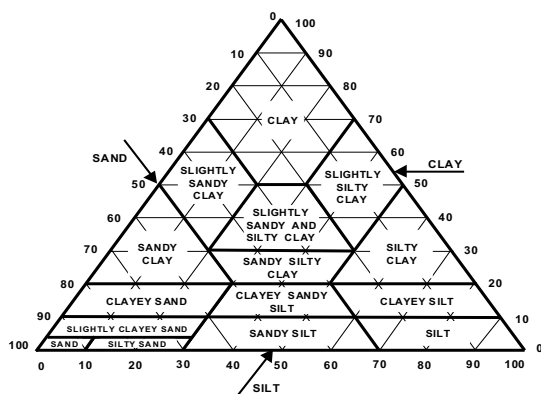


Appendix A

Summary of standard soil and rock profile
description terminology

STANDARD DESCRIPTIONS USED IN SOIL PROFILING

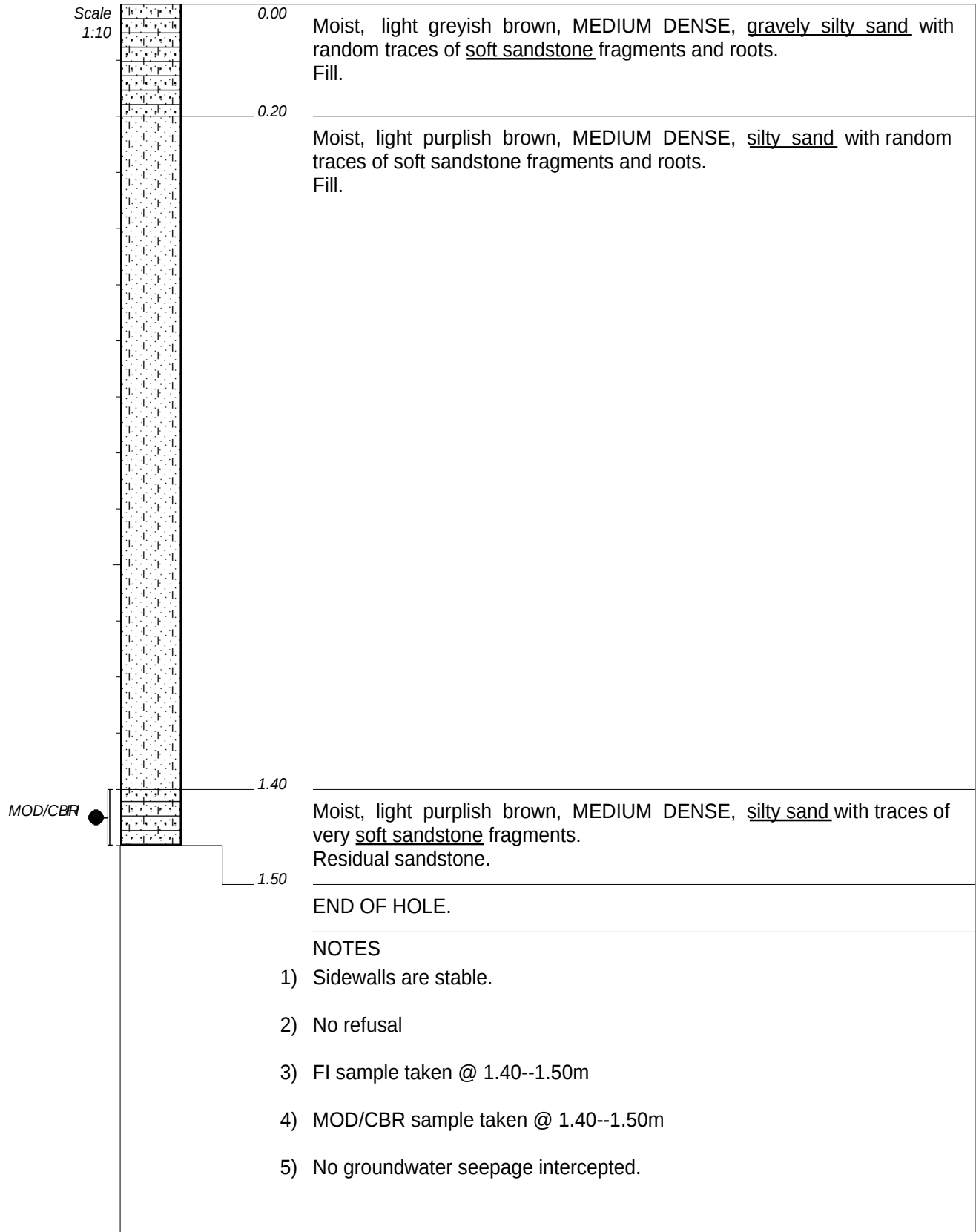
1. MOISTURE CONDITION		2. COLOUR	
Term	Description	The Predominant colours or colour combinations are described including secondary coloration described as banded, streaked, blotched, mottled, speckled or stained.	
Dry			
Slightly moist	Requires addition of water to reach optimum moisture content for compaction		
Moist	Near optimum content		
Very Moist	Requires drying to attain optimum content		
Wet	Fully saturated and generally below water table		
3. CONSISTENCY			
3.1 Non-Cohesive Soils		3.2 Cohesive Soils	
Term	Description	Term	Description
Very Loose	Crumbles very easily when scraped with geological pick	Very soft	Easily penetrated by thumb. Sharp end of pick can be pushed in 30 - 40mm. Easily moulded by fingers.
Loose	Small resistance to penetration by sharp end of geological pick	Soft	Pick head can easily be pushed into the shaft of handle. Moulded by fingers with some pressure.
Medium Dense	Considerable resistance to penetration by sharp end of geological pick	Firm	Indented by thumb with effort. Sharp end of pick can be pushed in up to 10mm. Can just be penetrated with an ordinary spade.
Dense	Very high resistance to penetration to sharp end of geological pick. Requires many blows of hand pick for excavation.	Stiff	Penetrated by thumbnail. Slight indentation produced by pushing pick point into soil. Cannot be moulded by fingers. Requires hand pick for excavation.
Very Dense	High resistance to repeated blows of geological pick. Requires power tools for excavation	Very Stiff	Indented by thumbnail. Slight indentation produced by blow of pick point. Requires power tools for excavation.
4. STRUCTURE		5. SOIL TYPE	
		5.1 Particle Size	
Term	Description	Term	Size (mm)
Intact	Absence of fissures or joints	Boulder	>200
Fissured	Presence of closed joints	Pebbles	60 – 200
Shattered	Presence of closely spaced air filled joints giving cubical fragments	Gravel	60 – 2
Micro-shattered	Small scale shattering with shattered fragments the size of sand grains	Sand	2 – 0,06
Slickensided	Polished planar surfaces representing shear movement in soil	Silt	0,06 – 0,002
Bedded Foliated	Many residual soils show structures of parent rock.	Clay	<0,002
6. ORIGIN		5.2 Soil Classification	
6.1 Transported Soils			
Term	Agency of Transportation		
Colluvium	Gravity deposits		
Talus	Scree or coarse colluvium		
Hillwash	Fine colluvium		
Alluvial	River deposits		
Aeolian	Wind deposits		
Littoral	Beach deposits		
Estuarine	Tidal – river deposits		
Lacustrine	Lake deposits		
6.2 Residual soils			
These are products of in situ weathering of rocks and are described as e.g. Residual Shale			
6.3 Pedocretes			
Formed in transported and residual soils etc. calcrete, silcrete, manganocrete and ferricrete.			

SUMMARY OF DESCRIPTIONS USED IN ROCK CORE LOGGING

1. WEATHERING				
Term	Symbol	Diagnostic Features		
Residual Soil	W5	Rock is discoloured and completely changed to a soil in which original rock fabric is completely destroyed. There is a large change in volume.		
Completely Weathered	W5	Rock is discoloured and changed to a soil but original fabric is mainly preserved. There may be occasional small corestones.		
Highly Weathered	W4	Rock is discoloured, discontinuities may be open and have discoloured surfaces, and the original fabric of the rock near the discontinuities may be altered; alternation penetrates deeply inwards, but corestones are still present.		
Moderately Weathered	W3	Rock is discoloured, discontinuities may be open and will have discoloured surfaces with alteration starting to penetrate inwards, intact rock is noticeably weaker than the fresh rock.		
Slightly Weathered	W2	Rock may be slightly discoloured, particularly adjacent to discontinuities, which may be open and will have slightly discoloured surfaces, the intact rock is not noticeably weaker than the fresh rock.		
Unweathered	W1	Parent rock showing no discolouration, loss of strength or any other weathering effects.		
2. HARDNESS				3. COLOUR
Classification	Field Test		Compressive Strength Range MPa	The predominant colours or colour combination are described including secondary colouration described as banded, streaked, blotched, mottled, speckled or stained.
Extremely Soft Rock	Easily peeled with a knife		<1	
Very Soft Rock	Can be peeled with a knife. Material crumbles under firm blows with the sharp end of a geological pick.		1 to 3	
Soft Rock	Can be scraped with a knife, indentation of 2 to 4 mm with firm blows of the pick point.		3 to 10	
Medium Hard Rock	Cannot be scraped or peeled with a knife. Hand held specimen breaks with firm blows of the pick.		10 to 25	
Hard Rock	Point load tests must be carried out in order to distinguish between these classifications		25 - 70	
Very Hard Rock	These results may be verified by uniaxial compressive strength tests on selected samples.		70 - 200	
Extremely Hard Rock			>200	
4. FABRIC				
4.1 Grain Size		4.2 Discontinuity Spacing		
Term	Size (mm)	Description for: Bedding, foliation, laminations	Spacing (mm)	Descriptions for joints, faults, etc.
Very Coarse	>2,0	Very Thickly Bedded	> 2000	Very Widely
Coarse	0,6 – 2,0	Thickly Bedded	600 – 2000	Widely
Medium	0,2 – 0,6	Medium Bedded	200 – 600	Medium
Fine	0,06 – 0,2	Thinly Bedded	60 – 200	Closely
Very Fine	< 0,06	Laminated	3 – 60	Very closely
		Thinly Laminated	<3	
5. ROCK NAME			6. STRATIGRAPHIC HORIZON	
Classified in terms of origin:			Identification of rock type in terms of stratigraphic horizons.	
IGNEOUS	Granite, Diorite, Gabbro, Syenite, , Dolerite, Trachyte, Andesite, Basalt.			
METAMORPHIC	Slate, Felsite, Gneiss, Schist, Quartzite			
SEDIMENTARY	Shale, Mudstone, Siltstone, Sandstone, Dolomite, Conglomerate, Tillite. Limestone.			

Appendix B

Soil Profile Descriptions from test pit and Boreholes

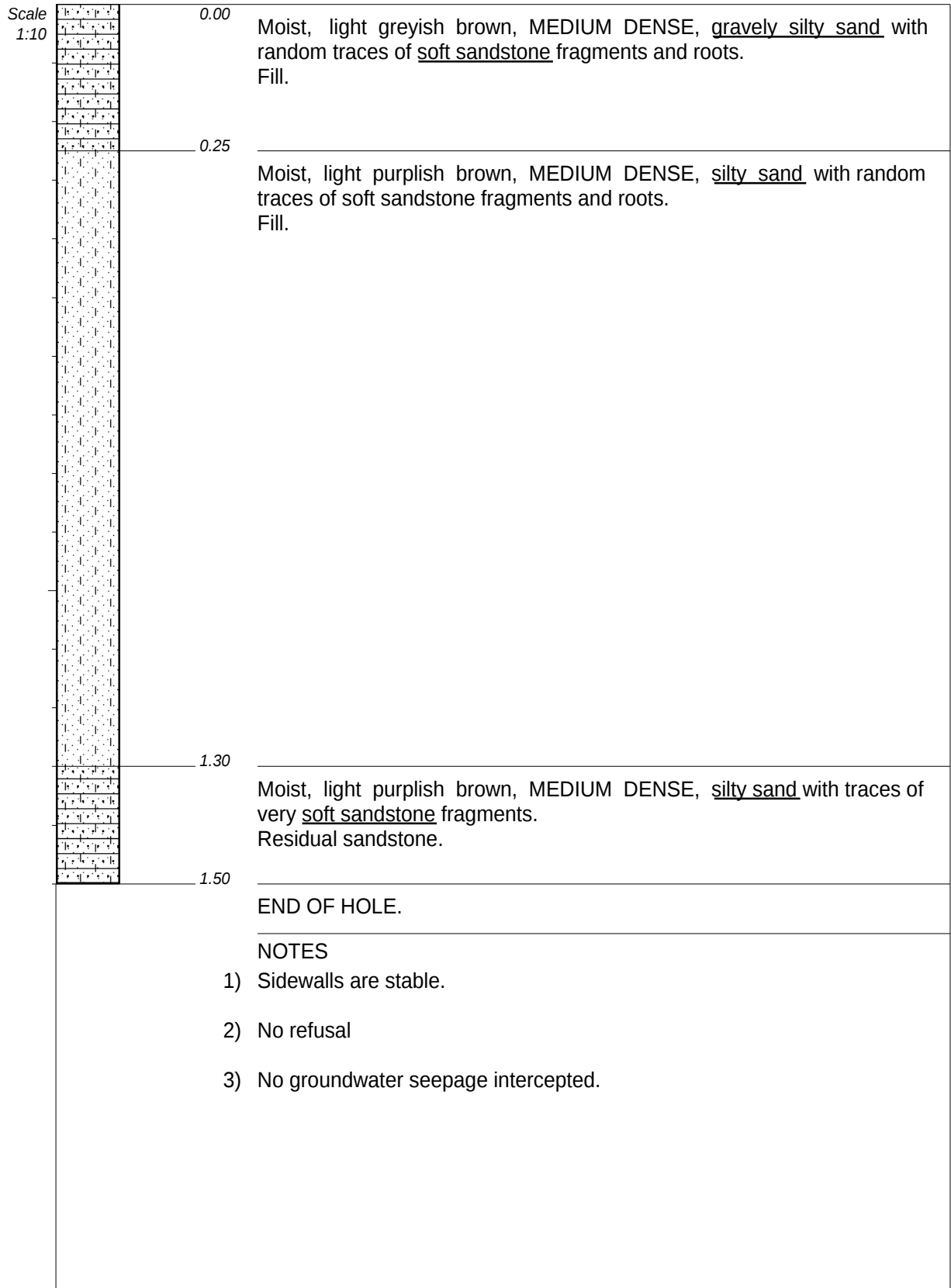


CONTRACTOR :
MACHINE :
DRILLED BY :
PROFIED BY :
TYPE SET BY :
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 11/10/2024
DATE :
TEXT :

