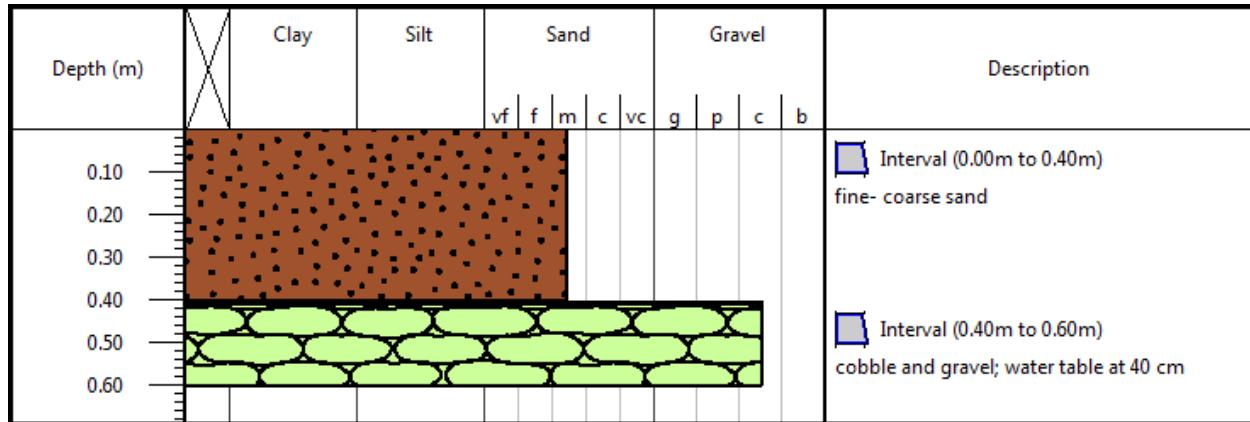
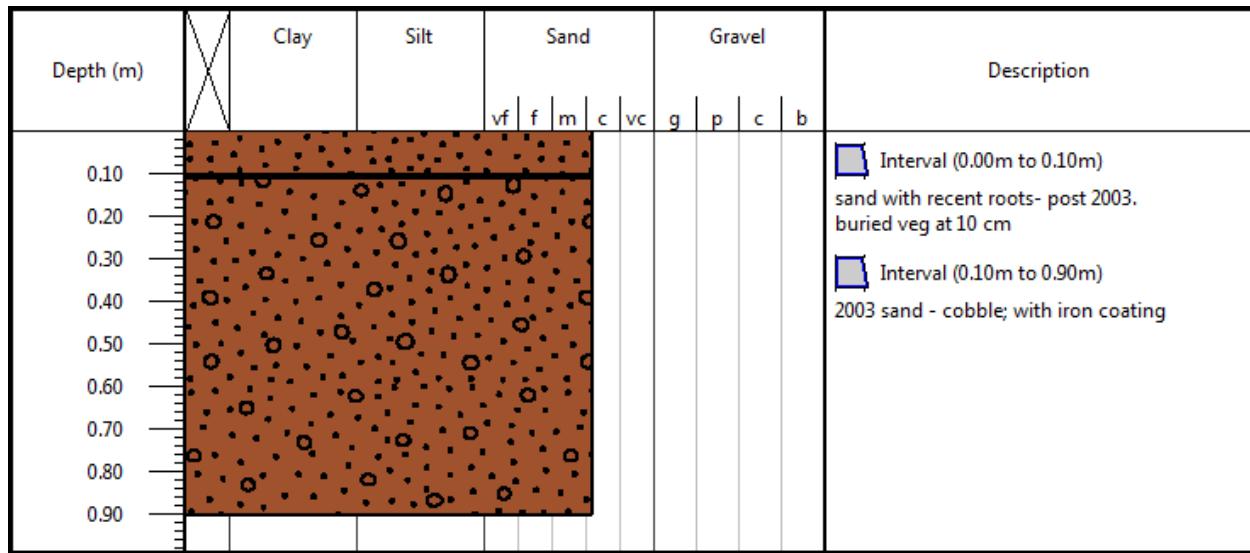


Appendix 1: Stratigraphic sediment profile cross sections. Representing thickness and texture of sediments and buried materials. Collected September 2009 using a Bobcat Excavator in Lulu City Wetland – Rocky Mountain National Park, CO.

Pit 1



Pit 2



Pit

3

Soil profile diagram showing depth (m) from 0.00 to 1.10. The profile is divided into three main layers:

- Top Layer (0.00m to 0.31m):** brown silt/ fine sand; roots
- Middle Layer (0.31m to 1.048m):** gray, med-fine sand with buried vegetation
- Bottom Layer (1.048m to 1.10m):** coarse sand/gravel

Pit 4

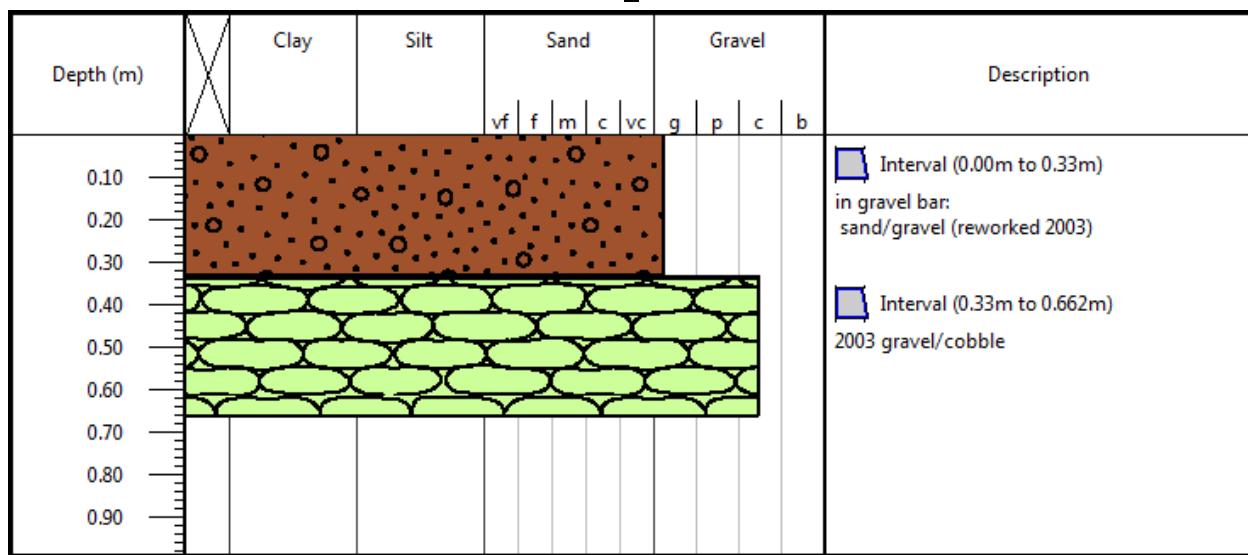
Depth (m)	Clay	Silt	Sand				Gravel				Description
			vf	f	m	c	vc	g	p	c	
0.00	X										
0.10											
0.20											
0.30											
0.40											
0.50											
0.60											
0.70											
0.80											
0.90											
1.00											
1.10											
1.20											

Legend:

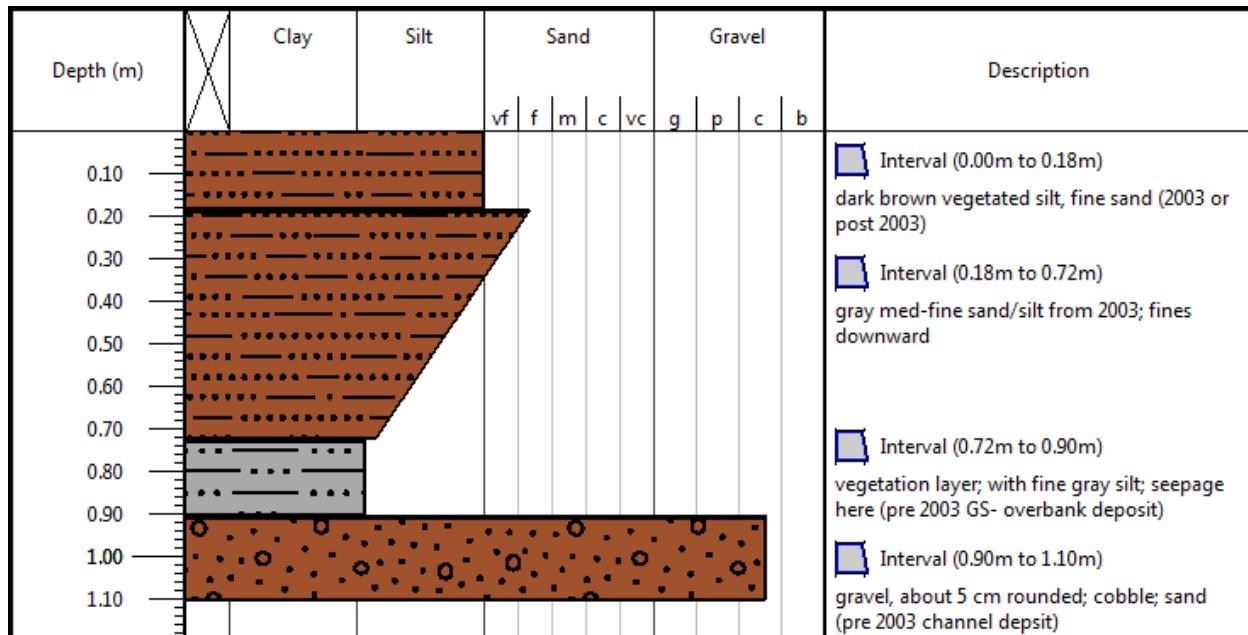
- Interval (0.00m to 0.12m) silt with roots-post 2003
- Interval (0.12m to 0.43m) coarse oxidized sand with gravel- 2003
- Interval (0.43m to 1.00m) coarse sand (2003) base at 43 cm
- Interval (1.00m to 1.20m) old channel gravels

