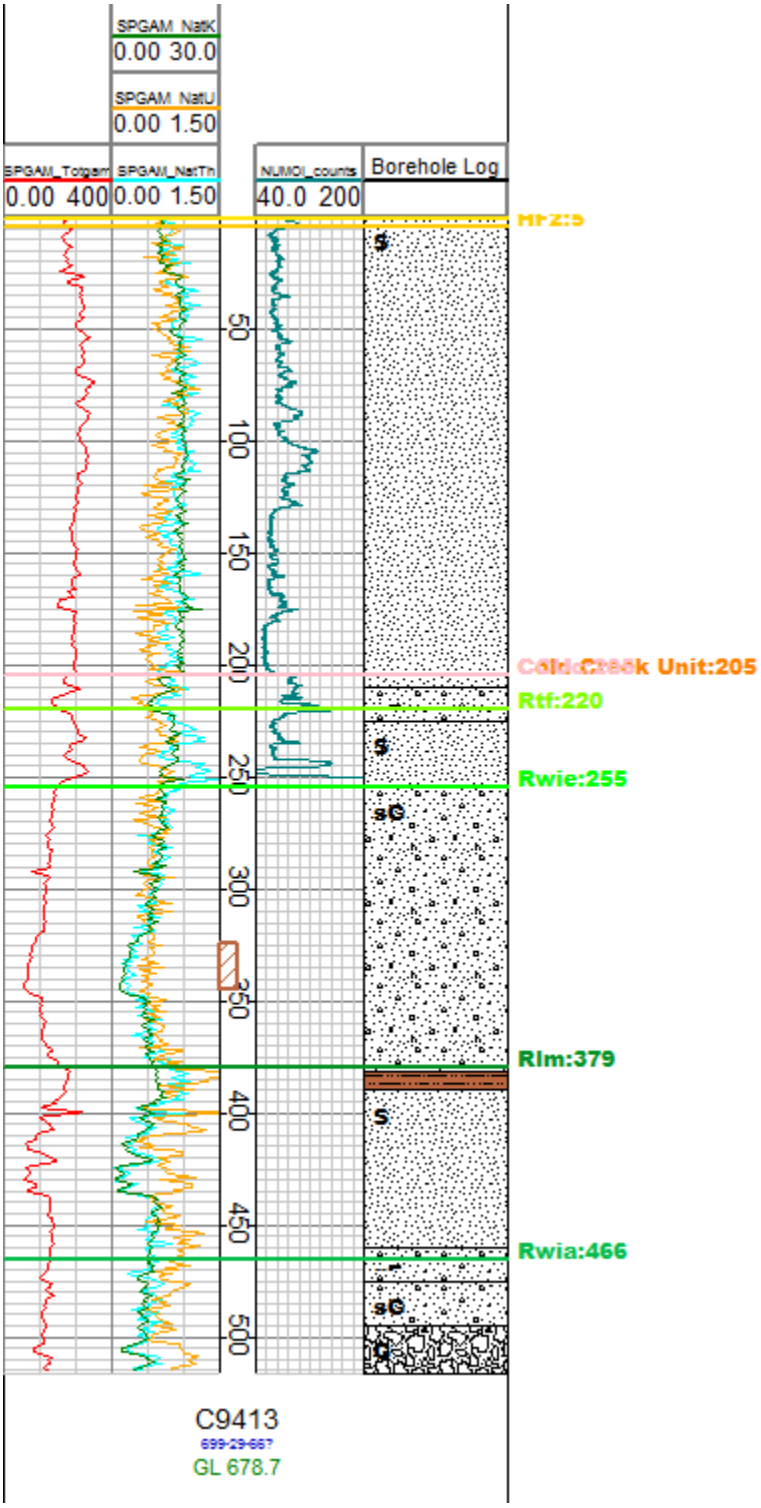

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF2:55
Cold Creek Unit:165
CCUc:180
Rtf:197
Rwie:243
50
100
150
200
250
300
350
C8928
299-W19-114
701.0
50 ft

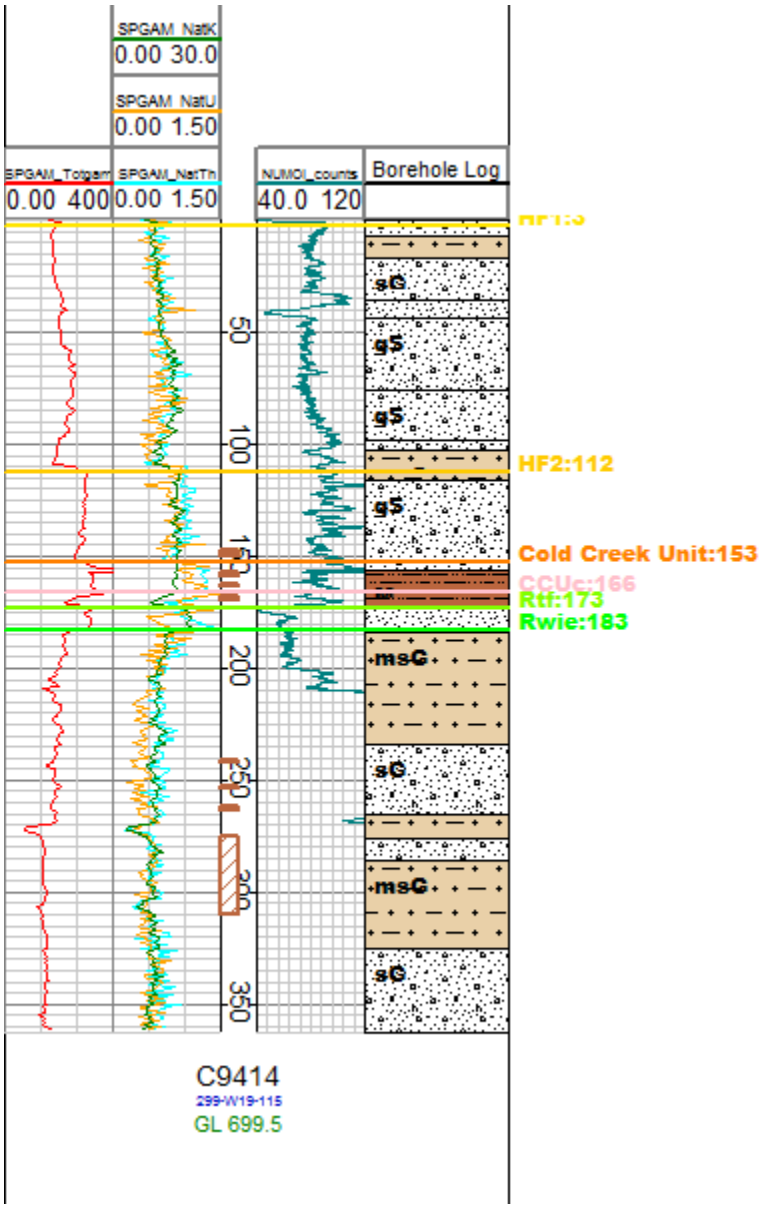

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:4
HF2:60
Cold Creek Unit:123
CCUc:141
Rtf:156
Rwie:177
50
100
150
200
250
C8943
299-W22-113
GL 669.4

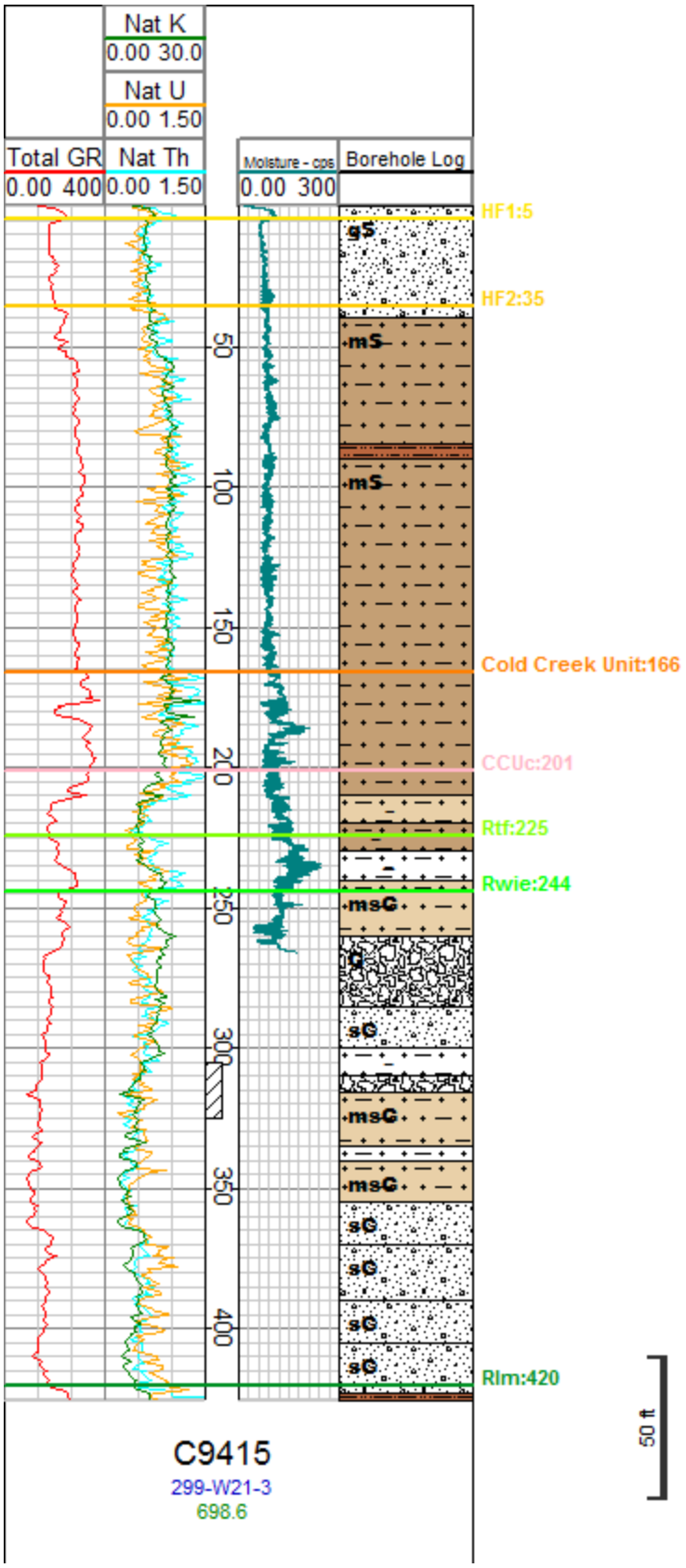

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
Cold Creek Unit:61
CCUc:70
Rtf:98
Rwie:127
Rlm:426
sG
G
geM
C8945
299-W7-13
689.0
50 ft

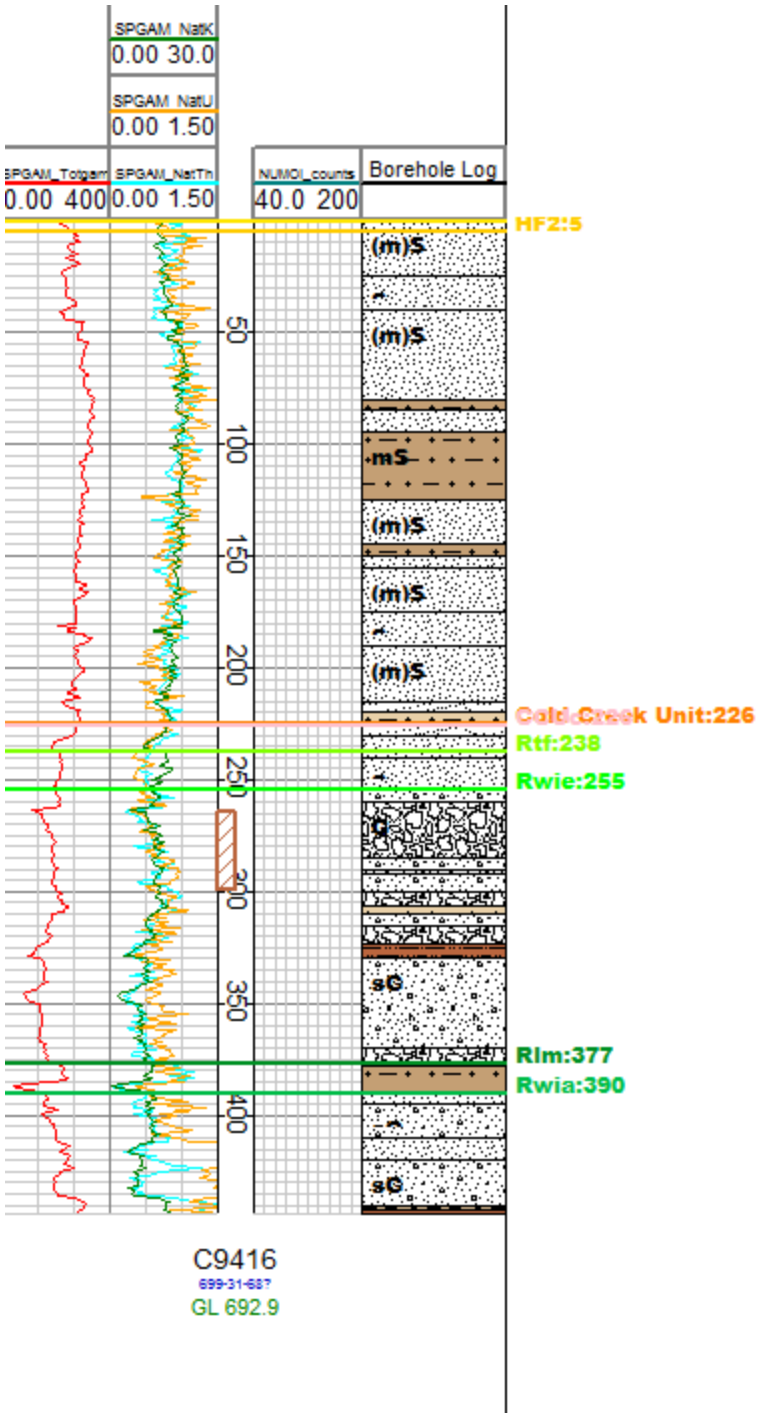

Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
S
HF2:48
(m)S
Cold Creek Unit:165
CCUc:183
Rtf:196
(m)S
Rwie:229
sG
G
sG
S
sG
50
100
150
200
250
300
350
400
450
C9411
299-W22-114
680.4
60 ft

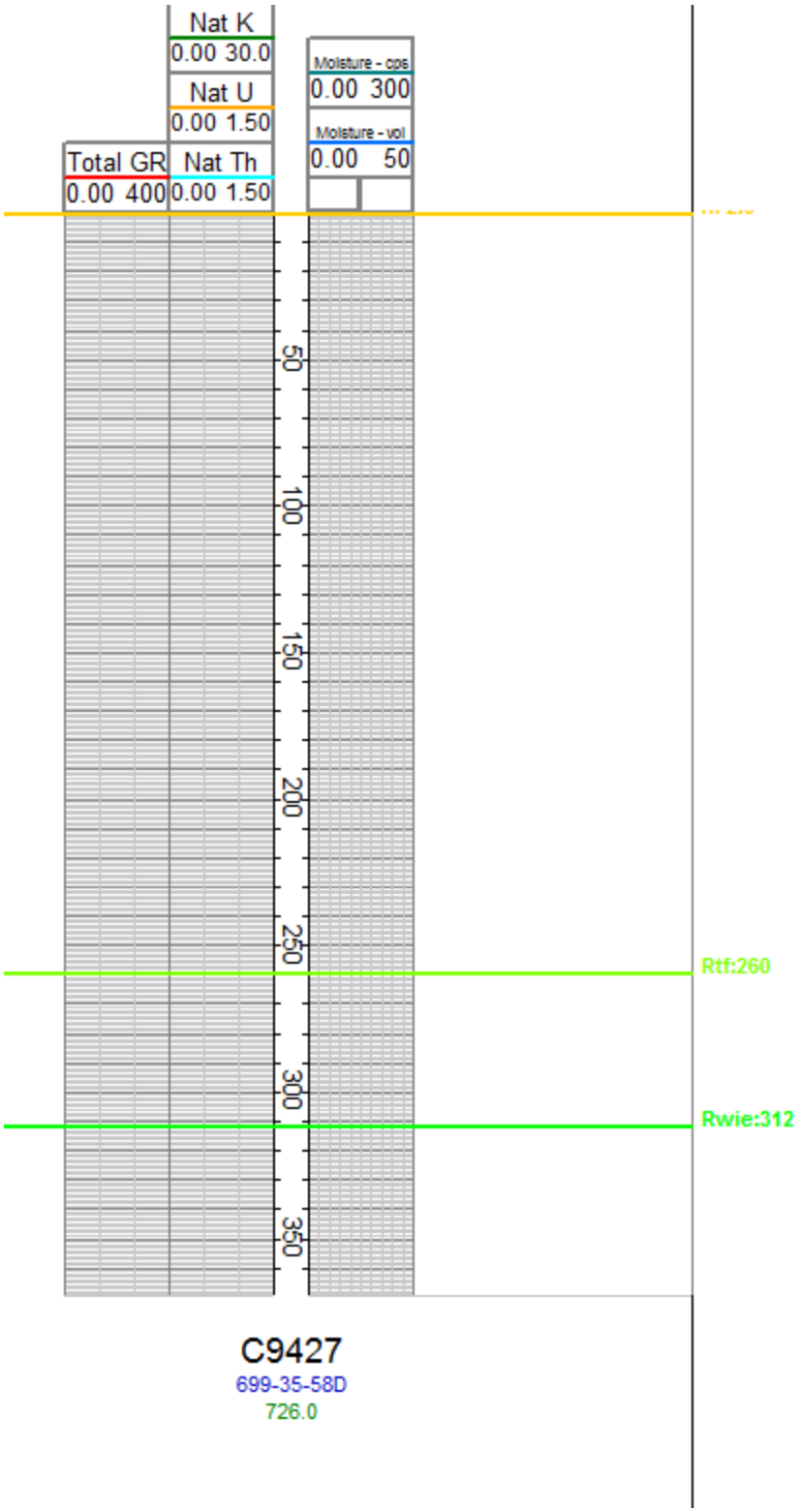

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF2:35
Cold Creek Unit:177
CCUc:188
Rtf:211
Rwie:250
Rlm:448
50
100
150
200
250
300
350
400
450
C9412
299-W19-116
GL 717.0

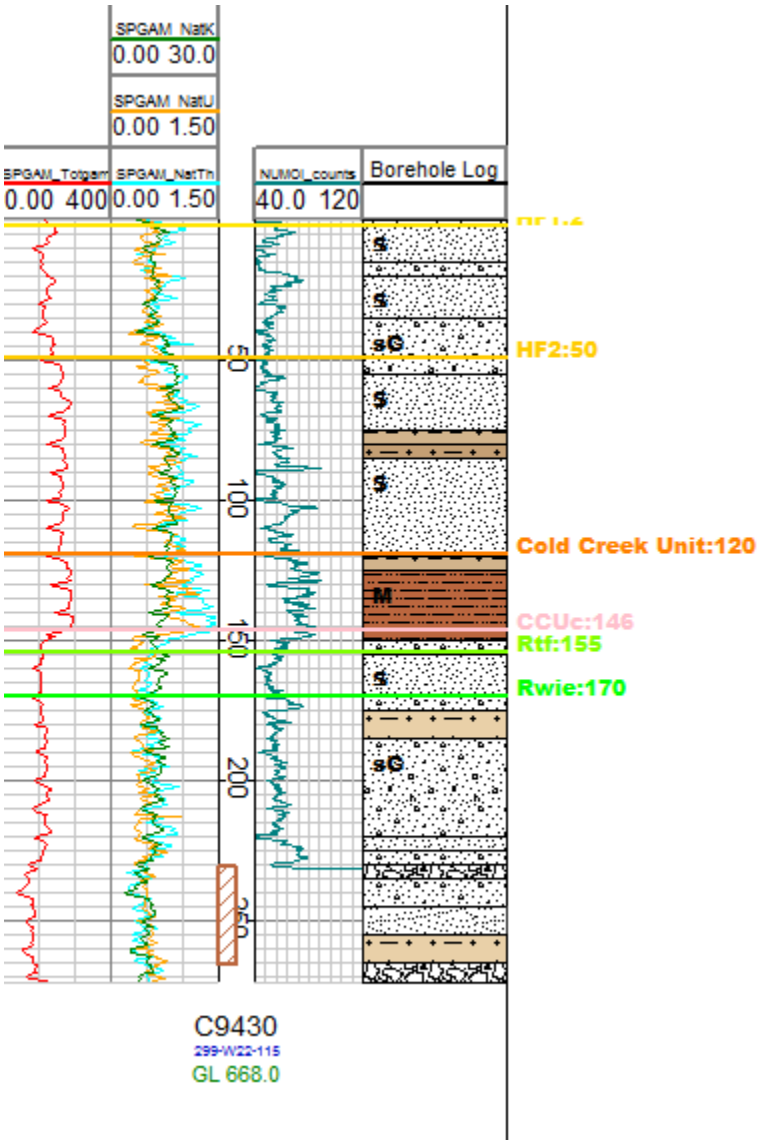

SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
Unit:205
Rtf:220
Rwie:255
Rlm:379
Rwia:466
C9413
GL 678.7


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
50
100
150
200
250
300
350
sG
gS
gS
HF2:112
gS
Cold Creek Unit:153
CCUc:166
Rtf:173
Rwie:183
msG
sG
msG
sG
C9414
299-W19-115
GL 699.5


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:5
HF2:35
Cold Creek Unit:166
CCUc:201
Rtf:225
Rwie:244
Rlm:420
50
100
150
200
250
300
350
400
gS
mS
msG
G
sG
50 ft
C9415
299-W21-3
698.6


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF2:5
(m)S
(m)S
mS
(m)S
(m)S
(m)S
Cold Creek Unit:226
Rtf:238
Rwie:255
G
sG
Rlm:377
Rwia:390
sG
50
100
150
200
250
300
350
400
C9416
699-31-68?
GL 692.9


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Moisture - vol
0.00 50
50
100
150
200
250
300
350
Rtf:260
Rwie:312
C9427
699-35-58D
726.0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SPGAM_NatTh
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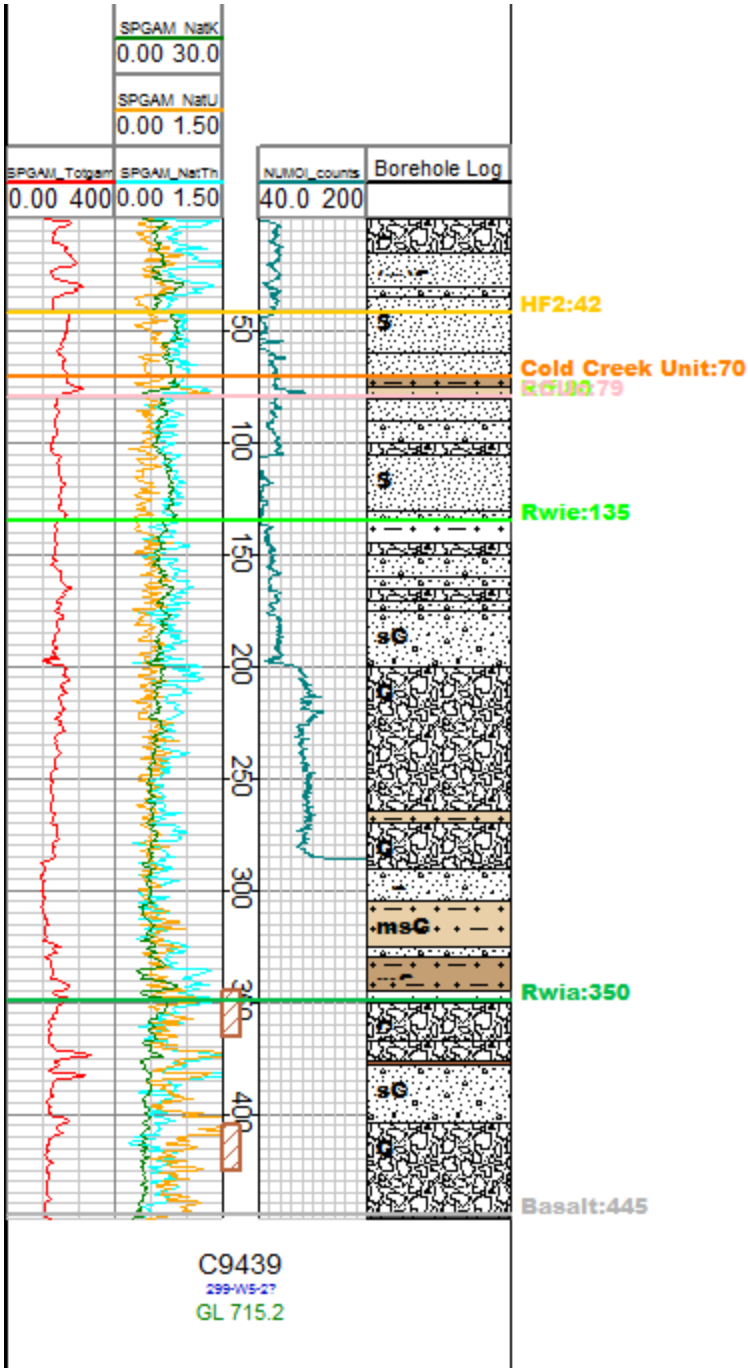
NUMOI_counts
40.0 120
Borehole Log
HF2:50
Cold Creek Unit:120
CCUc:146
Rtf:155
Rwie:170
50
100
150
200
250
C9430
299-W22-115
GL 668.0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SPGAM_NatU
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SPGAM_NatTh
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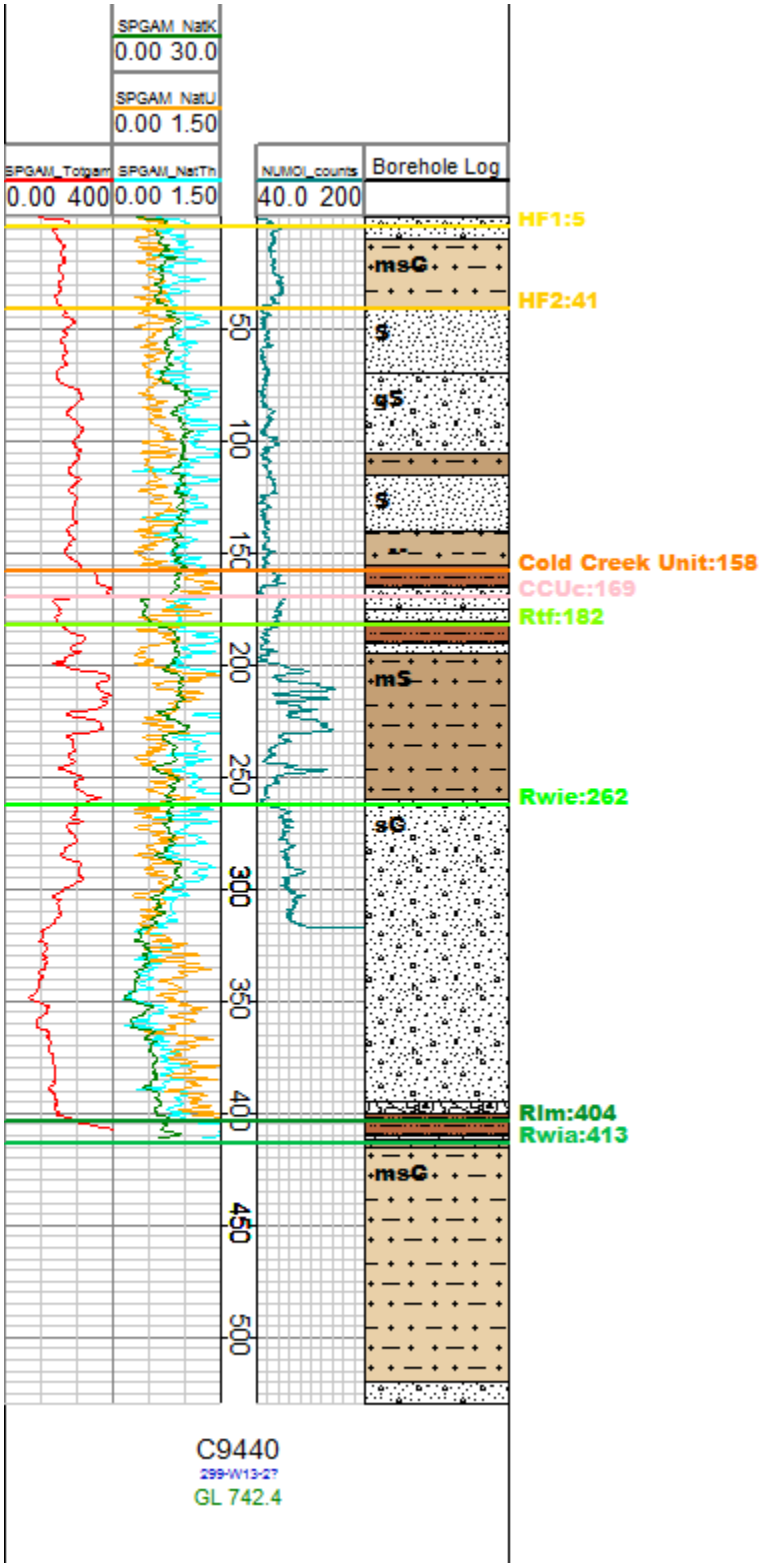
NUMCI_counts
40.0 200
Borehole Log
HF2:42
Cold Creek Unit:70
Rwie:135
Rwia:350
Basalt:445
50
100
150
200
250
300
350
400
S
sG
G
msG
C9439
299-W5-27
GL 715.2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SPGAM_NatU
0.00 1.50
SPGAM_Totgam
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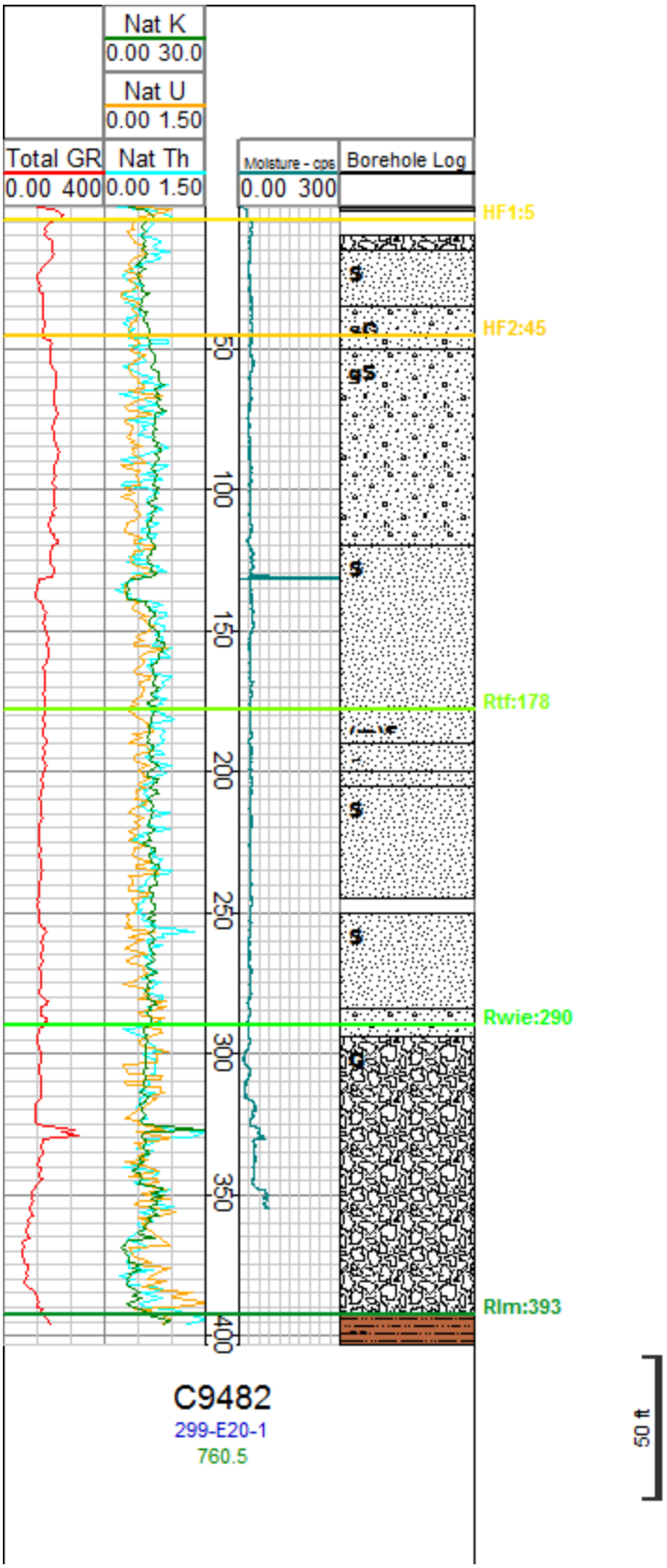
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:5
msG
HF2:41
S
gS
S
Cold Creek Unit:158
CCUc:169
Rtf:182
mS
Rwie:262
sG
Rlm:404
Rwia:413
msG
50
100
150
200
250
300
350
400
450
500
C9440
299/W13-27
GL 742.4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Nat U
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Total GR
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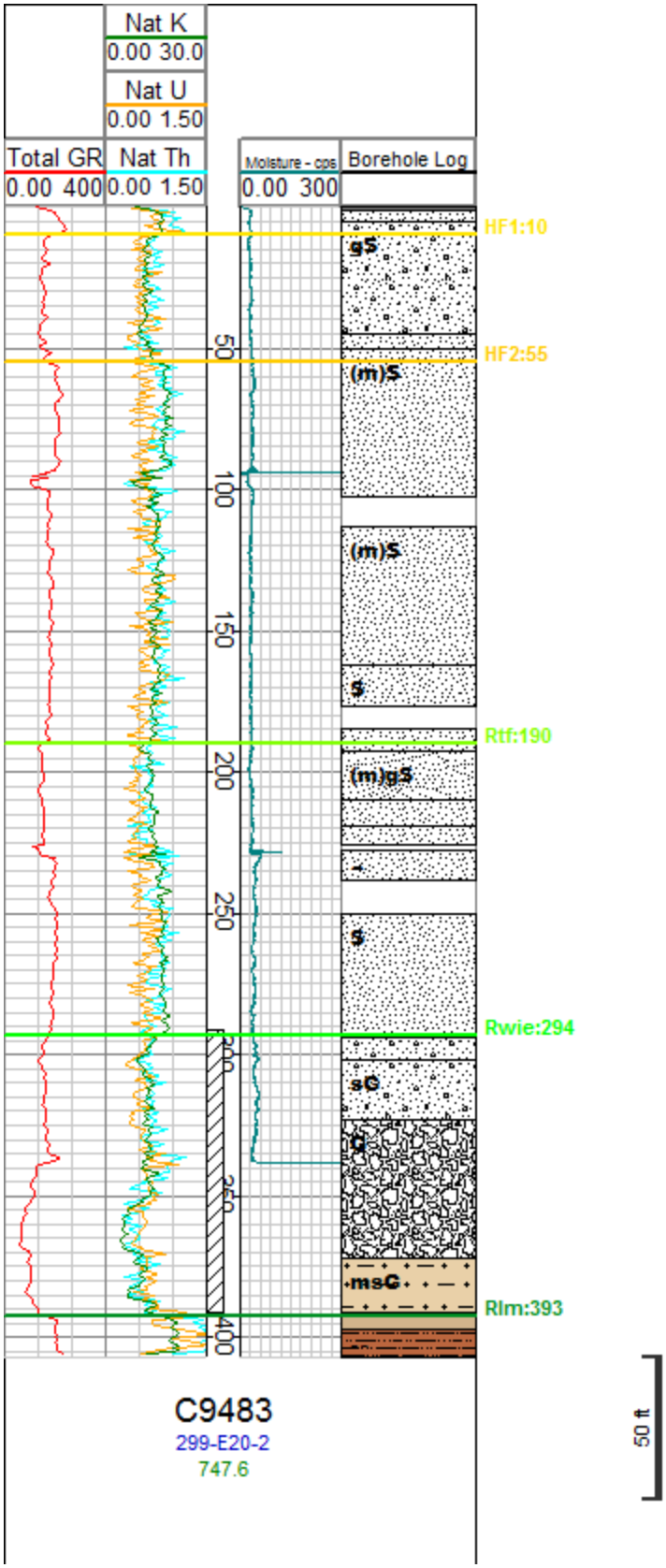
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:5
HF2:45
Rtf:178
Rwie:290
Rlm:393
50
100
150
200
250
300
350
400
C9482
299-E20-1
760.5
50 ft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Nat U
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Total GR
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Nat Th
0.00 1.50
Moisture - cps
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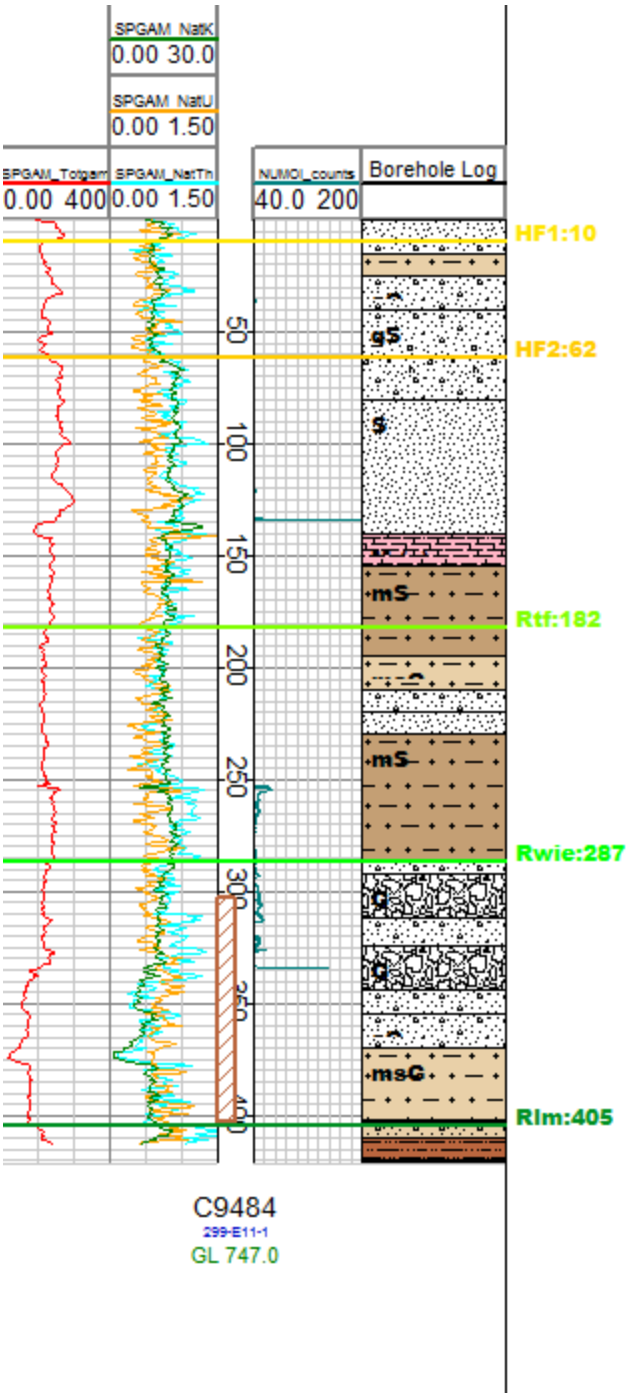
Borehole Log
HF1:10
HF2:55
Rtf:190
Rwie:294
Rlm:393
gS
(m)S
(m)S
S
(m)gS
S
sG
msG
50
100
150
200
250
300
350
400
C9483
299-E20-2
747.6
50 ft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SPGAM_NatU
0.00 1.50
SPGAM_Totgam
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SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Borehole Log
HF1:10
HF2:62
Rtf:182
Rwie:287
Rlm:405
50
100
150
200
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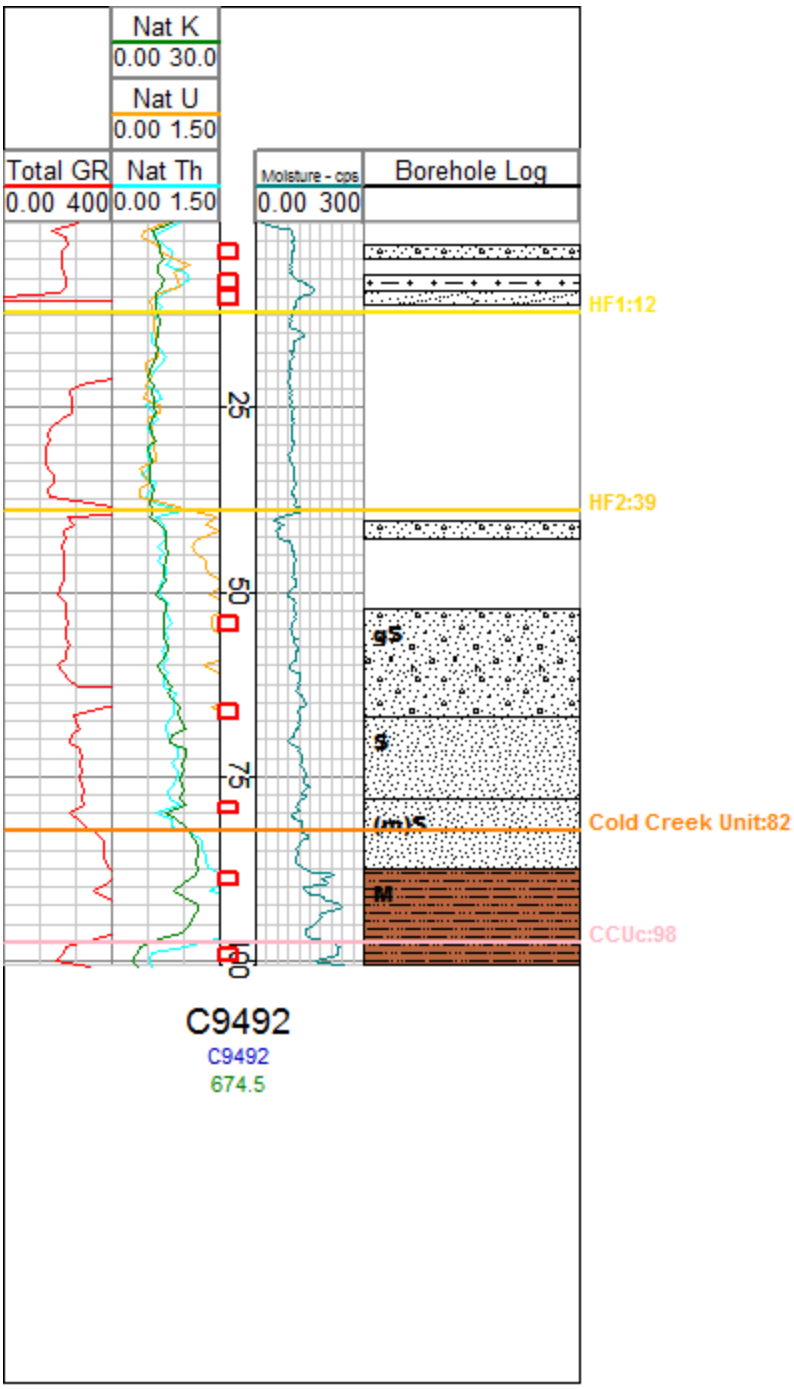
400
gS
S
mS
mS
C
C
msC
C9484
299-E11-1
GL 747.0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Nat U
0.00 1.50
Total GR
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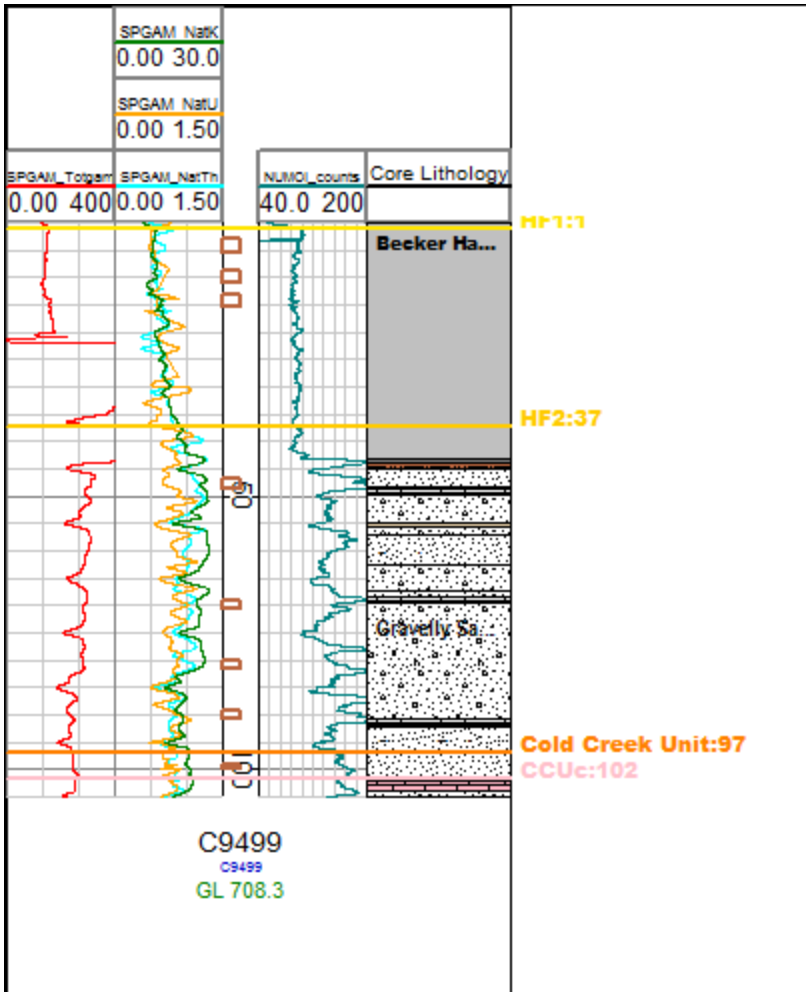
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:12
HF2:39
Cold Creek Unit:82
CCUc:98
25
50
75
100
gS
S
(m)S
M
C9492
C9492
674.5