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP01
Trenance 3 Reservoir site



CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY :

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE : 11/10/2024

DATE :

TEXT :

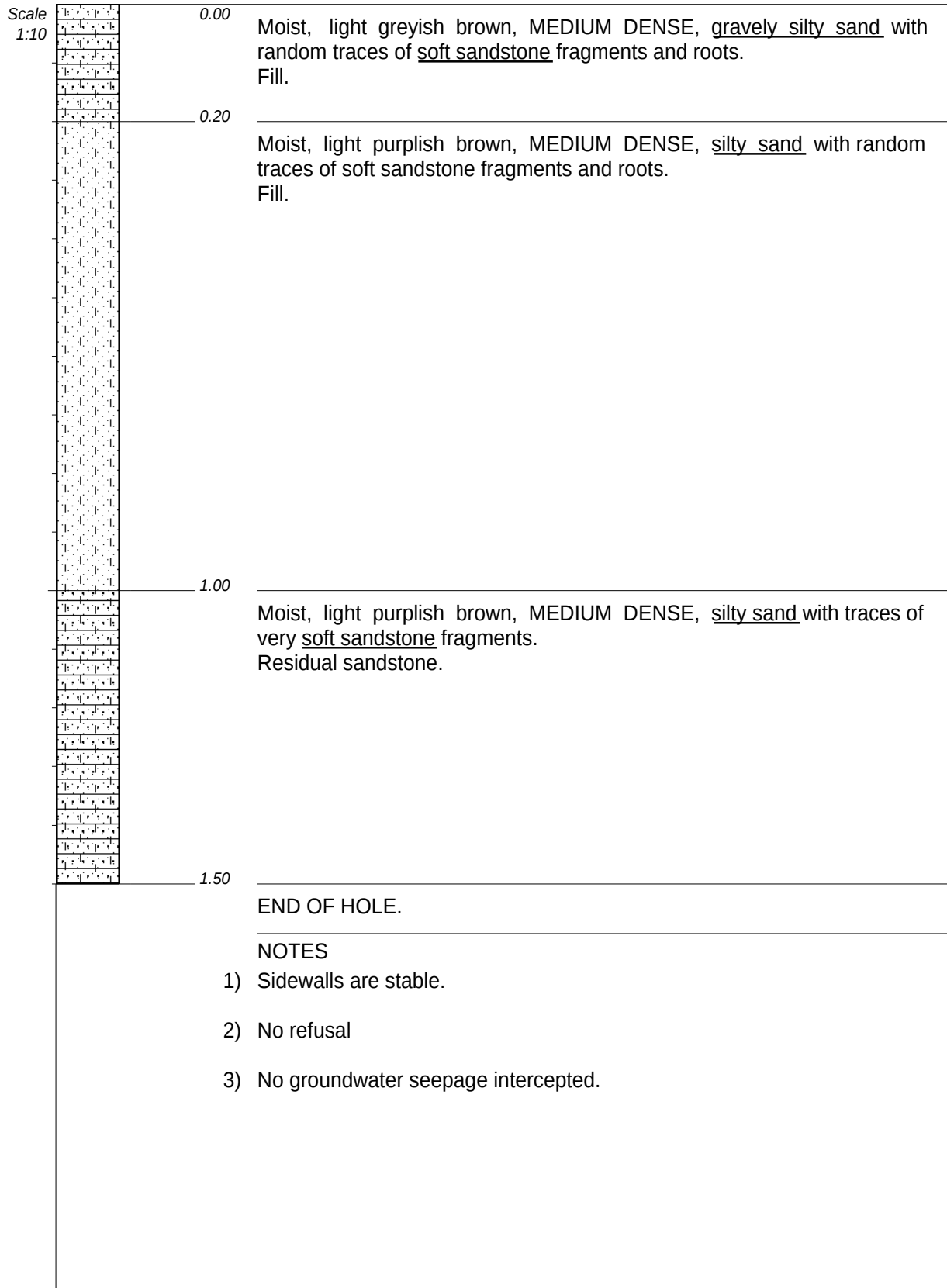
ELEVATION :

X-COORD :

Y-COORD :

HOLE No: TP02

Trenance 3 Reservoir site



CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY :

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE : 11/10/2024

DATE :

TEXT :

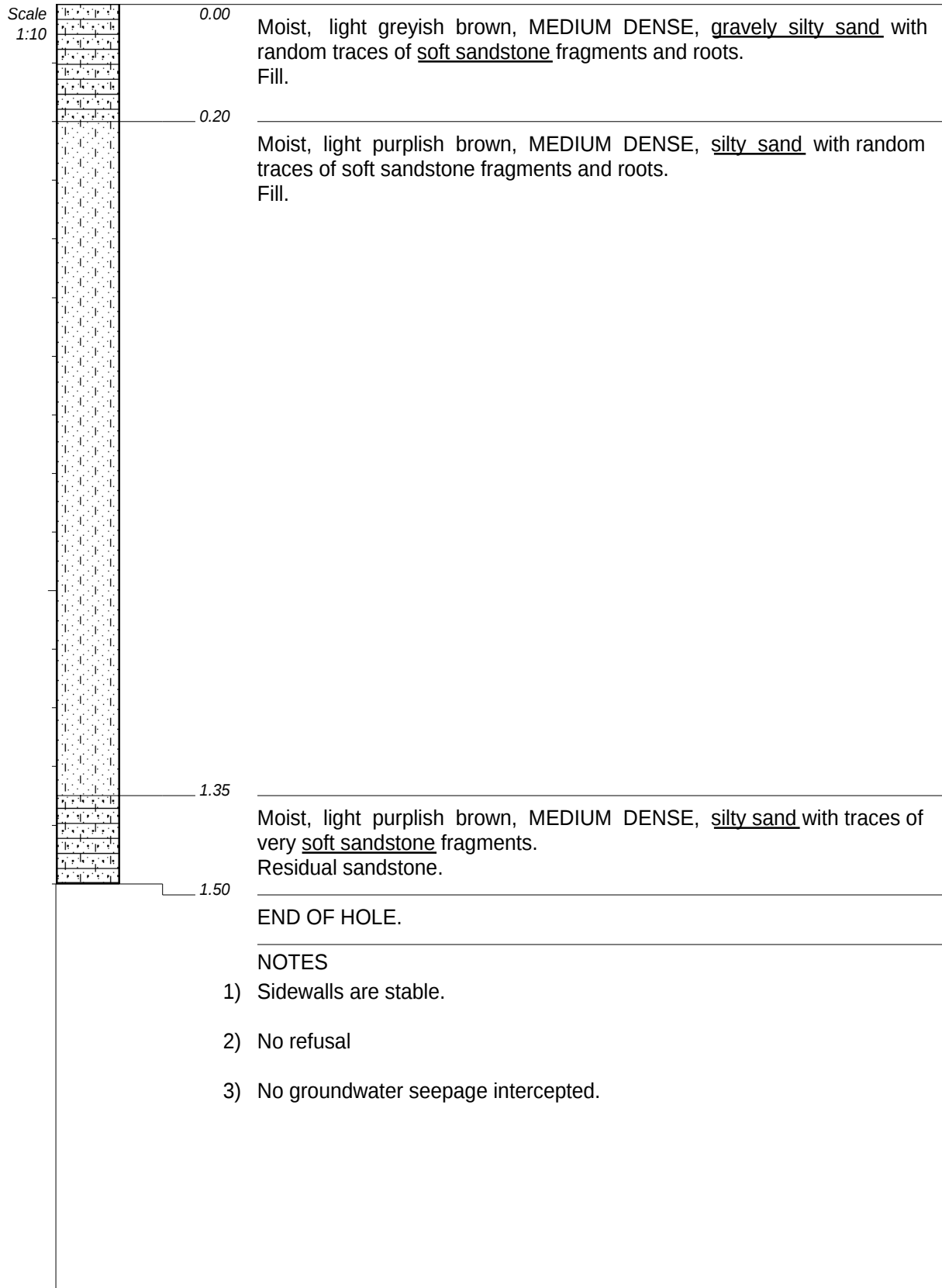
ELEVATION :

X-COORD :

Y-COORD :

HOLE No: TP03

Trenance 3 Reservoir site



CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY :

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE : 11/10/2024

DATE :

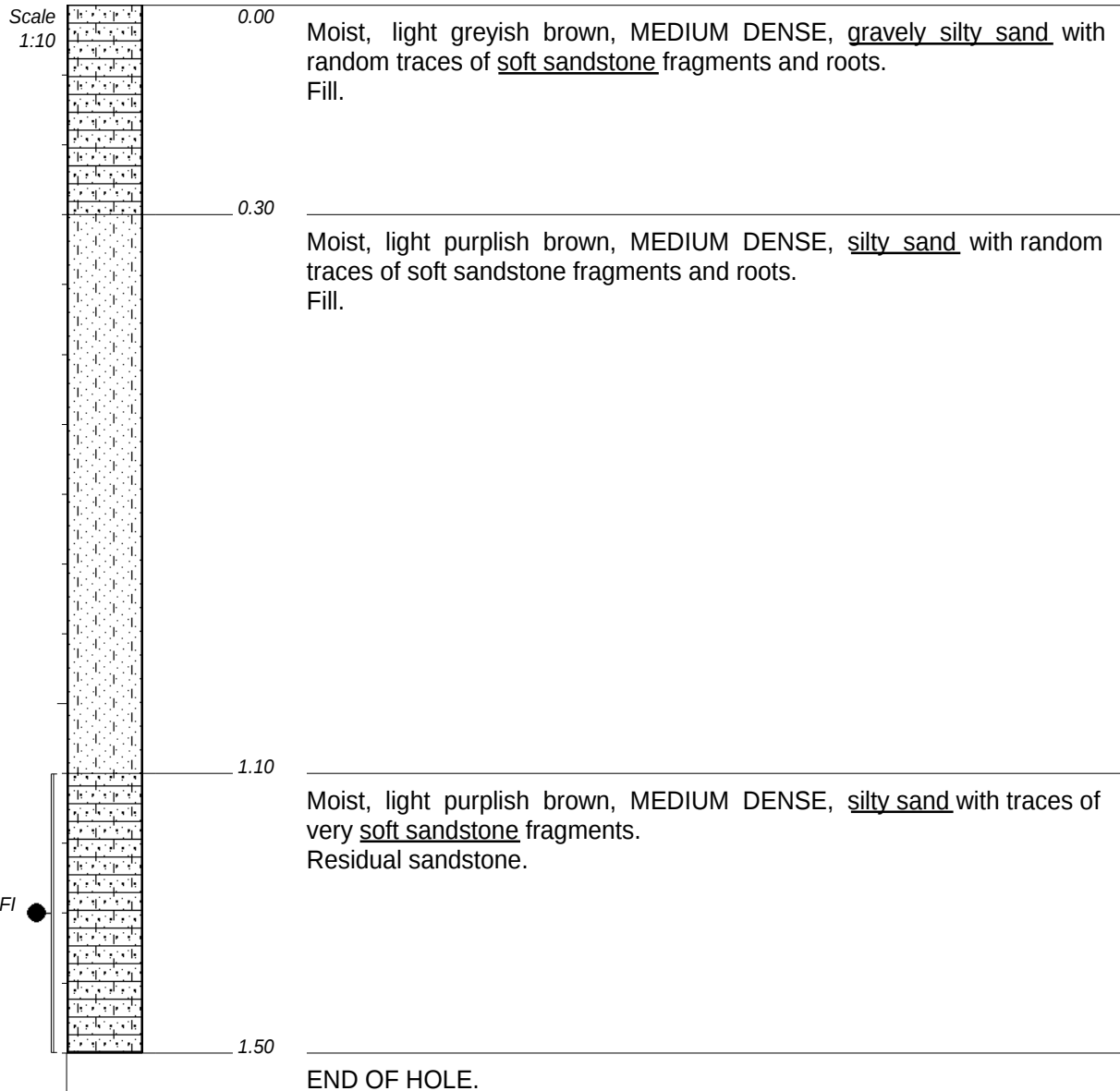
TEXT :

ELEVATION :

X-COORD :

Y-COORD :

HOLE No: TP04
Trenance 3 Reservoir site



NOTES

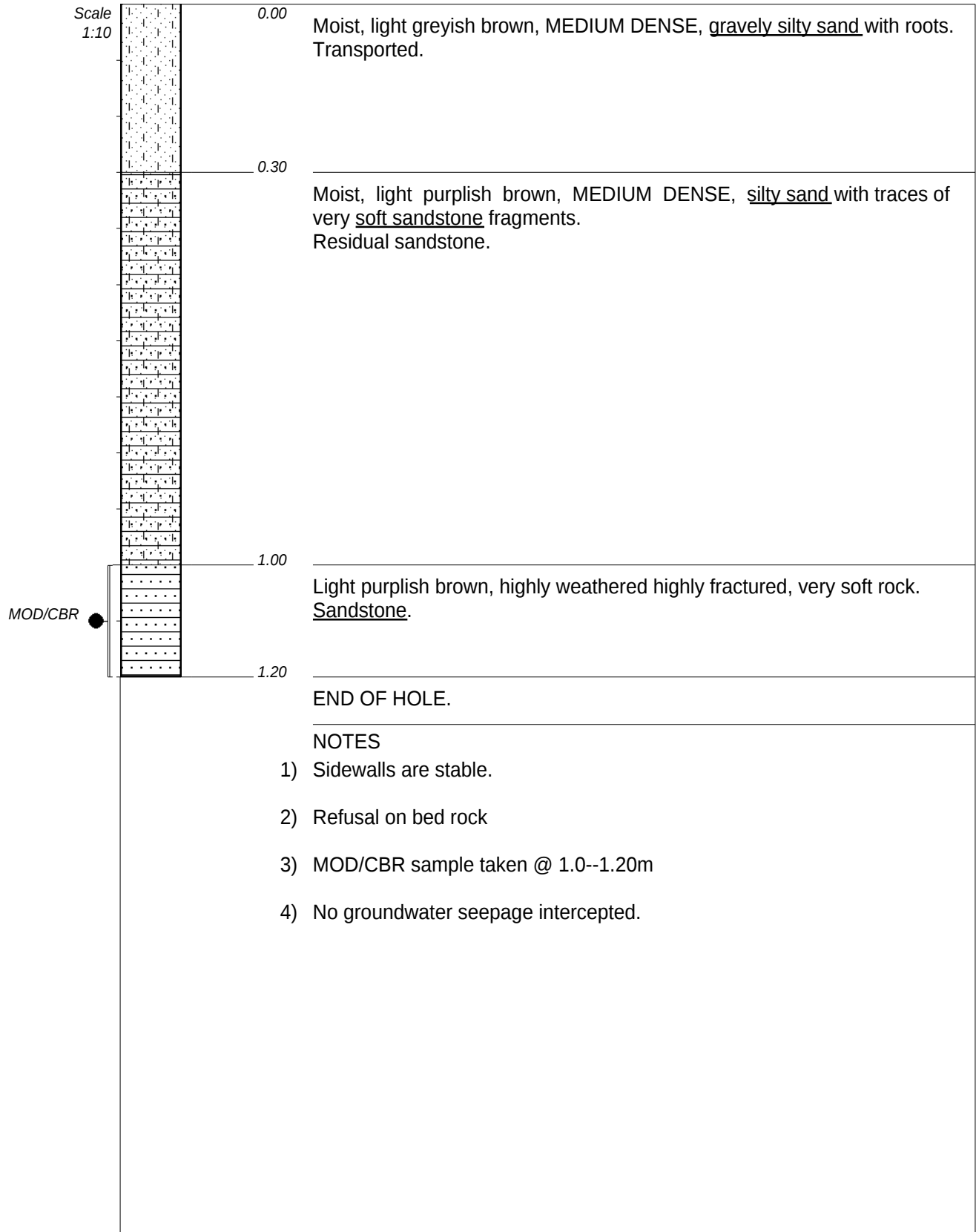
- 1) Sidewalls are stable.
- 2) No refusal
- 3) FI sample taken @ 1.10--1.50m
- 4) No groundwater seepage intercepted.