Pit

5



Pit 6



Pit

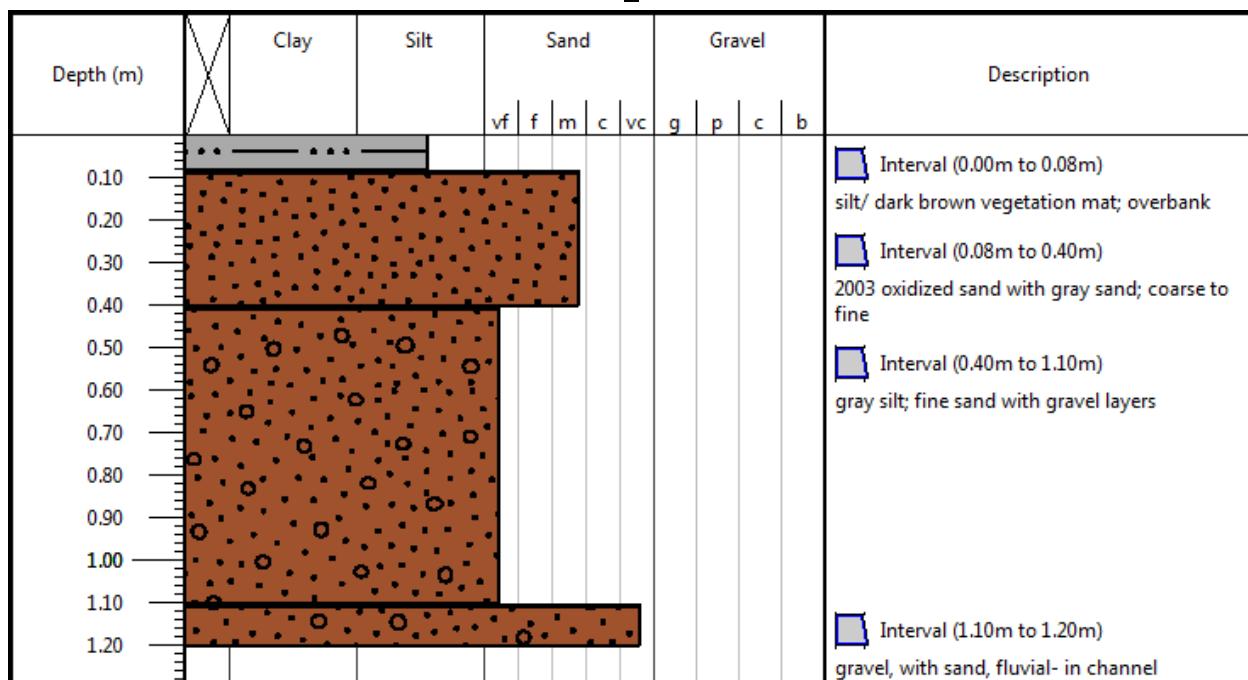
7

Pit 8

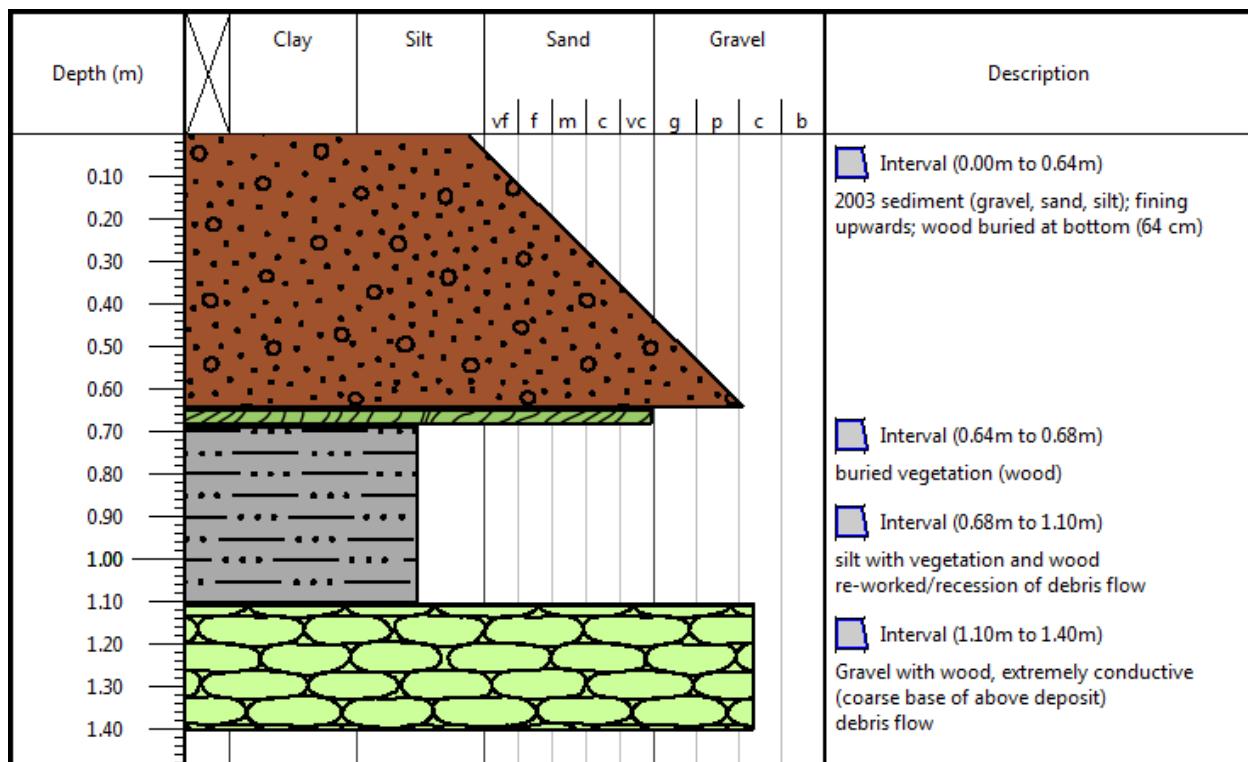
Depth (m)		Clay	Silt	Sand			Gravel			Description			
				vf	f	m	c	vc	g	p	c	b	
0.10													Interval (0.00m to 0.31m) heavily rooted; dark brown; silt/fine sand
0.20													
0.30													Interval (0.31m to 0.45m) oxidized coarse sand and gray silt with gravels; 2003
0.40													
0.50													Interval (0.45m to 0.64m) gravel and coarse sand with high conductivity (pre 2003 debris flow)
0.60													
0.70													
0.80													
0.90													Interval (0.64m to 0.88m) gray silt (pond deposit)

Pit

9

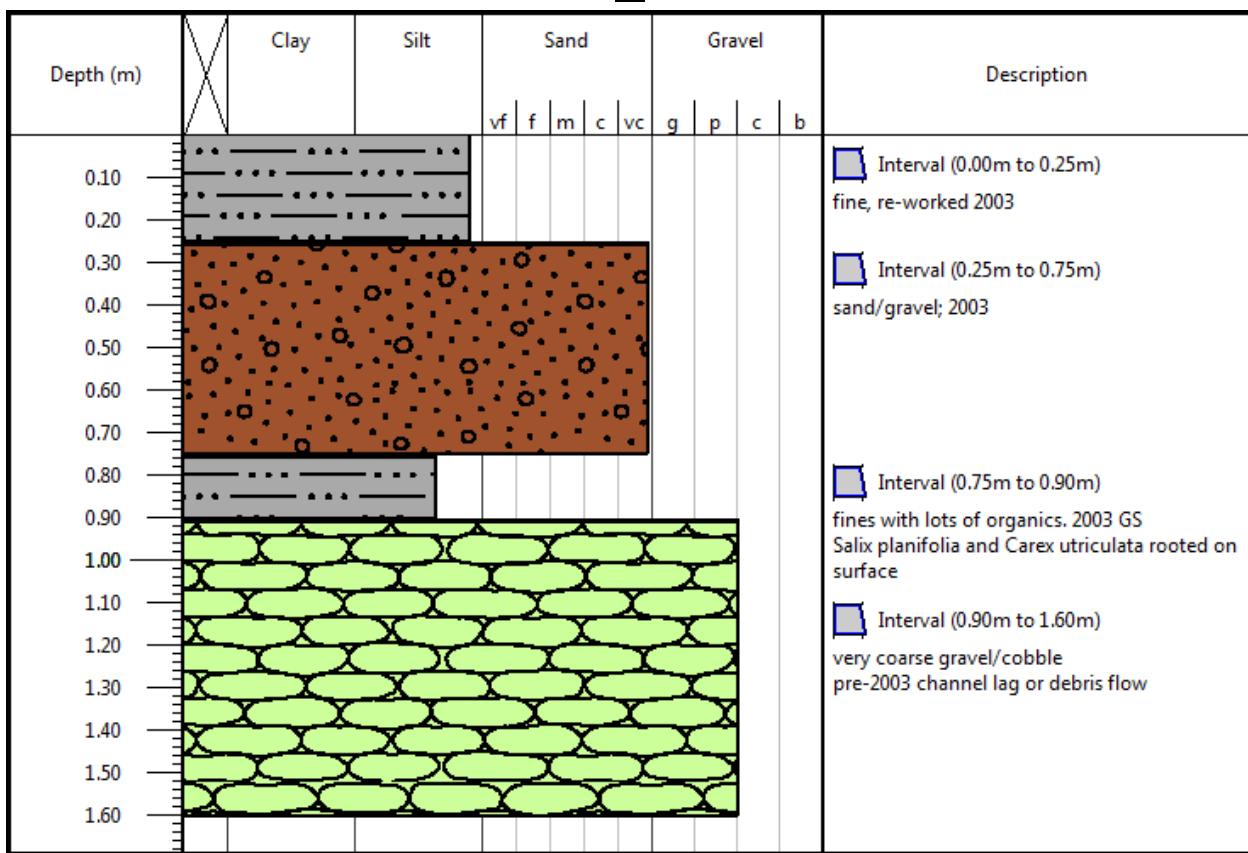


Pit 10



Pit

11



Pit 12

No stratigraphic data for pit 12. Excavated two standing dead Lodgepole Pines from the hole. The germination crown of the small pine was 25 cm below the current ground surface and had approximately 20 annual growth rings. The germination crown of the large pine was 55 cm below the current ground surface and had approximately 45 annual growth rings.