20 ft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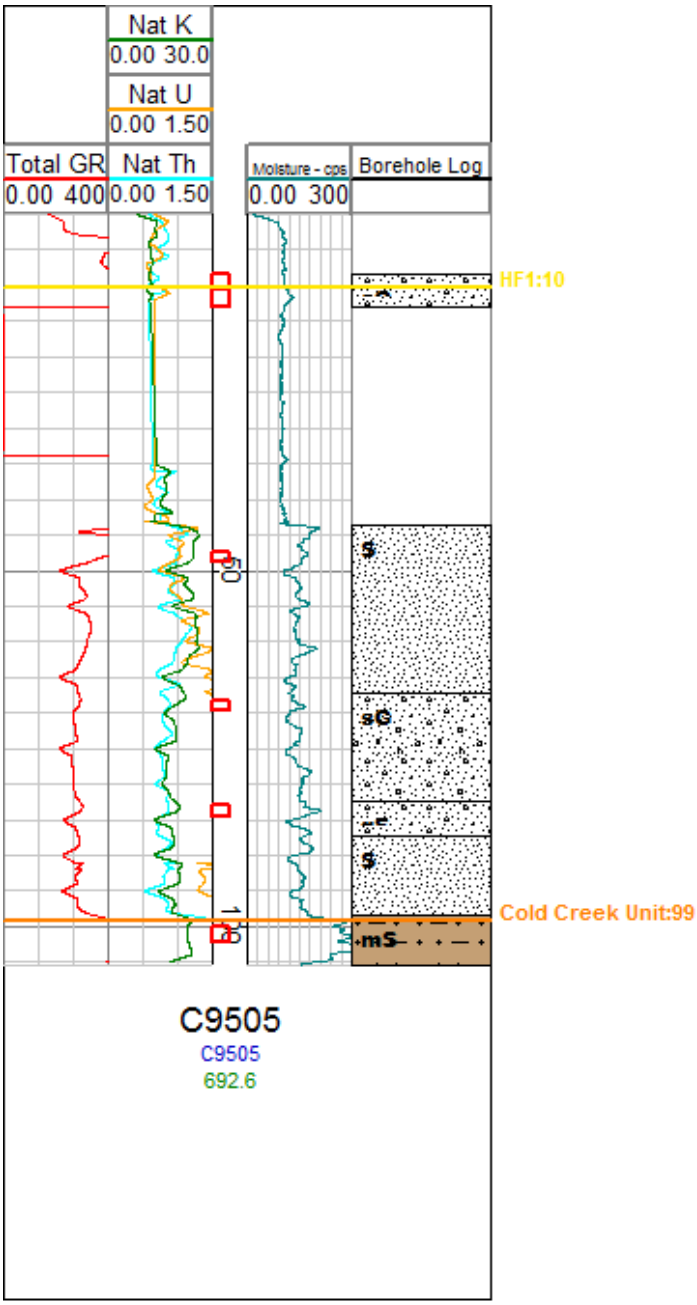
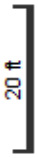
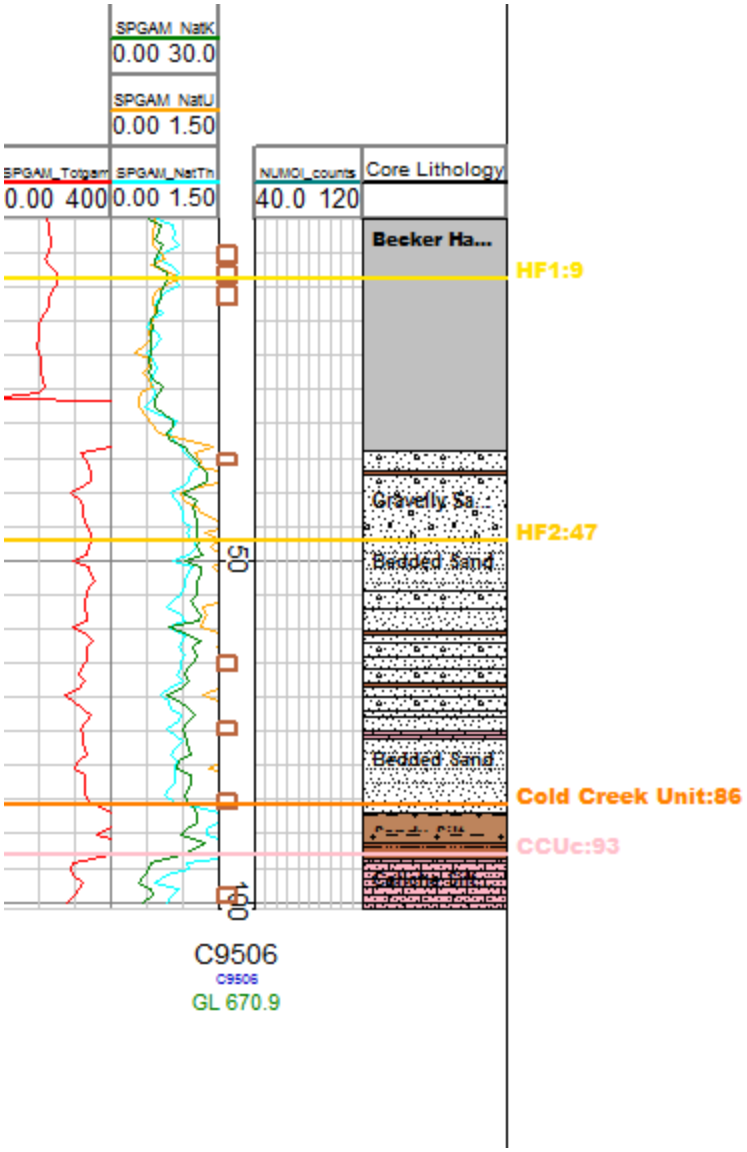
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 200
Core Lithology
Becker Ha...
HF2:37
Gravelly Sa...
Cold Creek Unit:97
CCUc:102
C9499
C9499
GL 708.3


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
HF1:10
S
sG
S
mS
Cold Creek Unit:99
C9505
C9505
692.6


20 ft


SPGAM_NatK
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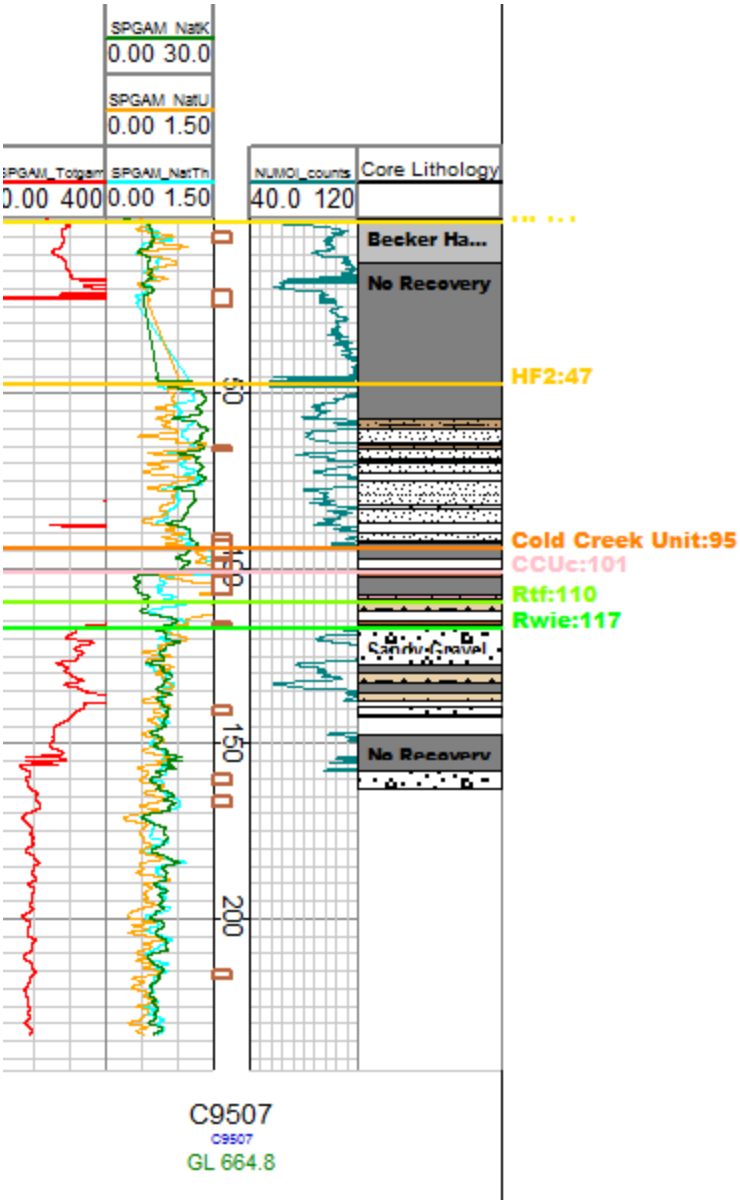
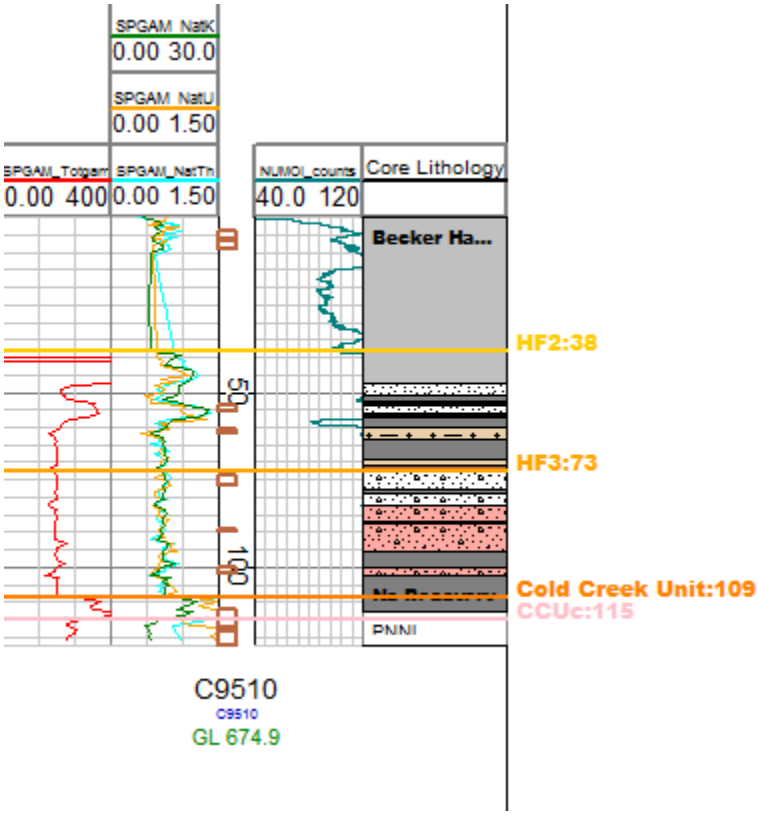
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Core Lithology
Becker Ha...
HF1:9
Gravelly Sa...
HF2:47
Bedded Sand
Bedded Sand
Cold Creek Unit:86
CCUc:93
50
100
C9506
C9506
GL 670.9


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Core Lithology
Becker Ha...
No Recovery
HF2:47
Cold Creek Unit:95
CCUc:101
Rtf:110
Rwie:117
Sandy Gravel
No Recovery
50
100
150
200
C9507
C9507
GL 664.8


SPGAM_NatK
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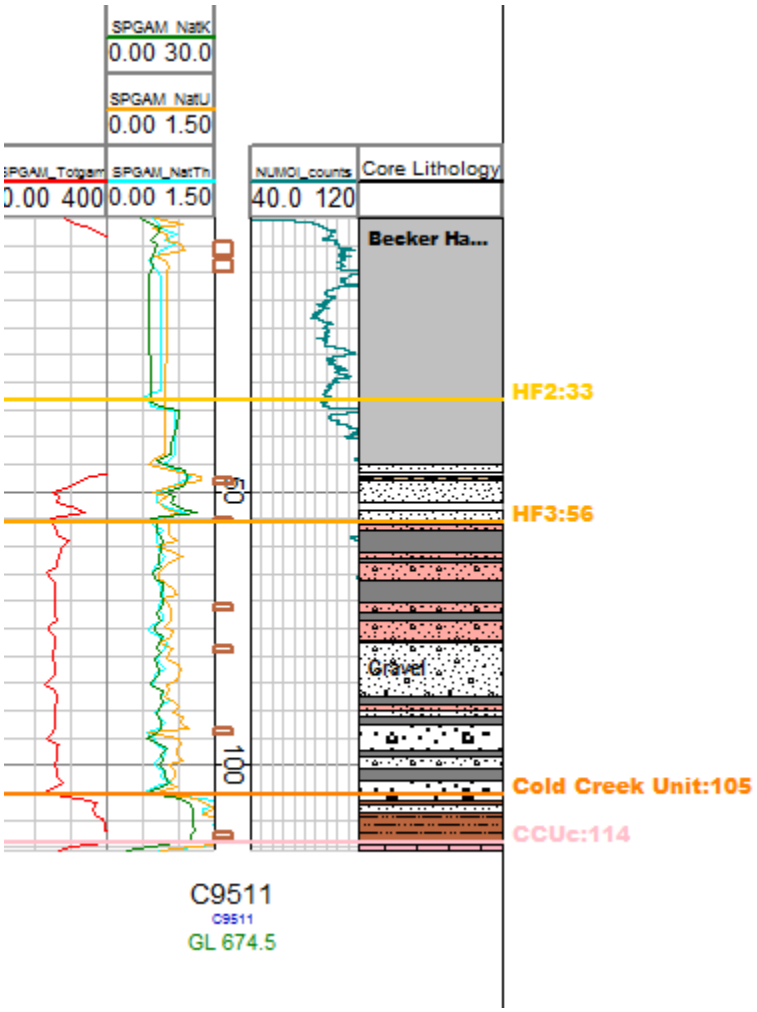
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Core Lithology
Becker Ha...
HF2:38
50
HF3:73
100
Cold Creek Unit:109
CCUc:115
PNNI
C9510
C9510
GL 674.9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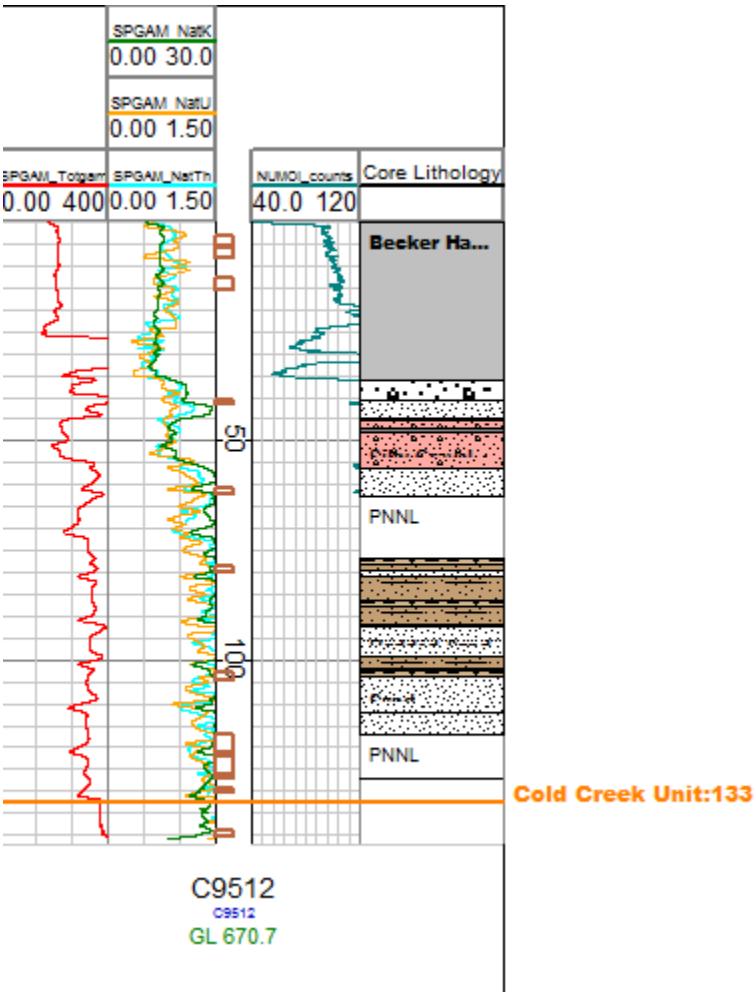
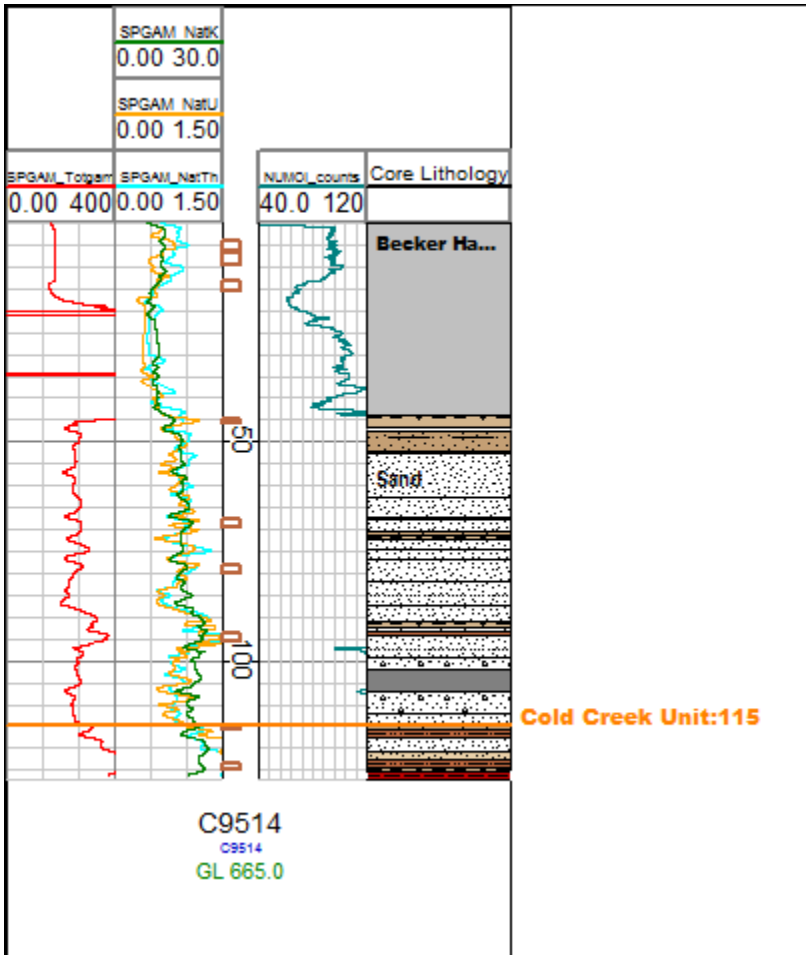
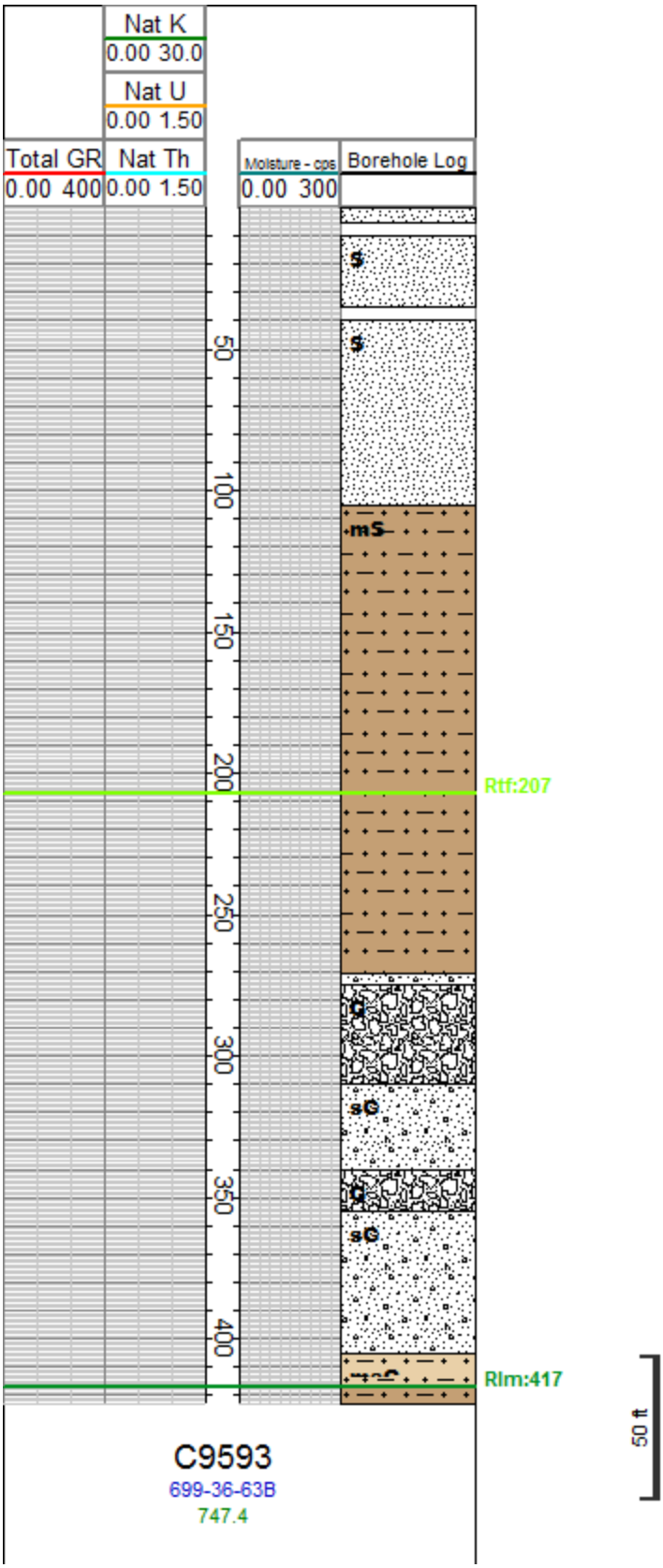
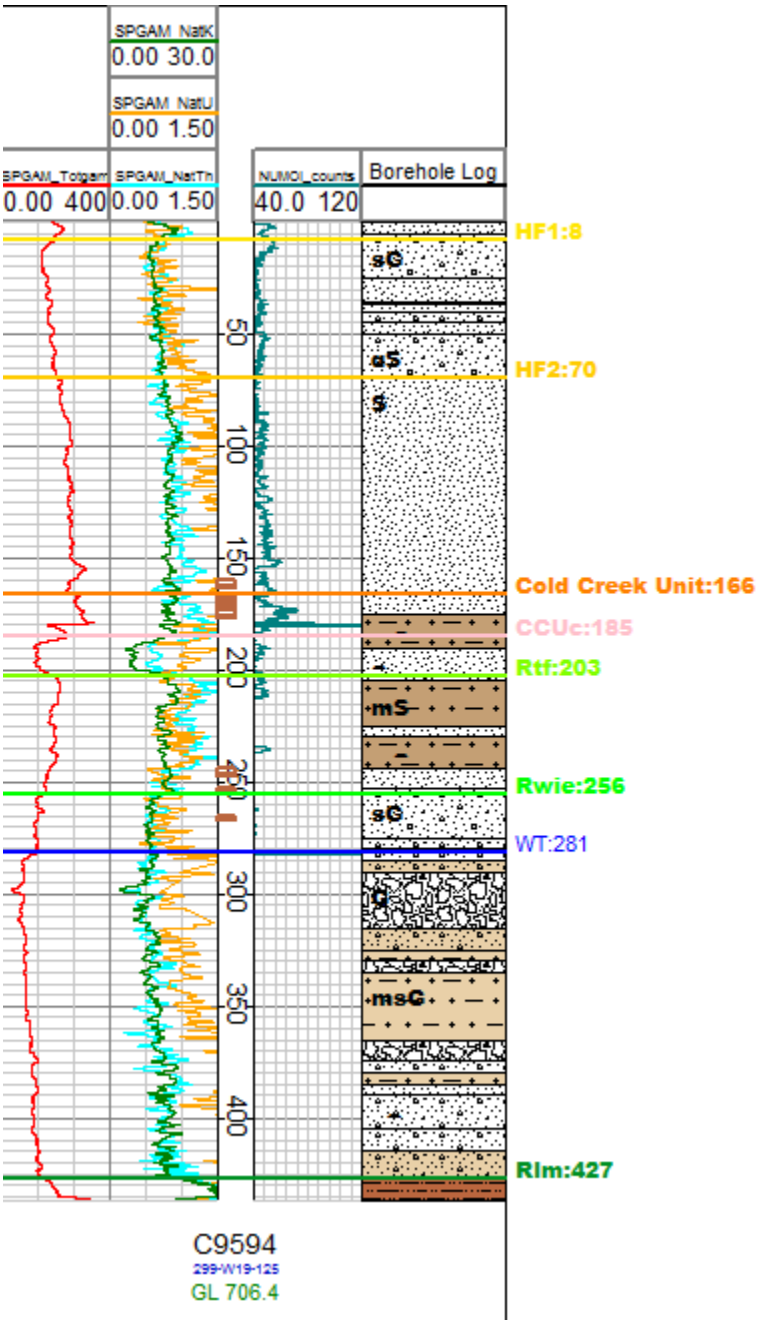
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Core Lithology
Becker Ha...
HF2:33
HF3:56
Gravel
Cold Creek Unit:105
CCUc:114
50
100
C9511
C9511
GL 674.5


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Core Lithology
Becker Ha...
50
100
PNNL
PNNL
Cold Creek Unit:133
C9512
C9512
GL 670.7


SPGAM_NatK
0.00 30.0
SPGAM_NatU
0.00 1.50
SPGAM_Totgam
0.00 400
SPGAM_NatTh
0.00 1.50
NUMCI_counts
40.0 120
Core Lithology
Becker Ha...
50
Sand
100
Cold Creek Unit:115
C9514
C9514
GL 665.0


Nat K
0.00 30.0
Nat U
0.00 1.50
Total GR
0.00 400
Nat Th
0.00 1.50
Moisture - cps
0.00 300
Borehole Log
50
100
150
200
250
300
350
400
S
S
mS
G
sG
G
sG
Rtf:207
Rlm:417
50 ft
C9593
699-36-63B
747.4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SPGAM_NatU
0.00 1.50
SPGAM_Totgam
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SPGAM_NatTh
0.00 1.50
NUMOI_counts
40.0 120
Borehole Log
HF1:8
HF2:70
Cold Creek Unit:166
CCUc:185
Rtf:203
Rwie:256
WT:281
Rlm:427
sG
gS
S
mS
sG
G
msG
50
100
150
200
250
300
350
400
C9594
299-W19-125
GL 706.4

Appendix C

Boreholes Used in Central Plateau Vadose Zone Geoframework Model

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C1 Introduction

This appendix contains a list of the boreholes included in the Composite Analysis geoframework model. The list includes the well name, Hanford ID, location coordinates, groundsurface elevation, and total depth of each borehole. Ground surface elevations are either derived from the calculated best estimate elevations in GeoContacts_Hanford_2017-01-19.xlsx or downloaded directly from well surveys in the Hanford Environmental Information System. The process for calculating best estimate elevations is detailed in PNNL-17913, *Hydrogeology of the Hanford Site Central Plateau – A Status Report for the 200 West Area*.