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY :
TYPE SET BY :
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 11/10/2024
DATE :
TEXT :

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP05
Trenance 3 Reservoir site



CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY :

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE : 11/10/2024

DATE :

TEXT :

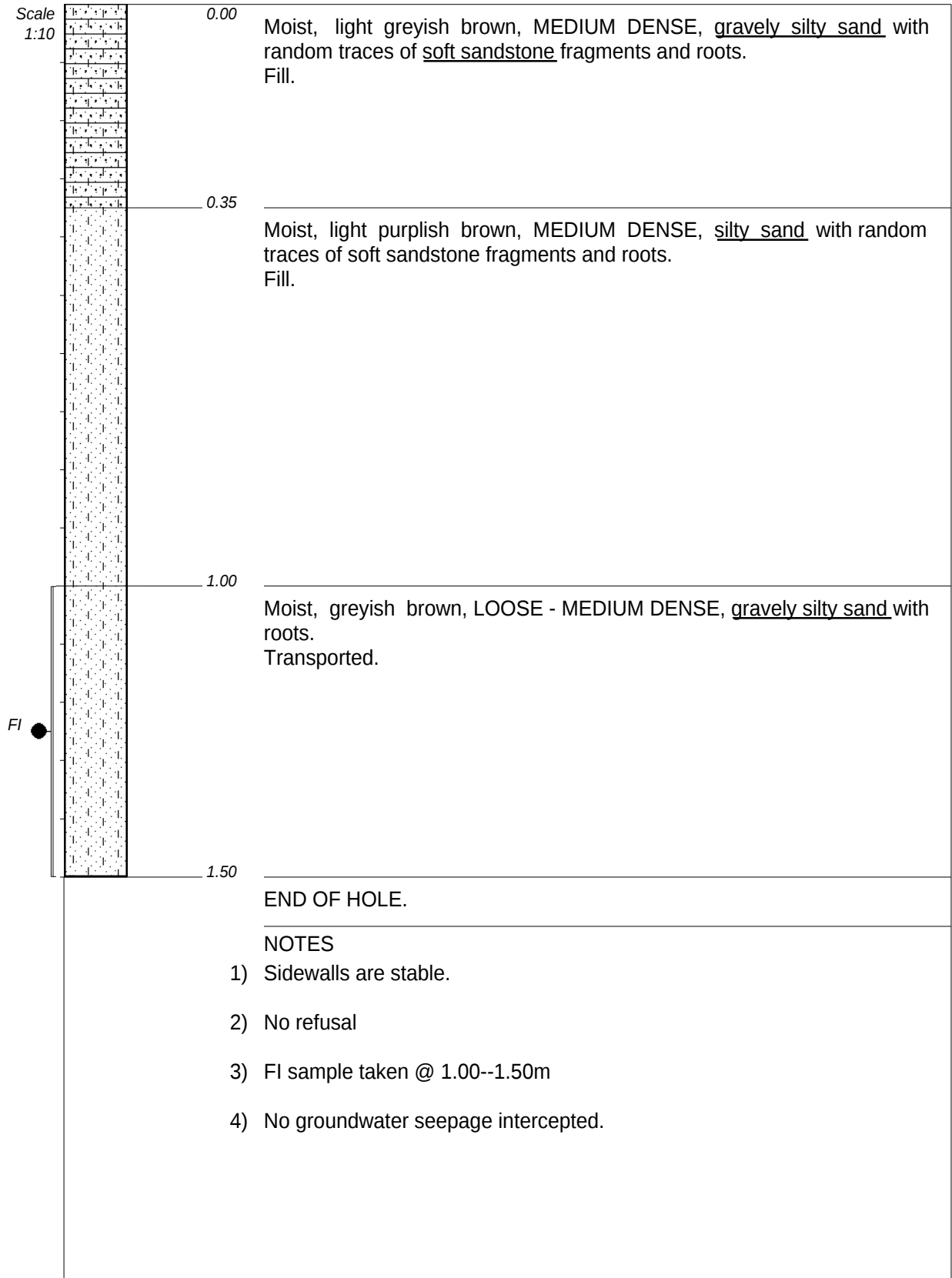
ELEVATION :

X-COORD :

Y-COORD :

HOLE No: TP06

Trenance 3 Reservoir site

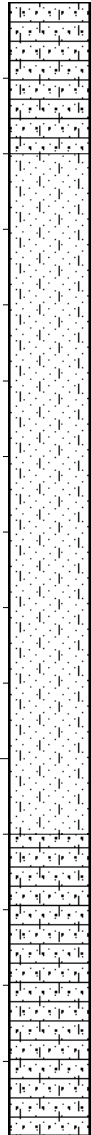


CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY :
TYPE SET BY :
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 11/10/2024
DATE :
TEXT :

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP07
Trenance 3 Reservoir site

Scale
1:10

0.00

Moist, light greyish brown, MEDIUM DENSE, gravely silty sand with random traces of soft sandstone fragments and roots.
Fill.

0.20

Moist, light purplish brown, MEDIUM DENSE, silty sand with random traces of soft sandstone fragments and roots.
Fill.

1.10

Moist, light purplish brown, MEDIUM DENSE, silty sand with traces of very soft sandstone fragments.
Residual sandstone.

1.50

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) No refusal
- 3) No groundwater seepage intercepted.

CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY :

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE : 11/10/2024

DATE :

TEXT : .

ELEVATION :

X-COORD :

Y-COORD :

HOLE No: TP08

Trenance 3 Reservoir site

JOB NUMBER: 000

Name ●

	SAND	{SA04}
	SILTY	{SA07}
	SANDSTONE	{SA11}
	DISTURBED SAMPLE	{SA38}

CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY :

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE :

DATE :

TEXT :

ELEVATION :

X-COORD :

Y-COORD :

LEGEND

SUMMARY OF SYMBOLS

JOB NUMBER: EGE-2024-19

GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

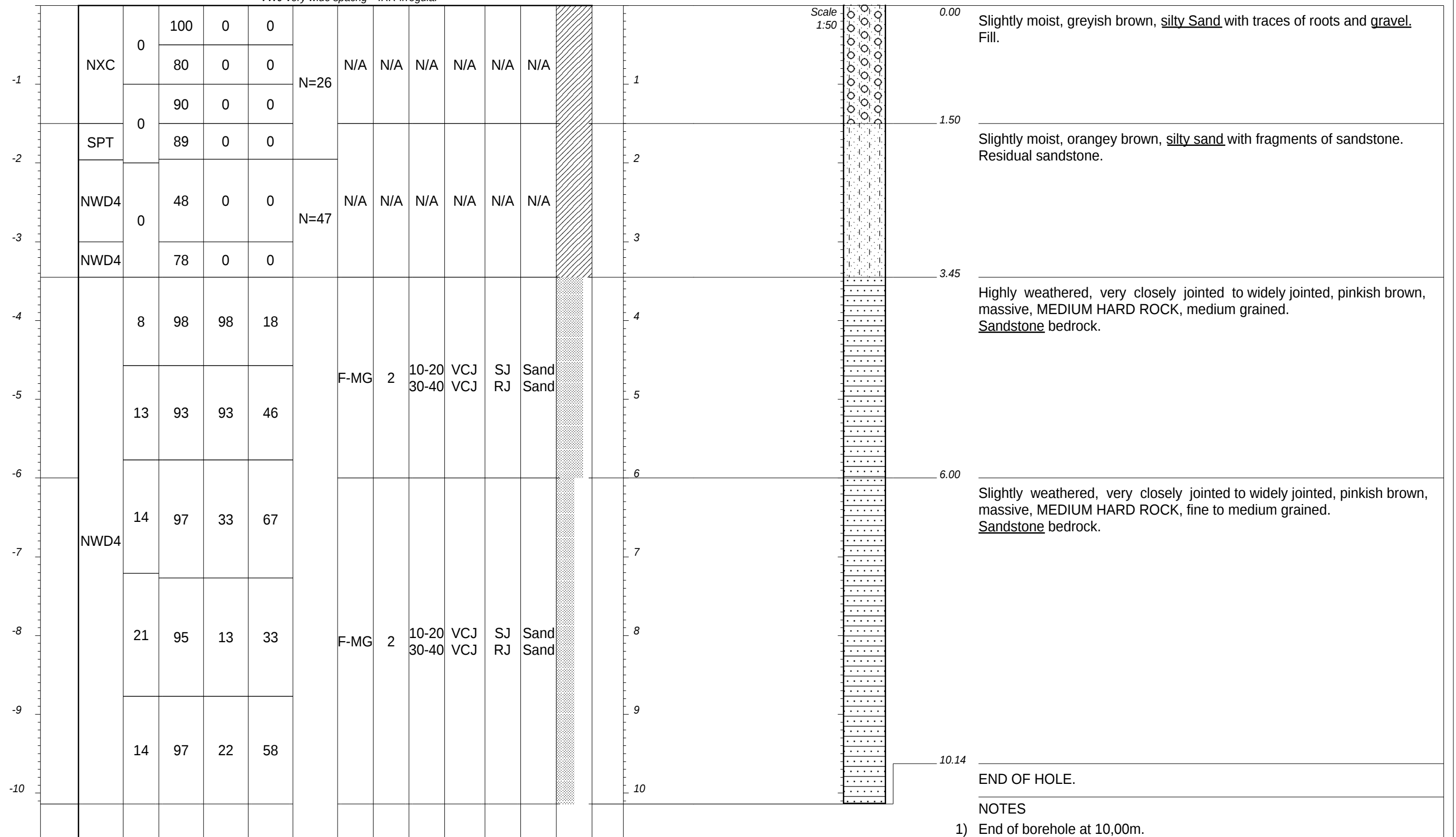
JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slickensided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

HOLE No: BH1
Sheet 1 of 1

JOB NUMBER: EGE-2024-19



1) End of borehole at 10,00m.

NOTES

REDUCED LEVEL	Drilling method	JOINT FRAC. FREQ. (width 0.8)	Material Recovery (%)	Core Recovery (%)	RQD (%)	SPT-N	ROCK FABRIC AND GRAIN	JOINT NO OF SETS	JOINT INCLIN (deg)	JOINT SPACING	JOINT ROUGH NESS	JOINT FILLING	WEATHERING	DEPTH Scale 1:50
------------------	--------------------	---	-----------------------------	-------------------------	------------	-------	--------------------------------	------------------------	--------------------------	------------------	------------------------	------------------	------------	------------------------

CONTRACTOR : Africa Geo Intel
MACHINE :
DRILLED BY :
PROFILED BY : NM and SGM
TYPE SET BY : SGM
SETUP FILE : STANDARD.SET

INCLINATION : VERTICAL
DIAM :
DATE : 12/10/2024
DATE : 16/10/2024

DATE : 29/10/2024 14:56

TEXT : ..00\Examples\Examples.TXT

ELEVATION :
X-COORD : 30°59'46.76"E
Y-COORD : 29°39'9.14"S

HOLE No: BH1

JOB NUMBER: EGE-2024-19

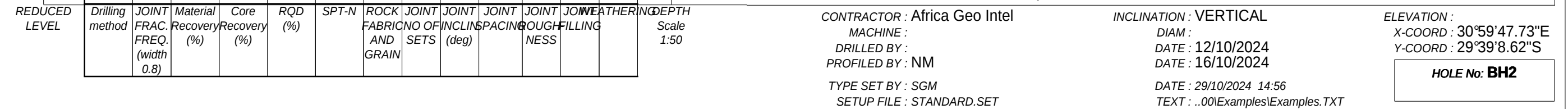
GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slickensided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

