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June 13, 2017

Mr. Stephen A. Cobb, Chief
c/o Mrs. Brandi Little
Governmental Hazardous Waste Branch Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463

Via Email

SUBJECT: *Remedy Selection Update / Addendum to Final Corrective Measures Implementation Plan Training Area T-6 (Naylor Field), Parcel 183(6) and Cane Creek Training Area, Parcel 501(7), McClellan, Anniston, Alabama dated August 2008*

Dear Mr. Cobb:

On behalf of the McClellan Development Authority (MDA), Matrix Environmental Services, LLC (MES) is pleased to submit this *Remedy Selection Update / Addendum to Final Corrective Measures Implementation Plan Training Area T-6 (Naylor Field), Parcel 183(6) and Cane Creek Training Area, Parcel 501(7), McClellan, Anniston, Alabama dated August 2008 (Final CMIP)* to describe additional in situ bioremediation (ISB) measures to be undertaken at the site.

Groundwater at the site is impacted with chlorinated volatile organic compounds, including 1,1,2,2-tetrachloroethane (1,1,2,2-PCA), tetrachloroethane (PCE), and trichloroethene (TCE). The groundwater remedy transitioned from air sparge/soil vapor extraction (AS/SVE) to ISB in accordance with the *Final CMIP*. The first ISB injection at T-6 which occurred in January 2015, was applied using eight existing SVE wells and included the following permitted amendments: (i) EVO; (ii) sodium bicarbonate; (iii) sodium bromide (injection wells SVE-5 and SVE-8 only); (iv) KB-1[®] Plus; (v) sodium sulfite; and (vi) potable water. This work was performed in accordance with the *Underground Injection Control (UIC) Class V Well Permit ALSI9908664*. The additional injection work described herein represents ISB optimization to address three areas not effectively treated by the first application.

Although ISB implementation has been effective in decreasing concentrations of Corrective Action COCs at the site monitoring wells CWM-183-MW-07, CWM-183-MW-09, and CWM-183-MW23 have not responded to treatment. Soil boring logs, SVE data collected during startup (March 2010) and other historical site documents were reviewed. Soil concentrations in CWM-183-MW23 collected in 2001 – 2002 had approximately 10-fold higher concentrations than other locations and Photoionization Detector (PID) readings from the boring logs at CWM-183-MW23 were highest between 10 – 24 feet below ground surface (bgs). PID concentrations and associated soil data were lower in CWM-183-MW07 and CWM-183-MW09 compared to CWM-183-MW23.

A high vacuum sampling (HVS) test was performed using wells CWM-183-MW07, CWM-183-MW09, and SVE-4 to assess the need for additional treatment in this area. Vapor samples were collected using a field PID and two summa canisters from each location for VOC analysis. The results suggested that the VOCs detected may be due to equilibrium with groundwater and indicate that the footprint for any ISB optimization in this area is limited in extent.

Membrane interface probe (MIP) technology was deployed around CWM-183-MW23 to assess the extent of contamination sources and refine the footprint for potential groundwater remedy optimization. Using direct push technology (DPT), fifteen MIP locations were advanced by Cascade Technical Services in the vicinity of CWM-183-MW23. Relative VOC concentrations were measured downhole using an electron capture detector (ECD), photoionization detector (PID), and flame ionization detector (FID) in addition to electrical conductivity for soil type. The results indicate contaminant sources are present from <10 feet to >30 feet bgs.

Additional ISB treatment will be implemented in accordance with the *UIC Permit* and *Final CMIP* using DPT to inject the same remedial amendments. The target injection interval for the 8 DPT injection points around CWM-183-MW07 is between 11 and 21 feet bgs and the 8 DPT injection points around CWM-183-MW09 is between 18 and 28 feet bgs. The target intervals for these locations is 10 feet above estimated bedrock and depending on the variable depth to water, includes the saturated residuum and a portion of the vadose zone. The target injection interval for the 19 DPT injection points around CWM-183-MW23 is between 10 feet bgs and the presumed depth to bedrock at 60 feet bgs; the target interval at CWM183-MW23 includes both vadose and saturated zones. Implementation of ISB at T-6 will be performed by MES in collaboration with Geosyntec Consultants and Geo Lab, Inc.

The groundwater monitoring schedule will revert to quarterly for 1 year and semiannually for the second year following implementation of the ISB optimization. After 2 years, MDA will assess the performance and recommend a sampling frequency to ADEM for incorporation into the Cleanup Agreement.

An electronic copy of this document has been provided to Mrs. Brandi Little via e-mail and two hard copies will follow by mail. Please contact me at (256) 847-0780 (Anniston) or (770) 594-0331 (Atlanta) should you have any questions or comments.

Sincerely,
MATRIX ENVIRONMENTAL SERVICES, LLC



Richard Satkin, P.G
McClellan Program Manager

Enclosures

Attachments: Table 1: High Volume Sampling Analytical Results
Table 2: High Volume Sampling Screening Results
Figure 1: High Volume Sampling Screening Results

Figure 2: Proposed Injection Point Locations
Appendix A: MIP Report
Appendix B: Well Logs

cc: Mrs. Brandi Little, ADEM (two paper copies)
Mr. Robin Scott, MDA (one paper copy)
Ms. Lisa Holstein, U.S. Army (one paper copy)
MES Files (one paper copy)

Table 1
High Volume Sampling Analytical Results
McClellan - T6, Anniston, AL

COCs	MW07-01-20160608		MW07-02-20160608		MW09-01-20160607		MW09-02-20160607		SVE4-01-20160608		SVE4-02-20160608	
	ppbv	ug/m ³	ppbv	ug/m ³	ppbv	ug/m ³	ppbv	ug/m ³	ppbv	ug/m ³	ppbv	ug/m ³
1,1,2,2-Tetrachloroethane	1	7.1	<0.15 U	<1.0 U	280 E	1900 E	43	290	<0.15 U	<1.0 U	<0.15 U	<1.0 U
1,1,2-Trichloroethane	<0.15 U	<0.82 U	<0.15 U	<0.82 U	5.4	30	1	5.6	<0.15 U	<0.82 U	<0.15 U	<0.82 U
Chloroform	0.32 J	1.5 J	<0.15 U	<0.73 U	11	53	1.3	6.3	0.74	3.6	<0.15 U	<0.73 U
Tetrachloroethene	0.66	4.5	0.16 J	1.1 J	46	310	6.5	44	1.3	8.9	0.33 J	2.2 J
Trichloroethene	33	180	5.9	32	3000 E	16000 E	310 E	1600 E	8.5	46	0.88	4.7
Degradation Products												
1,1-Dichloroethene	<0.15 U	<0.59 U	<0.15 U	<0.59 U	5.5	22	0.35 J	1.4 J	0.51	2	<0.15 U	<0.59 U
1,2-Dichloroethane	<0.15 U	<0.61 U	<0.15 U	<0.61 U	<0.15 U	<0.61 U	<0.15 U	<0.61 U	0.86	3.5	<0.15 U	<0.61 U
Chloroethane	<0.15 U	<0.40 U	<0.15 U	<0.40 U	<0.15 U	<0.40 U	<0.15 U	<0.40 U	11	29	<0.15 U	<0.40 U
Chloromethane	0.81	1.7	0.78	1.6	1.3	2.7	0.73	1.5	<0.15 U	<0.31 U	0.69	1.4
cis-1,2-Dichloroethene	0.24 J	0.94 J	<0.15 U	<0.59 U	440 E	1700 E	56	220	5.2	21	0.44 J	1.8 J
Methylene chloride	0.21 J	0.73 J	0.30 J	1.0 J	0.30 J	1.0 J	0.58	2	0.8	2.8	0.39 J	1.4 J
trans-1,2-Dichloroethene	<0.15 U	<0.59 U	<0.15 U	<0.59 U	77	300	4.2	17	7.6	30	0.21 J	0.84 J
Vinyl chloride	<0.15 U	<0.38 U	<0.15 U	<0.38 U	300 E	760 E	10	26	15	39	0.64	1.6
Total	36.24	196.47	7.14	35.7	4166.5	21078.7	433.66	2213.8	51.51	185.8	3.58	13.94

Notes

Relatively significant impacts to groundwater anticipated (greater than 5000-10000 ug/m³)

Potential impacts to groundwater anticipated (greater than 500 ug/m³)

U = Qualifier indicates that the analyte was not detected above the MDL.

J = Qualifier Indicates that the analyte value is between the MDL and the RL.

E = Qualifier indicates that the analyte result exceeds calibration range.

MDL = method detection limit

RL = reporting limit

ppbv = part per billion by volume

ug/m³ = microgram per cubic meter

Henry's Law: $C_g = K_h * C_aq$

MW-09	Aqueous Phase Concentration (3/8/2016) (ug/L)	Henry's Law Constant (dimensionless)	Estimated Equilibrium Gas Phase Concentration (ug/L)	Estimated Equilibrium Gas Phase Concentration (ug/m ³)
TCE	180	0.4026983	72.5	72,486
1,1,2,2-TeCA	950	0.0150041	14.3	14,254

***suggests observed vapors in MW09-01-20160607 may simply be due to equilibrium with groundwater

Table 2
High Volume Sampling Screening Results
McClellan - T6, Anniston, AL

Location	Time (hh:mm)	Elapsed Time (min)	Analytical - Total ¹ (ppm _v)	Field - PID Measurement ² (ppm _v)	Extraction Velocity (ft/min)	System Vacuum (in. H ₂ O)	Cumulative Volume Removed (L)
MW-07 Well Diameter: 2 in. Well Depth: 19.35 ft BTOC Average Extraction Velocity: 2,799 ft/min Average Extraction Vacuum: 31 in. H ₂ O Extraction Flow Rate: 60 SCFM	08:06	0		7.1	2,519	31	0
	08:10	4	0.036	0.6	2,421	31	6,826
	08:14	8		0.4	2,420	31	13,652
	08:19	13		0.5	2,630	31	22,184
	08:22	16		0.4	2,449	31	27,303
	08:25	19		0.1	2,562	31	32,423
	08:28	22		0.4	2,553	31	37,542
	08:31	25		0.3	2,738	31	42,661
	08:35	29		0.2	3,002	31	49,487
	08:38	32		0.0	2,723	31	54,607
	08:42	36		0.0	2,592	31	61,432
	08:47	41		0.2	2,834	31	69,965
	08:52	46		0.0	2,966	31	78,497
	08:57	51		0.2	3,320	31	87,029
	09:02	56		0.0071	2,910	31	95,561
	09:05	59		0.0	2,881	31	100,681
	09:10	64		0.0	2,600	31	109,213
	09:14	68		0.0	2,746	31	116,039
	09:19	73		0.0	2,802	31	124,571
	09:23	77		0.0	2,644	31	131,397
09:28	82		0.0	2,853	31	139,929	
09:33	87		0.0	2,878	31	148,461	
09:38	92		0.0	3,517	31	156,994	
09:43	97		0.0	3,113	31	165,526	
09:48	102		0.0	2,576	31	174,058	
09:53	107		0.0	2,615	31	182,591	
09:58	112		0.2	2,834	31	191,123	
10:03	117		0.0	3,961	31	199,655	
10:08	122		0.1	2,510	31	208,187	
MW-09 Well Diameter: 2 in. Well Depth: 27.60 ft BTOC Average Extraction Velocity: 2,539 ft/min Average Extraction Vacuum: 28 in. H ₂ O Extraction Flow Rate: 55 SCFM	16:34	0		1.3	2,359	28	0
	16:37	3		1.3	2,517	28	4,679
	16:40	6	4.2	1.6	2,320	28	9,358
	16:43	9		0.8	2,815	28	14,038
	16:46	12		0.0	2,761	28	18,717
	16:50	16		0.0	2,391	28	24,956
	16:55	21		0.0	2,986	28	32,755
	17:00	26		0.0	3,170	28	40,553
	17:05	31		0.0	2,248	28	48,352
	17:09	35		0.0	2,853	28	54,591
	17:14	40		0.0	2,861	28	62,390
	17:17	43		0.0	2,664	28	67,069
	17:23	49		0.0	2,647	28	76,428
	17:28	54		0.0	2,807	28	84,226
	17:32	58		0.0	2,488	28	90,465
	17:37	63		0.0	2,593	28	98,264
	17:41	67		0.0	2,612	28	104,503
	17:46	72		0.0	2,486	28	112,302
	17:52	78	0.43	3.7	2,472	28	121,660
	17:54	80		1.9	2,566	28	124,780
17:58	84		2.9	2,347	28	131,019	
18:02	88		0.0	2,379	28	137,258	
18:07	93		0.0	2,304	28	145,057	
18:10	96		0.0	1,959	29	149,736	
18:15	101		0.0	2,373	29	157,535	
18:20	106		0.0	2,224	29	165,333	
18:25	111		0.0	2,557	29	173,132	
18:30	116		0.0	2,340	29	180,931	
SVE-4 Well Diameter: 4 in. Well Depth: 28.81 ft BTOC Average Extraction Velocity: 3,625 ft/min Average Extraction Vacuum: 29 in. H ₂ O Extraction Flow Rate: 298 SCFM	10:47	0	0.052	-	-	30	0
	11:00	0		-	-	-	0
	11:30	0		-	-	-	0
	11:35	5		0.0	-	15	11,113
	11:40	10		0.0	3,264	20	22,225
	11:41	11		0.0	4,300	29	24,448
	11:44	14		0.0	2,902	30	31,115
	11:51	21		0.0	3,511	30	46,673
	11:55	25		0.0	2,913	30	55,563
	12:00	30		0.3	4,046	31	66,676
	12:05	35	0.014	21.3	3,221	31	77,789
	12:10	40		5.6	3,241	31	88,901
	12:15	45		5.8	3,279	31	100,014
	12:20	50		2.8	3,632	31	111,127
	12:25	55		2.1	3,792	30	122,239
	12:30	60		1.8	3,080	30	133,352
	12:35	65		2.2	3,445	30	144,465
12:40	70		1.8	3,825	30	155,577	
12:45	75		1.5	3,745	30	166,690	
12:50	80		1.4	4,440	30	177,803	
12:55	85		1.0	4,296	30	188,915	
13:00	90		0.6	4,320	30	200,028	

Notes:

hh:mm - hours:minutes

ft BTOC - feet below top of casing

ft/min - feet per minute

in. H₂O - inches of water

L - liters

min - minutes

- indicates no field measurement taken

¹Analytical measurements collected with 1-L summa canisters and analyzed by EPA method TO-15. Total represents sum of detected Site COCs + Degradation Products.

TO-15 - EPA method for VOCs analysis

²Field PID measurement collected with a 10.6 eV lamp PID

PID - photoionization detector

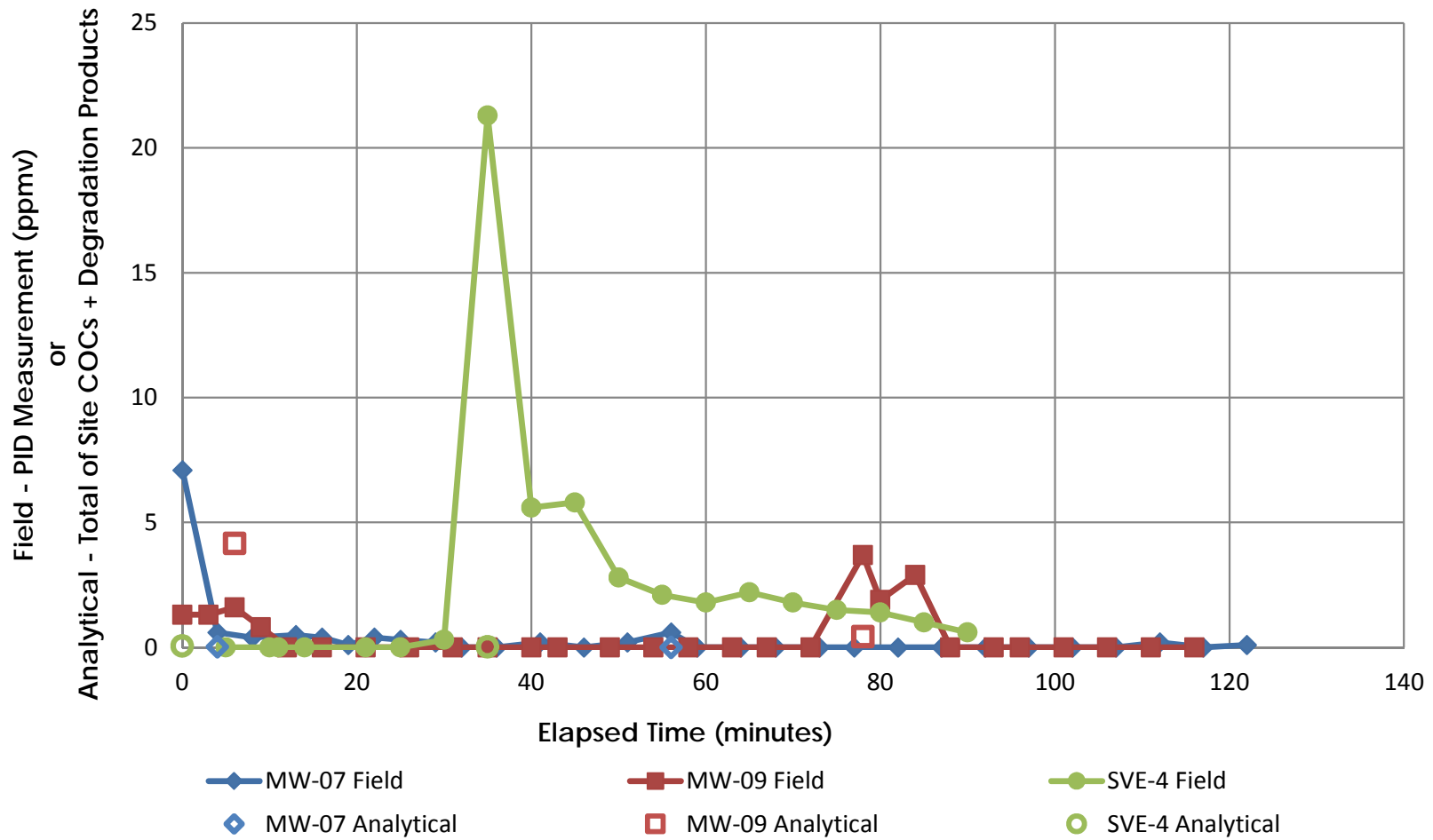
ppm_v - parts per million by volume

SCFM - standard cubic feet per minute

ROI - radius of influence

COCs - constituents of concern

Figure 1
 High Volume Sampling Screening Results
 McClellan - T6, Anniston, AL



Notes:
 Field measurements collected with a 10.6 eV lamp PID
 Analytical measurements collected with 1-L summa
 cannisters and analyzed by EPA method TO-15
 HVS - high volume sampling
 PID - photoionization detector
 ppm_v - parts per million by volume
 COCs - constituents of concern

HVS Test Results
 McClellan - T6, Anniston, AL

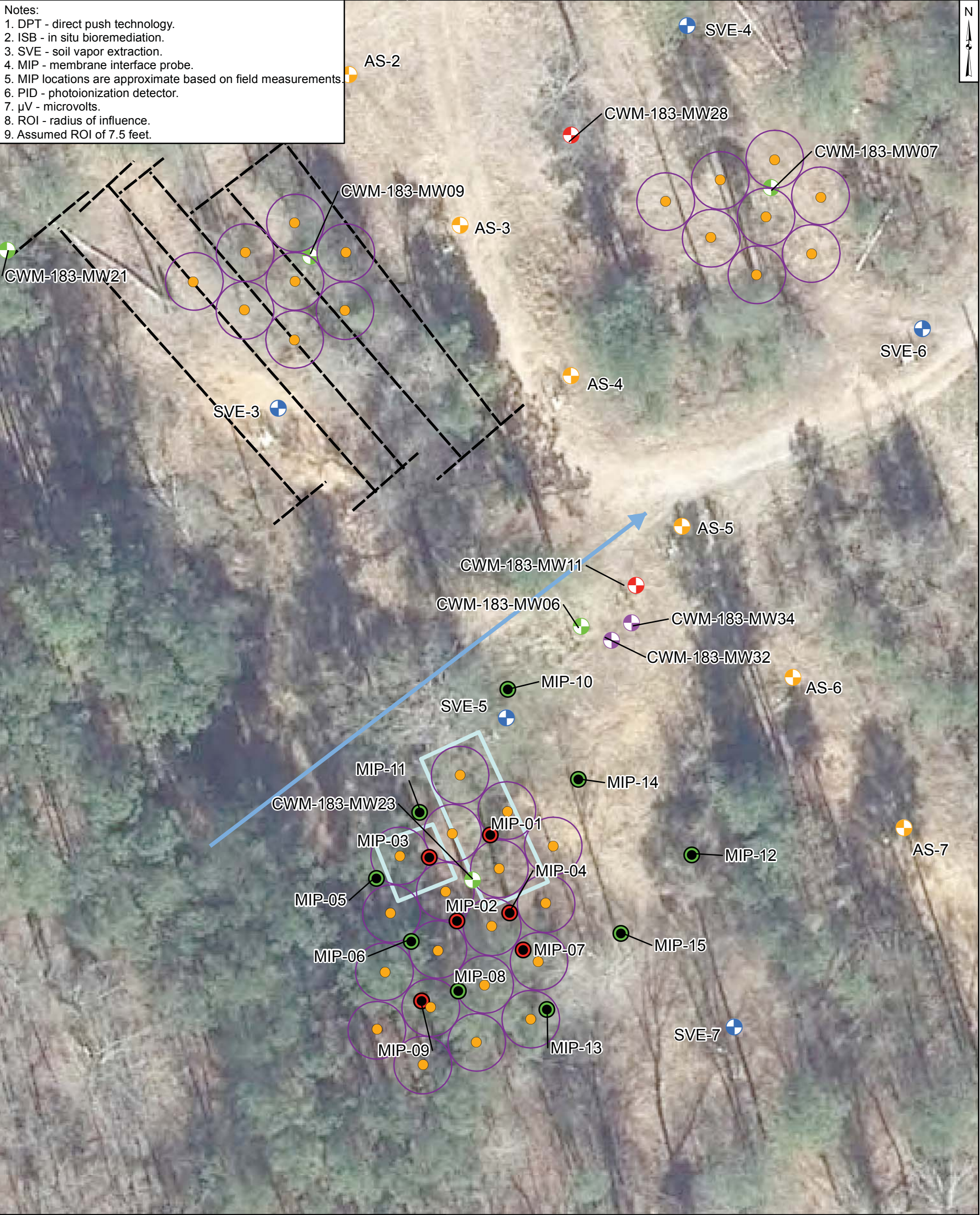


Figure
1

Kennesaw, GA

June 2016

- Notes:
1. DPT - direct push technology.
 2. ISB - in situ bioremediation.
 3. SVE - soil vapor extraction.
 4. MIP - membrane interface probe.
 5. MIP locations are approximate based on field measurements.
 6. PID - photoionization detector.
 7. μV - microvolts.
 8. ROI - radius of influence.
 9. Assumed ROI of 7.5 feet.