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E13-14	A4726	573087.50	134474.13	746.10	227.41	370.00	112.78
299-E16-1	A4727	575782.65	135219.91	696.60	212.33	510.00	155.45
299-E17-1	A4728	574977.08	135386.15	720.40	219.58	336.00	102.41
299-E17-12	A4730	574905.37	135125.91	722.60	220.25	340.00	103.63
299-E17-13	A4731	574948.03	135172.58	721.00	219.76	337.00	102.72
299-E17-14	A4732	575140.61	135333.74	722.70	220.28	335.00	102.11
299-E17-15	A4733	575142.78	135282.05	722.30	220.16	330.00	100.59
299-E17-16	A4734	575145.77	135210.78	721.40	219.89	337.00	102.72
299-E17-17	A4735	575046.18	135209.74	720.60	219.64	331.40	101.01
299-E17-18	A4736	575112.43	135123.59	721.30	219.85	331.50	101.04
299-E17-19	A4737	575017.18	135414.87	720.00	219.46	326.70	99.58
299-E17-20	A4738	574938.11	135415.33	719.90	219.43	326.70	99.58
299-E17-5	A4739	575093.97	135278.55	721.00	219.76	336.00	102.41
299-E17-6	A4740	575113.12	135108.18	721.00	219.76	500.00	152.40
299-E17-8	A4741	574884.08	135407.22	720.30	219.55	365.00	111.25
299-E17-9	A4742	575100.32	135378.60	719.50	219.31	325.00	99.06
299-E18-1	A4743	573296.57	135200.16	720.10	219.49	332.00	101.19
299-E18-2	A4744	573392.24	135291.02	721.90	220.04	332.00	101.19
299-E18-3	A4745	573428.99	135277.94	722.10	220.10	330.20	100.65
299-E18-4	A4746	573428.67	135259.27	722.10	220.10	331.40	101.01
299-E23-2	A4748	573709.43	135671.74	721.90	220.04	456.00	138.99
299-E24-13	A4749	575300.61	136037.32	694.30	211.63	340.00	103.63
299-E24-14	A4750	575323.85	136018.81	694.40	211.66	340.00	103.63
299-E24-16	A4751	575017.62	135464.36	718.90	219.12	329.30	100.37
299-E24-17	A4752	574937.81	135463.88	719.30	219.25	329.20	100.34
299-E24-18	A4753	574647.09	135469.76	719.90	219.43	330.00	100.59
299-E24-2	A4755	574973.64	135493.02	719.00	219.15	350.00	106.68
299-E24-20	A4756	575251.10	136049.40	689.30	210.10	304.00	92.66
299-E24-7	A4757	574406.52	135560.45	717.40	218.67	450.00	137.16
299-E25-1	A4759	575336.03	136030.88	693.80	211.47	322.00	98.15

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E25-11	A4761	575835.00	135558.57	683.20	208.24	340.00	103.63
299-E25-13	A4762	575362.87	136140.43	685.70	209.00	317.00	96.62
299-E25-15	A4763	575368.82	136018.65	692.90	211.20	340.00	103.63
299-E25-18	A4764	575817.38	135699.30	680.80	207.51	300.00	91.44
299-E25-19	A4765	575852.33	135659.03	678.60	206.84	300.00	91.44
299-E25-2	A4766	575513.76	136061.87	676.60	206.23	375.00	114.30
299-E25-20	A4767	575910.94	135654.00	678.10	206.69	300.00	91.44
299-E25-21	A4768	576063.02	135558.41	678.20	206.72	300.00	91.44
299-E25-26	A4771	575907.50	135912.86	669.60	204.10	290.00	88.39
299-E25-28	A4773	576011.77	136111.69	663.50	202.24	348.00	106.07
299-E25-31	A4778	575948.02	135772.25	675.00	205.74	298.00	90.83
299-E25-35	A4783	575708.34	135864.69	674.50	205.59	285.00	86.87
299-E25-36	A4784	575403.61	135566.37	708.00	215.80	319.00	97.23
299-E25-37	A4785	575948.98	135818.07	674.00	205.44	280.70	85.56
299-E25-38	A4786	576034.74	135694.87	674.10	205.47	283.00	86.26
299-E25-39	A4787	576581.88	135837.27	671.90	204.80	282.40	86.08
299-E25-4	A4788	575648.83	136169.12	662.80	202.02	289.00	88.09
299-E25-40	A4789	575464.68	136212.32	666.40	203.12	274.00	83.52
299-E25-41	A4790	575466.06	136145.92	671.70	204.74	279.00	85.04
299-E25-42	A4791	575622.80	135887.60	683.20	208.24	294.70	89.83
299-E25-46	A4793	575359.73	135963.50	695.10	211.87	310.30	94.58
299-E25-48	A4795	575623.85	135815.69	683.00	208.18	297.50	90.68
299-E25-6	A4796	575683.76	136163.97	662.30	201.87	290.00	88.39
299-E25-9	A4797	575914.15	136219.64	659.10	200.90	289.00	88.09
299-E26-11	A4800	576179.95	137134.60	600.30	182.97	206.20	62.85
299-E26-4	A4804	575733.96	136360.88	649.50	197.97	283.00	86.26
299-E28-18	A4821	573104.08	136767.78	693.20	211.29	330.00	100.59
299-E28-26	A4822	572941.55	137024.02	688.40	209.83	328.50	100.13
299-E28-27	A4823	573226.78	137070.06	681.40	207.69	301.50	91.90
299-E28-28	A4824	572804.35	137108.26	687.30	209.49	296.00	90.22

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E28-6	A4826	573782.42	136388.39	701.10	213.70	340.00	103.63
299-E28-9	A4828	573096.47	136587.22	702.40	214.09	350.00	106.68
299-E32-1	A4829	572611.61	137645.48	658.10	200.59	283.00	86.26
299-E32-2	A4830	572648.02	137467.51	671.50	204.68	289.20	88.15
299-E32-3	A4831	572600.61	137384.00	678.90	206.93	304.00	92.66
299-E32-4	A4832	572603.74	137187.22	688.20	209.77	311.00	94.79
299-E32-5	A4833	572599.70	137285.13	682.70	208.09	293.60	89.49
299-E32-6	A4834	572600.40	137515.10	667.20	203.37	278.80	84.98
299-E32-7	A4835	572600.38	137647.05	658.20	200.62	273.80	83.46
299-E32-8	A4836	572663.39	137741.47	645.50	196.75	256.70	78.24
299-E33-12	A4839	573780.54	137632.23	624.30	190.29	415.00	126.49
299-E33-14	A4841	573985.61	137567.22	623.40	190.01	230.00	70.10
299-E33-15	A4842	573810.29	137540.70	628.10	191.45	251.00	76.51
299-E33-17	A4843	573878.52	137467.18	633.40	193.06	244.00	74.37
299-E33-2	A4846	573617.01	137641.27	630.70	192.24	243.00	74.07
299-E33-21	A4848	573474.47	137293.21	667.40	203.43	282.00	85.95
299-E33-24	A4849	573493.54	137578.53	638.30	194.56	256.00	78.03
299-E33-26	A4850	573333.35	137681.47	633.70	193.15	240.00	73.15
299-E33-27	A4851	573668.07	137338.19	659.40	200.99	255.00	77.72
299-E33-28	A4852	573226.36	137375.02	666.20	203.06	278.30	84.83
299-E33-3	A4854	573633.13	137666.04	623.60	190.08	236.00	71.93
299-E33-30	A4855	572923.80	137467.78	665.50	202.85	280.10	85.38
299-E33-33	A4858	574080.14	137301.93	640.70	195.29	252.00	76.81
299-E33-34	A4859	573104.46	137740.43	634.00	193.25	240.00	73.15
299-E33-35	A4860	573220.80	137605.10	643.60	196.17	250.00	76.20
299-E33-38	A4863	573591.16	137594.49	633.30	193.03	239.60	73.03
299-E33-4	A4865	573616.75	137693.11	628.70	191.63	231.00	70.41
299-E33-5	A4870	573574.22	137606.42	632.30	192.73	242.00	73.76
299-E33-7	A4871	573574.03	137695.97	625.70	190.72	233.00	71.02
299-E33-8	A4872	573475.30	137447.93	650.70	198.34	257.00	78.33

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E33-9	A4873	573646.83	137485.88	653.50	199.19	275.00	83.82
299-E34-10	A4875	574284.40	137224.57	640.30	195.17	249.00	75.90
299-E34-11	A4876	574176.16	137581.78	618.10	188.40	219.30	66.84
299-E34-2	A4877	574634.81	137220.69	632.60	192.82	241.50	73.61
299-E34-3	A4878	575110.25	137301.44	613.10	186.88	213.90	65.20
299-E34-4	A4879	574825.05	137743.88	588.70	179.44	177.10	53.98
299-E34-5	A4880	574643.81	137743.33	592.60	180.63	192.00	58.52
299-E34-6	A4881	574462.33	137740.73	600.20	182.94	195.00	59.44
299-E34-7	A4882	575274.18	137357.75	604.70	184.31	205.50	62.64
299-E34-8	A4883	574206.44	137249.62	641.10	195.41	260.00	79.25
299-E34-9	A4884	574186.02	137429.82	629.30	191.81	234.50	71.48
299-E35-1	A4885	575459.73	137464.96	598.80	182.52	193.80	59.07
299-E35-2	A4886	575576.11	137255.05	602.70	183.71	202.30	61.66
299-W10-14	A4891	566017.19	136608.89	700.70	213.58	462.00	140.82
299-W10-15	A4892	566770.38	136808.05	676.10	206.08	222.30	67.76
299-W10-17	A4894	566775.44	136491.25	671.30	204.61	222.90	67.94
299-W10-2	A4896	566672.24	136614.78	676.00	206.05	230.00	70.10
299-W10-3	A4897	566731.86	136673.40	675.10	205.77	239.00	72.85
299-W10-8	A4899	566848.82	136811.22	680.50	207.42	252.00	76.81
299-W10-9	A4900	566748.18	136798.84	675.30	205.83	225.00	68.58
299-W11-12	A4902	566927.14	136604.01	682.00	207.88	250.00	76.20
299-W11-14	A4903	567457.92	136913.96	717.00	218.54	315.00	96.01
299-W11-23	A4905	566904.97	136801.08	688.90	209.98	252.00	76.81
299-W11-24	A4906	566912.96	136744.53	688.10	209.74	250.00	76.20
299-W11-28	A4908	566934.89	136743.74	693.40	211.35	247.40	75.41
299-W11-7	A4910	567260.88	136675.33	711.00	216.72	315.00	96.01
299-W11-9	A4911	567781.02	136667.34	724.40	220.80	297.00	90.53
299-W12-1	A4912	568331.25	137206.12	727.60	221.78	314.00	95.71
299-W14-1	A4913	566953.32	136311.18	669.20	203.97	240.00	73.15
299-W14-12	A4914	566905.69	136284.17	670.60	204.40	222.50	67.82

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W14-9	A4915	567031.76	135650.70	680.70	207.48	545.00	166.12
299-W15-10	A4916	566448.63	135981.14	678.10	206.69	300.00	91.44
299-W15-12	A4917	566699.21	136368.77	670.80	204.46	225.00	68.58
299-W15-13	A4918	566845.45	136369.50	670.70	204.43	225.00	68.58
299-W15-15	A4919	566088.81	135751.49	699.30	213.15	255.00	77.72
299-W15-22	A4925	566683.04	136110.93	671.10	204.55	221.90	67.64
299-W15-23	A4926	566083.65	135858.13	699.90	213.33	240.00	73.15
299-W15-24	A4927	566091.13	135605.74	699.80	213.30	241.80	73.70
299-W15-3	A4928	566729.20	136371.48	673.40	205.25	245.00	74.68
299-W15-4	A4929	566826.28	136027.67	664.50	202.54	217.00	66.14
299-W18-15	A4932	566380.03	134733.48	662.10	201.81	248.00	75.59
299-W18-21	A4933	566097.70	134978.69	670.10	204.25	227.00	69.19
299-W18-22	A4934	566088.63	134990.16	670.10	204.25	455.00	138.69
299-W18-23	A4935	566084.53	135342.44	698.30	212.84	255.00	77.72
299-W18-24	A4936	566370.84	135346.32	685.80	209.03	240.00	73.15
299-W18-25	A4937	566721.48	134978.22	666.50	203.15	215.40	65.65
299-W18-27	A4939	566090.19	135226.54	690.10	210.35	238.50	72.70
299-W18-28	A4940	566092.57	135106.79	679.80	207.21	230.10	70.14
299-W18-30	A4942	566870.76	135193.62	672.80	205.07	235.50	71.78
299-W18-31	A4943	566721.54	135075.18	664.10	202.42	227.60	69.37
299-W19-1	A4944	566886.93	134925.62	675.50	205.89	301.00	91.75
299-W19-12	A4945	566897.13	135059.45	674.80	205.68	250.00	76.20
299-W19-14	A4946	567267.98	134831.14	695.00	211.84	250.00	76.20
299-W19-15	A4947	567254.25	134975.78	695.50	211.99	285.00	86.87
299-W19-24	A4952	567771.56	134927.74	698.50	212.91	255.00	77.72
299-W19-28	A4954	567589.79	134991.19	703.70	214.49	255.00	77.72
299-W19-29	A4955	567664.11	134999.51	702.10	214.00	256.00	78.03
299-W19-31	A4956	566897.00	135127.48	674.70	205.65	225.30	68.67
299-W19-32	A4957	566896.55	135009.29	675.40	205.86	223.10	68.00
299-W22-17	A4964	567012.95	134292.28	672.90	205.10	261.00	79.55

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W22-26	A4968	567205.19	134465.23	681.20	207.63	300.00	91.44
299-W22-28	A4969	567433.70	134465.78	690.20	210.38	300.00	91.44
299-W22-39	A4970	566903.88	134213.67	668.80	203.85	223.30	68.06
299-W22-45	A4976	566945.16	134292.51	666.50	203.15	240.00	73.15
299-W23-1	A4979	566850.16	134424.77	669.00	203.91	262.00	79.86
299-W23-11	A4980	566512.27	134299.01	665.10	202.72	235.00	71.63
299-W23-13	A4982	566712.80	134445.93	666.90	203.27	218.20	66.51
299-W23-2	A4985	566853.87	134258.58	666.30	203.09	236.00	71.93
299-W23-3	A4986	566851.07	134162.58	666.40	203.12	232.00	70.71
299-W23-4	A4987	566628.22	134391.88	664.50	202.54	300.00	91.44
299-W23-5	A4988	566871.01	134190.35	667.20	203.37	250.00	76.20
299-W23-6	A4989	566871.04	134131.95	667.30	203.40	250.00	76.20
299-W23-8	A4991	566707.13	134287.75	664.50	202.54	235.00	71.63
299-W6-1	A4996	567214.13	137510.14	704.40	214.70	476.00	145.09
299-W6-3	A4998	567118.18	137299.13	700.00	213.36	441.00	134.42
299-W6-4	A4999	567132.25	137290.49	701.30	213.76	258.20	78.70
299-W6-6	A5001	567318.74	137638.72	710.30	216.50	472.00	143.87
299-W6-8	A5003	567028.80	137638.80	694.80	211.78	252.00	76.81
299-W7-1	A5004	565932.05	137647.13	692.20	210.99	245.00	74.68
299-W7-11	A5006	566186.20	137636.00	681.50	207.72	234.50	71.48
299-W7-2	A5008	566302.80	137638.50	676.80	206.29	236.00	71.93
299-W7-3	A5009	566292.03	137638.64	677.30	206.44	476.70	145.30
299-W7-4	A5010	566408.77	137308.24	672.60	205.01	235.00	71.63
299-W7-5	A5011	566476.03	137635.69	674.00	205.44	229.00	69.80
299-W8-1	A5016	565749.42	137646.64	703.00	214.28	270.50	82.45
299-W9-1	A5017	565657.66	137023.77	739.00	225.25	295.00	89.92
699-29-78	A5121	566211.59	132413.61	647.90	197.48	600.00	182.88
699-31-65	A5124	569987.67	132774.91	685.60	208.97	450.00	137.16
699-31-84B	A5125	564381.56	132984.26	628.40	191.54	1600.00	487.69
699-32-43	A5127	576902.13	133278.61	517.50	157.74	127.00	38.71

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
699-32-62	A5128	571009.56	133215.92	708.00	215.80	501.00	152.71
699-32-70B	A5129	568462.00	133242.25	668.80	203.85	350.00	106.68
699-32-77	A5131	566416.79	133152.49	655.10	199.68	290.70	88.61
699-33-42	A5132	577020.56	133480.66	516.40	157.40	126.00	38.41
699-33-56	A5133	572922.69	133627.23	718.90	219.12	440.00	134.11
699-34-39A	A5134	578013.48	133881.12	537.90	163.95	167.20	50.96
699-34-41B	A5135	577338.31	133911.73	569.50	173.59	179.00	54.56
699-34-42	A5136	577165.46	133714.65	540.90	164.87	183.00	55.78
699-34-51	A5137	574269.89	133808.48	736.00	224.34	385.00	117.35
699-35-66A	A5139	569857.86	134099.24	727.90	221.87	450.00	137.16
699-36-61A	A5144	571395.47	134557.11	750.00	228.60	390.00	118.87
699-37-43	A5146	576828.53	134782.51	692.30	211.02	517.00	157.58
699-37-82A	A5147	564906.95	134739.82	637.90	194.43	440.00	134.11
699-39-39	A5150	578052.40	135391.65	537.70	163.89	212.00	64.62
699-40-39	A5155	577938.04	135645.61	542.20	165.26	212.20	64.68
699-40-40A	A5156	577680.08	135594.09	541.10	164.93	227.00	69.19
699-40-62	A5158	571164.26	135764.42	750.90	228.88	384.00	117.04
699-41-40	A5161	577613.89	135995.88	546.20	166.48	176.10	53.68
699-41-42	A5162	577122.04	136067.95	643.70	196.20	342.90	104.52
699-42-37	A5164	578476.75	136247.22	519.50	158.35	268.00	81.69
699-42-39A	A5165	577857.06	136251.75	558.00	170.08	180.10	54.90
699-42-39B	A5166	577859.03	136236.40	558.20	170.14	216.00	65.84
699-42-40C	A5169	577644.38	136417.94	547.10	166.76	392.00	119.48
699-42-41	A5170	577335.19	136365.59	567.40	172.95	156.70	47.76
699-42-42B	A5171	576998.10	136433.92	583.10	177.73	250.00	76.20
699-43-40	A5173	577583.11	136705.33	542.10	165.23	137.00	41.76
699-43-41G	A5176	577466.41	136586.61	551.30	168.04	201.30	61.36
699-43-42	A5177	577177.10	136607.27	567.10	172.85	223.00	67.97
699-43-45	A5180	576283.81	136585.73	597.90	182.24	203.55	62.04
699-44-42	A5186	577099.32	136833.58	579.20	176.54	173.00	52.73

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
699-44-43B	A5187	576673.28	136897.72	580.40	176.91	176.66	53.85
699-44-64	A5188	570390.65	136897.43	726.70	221.50	452.00	137.77
699-45-42	A5195	577055.09	137286.37	579.20	176.54	195.00	59.44
699-47-46A	A5200	575869.83	137820.74	581.70	177.30	207.00	63.09
699-47-50	A5201	574798.72	137887.17	585.10	178.34	295.00	89.92
699-48-50	A5212	574817.58	138227.09	574.60	175.14	179.70	54.77
699-49-55B	A5218	573138.72	138350.88	531.80	162.09	227.00	69.19
699-49-79	A5221	565771.12	138271.11	691.40	210.74	290.00	88.39
699-50-42	A5224	577111.01	138786.69	468.40	142.77	125.00	38.10
699-50-45	A5225	576172.76	138783.37	452.60	137.95	178.00	54.26
699-50-48B	A5226	575390.73	138715.91	552.00	168.25	250.00	76.20
699-50-53A	A5227	573649.67	138670.48	558.30	170.17	185.00	56.39
699-51-46	A5230	575738.50	139001.59	446.00	135.94	168.00	51.21
699-52-46A	A5234	575903.30	139358.01	457.20	139.36	225.00	68.58
699-52-48	A5235	575231.47	139195.67	468.60	142.83	197.00	60.05
699-52-54	A5236	573254.24	139193.17	568.90	173.40	168.60	51.39
699-52-57	A5237	572761.35	139115.32	561.60	171.18	165.50	50.45
699-53-55A	A5244	573115.86	139631.88	577.30	175.96	455.00	138.69
699-54-42	A5250	576933.16	140099.18	513.30	156.46	210.00	64.01
699-54-45A	A5251	576314.76	140001.43	494.70	150.79	105.00	32.00
699-54-48	A5252	575357.77	139821.18	458.10	139.63	101.00	30.79
699-54-57	A5253	572619.41	140029.63	577.00	175.87	321.00	97.84
699-55-40	A5255	577550.24	140346.52	543.30	165.60	145.00	44.20
699-55-44	A5256	576565.59	140384.11	520.90	158.77	160.00	48.77
699-55-57	A5259	572445.43	140119.85	569.00	173.43	180.00	54.86
699-56-43	A5264	576756.29	140627.54	540.90	164.87	155.00	47.24
699-56-53	A5265	573794.19	140650.66	435.90	132.86	270.00	82.30
699-57-59	A5269	571830.22	140923.72	576.60	175.75	190.50	58.07
699-59-58	A5277	572273.62	141414.96	498.70	152.01	117.00	35.66
299-W26-12	A5409	566900.97	133689.86	675.70	205.96	230.00	70.10

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E34-12	A5433	574411.00	137168.54	639.20	194.83	247.90	75.56
299-W6-9	A5434	567031.61	137363.12	696.70	212.36	253.20	77.18
299-W6-10	A5435	567413.34	137453.05	713.10	217.36	278.30	84.83
299-W6-11	A5436	567162.52	137634.83	703.40	214.40	280.30	85.44
299-W6-12	A5437	566915.53	137635.16	693.00	211.23	259.30	79.04
299-W10-20	A5439	566249.69	136866.61	688.10	209.74	251.00	76.51
299-W26-6	A5445	566463.38	133406.00	654.80	199.59	227.00	69.19
699-34-61	A5463	571395.80	133809.86	724.80	220.92	345.12	105.19
299-W15-2	A5466	566093.76	136336.24	693.40	211.35	261.00	79.55
299-W18-20	A5471	566590.08	135081.76	671.50	204.68	250.00	76.20
299-W11-31	A5472	567221.58	137235.28	707.20	215.56	267.30	81.47
299-W11-3	A5473	567641.72	136663.90	719.30	219.25	330.00	100.59
299-W14-5	A5475	566899.25	136039.87	667.20	203.37	240.00	73.15
299-W15-7	A5476	566675.88	135920.20	667.70	203.52	350.00	106.68
299-W18-2	A5478	566380.16	135383.59	684.60	208.67	280.00	85.35
299-W18-17	A5479	566702.76	135425.24	673.10	205.16	265.00	80.77
299-E13-1	A5849	573655.72	134404.51	746.30	227.48	365.00	111.25
299-E13-2	A5850	573612.58	134427.29	747.30	227.78	365.00	111.25
299-E13-7	A5855	573405.33	134339.29	744.90	227.05	367.00	111.86
299-E13-8	A5856	573339.56	134301.72	744.50	226.93	364.00	110.95
299-E13-9	A5857	573347.15	134421.20	745.00	227.08	364.00	110.95
299-E13-15	A5860	572990.43	134346.35	739.70	225.46	367.00	111.86
299-E13-17	A5862	573057.57	134215.99	734.40	223.85	358.00	109.12
299-E13-18	A5863	573118.63	134216.14	733.60	223.60	458.00	139.60
299-E13-19	A5864	573277.66	134061.01	730.70	222.72	363.00	110.64
299-E13-20	A5865	573609.78	134312.88	743.90	226.74	596.00	181.66
299-E13-51	A5867	573380.76	134306.40	743.70	226.68	100.00	30.48
299-E13-52	A5868	573089.76	134400.90	745.20	227.14	94.00	28.65
299-E16-2	A5878	576129.20	135419.29	681.50	207.72	340.00	103.63
299-E17-2	A5879	575221.11	135389.90	718.60	219.03	408.00	124.36

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E17-4	A5881	575117.87	135370.03	718.60	219.03	400.00	121.92
299-E17-11	A5883	575109.14	135347.19	720.80	219.70	150.00	45.72
299-E17-51	A5886	575109.36	135230.50	720.60	219.64	150.00	45.72
299-E17-53	A5887	574940.30	135146.07	721.30	219.85	152.00	46.33
299-E17-54	A5888	574885.03	135172.73	722.50	220.22	152.00	46.33
299-E19-1	A5889	572819.69	135085.57	737.60	224.82	536.00	163.37
299-E24-1	A5896	575032.10	135490.74	718.10	218.88	343.00	104.55
299-E24-3	A5897	575165.15	135983.20	700.30	213.45	333.00	101.50
299-E24-4	A5898	575112.42	136035.20	698.90	213.03	330.00	100.59
299-E24-5	A5899	575037.90	136063.46	698.50	212.91	329.00	100.28
299-E24-9	A5901	575175.19	135460.45	717.70	218.76	370.00	112.78
299-E24-10	A5902	575047.61	135485.67	717.30	218.64	320.00	97.54
299-E24-11	A5903	574882.38	135482.79	719.60	219.34	365.00	111.25
299-E24-12	A5904	575202.22	135437.37	718.00	218.85	325.00	99.06
299-E24-51	A5908	575035.33	135629.46	711.00	216.72	50.00	15.24
299-E24-52	A5909	575248.60	135630.03	710.00	216.41	50.00	15.24
299-E24-53	A5910	575189.28	135527.69	713.50	217.48	50.00	15.24
299-E24-54	A5911	575224.41	135536.19	713.70	217.54	100.00	30.48
299-E24-55	A5912	575058.06	135562.77	713.00	217.33	50.00	15.24
299-E24-56	A5913	575049.48	135476.88	716.50	218.39	150.00	45.72
299-E24-57	A5914	575049.12	135509.87	716.00	218.24	150.00	45.72
299-E24-58	A5915	575061.03	135492.32	718.00	218.85	200.00	60.96
299-E24-59	A5916	574985.79	135435.48	718.60	219.03	150.00	45.72
299-E24-60	A5917	574964.09	135435.78	720.00	219.46	200.00	60.96
299-E24-76	A5931	574830.70	135418.63	720.00	219.46	60.00	18.29
299-E24-77	A5932	574832.68	135418.62	720.00	219.46	60.00	18.29
299-E24-78	A5933	574834.67	135418.58	720.00	219.46	60.00	18.29
299-E24-79	A5934	574836.70	135418.60	719.60	219.34	60.00	18.29
299-E24-80	A5935	574831.10	135420.04	720.10	219.49	60.00	18.29
299-E24-81	A5936	574832.55	135421.42	719.90	219.43	60.00	18.29

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E24-82	A5937	574833.99	135422.86	719.80	219.40	60.00	18.29
299-E24-83	A5938	574835.40	135424.28	719.90	219.43	60.00	18.29
299-E24-84	A5939	574829.66	135419.64	719.50	219.31	60.00	18.29
299-E24-85	A5940	574829.68	135421.72	720.00	219.46	60.00	18.29
299-E24-86	A5941	574829.70	135423.65	719.70	219.37	60.00	18.29
299-E24-87	A5942	574829.70	135426.21	719.90	219.43	60.00	18.29
299-E24-88	A5943	574828.28	135420.05	719.70	219.37	60.00	18.29
299-E24-89	A5944	574826.90	135421.48	719.90	219.43	60.00	18.29
299-E24-90	A5945	574825.50	135422.93	719.50	219.31	60.00	18.29
299-E24-91	A5946	574824.06	135424.32	720.00	219.46	60.00	18.29
299-E24-92	A5947	574828.71	135418.67	720.00	219.46	60.00	18.29
299-E24-93	A5948	574826.67	135418.67	720.10	219.49	60.00	18.29
299-E24-94	A5949	574824.69	135418.65	720.10	219.49	60.00	18.29
299-E24-95	A5950	574822.70	135418.69	719.80	219.40	60.00	18.29
299-E24-96	A5951	574828.24	135417.23	720.10	219.49	60.00	18.29
299-E24-97	A5952	574826.90	135415.82	719.80	219.40	60.00	18.29
299-E24-98	A5953	574825.41	135414.42	719.20	219.21	60.00	18.29
299-E24-99	A5954	574824.01	135412.99	719.60	219.34	60.00	18.29
299-E24-100	A5955	574829.65	135417.64	720.00	219.46	60.00	18.29
299-E24-101	A5956	574829.63	135415.63	719.80	219.40	60.00	18.29
299-E24-102	A5957	574829.65	135413.66	719.70	219.37	60.00	18.29
299-E24-103	A5958	574829.63	135411.64	719.70	219.37	60.00	18.29
299-E24-104	A5959	574831.07	135417.18	720.10	219.49	60.00	18.29
299-E24-105	A5960	574832.49	135415.79	719.80	219.40	60.00	18.29
299-E24-106	A5961	574833.91	135414.37	719.90	219.43	60.00	18.29
299-E24-107	A5962	574835.35	135412.95	719.80	219.40	60.00	18.29
299-E24-109	A5964	574829.84	135433.88	719.80	219.40	60.00	18.29
299-E24-110	A5965	574829.85	135431.88	719.80	219.40	60.00	18.29
299-E24-160	A6021	574986.74	135467.49	718.90	219.12	220.00	67.06
299-E25-3	A6024	575580.35	135670.35	693.00	211.23	365.00	111.25

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E25-12	A6028	575978.70	135490.98	681.90	207.85	340.00	103.63
299-E25-14	A6029	575667.76	136166.55	665.20	202.76	208.00	63.40
299-E25-16	A6030	575323.66	136018.54	694.50	211.69	340.00	103.63
299-E25-17	A6031	575760.25	135702.51	678.00	206.66	300.00	91.44
299-E25-22	A6032	575998.48	135609.38	675.20	205.80	295.00	89.92
299-E25-23	A6033	576255.76	135467.22	681.30	207.66	310.00	94.49
299-E25-29	A6034	575953.67	135729.16	675.60	205.93	330.00	100.59
299-E25-30	A6035	576208.36	135589.91	680.80	207.51	330.00	100.59
299-E25-32B	A6037	576382.30	136044.30	671.10	204.55	352.00	107.29
299-E25-50	A6039	576399.06	135681.64	678.70	206.87	294.20	89.67
299-E25-52	A6041	575278.60	135574.41	711.90	216.99	40.00	12.19
299-E25-53	A6042	575568.43	135614.79	697.60	212.63	150.00	45.72
299-E25-54	A6043	575512.44	136043.48	677.00	206.35	155.00	47.24
299-E25-55	A6044	575369.18	136050.83	692.10	210.95	151.00	46.03
299-E25-56	A6045	575337.65	136066.77	689.30	210.10	151.00	46.03
299-E25-58	A6047	575402.68	136029.42	691.10	210.65	151.00	46.03
299-E25-1000	A6536	576478.44	135757.65	674.30	205.53	391.89	119.45
299-E25-190	A6596	575817.10	135597.33	683.30	208.27	50.00	15.24
299-E25-191	A6597	575934.17	135543.12	683.10	208.21	50.00	15.24
299-E25-193	A6599	576010.54	135504.34	681.90	207.85	60.00	18.29
299-E26-3	A6640	575853.55	136384.34	642.40	195.81	274.00	83.52
299-E26-5	A6641	575614.42	136337.77	651.70	198.64	292.00	89.00
299-E26-6	A6642	575459.83	136397.86	653.00	199.04	290.00	88.39
299-E26-7	A6643	575673.17	136373.30	648.00	197.51	245.00	74.68
299-E27-2	A6670	575254.18	136341.95	667.30	203.40	312.00	95.10
299-E27-3	A6671	575108.94	136284.23	685.40	208.91	360.00	109.73
299-E27-5	A6672	574688.68	136306.46	685.80	209.03	335.00	102.11
299-E27-6	A6673	575245.06	136332.48	672.10	204.86	353.00	107.60
299-E27-18	A6674	574299.61	137119.29	650.50	198.27	265.00	80.77
299-E27-19	A6675	574355.07	137103.59	651.10	198.46	266.80	81.32

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-E28-1	A6784	573933.39	136732.60	685.70	209.00	325.00	99.06
299-E28-2	A6785	573704.52	136863.88	682.50	208.03	322.50	98.30
299-E28-3	A6786	573708.82	136607.31	694.50	211.69	326.00	99.37
299-E28-5	A6787	574033.84	136856.67	674.20	205.50	327.50	99.82
299-E28-8	A6788	573698.10	137074.30	670.10	204.25	315.00	96.01
299-E28-10	A6789	573755.55	136890.30	679.00	206.96	325.00	99.06
299-E28-13	A6791	573083.64	136484.87	706.80	215.44	368.00	112.17
299-E28-19	A6795	573064.74	136682.64	697.80	212.69	330.00	100.59
299-E28-20	A6796	573069.74	136799.00	690.20	210.38	330.00	100.59
299-E28-21	A6797	573038.45	136829.63	689.60	210.19	330.00	100.59
299-E28-22	A6798	574040.90	136321.46	702.10	214.00	381.00	116.13
299-E28-95	A6846	572884.73	136442.07	708.00	215.80	303.50	92.51
299-E33-10	A6853	573255.50	137258.19	674.20	205.50	290.00	88.39
299-E33-11	A6854	573901.32	137635.81	622.20	189.65	230.00	70.10
299-E33-25	A6858	573365.23	137681.63	631.10	192.36	240.00	73.15
299-E33-58	A6866	573806.89	137388.06	652.50	198.88	153.00	46.63
299-E33-59	A6867	573797.25	137388.59	653.60	199.22	153.00	46.63
299-E33-60	A6868	573802.06	137379.96	652.70	198.95	153.00	46.63
299-E33-75	A6883	573795.54	137412.00	651.60	198.61	150.00	45.72
299-E33-296	A7092	573628.12	137613.85	632.40	192.76	227.00	69.19
299-E33-302	A7098	573579.94	137665.73	628.80	191.66	223.00	67.97
299-E33-304	A7100	573496.64	137563.32	640.30	195.17	235.50	71.78
299-W10-1	A7136	566663.10	136734.57	678.10	206.69	305.00	92.97
299-W10-52	A7142	566755.35	136684.51	675.50	205.89	148.00	45.11
299-W10-56	A7146	566718.40	136699.80	675.30	205.83	150.00	45.72
299-W10-57	A7147	566727.01	136704.18	675.40	205.86	150.00	45.72
299-W10-59	A7149	566723.31	136658.06	674.40	205.56	150.00	45.72
299-W10-62	A7152	566721.16	136660.14	674.70	205.65	150.00	45.72
299-W10-65	A7155	566731.07	136686.35	672.90	205.10	75.00	22.86
299-W10-67	A7157	566732.86	136660.31	674.60	205.62	150.00	45.72

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W10-69	A7159	566694.13	136664.65	673.10	205.16	150.00	45.72
299-W10-70	A7160	566642.81	136671.83	673.40	205.25	150.00	45.72
299-W10-71	A7161	566628.80	136654.67	673.80	205.38	150.00	45.72
299-W10-72	A7162	566676.60	136649.77	673.10	205.16	150.00	45.72
299-W10-73	A7163	566702.94	136678.81	672.90	205.10	75.00	22.86
299-W10-75	A7165	566732.15	136698.33	673.10	205.16	75.00	22.86
299-W10-76	A7166	566690.48	136691.28	673.50	205.29	75.00	22.86
299-W10-80	A7170	566702.44	136636.28	672.60	205.01	115.00	35.05
299-W10-82	A7172	566729.20	136427.89	670.80	204.46	150.00	45.72
299-W10-83	A7173	566754.53	136428.14	673.90	205.41	150.00	45.72
299-W10-88	A7178	566777.80	136460.04	674.70	205.65	100.00	30.48
299-W10-89	A7179	566783.40	136436.03	674.30	205.53	100.00	30.48
299-W10-90	A7180	566758.25	136445.19	674.00	205.44	100.00	30.48
299-W10-91	A7181	566746.60	136460.03	673.80	205.38	100.00	30.48
299-W10-92	A7182	566752.14	136435.94	673.80	205.38	100.00	30.48
299-W10-93	A7183	566727.28	136445.10	672.80	205.07	100.00	30.48
299-W10-94	A7184	566772.91	136429.99	674.80	205.68	100.00	30.48
299-W10-95	A7185	566787.67	136414.24	674.50	205.59	100.00	30.48
299-W10-96	A7186	566772.95	136399.88	674.40	205.56	100.00	30.48
299-W10-97	A7187	566752.28	136425.59	674.00	205.44	100.00	30.48
299-W10-98	A7188	566741.51	136401.52	673.70	205.35	100.00	30.48
299-W10-99	A7189	566727.21	136416.13	670.30	204.31	100.00	30.48
299-W10-101	A7191	566849.65	136772.12	677.70	206.57	94.00	28.65
299-W10-102	A7192	566850.32	136760.11	677.60	206.53	87.00	26.52
299-W10-103	A7193	566837.58	136748.13	676.70	206.26	94.00	28.65
299-W10-104	A7194	566824.52	136765.22	676.50	206.20	96.00	29.26
299-W10-105	A7195	566837.52	136778.54	677.10	206.38	92.00	28.04
299-W10-108	A7198	566786.50	136744.07	675.20	205.80	92.00	28.04
299-W10-110	A7200	566789.36	136729.17	674.80	205.68	93.00	28.35
299-W10-115	A7205	566766.59	136744.04	674.90	205.71	87.00	26.52

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W10-117	A7207	566789.17	136751.43	675.30	205.83	91.00	27.74
299-W10-119	A7209	566794.12	136759.56	675.30	205.83	91.00	27.74
299-W10-120	A7210	566763.08	136703.61	674.80	205.68	92.00	28.04
299-W10-123	A7213	566811.73	136749.49	675.70	205.96	91.00	27.74
299-W10-124	A7214	566792.19	136770.95	675.10	205.77	91.00	27.74
299-W10-125	A7215	566804.98	136778.63	675.50	205.89	92.00	28.04
299-W10-126	A7216	566782.31	136778.67	675.30	205.83	92.00	28.04
299-W10-127	A7217	566763.54	136760.67	674.60	205.62	91.00	27.74
299-W10-128	A7218	566766.68	136774.10	675.40	205.86	93.00	28.35
299-W10-130	A7220	566822.45	136740.41	676.30	206.14	93.00	28.35
299-W10-138	A7228	566813.54	136660.39	673.40	205.25	93.00	28.35
299-W10-140	A7230	566771.45	136660.38	675.20	205.80	94.00	28.65
299-W10-143	A7233	566813.63	136689.49	676.10	206.08	93.00	28.35
299-W10-144	A7234	566770.80	136688.35	674.90	205.71	94.00	28.65
299-W10-146	A7236	566851.36	136735.84	678.40	206.78	90.00	27.43
299-W10-147	A7237	566831.69	136720.32	676.30	206.14	100.00	30.48
299-W10-149	A7239	566850.87	136703.89	677.90	206.63	92.00	28.04
299-W10-151	A7241	566823.60	136667.01	676.50	206.20	93.00	28.35
299-W10-152	A7242	566801.07	136660.31	672.70	205.04	94.00	28.65
299-W10-161	A7245	566734.26	136456.85	673.50	205.29	105.00	32.00
299-W10-166	A7249	566791.38	136707.98	674.90	205.71	122.00	37.19
299-W10-167	A7250	566788.47	136725.94	674.80	205.68	126.00	38.41
299-W10-168	A7251	566755.44	136726.08	674.60	205.62	122.00	37.19
299-W10-169	A7252	566842.62	136832.74	678.50	206.81	122.00	37.19
299-W10-176	A7255	566795.20	136698.70	675.30	205.83	100.00	30.48
299-W11-1	A7275	567220.38	136652.13	709.60	216.29	314.50	95.86
299-W11-2	A7276	567406.28	136671.05	716.40	218.36	530.00	161.55
299-W11-4	A7277	567363.69	136587.26	715.10	217.97	310.00	94.49
299-W11-5	A7278	567443.40	136592.40	718.40	218.97	316.00	96.32
299-W11-16	A7282	567236.24	137093.17	711.00	216.72	365.00	111.25

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W11-17	A7283	567172.57	137073.23	707.40	215.62	300.00	91.44
299-W11-18	A7284	567181.92	137161.48	707.70	215.71	300.00	91.44
299-W11-26	A7287	567045.14	136563.73	697.10	212.48	515.00	156.97
299-W11-55	A7297	567198.31	136670.04	712.90	217.29	150.00	45.72
299-W11-56	A7298	567202.77	136661.69	712.90	217.29	150.00	45.72
299-W11-57	A7299	567198.32	136673.02	713.00	217.33	163.00	49.68
299-W11-59	A7301	567211.01	136657.42	707.80	215.74	90.00	27.43
299-W11-60	A7302	567171.28	136664.45	711.70	216.93	150.00	45.72
299-W11-61	A7303	567188.92	136657.81	712.40	217.14	85.00	25.91
299-W11-62	A7304	567205.31	136660.52	709.20	216.17	102.00	31.09
299-W11-63	A7305	567197.97	136652.77	707.40	215.62	160.00	48.77
299-W11-64	A7306	567205.65	136668.69	713.10	217.36	75.00	22.86
299-W11-65	A7307	567197.81	136642.56	707.10	215.53	160.00	48.77
299-W11-66	A7308	567182.64	136652.49	707.20	215.56	75.00	22.86
299-W11-67	A7309	567220.72	136643.12	708.40	215.92	76.00	23.17
299-W11-68	A7310	566970.88	136782.45	699.60	213.24	100.00	30.48
299-W11-69	A7311	566929.29	136834.82	697.10	212.48	105.00	32.00
299-W11-70	A7312	566932.17	136392.11	671.80	204.77	150.00	45.72
299-W11-80	A7322	566996.37	136873.28	700.50	213.51	50.00	15.24
299-W11-81	A7323	567024.20	136801.85	701.50	213.82	50.00	15.24
299-W11-82	A7324	566933.85	136407.52	671.20	204.58	70.00	21.34
299-W14-2	A7328	566932.32	136340.41	671.60	204.71	223.00	67.97
299-W14-3	A7329	566940.41	136342.97	671.50	204.68	269.00	81.99
299-W14-4	A7330	566920.62	136348.79	672.20	204.89	205.00	62.48
299-W14-6	A7331	566899.19	136100.83	665.30	202.79	240.00	73.15
299-W14-51	A7335	566855.83	136001.55	665.00	202.69	77.00	23.47
299-W14-53	A7337	566932.37	136366.24	672.60	205.01	100.00	30.48
299-W14-54	A7338	567853.79	135885.74	725.00	220.98	97.00	29.57
299-W14-55	A7339	567917.82	135881.80	726.10	221.32	95.00	28.96
299-W14-62	A7346	566941.34	136373.99	673.10	205.16	68.00	20.73