Pit

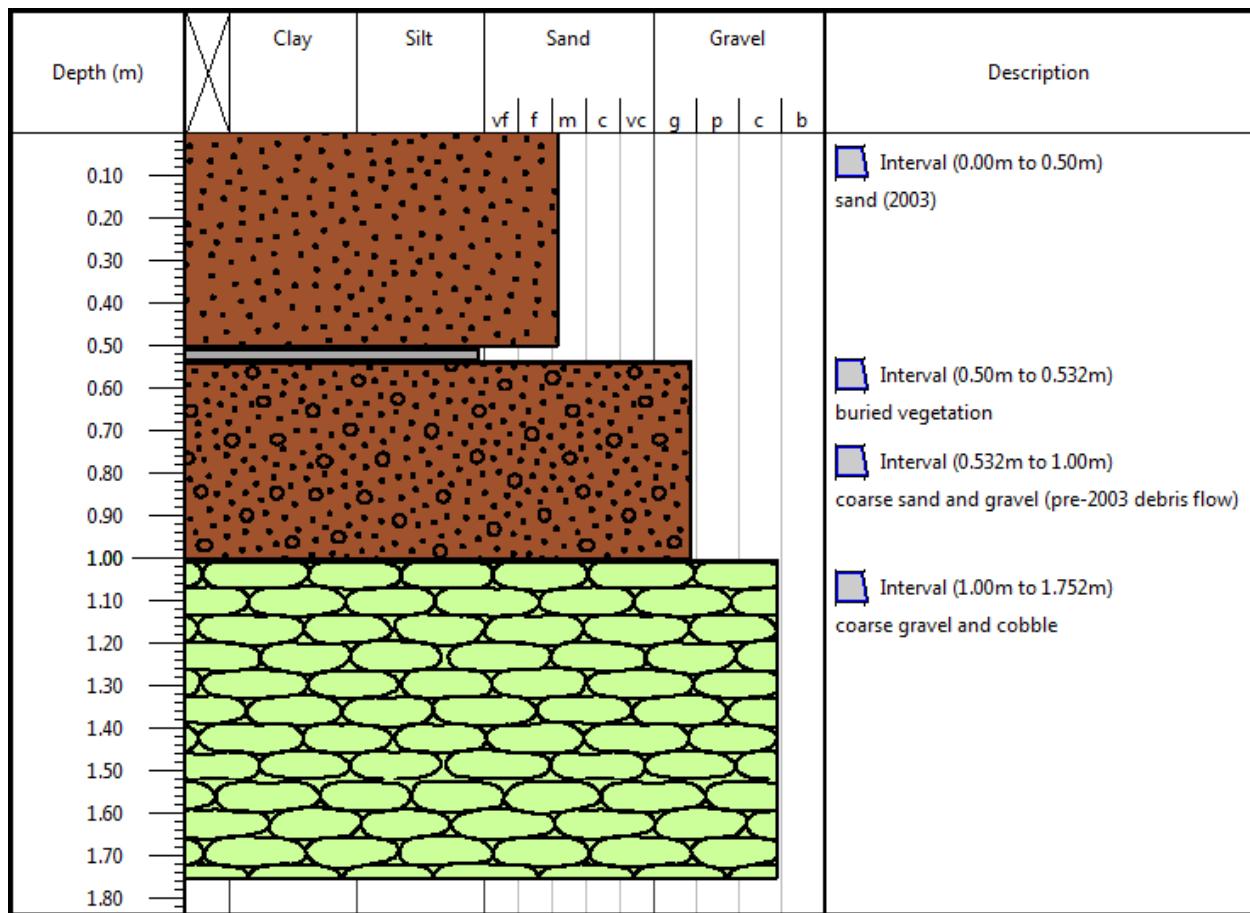
13

Pit

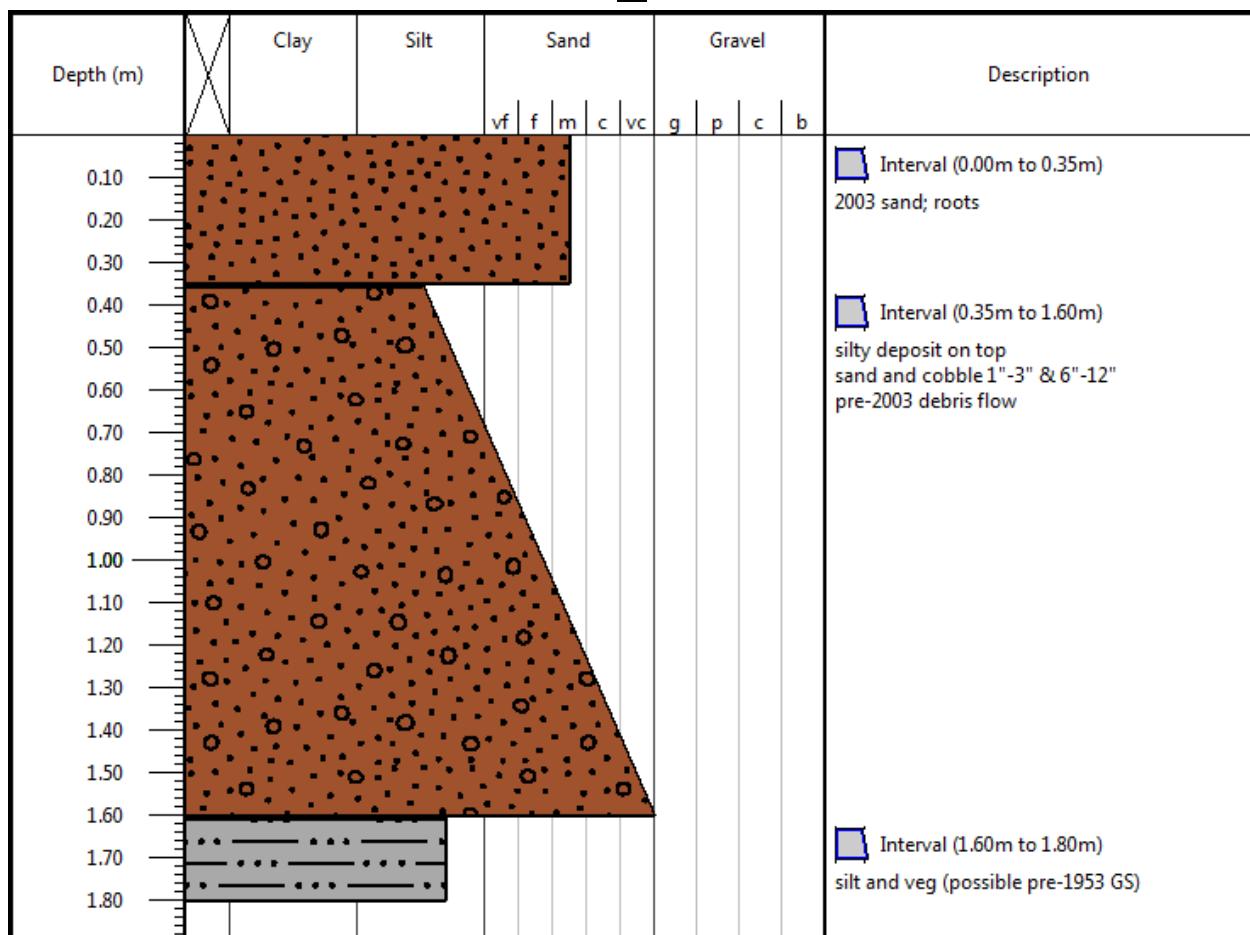
14

Depth (m)	Clay	Silt	Sand			Gravel				Description			
			vf	f	m	c	vc	g	p	c	b		
0.10													
0.20													
0.30													
0.40													
0.50													
0.60													
0.70													
0.80													
0.90													
1.00													
1.10													
1.20													
1.30													