- Proposed DPT Locations
- MIP Location - Max PID <math> < 5 \times 10^4 \mu\text{V}</math>
- MIP Location - Max PID >math> > 5 \times 10^4 \mu\text{V}</math>
- ⊕ ISB Monitoring Well
- ⊕ SVE Well Used as ISB Injection Well
- ⊕ T-6 Residuum Monitoring Well
- ⊕ T-6 Bedrock Monitoring Well
- ⊕ T-6 Air Sparge (AS) Well
- Approx. ROI
- Approx. Groundwater Flow
- - - Trench (Previously Used in Training Exercises)
- Former Concrete Wash Pad



**Proposed Injection Point Locations
Training Area T-6 (Naylor Field)
Parcel 183(6)**
McClellan, Anniston, AL



Kennesaw, GA

March 2017

Figure
2

N:\McClellan\T-6\ISB_Design_2017\Figures\Figure_1_DPTLocations.mxd



Attention: Geosyntec

November 10, 2016

RE: MIHPT Site Investigation
McClellan T6 Site
Fort McClellan, AL
204-16-8824

Dear Joseph Ivanowski :

The following is a summary of site activities performed by Cascade Technical Services, LP at the McClellan T6 Site in Fort McClellan, AL.

In addition to the field logs within this report, we have provided guides to assist you in understanding the high resolution data and how the systems work. We recommend that you collect groundwater and / or soil samples to correlate the high resolution data with traditional data. This will provide you with additional evidence to support your development or refinement of your conceptual site model.

We offer 3D modeling of high resolution data and traditional sampling services as well. These would be beneficial for viewing the data within the same area.

If you have any questions about this report or you would like to discuss applying this data to a remedial design at the site, please call me at (813) 731-5916.

Brad Carlson

Cascade Technical Services, LP

1020 SOUTH 82nd STREET
TAMPA FL, 33619
PHONE (813) 731-5916



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MIP and HPT Boring Logs (Common Scale)	Appendix B

Personnel:

Mr. Brad Carlson, Cascade Technical Services (HRSC Manager)

Mr. Dan Ferrell, Cascade Technical Services (HRSC Operator)

Mr. Dan Mullin, Cascade Technical Services (DPT Operator)

Equipment:

- Geoprobe 7822 Direct Push Drill Rig
- MIP Controller (Nitrogen Flow and Heater)
- Geoprobe FI 6000 Computer
- HP 5890 Gas Chromatograph
- K6300 HPT Controller
- Electrical Conductivity
- ECD (Electron Capture Detector)
- PID (Photo Ionization Detector) 10.2 eV Lamp
- FID (Flame Ionization Detector)
- 150' MIP/HPT Trunkline
- 1.75" O.D. MIHPT Probe
- 1.75" O.D. Drive Rods
- UHPN (Ultra High Purity Nitrogen)
- UHPH (Ultra High Purity Hydrogen)

MIP System Overview:

The MIP is a direct push tool that produces continuous chemical and physical logs of the vadose and saturated zones. The system detects VOCs in-situ and shows where the contaminants occur relative to the geologic and hydrologic units. Vertical profiles, transects, 3D images and maps can all be produced from the electronic data generated by the MIP logs. The unique capability of providing reliable, real-time information allows for informed and timely decision making in the field. The MIP is a downhole tool that heats the soils and groundwater adjacent to the probe to 120 degrees C. This increases volatility and the vapor phase diffuses across a membrane into a closed, inert gas loop that carries these vapors to a series of detectors housed at the surface. Continuous chemical logs or profiles are generated from each hole. Soil conductivity is also measured and these logs can be compared to the chemical logs to better understand where the VOCs occur. The MIP technology is only appropriate for volatile organic compounds (VOCs). The gas stream can be analyzed with multiple detectors, for example an electron capture detector is used to detect chlorinated hydrocarbons, and a flame ionization detector is used to detect methane.

Detector Overview:

- ECD – Electron Capture Detector uses a radioactive Beta emitter (electrons) to ionize some of the carrier gas and produce a current between a biased pair of electrodes. When organic molecules contain electronegative functional groups, such as halogens, phosphorous, and nitro groups pass by the detector, they capture some of the electrons and reduce the current measured between the electrodes.

- PID – Photo Ionization Detector sample stream flows through the detector's reaction chamber where it is continuously irradiated with high energy ultraviolet light. When compounds are present that have a lower ionization potential than that of the irradiation energy (10.2 electron volts with standard lamp) they are ionized. The ions formed are collected in an electrical field, producing an ion current that is proportional to compound concentration. The ion current is amplified and output by the gas chromatograph's electrometer.
- FID – Flame Ionization Detector consists of a hydrogen / air flame and a collector plate. The effluent from the GC (trunkline) passes through the flame, which breaks down organic molecules and produces ions. The ions are collected on a biased electrode and produce an electric signal.

MIP Data Collection

- Depth - Data is collected from twenty data points per foot. 0.05', 0.10', 0.15', etc...
- Electrical Conductivity - Electrical Conductivity data is measured/collected in milli-siemens per Meter (ms/M). The conductivity of soils is different for each type of media. Finer grained sediments, such as silts or clays, will have a higher EC signal. While coarser grained sediments, sands and gravel, will have a lower EC signal. The coarser grained sediments will allow the migration of contaminants and the finer grained sediments will trap the contaminant.
- Speed / Advancement Rate - Speed data is measured/collected in feet per minute (ft/min). Speed is an indication of the physical advancement rate of the MIP probe. Speed of the MIP probe can vary due to operator advancement and dense soil types. Speed log can provide soil type information which can be correlated with electrical conductivity. Lower advancement speed, correlated with lower conductivity or larger grained soils would more than likely be associated with dense or compacted sands.
- Temperature - Temperature data is measured/collected in Degrees Celsius. Temperature is an indication of the physical temperature of the MIP block. Minimum and Maximum temperature is collected at each vertical interval. Cascade's temperature protocol indicates that the MIP probe temperature shall maintain a minimum temperature of 75 Degrees Celsius.
- Pressure - Pressure data is measured/collected in PSI. Pressure is an indication of the internal pressure of the nitrogen lines located within the trunkline and the pressure behind the membrane. Geoprobe's protocol indicates that the MIP probe pressure shall not exceed 1.5 PSI difference from baseline.
- Detector (XSD, ECD, PID, FID) - Detector responses are measured/collected in micro Volts (uV). Detector responses are an indication of relative contaminant responses. Minimum and Maximum detector responses are collected at each vertical interval.

Response Testing

Response testing is an integral part of ensuring the quality of data from the MIP system. Response testing must be conducted before and after each log. This will ensure the validity of the data and the integrity of the system. Response testing also provides for comparison of data for later MIP logs at a particular site. However, results of the response test may change due to membrane wear from soil contact and abrasion.

Prior to conducting a response test, a response test standard solution is prepared by adding an appropriate volume of stock standard solution to 0.5 liters of clean water in a suitable measuring container (beaker or graduated cylinder) to produce a working standard, for example, 10 μL of 50 mg/mL concentration stock standard is added to 0.5 liters of water to yield a 1mg/L working standard. Generally, response test standard solutions are prepared using trichloroethene and toluene. However, response test standard solutions may be prepared based on the specific contaminants of concern at a site of necessary. Also prior to conducting the response test, the MIP is placed in clean water until detector response stabilization has occurred.

The working standard is poured into a 50 mL VOA. Once a stabilized Detector baseline is achieved, the working standard is placed over the Membrane for duration of 30 seconds. At the end of 30 seconds the MIP is removed. The working standard cannot be reused after a response test.

HPT System Overview

The HPT system is designed to evaluate the hydraulic behavior of unconsolidated materials. As the probe is pushed or hammered at 2cm/s, clean water is injected through a screen on the side of the HPT probe at a flow rate usually less than 300 mL/min. The injection pressure, which is monitored and plotted with depth, is an indication of the hydraulic properties of the soil. A relatively low pressure response indicates a relatively large grain size, and the ability to easily transmit water. However, a relatively high pressure response indicates a relatively small grain size, which correlates with the inability to transmit water.

Additionally, an EC dipole is integrated into the HPT probe. This allows for the collection soil electrical conductivity (EC) data to interpret the lithology of the subsurface. In general, the higher the electrical conductivity value, the smaller the grain size, the lower the electrical conductivity value, the larger the grain size. However, other factors can affect EC, such as mineralogy and pore water chemistry (brines, extreme pH, contaminants). Conversely, the HPT pressure response is independent of these chemical and mineralogical factors.

There are five primary components of the HPT system (see schematic below): the probe assembly, controller, pump, trunkline, and field instrument. The probe assembly consists of the section that houses the 100 psi pressure transducer, water and electrical connections, and the probe body with the injection screen and electrical conductivity.

Injecting water at a constant rate is integral to system operation. A controller box houses components that monitor and regulate the water injection rate and pressure, as well as pressure transducer signal conditioning electronics. The flow rate, up to 1000 mL/min, is set manually on the front of the controller, and a valve is used to turn on or shut off flow.

A vane pump provides system pressure ensuring adequate flow to the screen. The pump is secured to a frame with an integrated visual flow meter. Water and power are transmitted from the controller to the probe assembly via the trunkline. The probe rods are pre-strung with the trunkline before advancing of the HPT probe begins.

HPT Data Collection

The HPT system collects depth, electrical conductivity, advancement rate, hydraulic pressure, and flow information. Additional detail regarding each of these parameters is provided below.

- Depth - Data is collected from twenty data points per foot. 0.05', 0.10', 0.15', etc...
- Electrical Conductivity - Electrical Conductivity (EC) data is collected in milli-siemens per meter (ms/M). The conductivity of soils is different for each type of media. Finer grained sediments, such as silts or clays, will have a higher EC signal. While coarser grained sediments, sands and gravel, will have a lower EC signal. The coarser grained sediments will allow the migration of contaminants and the finer grained sediments will trap the contaminant.
- Advancement Rate – Advancement rate is collected in units of feet per minute (ft/min). Advancement rate of the HPT probe can vary due to operator advancement and soil types encountered.
- Pressure - Pressure data is collected in pounds per square inch (PSI). Pressure is an indication of hydraulic pressure applied to the subsurface by the HPT system. The system collects both the minimum and maximum pressures over each vertical interval.
- Flow - Flow data is collected in milliliters per minute (mL/min). Flow is an indication of the rate water that is pumped out of the membrane at the HPT probe. The system collects both the minimum and maximum flow over each vertical interval.
- Estimated Hydraulic Conductivity (est. K) – Hydraulic conductivity, symbolically represented as K, is an in-situ property that describes the ease with which water can move through pore spaces or fractures. It is dependent on the intrinsic permeability of the material and on the degree of saturation. With respect to the HPT system, the estimated K values are only applicable to the saturated portion of the formation. The estimated K value is calculated using the HPT pressure and flow data. It is also necessary to collect HPT response test data before and after each boring. Additionally, it is necessary to conduct at least one pressure dissipation test during the logging operation, below the static water table level.

Site Activities:

Project Dates: 9/06/2016 to 9/10/2016

SCOPE: Cascade Technical Services, LP advanced 15 direct push MIHPT borings from the ground surface to 38 feet below ground surface (BGS).

MIHPT Boring	Date	Total Depth (feet)	Dissipation Test Depth(s) (feet)	MIHPT Notes
MIP-01	09/07/16	32.25	32	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-02	09/08/16	36.45	36	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-03	09/08/16	30.05	30	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-04	09/08/16	30.01	17	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-05	09/08/16	30.4	27	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-06	09/08/16	30.4	22, 27	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-07	09/09/16	30.05	27	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-08	09/09/16	30.3	None	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-09	09/09/16	30.1	19	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-10	09/09/16	25.25	18	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-11	09/10/16	30.1	23	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-12	09/09/16	29.0	19	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-13	09/10/16	30.2	23	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-14	09/10/16	29.15	28	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.
MIP-15	09/10/16	30.15	30	Hand cleared for utilities to 5 feet bgs. Advanced MIHPT to terminal depth.

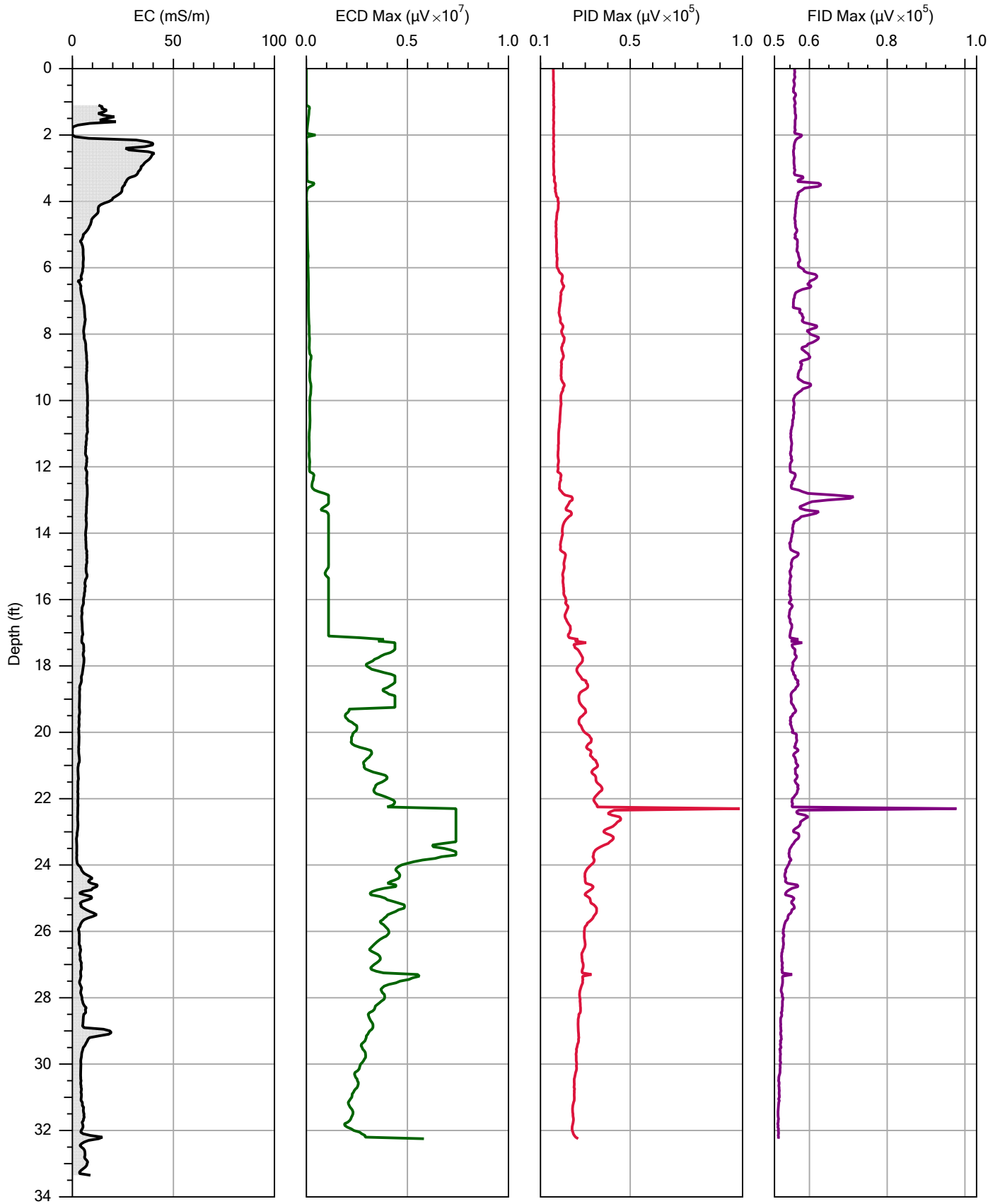
Site Map:

Site Location Map using Google Earth software.



