March 20, 2023

Mr. Steve Wallace
Limestone County Schools
300 South Jefferson Street
Athens, Alabama 35611

Subject: Report of Soil/Rock Core Boring Drilling
Elkmont Elementary Pump Station
Elkmont, Alabama

Dear Mr. Wallace,

Morell Engineering has completed a soil/rock core boring for the planned Elkmont Elementary Pump Station project, located in Elkmont, Alabama. Boring B-101 was performed near the planned pump station location on March 10, 2023 by South Brothers Drilling using a CME 45 drill rig, fitted with an automatic hammer. At the boring location, soil samples were initially retrieved at standard sampling intervals by driving a split-tube sampler. The borehole was first advanced to the sample depth by augering, and the sampling tools were placed in the open hole. The sampler was then driven into the ground 18 inches by blows from a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler each 6-inch increment was recorded. The initial increment is considered the "seating" blows, where the sampler penetrates any loose or disturbed soil in the bottom of the borehole. The blows required to penetrate the final two increments are added together, and referred to as the Standard Penetration Test (SPT) N-Value. The N-Value, when properly evaluated, gives an indication of the soil's strength and ability to support structural loads. Many factors can affect the SPT N-Value, so this result should not be used exclusively to evaluate soil conditions. After encountering refusal at the boring location, refusal materials (i.e., bedrock) were explored using diamond core (NQ) drilling techniques. Cylindrical cores of rock, approximately 2 inches in diameter, were drilled and recovered using a hollow steel core barrel fitted with a coring bit.

Soil samples retrieved from the boring were labeled and stored in plastic bags at the jobsite before being transported to our laboratory for classification. The soil samples were visually examined by a member of our engineering staff in order to provide soil descriptions and classifications in general accordance with ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. Pocket penetrometer tests were also performed on the cohesive soil samples, where possible. The pocket penetrometer provides an estimate of the soil's unconfined compressive strength (Qu). The pocket penetrometer data is presented as Qu in units of tons per square-foot (tsf) on the attached boring log.

Rock core samples retrieved from the boring location were placed in a sample box before being transported to our laboratory for classification and analysis. A member of our engineering staff classified the rock and

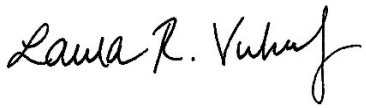
measured the recovery (REC) and Rock Quality Designation (RQD). A photograph of the recovered rock core is presented later in this report. A boring log summarizing the subsurface conditions at the boring location was prepared by a member of our engineering staff and is attached to this report.

Boring B-101 initially encountered a layer of topsoil that was approximately 4 inches thick. Beneath the topsoil, the boring encountered residual soils which consisted of very soft to firm silts and elastic silts to a depth of about 8 feet. Very dense weathered rock was then encountered from about 8 feet to 10 feet. Refusal was encountered in the boring at this 10-foot depth. Upon encountering refusal, refusal materials (i.e., bedrock) were cored from the boring until reaching a termination depth of 20 feet. The refusal materials generally consisted of gray, fine-grained, thinly- to thickly-bedded, hard limestone that contained interbedded shale seams and partings. Table 1 lists the recovery and Rock Quality Designation (RQD) values for each core run, and a photograph of the rock core samples is presented below.

Table 1: Rock Core Recovery and RQD Values				
ID	Run Depth (feet)	Recovery (%)	RQD (%)	Rock Quality Designation
B-101	10 to 15	97	90	Good
	15 to 20	92	84	Good

Please let us know if you have any questions regarding this report.

Respectfully submitted,



Laura R. Vukosavljevic, P.E.
Geotechnical Engineer
Morell Engineering, Inc.