JOB NUMBER: EGE-2024-19



JOB NUMBER: EGE-2024-19

GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

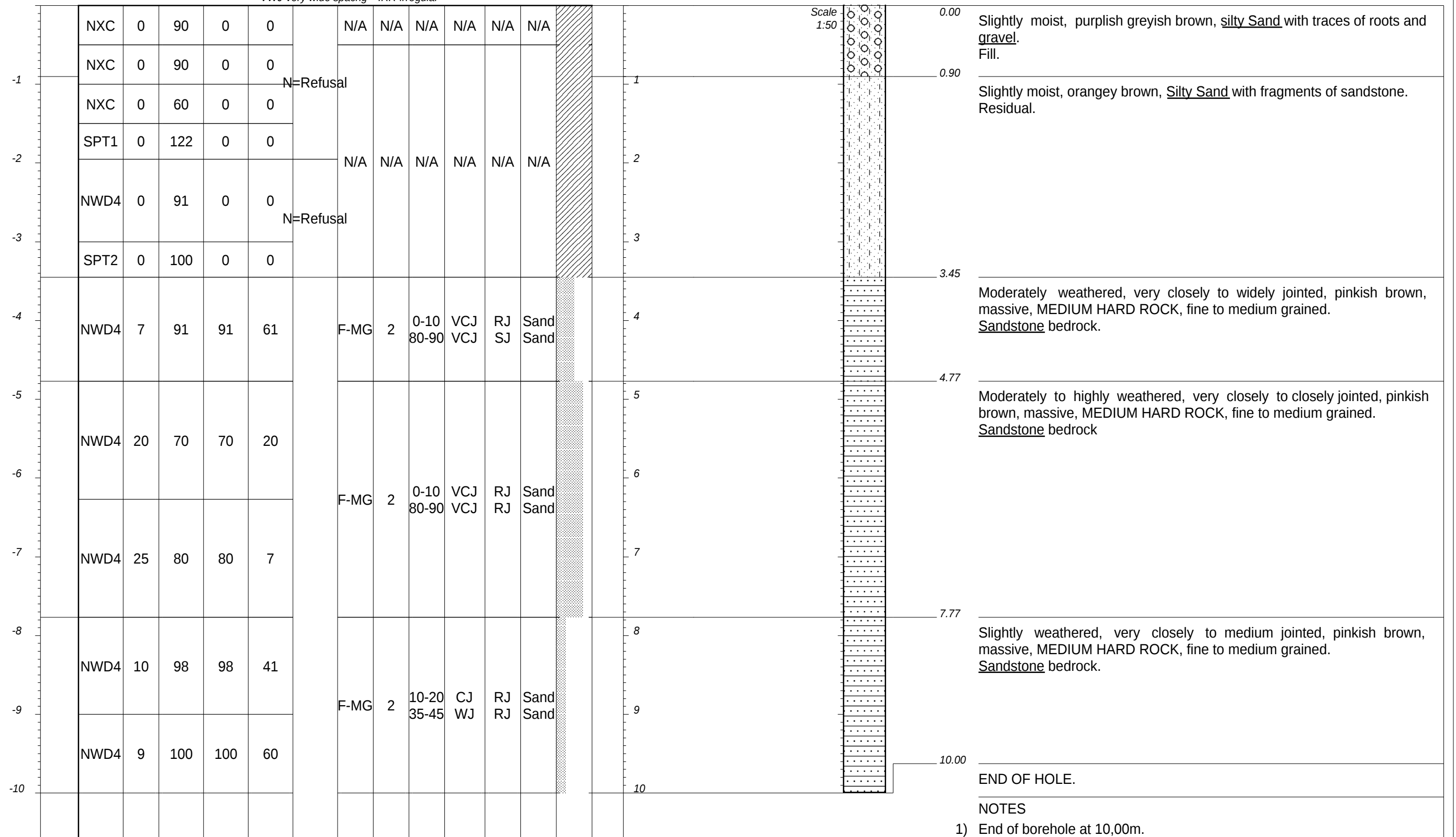
JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slickensided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

HOLE No: BH3
Sheet 1 of 1

JOB NUMBER: EGE-2024-19



1) End of borehole at 10,00m.

REDUCED LEVEL	Drilling method	JOINT FRAC. FREQ. (width 0.8)	Material Recovery (%)	Core Recovery (%)	RQD (%)	SPT-N	ROCK FABRIC AND GRAIN	JOINT NO OF SETS	JOINT INCLIN (deg)	JOINT SPACING	JOINT ROUGH- NESS	JOINT FILLING	WEATHERING	DEPTH Scale 1:50
------------------	--------------------	---	-----------------------------	-------------------------	------------	-------	--------------------------------	------------------------	--------------------------	------------------	-------------------------	------------------	------------	------------------------

HOLE No: BH3

JOB NUMBER: EGE-2024-19

GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

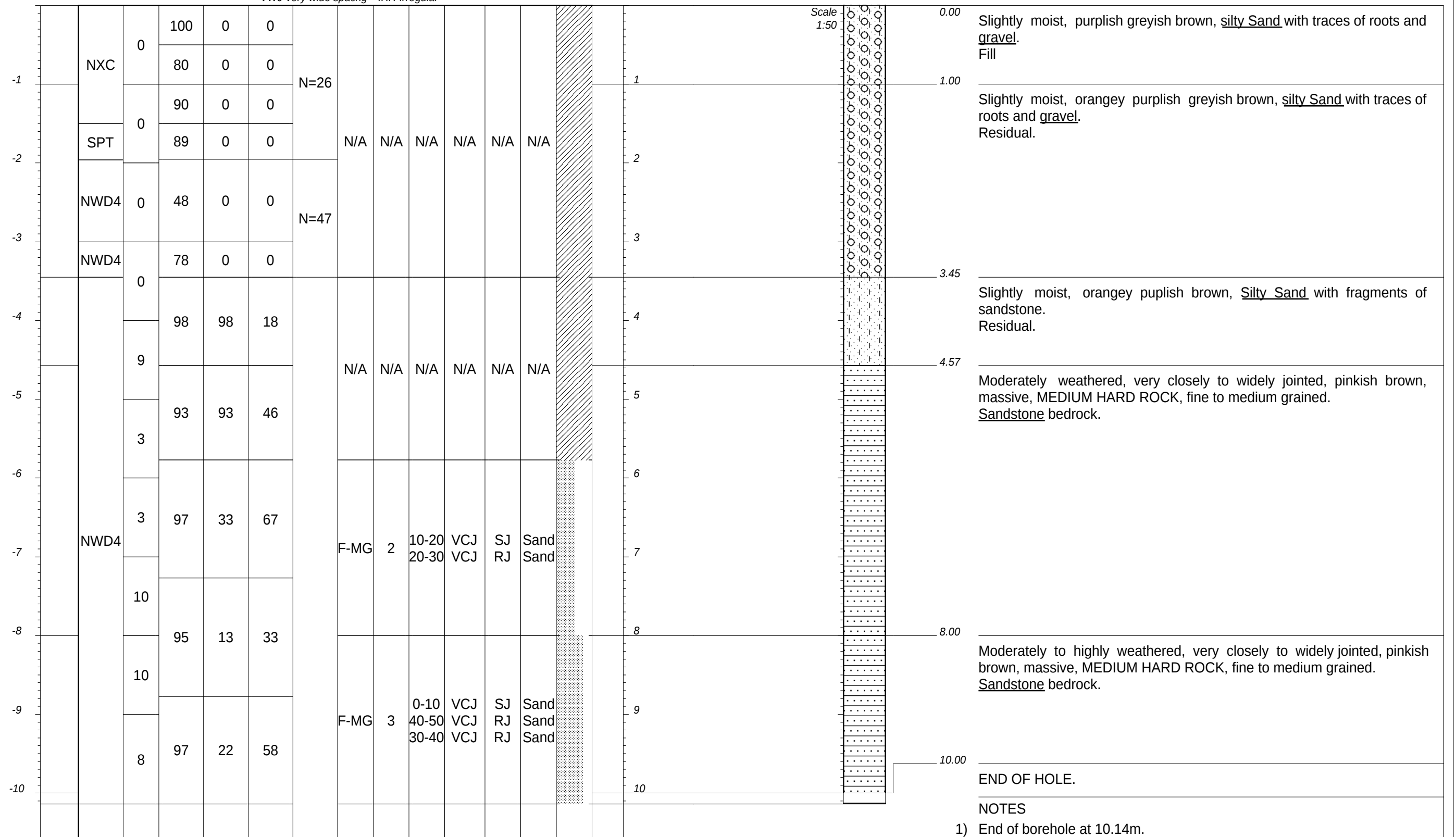
JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slickensided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

HOLE No: BH4
Sheet 1 of 1

JOB NUMBER: EGE-2024-19



1) End of borehole at 10.14m.

NOTES

REDUCED LEVEL	Drilling method	JOINT FRAC. FREQ. (width 0.8)	Material Recovery (%)	Core Recovery (%)	RQD (%)	SPT-N	ROCK FABRIC AND GRAIN	JOINT NO OF SETS	JOINT INCLIN (deg)	JOINT SPACING	JOINT ROUGH- NESS	JOINT FILLING	WEATHERING	DEPTH Scale 1:50
------------------	--------------------	---	-----------------------------	-------------------------	------------	-------	--------------------------------	------------------------	--------------------------	------------------	-------------------------	------------------	------------	------------------------

CONTRACTOR : Africa Geo Intel
MACHINE :
DRILLED BY :
PROFILED BY : NM and SMG
TYPE SET BY : SMG
SETUP FILE : STANDARD.SET

INCLINATION : VERTICAL
DIAM :
DATE : 12/07/2024
DATE : 16/07/2024
DATE :
TEXT :

ELEVATION :
X-COORD : 30°59'47.15"E
Y-COORD : 29°39'9.32"S

HOLE No: BH4

JOB NUMBER: EGE-2024-19

GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

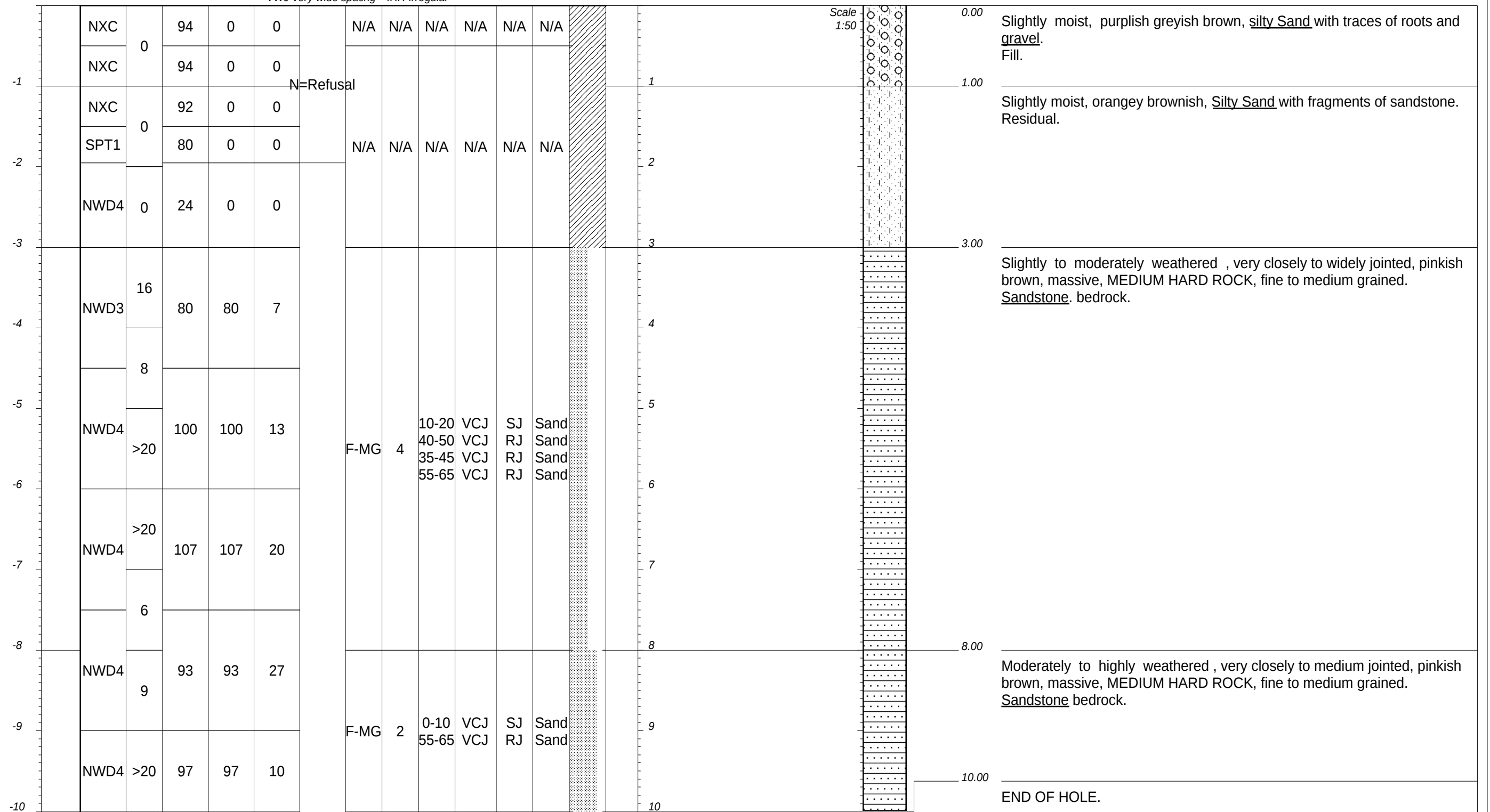
JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slickensided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

HOLE No: BH5
Sheet 1 of 1

JOB NUMBER: EGE-2024-19



NOTES

1) End of borehole at 10,00m.