APPENDIX A

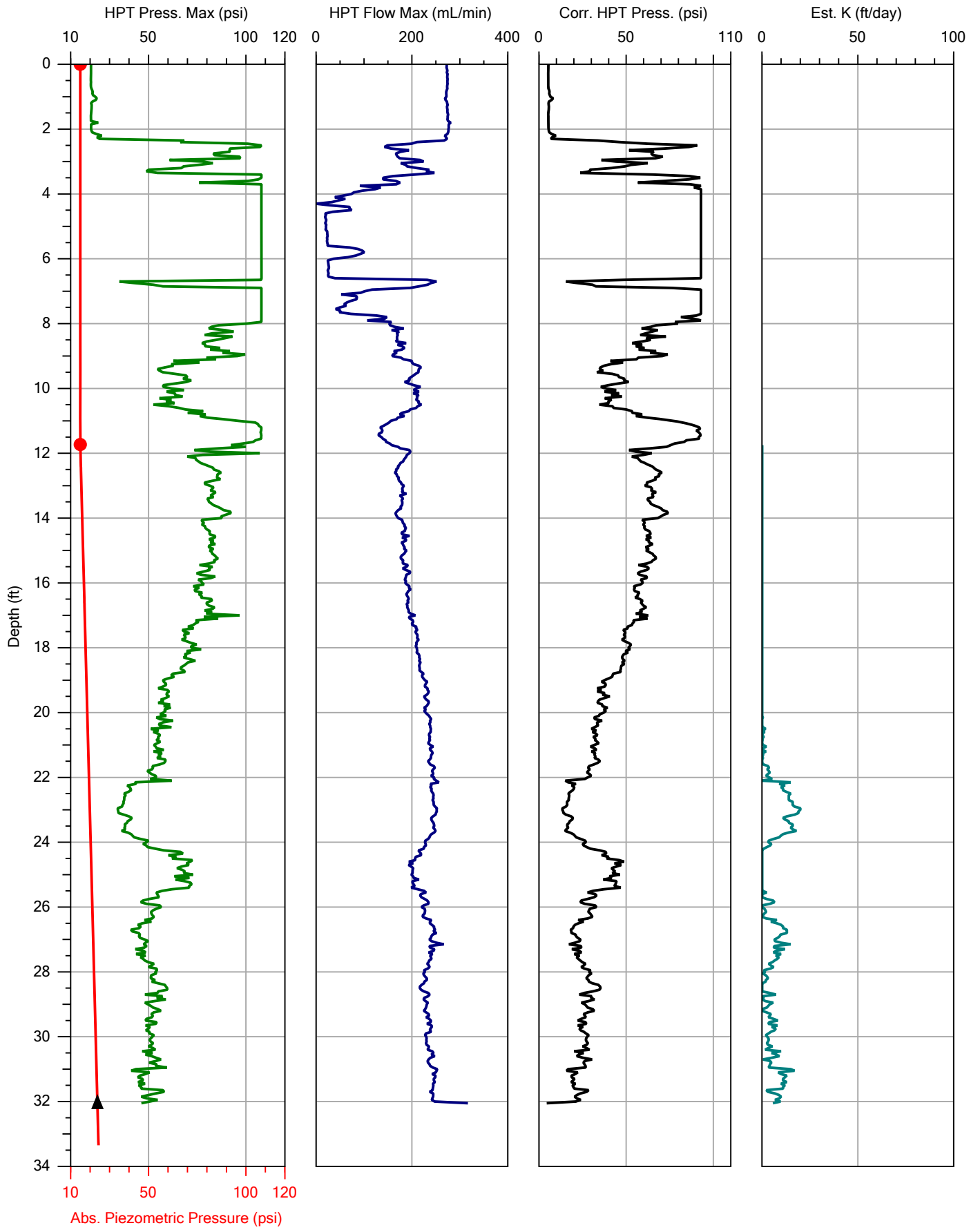
MiHPT BORING LOGS



Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

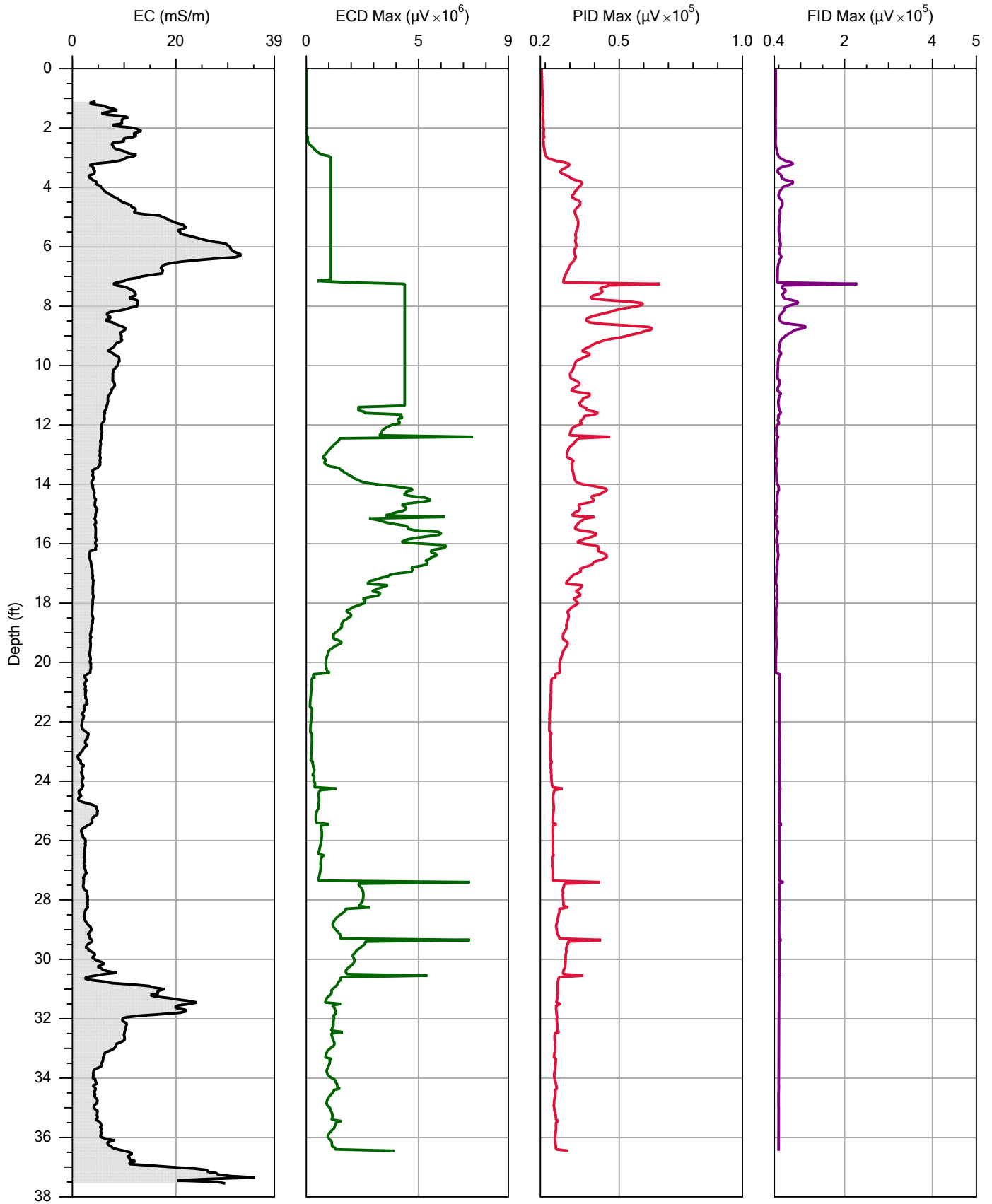
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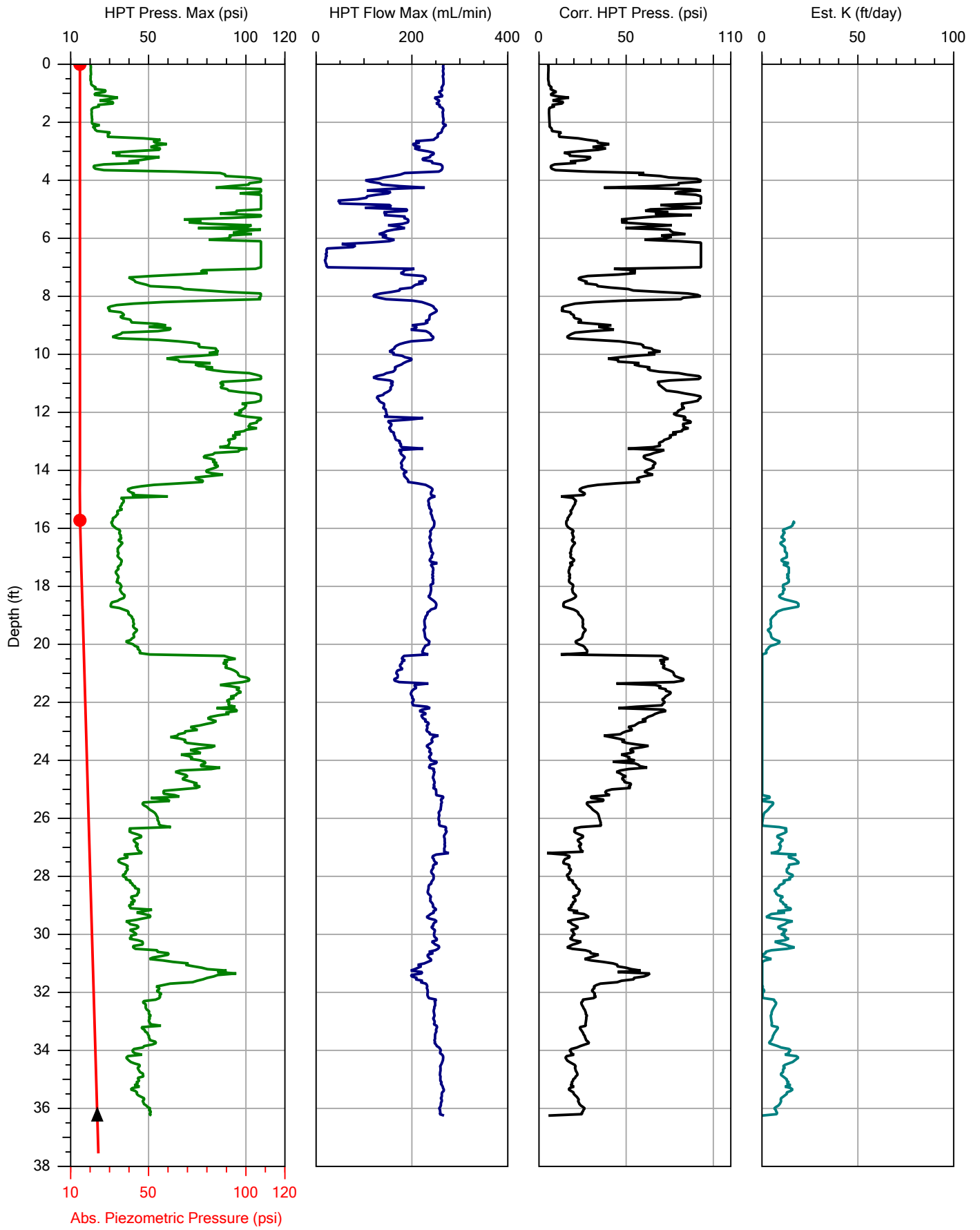


Company: Cascade
 Project ID: Fort McClellan

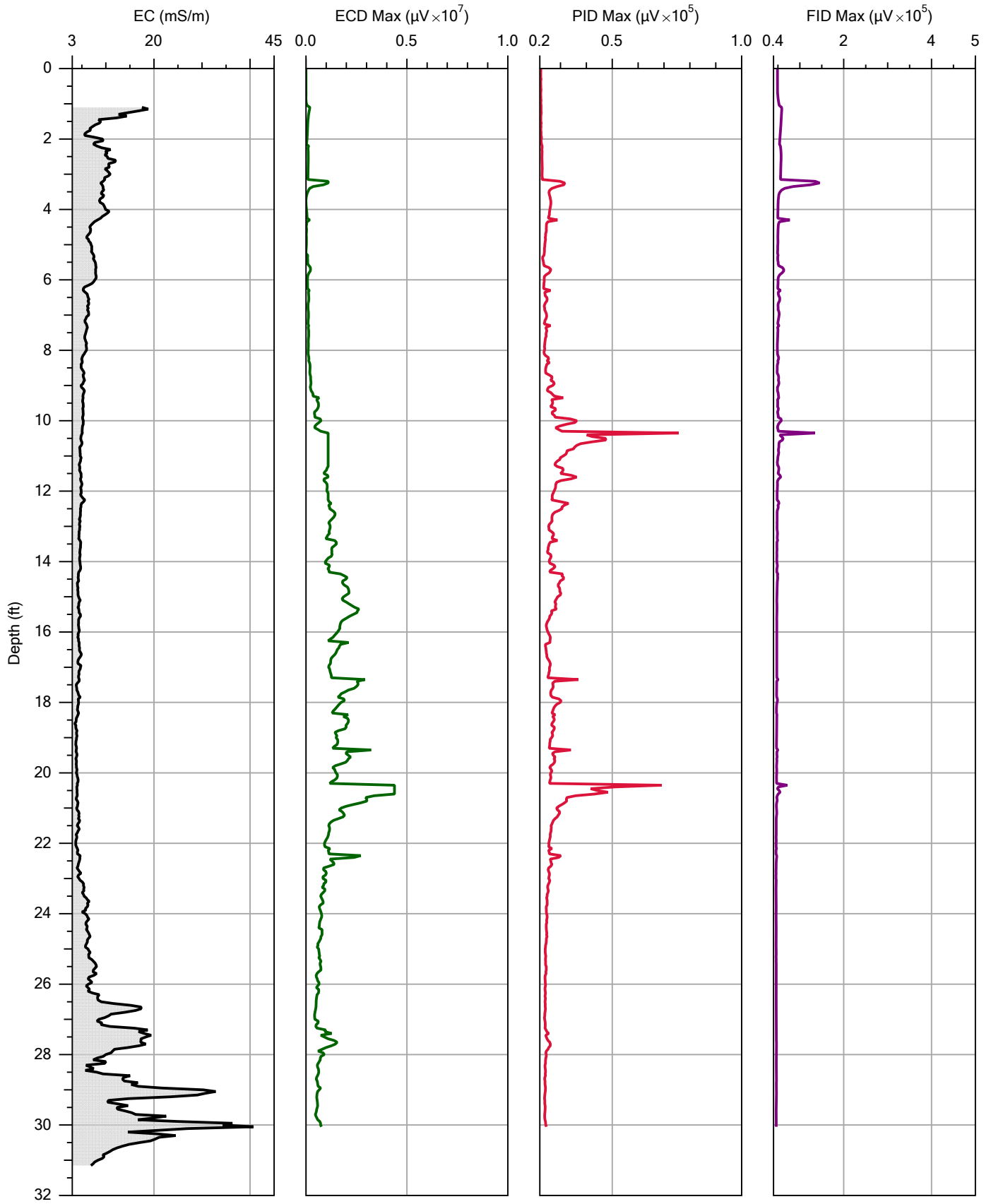
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 Client: Geosyntec

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Location:	





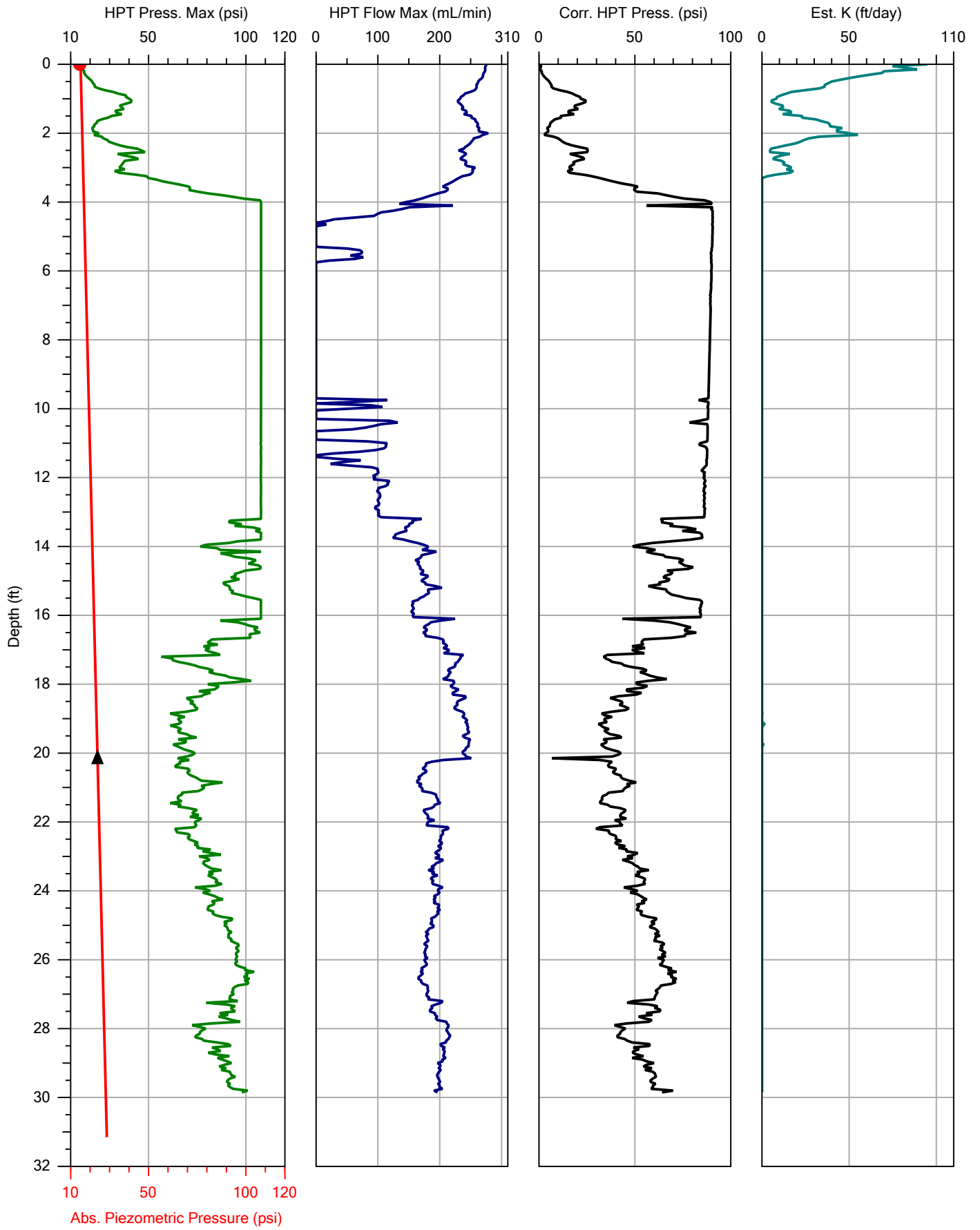
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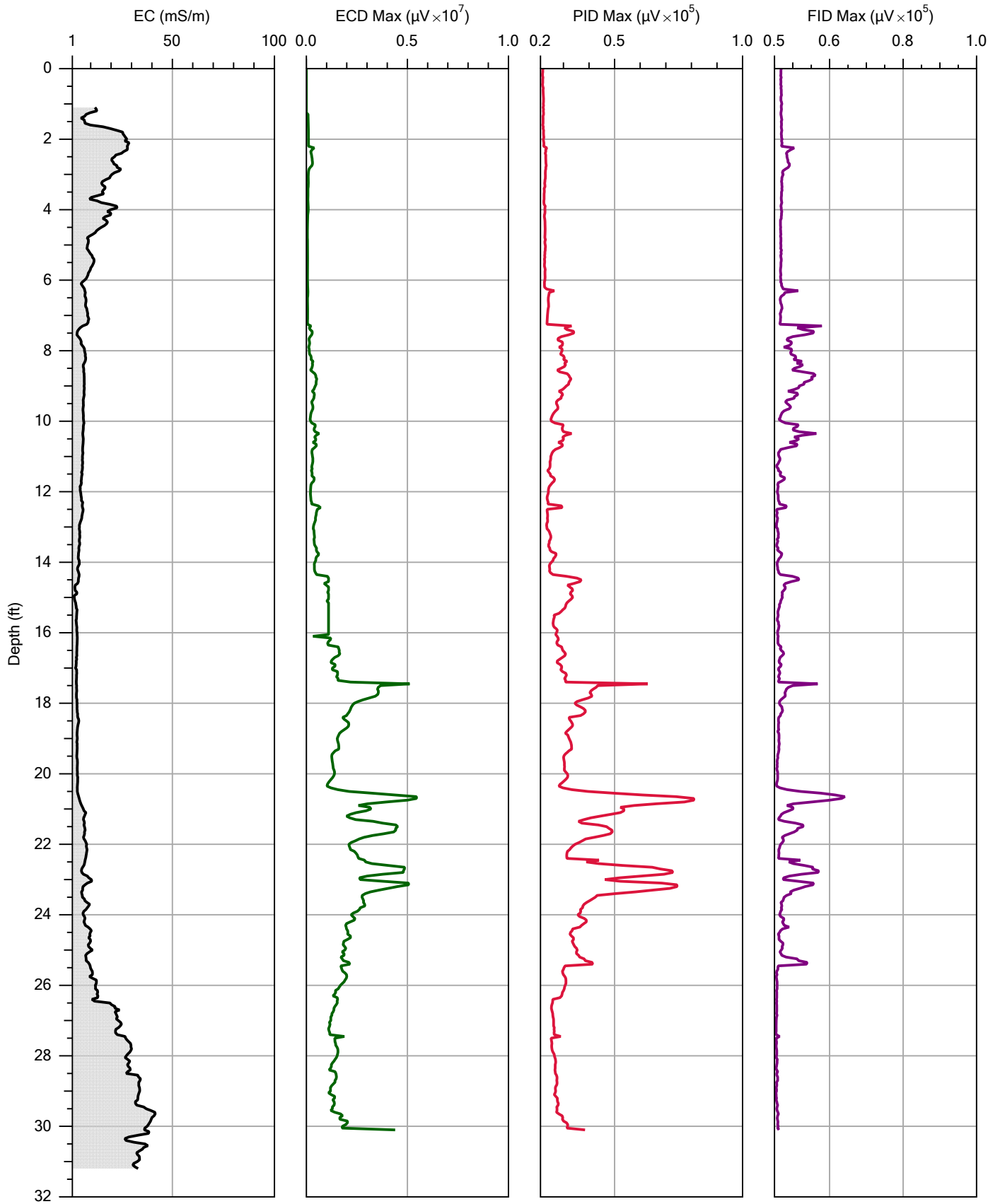
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 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

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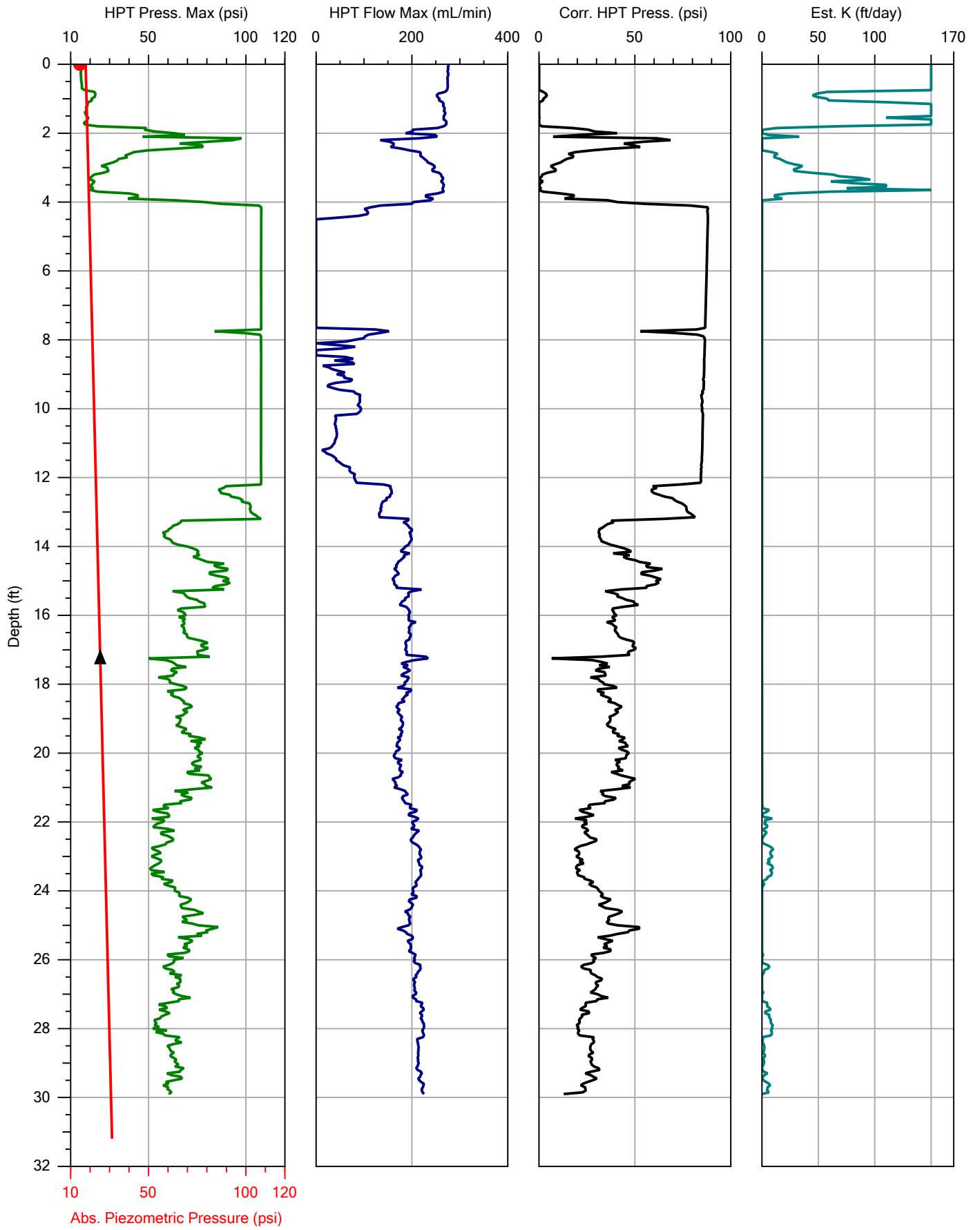
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