Attachments: Boring Log

MORELL ENGINEERING

711 East Hobbs Street
Athens, AL 35611
Office: 2568674957

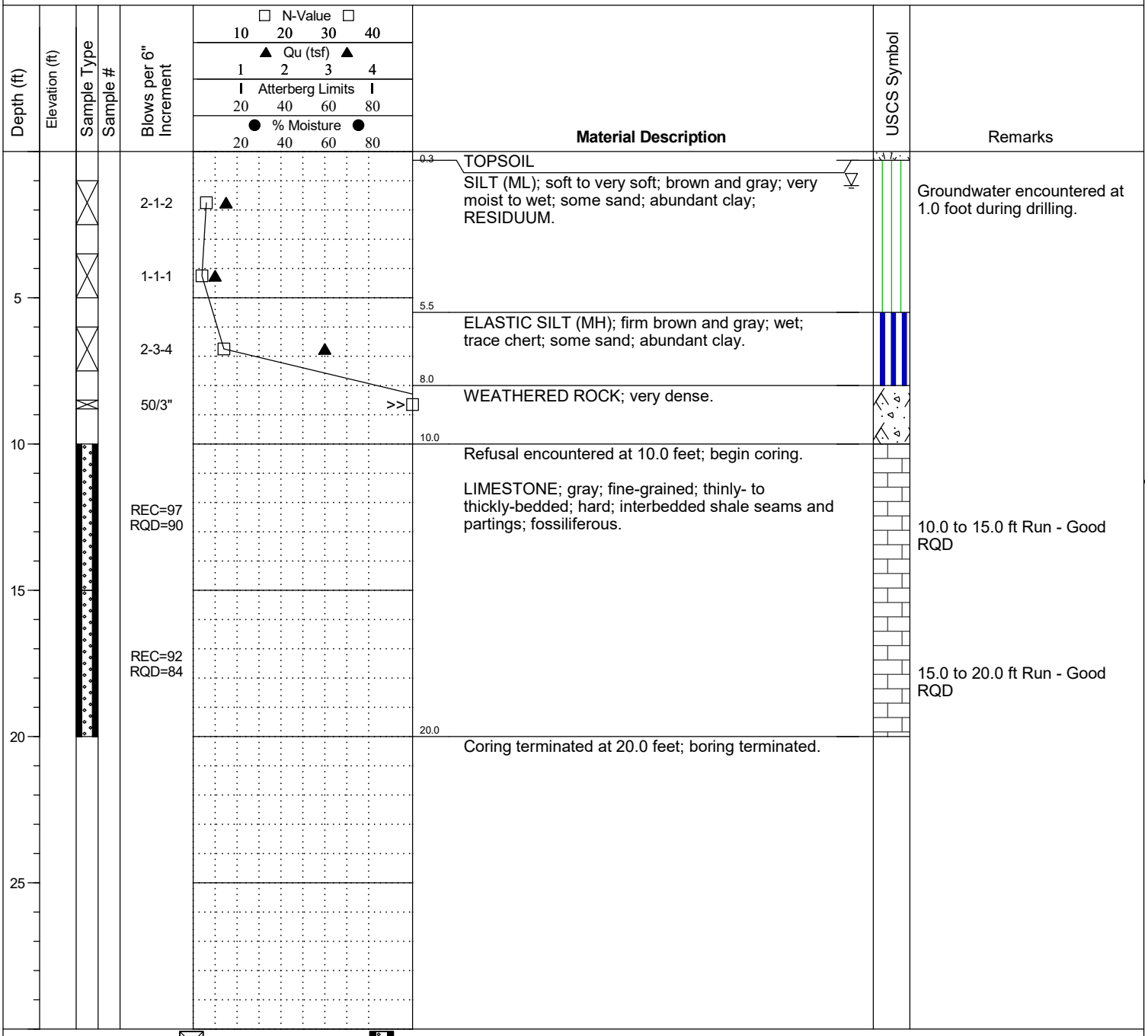
Designation: B-101

Soil Boring Log

Sheet 1 of 1

Project Name: Elkmont Elementary Pump Station
Project Number: 22-0052
Drilling Method: Hollow Stem Auger/Rock Core
Equipment Used: CME 45
Hammer Type: Automatic
Boring Location: Planned Pump Station

Project Location: Elkmont, Alabama
Date Drilled: 3/10/23
Weather Conditions: Fair
Surface Elevation:
Drilling Contractor: South Bros. Drilling, Inc.
Logged By: LRV



SAMPLE TYPE ☒ Split Spoon ▮ Rock Core

N-VALUE	STANDARD PENETRATION RESISTANCE (AASHTO T-206)	**REC**	RECOVERY
% MOISTURE	PERCENT NATURAL MOISTURE CONTENT	**RQD**	ROCK QUALITY DESIGNATION
▽	GROUNDWATER LEVEL IN THE BOREHOLE	**UD**	UNDISTURBED
Qu	UNCONFINED COMPRESSIVE STRENGTH ESTIMATE FROM POCKET PENETROMETER TEST		

SOIL BORING LOG B-101.GPJ MORELL ENGINEERING.GDT 3/20/23