REDUCED LEVEL	Drilling method	JOINT FRAC. FREQ. (width 0.8)	Material Recovery (%)	Core Recovery (%)	RQD (%)	SPT-N	ROCK FABRIC AND GRAIN	JOINT NO OF SETS	JOINT INCLIN (deg)	JOINT SPACING	JOINT ROUGH- NESS	JOINT FILLING	WEATHERING	DEPTH Scale 1:50
------------------	--------------------	---	-----------------------------	-------------------------	------------	-------	--------------------------------	------------------------	--------------------------	------------------	-------------------------	------------------	------------	------------------------

CONTRACTOR : Africa Geo Intel
MACHINE :
DRILLED BY :
PROFILED BY : NM and SMG
TYPE SET BY : SMG
SETUP FILE : STANDARD.SET

INCLINATION : VERTICAL
DIAM :
DATE : 12/07/2024
DATE : 16/07/2024
DATE :
TEXT :

ELEVATION :
X-COORD : 30°59'47.51"E
Y-COORD : 29°39'9.32"S

HOLE No: BH5

JOB NUMBER: EGE-2024-19

GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

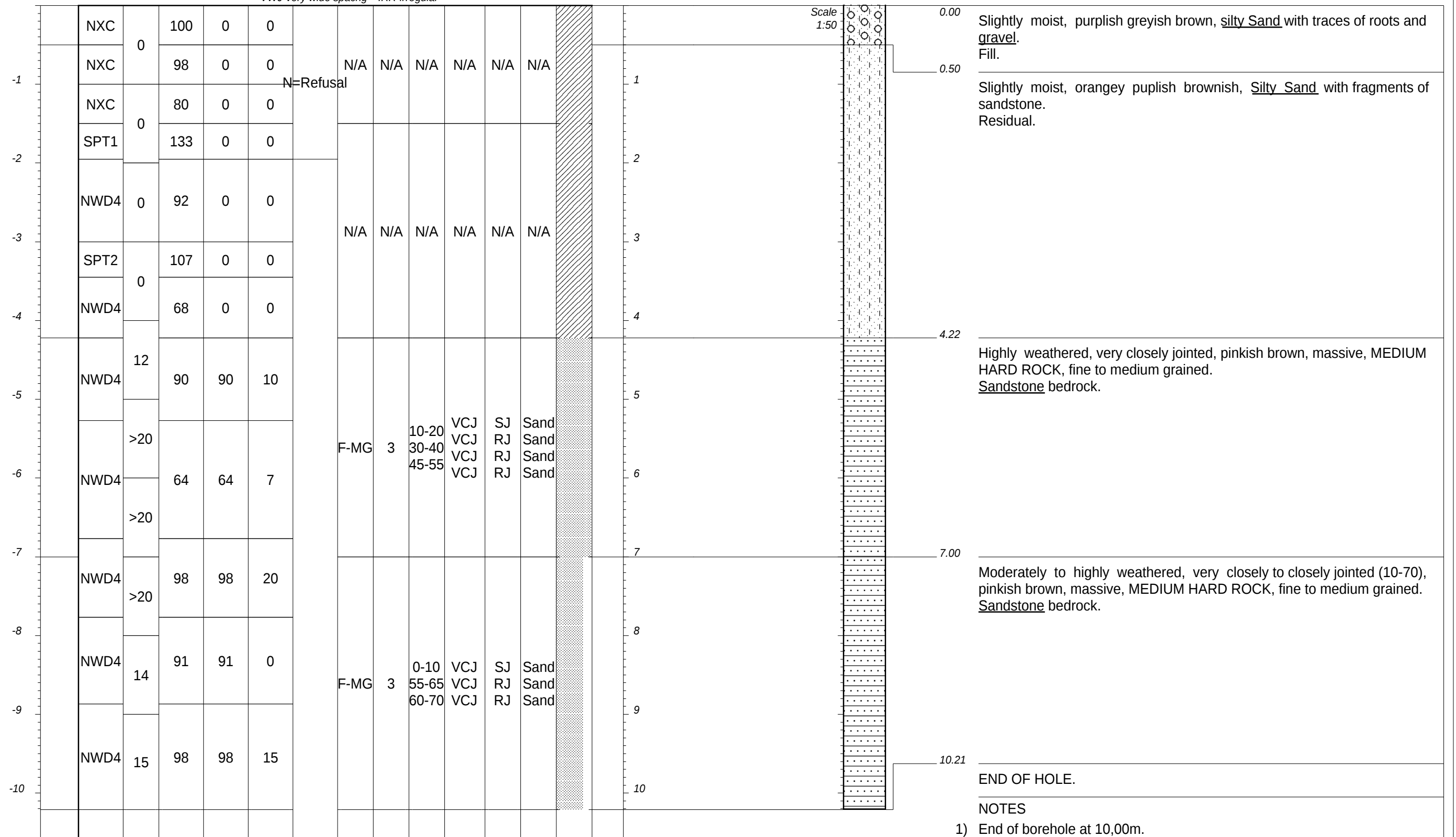
JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slickensided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

HOLE No: BH6
Sheet 1 of 1

JOB NUMBER: EGE-2024-19



1) End of borehole at 10,00m.

NOTES

REDUCED LEVEL	Drilling method	JOINT FRAC. FREQ. (width 0.8)	Material Recovery (%)	Core Recovery (%)	RQD (%)	SPT-N	ROCK FABRIC AND GRAIN	JOINT NO OF SETS	JOINT INCLIN (deg)	JOINT SPACING	JOINT ROUGH- NESS	JOINT FILLING	WEATHERING	DEPTH Scale 1:50
------------------	--------------------	---	-----------------------------	-------------------------	------------	-------	--------------------------------	------------------------	--------------------------	------------------	-------------------------	------------------	------------	------------------------

CONTRACTOR : Africa Geo Intel
MACHINE :
DRILLED BY :
PROFILED BY : NM and SMG
TYPE SET BY : SMG
SETUP FILE : STANDARD.SET

INCLINATION : VERTICAL
DIAM :
DATE : 12/07/2024
DATE : 16/07/2024
DATE :
TEXT :

ELEVATION :
X-COORD : 30°59'46.50"E
Y-COORD : 29°39'8.73"S

HOLE No: BH6

JOB NUMBER: EGE-2024-19

GRAIN SIZE
FG -fine grained
MG -medium grain
CG -coarse grain

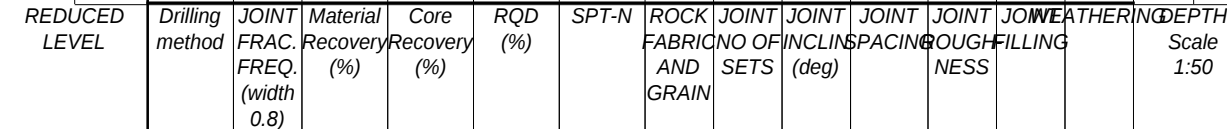
JOINT SPACING
VCJ-very close spacg
CJ -close spacing
MJ -medium spacing
WJ -wide spacing
VWJ-very wide spacng

JOINT ROUGHNESS
SLJ-slicksided
SJ-smooth
RJ-rough

JOINT SHAPE
CUR-curvilinear
PLA-planar
UND-undulating
STE-stepped
IRR-irregular

eThekweni Municipality
Trenance 3 Reservoir and Elevation Tank

JOB NUMBER: EGE-2024-19



INCLINATION : VERTICAL
DIAM :
DATE : 12/07/2024
DATE : 16/07/2024
DATE :
TEXT :

HOLE No: **BH7**

	GRAVEL	{SA02}
	SAND	{SA04}
	SILTY	{SA07}
	SANDSTONE	{SA11}

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY :

TYPE SET BY : SMG
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE :

DATE :
TEXT :

ELEVATION :
X-COORD :
Y-COORD :

Appendix C

Soil Laboratory Test results

Laboratory Test Summary

Job Description: Elite Geo&Enviro/Trenance 3 Reservoir
Job no.: M2003
Date: 28-10-2024



THEKWINI SOILS LAB. CC

V.A.T. REGISTRATION NO. 4590210961.

68 Ridge Road, P.O. Box 30464,
 Tollgate, DURBAN MAYVILLE, 4058
 Tel : (031) 201-8992 Fax : (031) 201-7920

Lab no.		170918	170919								
Location		TP1	TP6								
Depth		1.40-1.50	1.0-1.20								
Description		0	0								
		0	0								
Binder Material		-	-								
Particle Size (mm)	75										
	53										
	37.5										
	26.5										
	19		100								
	13.2	100	99								
	9.5	100	98								
	4.75	99	97								
	2	97	96								
	0.425	68	72								
	0.25	54	51								
	0.15	42	32								
	0.075	31	20								
	0.05	29	17								
	0.02	22	13								
	0.005	16	9								
	0.002	10	8								
Soil Mortar	Coarse Sand <2.0 >0.425mm	30.0	25.0								
	Fine Sand <0.425>0.05mm	49.9	62.3								
	Silt <0.05 >0.005	9.2	5.9								
	Clay <0.005	10.9	6.7								
Atterberg Limits	Liquid Limit	36	18								
	Plasticity Index	9	0								
	Linear Shrinkage	4.7	0								
	Natural MC	-	-								
Mod AASHTO Density	Dry Density kg/m ³	1875	1928								
	OMC	11.7	7.8								
CBR	100%	32	84								
	98%	22	65								
	95%	13	44								
	93% (Inferred)	10	32								
	90%	6	20								
	CBR Swell	1.34	0.00								
AASHTO Soil Classification		A - 2 - 4 (0)	A - 2 - 4 (0)								
Grading Modulus		1.03	1.13								
TRH 14 (1985)		G9	G7								

Project: Elite Geo&Enviro/Trenance 3 Reservoir

Ref no.: M2003 **Lab no.:** 170918 **Borehole/Pit no.:** TP1 **Fig no.:** 0

Depth: 1.40-1.50

Grading Analysis

Grain Size %Passing

75 (mm)	
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
13.2	100.0
9.5	99.9
4.75	99.2
2	97.3
0.425	68.1
0.25	54.2
0.15	42.0
0.075	31.3
0.05	28.7
0.02	22.1
0.005	15.5
0.002	10.3

M.I.T SIZE

CLASSIFICATION

Cobble%	0.0
Gravel%	2.7
Coarse	0.0
Medium	0.6
Fine	2.1
Sand%	67.6
Coarse	26.0
Medium	23.2
Fine	18.4
Silt%	19.5
Coarse	7.6
Medium	6.1
Fine	5.7
Clay%	10.3

PLASTICITY

Liquid Limit	36
Plasticity Index	9
Linear Shrinkage	4.7

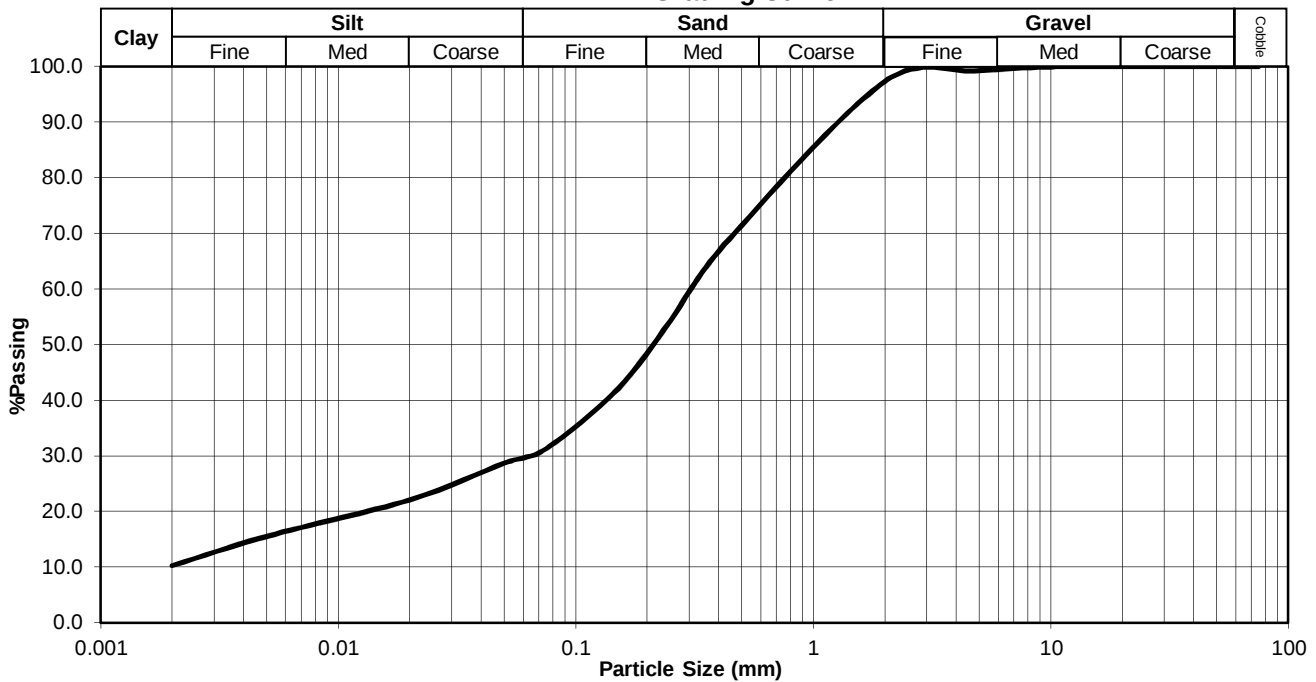
GRADING

D10 Size (mm)	<0.002
Uniformity Coefficient	NA
Grading Modulus	1.03

CLASSIFICATION

Potential Expansiveness	Low
Group Index	0
AASHTO Soil Classification	A - 2 - 4
Unified Classification	SM

Grading Curve



Ref no.: M2003

Fig no.: 0

Project: Elite Geo&EnviroTrenance 3 Reservoir

Ref no.: M2003 **Lab no.:** 170919 **Borehole/Pit no.:** TP5 **Fig no.:** 0

Depth: 1.10-1.50

Grading Analysis

Grain Size %Passing

Grain Size (mm)	%Passing
75	90.1
53	78.7
37.5	69.8
26.5	65.4
19	63.6
13.2	63.4
9.5	63.3
4.75	63.1
2	62.5
0.425	47.3
0.25	33.2
0.15	21.3
0.075	13.4
0.05	11.8
0.02	9.4
0.005	7.8
0.002	6.2

M.I.T SIZE

CLASSIFICATION

Cobble%	17.7
Gravel%	19.8
Coarse	18.5
Medium	0.7
Fine	0.6
Sand%	50.0
Coarse	13.6
Medium	21.7
Fine	14.8
Silt%	6.2
Coarse	3.0
Medium	1.5
Fine	1.7
Clay%	6.2

PLASTICITY

Liquid Limit	19
Plasticity Index	0
Linear Shrinkage	0

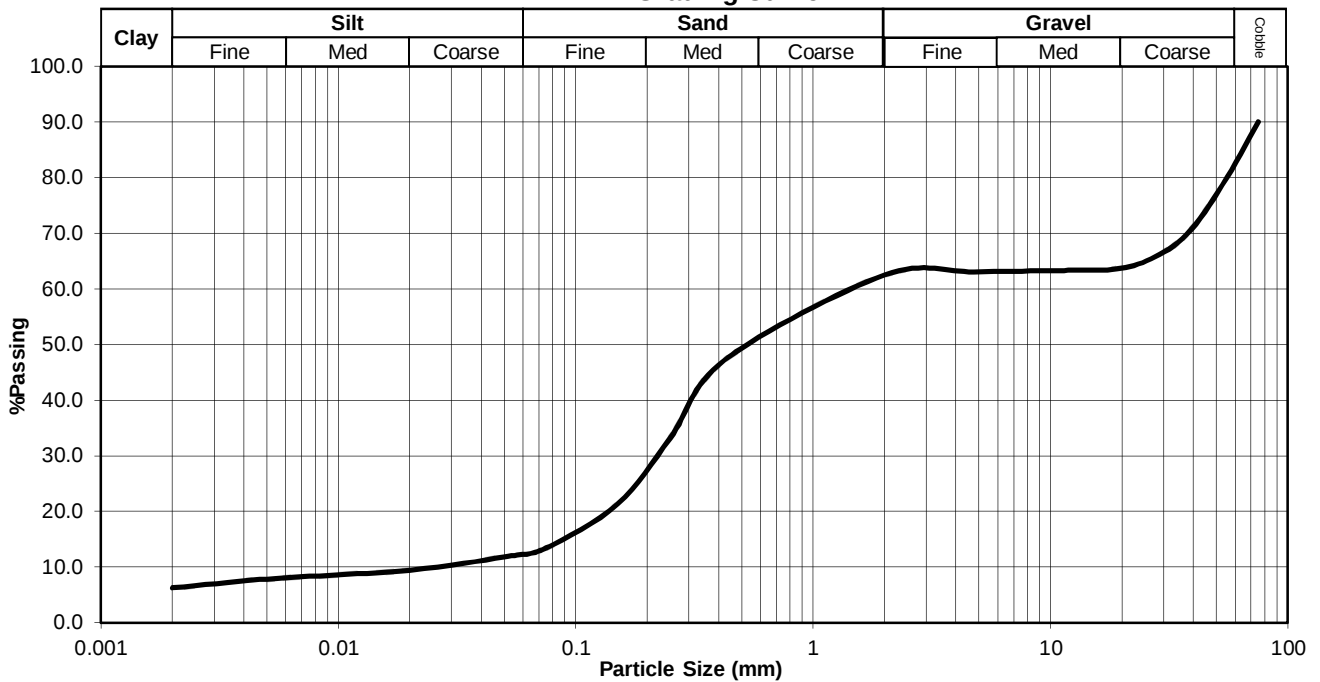
GRADING

D10 Size (mm)	0.025
Uniformity Coefficient	62.42
Grading Modulus	1.77

CLASSIFICATION

Potential Expansiveness	Low
Group Index	0
AASHTO Soil Classification	A - 1 - b
Unified Classification	SM

Grading Curve



Ref no.: M2003

Fig no.: 0

THEKWINI SOILS LAB. CC

V.A.T. REGISTRATION NO. 4590210961.