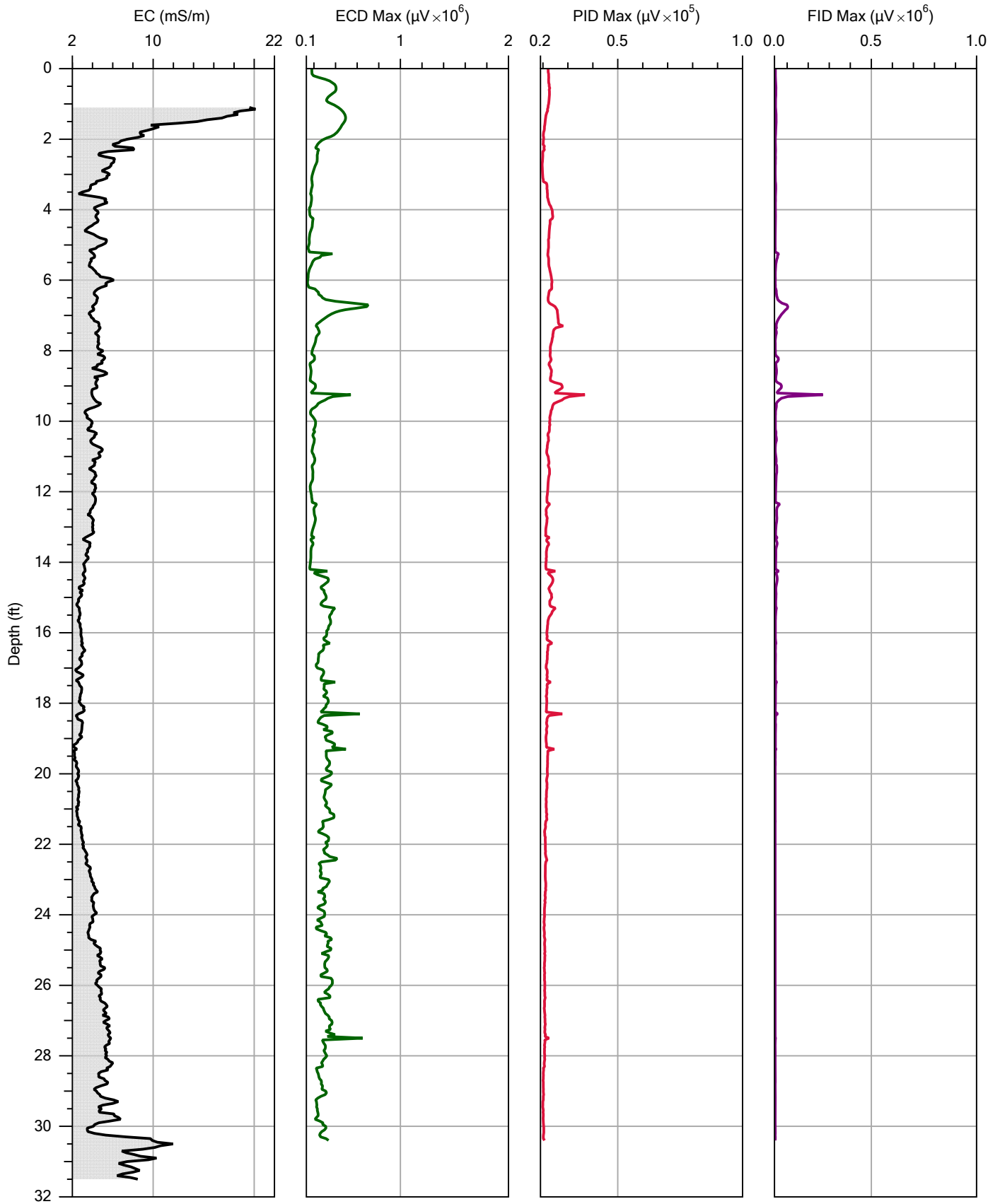
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

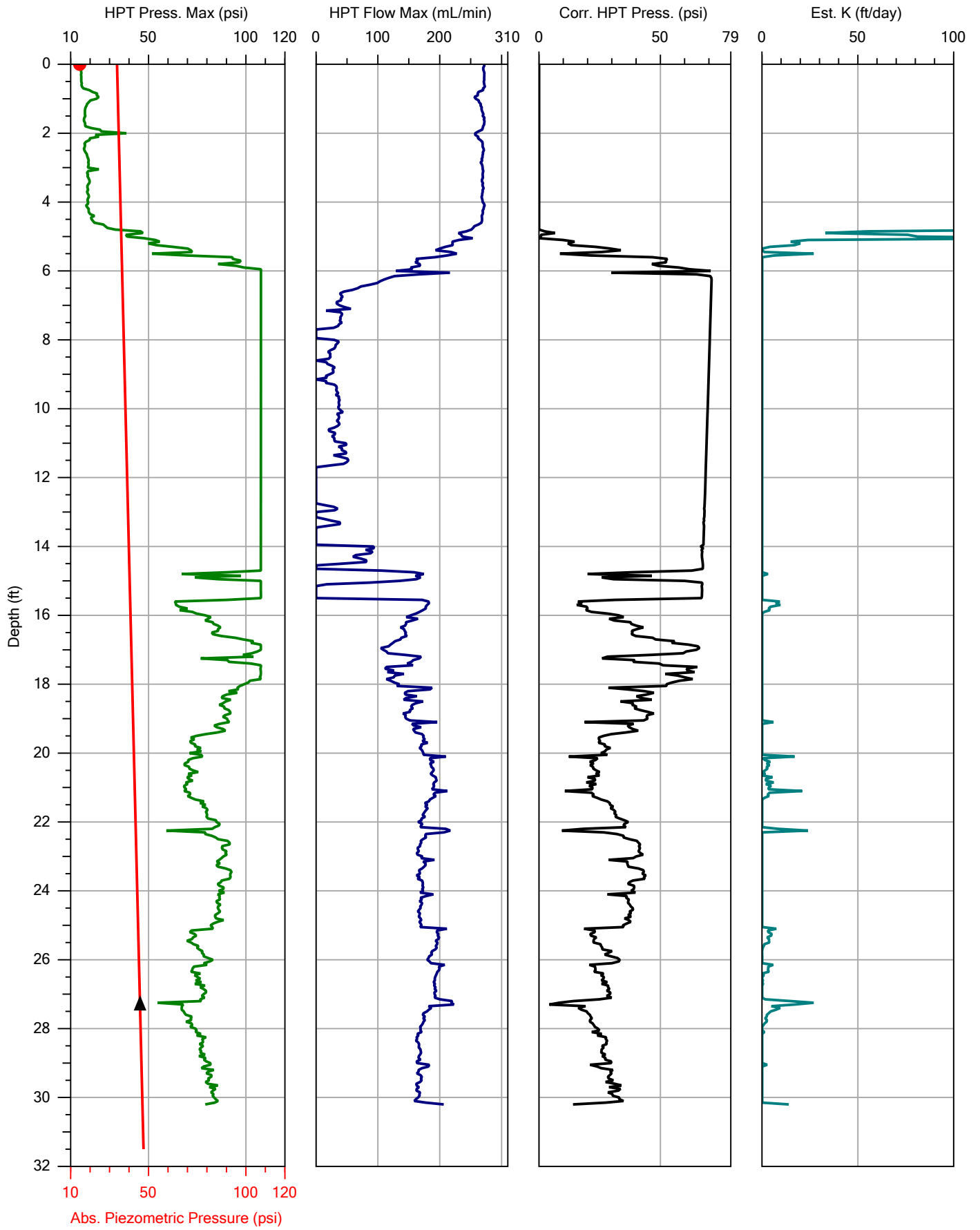
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

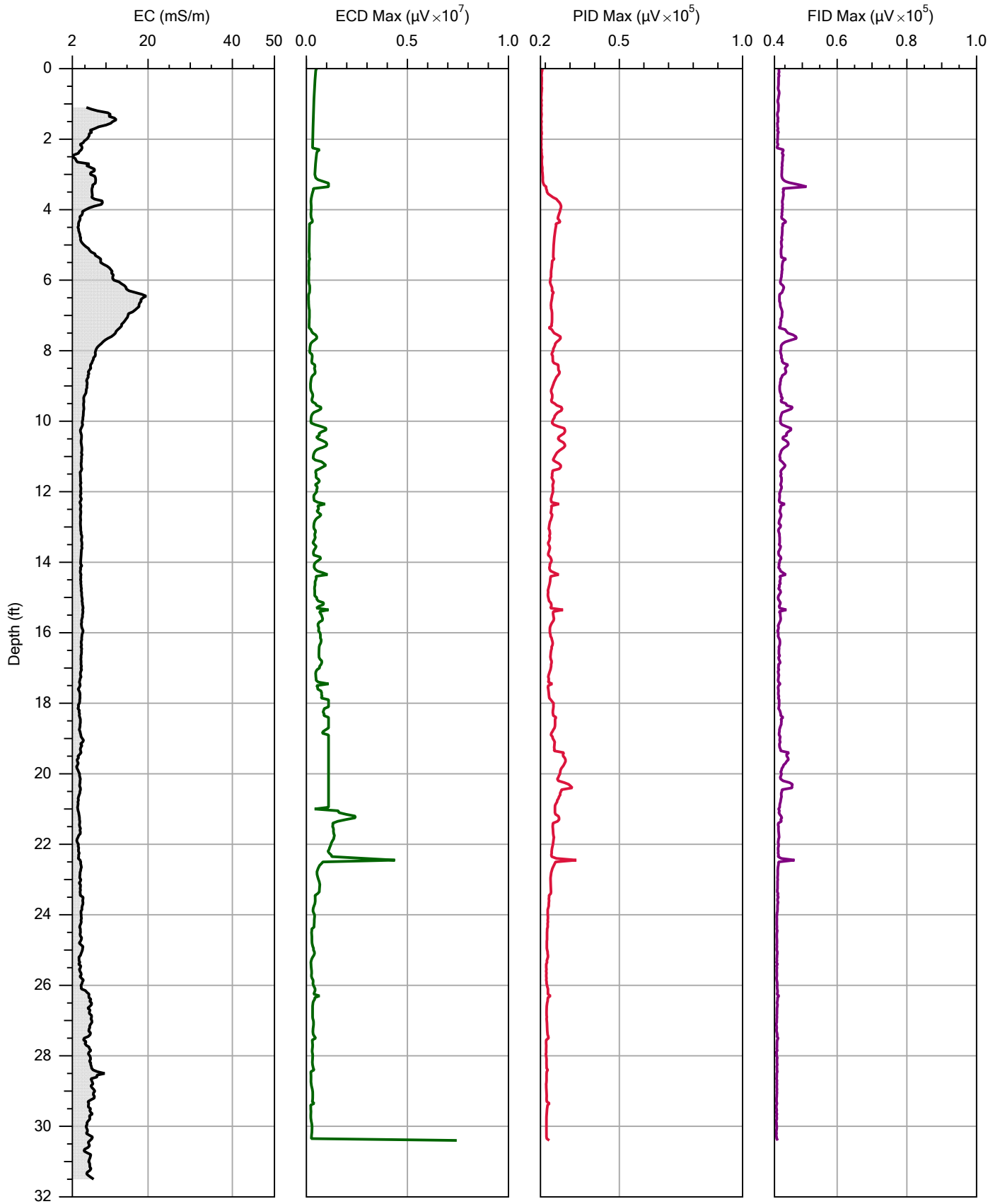
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

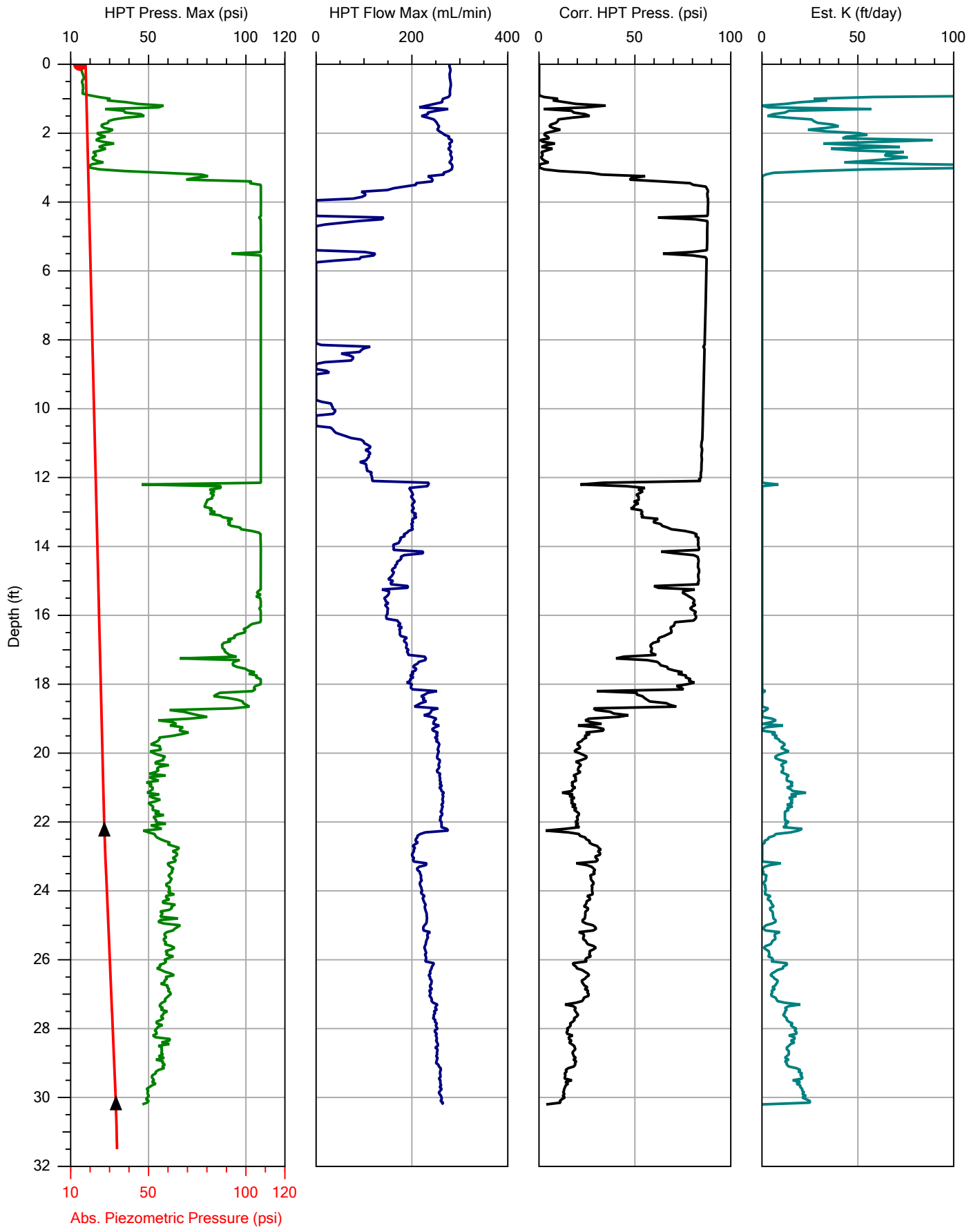
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

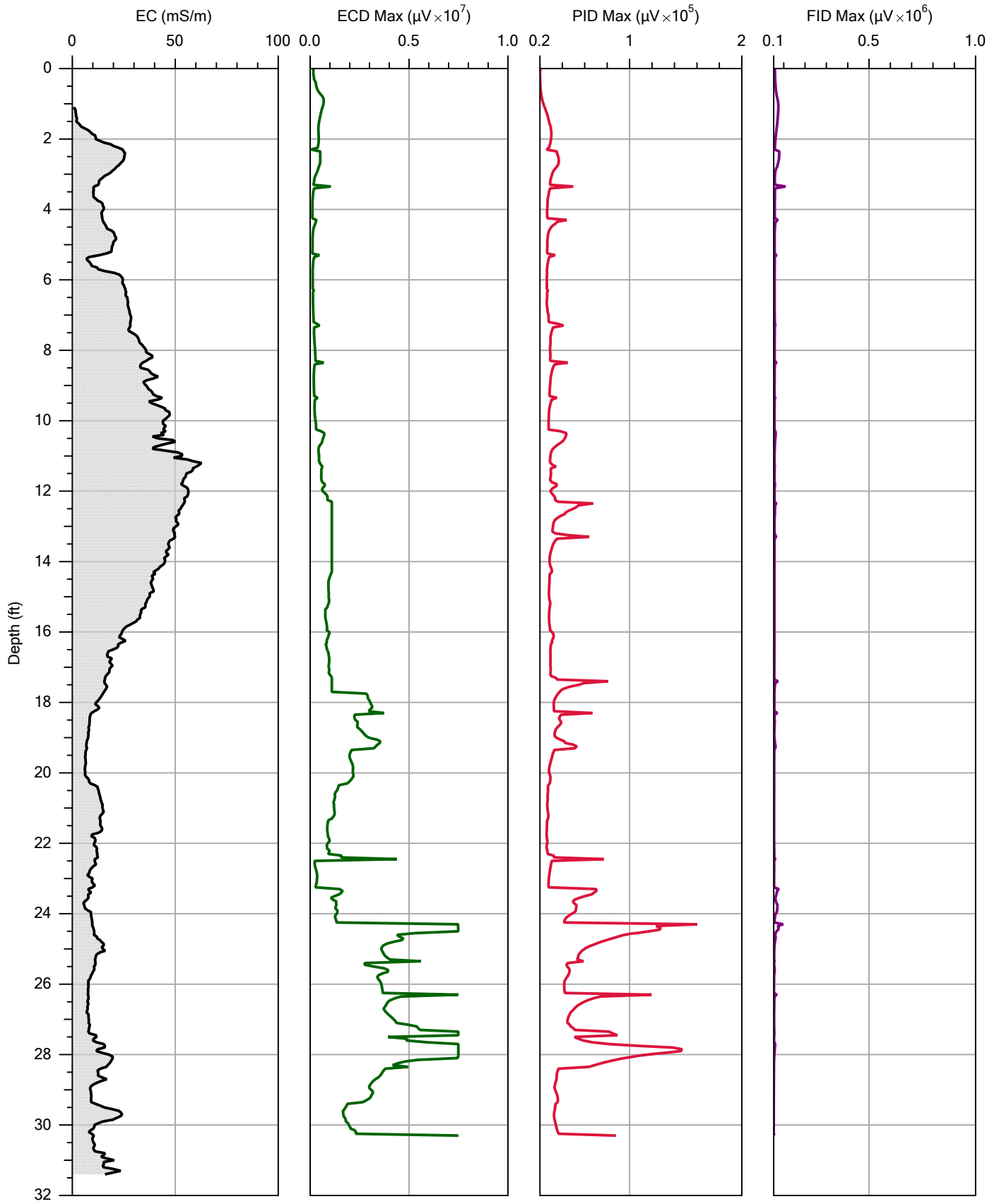
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Location:	



Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

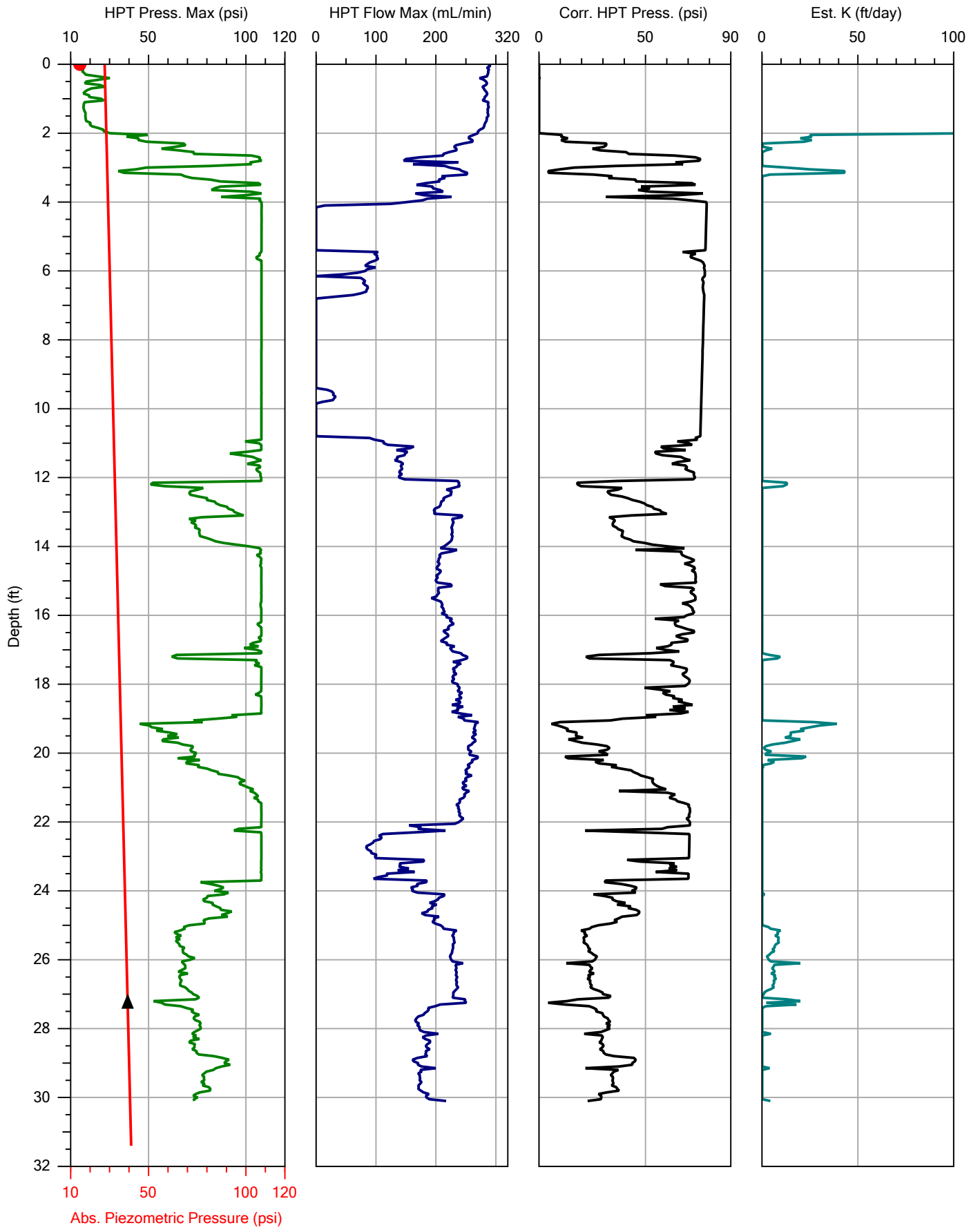
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Location:	



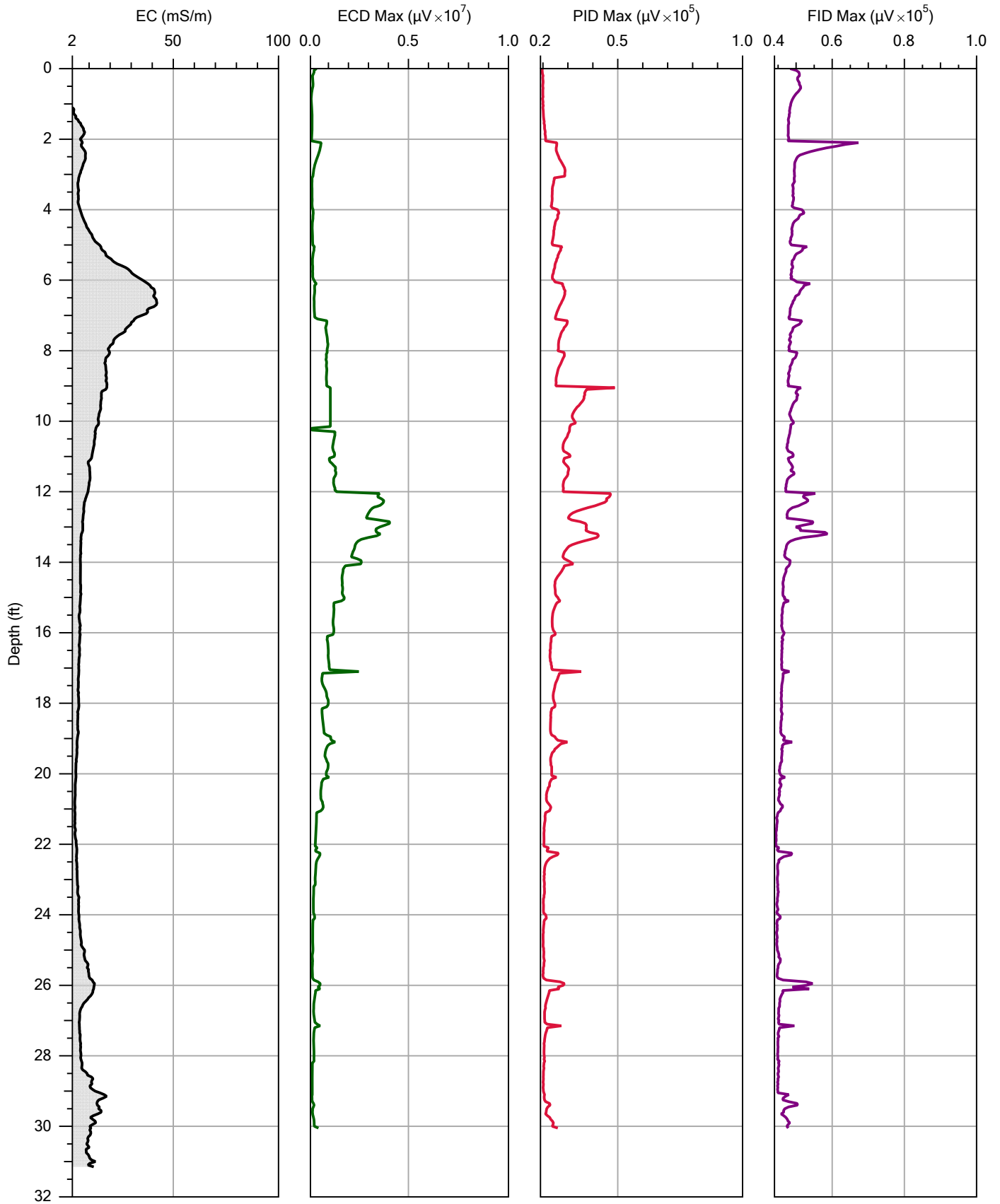
Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

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Location:	



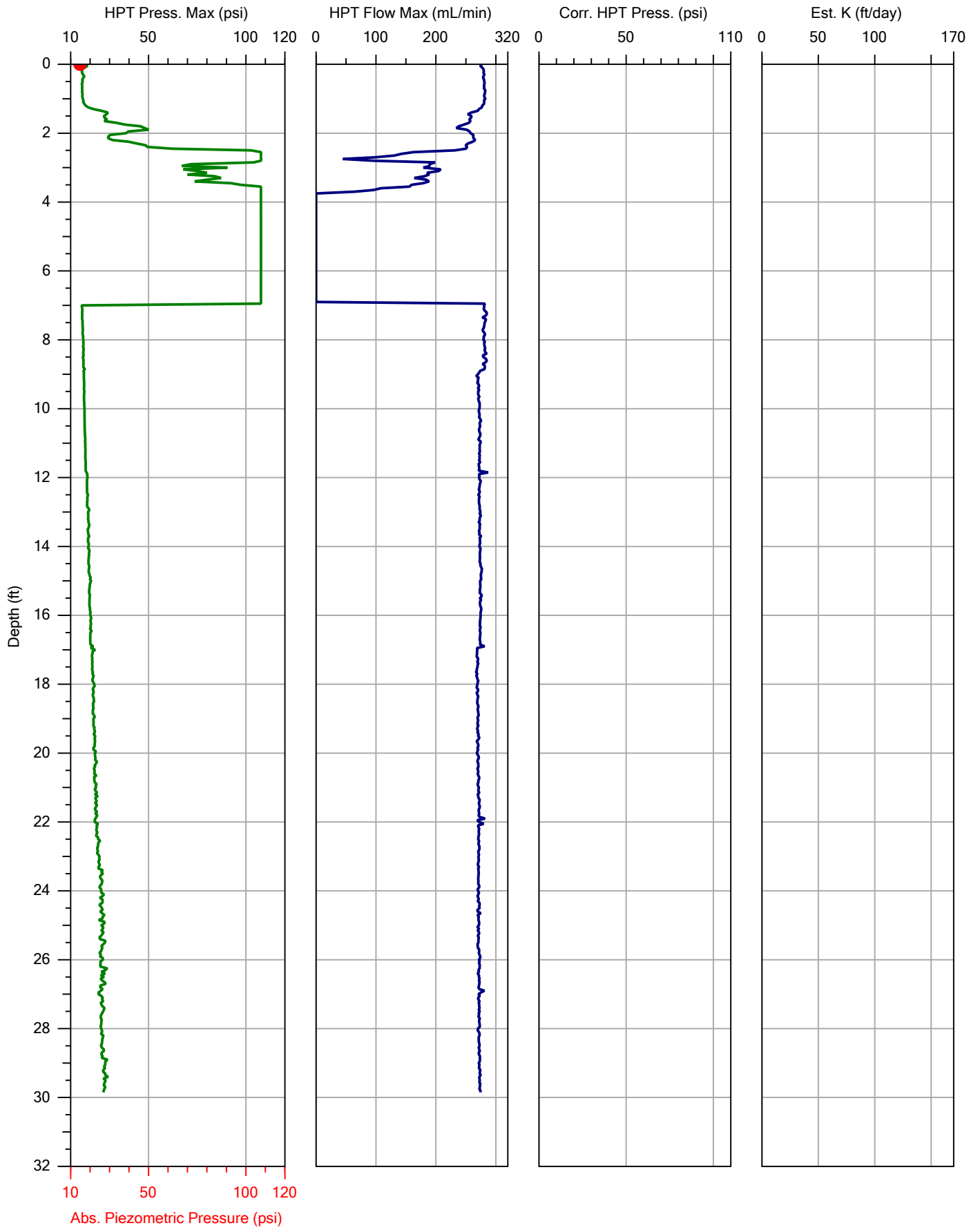
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			Location:



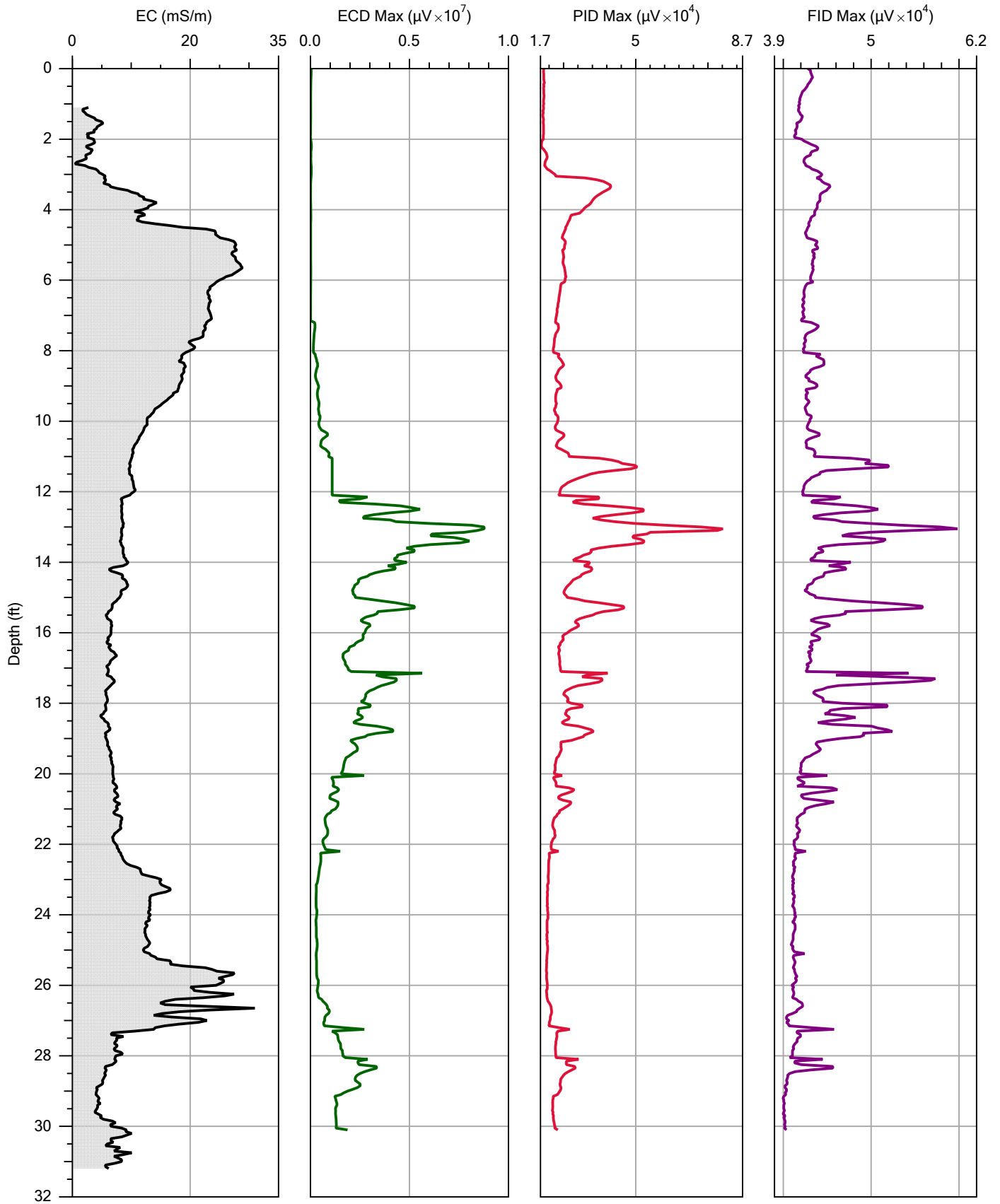
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 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

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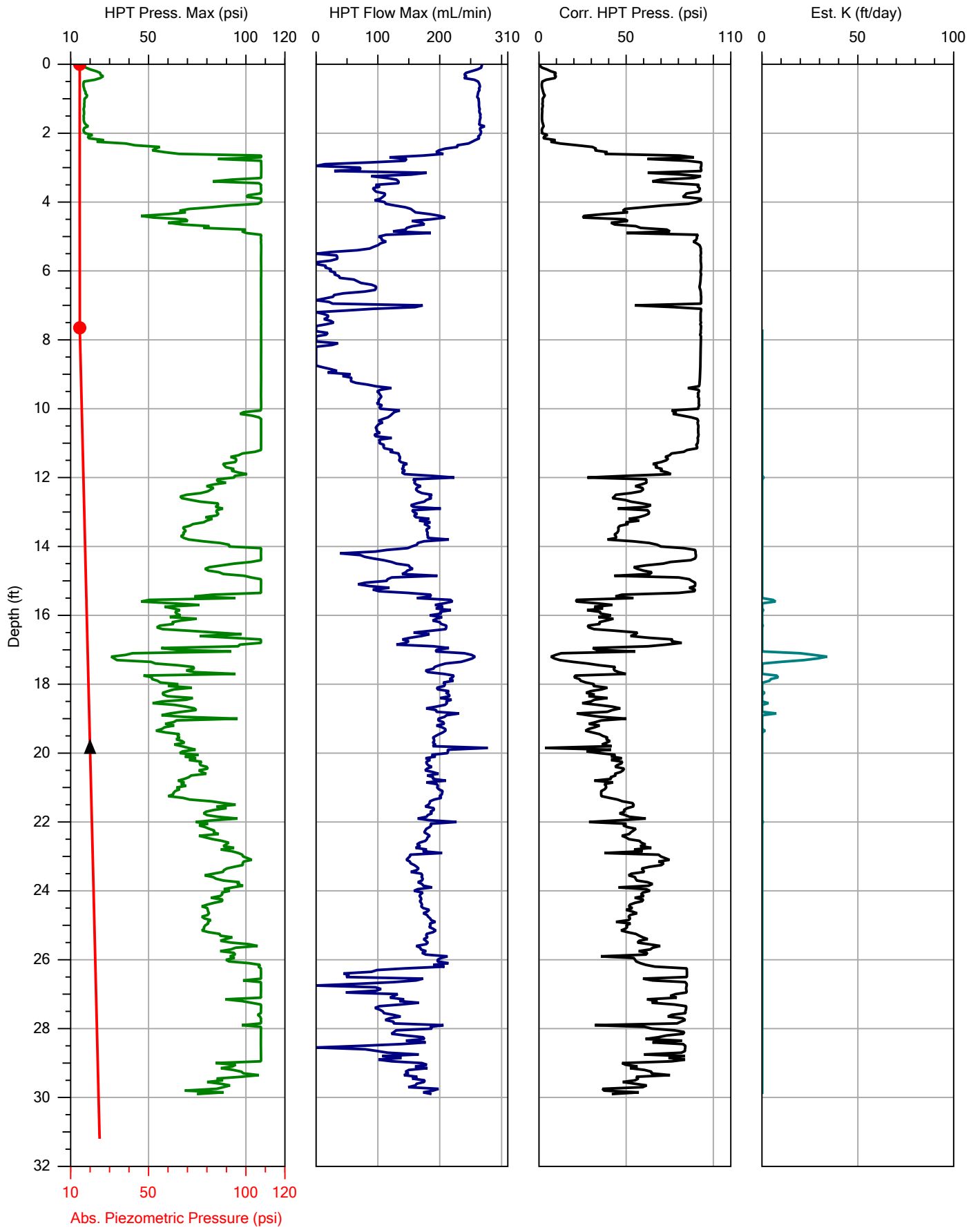
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

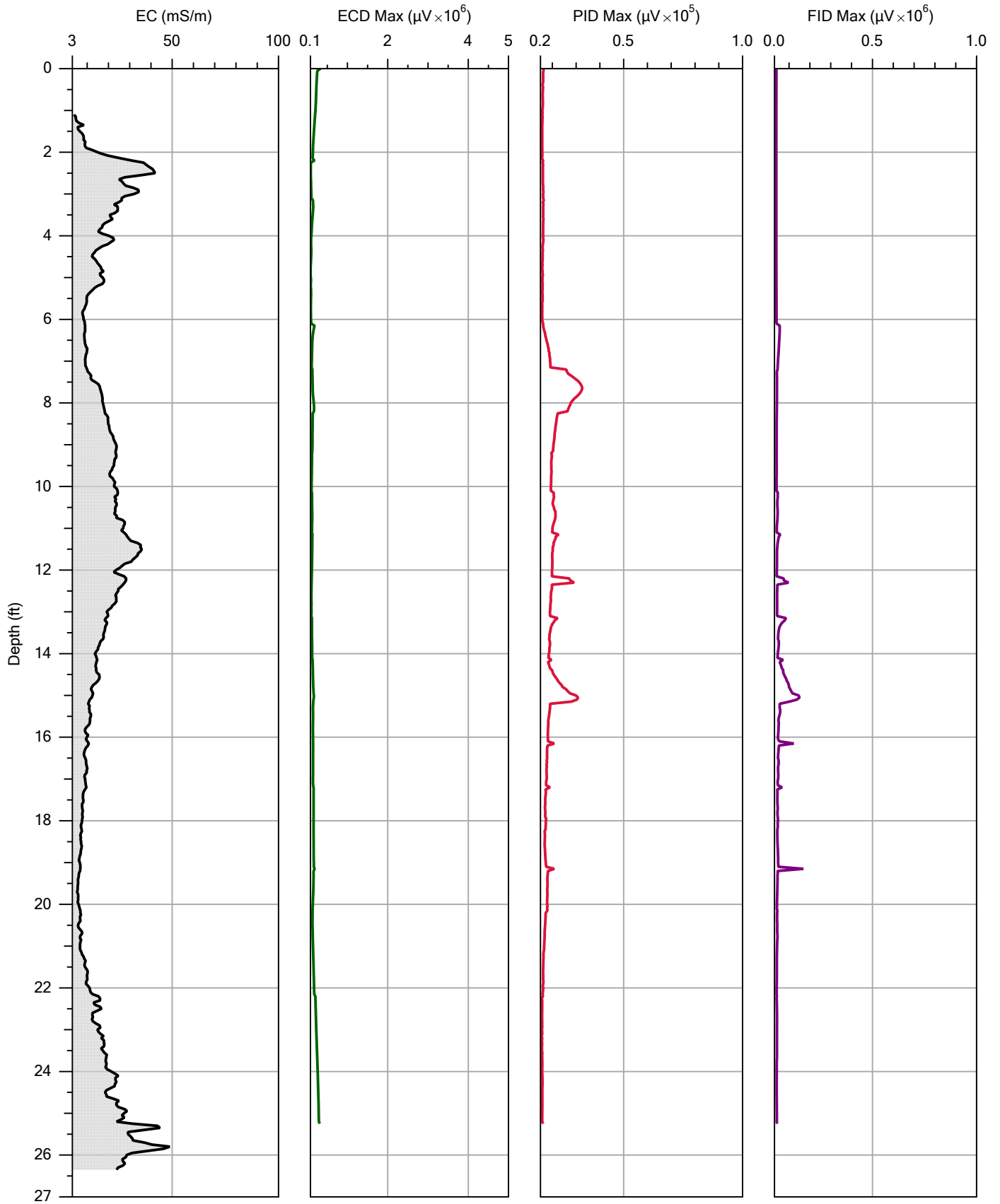
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