Pit 15

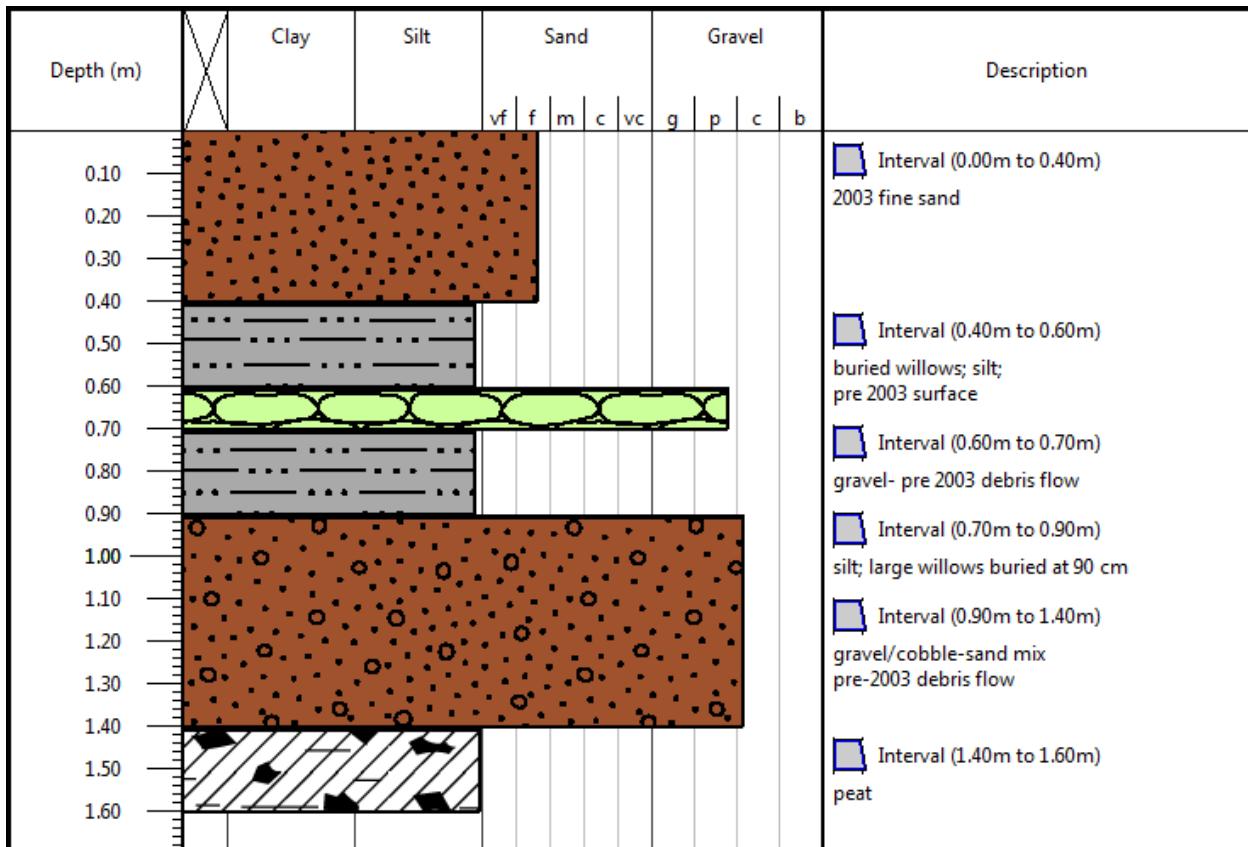


Pit

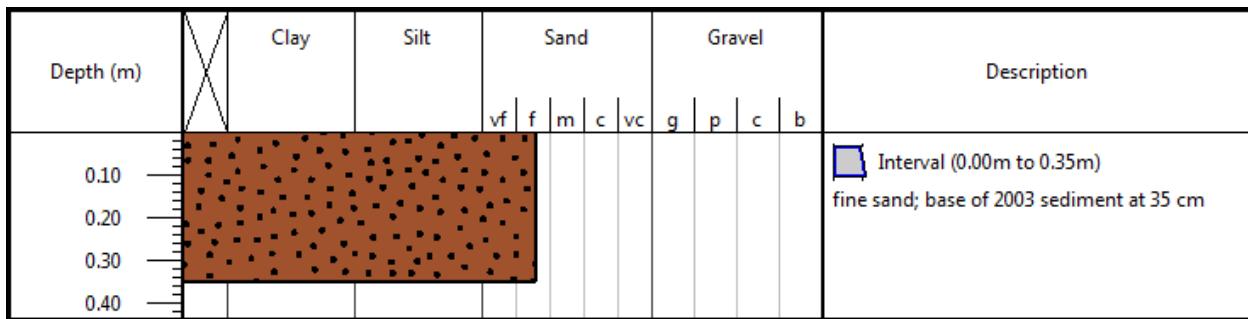
16

Pit

17



Pit 18



Pit

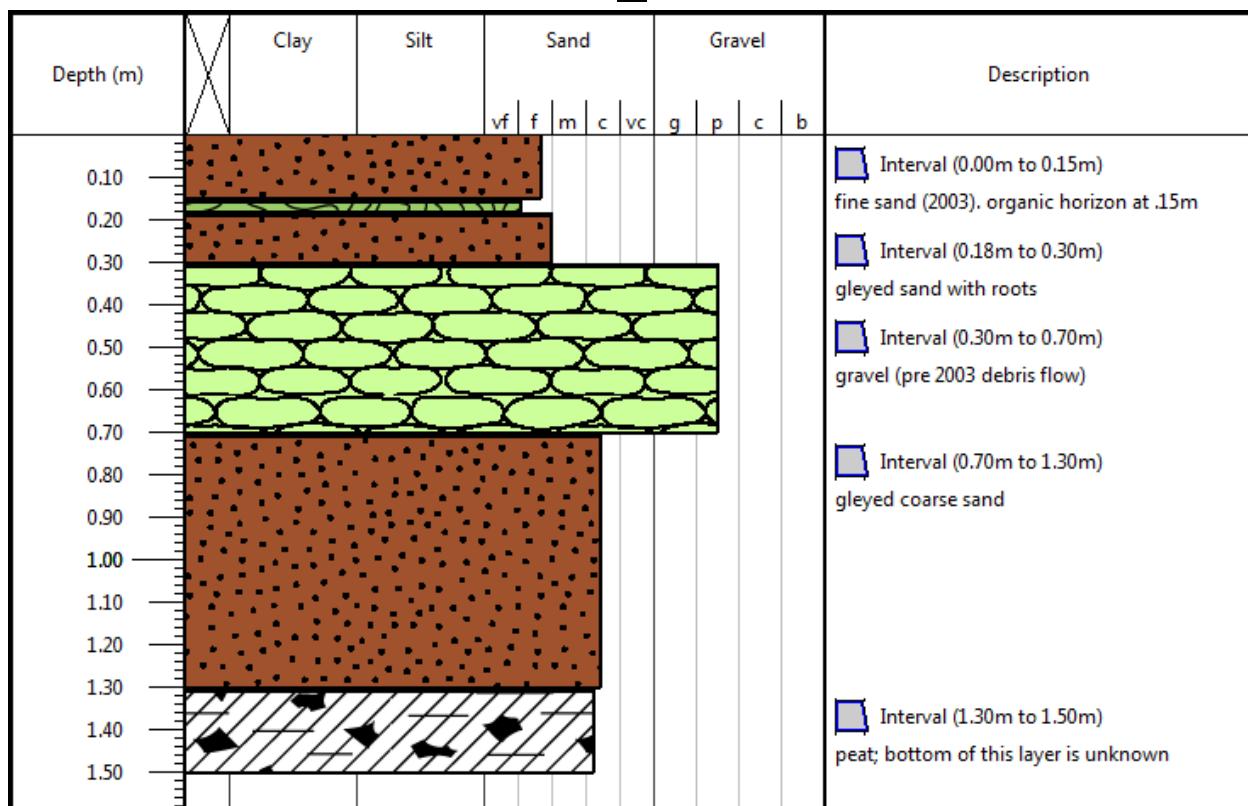
19

Depth (m)	Clay	Silt	Sand		Gravel			Description				
			vf	f	m	c	vc	g	p	c	b	
0.10												Interval (0.00m to 0.348m) fine sand (2003)
0.20												
0.30												
0.40												Interval (0.348m to 0.396m) buried roots (base of 2003)
0.50												Interval (0.396m to 0.508m) sandy gravel