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W15-1	A7348	566554.31	135942.94	677.20	206.41	300.00	91.44
299-W15-6	A7349	566801.51	135654.39	663.00	202.08	410.00	124.97
299-W15-14	A7350	566093.44	135648.27	698.80	213.00	581.00	177.09
299-W15-53	A7354	566553.84	135917.66	677.20	206.41	80.00	24.38
299-W15-54	A7355	566538.50	135930.80	676.30	206.14	138.00	42.06
299-W15-55	A7356	566549.62	135925.81	677.30	206.44	150.00	45.72
299-W15-56	A7357	566541.63	135930.60	676.80	206.29	150.00	45.72
299-W15-57	A7358	566549.79	135935.36	677.00	206.35	155.00	47.24
299-W15-59	A7360	566570.26	135899.36	676.80	206.29	175.00	53.34
299-W15-60	A7361	566566.21	135892.68	677.00	206.35	175.00	53.34
299-W15-61	A7362	566562.16	135899.36	677.60	206.53	175.00	53.34
299-W15-62	A7363	566688.70	135949.77	667.50	203.46	200.00	60.96
299-W15-63	A7364	566703.90	135949.78	666.70	203.21	200.00	60.96
299-W15-64	A7365	566739.90	135925.73	664.10	202.42	200.00	60.96
299-W15-66	A7367	566841.95	135936.61	664.90	202.66	77.00	23.47
299-W15-67	A7368	566822.62	136203.07	681.10	207.60	150.00	45.72
299-W15-68	A7369	566788.23	136292.23	674.30	205.53	150.00	45.72
299-W15-69	A7370	566758.55	136137.18	671.90	204.80	150.00	45.72
299-W15-70	A7371	566820.39	136137.72	670.90	204.49	150.00	45.72
299-W15-71	A7372	566758.23	136167.76	674.80	205.68	150.00	45.72
299-W15-72	A7373	566757.52	136230.30	673.40	205.25	150.00	45.72
299-W15-73	A7374	566694.35	136137.12	669.50	204.07	150.00	45.72
299-W15-74	A7375	566688.25	136202.69	668.30	203.70	150.00	45.72
299-W15-75	A7376	566710.42	136265.06	672.00	204.83	150.00	45.72
299-W15-76	A7377	566659.22	135919.43	668.70	203.82	102.00	31.09
299-W15-79	A7380	566754.79	136371.46	674.60	205.62	150.00	45.72
299-W15-80	A7381	566548.97	136108.07	678.40	206.78	120.00	36.58
299-W15-81	A7382	566501.60	136152.46	678.50	206.81	115.00	35.05
299-W15-103	A7402	566786.57	136214.58	675.50	205.89	100.00	30.48
299-W15-104	A7403	566762.57	136207.93	672.10	204.86	100.00	30.48

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W15-105	A7404	566770.13	136230.97	674.00	205.44	100.00	30.48
299-W15-106	A7405	566756.40	136221.37	673.60	205.32	100.00	30.48
299-W15-107	A7406	566735.11	136205.24	673.70	205.35	100.00	30.48
299-W15-109	A7408	566725.53	136214.36	672.90	205.10	100.00	30.48
299-W15-110	A7409	566704.01	136205.16	672.10	204.86	100.00	30.48
299-W15-111	A7410	566707.48	136232.05	668.90	203.88	100.00	30.48
299-W15-112	A7411	566814.74	136238.65	673.60	205.32	100.00	30.48
299-W15-113	A7412	566795.03	136239.48	674.50	205.59	100.00	30.48
299-W15-116	A7415	566763.72	136239.19	673.40	205.25	100.00	30.48
299-W15-117	A7416	566770.01	136262.02	673.40	205.25	100.00	30.48
299-W15-118	A7417	566755.22	136246.60	670.60	204.40	100.00	30.48
299-W15-119	A7418	566733.93	136238.79	672.90	205.10	100.00	30.48
299-W15-121	A7420	566783.51	136291.13	674.70	205.65	100.00	30.48
299-W15-122	A7421	566760.49	136287.30	673.20	205.19	100.00	30.48
299-W15-124	A7423	566735.64	136268.35	672.20	204.89	100.00	30.48
299-W15-125	A7424	566731.53	136290.52	672.20	204.89	100.00	30.48
299-W15-128	A7427	566728.03	136156.90	674.40	205.56	100.00	30.48
299-W15-129	A7428	566711.17	136170.07	670.70	204.43	100.00	30.48
299-W15-130	A7429	566721.83	136145.18	671.10	204.55	100.00	30.48
299-W15-131	A7430	566699.39	136148.25	669.50	204.07	100.00	30.48
299-W15-132	A7431	566734.98	136199.45	673.50	205.29	100.00	30.48
299-W15-133	A7432	566753.73	136177.25	671.60	204.71	100.00	30.48
299-W15-134	A7433	566728.12	136185.69	673.70	205.35	100.00	30.48
299-W15-135	A7434	566704.10	136199.38	672.50	204.98	100.00	30.48
299-W15-137	A7436	566696.81	136185.30	671.90	204.80	100.00	30.48
299-W15-138	A7437	566804.58	136232.61	674.30	205.53	100.00	30.48
299-W15-139	A7438	566818.49	136222.74	673.30	205.22	100.00	30.48
299-W15-140	A7439	566794.20	136207.49	675.30	205.83	100.00	30.48
299-W15-141	A7440	566773.60	136169.80	673.20	205.19	100.00	30.48
299-W15-142	A7441	566760.22	136154.48	672.30	204.92	100.00	30.48

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W15-143	A7442	566783.65	136145.62	673.20	205.19	100.00	30.48
299-W15-144	A7443	566795.56	136197.09	676.60	206.23	100.00	30.48
299-W15-145	A7444	566814.75	136176.90	677.50	206.50	100.00	30.48
299-W15-146	A7445	566792.45	136179.86	675.90	206.02	100.00	30.48
299-W15-147	A7446	566763.49	136196.75	672.90	205.10	100.00	30.48
299-W15-148	A7447	566783.62	136196.94	673.60	205.32	100.00	30.48
299-W15-149	A7448	566785.14	136178.92	673.30	205.22	100.00	30.48
299-W15-153	A7451	566721.80	136165.30	671.40	204.65	105.00	32.00
299-W15-154	A7452	566710.67	136142.80	670.70	204.43	105.00	32.00
299-W15-155	A7453	566789.36	136157.10	673.00	205.13	115.00	35.05
299-W15-156	A7454	566700.35	136165.32	669.50	204.07	105.00	32.00
299-W15-158	A7456	566774.12	136202.54	672.60	205.01	105.00	32.00
299-W15-159	A7457	566719.16	136231.85	669.40	204.04	100.00	30.48
299-W15-160	A7458	566728.72	136250.10	669.80	204.16	100.00	30.48
299-W15-161	A7459	566818.68	136277.27	672.90	205.10	100.00	30.48
299-W15-162	A7460	566799.90	136294.69	673.80	205.38	100.00	30.48
299-W15-163	A7461	566792.93	136268.82	674.60	205.62	100.00	30.48
299-W15-164	A7462	566772.06	136294.63	675.40	205.86	100.00	30.48
299-W15-166	A7464	566816.72	136164.89	674.00	205.44	112.00	34.14
299-W15-167	A7465	566817.52	136149.62	673.30	205.22	115.00	35.05
299-W15-169	A7467	566795.59	136145.15	673.10	205.16	100.00	30.48
299-W15-170	A7468	566783.34	136167.16	672.90	205.10	100.00	30.48
299-W15-171	A7469	566800.62	136173.30	675.90	206.02	111.00	33.83
299-W15-173	A7471	566812.42	136197.57	677.30	206.44	100.00	30.48
299-W15-174	A7472	566819.21	136188.61	682.50	208.03	115.00	35.05
299-W15-176	A7474	566783.48	136228.73	674.50	205.59	100.00	30.48
299-W15-177	A7475	566748.53	136231.18	673.10	205.16	113.00	34.44
299-W15-178	A7476	566749.09	136200.79	672.00	204.83	110.00	33.53
299-W15-179	A7477	566717.54	136201.26	673.30	205.22	100.00	30.48
299-W15-180	A7478	566698.47	136221.41	668.60	203.79	100.00	30.48

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W15-181	A7479	566748.28	136293.60	672.60	205.01	100.00	30.48
299-W15-182	A7480	566751.83	136269.46	673.30	205.22	100.00	30.48
299-W15-184	A7482	566746.90	136371.07	674.20	205.50	100.00	30.48
299-W15-185	A7483	566755.35	136379.65	674.10	205.47	100.00	30.48
299-W15-186	A7484	566767.06	136371.18	674.50	205.59	100.00	30.48
299-W15-190	A7488	566735.94	136175.18	674.40	205.56	105.00	32.00
299-W15-197	A7495	566780.01	136230.23	674.60	205.62	100.00	30.48
299-W15-209	A7507	566545.41	136140.10	678.00	206.66	50.00	15.24
299-W15-210	A7508	566548.74	136179.25	677.20	206.41	100.00	30.48
299-W15-211	A7509	566583.80	136207.12	676.40	206.17	100.00	30.48
299-W15-212	A7510	566545.77	136234.20	677.60	206.53	100.00	30.48
299-W18-4	A7522	566305.56	135415.79	686.40	209.22	280.00	85.35
299-W18-7	A7524	566580.97	135409.80	679.30	207.05	300.00	91.44
299-W18-9	A7526	566472.96	135302.12	683.10	208.21	220.00	67.06
299-W18-18	A7531	566650.14	135317.38	670.80	204.46	265.00	80.77
299-W18-19	A7532	566610.48	135202.53	671.90	204.80	250.00	76.20
299-W18-51	A7534	566822.98	134989.10	669.90	204.19	151.00	46.03
299-W18-53	A7536	566759.32	135084.51	668.10	203.64	150.00	45.72
299-W18-54	A7537	566799.97	135054.06	668.50	203.76	150.00	45.72
299-W18-55	A7538	566759.42	135023.33	668.00	203.61	150.00	45.72
299-W18-86	A7569	566504.41	135379.64	684.80	208.73	150.00	45.72
299-W18-88	A7571	566598.68	135438.24	680.90	207.54	150.00	45.72
299-W18-90	A7573	566774.04	134999.43	667.90	203.58	100.00	30.48
299-W18-91	A7574	566769.19	135018.78	667.70	203.52	100.00	30.48
299-W18-95	A7578	566435.27	135244.99	683.80	208.42	80.00	24.38
299-W18-97	A7580	566490.25	135269.50	682.70	208.09	85.00	25.91
299-W18-100	A7583	566848.38	135025.82	672.60	205.01	125.00	38.10
299-W18-101	A7584	566811.52	134997.55	669.50	204.07	125.00	38.10
299-W18-102	A7585	566827.32	135013.09	669.90	204.19	125.00	38.10
299-W18-103	A7586	566796.68	135012.70	668.50	203.76	125.00	38.10

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W18-104	A7587	566849.75	134999.82	671.00	204.52	125.00	38.10
299-W18-105	A7588	566811.68	135028.37	670.60	204.40	125.00	38.10
299-W18-107	A7590	566835.61	135026.16	672.10	204.86	105.00	32.00
299-W18-109	A7592	566817.59	134999.83	669.60	204.10	125.00	38.10
299-W18-110	A7593	566803.72	134999.69	669.20	203.97	125.00	38.10
299-W18-114	A7597	566848.15	135056.20	670.30	204.31	105.00	32.00
299-W18-116	A7599	566829.36	135048.16	670.50	204.37	105.00	32.00
299-W18-117	A7600	566835.97	135056.43	670.80	204.46	125.00	38.10
299-W18-118	A7601	566796.53	135036.54	668.80	203.85	105.00	32.00
299-W18-119	A7602	566796.31	135048.66	668.20	203.67	125.00	38.10
299-W18-120	A7603	566787.08	135055.58	668.00	203.61	105.00	32.00
299-W18-121	A7604	566773.42	135029.50	667.90	203.58	105.00	32.00
299-W18-122	A7605	566765.88	135036.21	667.80	203.55	120.00	36.58
299-W18-123	A7606	566765.76	135048.42	667.40	203.43	125.00	38.10
299-W18-124	A7607	566827.93	135067.04	671.10	204.55	120.00	36.58
299-W18-125	A7608	566827.82	135078.45	672.00	204.83	120.00	36.58
299-W18-126	A7609	566842.05	135087.00	670.50	204.37	125.00	38.10
299-W18-127	A7610	566815.88	135057.65	669.70	204.13	125.00	38.10
299-W18-128	A7611	566805.55	135057.58	668.60	203.79	125.00	38.10
299-W18-129	A7612	566796.21	135066.64	668.30	203.70	125.00	38.10
299-W18-130	A7613	566798.19	135078.97	668.30	203.70	100.00	30.48
299-W18-131	A7614	566775.03	135058.76	667.70	203.52	125.00	38.10
299-W18-133	A7616	566766.45	135078.60	668.00	203.61	125.00	38.10
299-W18-134	A7617	566774.81	135086.19	668.30	203.70	105.00	32.00
299-W18-135	A7618	566825.96	135097.54	670.00	204.22	125.00	38.10
299-W18-137	A7620	566817.47	135117.59	669.20	203.97	125.00	38.10
299-W18-138	A7621	566820.98	135092.85	669.60	204.10	100.00	30.48
299-W18-139	A7622	566805.27	135089.27	669.50	204.07	125.00	38.10
299-W18-140	A7623	566798.86	135100.14	668.80	203.85	105.00	32.00
299-W18-141	A7624	566796.03	135109.36	668.50	203.76	125.00	38.10

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W18-142	A7625	566805.08	135117.67	668.80	203.85	100.00	30.48
299-W18-143	A7626	566786.58	135117.62	668.20	203.67	100.00	30.48
299-W18-144	A7627	566784.26	135089.65	668.70	203.82	125.00	38.10
299-W18-145	A7628	566766.28	135097.02	668.00	203.61	125.00	38.10
299-W18-146	A7629	566766.20	135109.38	667.60	203.49	100.00	30.48
299-W18-147	A7630	566774.87	135117.50	667.70	203.52	125.00	38.10
299-W18-176	A7658	566823.04	135066.03	669.30	204.01	75.00	22.86
299-W18-178	A7660	566644.76	135204.42	672.80	205.07	77.00	23.47
299-W18-247	A7727	566503.14	135231.66	681.70	207.78	227.00	69.19
299-W18-251	A7731	566603.27	134682.82	668.40	203.73	151.00	46.03
299-W19-5	A7734	567125.41	134693.48	688.60	209.89	235.00	71.63
299-W19-7	A7735	567120.85	134739.24	689.90	210.28	235.00	71.63
299-W19-13	A7740	567288.87	134897.26	696.50	212.30	250.00	76.20
299-W19-18	A7743	567360.65	135012.36	700.50	213.51	362.00	110.34
299-W19-25	A7746	567874.66	134916.36	693.00	211.23	248.00	75.59
299-W19-53	A7751	566860.36	135012.29	673.30	205.22	148.00	45.11
299-W19-54	A7753	566860.22	135103.62	674.70	205.65	153.00	46.63
299-W19-63	A7763	567429.66	134912.37	696.30	212.23	41.00	12.50
299-W19-72	A7772	567265.77	135001.89	706.00	215.19	50.00	15.24
299-W19-73	A7773	567242.92	135001.83	706.00	215.19	50.00	15.24
299-W19-74	A7774	566855.25	135048.71	672.00	204.83	125.00	38.10
299-W19-75	A7775	566853.46	135018.45	672.60	205.01	105.00	32.00
299-W19-76	A7776	566855.40	135072.32	672.50	204.98	125.00	38.10
299-W22-2	A7828	566970.66	134260.13	670.30	204.31	307.00	93.57
299-W22-3	A7829	566989.95	134225.01	669.80	204.16	309.00	94.18
299-W22-4	A7830	567082.80	134254.22	675.70	205.96	316.00	96.32
299-W22-5	A7831	567027.87	134254.61	673.30	205.22	317.00	96.62
299-W22-8	A7833	567741.79	134218.00	685.20	208.85	286.00	87.17
299-W22-10	A7835	567012.98	134215.14	673.40	205.25	312.00	95.10
299-W22-13	A7838	567142.83	134172.14	679.20	207.02	345.00	105.16

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W22-14	A7839	567186.93	134166.15	679.20	207.02	342.00	104.24
299-W22-15	A7840	566982.49	134283.93	671.70	204.74	268.00	81.69
299-W22-18	A7842	567009.57	134254.34	671.80	204.77	302.00	92.05
299-W22-25	A7846	567180.78	134404.62	681.50	207.72	335.00	102.11
299-W22-30	A7849	566987.94	134254.64	671.90	204.80	207.00	63.09
299-W22-31	A7850	566979.52	134265.26	671.00	204.52	206.00	62.79
299-W22-37	A7856	567084.51	134678.20	687.10	209.43	335.00	102.11
299-W22-38	A7857	567137.83	134647.80	688.40	209.83	233.00	71.02
299-W22-63	A7870	567559.10	133916.39	683.20	208.24	122.00	37.19
299-W22-74	A7878	567547.90	133926.13	683.30	208.27	174.00	53.04
299-W22-75	A7879	567594.19	134490.42	692.90	211.20	175.00	53.34
299-W23-9	A7883	566641.98	134274.63	665.10	202.72	235.00	71.63
299-W23-10	A7884	566570.35	134256.32	665.40	202.82	235.00	71.63
299-W23-16	A7885	566657.07	134661.52	674.10	205.47	237.00	72.24
299-W23-17	A7886	566532.11	134630.76	666.70	203.21	232.80	70.96
299-W23-51	A7887	566849.90	134487.10	669.40	204.04	150.00	45.72
299-W23-52	A7888	566815.34	134509.73	669.50	204.07	150.00	45.72
299-W23-53	A7889	566785.25	134490.36	666.90	203.27	150.00	45.72
299-W23-55	A7891	566785.48	134458.66	664.80	202.63	150.00	45.72
299-W23-56	A7892	566817.63	134395.67	669.20	203.97	150.00	45.72
299-W23-57	A7893	566785.55	134427.63	667.20	203.37	150.00	45.72
299-W23-59	A7895	566789.48	134286.11	665.90	202.97	101.00	30.79
299-W23-60	A7896	566819.99	134286.01	667.40	203.43	101.00	30.79
299-W23-62	A7898	566824.70	134254.07	666.70	203.21	101.00	30.79
299-W23-65	A7901	566756.75	134219.30	662.00	201.78	125.00	38.10
299-W23-66	A7902	566850.97	134211.88	664.40	202.51	126.00	38.41
299-W23-67	A7903	566821.40	134212.25	663.70	202.30	126.00	38.41
299-W23-68	A7904	566785.74	134192.42	665.40	202.82	125.00	38.10
299-W23-69	A7905	566813.81	134160.11	663.80	202.33	125.00	38.10
299-W23-70	A7906	566765.96	134159.82	661.70	201.69	125.00	38.10

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W23-72	A7908	566823.40	134182.96	664.00	202.39	100.00	30.48
299-W23-73	A7909	566834.50	134250.08	666.40	203.12	88.00	26.82
299-W23-74	A7910	566845.83	134245.82	664.10	202.42	75.00	22.86
299-W23-75	A7911	566850.06	134233.99	664.20	202.45	75.00	22.86
299-W23-79	A7915	566822.74	134242.97	664.20	202.45	75.00	22.86
299-W23-83	A7919	566832.46	134189.66	663.90	202.36	75.00	22.86
299-W23-84	A7920	566822.07	134198.09	664.10	202.42	75.00	22.86
299-W23-85	A7921	566827.80	134216.41	664.00	202.39	75.00	22.86
299-W23-92	A7928	566813.99	134192.76	663.50	202.24	135.00	41.15
299-W23-94	A7930	566792.73	134195.07	663.10	202.12	135.00	41.15
299-W23-97	A7933	566818.94	134206.13	663.90	202.36	75.00	22.86
299-W23-98	A7934	566815.28	134225.26	663.60	202.27	75.00	22.86
299-W23-99	A7935	566804.40	134220.43	663.00	202.08	135.00	41.15
299-W23-103	A7939	566818.90	134237.13	664.00	202.39	75.00	22.86
299-W23-108	A7944	566759.33	134238.60	662.10	201.81	130.00	39.62
299-W23-121	A7957	566762.81	134182.86	661.80	201.72	125.00	38.10
299-W23-125	A7961	566809.47	134252.47	663.00	202.08	135.00	41.15
299-W23-126	A7962	566796.61	134254.02	665.30	202.79	130.00	39.62
299-W23-128	A7964	566791.30	134273.75	665.70	202.91	130.00	39.62
299-W23-129	A7965	566806.49	134280.83	666.20	203.06	130.00	39.62
299-W23-130	A7966	566816.80	134273.85	666.40	203.12	130.00	39.62
299-W23-132	A7968	566841.97	134309.07	666.30	203.09	140.00	42.67
299-W23-133	A7969	566835.31	134283.90	666.30	203.09	100.00	30.48
299-W23-134	A7970	566822.97	134291.78	666.20	203.06	100.00	30.48
299-W23-135	A7971	566810.82	134308.80	666.30	203.09	140.00	42.67
299-W23-136	A7972	566790.87	134295.92	665.10	202.72	100.00	30.48
299-W23-137	A7973	566772.97	134310.50	664.90	202.66	140.00	42.67
299-W23-140	A7976	566842.67	134277.91	666.50	203.15	100.00	30.48
299-W23-141	A7977	566828.09	134277.11	666.20	203.06	100.00	30.48
299-W23-142	A7978	566779.92	134277.53	665.70	202.91	100.00	30.48

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W23-143	A7979	566782.57	134256.58	662.40	201.90	140.00	42.67
299-W23-145	A7981	566841.76	134515.01	668.90	203.88	100.00	30.48
299-W23-147	A7983	566821.99	134496.94	671.50	204.68	100.00	30.48
299-W23-148	A7984	566810.69	134514.95	667.60	203.49	100.00	30.48
299-W23-149	A7985	566798.67	134489.55	667.10	203.33	100.00	30.48
299-W23-153	A7989	566759.47	134507.49	666.00	203.00	100.00	30.48
299-W23-154	A7990	566816.77	134476.47	670.10	204.25	100.00	30.48
299-W23-155	A7991	566798.89	134458.40	667.30	203.40	100.00	30.48
299-W23-156	A7992	566790.65	134476.39	667.00	203.30	100.00	30.48
299-W23-159	A7995	566759.61	134476.31	666.40	203.12	100.00	30.48
299-W23-160	A7996	566841.94	134452.60	669.10	203.94	100.00	30.48
299-W23-161	A7997	566835.57	134425.38	668.90	203.88	100.00	30.48
299-W23-162	A7998	566822.67	134447.55	668.90	203.88	100.00	30.48
299-W23-164	A8000	566789.83	134441.72	667.20	203.37	100.00	30.48
299-W23-165	A8001	566782.56	134450.17	667.20	203.37	100.00	30.48
299-W23-167	A8003	566759.64	134445.17	666.50	203.15	100.00	30.48
299-W23-168	A8004	566849.00	134410.82	669.10	203.94	100.00	30.48
299-W23-170	A8006	566820.94	134410.66	668.50	203.76	100.00	30.48
299-W23-171	A8007	566810.84	134421.60	668.70	203.82	100.00	30.48
299-W23-174	A8010	566782.57	134419.13	667.30	203.40	100.00	30.48
299-W23-176	A8012	566758.81	134410.48	666.60	203.18	100.00	30.48
299-W23-178	A8014	566806.78	134455.69	667.80	203.55	105.00	32.00
299-W23-179	A8015	566848.54	134499.16	669.50	204.07	100.00	30.48
299-W23-181	A8017	566807.76	134489.49	667.50	203.46	100.00	30.48
299-W23-182	A8018	566797.76	134516.32	668.60	203.79	100.00	30.48
299-W23-183	A8019	566760.20	134494.55	666.00	203.00	100.00	30.48
299-W23-184	A8020	566767.74	134516.33	666.40	203.12	100.00	30.48
299-W23-190	A8026	566846.57	134289.79	666.60	203.18	100.00	30.48
299-W23-191	A8027	566821.28	134301.84	666.50	203.15	100.00	30.48
299-W23-193	A8029	566795.68	134308.82	665.40	202.82	100.00	30.48

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W23-194	A8030	566784.33	134305.10	665.00	202.69	100.00	30.48
299-W23-195	A8031	566784.14	134287.65	665.30	202.79	100.00	30.48
299-W23-196	A8032	566763.60	134306.18	664.70	202.60	100.00	30.48
299-W23-197	A8033	566850.17	134266.76	666.50	203.15	100.00	30.48
299-W23-198	A8034	566843.40	134254.60	666.40	203.12	100.00	30.48
299-W23-201	A8037	566757.00	134464.84	666.30	203.09	105.00	32.00
299-W23-202	A8038	566791.25	134430.40	667.30	203.40	105.00	32.00
299-W23-203	A8039	566760.60	134433.90	666.40	203.12	105.00	32.00
299-W23-204	A8040	566842.01	134397.38	668.70	203.82	105.00	32.00
299-W23-206	A8042	566807.33	134395.67	668.10	203.64	105.00	32.00
299-W23-207	A8043	566786.13	134403.29	667.40	203.43	105.00	32.00
299-W23-208	A8044	566759.39	134399.02	666.40	203.12	105.00	32.00
299-W23-212	A8046	566786.68	134503.65	667.00	203.30	130.00	39.62
299-W23-213	A8047	566784.81	134464.44	667.10	203.33	130.00	39.62
299-W23-216	A8048	566803.78	134455.10	667.80	203.55	130.00	39.62
299-W23-218	A8049	566842.17	134421.34	669.10	203.94	130.00	39.62
299-W23-220	A8050	566785.43	134401.98	667.20	203.37	130.00	39.62
299-W23-223	A8051	566810.53	134284.05	666.20	203.06	130.00	39.62
299-W23-225	A8052	566823.57	134259.15	666.70	203.21	130.00	39.62
299-W23-226	A8053	566773.46	134252.15	664.60	202.57	130.00	39.62
299-W23-227	A8054	566766.27	134277.94	665.10	202.72	130.00	39.62
299-W26-1	A8057	566433.61	133436.04	654.80	199.59	87.00	26.52
299-W26-4	A8059	566369.97	133500.93	653.30	199.13	77.00	23.47
299-W26-5	A8060	566363.03	133507.14	655.10	199.68	115.00	35.05
299-W27-1	A8062	567575.12	133750.35	676.40	206.17	257.00	78.33
699-29-83	A8494	564509.99	132372.27	625.00	190.50	569.00	173.43
699-30-47	A8499	575576.56	132626.58	667.40	203.43	251.00	76.51
699-30-51	A8500	574357.67	132623.30	693.40	211.35	275.00	83.82
699-30-55	A8501	573138.50	132621.58	694.60	211.72	285.00	86.87
699-31-53A	A8506	573754.45	132960.36	708.70	216.01	487.00	148.44

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
699-31-84C	A8510	564228.38	132991.64	626.10	190.84	3854.00	1174.71
699-32-42	A8516	576976.25	133378.87	518.30	157.98	128.00	39.01
699-32-49A	A8517	574985.04	133213.81	713.50	217.48	250.00	76.20
699-33-38	A8531	578264.50	133664.95	536.00	163.37	130.00	39.62
699-34-39B	A8539	578026.61	133867.87	536.50	163.53	115.00	35.05
699-35-57	A8556	572422.61	134106.71	726.10	221.32	350.00	106.68
699-35-58	A8557	572300.42	134272.86	724.90	220.95	350.00	106.68
699-35-59	A8558	571956.40	134096.20	726.20	221.35	350.00	106.68
699-36-58A	A8571	572251.67	134536.25	737.10	224.67	360.00	109.73
699-36-58B	A8572	572253.48	134431.19	727.60	221.78	350.00	106.68
699-36-61B	A8573	571401.21	134586.89	749.60	228.48	568.00	173.13
699-37-82B	A8580	564904.60	134733.62	637.50	194.31	627.00	191.11
699-37-84	A8584	564246.76	134768.37	636.90	194.13	626.00	190.81
699-40-80	A8643	565518.01	135547.80	656.50	200.10	559.00	170.39
699-40-84	A8644	564246.01	135751.27	641.50	195.53	620.50	189.13
699-41-64B	A8658	570364.96	136018.03	754.20	229.88	103.00	31.39
699-42-42A	A8670	577088.02	136290.06	603.50	183.95	1092.00	332.85
699-43-42K	A8695	576997.15	136445.02	582.30	177.49	263.00	80.16
699-44-70	A8712	568495.35	136805.85	732.60	223.30	3635.00	1107.96
699-47-42	A8749	577156.48	137909.03	470.90	143.53	1971.00	600.77
699-47-51	A8752	574352.30	137953.17	585.00	178.31	167.00	50.90
699-48-48A	A8768	575196.58	138112.70	575.00	175.26	5661.00	1725.49
699-48-48B	A8769	575179.03	138104.01	573.10	174.68	3300.00	1005.85
699-48-77A	A8772	566413.23	137968.86	675.60	205.93	457.70	139.51
699-48-77C	A8774	566468.95	138086.80	675.40	205.86	437.20	133.26
699-49-85A	A8797	563940.39	138526.79	746.10	227.41	3990.00	1216.17
699-49-85B	A8798	563917.28	138506.31	746.30	227.48	3998.00	1218.61
699-50-48A	A8812	575154.97	138684.76	553.40	168.68	173.00	52.73
699-52-52	A8842	573920.52	139293.86	560.80	170.93	903.00	275.24
699-55-50A	A8865	574642.28	140245.04	444.90	135.61	110.00	33.53

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
699-55-50D	A8867	574596.50	140248.36	442.20	134.78	100.00	30.48
699-56-51	A8891	574312.68	140605.60	440.50	134.27	105.00	32.00
699-57-41A	A8896	577163.42	140809.17	707.00	215.50	512.00	156.06
699-57-41B	A8897	577363.99	140891.01	710.60	216.59	461.00	140.51
699-57-41C	A8898	577254.32	140781.03	709.30	216.20	300.00	91.44
699-57-41E	A8900	577257.29	140720.53	698.40	212.87	550.00	167.64
699-57-41F	A8901	577362.82	140986.37	707.60	215.68	608.00	185.32
699-57-42	A8902	577159.82	140689.72	663.70	202.30	400.00	121.92
699-58-40	A8907	577541.88	141094.31	746.90	227.66	450.00	137.16
699-58-41A	A8908	577530.46	141152.15	709.90	216.38	274.00	83.52
699-58-41B	A8909	577513.65	141162.83	704.00	214.58	225.00	68.58
699-58-41C	A8910	577493.28	141176.31	702.90	214.25	130.00	39.62
699-58-41E	A8912	577473.22	141188.31	700.40	213.48	390.00	118.87
699-58-41F	A8913	577435.75	141051.47	699.50	213.21	600.00	182.88
699-50-42P	A9486	577111.01	138786.69	467.80	142.59	125.00	38.10
699-38-68A	A9516	569180.31	134931.60	715.90	218.21	306.98	93.57
699-50-85S	A9728	564130.20	138669.32	740.60	225.74	600.00	182.88
699-51-75Q	A9731	566978.08	138906.29	642.80	195.93	382.00	116.44
699-55-70P	A9740	568529.96	140318.97	569.80	173.68	205.00	62.48
699-55-76P	A9742	566723.42	140225.82	584.50	178.16	238.00	72.54
299-W10-22	A9890	566832.61	136883.05	682.50	208.03	300.00	91.44
699-36-70A	A9901	568466.68	134308.84	706.10	215.22	440.00	134.11
299-W19-39	B2460	567901.74	134886.74	690.50	210.47	287.50	87.63
299-W19-36	B2461	567634.74	135017.05	705.00	214.89	295.00	89.92
299-W19-38	B2463	567780.98	134849.14	700.20	213.42	259.30	79.04
299-W19-40	B2464	567973.86	134847.38	688.80	209.95	258.50	78.79
299-W19-37	B2465	567723.85	134950.35	700.80	213.61	267.00	81.38
699-37-68	B2732	569273.67	134629.49	714.60	217.81	297.00	90.53
299-W15-36	B2752	566773.90	135429.59	668.80	203.85	263.00	80.16
299-W15-37	B2753	566716.47	135248.32	666.10	203.03	258.00	78.64

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
699-37-47A	B2822	575556.97	134893.26	716.70	218.45	525.50	160.17
299-E33-333	B8079	574086.41	137181.28	653.40	199.16	254.00	77.42
299-W10-23	B8545	566823.73	136815.34	678.10	206.69	272.00	82.91
299-W10-24	B8546	566885.43	136798.78	685.60	208.97	432.50	131.83
299-W14-14	B8547	566898.39	136181.05	671.30	204.61	443.00	135.03
299-W10-26	B8548	566843.40	136400.59	671.50	204.68	262.00	79.86
299-W14-13	B8549	566901.72	136282.38	670.40	204.34	262.00	79.86
299-W15-40	B8550	566652.50	136204.97	672.80	205.07	262.40	79.98
299-W19-41	B8551	566896.53	135004.51	675.10	205.77	264.50	80.62
299-W19-42	B8553	566896.81	135122.90	674.20	205.50	265.20	80.83
299-E33-44	B8554	573706.41	137469.16	643.10	196.02	255.00	77.72
699-53-51	B8695	574583.70	139702.70	445.00	135.64	194.00	59.13
699-43-44	B8758	576744.71	136652.85	579.50	176.63	211.00	64.31
299-W23-19	B8809	566759.11	134166.65	664.30	202.48	246.00	74.98
299-W22-48	B8812	566996.64	134425.10	679.60	207.14	249.00	75.90
299-W22-50	B8814	566904.21	134139.71	669.80	204.16	547.00	166.73
299-W15-41	B8815	566757.59	136031.68	665.30	202.79	239.00	72.85
299-W26-13	B8817	566424.39	133293.60	653.00	199.04	240.00	73.15
B8826	B8826	575798.53	135868.14	671.60	204.71	273.00	83.21
299-W26-14	B8828	566682.69	133539.21	671.50	204.68	267.00	81.38
C3102	C3102	566933.55	136399.73	674.10	205.47	227.00	69.19
C3104	C3104	573471.18	137347.64	662.70	201.99	263.50	80.32
299-W14-15	C3114	566899.69	136230.65	671.20	204.58	260.00	79.25
299-W11-39	C3117	566908.38	136779.92	688.60	209.89	282.31	86.05
299-W11-40	C3118	566926.84	136709.67	688.00	209.70	280.00	85.35
299-W11-41	C3119	566935.51	136677.78	687.90	209.67	280.00	85.35
299-W22-81	C3123	567000.26	134354.19	675.50	205.89	270.00	82.30
299-W10-27	C3125	566843.97	136441.78	672.20	204.89	268.70	81.90
299-E24-21	C3177	574635.76	135698.20	717.30	218.64	334.00	101.80
299-W11-42	C3242	566920.44	136745.67	689.60	210.19	280.00	85.35

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
C3245	C3245	575660.99	136269.73	657.10	200.29	259.00	78.94
C3246	C3246	573128.81	136589.76	705.50	215.04	308.00	93.88
C3247	C3247	574979.08	135438.80	718.10	218.88	324.00	98.76
299-W15-763	C3339	566809.21	136028.76	663.30	202.18	257.60	78.52
299-E33-337	C3390	573821.80	137193.87	662.70	201.99	286.00	87.17
299-W19-44	C3393	566896.95	135041.97	677.60	206.53	272.00	82.91
299-W19-45	C3394	566897.65	135087.65	674.70	205.65	266.10	81.11
299-W14-18	C3396	566897.47	136344.15	670.10	204.25	261.50	79.71
299-W22-84	C3398	566978.76	134547.62	681.70	207.78	273.50	83.36
C3808	C3808	566610.06	134981.76	670.70	204.43	225.25	68.66
299-E17-22	C3826	574841.09	135195.54	726.50	221.44	358.66	109.32
299-E17-23	C3827	574694.48	134842.44	734.40	223.85	370.11	112.81
299-E17-24	C3828	574518.13	134845.55	737.50	224.79	383.00	116.74
C3830	C3830	566795.41	136166.88	674.80	205.68	116.75	35.59
C3832	C3832	566717.68	136137.32	672.00	204.83	114.20	34.81
299-E17-25	C3926	574515.19	134845.57	738.30	225.04	373.58	113.87
299-W15-43	C3955	566490.13	136210.03	678.40	206.78	347.00	105.77
299-W15-44	C3956	566685.02	136066.47	669.80	204.16	342.00	104.24
299-W14-19	C3957	566898.60	136135.06	672.20	204.89	344.00	104.85
299-W19-46	C3958	567782.67	134842.46	700.10	213.39	380.00	115.83
C4106	C4106	575917.54	135640.23	678.40	206.78	278.00	84.74
299-E25-93	C4122	575471.51	136022.09	680.00	207.27	325.00	99.06
299-E24-22	C4123	575262.68	136142.82	687.50	209.55	323.68	98.66
299-E27-22	C4124	575185.10	136685.33	631.90	192.61	268.10	81.72
299-E27-4	C4125	575032.02	136497.92	671.50	204.68	307.76	93.81
299-E27-21	C4127	575145.03	136407.21	672.60	205.01	308.83	94.13
C4129	C4129	564260.79	136340.48	640.60	195.26	83.00	25.30
C4160	C4160	575106.04	135355.28	720.20	219.52	321.00	97.84
C4175	C4175	566931.90	136348.82	672.30	204.92	227.50	69.34
299-E27-23	C4190	575069.46	136452.23	674.70	205.65	310.97	94.78

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
C4191	C4191	573286.84	134146.02	735.30	224.12	337.78	102.96
699-40-65	C4235	570057.48	135881.16	755.70	230.34	459.00	139.90
699-38-70B	C4236	568469.10	135331.04	727.70	221.81	478.50	145.85
299-W17-1	C4237	565310.68	135038.74	650.90	198.40	230.62	70.29
299-W13-1	C4238	568148.74	136048.60	731.00	222.81	527.30	160.72
699-38-70C	C4256	569084.11	135325.58	741.20	225.92	419.00	127.71
299-E24-33	C4257	575325.40	136251.45	675.90	206.02	315.40	96.14
299-W19-47	C4258	566895.31	135161.86	674.40	205.56	269.00	81.99
299-E33-47	C4259	573916.48	137295.46	648.80	197.76	268.90	81.96
299-E33-48	C4260	573781.45	137162.07	664.70	202.60	290.90	88.67
299-E33-49	C4261	573647.48	137212.80	666.80	203.24	288.80	88.03
699-30-66	C4298	569990.98	132739.19	688.00	209.70	406.30	123.84
699-36-70B	C4299	568427.79	134625.98	703.70	214.49	427.00	130.15
299-W19-48	C4300	567822.93	134925.99	696.00	212.14	424.00	129.24
299-W15-49	C4301	566307.20	135972.91	683.70	208.39	435.00	132.59
299-W15-50	C4302	566793.47	135790.72	664.40	202.51	337.00	102.72
299-W18-16	C4303	566605.05	135425.69	682.00	207.88	348.00	106.07
C4304	C4304	573208.70	134350.80	751.10	228.94	99.70	30.39
C4545	C4545	575682.46	136176.35	662.00	201.78	264.50	80.62
C4557	C4557	567172.76	134176.07	680.10	207.30	226.50	69.04
C4560	C4560	575216.72	135530.72	714.50	217.78	25.00	7.62
C4562	C4562	574116.92	134895.93	735.00	224.03	539.00	164.29
299-W21-2	C4639	568124.39	134573.79	702.60	214.16	381.00	116.13
299-E24-24	C4647	574179.77	135459.30	723.40	220.50	364.00	110.95
299-E17-26	C4648	574662.61	135025.06	736.30	224.43	379.00	115.52
299-E25-94	C4665	575409.17	136012.43	693.30	211.32	333.00	101.50
299-W22-47	C4667	566908.74	134076.28	674.30	205.53	348.60	106.25
299-W14-11	C4668	566901.69	136287.62	670.50	204.37	348.00	106.07
299-W11-25B	C4669	566912.34	136774.76	688.10	209.74	409.50	124.82
299-W15-83	C4683	566304.52	135826.24	685.50	208.94	278.00	84.74