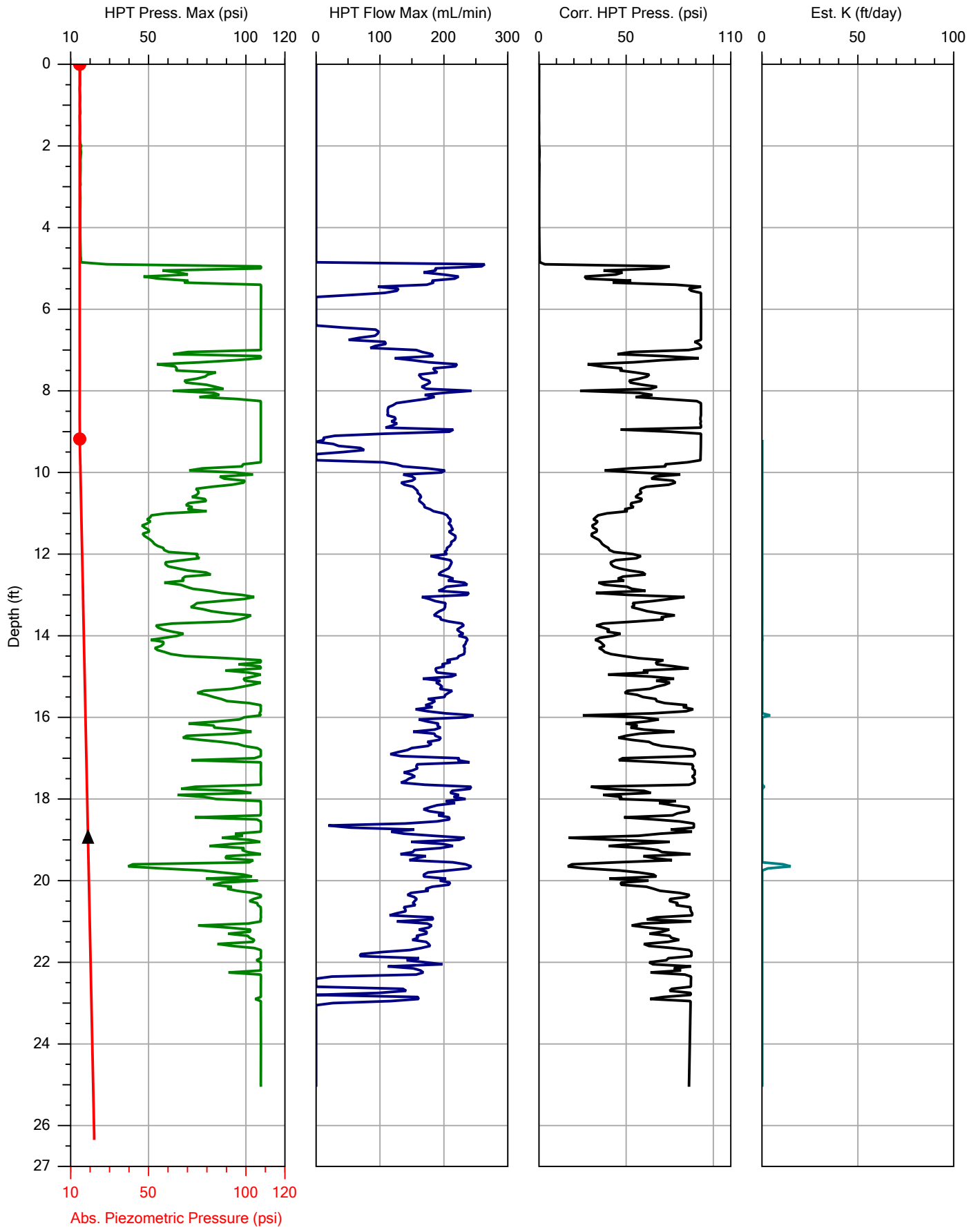
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

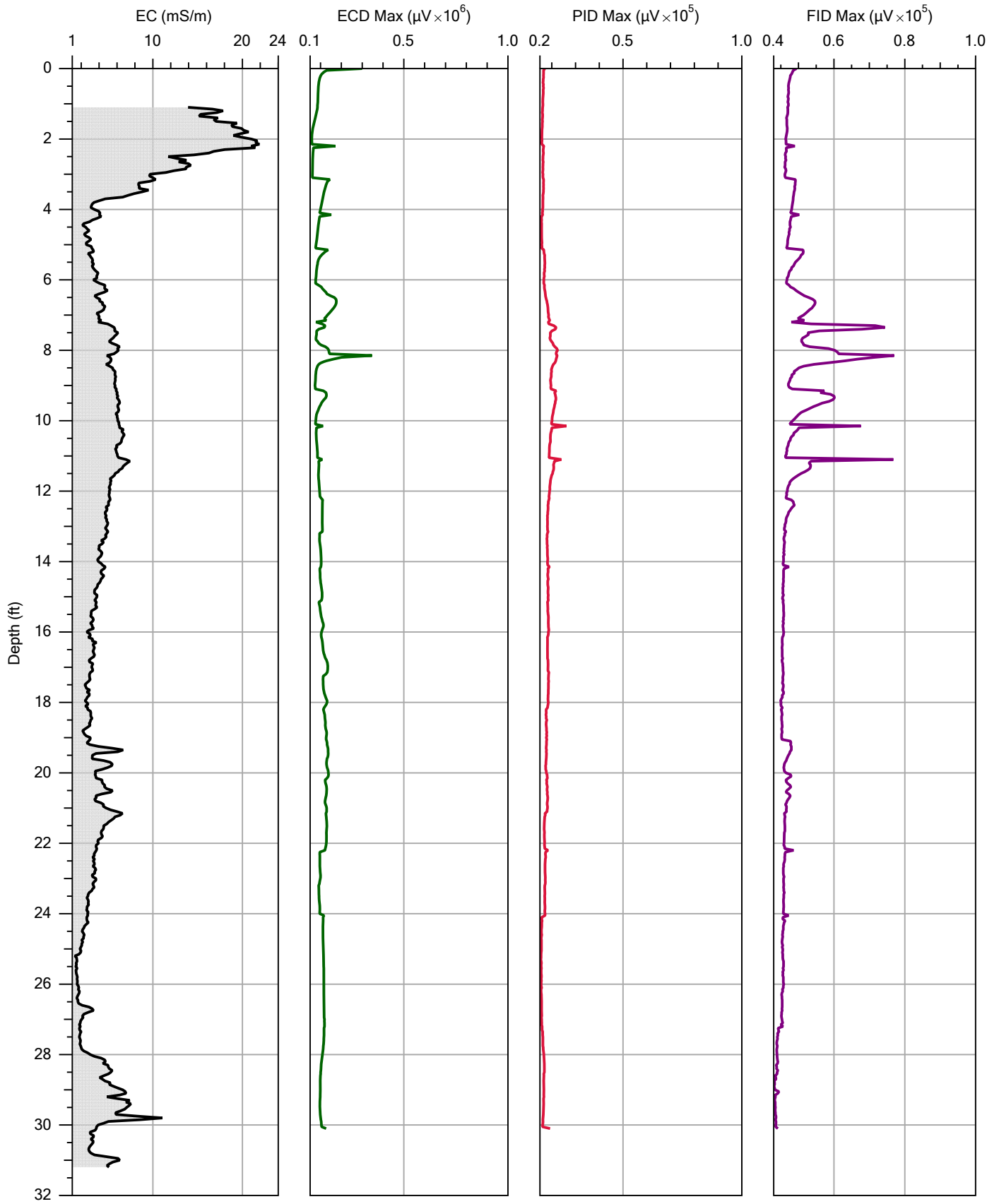
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

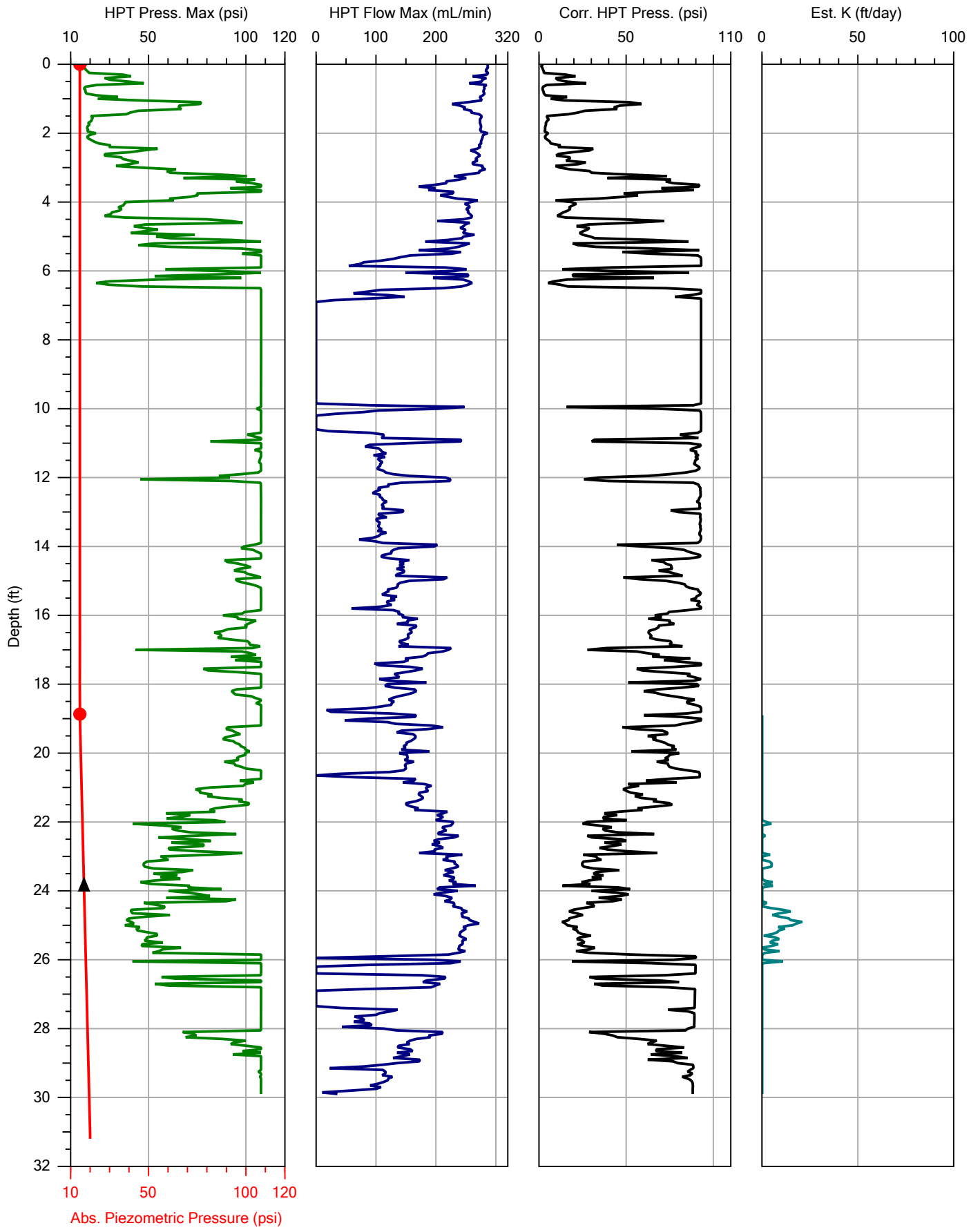
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

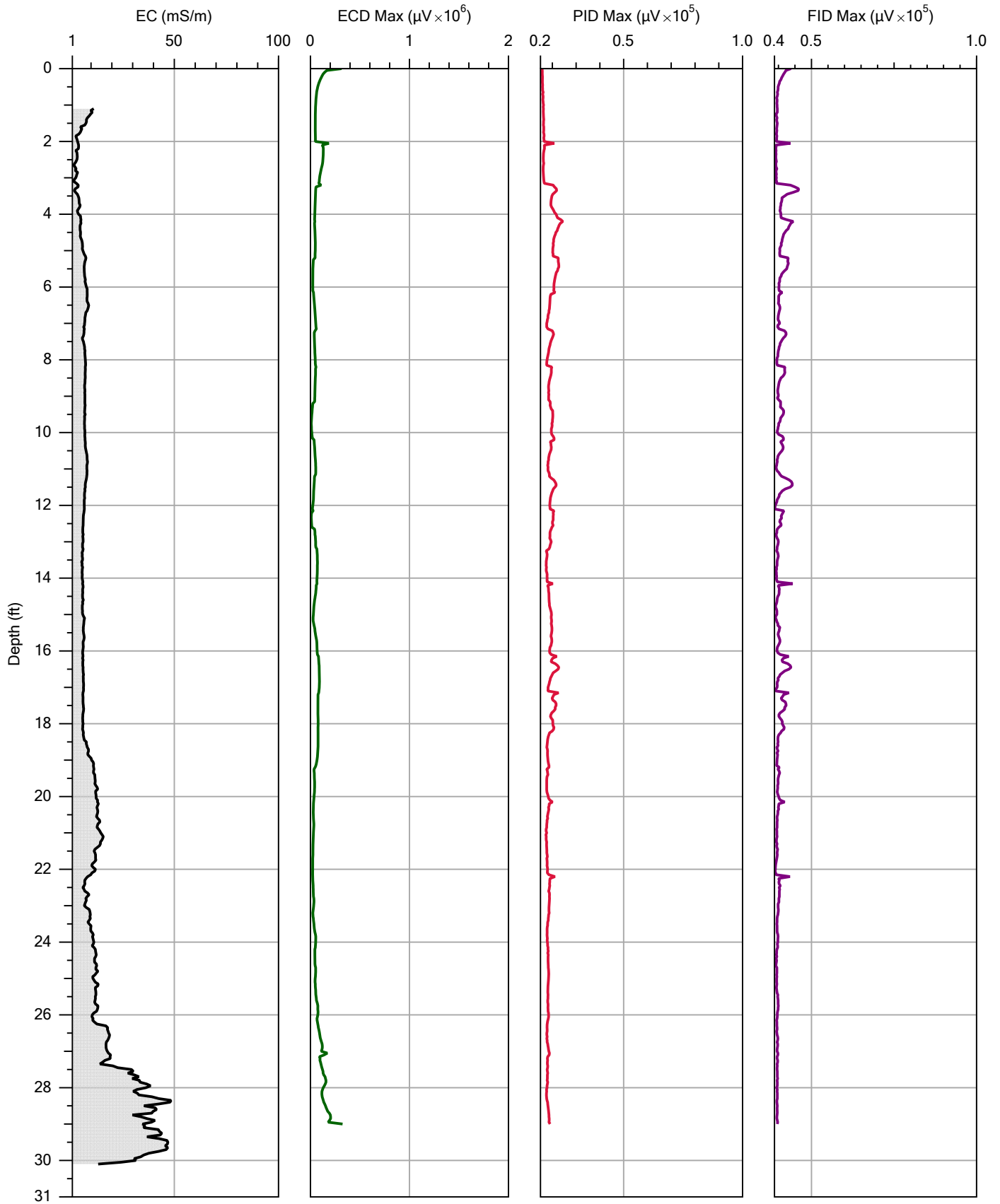
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Abs. Piezometric Pressure (psi)



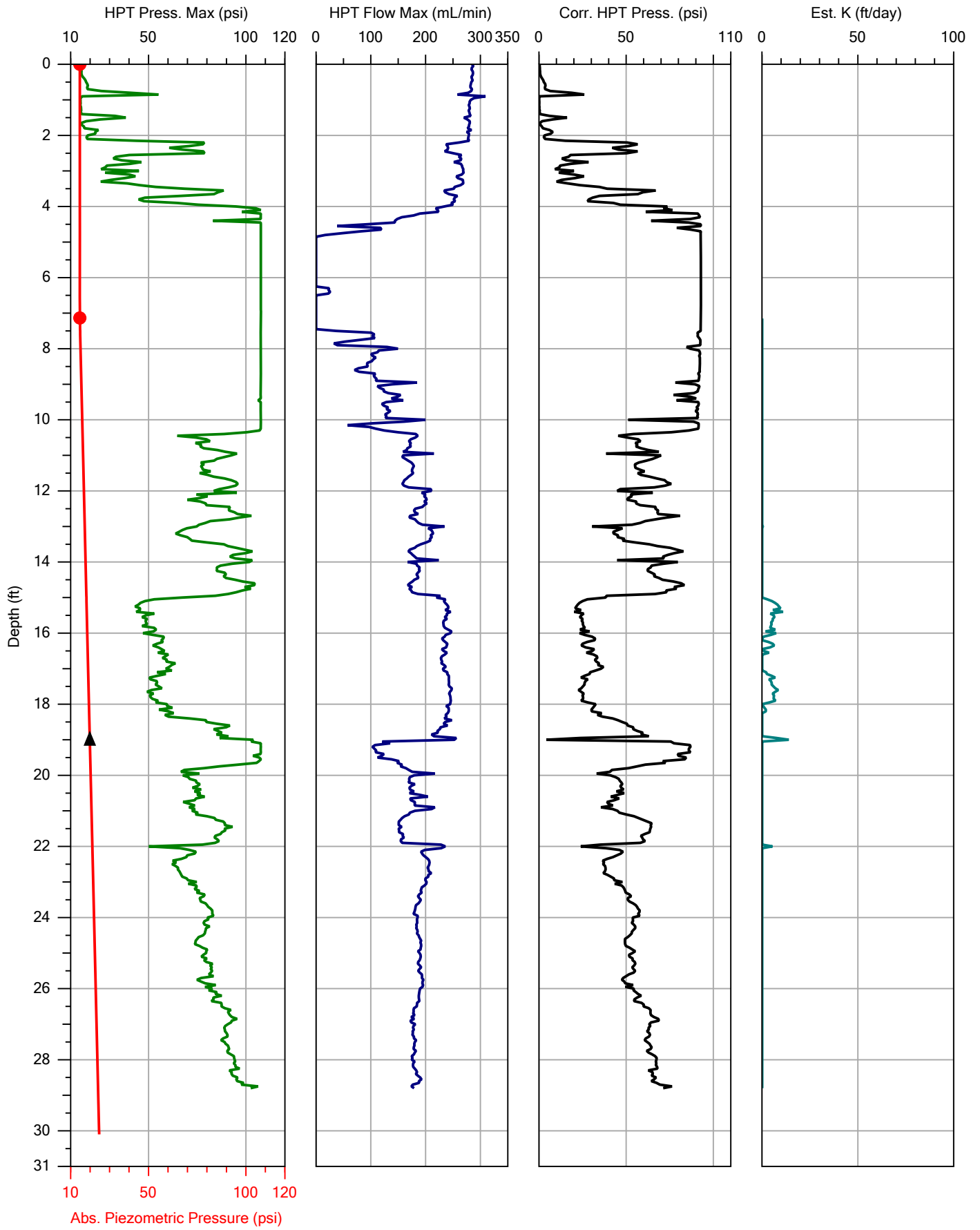
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

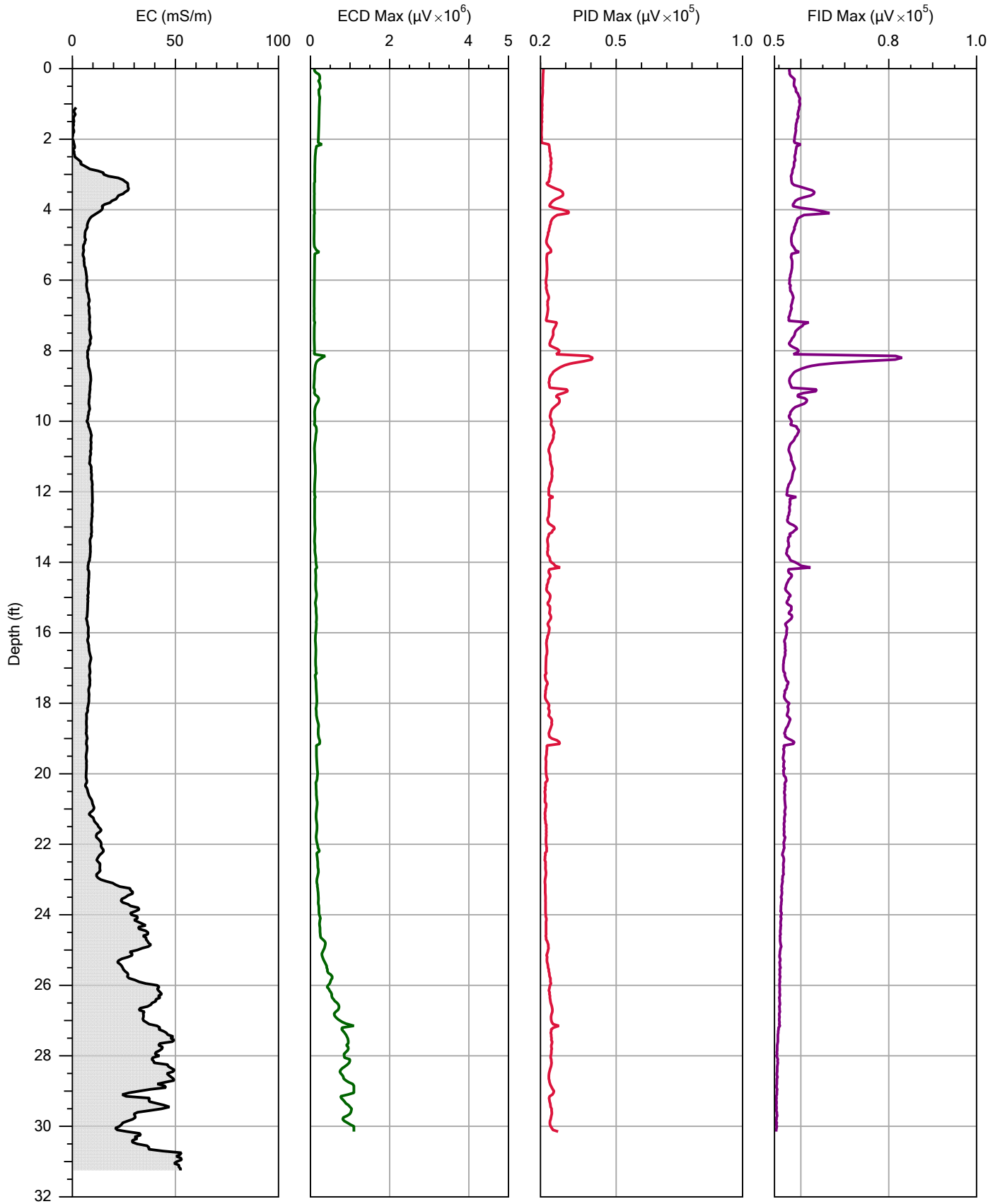
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