Pit 20

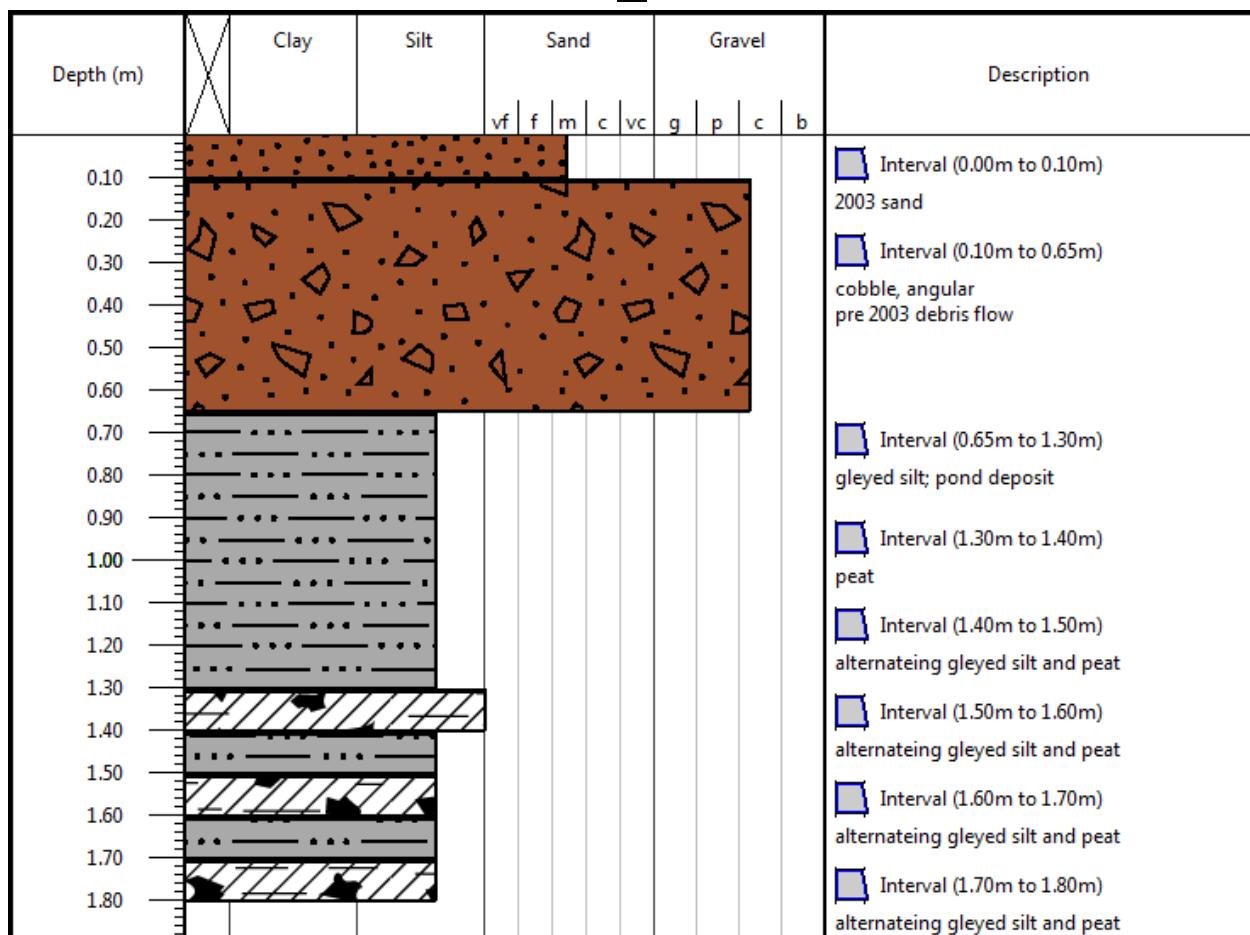
Pit

21



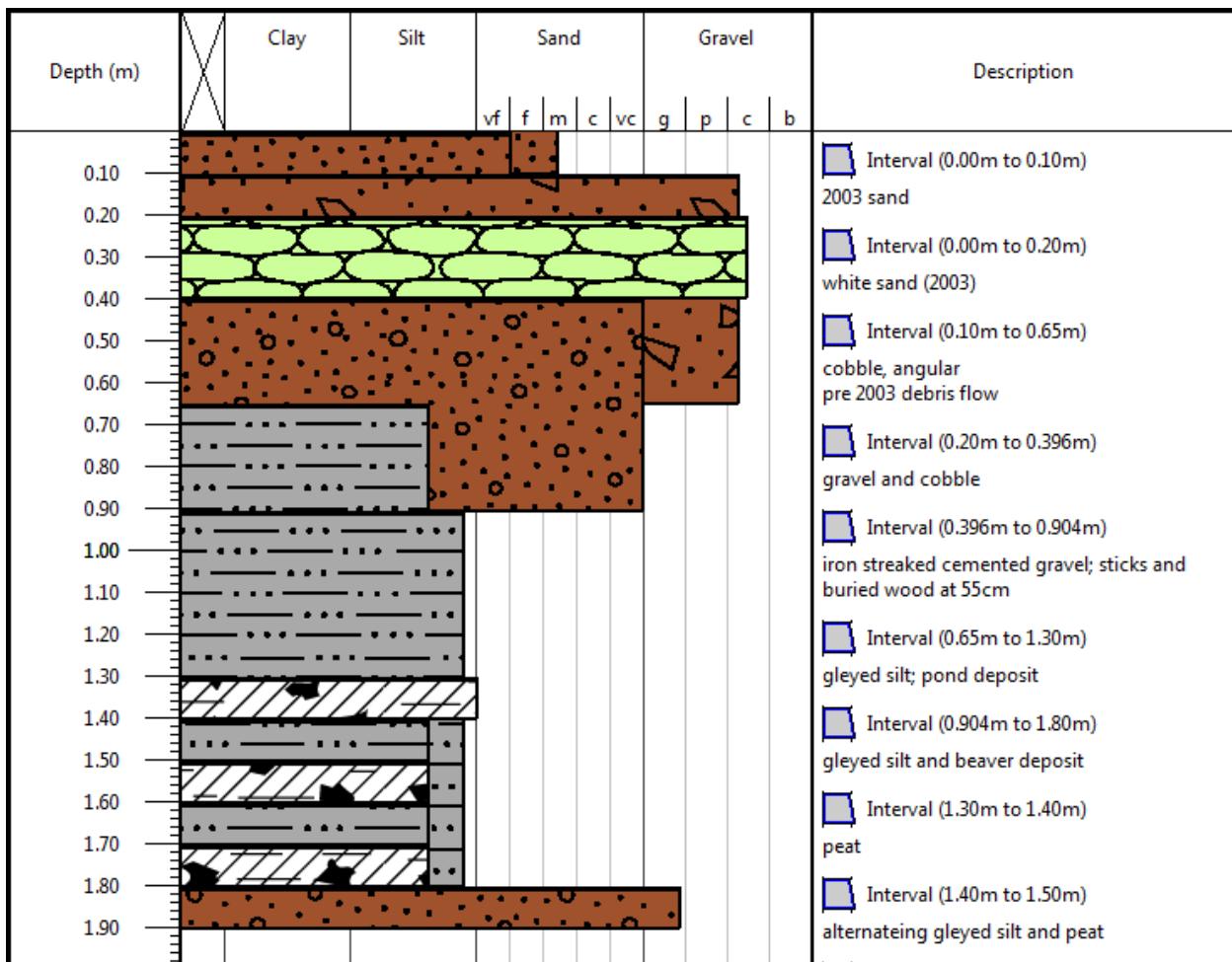
Pit

22

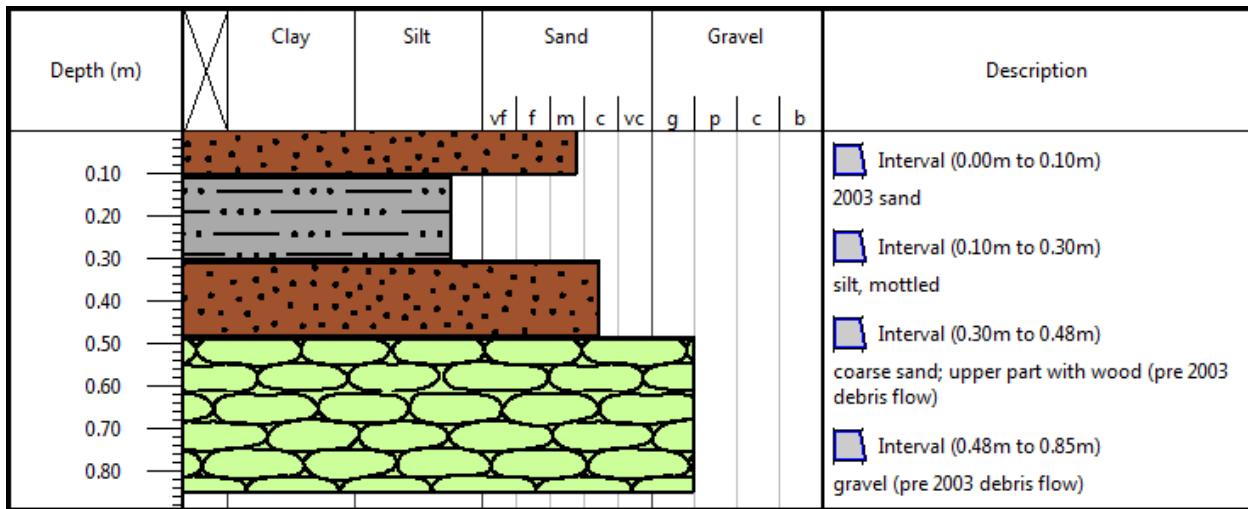


Pit

23



Pit 24



Pit

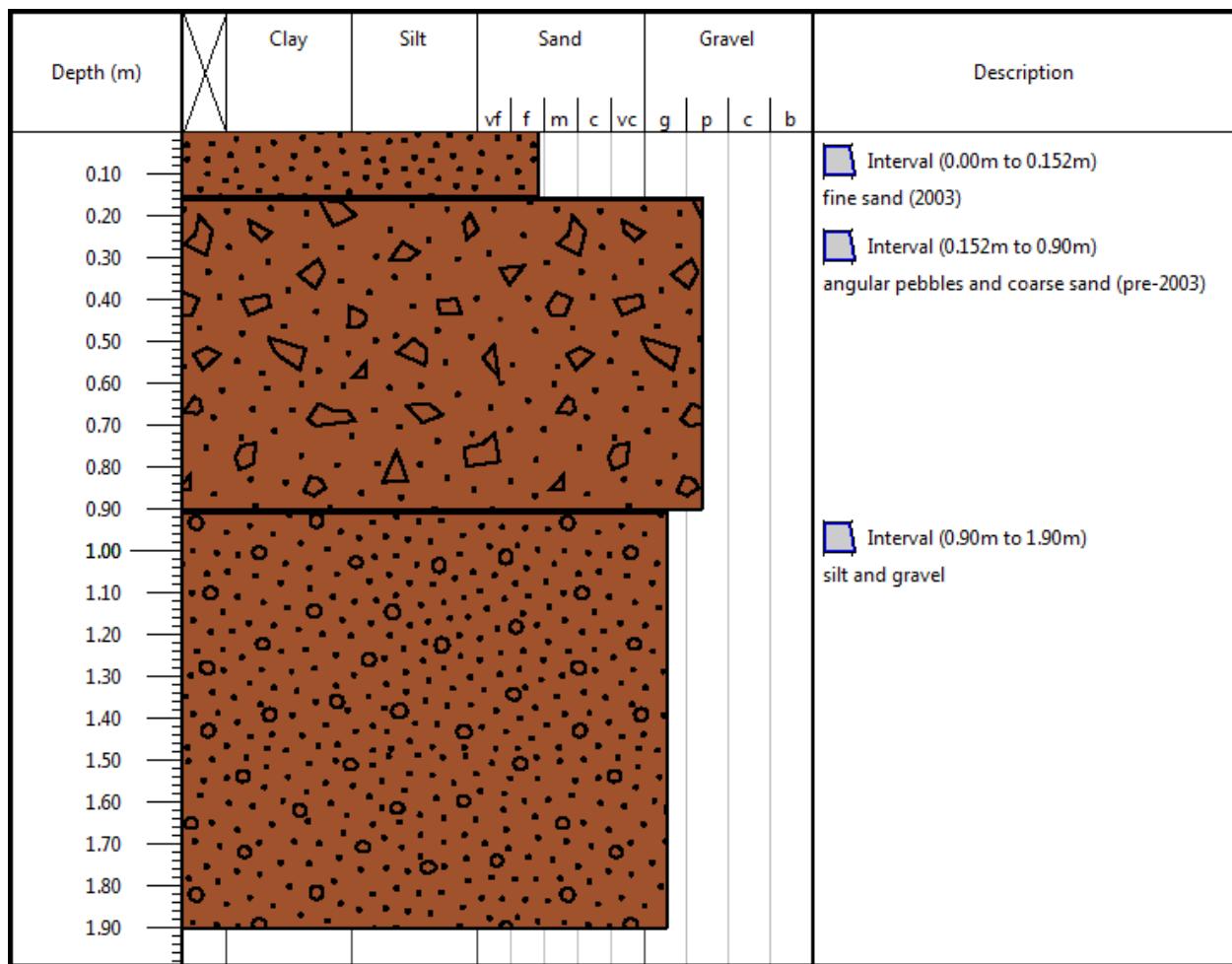
25

Pit

26

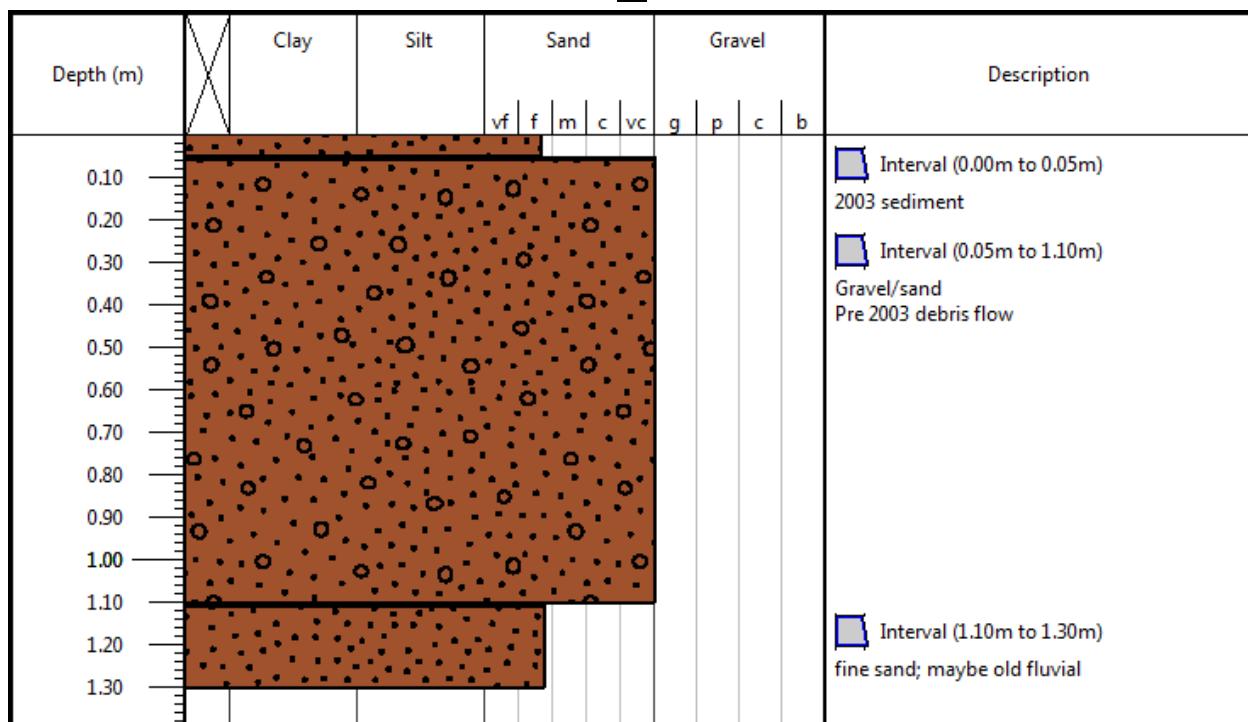
Depth (m)		Clay	Silt	Sand			Gravel			Description			
				vf	f	m	c	vc	g	p	c	b	
0.10													Interval (0.00m to 0.42m) angular pebbles and coarse sand
0.20													
0.30													
0.40													
0.50													Interval (0.42m to 1.052m) gleyed, ironstained silt with roots
0.60													
0.70													
0.80													
0.90													
1.00													
1.10													Interval (1.052m to 1.124m) peat
1.20													
1.30													Interval (1.20m to 1.292m) alternating peat and silt