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W15-94	C4684	566307.58	135640.34	687.00	209.40	278.00	84.74
299-W15-152	C4685	566309.40	135550.00	687.00	209.40	358.30	109.21
299-W11-43	C4694	567269.74	136971.04	711.00	216.72	448.00	136.55
299-W19-49	C4695	567568.04	134894.38	700.20	213.42	380.00	115.83
699-50-74	C4697	567359.52	138646.73	658.30	200.65	338.80	103.27
C4738	C4738	567452.39	136897.69	716.70	218.45	132.50	40.39
699-50-59	C4882	571946.90	138741.72	564.60	172.09	173.20	52.79
299-W11-45	C4948	566992.84	136775.64	698.40	212.87	438.00	133.50
299-W11-46	C4950	566914.86	136773.27	689.40	210.13	285.75	87.10
299-W19-101	C4966	567939.14	135014.07	700.30	213.45	380.00	115.83
299-W19-105	C4968	567565.15	134745.44	698.70	212.97	378.99	115.52
299-W22-69	C4969	567179.60	134347.83	680.00	207.27	376.55	114.77
299-W22-72	C4970	567237.37	134207.08	680.20	207.33	357.80	109.06
299-W22-86	C4971	567186.74	134041.31	674.90	205.71	350.00	106.68
699-34-72	C4972	567859.97	133785.33	673.10	205.16	417.00	127.10
699-33-74	C4973	567472.65	133552.16	673.80	205.38	358.00	109.12
699-33-75	C4974	566907.78	133662.48	677.80	206.60	346.00	105.46
699-33-76	C4976	566621.21	133600.43	666.70	203.21	342.40	104.36
299-W22-87	C4977	567541.75	134539.88	693.10	211.26	379.50	115.67
299-W22-88	C4978	568046.48	134390.53	699.30	213.15	438.00	133.50
299-W15-224	C4986	566307.89	135926.08	683.40	208.30	274.10	83.55
299-W10-29	C4988	566082.98	136828.74	694.30	211.63	287.20	87.54
299-W10-30	C4989	566082.78	136739.33	691.80	210.86	283.00	86.26
299-W11-47	C4990	566933.82	136680.70	687.90	209.67	407.00	124.06
C4993	C4993	576087.44	135756.66	658.20	200.62	1411.00	430.08
C4996	C4996	576145.17	136054.19	670.00	204.22	1467.80	447.39
C4997	C4997	576309.43	135755.32	676.90	206.32	1435.70	437.61
C4998	C4998	576300.27	135780.97	676.90	206.32	1400.00	426.73
299-W11-86	C5101	568143.53	136610.04	730.60	222.69	491.00	149.66
299-W14-71	C5102	567733.43	135567.81	717.30	218.64	467.90	142.62

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W14-72	C5103	567328.44	135941.28	707.60	215.68	439.50	133.96
299-W19-107	C5193	567997.87	135205.66	710.90	216.68	429.00	130.76
299-W10-31	C5194	566266.44	136968.34	687.90	209.67	278.90	85.01
299-E33-50	C5195	573773.61	137599.30	625.80	190.75	381.00	116.13
699-48-50B	C5196	573334.48	138044.28	608.80	185.56	215.20	65.59
699-50-56	C5197	572748.21	138841.55	551.80	168.19	164.20	50.05
299-W11-48	C5243	566881.97	136846.18	685.40	208.91	409.00	124.66
299-E24-23	C5301	575205.22	135517.81	714.60	217.81	360.00	109.73
C5515	C5515	575180.05	135530.89	715.60	218.12	325.00	99.06
299-W11-88	C5572	567874.67	137113.09	725.50	221.14	490.20	149.41
699-43-69	C5573	568967.03	136488.48	743.20	226.53	501.50	152.86
699-45-69C	C5574	568947.12	137233.81	727.30	221.68	455.00	138.69
699-37-66	C5704	569730.32	134797.15	725.70	221.20	340.80	103.88
299-E27-155	C5852	575003.11	136429.08	681.40	207.69	340.00	103.63
299-E33-340	C5853	573779.64	137763.84	617.90	188.34	358.85	109.38
299-W10-33	C5855	566772.75	136610.19	673.20	205.19	427.00	130.15
299-E33-341	C5856	573565.21	137652.50	627.50	191.26	237.00	72.24
299-E33-342	C5857	573625.68	137579.96	636.90	194.13	245.50	74.83
299-E33-343	C5858	573743.98	137382.25	652.30	198.82	263.80	80.41
299-E29-54	C5860	573467.15	136403.12	704.30	214.67	375.20	114.36
699-52-55	C5861	573102.44	139443.20	574.00	174.96	183.30	55.87
699-52-55B	C5862	573102.17	139440.66	573.60	174.84	292.00	89.00
299-E13-63	C5924	573192.41	134269.51	742.90	226.44	248.00	75.59
299-E13-64	C5925	573500.52	134350.75	745.00	227.08	203.50	62.03
C5941	C5941	575883.40	135558.22	683.40	208.30	296.50	90.37
299-E33-205	C5989	573633.38	137406.22	657.20	200.32	270.60	82.48
C6174	C6174	566209.26	133589.65	655.50	199.80	100.00	30.48
699-36-66B	C6219	569731.34	134469.01	723.30	220.46	338.00	103.02
299-E26-77	C6455	575579.03	137129.97	603.70	184.01	232.20	70.78
299-E25-236	C6542	575327.99	135965.34	694.80	211.78	328.70	100.19

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
C6552	C6552	575048.95	135495.39	717.70	218.76	329.50	100.43
C6756	C6756	573211.98	134441.67	746.60	227.57	25.00	7.62
299-E26-79	C6826	575827.88	137051.50	598.30	182.36	224.76	68.51
C6911	C6911	573467.22	136401.63	704.60	214.76	216.00	65.84
C6913	C6913	566792.02	136413.56	674.90	205.71	103.50	31.55
C6917	C6917	566795.31	136377.51	675.40	205.86	104.50	31.85
C6927	C6927	566764.80	136431.51	674.70	205.65	108.00	32.92
C6931	C6931	566917.00	136411.00	671.60	204.71	99.50	30.33
C6933	C6933	566917.00	136411.00	671.50	204.68	104.00	31.70
C6935	C6935	566917.00	136411.00	671.40	204.65	102.50	31.24
C6943	C6943	566917.00	136411.00	670.80	204.46	104.00	31.70
299-W15-225	C7017	566657.35	136108.93	672.10	204.86	465.00	141.73
299-W14-20	C7018	566909.22	136284.47	670.60	204.40	439.00	133.81
299-W11-49	C7019	567361.50	135924.72	708.70	216.01	457.00	139.30
299-W11-50	C7020	566966.27	136756.64	696.50	212.30	490.00	149.35
299-W14-73	C7021	567358.99	136204.58	711.00	216.72	507.50	154.69
299-W11-90	C7022	567306.79	136519.66	715.70	218.15	525.90	160.30
299-W14-74	C7024	567781.48	136381.29	726.50	221.44	508.00	154.84
299-W11-92	C7025	566692.86	136351.78	671.20	204.58	460.00	140.21
299-W11-93	C7026	567775.46	136780.07	723.60	220.56	510.00	155.45
299-W12-2	C7027	568312.67	136610.25	729.30	222.29	505.00	153.93
299-W12-3	C7028	568321.53	136998.09	732.20	223.18	496.00	151.18
299-W12-4	C7029	568327.41	136363.65	729.60	222.38	515.80	157.22
299-W14-22	C7030	568324.69	136117.29	733.70	223.63	527.30	160.72
299-W14-21	C7494	567721.52	135890.01	719.50	219.31	525.00	160.02
299-E24-25	C7514	574598.56	136287.23	687.80	209.64	361.90	110.31
299-E28-30	C7515	573140.34	136550.79	704.00	214.58	375.60	114.48
C7517	C7517	574836.99	135420.71	720.00	219.46	53.81	16.40
C7518	C7518	574833.26	135428.98	720.40	219.58	53.81	16.40
C7519	C7519	574832.59	135427.98	720.30	219.55	56.92	17.35

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
C7520	C7520	574833.44	135429.42	720.40	219.58	57.09	17.40
C7521	C7521	574836.93	135417.83	719.90	219.43	60.37	18.40
299-E33-265	C7564	572866.03	137467.96	666.60	203.18	283.60	86.44
299-E33-266	C7565	572828.95	137467.95	667.90	203.58	286.06	87.19
299-E34-13	C7566	574640.26	137297.34	626.00	190.81	236.30	72.03
299-E27-24	C7570	575212.03	136436.28	665.50	202.85	317.80	96.87
299-W15-226	C7574	566033.30	136450.23	696.80	212.39	489.00	149.05
299-W15-227	C7575	566034.04	135966.56	701.30	213.76	511.85	156.01
299-W17-2	C7576	566951.64	135806.21	671.00	204.52	470.00	143.26
299-W22-89	C7664	566906.77	134031.67	674.10	205.47	332.60	101.38
299-W6-14	C8065	566939.64	137388.93	695.90	212.11	475.80	145.03
299-W10-36	C8066	566019.19	137451.97	690.50	210.47	457.00	139.30
699-46-68	C8067	569109.83	137600.88	712.10	217.05	437.00	133.20
699-44-67	C8068	569338.04	136894.30	735.40	224.15	482.40	147.04
699-42-67	C8069	569390.25	136199.83	748.90	228.27	524.37	159.83
699-40-67	C8070	569420.26	135815.70	750.40	228.72	535.10	163.10
299-W22-91	C8096	566911.76	134134.53	670.60	204.40	307.30	93.67
299-W22-92	C8097	567167.84	134029.77	674.40	205.56	307.40	93.70
299-W9-2	C8201	565742.21	136872.84	734.10	223.76	325.00	99.06
299-W22-93	C8202	566949.07	134485.98	678.80	206.90	288.10	87.81
299-W22-94	C8203	567009.82	134429.75	680.10	207.30	342.80	104.49
299-E26-14	C8204	575786.45	137264.50	598.70	182.49	240.60	73.34
299-W22-95	C8240	567170.54	134549.11	683.30	208.27	317.80	96.87
299-E33-267	C8242	573519.51	137494.16	647.50	197.36	260.30	79.34
699-43-67B	C8386	569374.78	136560.20	745.90	227.35	509.27	155.23
C8706	C8706	573636.00	137698.00	622.70	189.80	202.30	61.66
299-W15-228	C8716	565745.36	135711.48	685.50	208.94	520.23	158.57
699-45-67B	C8717	569264.36	137264.99	721.10	219.79	450.75	137.39
299-W19-111	C8718	567313.04	135547.02	702.90	214.25	448.50	136.70
299-W11-97	C8719	568317.57	135875.91	733.10	223.45	536.90	163.65

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
299-W6-15	C8720	567781.69	137076.41	724.90	220.95	481.95	146.90
299-W5-1	C8721	568329.73	137321.21	727.30	221.68	469.00	142.95
699-49-69	C8786	568829.74	137966.54	692.50	211.08	417.17	127.15
299-E33-350	C8914	573786.57	137426.63	654.00	199.34	234.90	71.60
699-46-91	C8916	576325.25	137287.35	601.00	183.19	208.00	63.40
299-W18-41	C8920	566045.06	135048.54	671.80	204.77	486.88	148.40
299-E25-237	C8922	575323.84	135965.27	695.10	211.87	374.78	114.23
299-E33-360	C8923	573772.05	137386.86	652.70	198.95	272.80	83.15
299-E33-361	C8924	574069.25	137122.32	655.00	199.65	277.89	84.70
299-W18-260	C8925	566862.54	135196.89	672.70	205.04	326.30	99.46
299-W19-114	C8928	567901.89	135013.21	701.00	213.67	391.00	119.18
299-W22-113	C8943	566904.52	134192.75	669.40	204.04	271.30	82.69
299-W7-13	C8945	566024.39	137636.29	689.00	210.01	440.00	134.11
299-W22-114	C9411	567730.54	134053.10	680.44	207.40	459.78	140.14
299-W19-116	C9412	568510.19	135090.16	716.98	218.54	452.80	138.02
699-29-66	C9413	570053.53	132336.94	678.71	206.87	516.60	157.46
299-W21-3	C9415	568570.76	133980.24	698.65	212.95	426.00	129.85
699-31-68	C9416	569598.00	133080.60	692.86	211.19	444.15	135.38
699-30-57	C9417	572394.41	132770.78	696.18	212.20	436.00	132.89
699-35-58D	C9427	571951.78	134365.55	726.00	221.29	369.50	112.62
299-W22-115	C9430	566939.39	134292.43	668.00	203.61	272.30	83.00
299-W5-2?	C9439	568175.40	137621.12	712.30	217.11	447.06	136.27
299-W13-2	C9440	568832.59	135819.18	739.20	225.31	530.00	161.55
299-E28-31	C9447	573358.37	136608.90	696.80	212.39	362.00	110.34
299-E28-32	C9448	573449.93	136392.19	704.60	214.76	372.40	113.51
299-E27-26?	C9449	575218.04	136624.88	640.57	195.25	280.90	85.62
299-E20-1	C9482	570503.00	135199.81	760.50	231.80	403.00	122.84
299-E20-2	C9483	570897.94	134895.76	747.60	227.87	407.00	124.06
299-E11-1	C9484	571003.10	134505.27	747.00	227.69	421.30	128.41
C9487	C9487	573802.00	137396.00	652.22	198.80	235.00	71.63

Table C-1. Boreholes Used in Central Plateau Vadose Zone Geoframework Model

Well Name	Well ID	X (m)	Y (m)	Elevation (ft)	Elevation (m)	Total Depth (ft)	Total Depth (m)
C9488	C9488	573784.71	137468.42	641.40	195.50	225.50	68.73
C9491	C9491	573466.00	137320.00	665.35	202.80	227.70	69.40
C9492	C9492	566675.40	136732.40	674.47	205.58	100.50	30.63
C9499	C9499	567202.90	136657.90	708.32	215.90	105.10	32.03
C9505	C9505	566975.00	136801.00	692.58	211.10	105.50	32.16
C9506	C9506	566949.00	136460.50	670.92	204.50	101.10	30.82
C9507	C9507	566847.78	136032.03	664.82	202.64	243.40	74.19
C9549	C9549	573661.70	137697.10	622.04	189.60	200.50	61.11
C9550	C9550	573549.30	137719.90	624.01	190.20	200.50	61.11
C9552	C9552	573613.00	137678.00	629.91	192.00	202.20	61.63
699-36-63B	C9593	570682.28	134227.58	747.37	227.80	422.88	128.90
CA Control Well 2	CA Control Well 2	574965.04	132873.23	667.00	203.30	600.00	182.88

CA = composite analysis

ID = identification

C2 References

PNNL-17913, 2009, *Hydrogeology of the Hanford Site Central Plateau – A Status Report for the 200 West Area*, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnl.gov/main/publications/external/technical_reports/PNNL-17913rev1.pdf.

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Appendix D

Geologic Type Logs

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D1 Introduction

This appendix provides geologic type logs for selected areas that were used to guide geology interpretations during development of the Composite Analysis geoframework model.

The appendix is divided into two parts, the 200 West Geologic Type Logs and 200 East Geologic Type Logs. The 200 West Geologic Type Logs section provides a geographic breakdown of how the type log regions are divided, followed by representative geologic 2D cross sections representing the various areas of 200 West. The individual type logs follow these initial interpretations.

The 200 East Geologic Type Logs section provides only examples of the borehole profiles used to develop the geologic interpretations for that half of the model.

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200 West Geologic Type Logs

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200 West Area Type Logs for Vadose Zone Stratigraphic Correlation 9-2016

200 West Area -2017 Borehole Type Log Selection and Development Rational and Process

1 Evaluate recently published vadose zone documentation to define vadose zone geologic variations across 200 West Area and vicinity

1a Documents evaluated include: PNNL-13858, SGW-50900, PNNL-17913, R.1., and PNNL-14702, R. 1.

2 Define mappable, correlatable vadose zone geologic formation, unit, and subunit (facies) and complete representative stratigraphic section.

3 Sub-divide 200 West Area into unique regions as defined by transitioning vadose zone geology.

3a Transition regions include: Area north of 200 West (missing Ringold and CCU), Area northeast of 200 West (missing CCU and Rlm above water table), area east of 200 West (missing CCU, more Rtf present), north to south across 200 West (changing CCUz and CCUc interval), SE of 200 West (missing CCU and more Rtf present).

3b Define applicable type logs by regions that are associated with CA focus areas (e.g., S-SX SST Complex)

4a CA Focus Areas include 200 West Area LLBG, WMA T, WMA TX/TY, WMA U, WMA S-SX, and ERDF

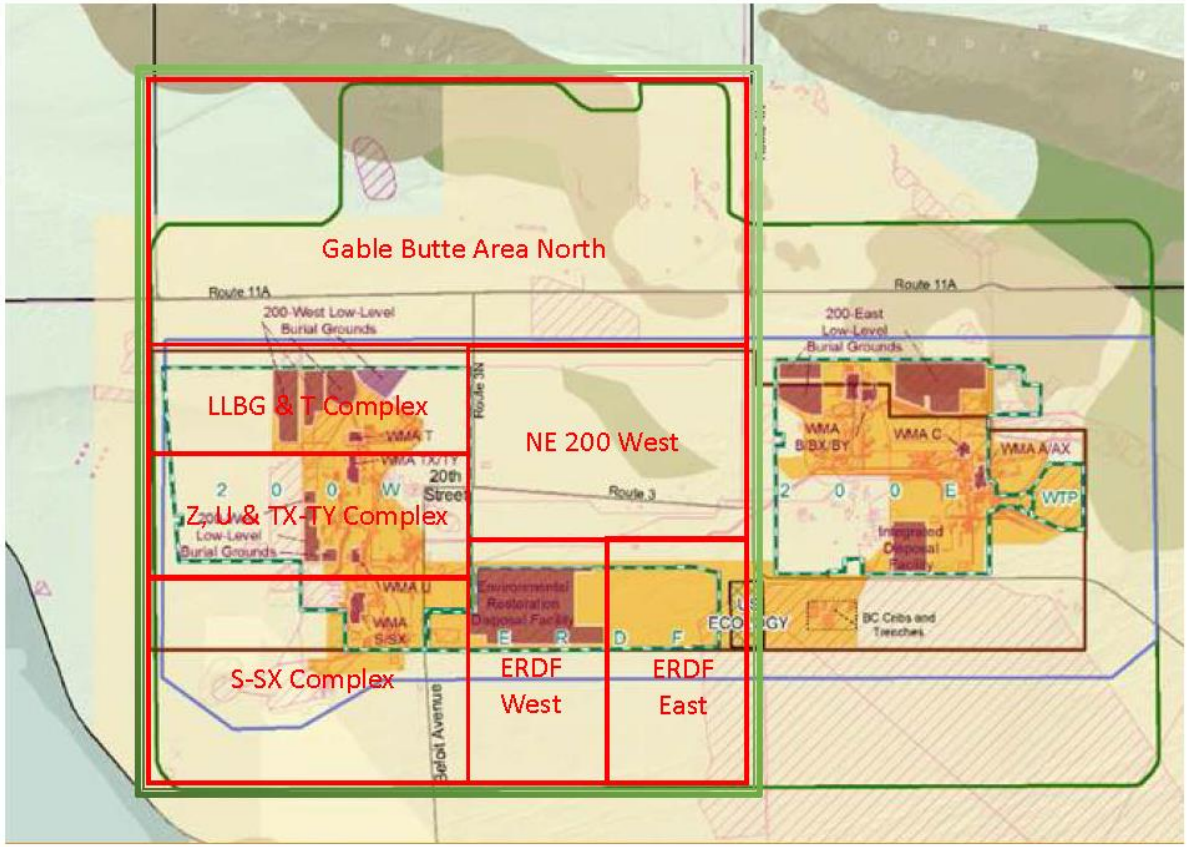
4b Develop Type Logs using most recently available borehole data to illustrate characteristic curves, descriptive information, and related features of the vadose zone.

4c Compare and validate vadose zone tops (depths) with those recorded in GeoContacts, SGW-50900, and PNNL-17913, R. 1. Record new Best estimate, date, source, author.

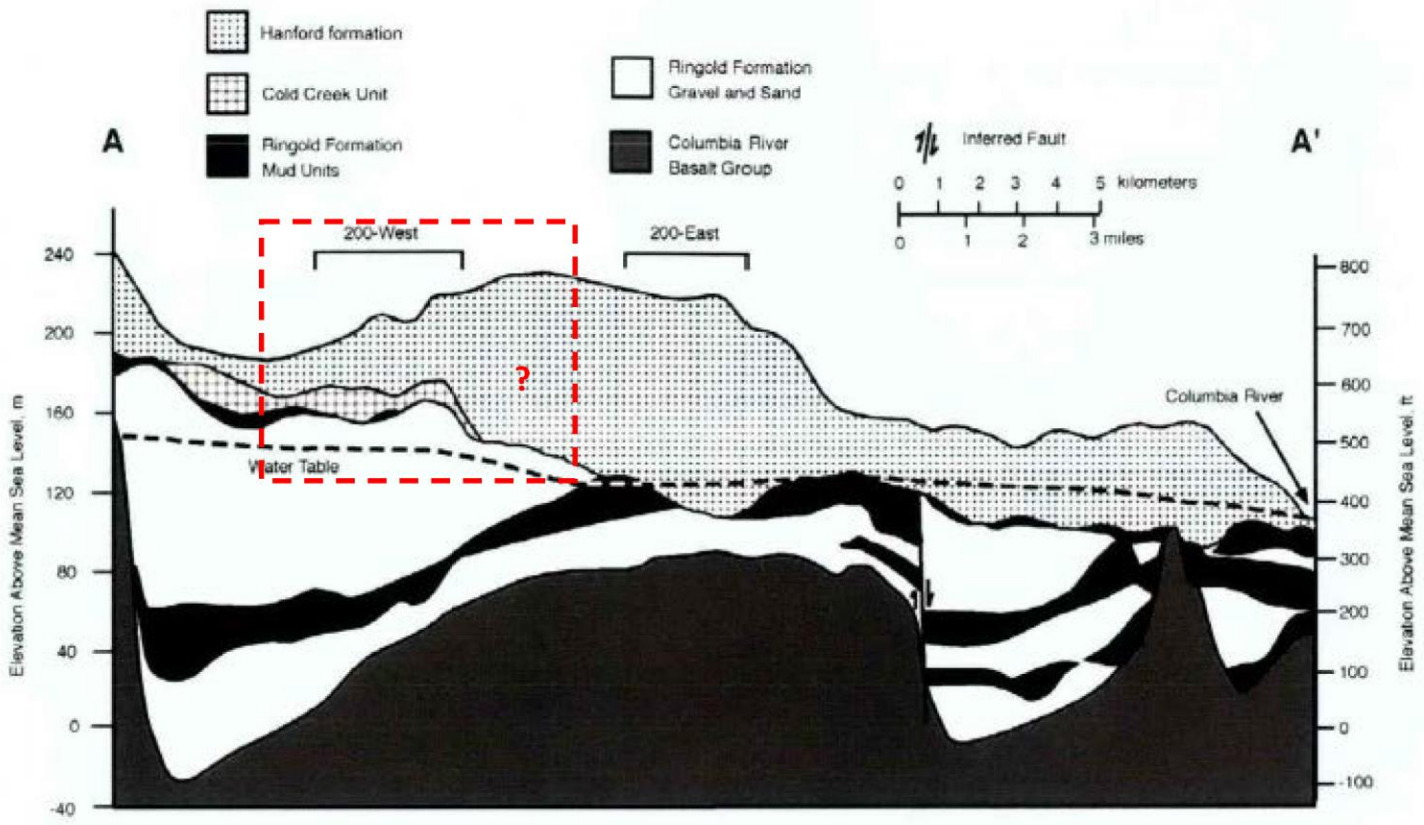
5

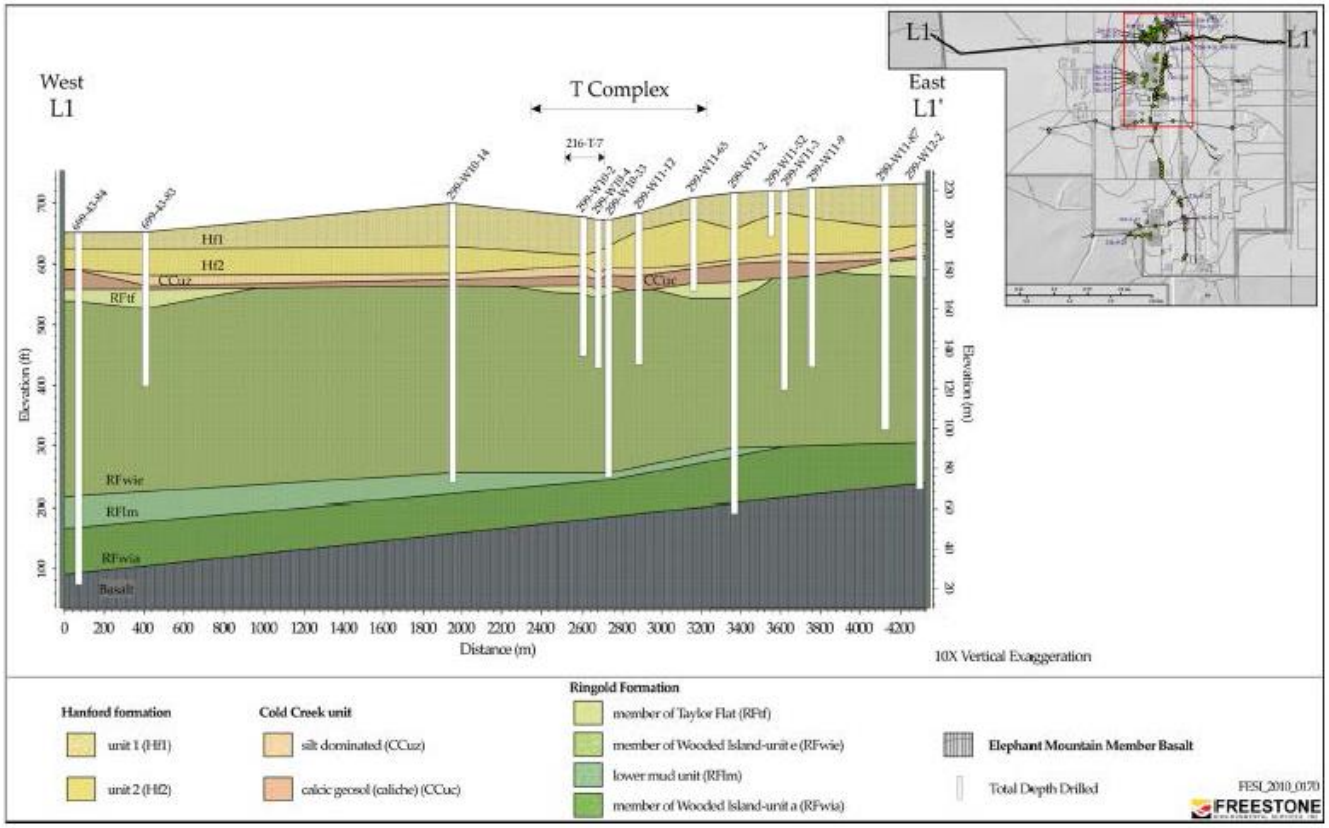
6 Define documentation source of hydrogeologic data used for the seven geographically based type log sections (after PNNL-14702)

Geographic Area	Type Log Designation	Known Geologic Transitions	References
200 West Area -Gable Butte	Gable Butte Area North	CCUz/c, Rtf, Rwie, Rlm	Williams, B. A.
200 West Area-North	LLBG & T-Complex	H1/H2., CCUz/c	SGW-50900, Williams
200 West Area-Central	Z, U- and TX-TY Complex	H1, H3,CCUz/c, Rtf	SGW-50900
200 West Area-South	S-SX Complex	CCUc/Rtf	SGW-50900
200 West Area-Northeast	NE 200 West	Rlm, CCUz/c	Williams, B. A.
ERDF-East	ERDF East	CCUz/c, Rtf	Williams, B. A.
ERDF-West	ERDF-West	CCUz/c	Williams, B. A.

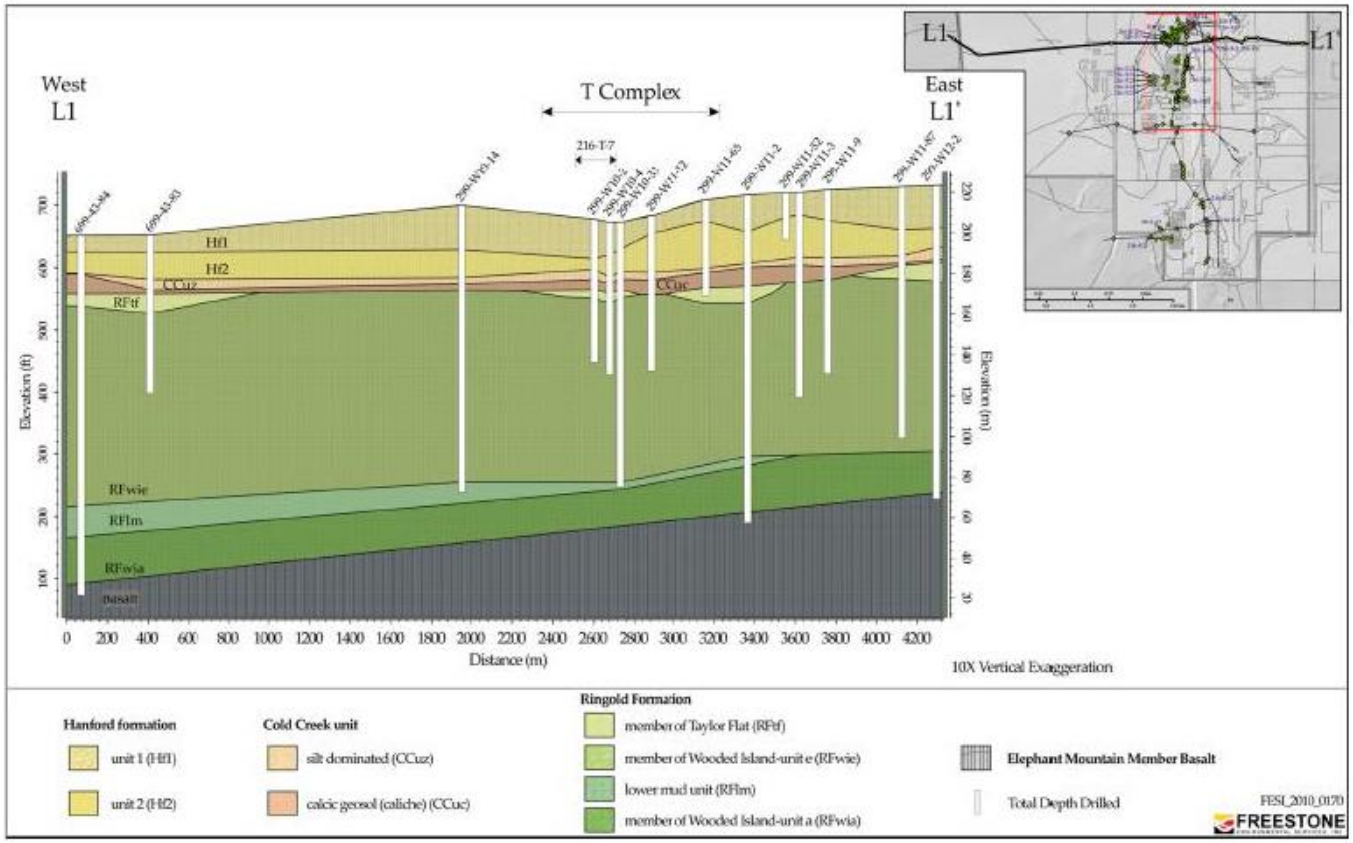

Gable Butte Area North
Route 11A
200-West Low-Level Burial Grounds
LLBG & T Complex
WMA T
WMA TX/TY
20th Street
Z, U & TX-TY Complex
Low-Level Burial Grounds
WMA U
WMA S/SX
S-SX Complex
Route 3N
NE 200 West
Route 3
Environmental Restoration Disposal Facility
ERDF West
ERDF East
Bafol Avenue
Route 11A
200-East Low-Level Burial Grounds
WMA B/BX/BY
WMA C
WMA A/AX
WTP
Integrated Disposal Facility
BC Cribs and Trenches

Hanford South Regional Cross Section Showing Major Formation/Unit Boundaries





From (SGW-50900)



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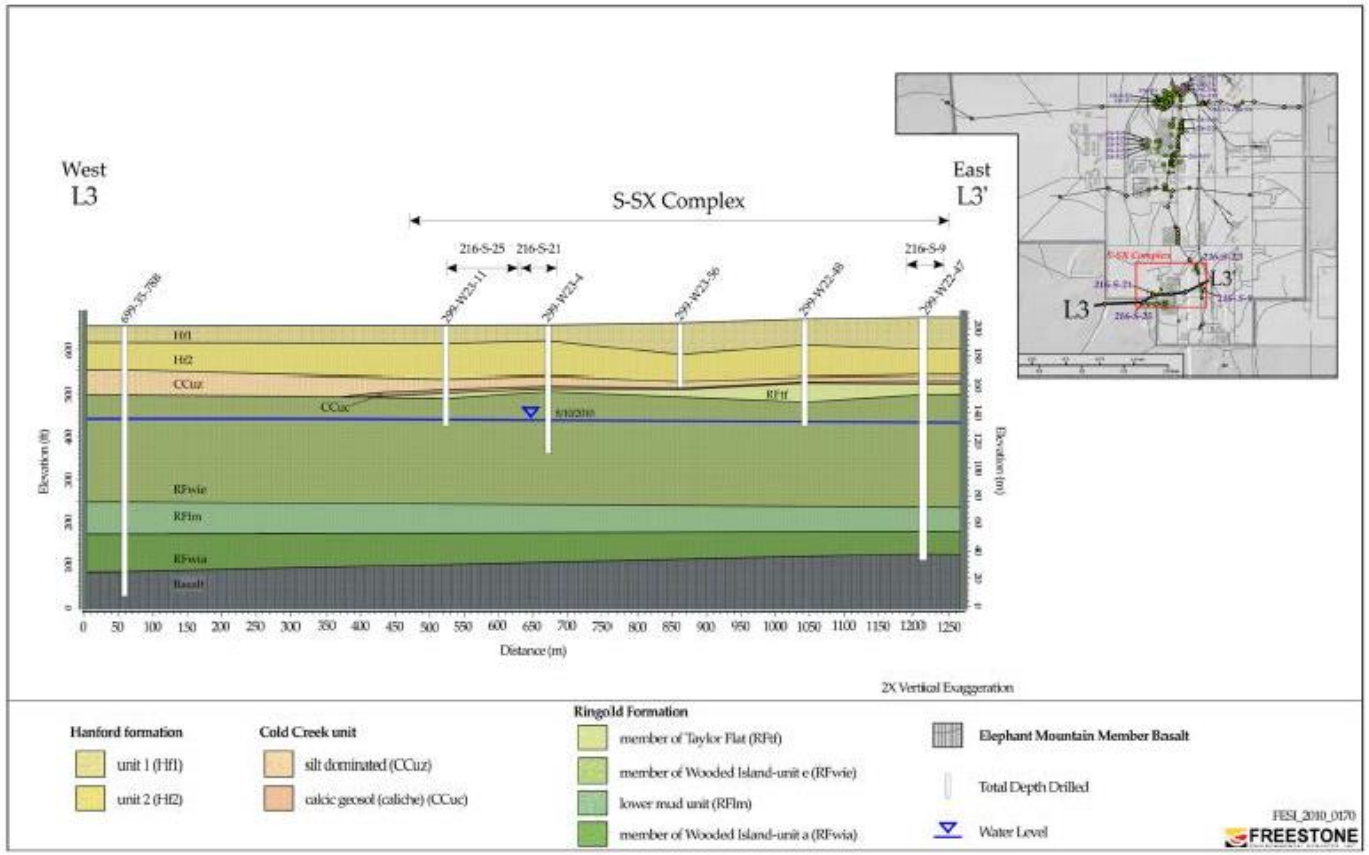