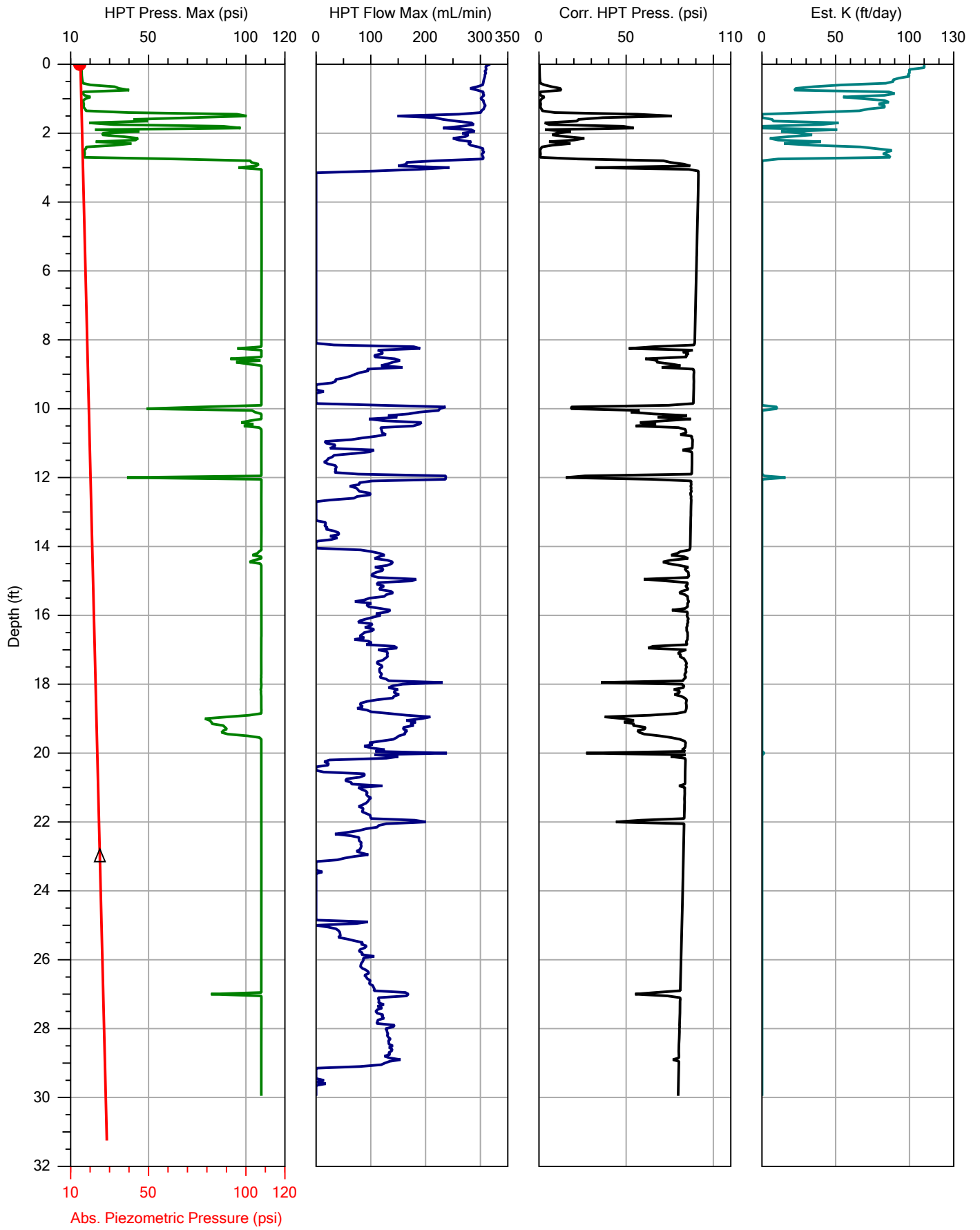
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Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

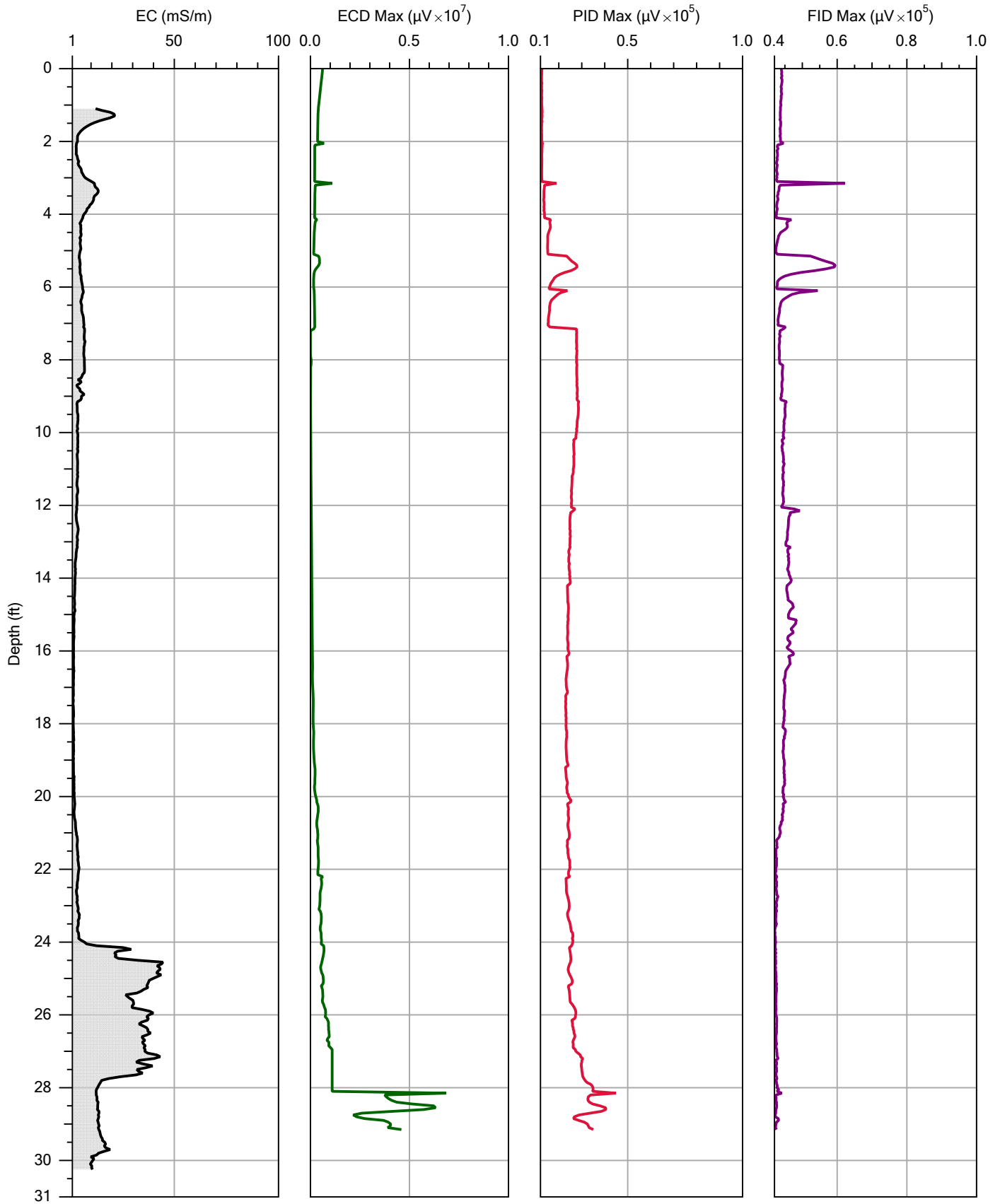
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Company: Cascade
 Project ID: Fort McClellan

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 Client: Geosyntec

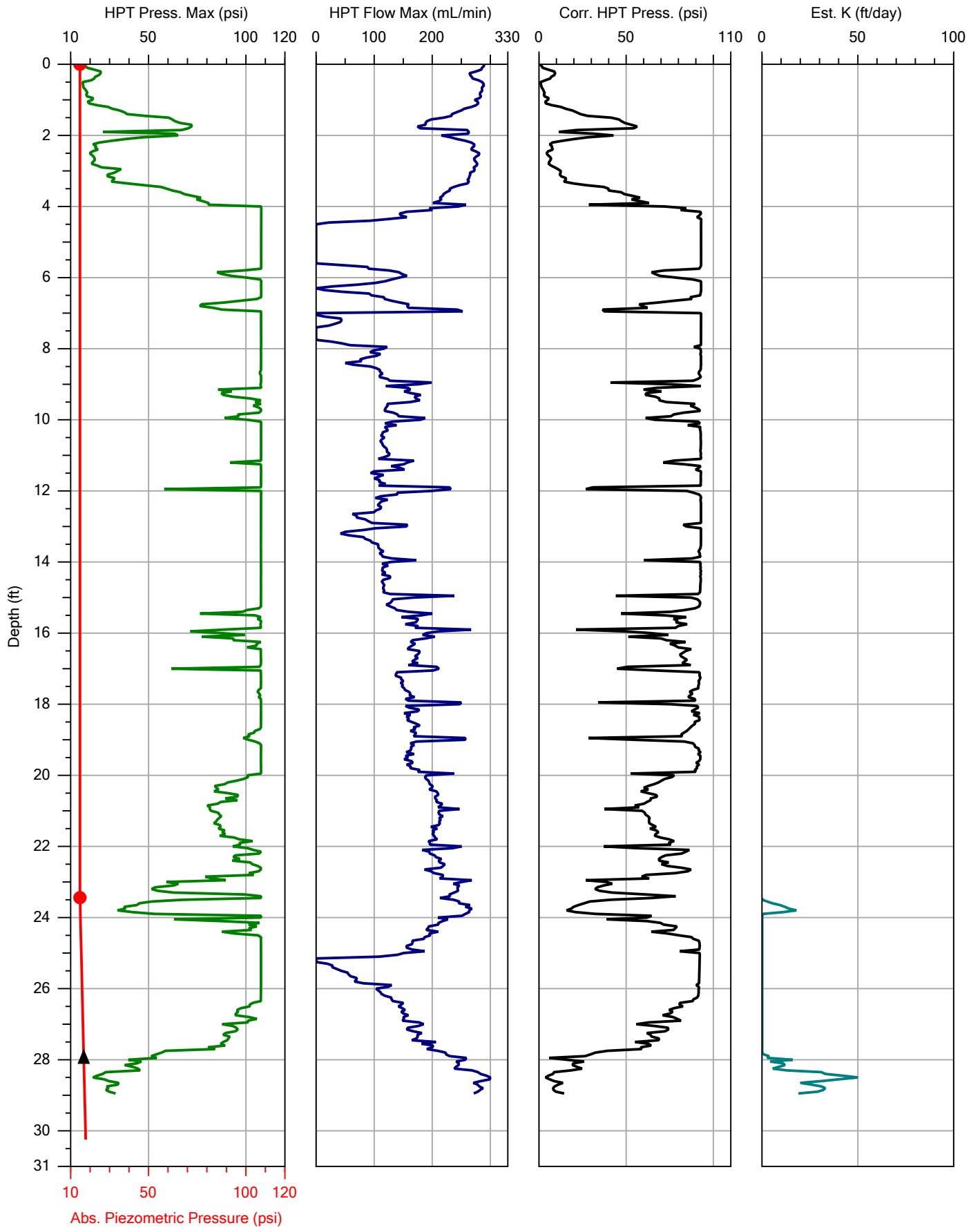
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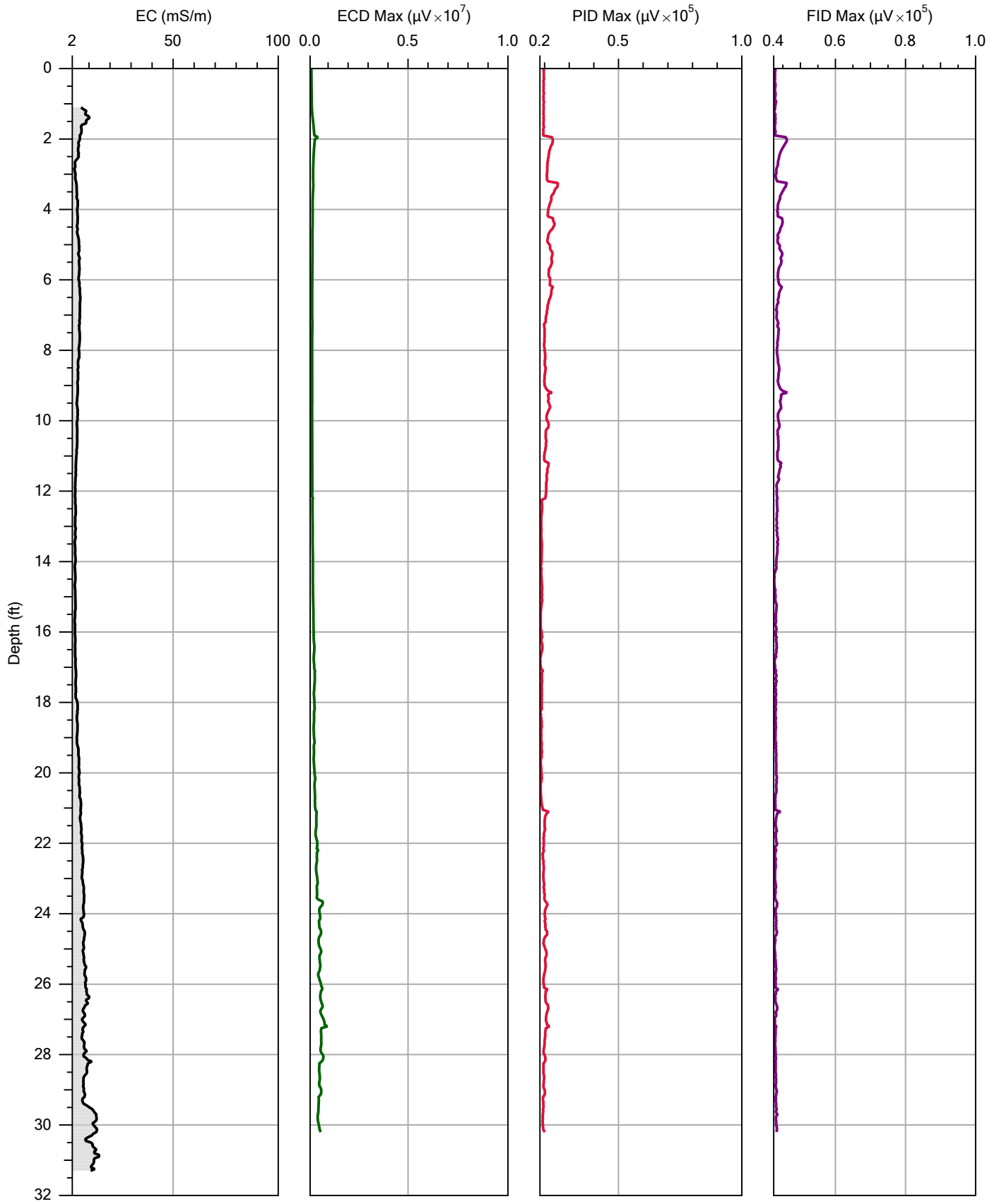
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 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

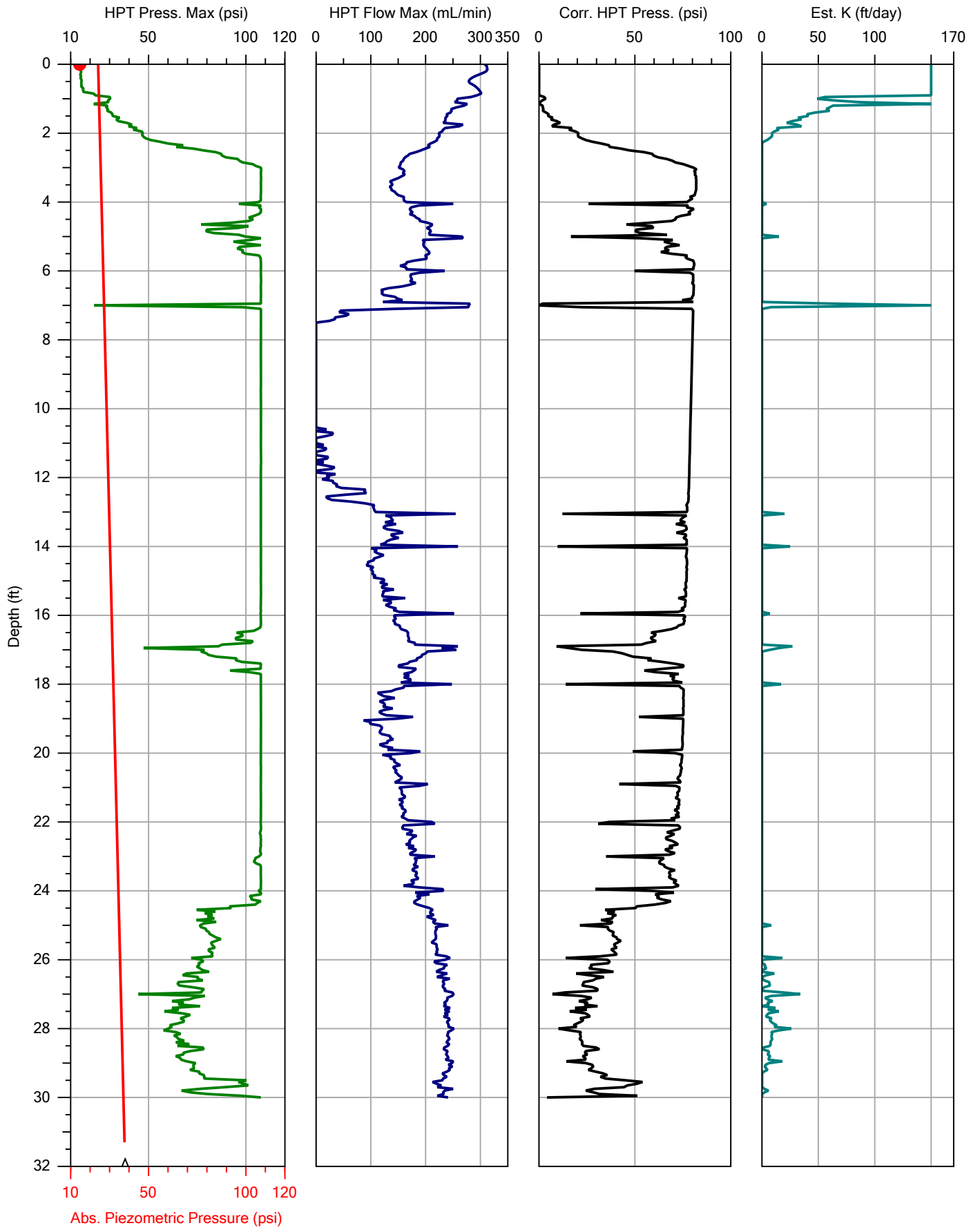
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Project ID:	Fort McClellan	Client:	Geosyntec	Date:	09/10/16
				Location:	



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Project ID:	Fort McClellan	Client:	Geosyntec	Date:	09/10/16
				Location:	