Pit 27

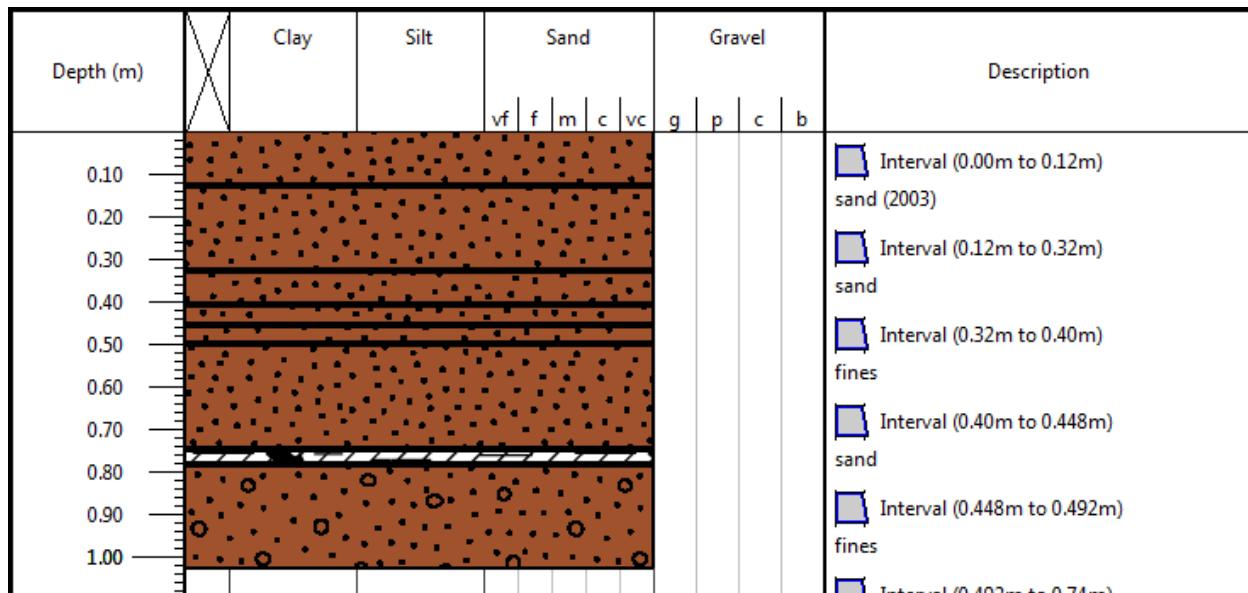


Pit

28



Pit 29



Pit

30

The figure is a geological cross-section diagram showing soil profile characteristics. The vertical axis represents Depth (m) from 0.00m to 1.40m. The horizontal axis represents various soil properties and descriptions. The profile is divided into several distinct layers:

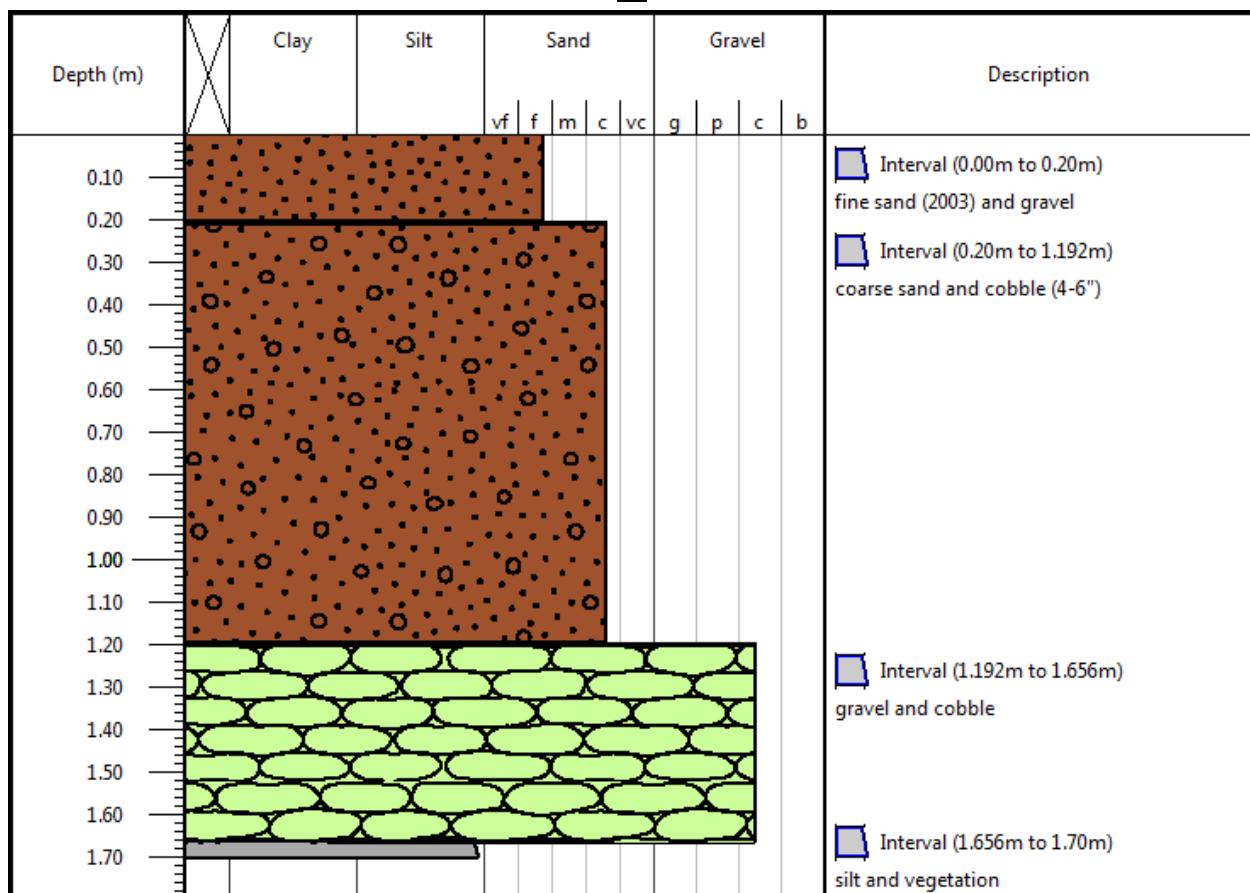
- 0.00m to 0.15m:** Interval (0.00m to 0.15m), described as 2003 sand.
- 0.15m to 0.60m:** Interval (0.15m to 0.60m), described as coarse sand/gravel; angular pebbles pre 2003 debris flow.
- 0.60m to 0.88m:** Interval (0.60m to 0.88m), described as gleyed silt, sorted debris flow? (beaver pond fill?).
- 0.88m to 1.35m:** Interval (0.88m to 1.35m), described as gravel; mixed mineral; mostly rounded in-channel deposits.

Soil properties listed along the top horizontal axis include: Clay, Silt, Sand (vf, f, m, c, vc), Gravel (g, p, c), and b.