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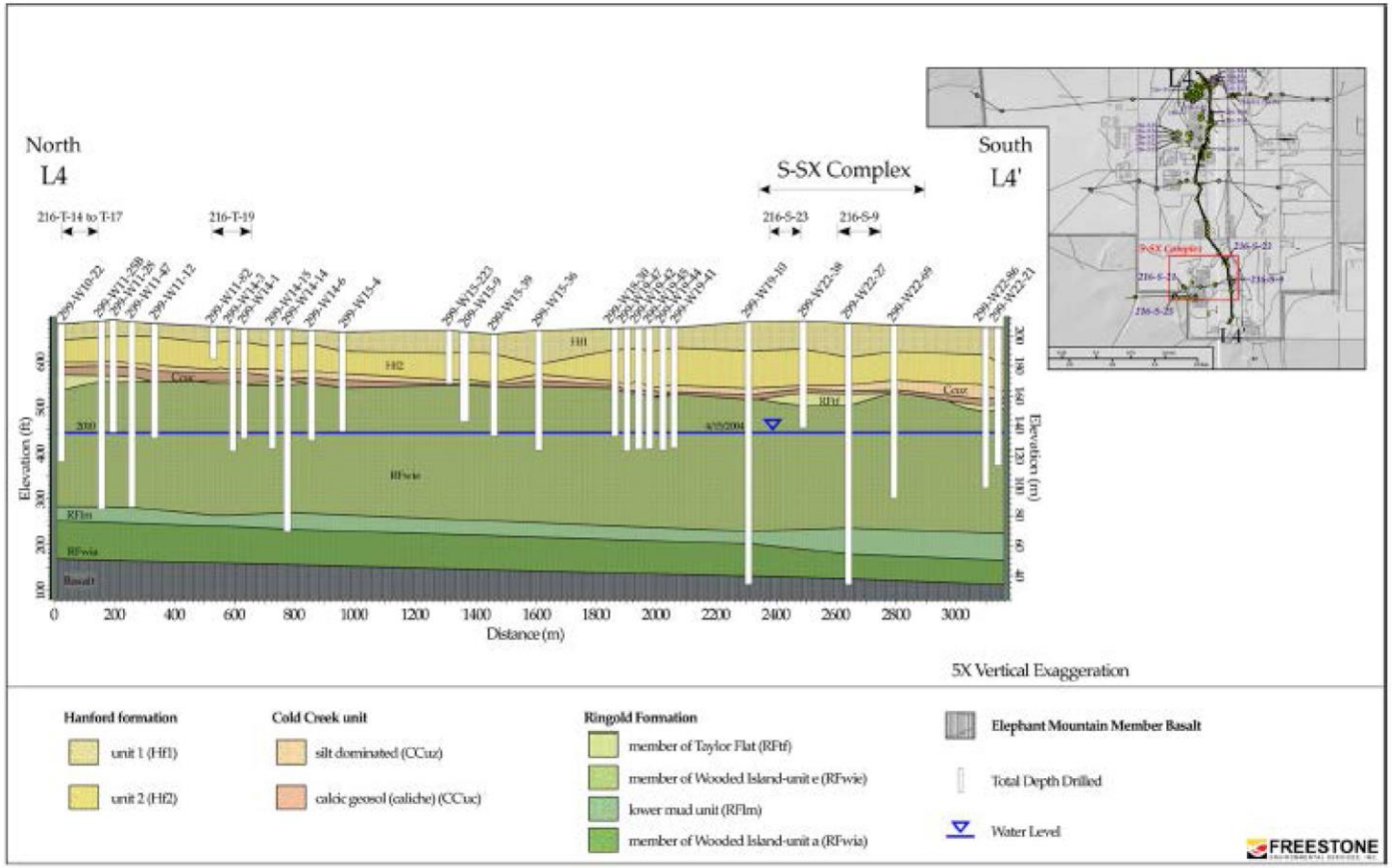
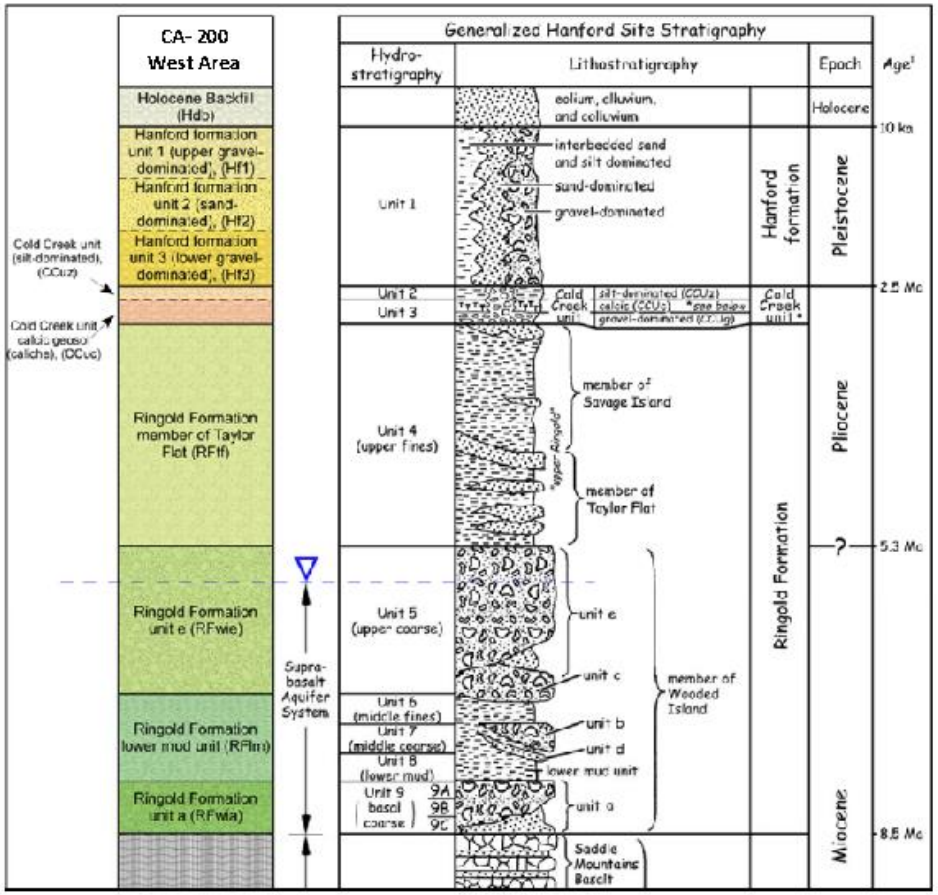


From (SGW-50900)

Stratigraphic Units Used for the Composite Analysis Geoframework Model



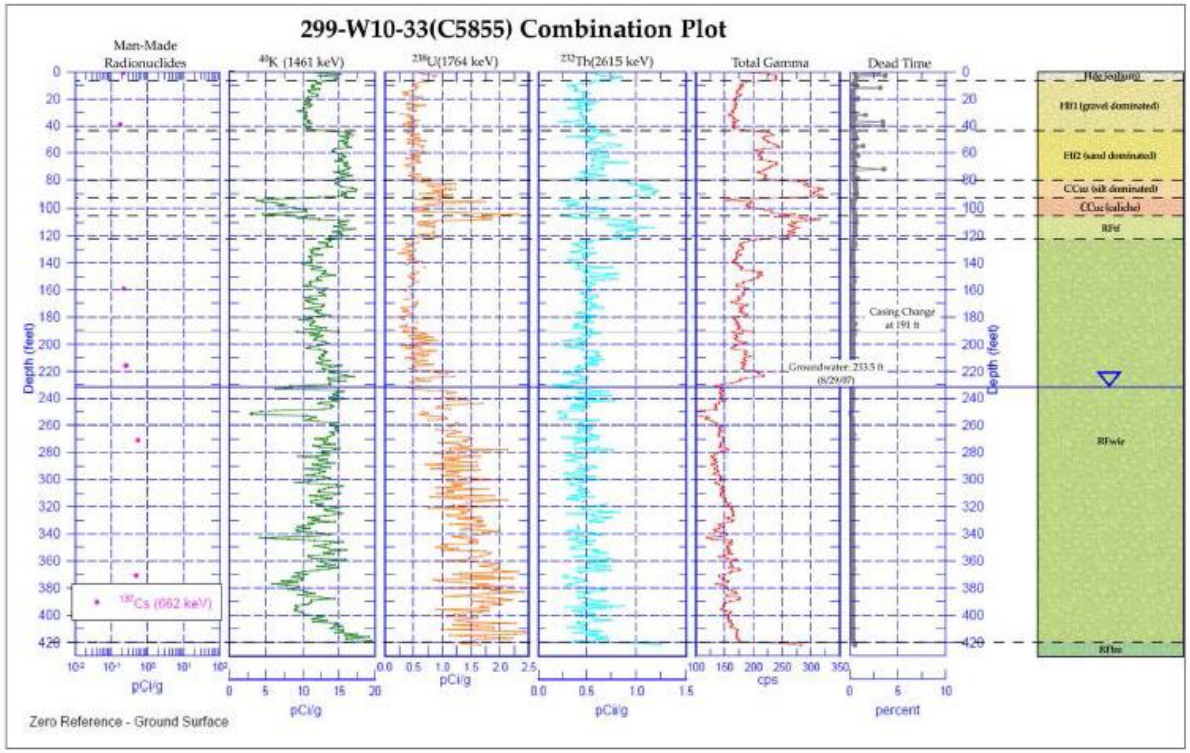
After PNNL-17913 and SGW-50900

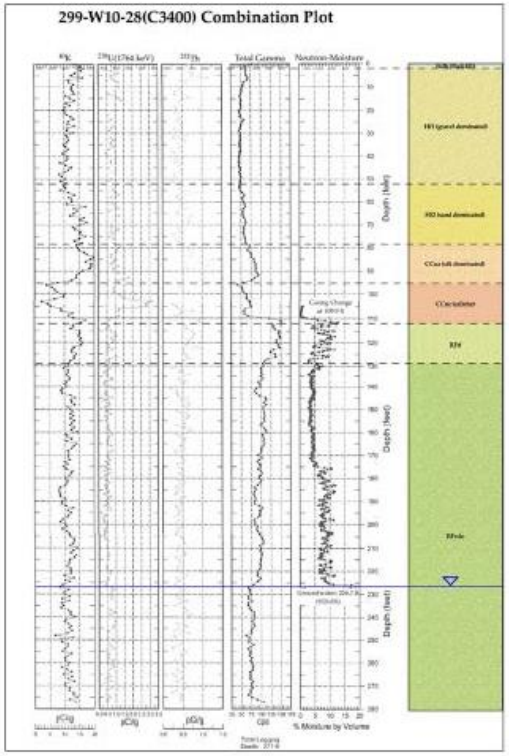
* CCUz = CCUf(lam-msv) = "early palouse soil" CCUc = CCUf-c(calc) = "caliche" CCUg = CCUc(ml) = "pre-Missoula gravels"	Adapted from: Reidel et. al. (1992), Thorne et al. (2006), Lindsey (1996), Williams et. al. (2000), DOE (2002)
* Cold Creek unit formerly known as "Plio-pleistocene unit"	[1]All Ages are approximate.

- Not to Scale -

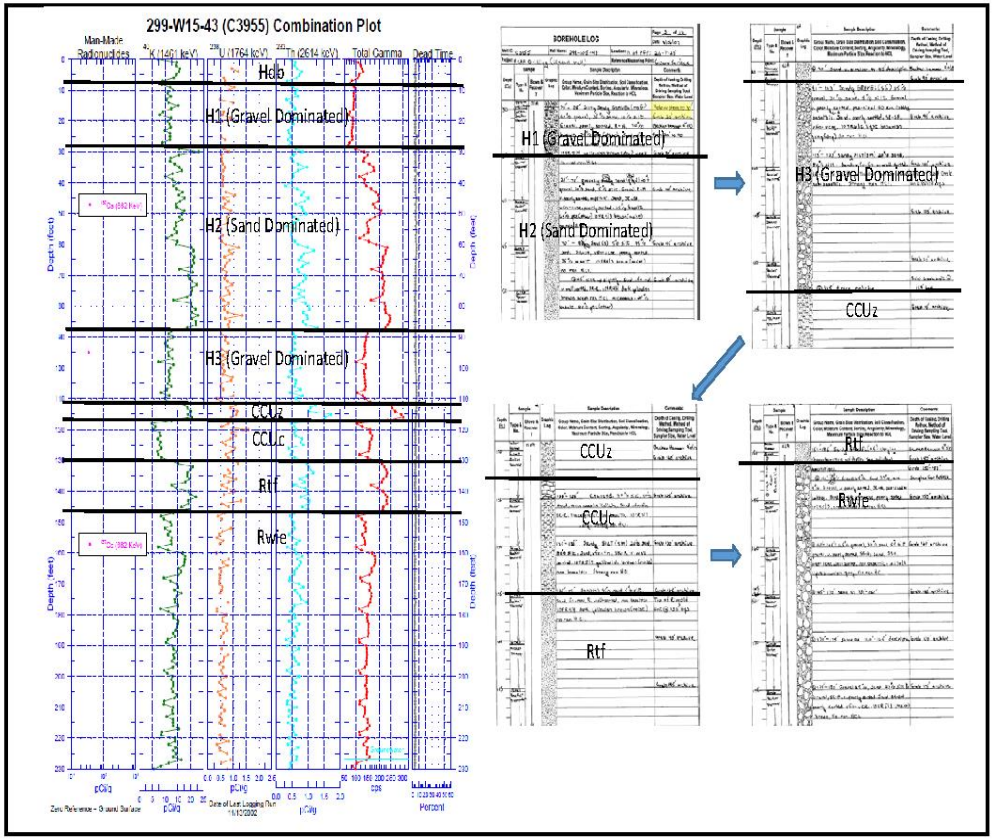
After 2010-DCL-HanStrat-001_04-13

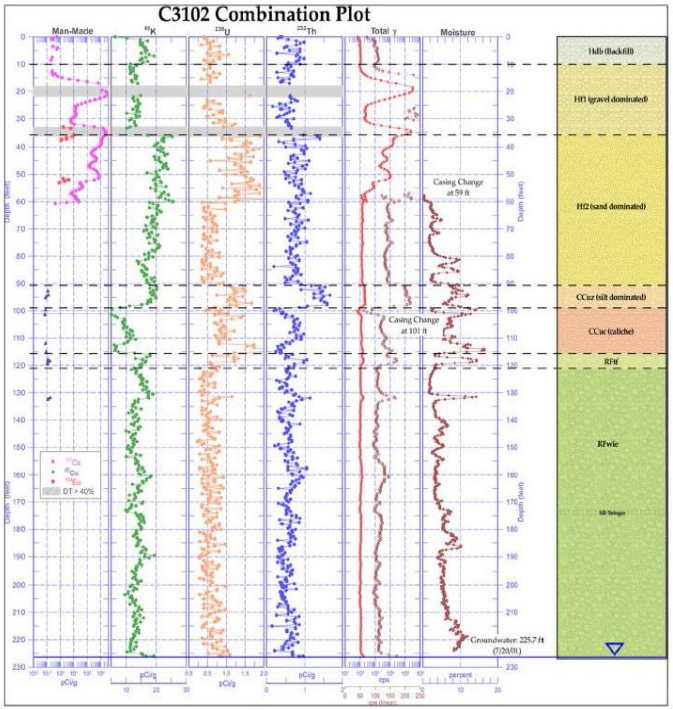
Borehole Type Log Examples: LLBG & T-Complex Area.



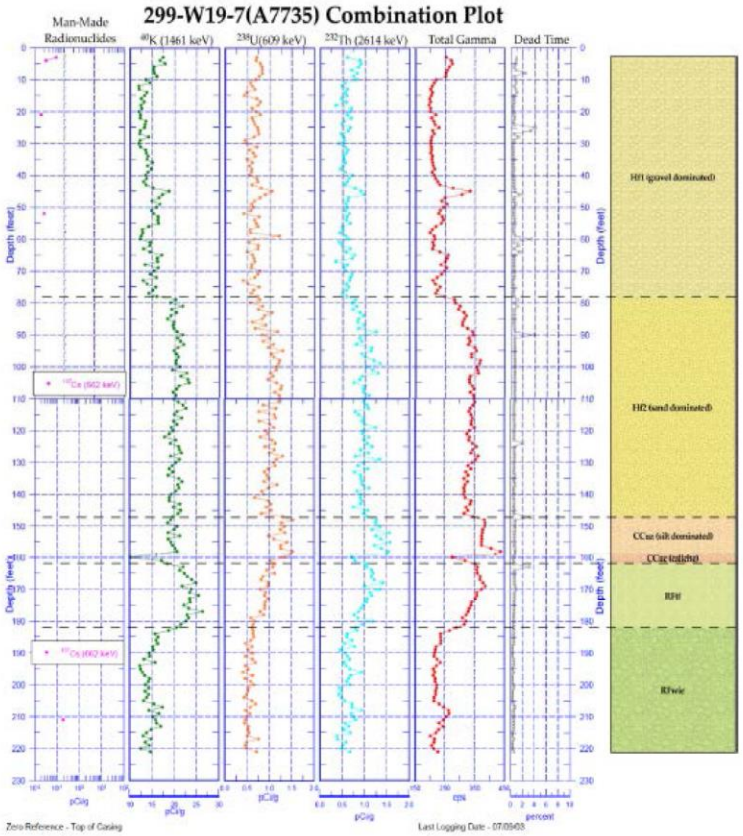


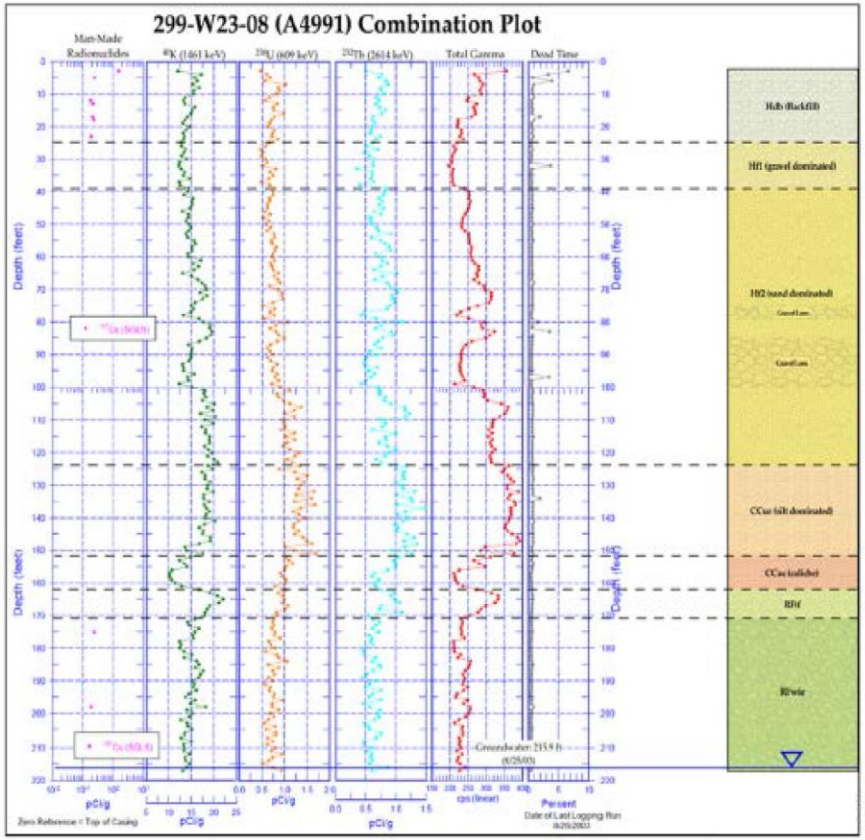
Borehole Type Log Examples: Z, U, and TX-TY Complex Area.



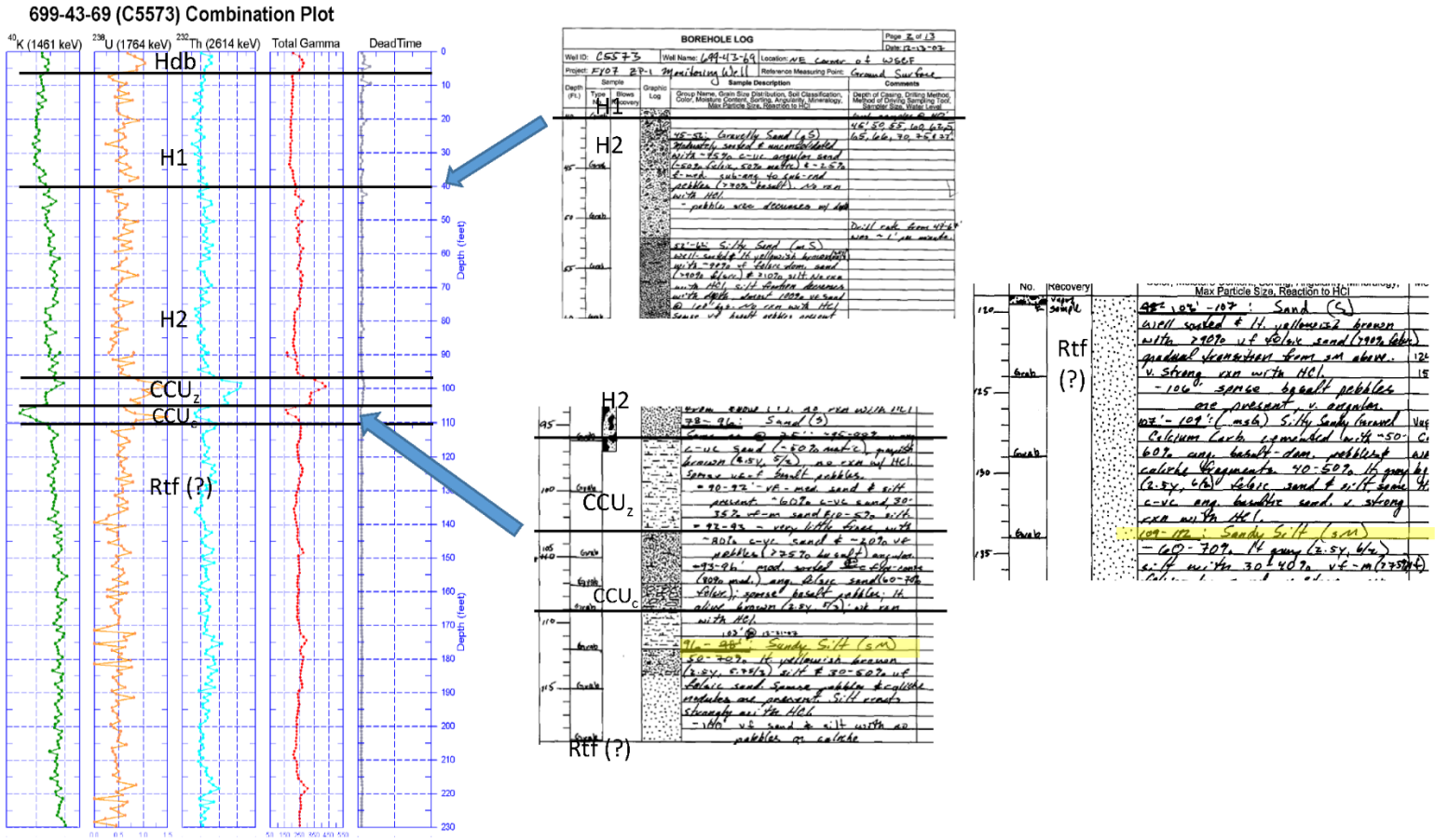


Borehole Type Log Examples: S-SX Complex Area.

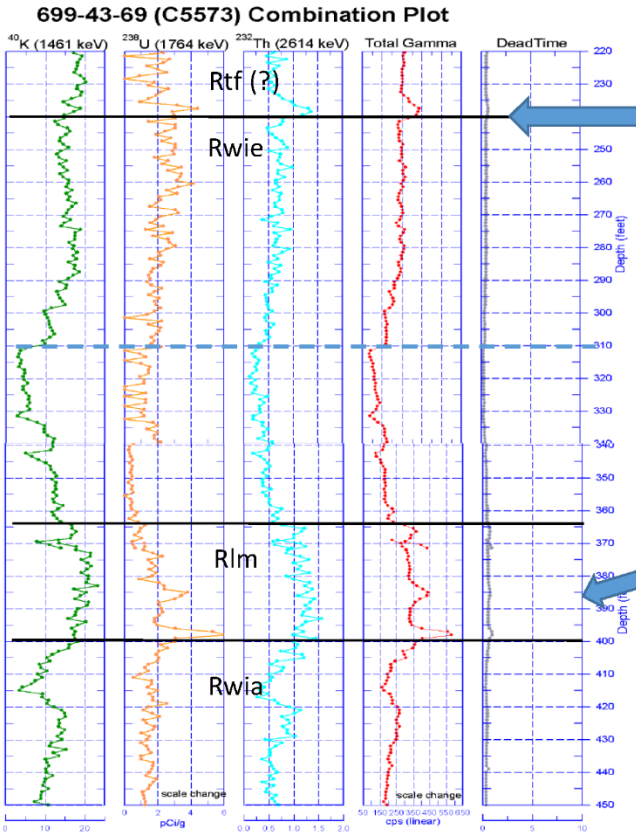


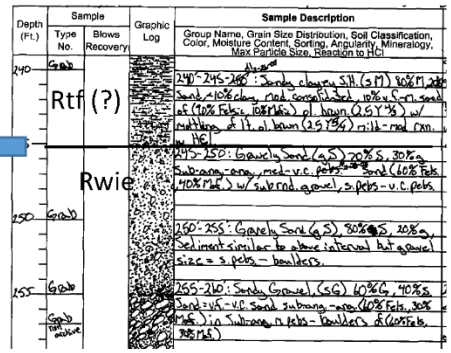


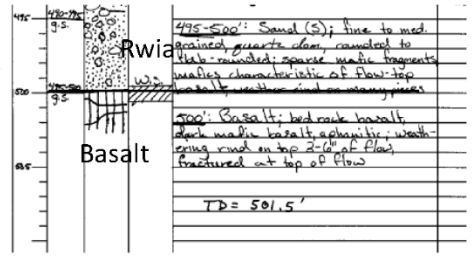
Borehole Type Log Examples: NE 200 West Area.

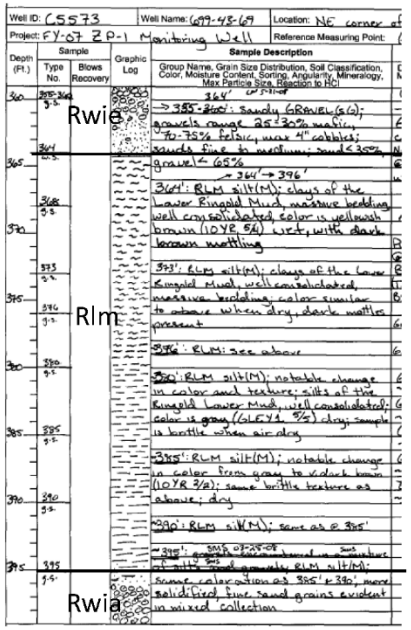


Borehole Type Log Examples: NE 200 West Area.

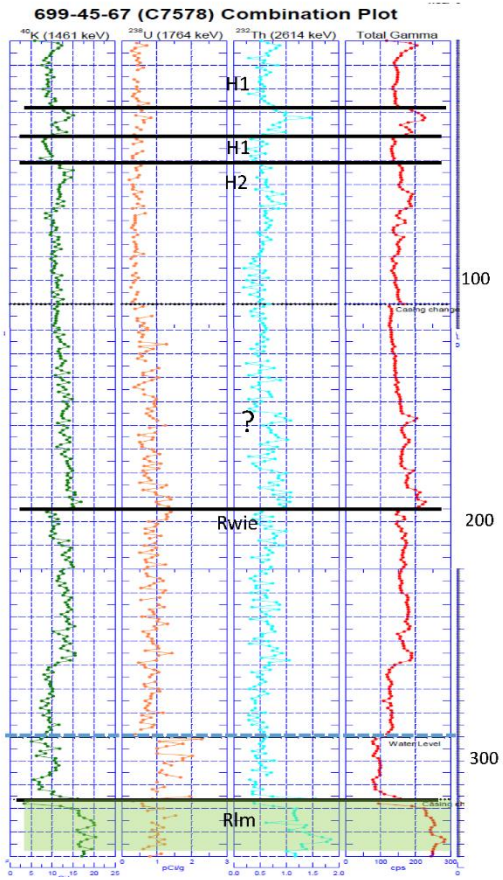


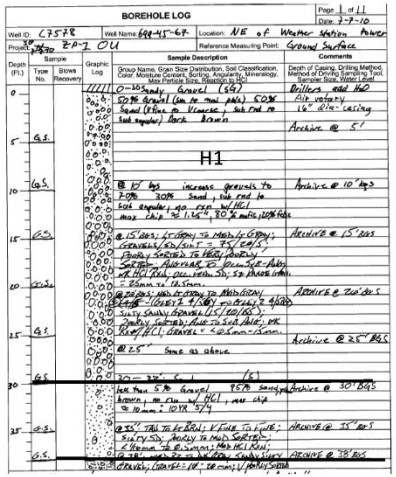


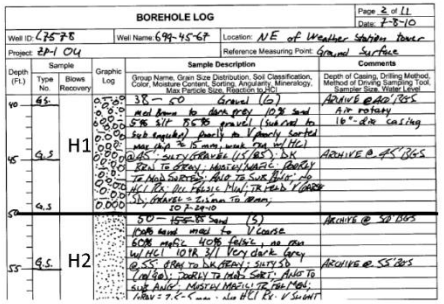


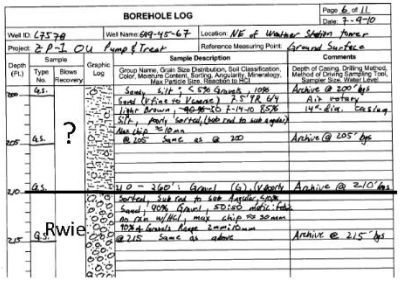


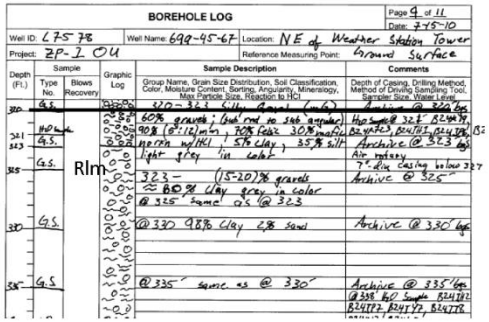
Borehole Type Log Examples: NE 200 West Area.











200 East Geologic Type Logs

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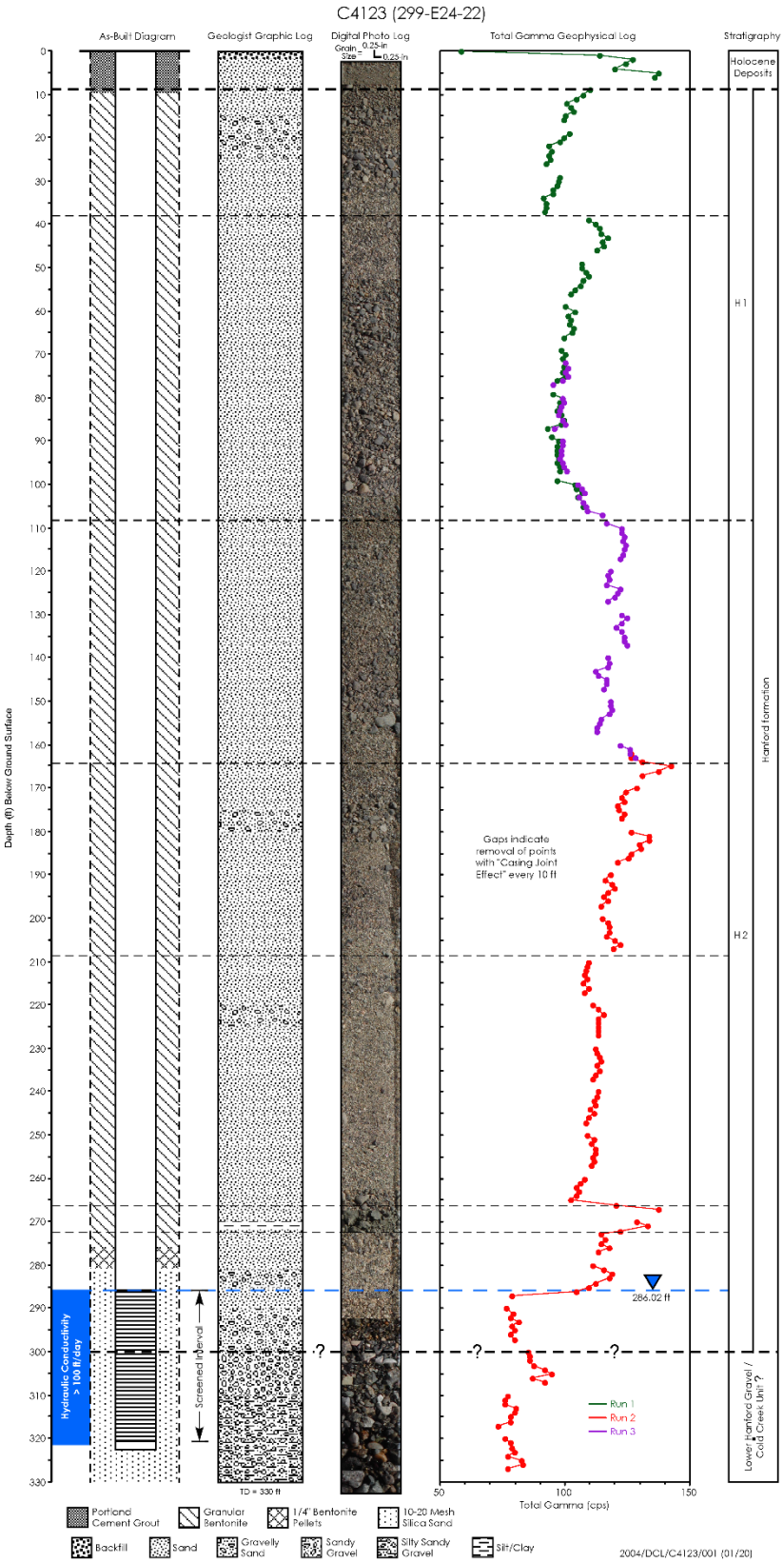
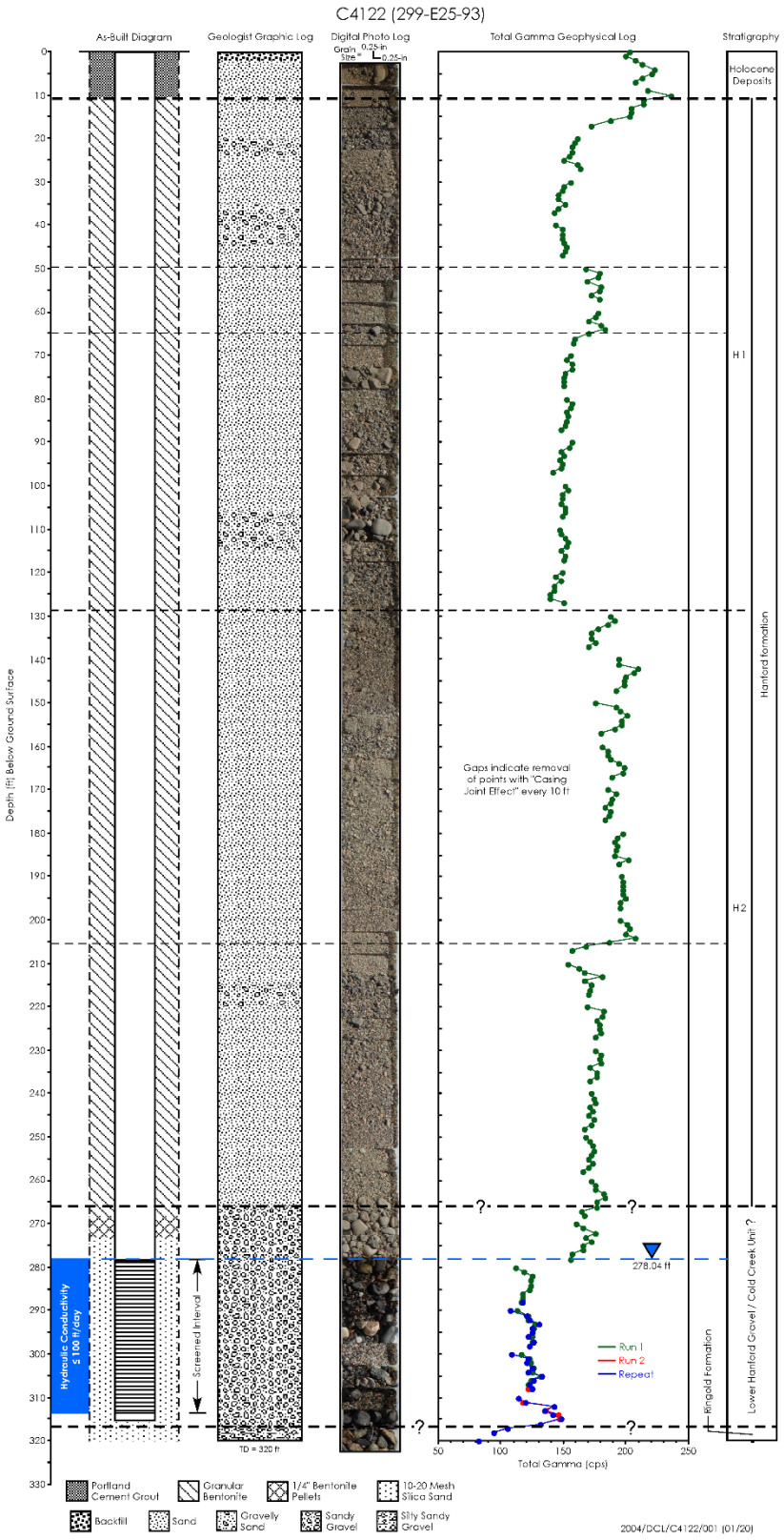
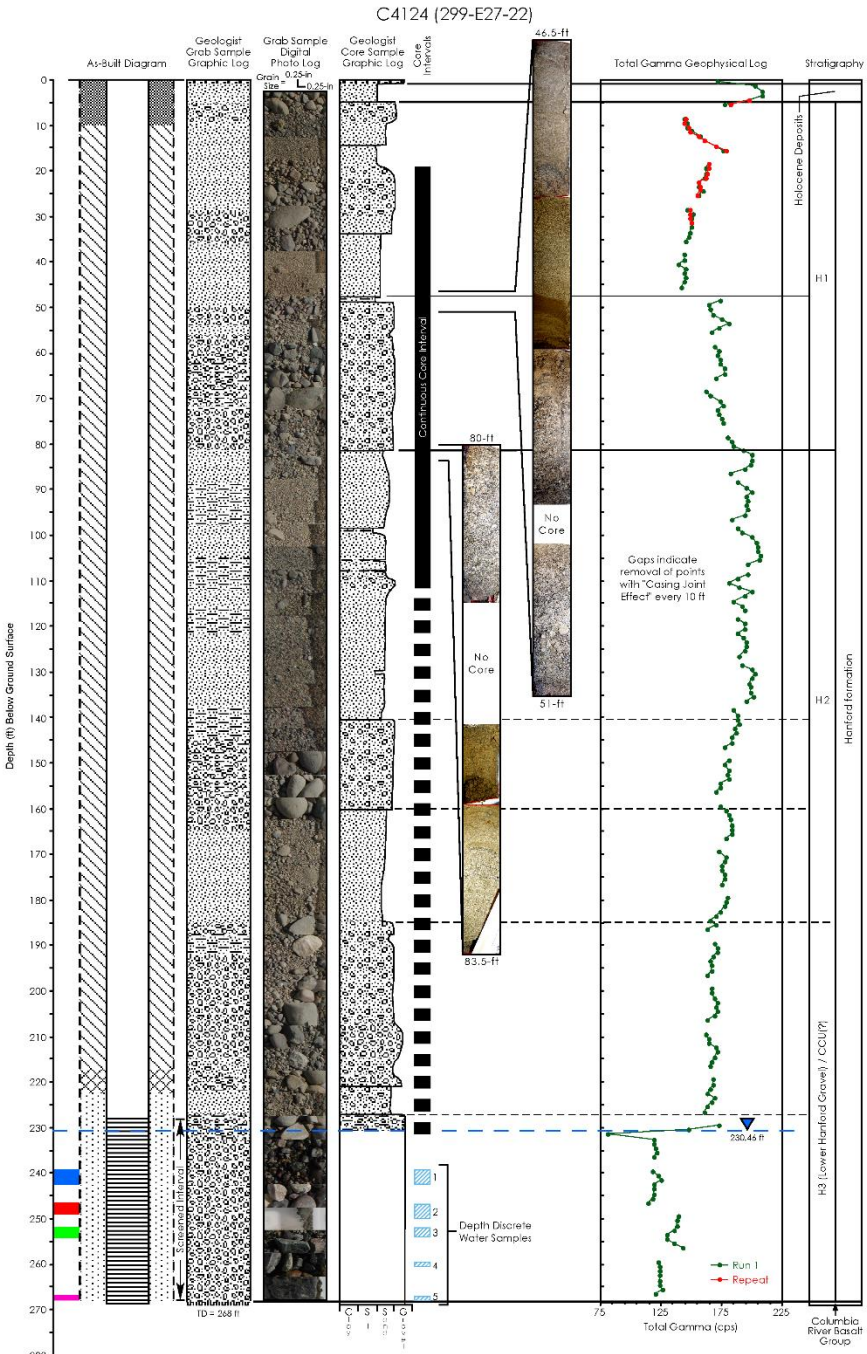