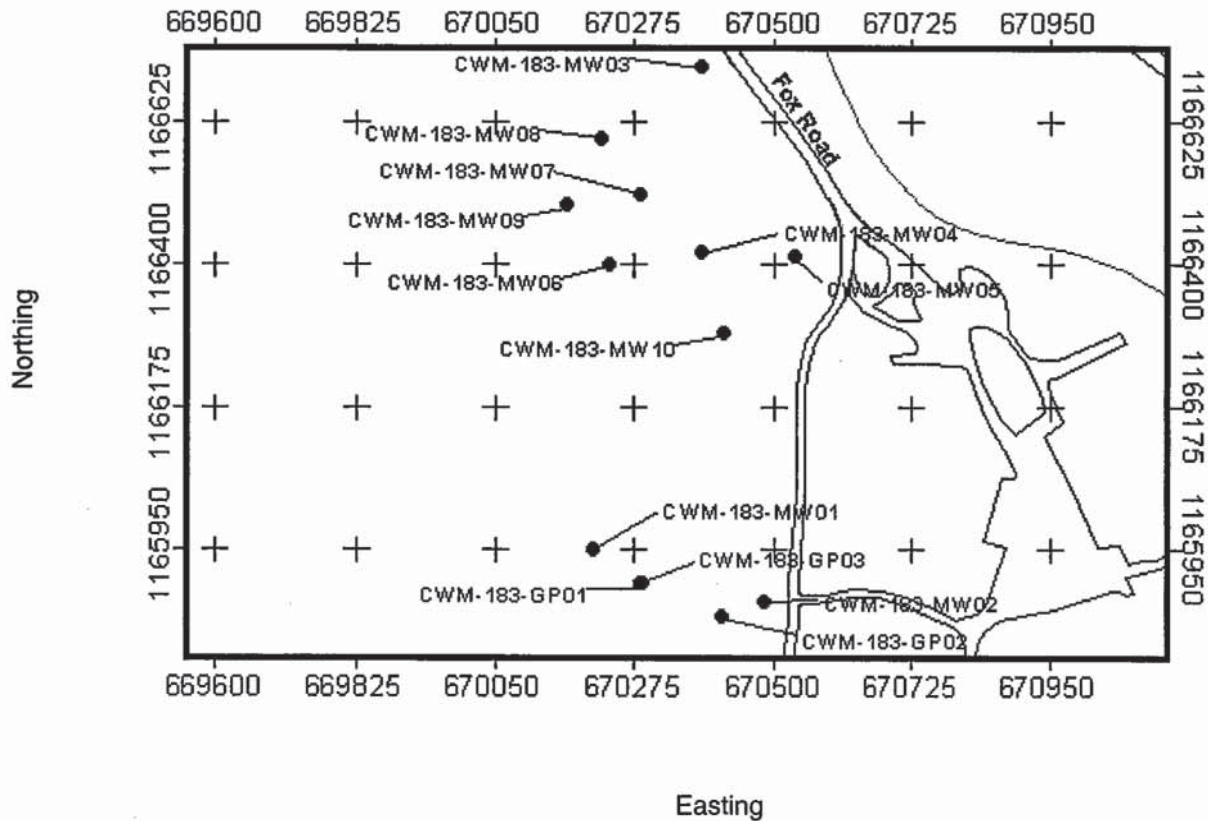
Company: Cascade
 Project ID: Fort McClellan

Operator: Dan F
 Client: Geosyntec

File:	MIP-015.MHP
Date:	09/10/16
Location:	

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER CWM-183-MW07	
1. Company name: IT Corporation		2. Drill Subcontractor: ESN/Miller Drilling Company		Sheet 1 of 3 sheets	
3. Project: Fort McClellan			4. Location: Calhoun County, Alabama		
5. Name of driller: Sammy McDaniel/Glen Bilbrey			6. Mfr. designation of drill: Geoprobe/CME-550X		
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP - 4"x2" Acetate-Lined Sampler HSA - 5"x4.25" ID Augers, 2"x2" Steel Split Spoons			8. Hole location: Training Area T-6 (Naylor Field), Parcel 183		
			9. Surface elevation (feet above mean sea level): 798.83		
12. Overburden thickness (feet bgs): 18			15. Depth groundwater encountered (feet bgs): 16		
13. Depth drilled into rock (feet bgs): 0.1			16. Depth to water and elapsed time after drilling completed (feet bgs): Dry on 11/19/01		
14. Total depth of hole (feet bgs): 18.1			17. Other water level measurements (specify): NA		
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA	
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	21. Total core recovery:
	X	X	CWM Breakdown	SVOCs	NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
		2" Permanent	Stick-up	Kyle Wilson/Adam Day	

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: CWM-183-MW07

HTRW DRILLING LOG (Continuation Sheet)













HOLE NUMBER: CWM-183-MW07

Project: Fort McClellan

Geologist: Kyle Wilson/Adam Day

Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
-----------	-----------	------------------------------	------------------	---------	-----------------------------	------------------------------------	---------------------------	-----------------	-------------

	0	cl: Light brown to yellowish orange, slightly moist, stiff CLAY, some dry, highly weathered Shale, trace coarse subangular quartz Gravel.			Organic Vapor = 0.0ppm		TG0017		Rec 3.3'/4.0' (0-4' bgs)
	1		cl		Organic Vapor = 0.0ppm		TG0018		
	2		cl		Organic Vapor = 0.0ppm				
	3		cl		Organic Vapor = 0.0ppm				
795	4	cl: Yellowish orange to light brown, dry, stiff CLAY, little pink to light brown subangular, medium grained fine Gravel, trace reddish brown to black mottling, some medium quartz Sand.	cl		Organic Vapor = 5.3ppm			12 21 20 22	Direct push refusal at 4' bgs Rec 1.7'/2.0' (4-6' bgs)
	5		cl						
	6	NA: No recovery.	NA						
	6	cl: Yellowish orange to light brown, dry, stiff CLAY, little pink to light brown subangular, medium grained, fine Gravel, trace reddish brown to black mottling, some medium quartz Sand.	cl		Organic Vapor = 1.5ppm			17 15 28 49	Rec 2.0'/2.0' (6-8' bgs)
	7		cl						
	8	cl: Yellowish orange to light brown, dry, stiff CLAY, little pink to light brown subangular, medium grained, fine Gravel, trace reddish brown to black mottling, some medium quartz Sand.	cl		Organic Vapor = 4.9ppm			60 75 96 67	Rec 1.5'/2.0' (8-10' bgs)
790	9		cl						
	10	NA: No recovery.	NA						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW07

Project: Fort McClellan

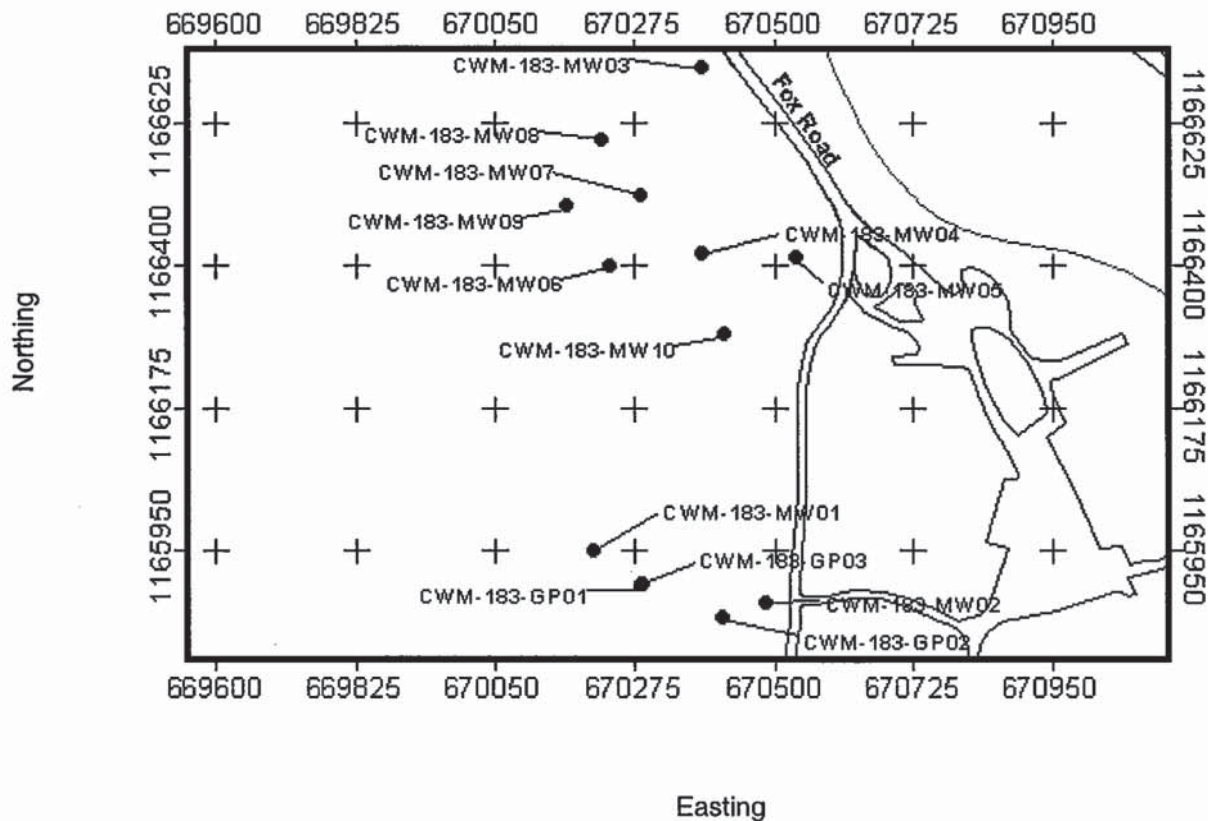
Geologist: Kyle Wilson/Adam Day

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11	cl: Yellowish orange to light brown, dry, stiff CLAY, little pink to light brown, subangular medium grained fine Gravel, trace reddish brown to black mottling, some medium quartz Sand.	cl		Organic Vapor = 0.0ppm			5 14 12 15	Rec 2.0'/2.0' (10-12' bgs)
	12	NA: No sample collected for lithologic description.	NA						
	13		NA						
785	14	cl: Yellowish orange to light brown, moist, stiff CLAY, little pink to light brown subangular, medium grained fine Gravel, trace reddish brown to black mottling, some medium quartz Sand.	cl		Organic Vapor = 0.0ppm			6 6 9 10	Rec 2.0'/2.0' (14-16' bgs)
	15		cl						
	16	NA: No sample collected for lithologic description.	NA						Groundwater encountered at 16' bgs
	17		NA						
	18	Is: LIMESTONE, highly weathered, highly fractured, soft, fine grained, light gray, reacts with HCl.							Rec 0.1'/0.1' (18-18.1' bgs) Bottom of borehole at 18.1' bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER CWM-183-MW09	
1. Company name: IT Corporation		2. Drill Subcontractor: ESN/Miller Drilling Company		Sheet 1 of 4 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Sammy McDaniel/Glen Bilbrey		6. Mfr. designation of drill: Geoprobe/CME-550X			
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP - 4'x2" Acetate-Lined Sampler HSA - 5'x4.25" ID Augers, 2'x2" Steel Split Spoons		8. Hole location: Training Area T-6 (Naylor Field), Parcel 183			
		9. Surface elevation (feet above mean sea level): 806.95			
		10. Date started: 11/12/01		11. Date completed: 11/26/01	
12. Overburden thickness (feet bgs): 25		15. Depth groundwater encountered (feet bgs): 25			
13. Depth drilled into rock (feet bgs): 0.1		16. Depth to water and elapsed time after drilling completed (feet bgs): Dry after 24 hours			
14. Total depth of hole (feet bgs): 25.1		17. Other water level measurements (specify): NA			
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA	
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)
	X	X	CWM Breakdown	SVOCs	
21. Total core recovery:					NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
		2" Permanent	Stick-up	Cindy Levaas/Adam Day	

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: CWM-183-MW09

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW09

Project: Fort McClellan

Geologist: Cindy Levaas/Adam Day

Sheet 3 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11		cl						
795	12	NA: No sample collected for lithologic description.							Direct push terminated at 12' bgs
	13		NA						
	14	cl: Yellowish orange, moist, soft to medium stiff CLAY.			Organic Vapor = 0.0ppm			3 5 8 7	Rec 2.0'/2.0' (14-16' bgs)
	15		cl						
	16	NA: No sample collected for lithologic description.							
790	17		NA						
	18								
	19	cl: Yellowish orange, moist, soft to medium stiff CLAY.			Organic Vapor = 0.0ppm			3 9 7 10	Rec 1.0'/2.0' (19-21' bgs)
	20	NA: No recovery.	cl						

TG0032



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW09

Project: Fort McClellan

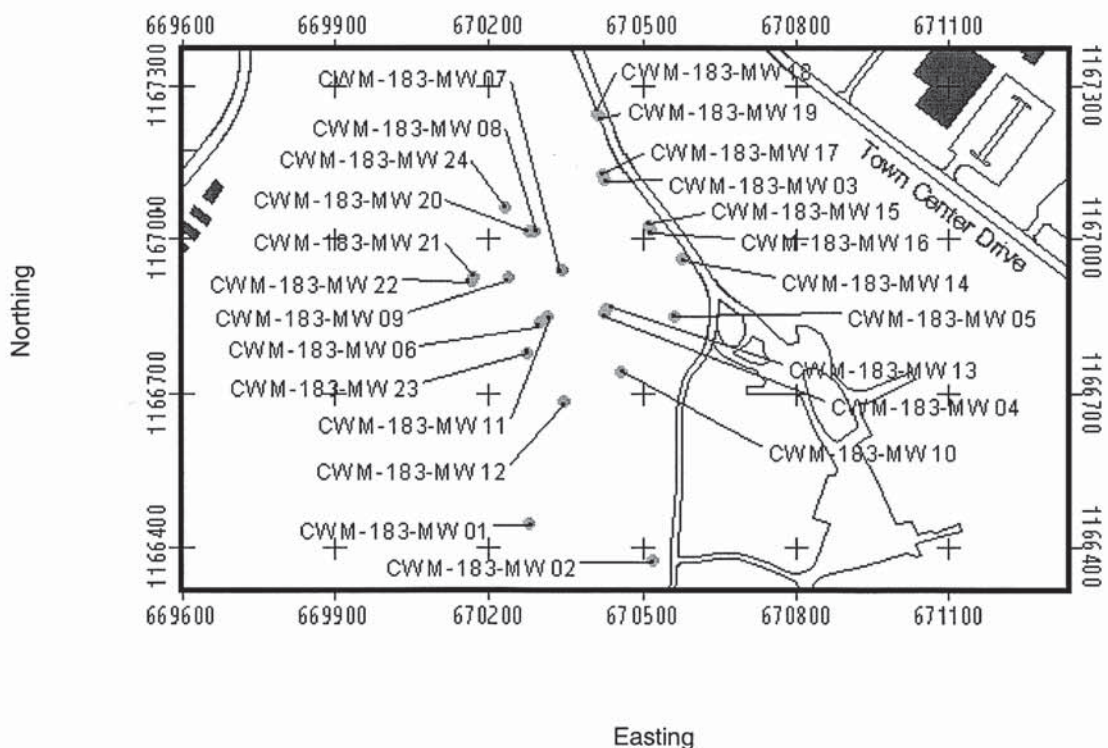
Geologist: Cindy Levaas/Adam Day

Sheet 4 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	21	NA: No sample collected for lithologic description.	NA						
785	22		NA						
	23								
	24	cl: Light brown to brown, moist to wet, very soft to soft CLAY, some fine Sand.	cl		Organic Vapor = 0.0ppm			2 2	Rec 1.0'/1.0' (24-25' bgs) Rec 0.1'/0.1' (25-25.1' bgs) Groundwater encountered at 25' bgs Bottom of borehole at 25.1' bgs
	25	ls: LIMESTONE, moderately hard, microcrystalline, fractured, dark gray to black.	ls						

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER CWM-183-MW23	
1. Company name: Shaw Environmental, Inc.		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 6 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Brian Glass/Jerry Ray		6. Mfr. designation of drill: Hand Auger/CME-75			
7. Sizes and types of drilling and sampling equipment: Hand Auger, Hollow Stem Auger HSA - 5'x4.25" ID Augers, 2'x2" Steel Split Spoons		8. Hole location: Training Area T-6 (Naylor Field), Parcel 183			
		9. Surface elevation (feet above mean sea level): 819.93			
		10. Date started: 12/02/02		11. Date completed: 12/06/02	
12. Overburden thickness (feet bgs): 50		15. Depth groundwater encountered (feet bgs): 38			
13. Depth drilled into rock (feet bgs): 0		16. Depth to water and elapsed time after drilling completed (feet bgs): 30.9 ~48 hours			
14. Total depth of hole (feet bgs): 50		17. Other water level measurements (specify): NA			
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA	
	NA	NA	NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	21. Total core recovery: NA
	Yes	Yes	CWM Breakdown	Orthosulfur SVOCs	
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
	NA	2" Permanent	NA	Cindy Levaas/Kyle Wilson	

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: CWM-183-MW23

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW23

Project: Fort McClellan

Geologist: Cindy Levaas/Kyle Wilson

Sheet 2 of 6 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
0	0	cl: Light brown, moist, medium stiff to stiff CLAY, some Silt.	cl		Organic Vapor = 5.8ppm		SE0021		Hand auger - Shaw - 12/2/02
1	1	cl: Light brown to yellowish orange, moist, medium stiff to stiff CLAY, little Silt.	cl		Organic Vapor = 0.0ppm				
2	2		cl						
3	3		cl						
4	4	cl: Light brown to dark gray, slightly moist, medium stiff CLAY and SILT.	cl		Organic Vapor = 0.0ppm				
815	5	NA: No sample collected for lithologic description.	NA						Hand auger refusal at 5' bgs HSA - Miller Drilling Company - 12/4/02
6	6	cl: Yellowish orange, medium stiff, slightly moist to moist CLAY, some Silt, trace coarse to fine Sand.	cl		Organic Vapor = 0.0ppm			5 8 12 15	Rec 2.0'/2.0' (6-8' bgs)
7	7		cl						
8	8	cl: Yellowish orange to light brown, medium stiff, slightly moist CLAY and SILT.	cl		Organic Vapor = 7.5ppm			50/0.5'	Rec 0.5'/0.5' (8-8.5' bgs)
9	9	NA: No sample collected for lithologic description.	NA						
810	10		NA						




HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW23

Project: Fort McClellan

Geologist: Cindy Levaas/Kyle Wilson

Sheet 3 of 6 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11	cl: Yellowish orange to light brown, medium stiff, slightly moist CLAY and SILT.	cl		Organic Vapor = 21.8ppm		SE0022	5 6 17 35	Rec 2.0'/2.0' (10-12' bgs)
	12	NA: No sample collected for lithologic description.	NA						
	13		NA						
	14		NA						
805	15	ml: Yellowish orange, medium stiff, moist CLAY and SILT.	ml		Organic Vapor = 13.8ppm			5 8 10 12	Rec 2.0'/2.0' (15-17' bgs)
	16		ml						
	17	NA: No sample collected for lithologic description.	NA						
	18	ml: Yellowish orange, medium stiff, moist CLAY and SILT.	ml		Organic Vapor = 80.3ppm			2 4 5 8	Rec 1.4'/2.0' (18-20' bgs)
	19		ml						
	20	NA: No recovery.	NA						
800	20	NA: No sample collected for lithologic	NA						



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW23

Project: Fort McClellan

Geologist: Cindy Levaas/Kyle Wilson

Sheet 4 of 6 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
21			NA						
22									
23		ml: Yellowish orange to light brown to light gray, moist, soft, partially laminated CLAY and SILT.	ml		Organic Vapor = 0.9ppm			2 3 5 10	Rec 1.6'/2.0' (23-25' bgs)
24									
25	795	NA: No recovery.	NA						
26		NA: No sample collected for lithologic description.							
27			NA						
28		ml: Light brown to yellowish orange, soft, wet to moist laminated CLAY and SILT, trace reddish brown weathered Shale.	ml		Organic Vapor = 2.9ppm			2 3 6 6	Rec 2.0'/2.0' (28-30' bgs)
29									
30	790	NA: No sample collected for lithologic description.							



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW23

Project: Fort McClellan

Geologist: Cindy Levaas/Kyle Wilson

Sheet 5 of 6 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	31		NA						
	32								
	33	cl: Light brown to yellowish orange to black, moist to wet, soft to medium stiff, laminated CLAY, some coarse to fine Sand, little Silt, trace highly weathered oxidized siltstone Gravel, trace highly weathered black Shale.	cl		Organic Vapor = 0.0ppm			2 4 5 6	Rec 2.0'/2.0' (33-35' bgs)
	34								
785	35	NA: No sample collected for lithologic description.	NA						
	36								
	37								
	38	ch: Light brown, soft, wet, fat, laminated CLAY, some Silt, trace highly weathered reddish brown shale Gravel, trace oxidized weathered siltstone Gravel.	ch		Organic Vapor = 0.0ppm			1 2 2 2	Rec 2.0'/2.0' (38-40' bgs) Groundwater encountered at 38' bgs
	39								
780	40	NA: No sample collected for lithologic description.	NA						


HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: CWM-183-MW23

Project: Fort McClellan

Geologist: Cindy Levaas/Kyle Wilson

Sheet 6 of 6 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
41			NA						
42									
43		ch: Yellowish orange to light brown, soft, saturated, fat CLAY, some Silt, trace highly weathered, decomposed, white limestone Gravel.			Organic Vapor = 0.0ppm			0 0 0 0	Rec 2.0'/2.0' (43-45' bgs)
44			ch						
775	45	NA: No sample collected for lithologic description.							
46									
47									
48			NA						
49									
770	50								Bottom of borehole at 50' bgs