Pit 31

Pit

32



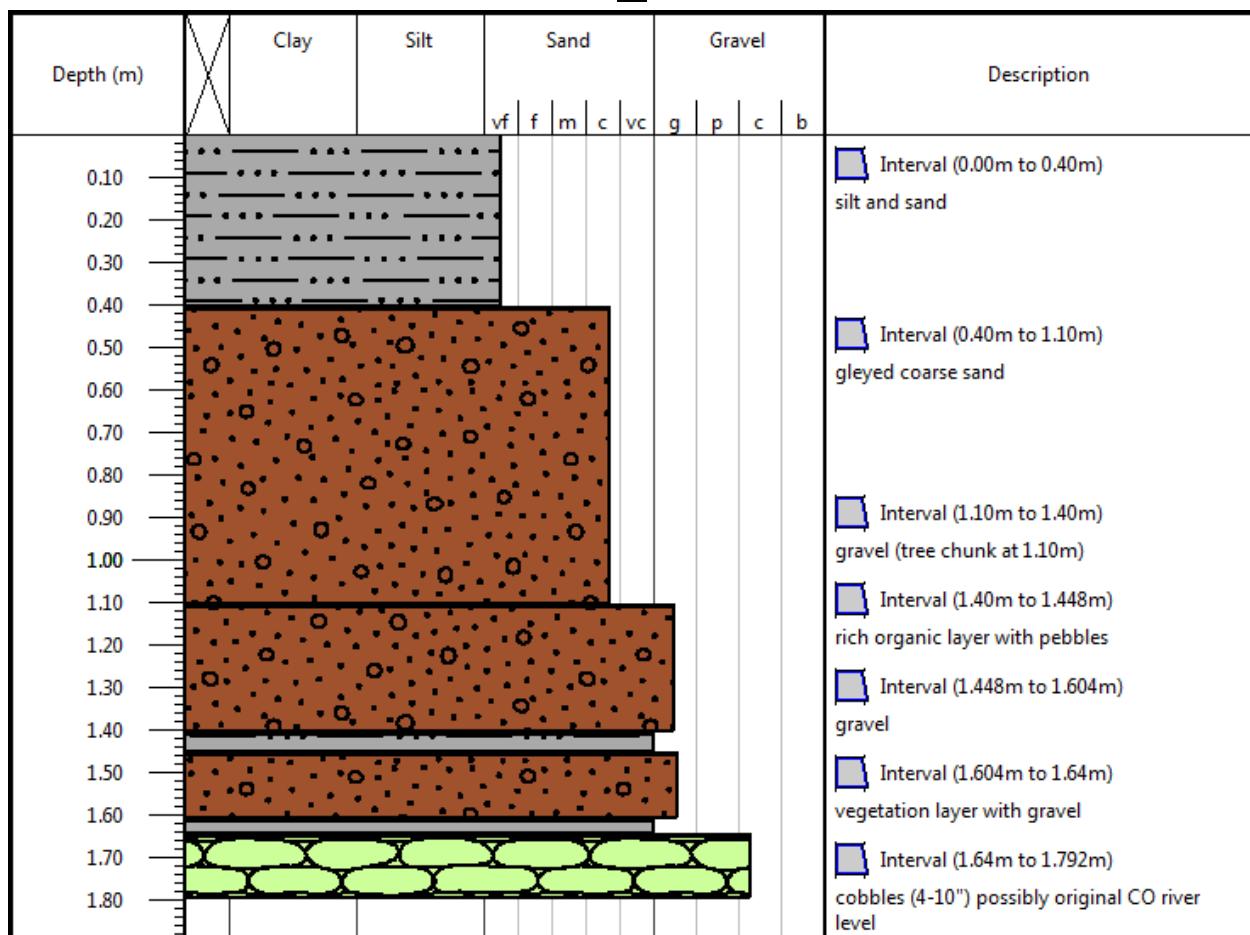
Pit

33

Depth (m)	Clay	Silt	Sand				Gravel				Description	
			vf	f	m	c	vc	g	p	c	b	
0.10												Interval (0.00m to 0.604m) silt and roots
0.20												
0.30												
0.40												
0.50												
0.60												Interval (0.604m to 1.70m) coarse sand and gravel
0.70												
0.80												
0.90												
1.00												
1.10												
1.20												
1.30												
1.40												
1.50												
1.60												
1.70												Interval (1.70m to 1.744m) stable vegetation layer beneath gravel
1.80												Interval (1.744m to 1.804m) silt and fines (dense and compact)

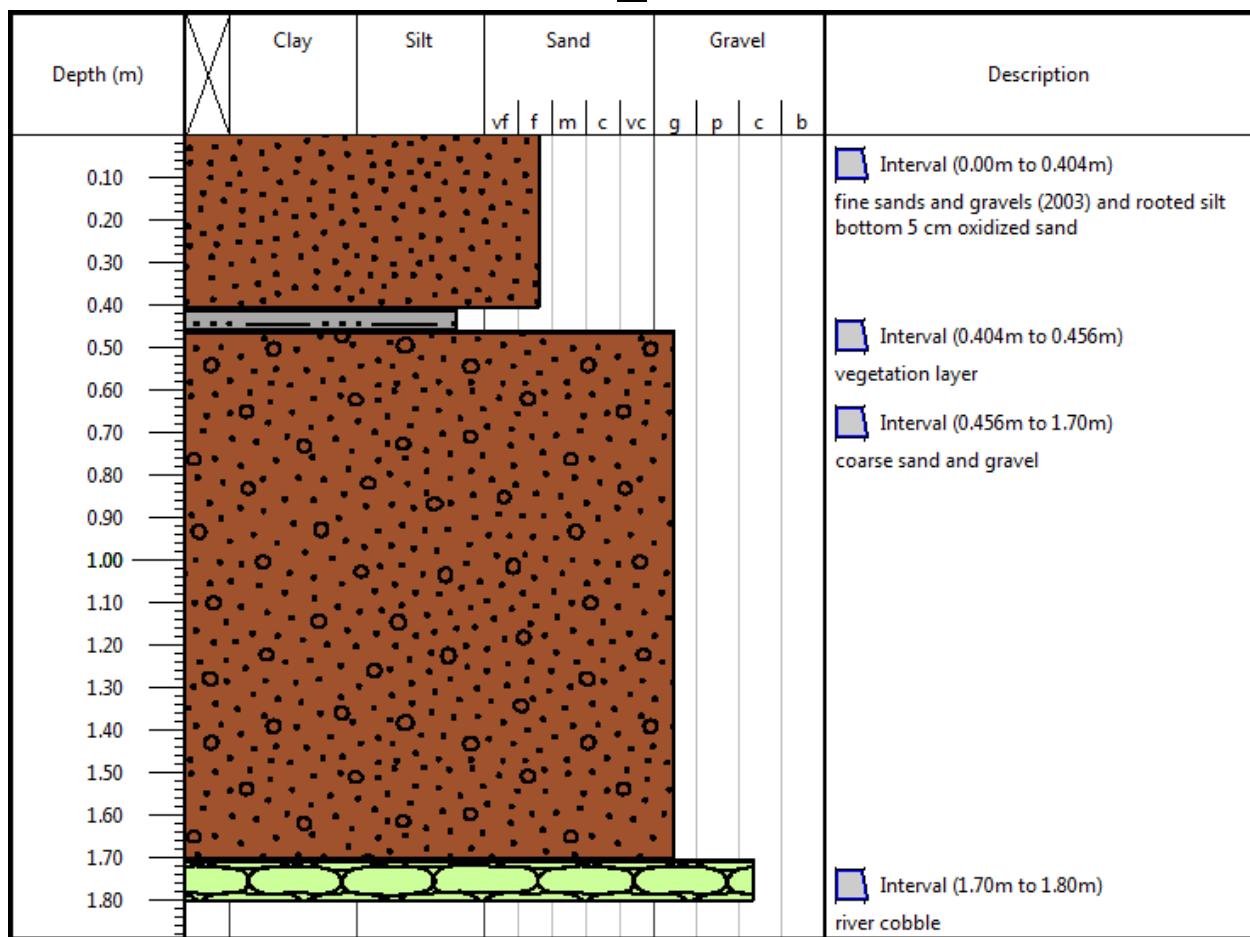
Pit

34



Pit

35



Pit

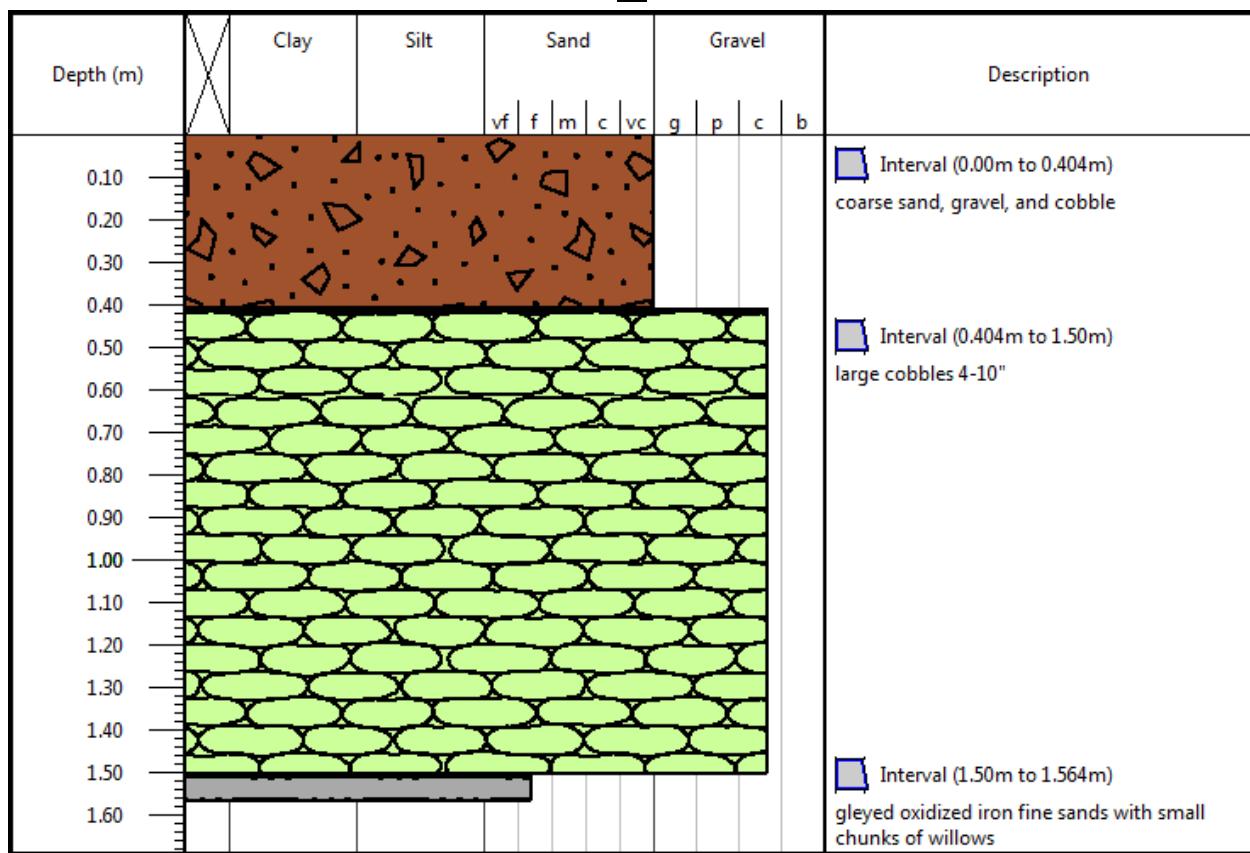
36

This figure is a soil profile diagram. The vertical axis on the left indicates depth in meters from 0.00m to 1.80m. The top layer is brown with small dots, followed by a thin grey layer at 0.50m. Below this is another brown layer with larger white circles. A thick grey layer follows, with a vertical white column at its base. The bottom layer is light green with horizontal wavy lines. At the very bottom is a dark grey layer. The top section has labels: Clay, Silt, Sand, and Gravel. Below these are codes: vf, f, m, c, vc, g, p, c, b. The right side is labeled 'Description' and contains five entries with blue boxes:

- Interval (0.00m to 0.448m)
rooting zone; some fines and unconsolidated gravels (2003)
- Interval (0.448m to 0.60m)
vegetation and silt
- Interval (0.60m to 1.10m)
sand and gravel. buried willow at 90 cm
- Interval (1.10m to 1.50m)
peaty layer > sticks and roots > sand
- Interval (1.50m to 1.804m)
cobbles (2-4" and 6-8")

Pit

37



Pit

38

Depth (m)	Clay	Silt	Sand				Gravel				Description	
			vf	f	m	c	vc	g	p	c		b
0.00 - 0.75	X											Interval (0.00m to 0.752m) iron rich coarse sand and gravel (1-2")
0.75 - 1.70												Interval (0.752m to 1.704m) cobbles (4-8" and 10-12")