68 Ridge Road,
Tollgate, DURBAN
Tel : (031) 201-8992P.O. Box 30464,
MAYVILLE, 4058
Fax : (031) 201-7920**Project:** Elite Geo&Enviro/Trenance 3 Reservoir**Ref no.:** M2003 **Lab no.:** 170920 **Borehole/Pit no.:** TP7 **Fig no.:** -**Depth:** 1.0-1.50**Grading Analysis**

Grain Size (mm)	%Passing
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
13.2	98.9
9.5	97.9
4.75	97.0
2	95.7
0.425	71.7
0.25	51.5
0.15	32.2
0.075	19.5
0.05	16.9
0.02	12.9
0.005	9.0
0.002	7.7

M.I.T SIZE**CLASSIFICATION**

Cobble%	0.0
Gravel%	4.3
Coarse	0.0
Medium	2.7
Fine	1.6
Sand%	77.7
Coarse	21.3
Medium	32.6
Fine	23.9
Silt%	10.3
Coarse	5.0
Medium	3.7
Fine	1.6
Clay%	7.7

PLASTICITY

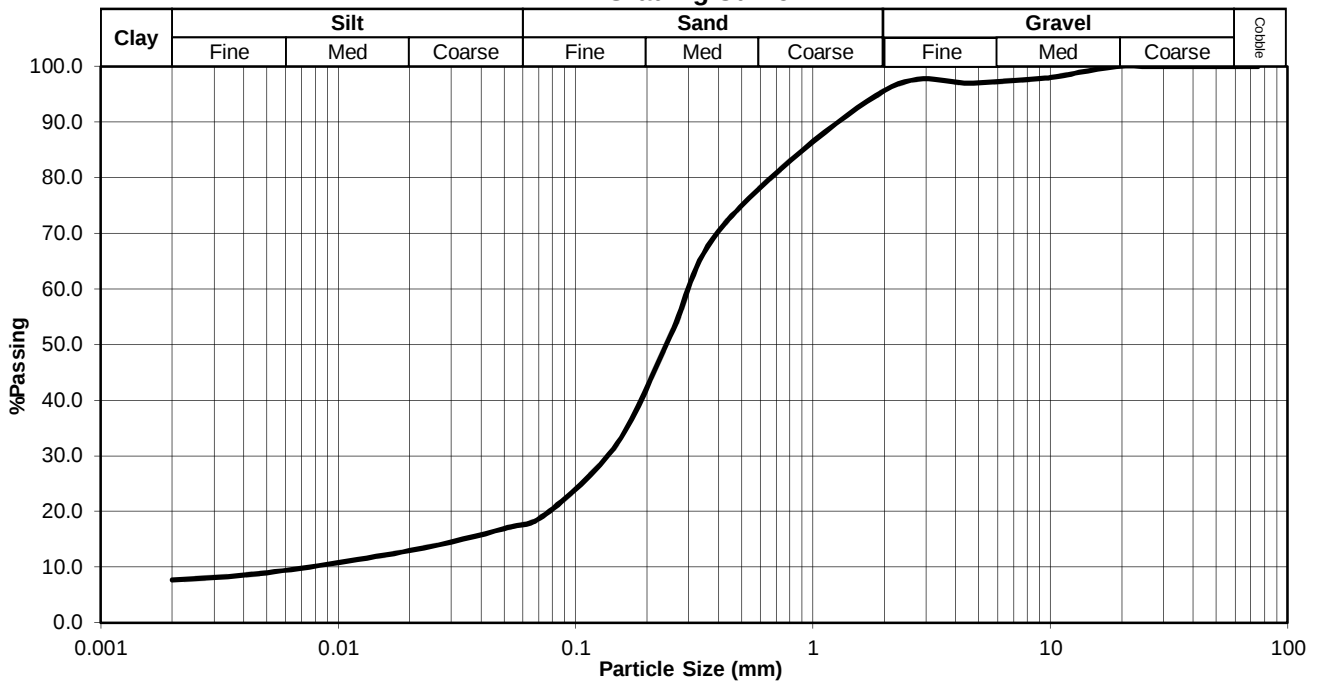
Liquid Limit	18
Plasticity Index	0
Linear Shrinkage	0

GRADING

D10 Size (mm)	0.0072
Uniformity Coefficient	43.72
Grading Modulus	1.13

CLASSIFICATION

Potential Expansiveness	Low
Group Index	0
AASHTO Soil Classification	A - 2 - 4
Unified Classification	SM

Grading Curve**Ref no.:** M2003**Fig no.:** -

Appendix D

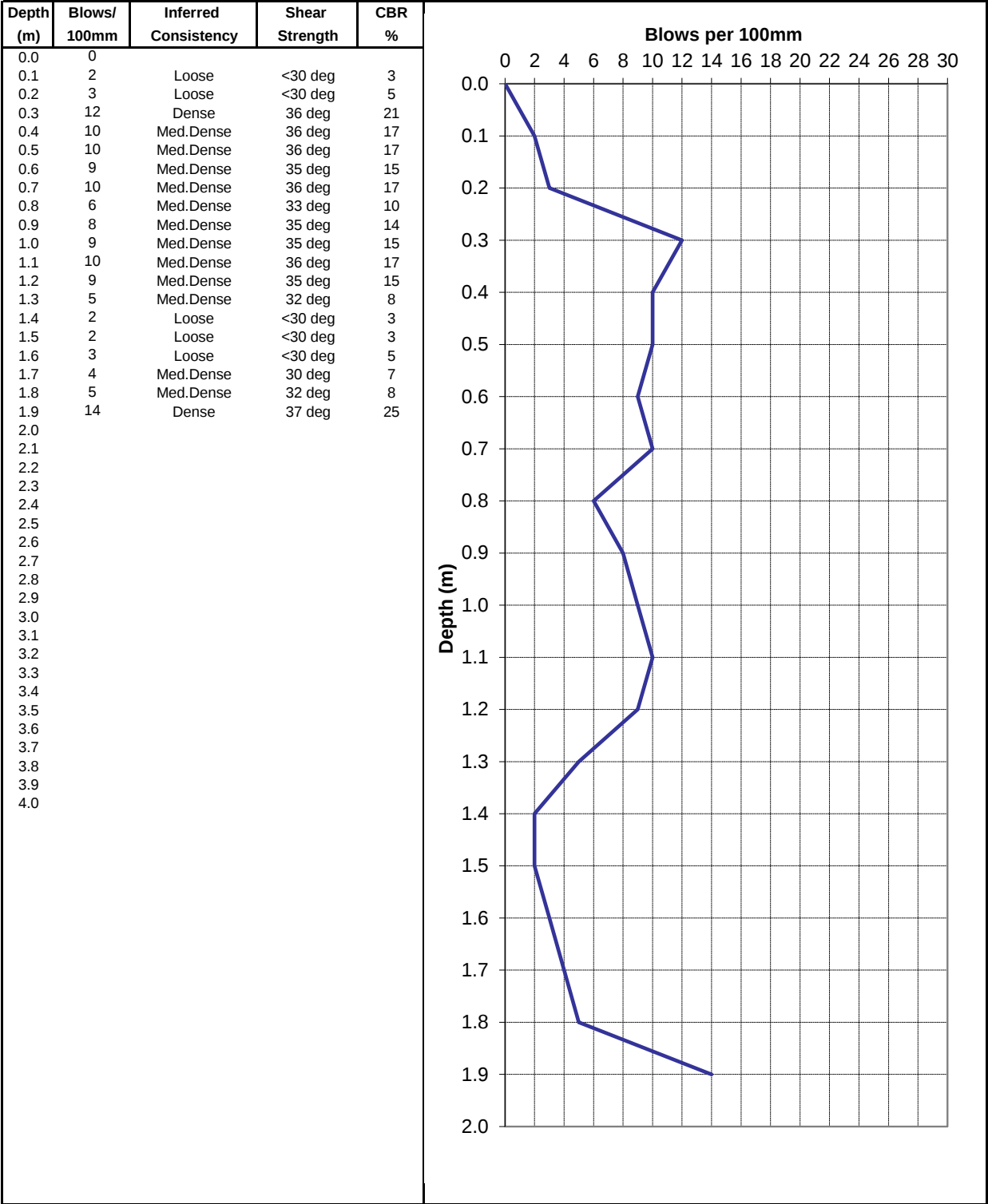
DCP Results

Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE

TEST No DCP1

THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.