C4123 (299-E24-22)
As-Built Diagram
Geologist Graphic Log
Digital Photo Log
Grain Size
0.25-in
Total Gamma Geophysical Log
Stratigraphy
Holocene Deposits
H1
H2
Hanford Formation
Lower Hanford Gravel / Cold Creek Unit ?
Depth (ft) Below Ground Surface
Gaps indicate removal of points with "Casing Joint Effect" every 10 ft
286.02 ft
Hydraulic Conductivity > 100 ft/day
Screened Interval
TD = 330 ft
Run 1
Run 2
Run 3
Total Gamma (cps)
Portland Cement Grout
Granular Bentonite
1/4" Bentonite Pellets
10-20 Mesh Silica Sand
Backfill
Sand
Gravelly Sand
Sandy Gravel
Silty Sandy Gravel
Silt/Clay
2004/DCL/C4123/001 (01/20)


C4122 (299-E25-93)
As-Built Diagram
Geologist Graphic Log
Digital Photo Log
Grain Size
0.25-in
0.25-in
Total Gamma Geophysical Log
Stratigraphy
Holocene Deposits
H1
H2
Hanford Formation
Ringold Formation
Lower Hanford Gravel / Cold Creek Unit ?
Depth (ft) Below Ground Surface
Gaps indicate removal of points with "Casing Joint Effect" every 10 ft
278.04 ft
Run 1
Run 2
Repeat
Hydraulic Conductivity ≤ 100 ft/day
Screened Interval
TD = 320 ft
Total Gamma (cps)
Portland Cement Grout
Granular Bentonite
1/4" Bentonite Pellets
10-20 Mesh Silica Sand
Backfill
Sand
Gravelly Sand
Sandy Gravel
Silty Sandy Gravel
2004/DCL/C4122/001 (01/20)



Results From Depth Discrete Aquifer Testing

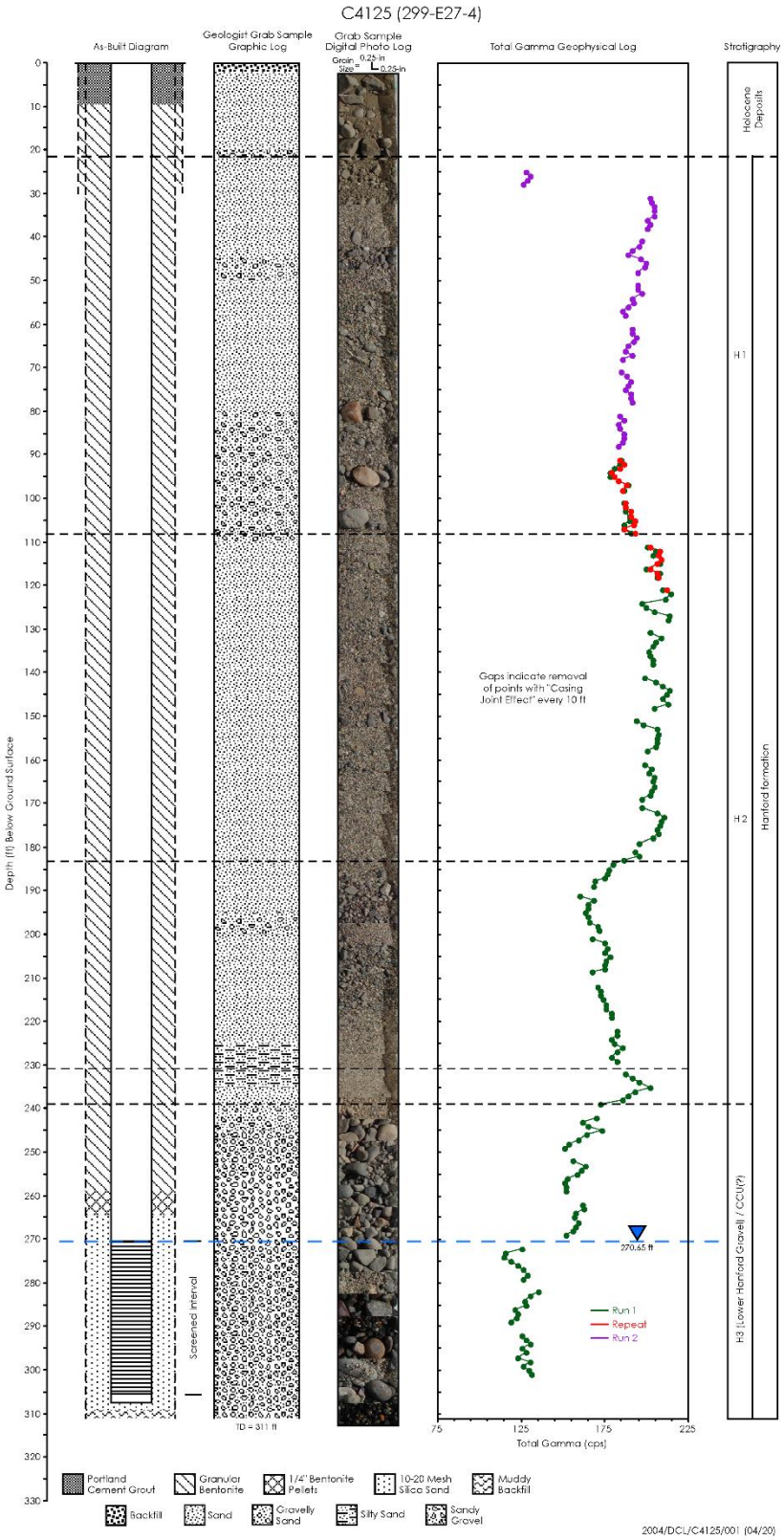
Zone	Interval Tested (ft)	Hydraulic Conductivity (ft/day)
	239.4 - 242.4	No Successful Tests Completed
	246.4 - 249	6.234 - 6.890
	252 - 254	0.13
	267 - 268	19.685 - 22.638

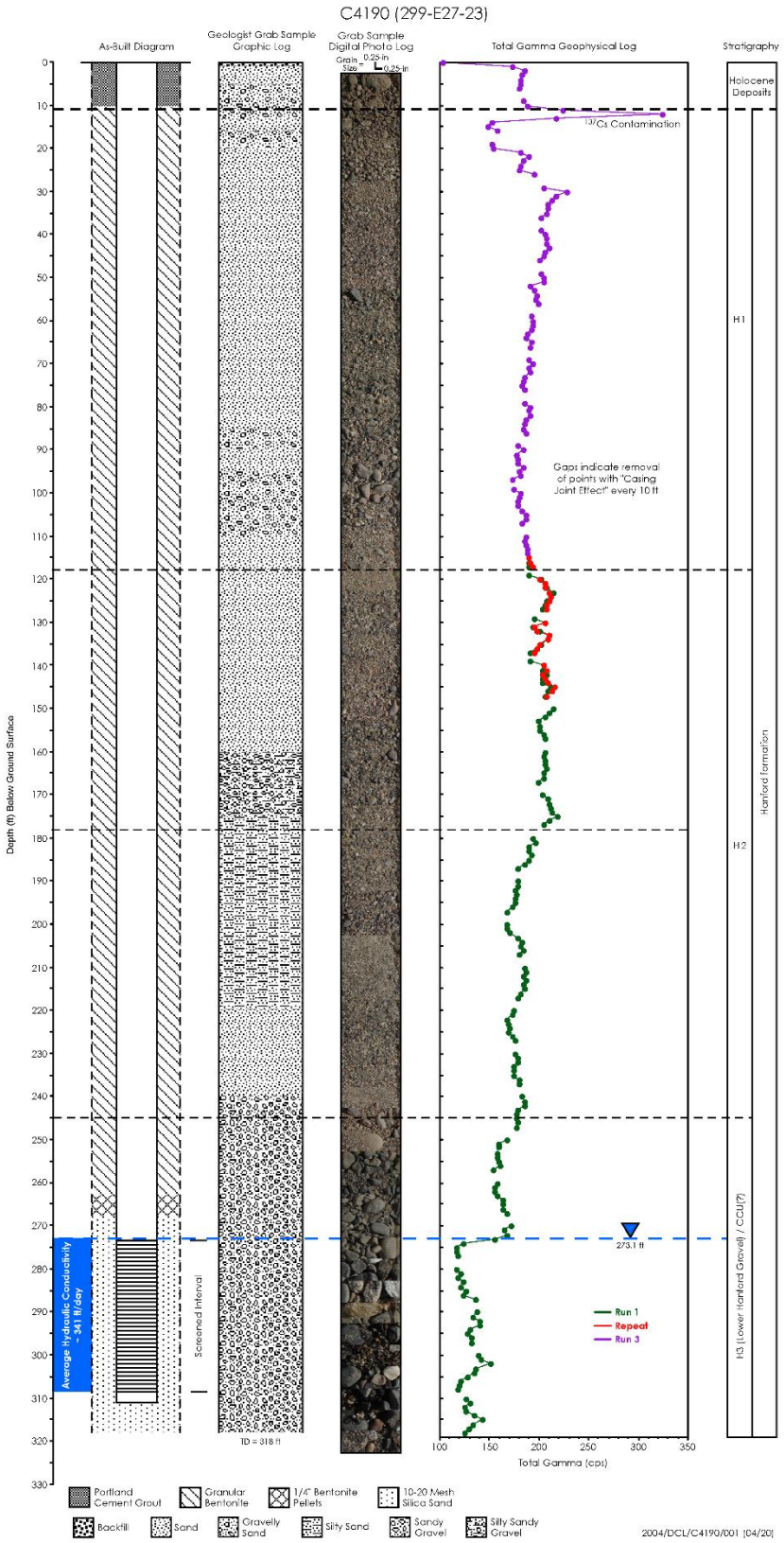
Results for Depth Discrete Water Sampling

Zone	Interval Sampled (ft)	Elec. Cond. (µS/cm)	NO_3 (mg/L)	^{99}Tc (pCi/L)	pH
1	239.5 - 242.5	447	14.2	10.9	---
2	247 - 250	412	16.2	U	8.11
3	252 - 254	429	18.4	14	7.95
4	260	439	20.1	38.5	7.98
5	268	563	31.1	80.1	8.01

U = undetected

2004/DCL/C4124/001 (04/20)


C4125 (299-E27-4)
As-Built Diagram
Geologist Grab Sample Graphic Log
Grab Sample Digital Photo Log
Total Gamma Geophysical Log
Stratigraphy
Depth (ft) Below Ground Surface
Gaps indicate removal of points with "Casing Joint Effect" every 10 ft
270.65 ft
Run 1
Repeat
Run 2
Total Gamma (cps)
Screened Interval
TD = 311 ft
Holocene Deposits
H1
H2
H3 (Lower Hanford Gravel / CCU(?))
Hanford formation
Portland Cement Grout
Granular Bentonite
1/4" Bentonite Pellets
10-20 Mesh Silica Sand
Muddy Backfill
Backfill
Sand
Gravelly Sand
Silty Sand
Sandy Gravel
2004/DCL/C4125/001 (04/20)


C4190 (299-E27-23)
As-Built Diagram
Geologist Grab Sample Graphic Log
Grab Sample Digital Photo Log
Grain Size
0.25 in
Total Gamma Geophysical Log
Stratigraphy
Holocene Deposits
137Cs Contamination
Gaps indicate removal of points with "Casing Joint Effect" every 10 ft
H1
H2
H3 (Lower Hanford Gravel) / CCU(?)
Hanford Formation
Depth (ft) Below Ground Surface
Average Hydraulic Conductivity = 341 ft/day
Screened Interval
TD = 318 ft
273.1 ft
Run 1
Repeat
Run 3
Total Gamma (cps)
Portland Cement Grout
Granular Bentonite
1/4" Bentonite Pellets
10-20 Mesh Silica Sand
Backfill
Sand
Gravelly Sand
Silty Sand
Sandy Gravel
Silty Sandy Gravel
2004/DCL/C4190/001 (04/20)

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Appendix E

Geologic Structure Maps and Cross Sections

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Figures

Figure E-1. Hanford Formation Unit 1 Structure Elevation (ft) in 200 West E-3
Figure E-2. Hanford Formation Unit 2 Structure Elevation (ft) in 200 West E-4
Figure E-3. Hanford Formation Unit 3 Structure Elevation (ft) in 200 West E-5
Figure E-4. Cold Creek Unit (Upper Undifferentiated) Structure Elevation (ft) in 200 West E-6
Figure E-5. Cold Creek Caliche Structure Elevation (ft) in 200 West E-7
Figure E-6. Ringold Formation Member of the Taylor Flats Structure Elevation (ft) in 200 West E-8
Figure E-7. Ringold Formation Member of Wooded Island, Unit E Structure Elevation (ft) in 200 West E-9
Figure E-8. Hanford Formation Unit 1 Structure Elevation (ft) in 200 East E-10
Figure E-9. Hanford Formation Unit 2 Structure Elevation (ft) in 200 East E-11
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Terms

HF1	Hanford formation unit 1
HF2	Hanford formation unit 2
HF3	Hanford formation unit 3
Rtf	Ringold Formation member of the Taylor Flats
Rwie	Ringold Formation Member of Wooded Island, unit E

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E1 Introduction

This appendix contains geologic structure maps and select geologic cross-sections for the Composite Analysis geoframework domain. The following geologic structure maps are included:

- Hanford formation unit 1 (HF1)
- Hanford formation unit 2 (HF2)
- Hanford formation unit 3 (HF3)
- Cold Creek Unit (upper undifferentiated) (CCU)
- Cold Creek caliche (CCUc)
- Ringold Formation member of the Taylor Flats (Rtf)
- Ringold Formation Member of Wooded Island, unit E (Rwie)

Hanford Formation Unit Figures

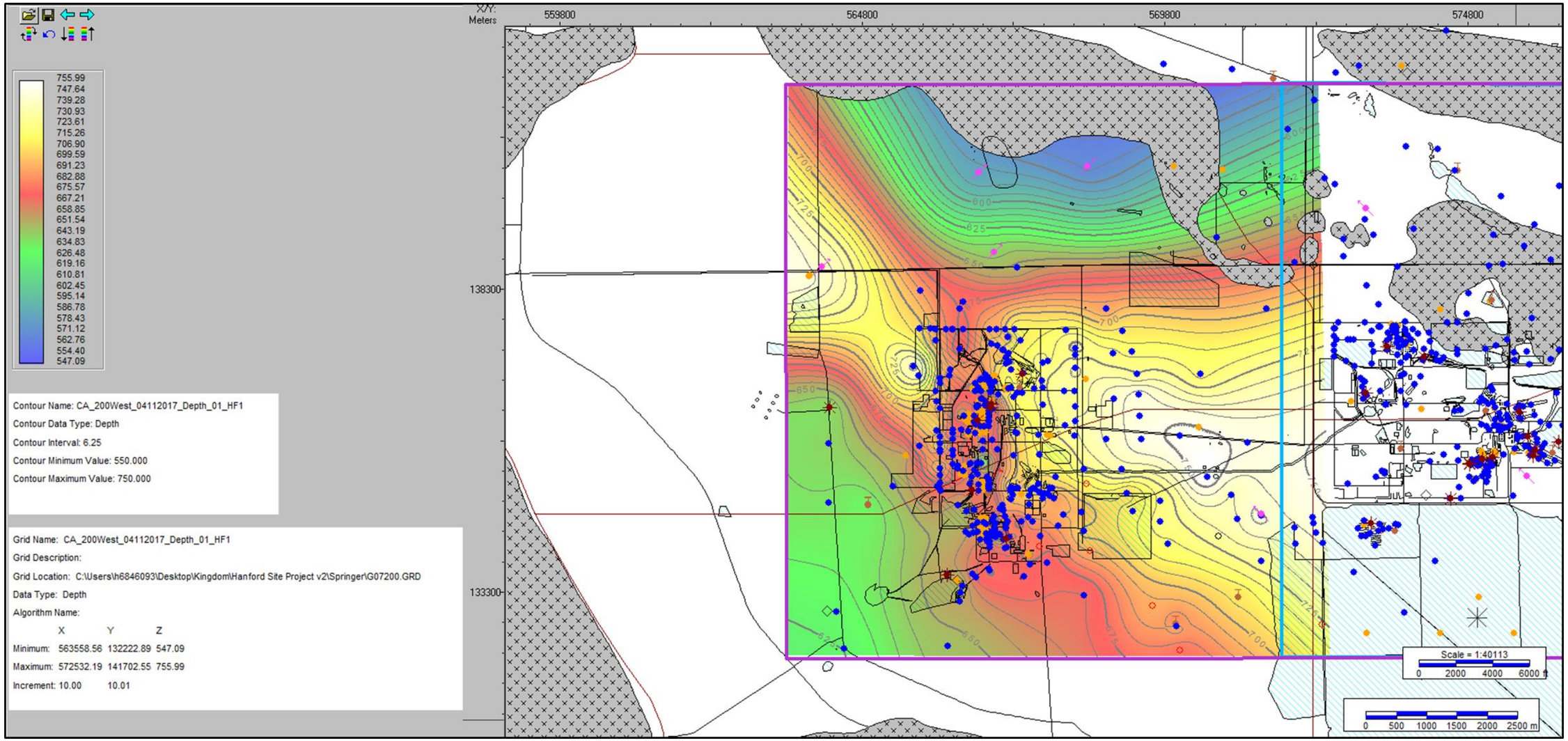

Figure E-1. Hanford Formation Unit 1 Structure Elevation (ft) in 200 West

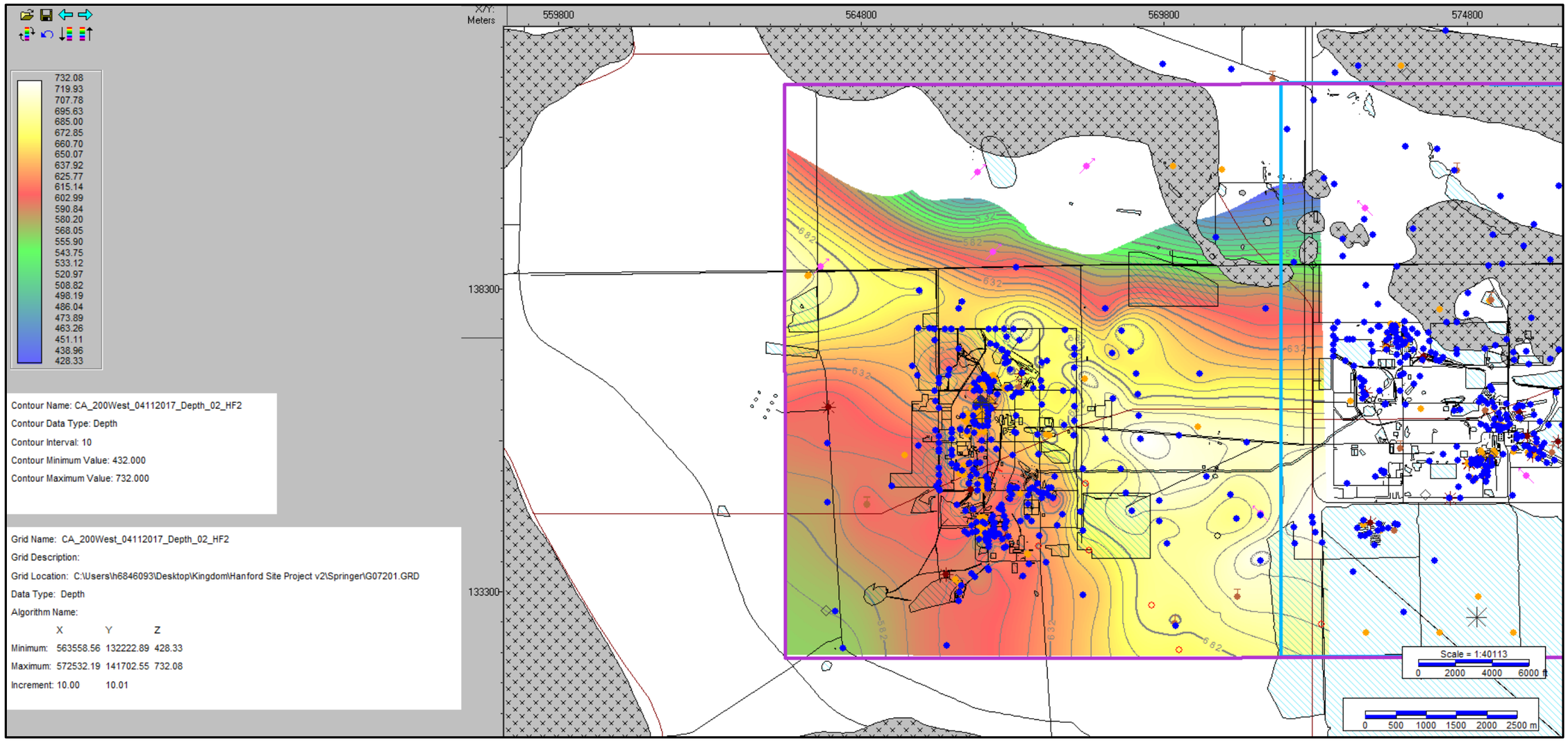

Figure E-2. Hanford Formation Unit 2 Structure Elevation (ft) in 200 West

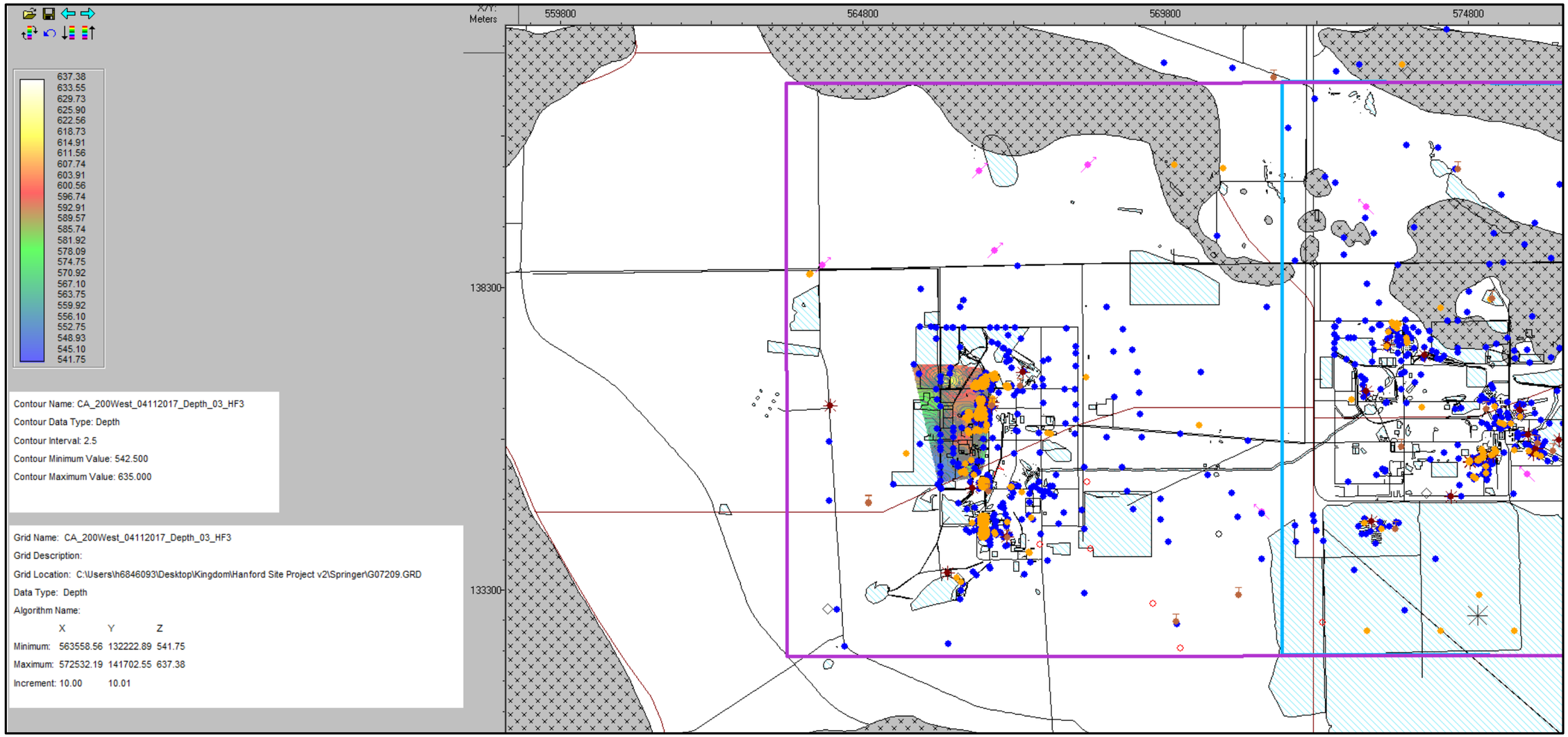

Figure E-3. Hanford Formation Unit 3 Structure Elevation (ft) in 200 West

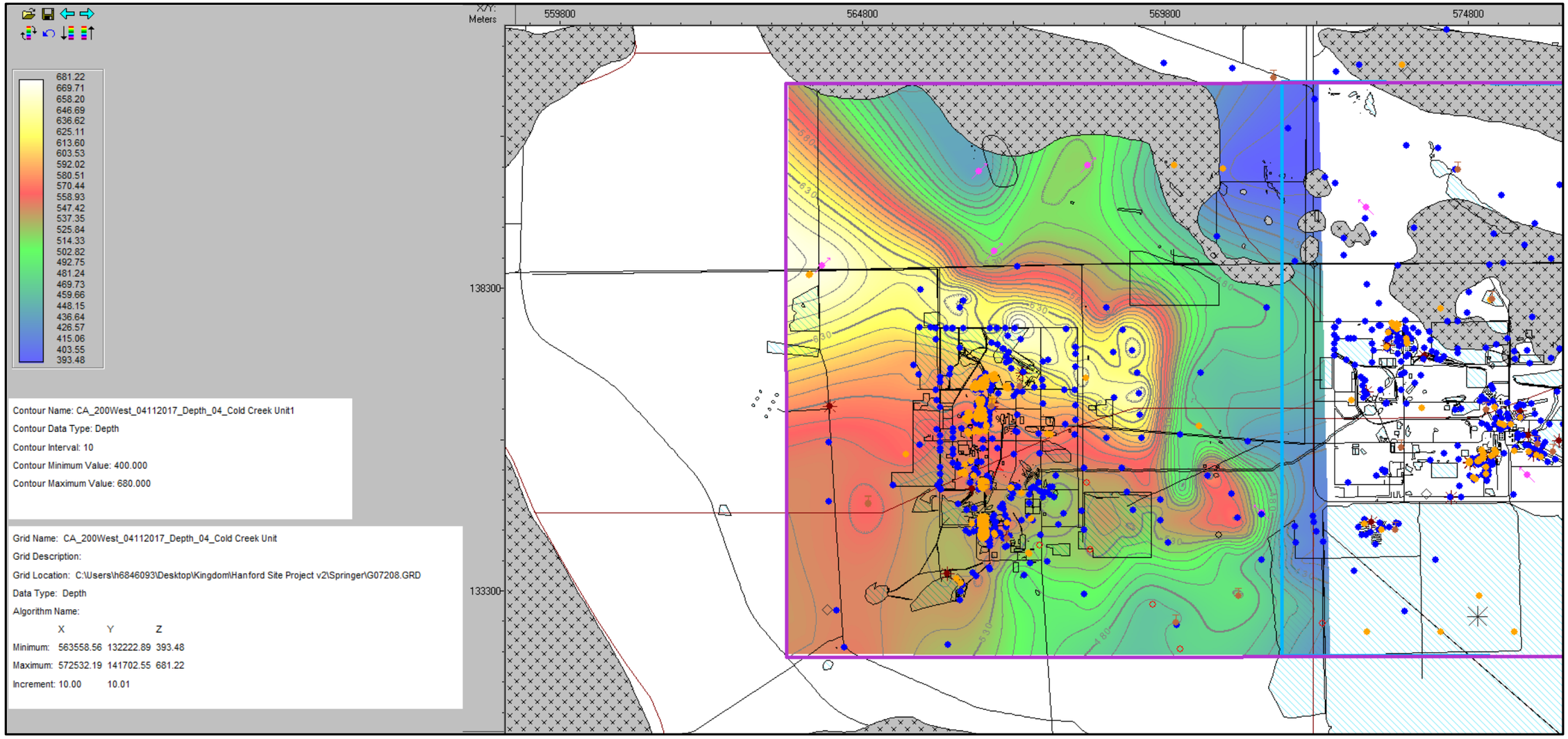

Figure E-4. Cold Creek Unit (Upper Undifferentiated) Structure Elevation (ft) in 200 West

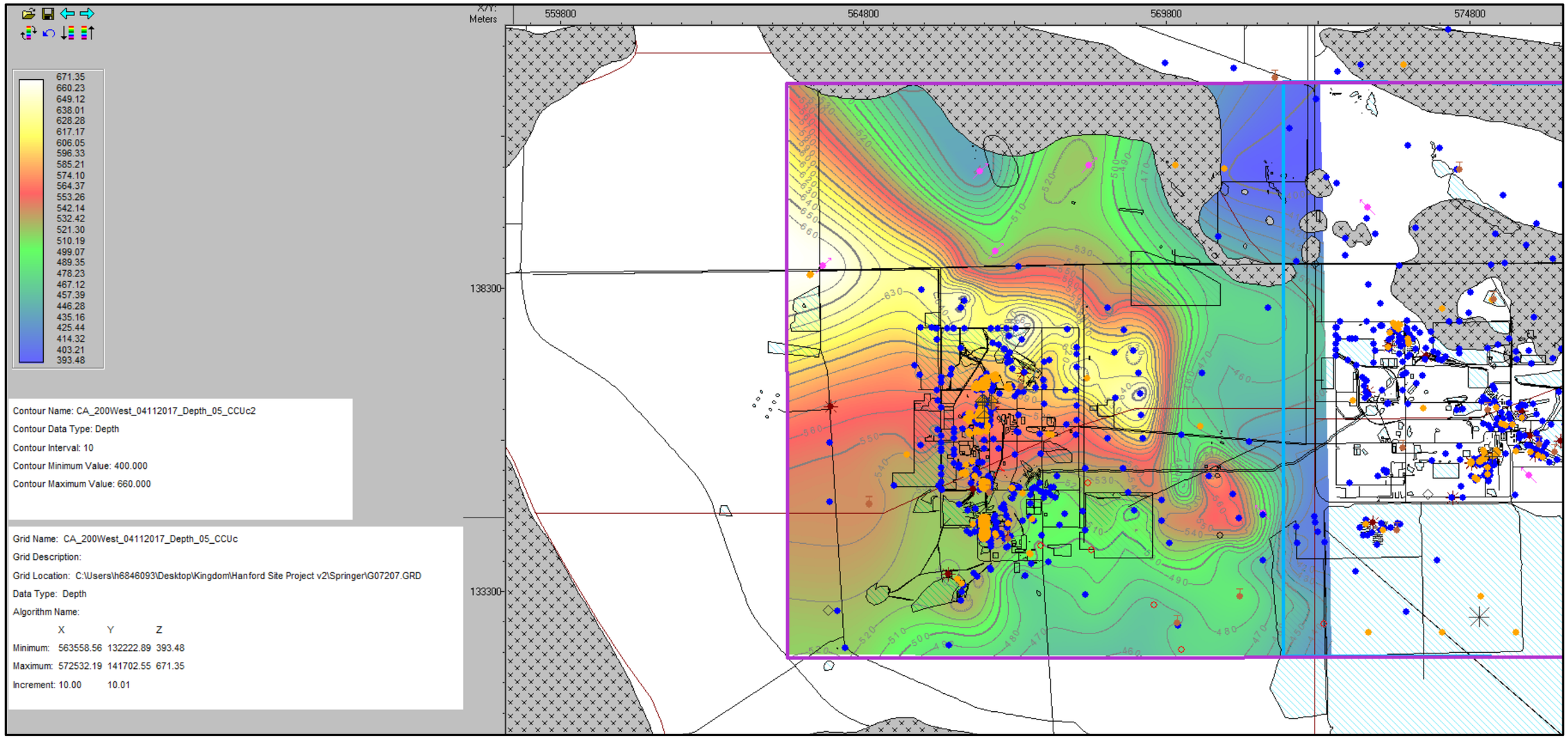

Figure E-5. Cold Creek Caliche Structure Elevation (ft) in 200 West

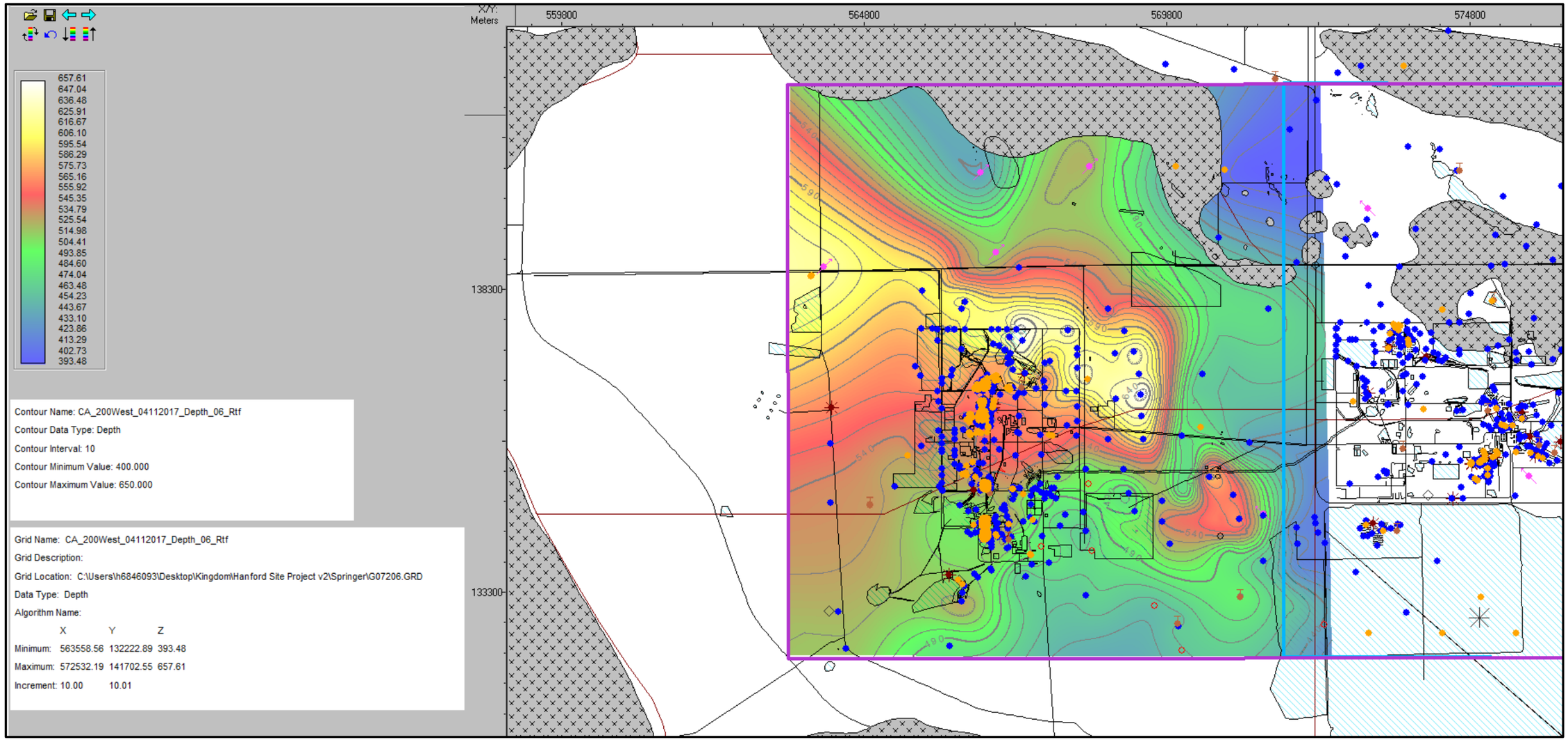

Figure E-6. Ringold Formation Member of the Taylor Flats Structure Elevation (ft) in 200 West