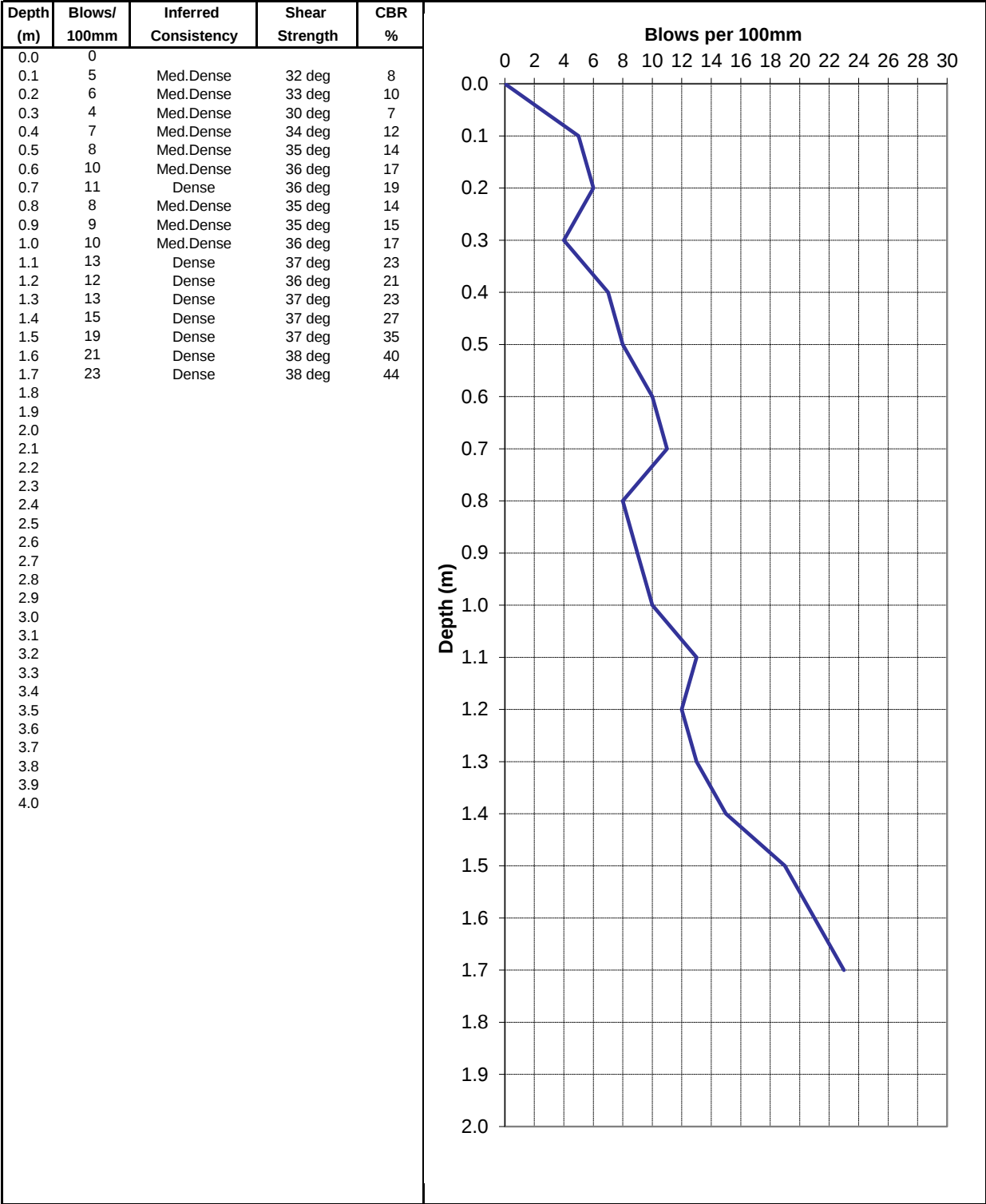


Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE

TEST No DCP2

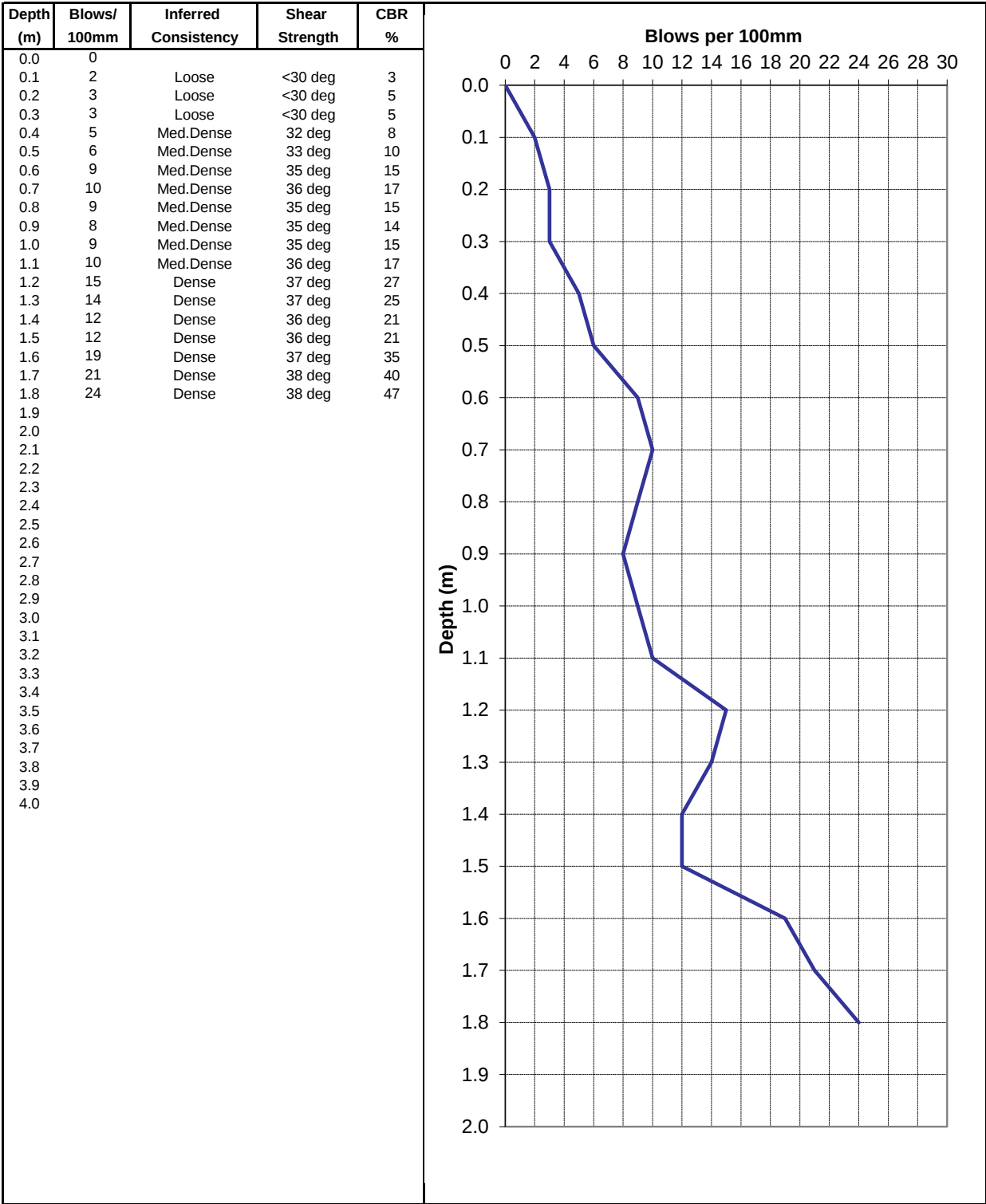
THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.



Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE	TEST No	DCP3
--	----------------	-------------

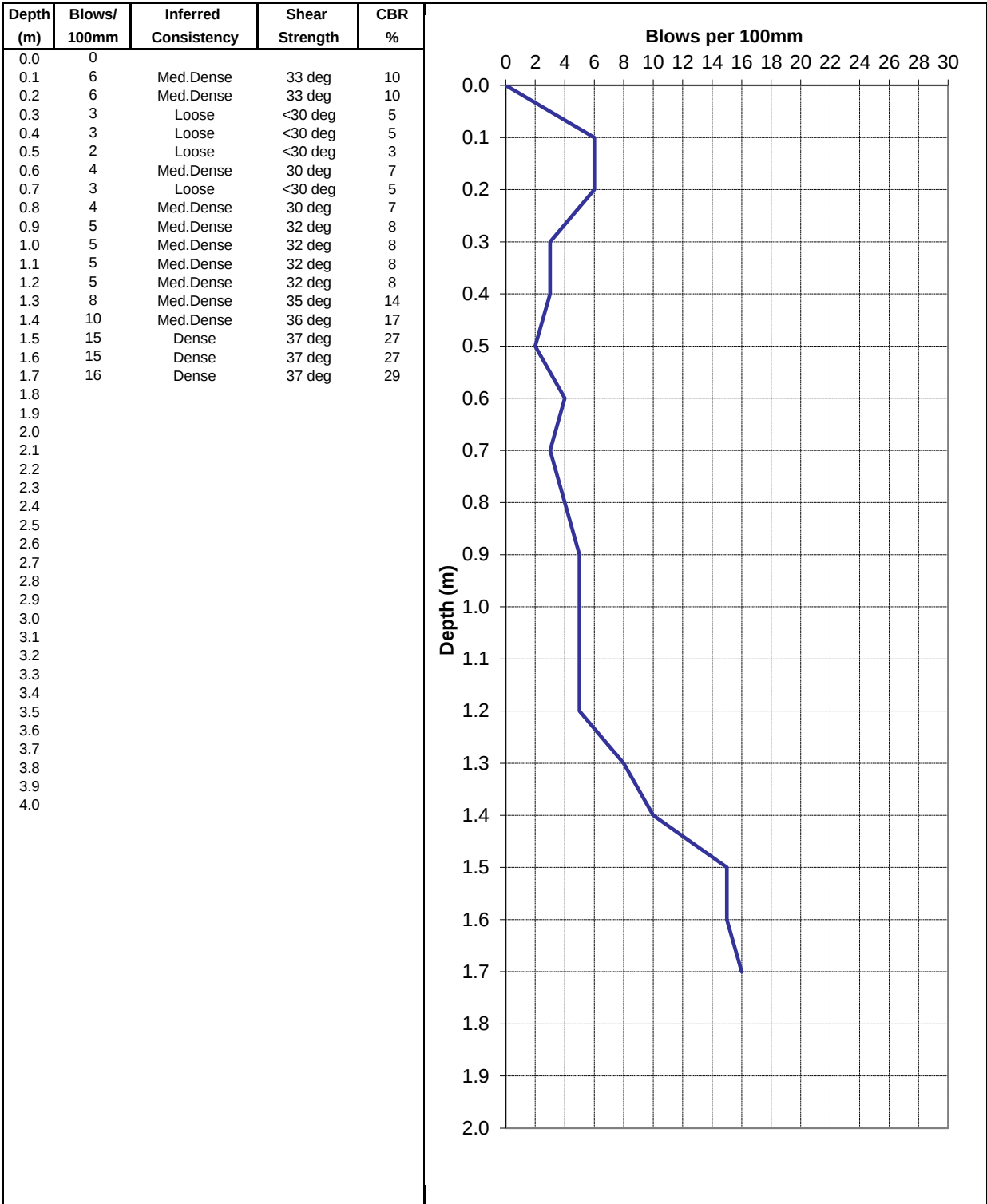
THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.



Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE	TEST No	DCP4
--	----------------	-------------

THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.

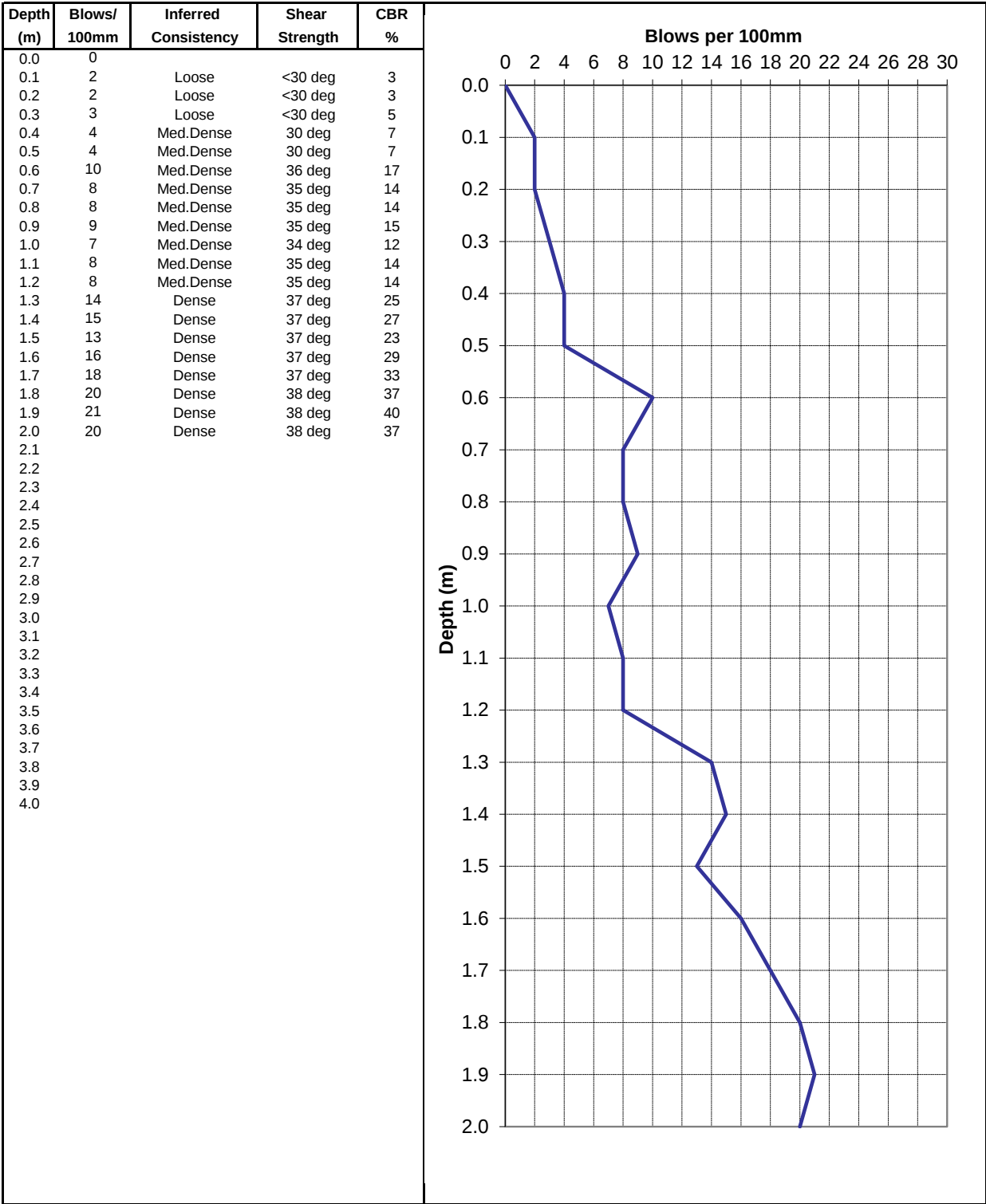


Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE

TEST No DCP5

THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.

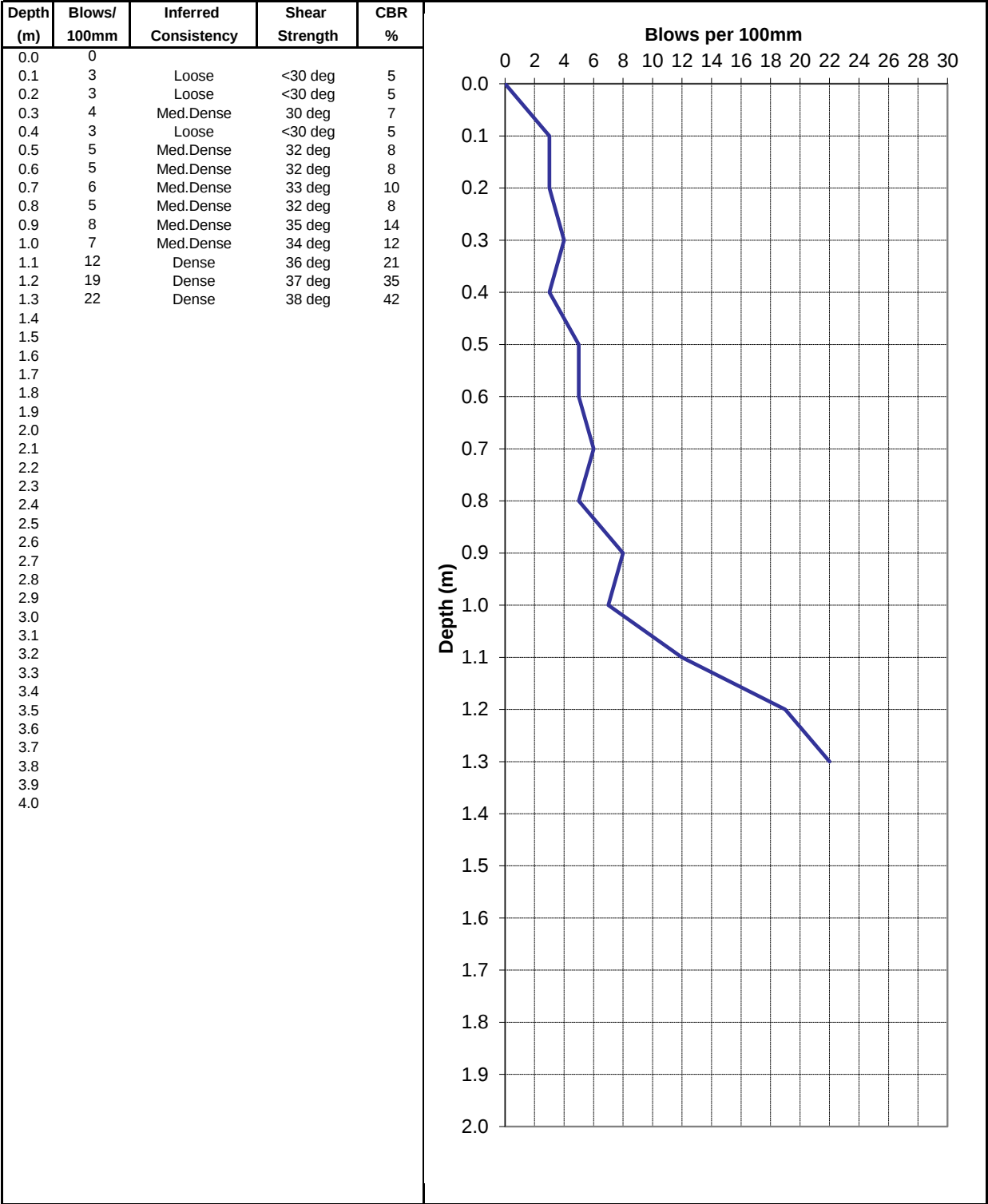


Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE

TEST No DCP6

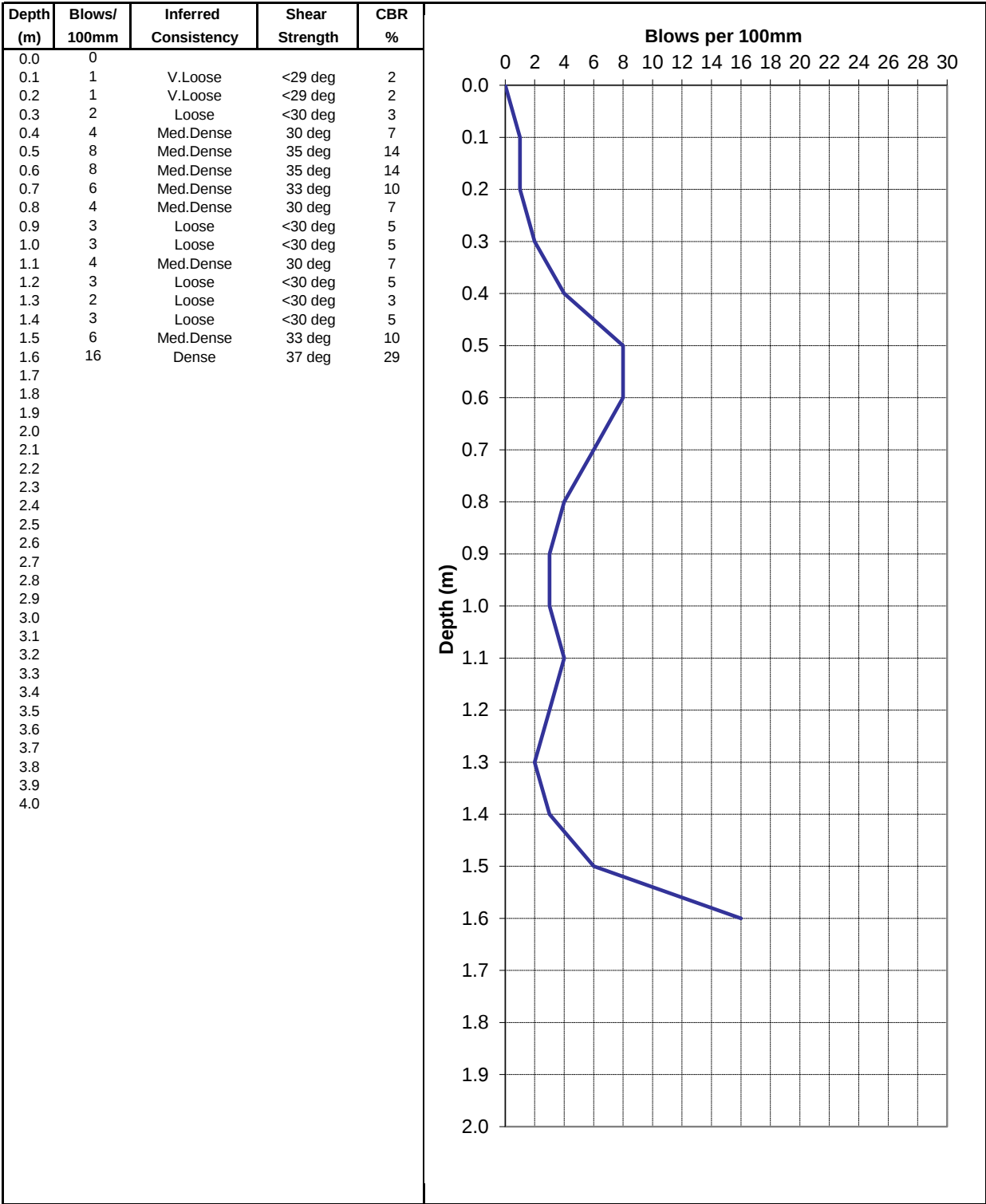
THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.



Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE	TEST No DCP7
--	---------------------

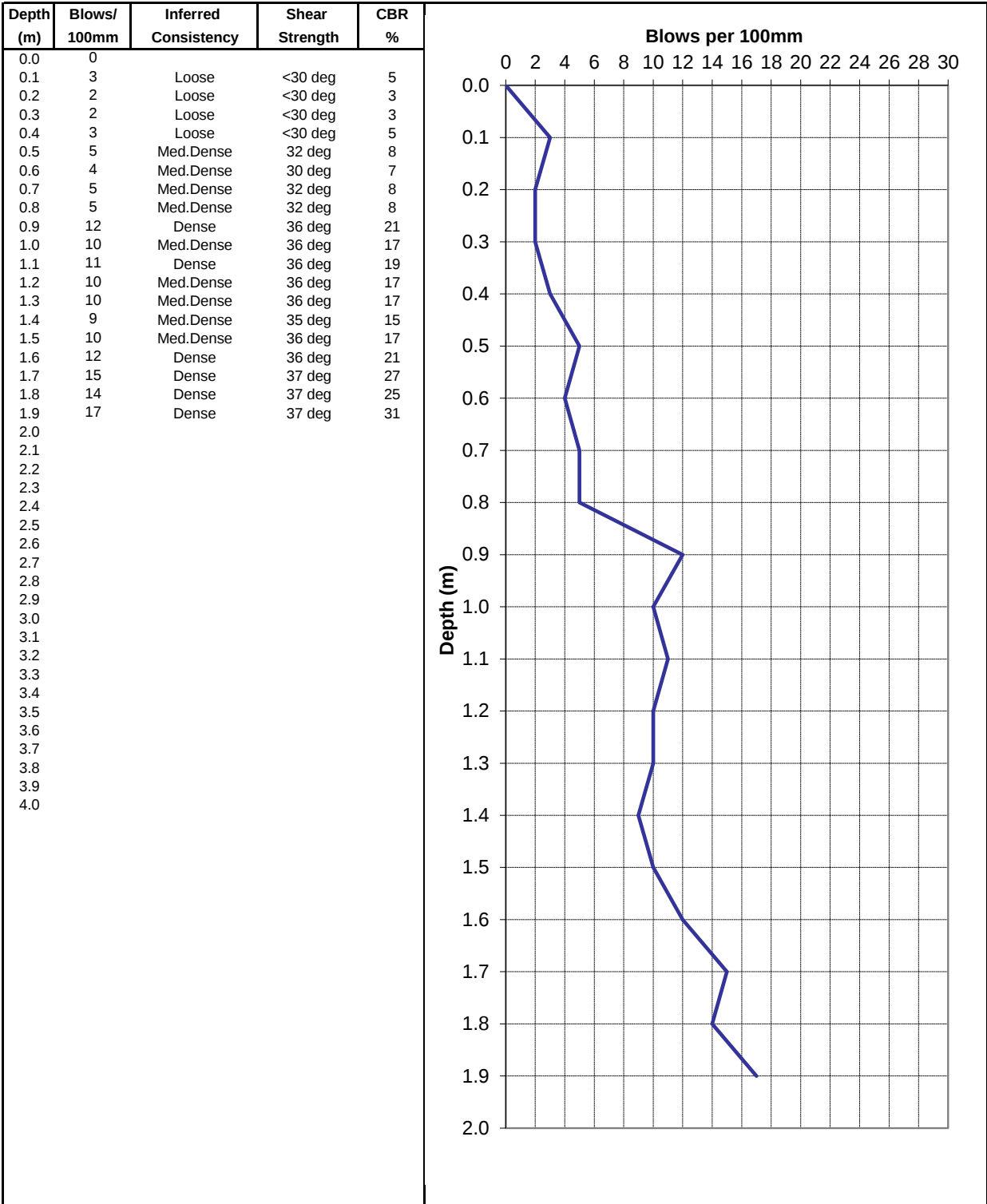
THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.



Client:	EThekweni Municipality	Ref. No.:	EGE2024-19
Project:	Trenance 3 Reservoir	Date:	12-Oct-24
Section:		Operator:	NE

CBR DYNAMIC CONE PENETROMETER PROBE	TEST No	DCP8
--	----------------	-------------

THE STRENGTH AND CBR VALUES ARE EMPIRICAL AND DEPEND ON FACTORS SUCH AS MOISTURE CONTENT WHICH HAVE NOT BEEN DETERMINED. THEY ARE THEREFORE INDICATIVE AND SHOULD BE VERIFIED BY TEST OR OBSERVATION.



Appendix E

Point load Test Results

Point Load Test Recording Sheet											Version: 5.0			
Job:	EGE2024-19			Borehole:	BH01 to BH07		Site:	Trenance 3 Reservoir			Drill Rig:			
Observer:	NM & SGM			Sheet:	1 of 1		Drill Length:	±10m						
												20		
BH ID	Sample Length (m)	Sample State	Rock Type	Test Sample ID	Test Sample Midpoint Depth	Test Type	Platen Sep (D) (mm)	Width (W) (mm)	Failure Load (kN)	Failure Mode	Comment	Area	Is50	UCS PLI
BH01	0.09	D	SS	1	6.08	D	64	87	2.69	P		4,096.0	0.66	13.15
BH01	0.13	D	SS	2	6.19	D	64	129	3.88	P		4,096.0	0.95	18.96
BH01	0.14	D	SS	3	6.35	D	64	135	4.30	P		4,096.0	1.05	21.01
BH01	0.04	D	SS	4	6.09	A	35	64	4.52	P		2,852.1	1.59	31.71
BH01	0.06	D	SS	5	6.20	A	56	64	9.93	P		4,563.3	2.18	43.54
BH01	0.06	D	SS	6	6.36	A	57	64	5.94	P		4,644.8	1.28	25.57
BH02	0.07	D	SS	1	6.77	D	64	73	4.70	P		4,096.0	1.15	22.95
BH02	0.10	D	SS	2	6.85	D	64	95	5.62	P		4,096.0	1.37	27.44
BH02	0.10	D	SS	3	7.02	D	64	98	0.50	B		4,096.0	0.12	2.44
BH02	0.05	D	SS	4	6.78	A	51	64	2.34	P		4,155.9	0.56	11.26
BH02	0.05	D	SS	5	6.86	A	47	64	5.48	P		3,829.9	1.43	28.62
BH02	0.05	D	SS	6	7.03	A	50	64	4.81	P		4,074.4	1.18	23.61
BH03	0.08	D	SS	1	3.57	D	64	75	9.59	P		4,096.0	2.34	46.83
BH03	0.09	D	SS	2	3.64	D	64	85	8.46	P		4,096.0	2.07	41.31
BH03	0.07	D	SS	3	3.72	D	64	65	2.06	P		4,096.0	0.50	10.06
BH03	0.04	D	SS	4	3.58	A	43	64	8.80	P		3,504.0	2.51	50.23
BH03	0.06	D	SS	5	3.65	A	62	64	14.33	P		5,052.2	2.84	56.73
BH03	0.04	D	SS	6	3.73	A	35	64	8.53	P		2,852.1	2.99	59.82
BH04	0.10	D	SS	1	6.90	D	64	102	4.79	P		4,096.0	1.17	23.39
BH04	0.09	D	SS	2	6.99	D	64	92	5.29	P		4,096.0	1.29	25.83
BH04	0.10	D	SS	3	7.12	D	64	100	5.15	P		4,096.0	1.26	25.15
BH04	0.05	D	SS	4	6.92	A	47	64	9.16	P		3,829.9	2.39	47.83
BH04	0.06	D	SS	5	7.02	A	56	64	7.97	P		4,563.3	1.75	34.93
BH04	0.04	D	SS	6	7.13	A	39	64	8.55	P		3,178.0	2.69	53.81
BH05	0.10	D	SS	1	8.48	D	64	98	4.53	P		4,096.0	1.11	22.12
BH05	0.09	D	SS	2	8.57	D	64	88	5.90	P		4,096.0	1.44	28.81
BH05	0.12	D	SS	3	8.67	D	64	120	5.94	P		4,096.0	1.45	29.00
BH05	0.05	D	SS	4	8.49	A	50	64	8.20	P		4,074.4	2.01	40.25
BH05	0.05	D	SS	5	8.58	A	48	64	3.95	P		3,911.4	1.01	20.20
BH05	0.05	D	SS	6	8.68	A	52	64	6.89	P		4,237.3	1.63	32.52
BH06	0.14	D	SS	1	6.90	D	64	138	6.48	P		4,096.0	1.58	31.64
BH06	0.12	D	SS	2	7.04	D	64	118	5.35	P		4,096.0	1.31	26.12
BH06	0.11	D	SS	3	7.14	D	64	105	2.53	P		4,096.0	0.62	12.35
BH06	0.06	D	SS	4	6.91	A	62	64	12.20	P		5,052.2	2.41	48.30
BH06	0.06	D	SS	5	7.05	A	55	64	9.18	P		4,481.8	2.05	40.97
BH06	0.05	D	SS	6	7.15	A	51	64	7.39	P		4,155.9	1.78	35.56
BH07	0.09	D	SS	1	6.00	D	64	90	5.69	P		4,096.0	1.39	27.78
BH07	0.10	D	SS	2	6.11	D	64	100	5.74	P		4,096.0	1.40	28.03
BH07	0.08	D	SS	3	6.19	D	64	80	7.19	P		4,096.0	1.76	35.11
BH07	0.05	D	SS	4	6.01	A	51	64	9.86	P		4,155.9	2.37	47.45
BH07	0.05	D	SS	5	6.12	A	52	64	11.03	P		4,237.3	2.60	52.06
BH07	0.05	D	SS	6	6.20	A	46	64	9.76	P		3,748.4	2.60	52.08

Rock Type	Test Type	UCS from PLI AVERAGE (MPa)	Sample Count	Minimum	Maximum	Standard deviation
Sandstone	Axial	39.86	21	11.26	59.80	
Sandstone	Diametral	24.74	21	2.44	46.83	