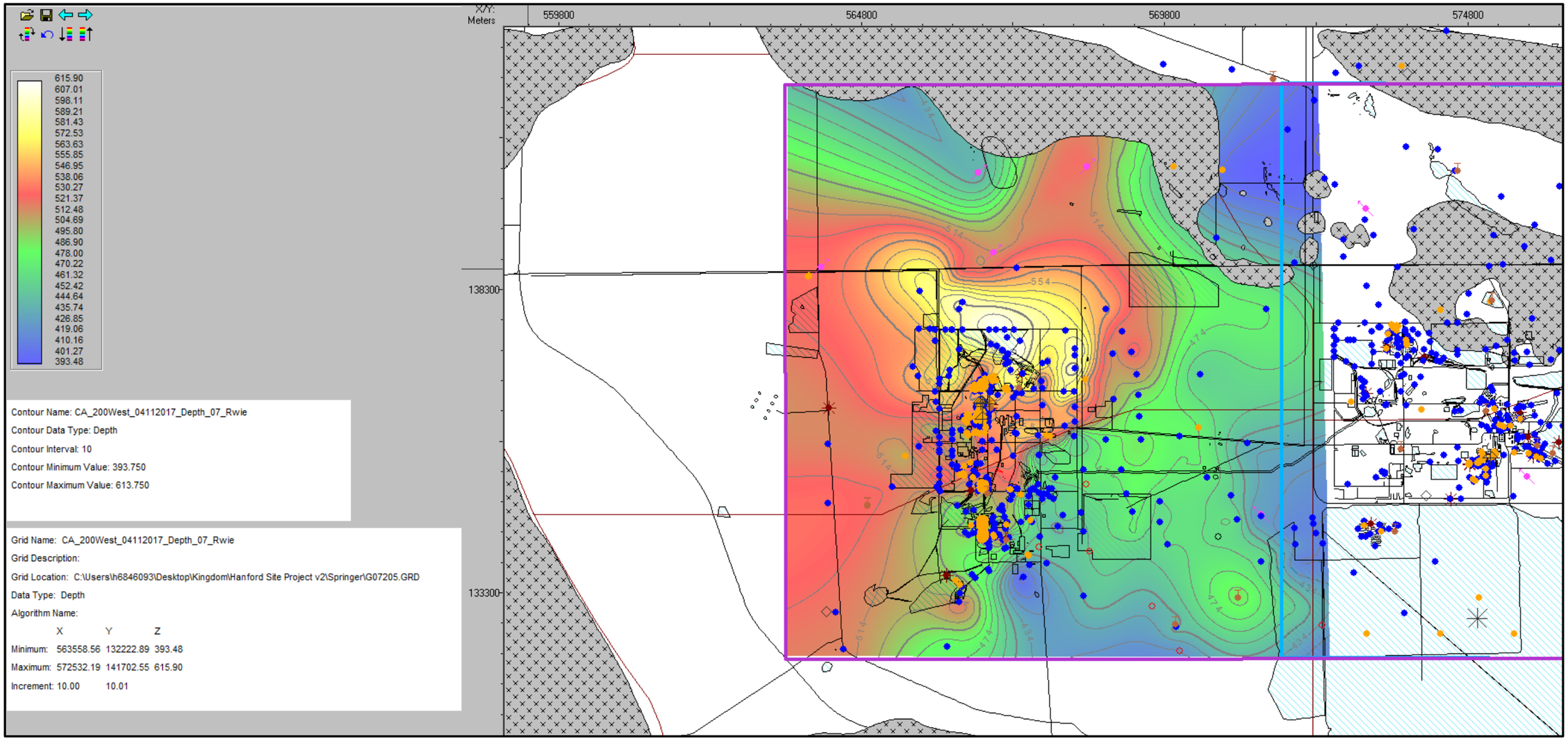

Figure E-7. Ringold Formation Member of Wooded Island, Unit E Structure Elevation (ft) in 200 West

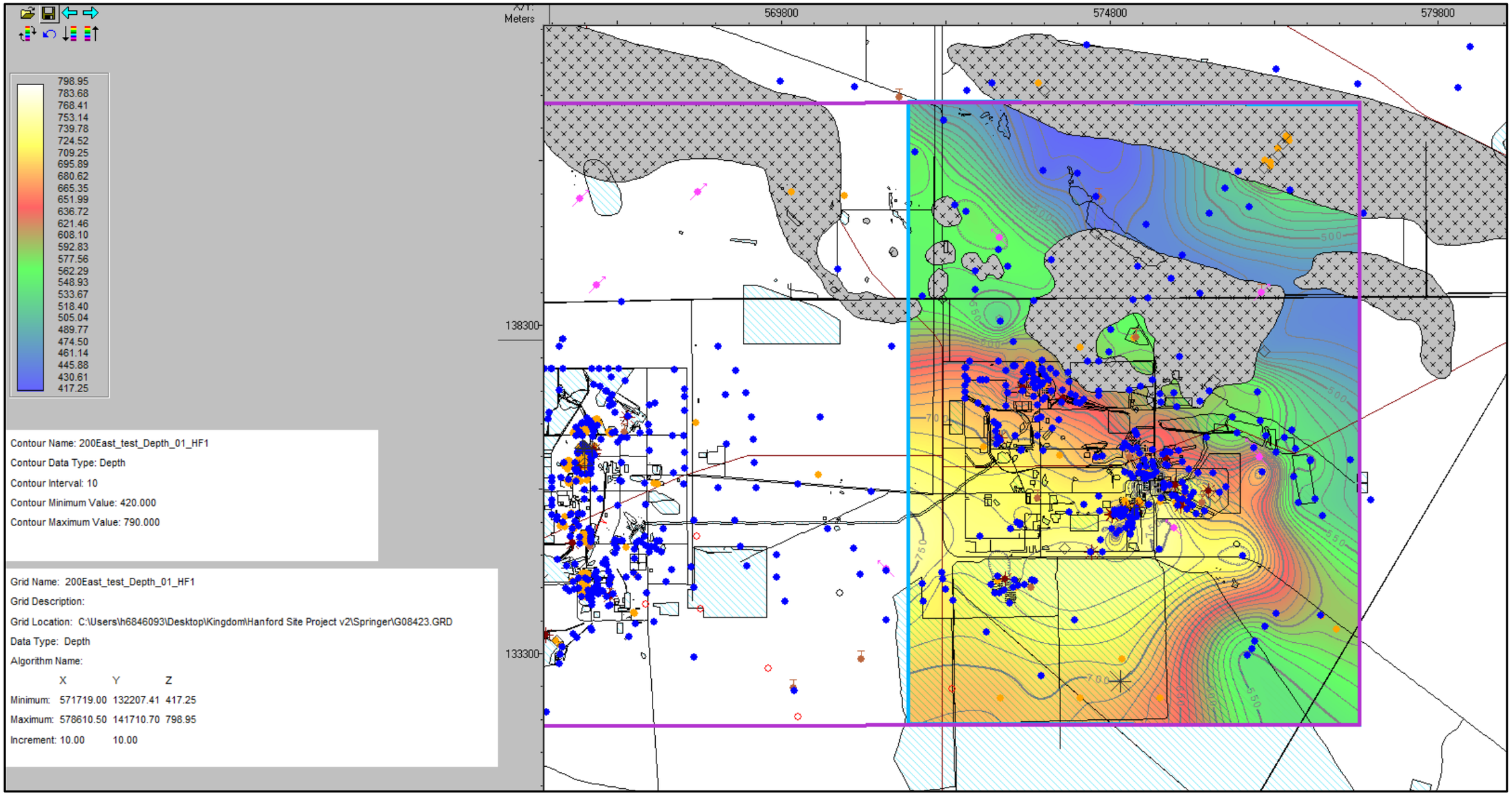

Figure E-8. Hanford Formation Unit 1 Structure Elevation (ft) in 200 East

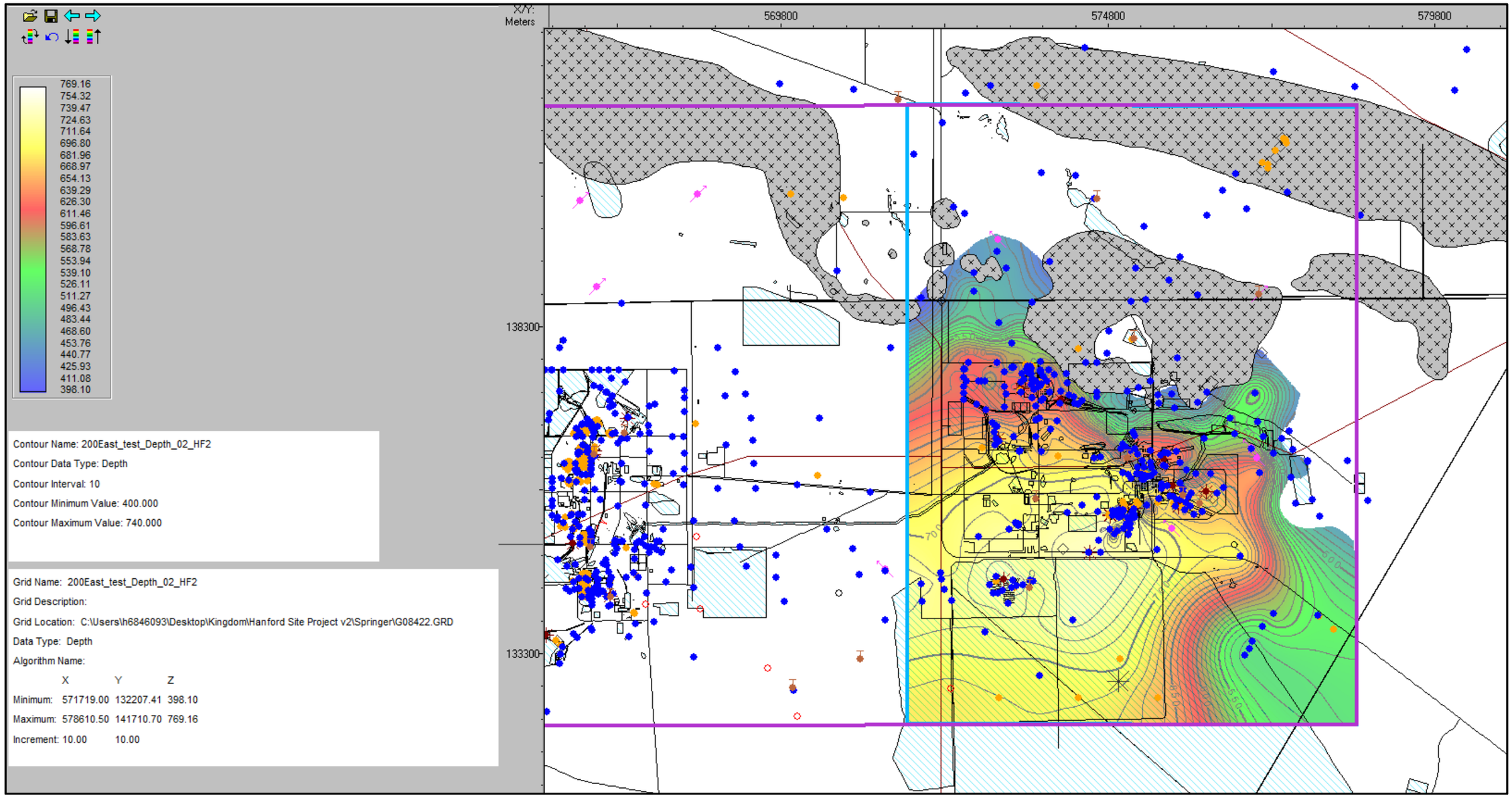

Figure E-9. Hanford Formation Unit 2 Structure Elevation (ft) in 200 East

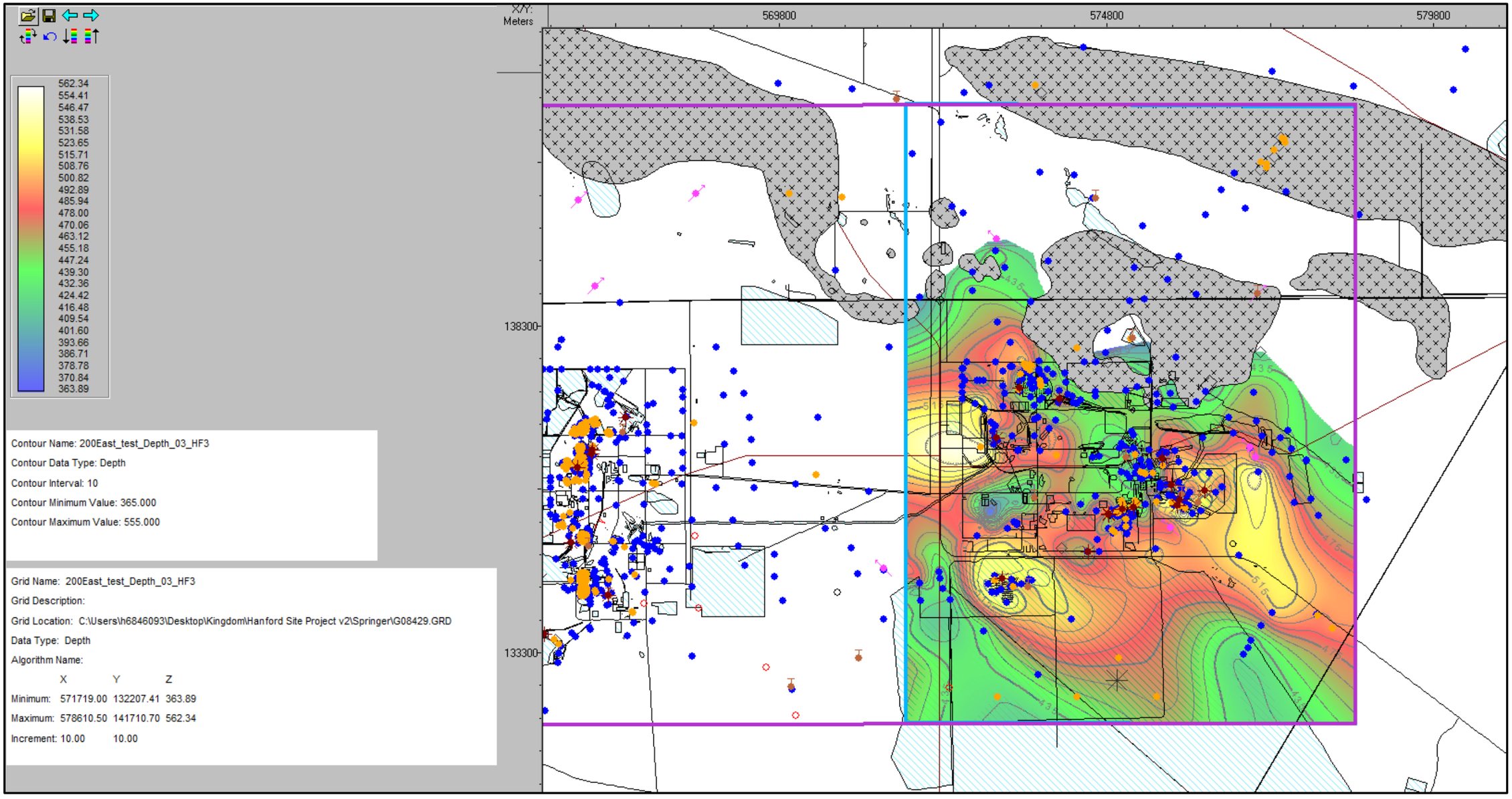

Figure E-10. Hanford Formation Unit 3 Structure Elevation (ft) in 200 East

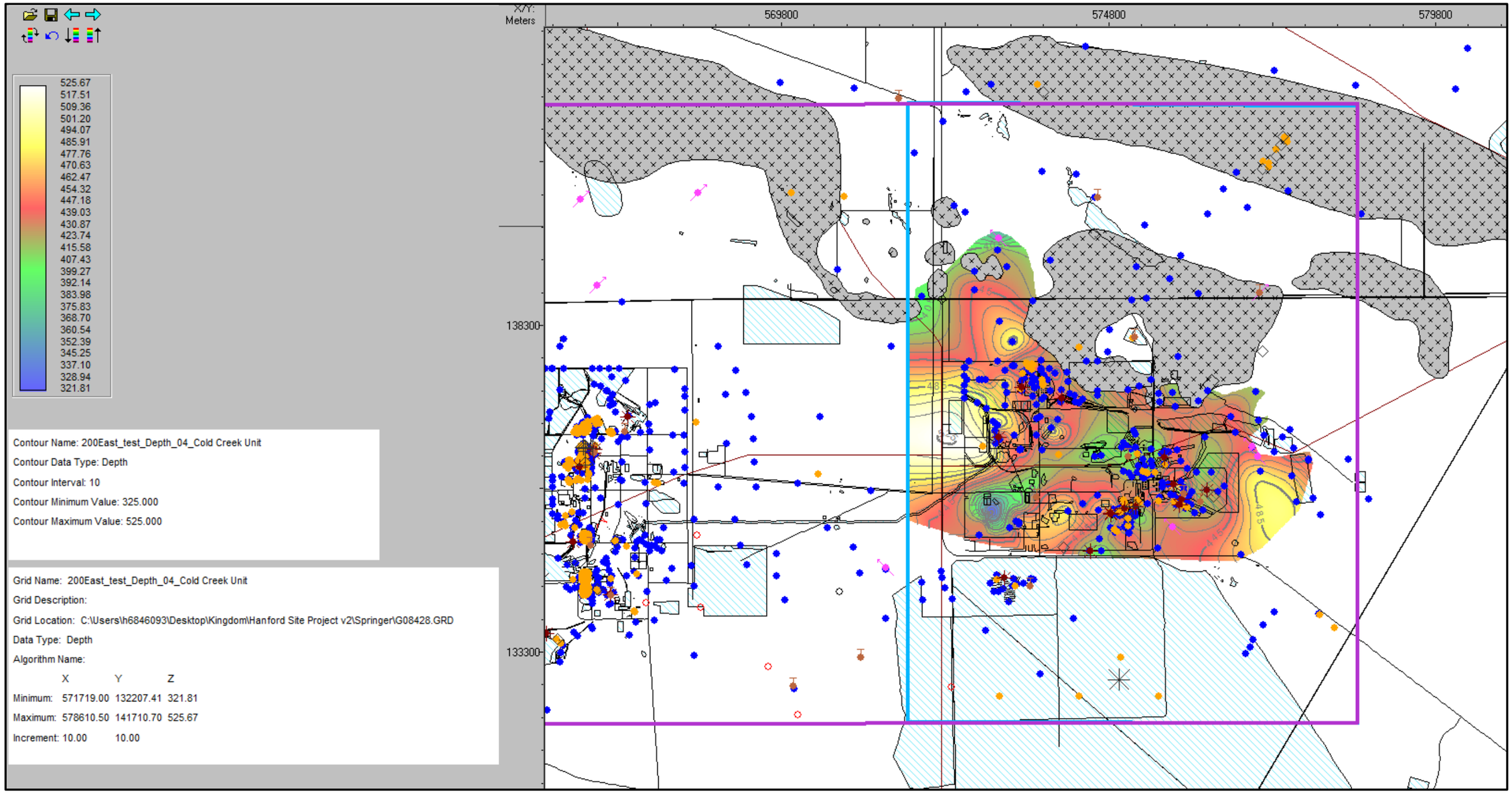

Figure E-11. Cold Creek Unit Upper Undifferentiated Structure Elevation (ft) in 200 East

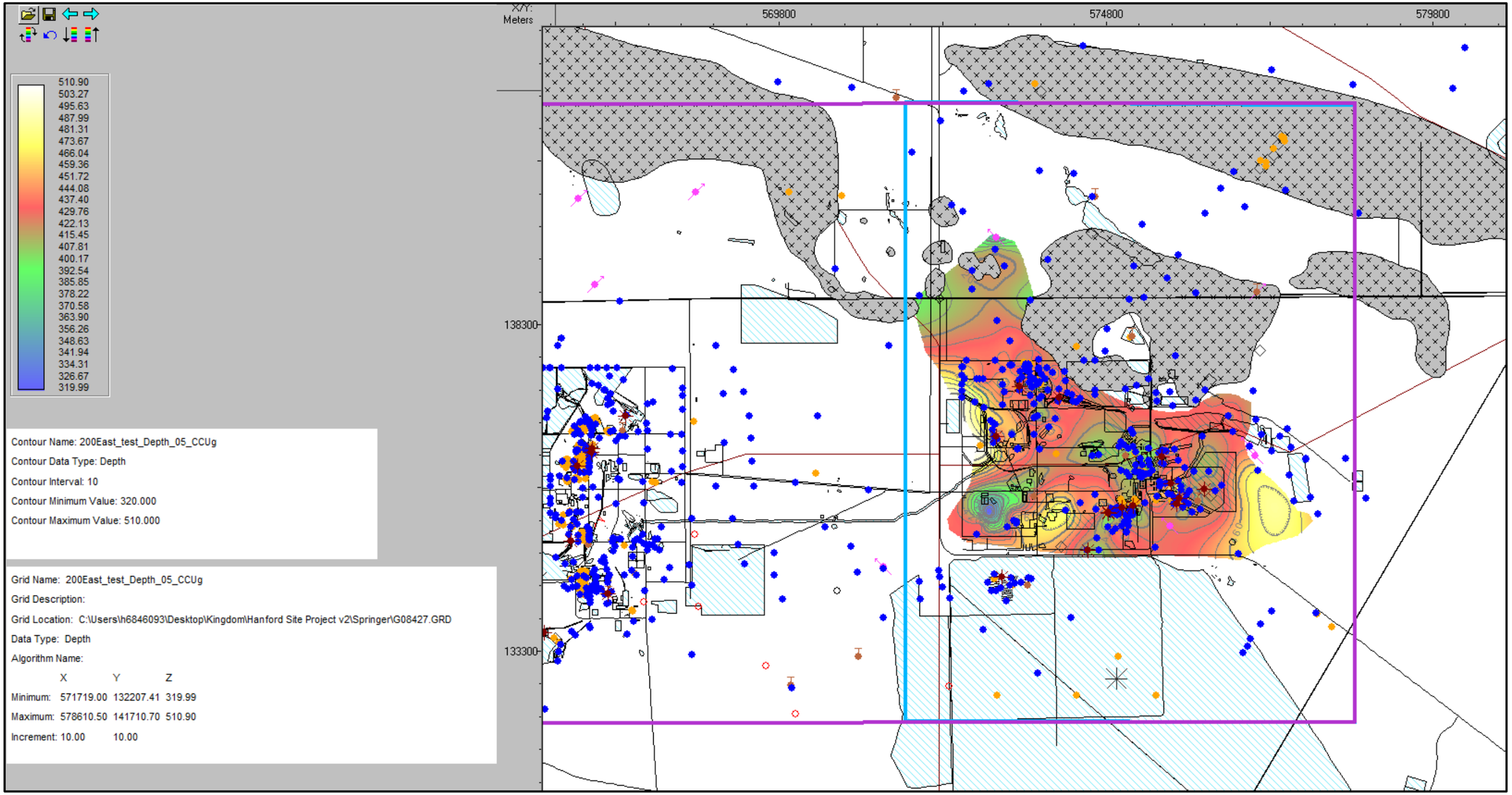

Figure E-12.Cold Creek Unit Gravel Structure Elevation (ft) in 200 East

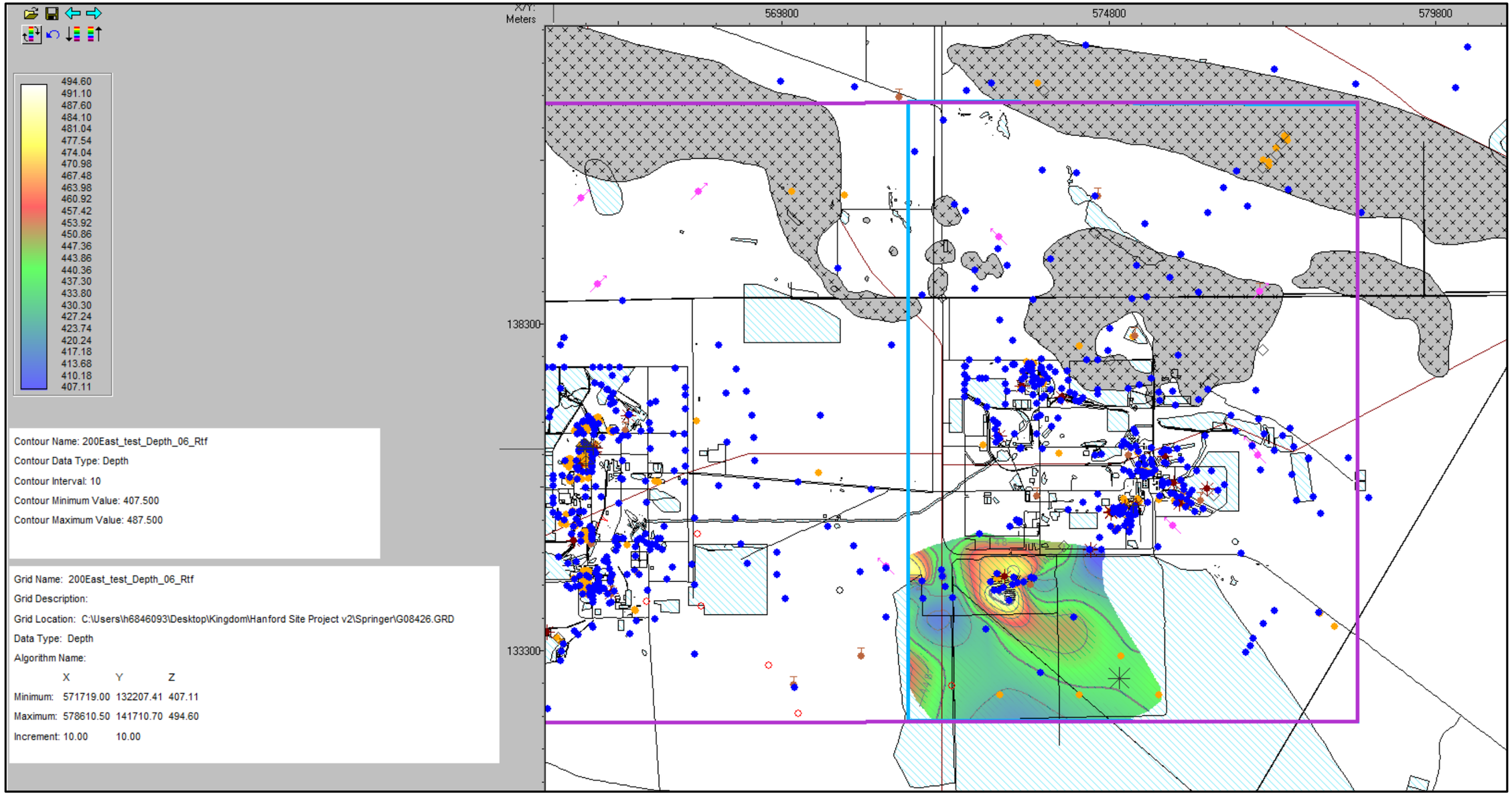

Figure E-13. Ringold Formation Member of Taylor Flats Structure Elevation (ft) in 200 East

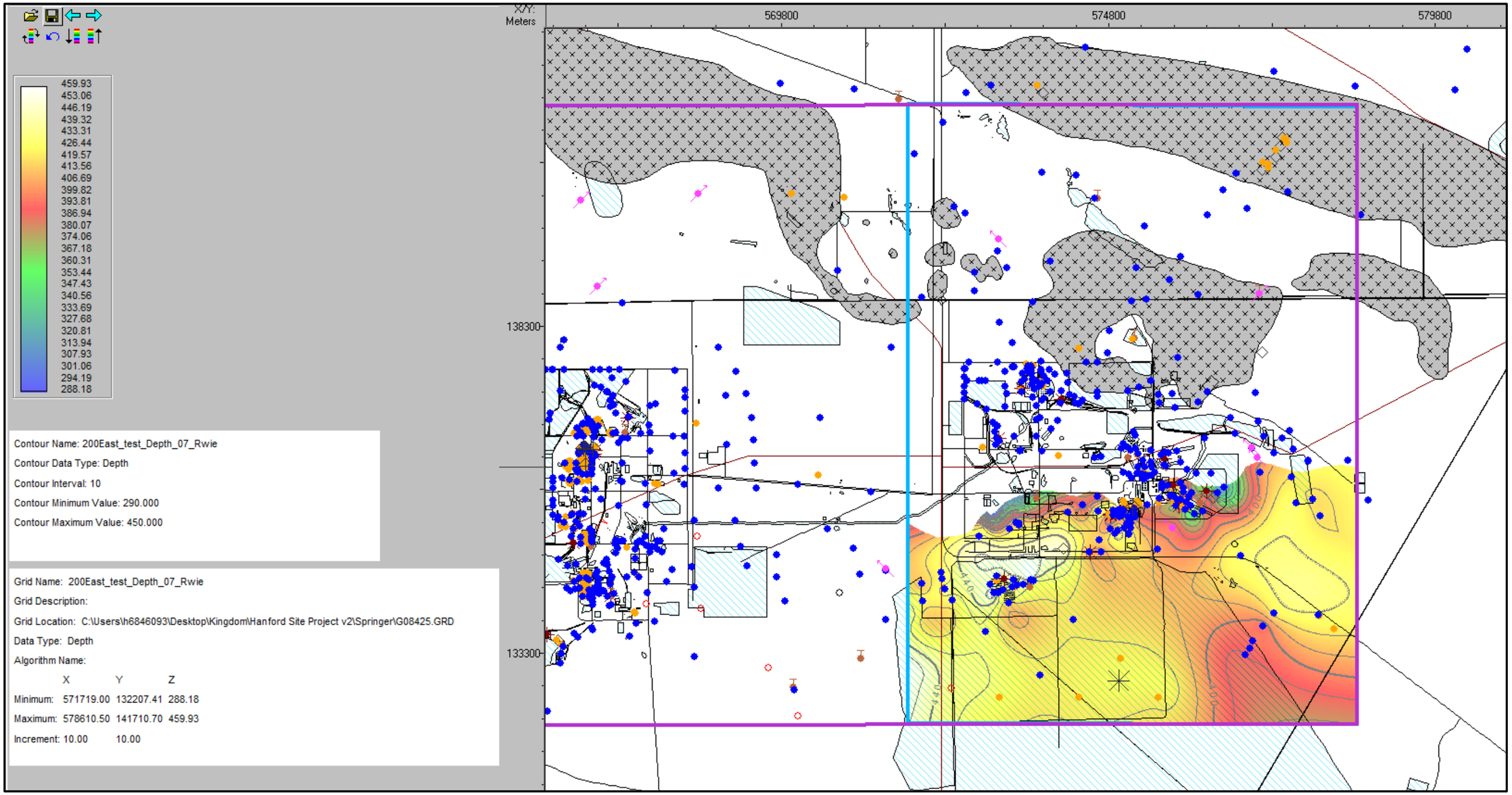

Figure E-14. Ringold Formation Member of Wooded Island, Unit E Structure Elevation (ft) in 200 East

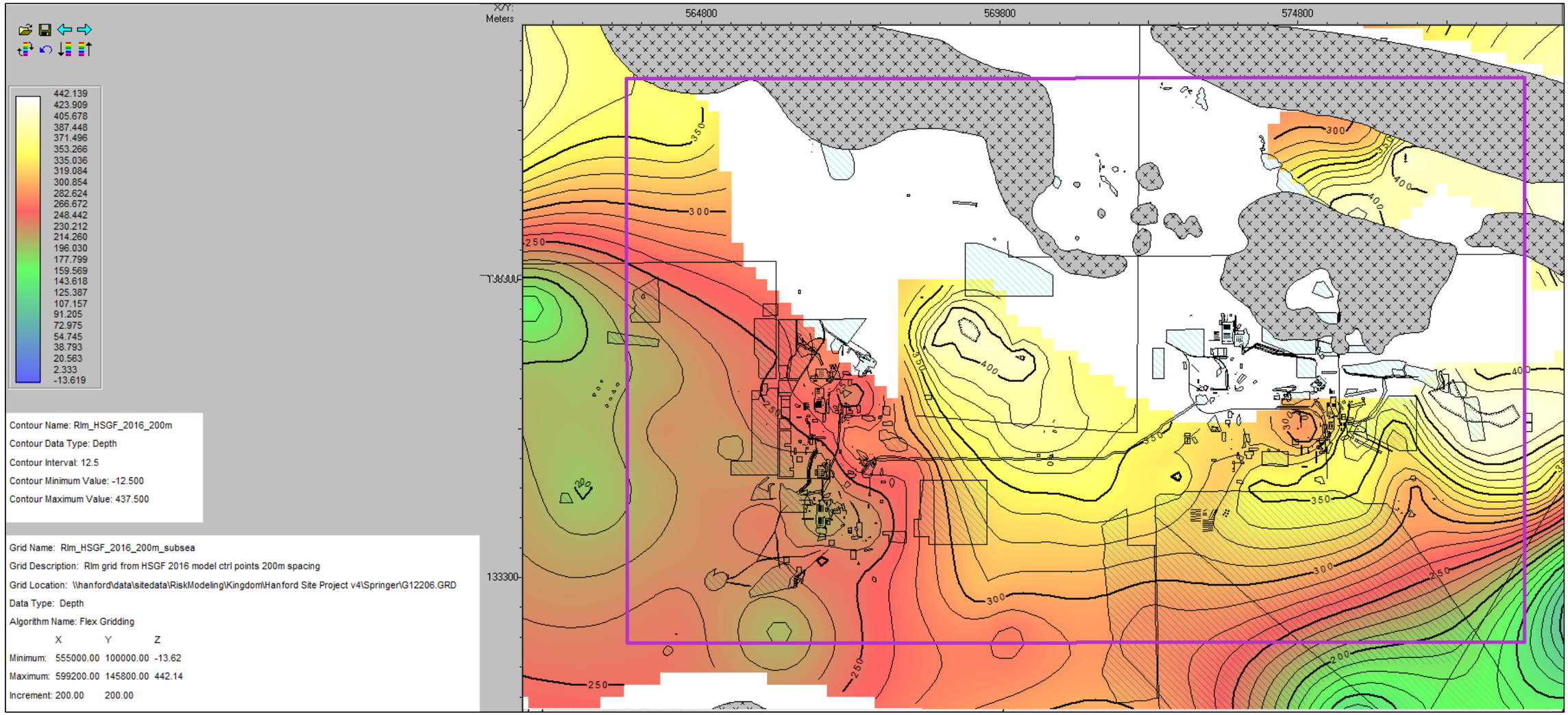

Figure E-15. Ringold Formation Member of Wooded Island, Lower Mud Unit (RLM) Structural Elevation (ft) across entire model domain. Surface from Hanford South Geoframework

Geologic Cross Section Figures

Northwest-Southeast Regional Geologic Cross Sections Through the Central Plateau, Hanford Site

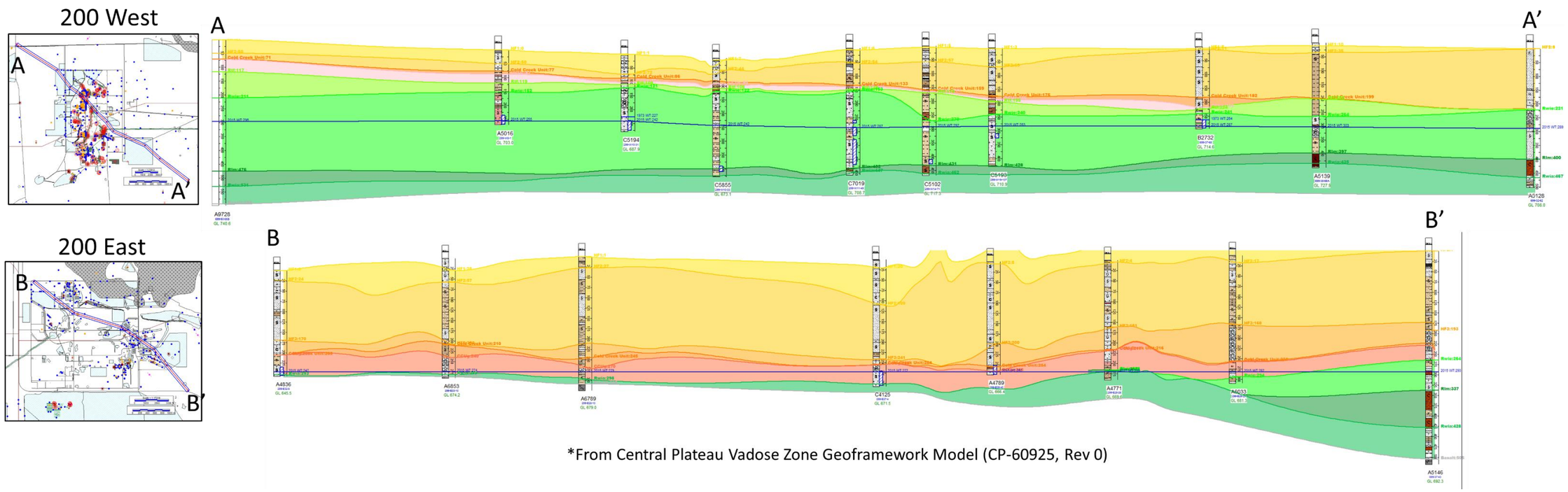

Figure E-16. Geologic Cross Sections Through the Central Plateau, Hanford Site

Appendix F

Python Script

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F1 Introduction

This appendix contains a Python® script for conversion of geologic surfaces between software products. The Python script converts surfaces (*.dat format) directly exported from Kingdom® to a format (*.asc) usable by Leapfrog Geo®.

® Python is a registered trademark of the Python Software Foundation.
® Kingdom is a registered trademark of IHS Markit.
® Leapfrog® is a registered trademark of ARANZ Geo Limited.

```
""" this script converts Kindgom point files of surfaces (geologic
    structure contour tops) to ascii raster file that Leapfrog can load.
    The Kingdom point files are x,y,z with a constant dx and dy
    and are sent to us by Sarah from CHPRC.

The Leapfrom ASCII raster (grid) file format is (example):
ncols        8500
nrows        120
xllcorner    568255.000000000000
yllcorner    132005.000000000000
cellsize     50.000000000000
NODATA_value  -99999

    MWilliams, Intera 12-12-2016

    Updated by MDWilliams. Intera, 1-25-2017
    Fixed bug - data is written out starting with the UL row and moving down

"""
import sys
import numpy as np

nodata = -99999
fnodata = float(nodata)

# two command line arguments: input-kingdom-file output-leapfrog-grid
print(sys.argv[1])
print(sys.argv[2])


# load csv file from kingdom
with open(sys.argv[1],"r") as fi:
      kingall = fi.read()

kinglines=kingall.split("\n")  # separate out lines into array
klen=len(kinglines)

# Points from Kingdom can come in irregular order or inconsistent rows
# and columns.  Scan file first to build max rectangular domain
xd = dict()
yd = dict()

for pline in kinglines[0:klen-1]:
      sxyz = pline.split(",")
      fx = float(sxyz[0])
      fy = float(sxyz[1])
      fz = float(sxyz[2])
      xd[fx] = 1
      yd[fy] = 1

# sort keys
nx=0
xl=[fnodata] * len(xd)
for fx in sorted(xd):
      xd[fx]=nx
      xl[nx]=fx
      nx+=1
```

```
ny=0
yl=[fnodata] * len(yd)
for fy in sorted(yd):
      yd[fy]=ny
      yl[ny]=fy
      ny+=1

print("nx,ny=",nx,ny)
zsize = nx*ny
z = []
for i in range(zsize):
      z.append(fnodata)
print("zlen=",len(z))
for pline in kinglines[0:klen-1]:
      sxyz = pline.split(",")
      fx = float(sxyz[0])
      fy = float(sxyz[1])
      fz = float(sxyz[2])
      i = xd[fx]
      j = yd[fy]
      zptr = (nx*j) + i
#     print("zptr=",zptr,i,j)
      z[zptr] = fz

# write out ASCII raster file for leapfrog
with open(sys.argv[2],"w") as fo:
      fo.write("ncols        %d\n" % nx)
      fo.write("nrows        %d\n" % ny)
      fo.write("xllcorner    %f\n" % xl[0])
      fo.write("yllcorner    %f\n" % yl[0])
      fo.write("cellsize     %f\n" % (xl[1]-xl[0]))
      fo.write("NODATA_value ");
      fo.write("%d\n" % nodata)
      # Patch - reversed order (jmax first) - mdw 1/25/2017
      # for j in range(ny):
      for j in reversed(range(ny)):
            for i in range(nx):
                  zptr = (nx*j) + i
                  if z[zptr] == fnodata:
                        fo.write("%d " % nodata)
                  else:
                        fo.write("%f " % z[zptr])
            fo.write("\n")
```

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