Pit

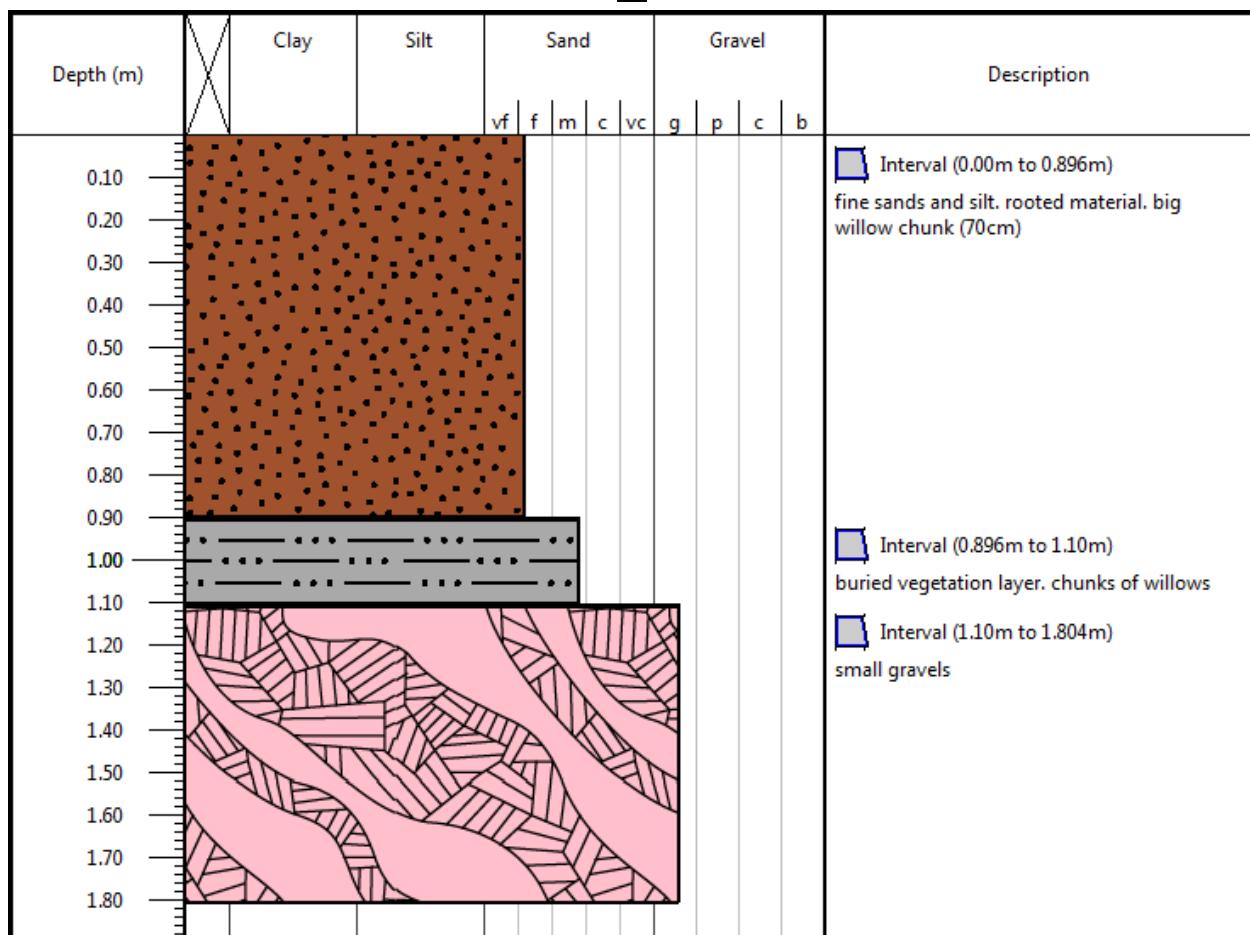
39

Geological cross-section diagram showing soil profile from 0.00m to 1.90m depth. The profile consists of light green layers with dark green horizontal bands representing gravel.

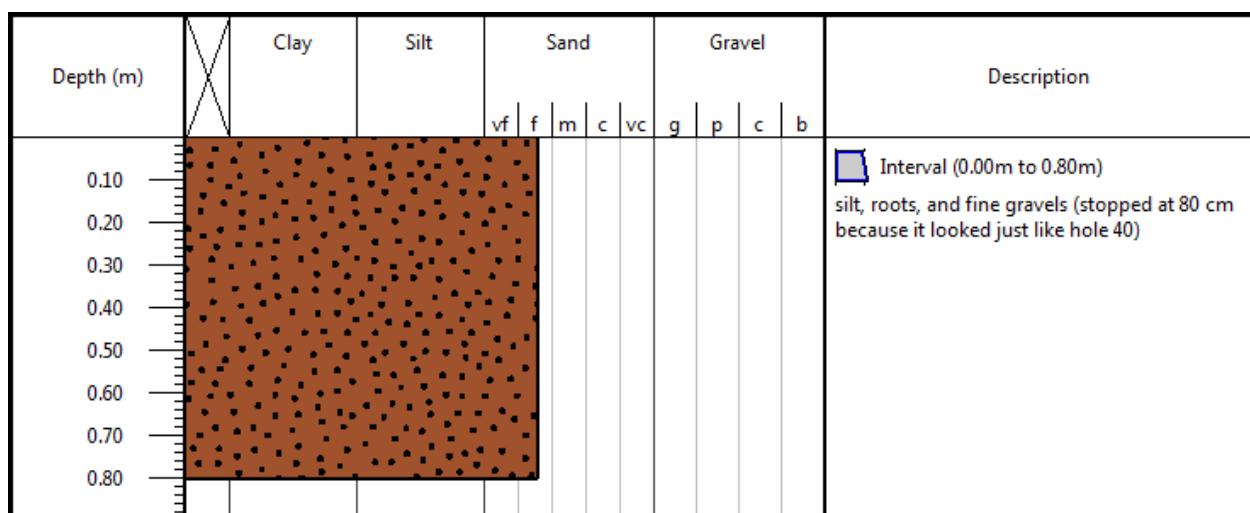
Depth (m)	Clay	Silt	Sand	Gravel	Description
	X			vf f m c vc g p c b	
0.00 to 1.80m					Interval (0.00m to 1.80m) gravels 1-2"; cobble 4-8"; roots throughout pre 2003 debris flow
1.80 to 1.90m					Interval (1.80m to 1.90m) boulders 12-14" debris flow

Pit

40



Pit 41



Pit

42

Depth (m)	Clay	Silt	Sand			Gravel				Description			
			vf	f	m	c	vc	g	p	c	b		
0.10												Interval (0.00m to 0.156m) fine gravels and sands	
0.20												Interval (0.156m to 0.50m) gravels (1-3")	
0.30													
0.40													
0.50													
0.60													
0.70													
0.80												vegetation layer. chunk of willow (55cm). fine line of needles and twigs (60cm). flattened sedges	

Pit 43

Depth (m)	Clay	Silt	Sand			Gravel				Description			
			vf	f	m	c	vc	g	p	c	b		
0.10												Interval (0.00m to 0.292m) sands and fine gravels	
0.20													
0.30													
0.40													
0.50													
0.60													
0.70													
0.80												Interval (0.752m to 0.852m) gleyed sands and cobbles (3-8")	

Pit

44

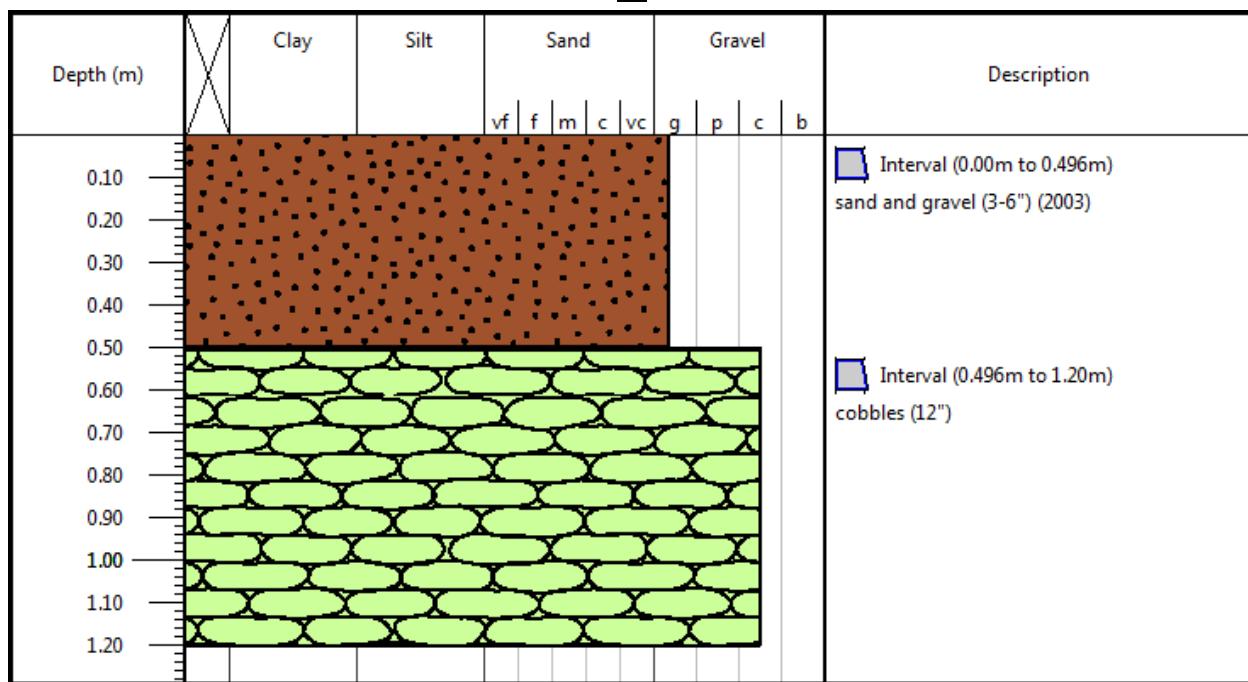
Depth (m)	X	Clay	Silt	Sand				Gravel				Description			
				vf	f	m	c	vc	g	p	c	b			
0.10													Interval (0.00m to 0.356m) silty sand (2003)		
0.20													Interval (0.356m to 0.412m) willow layer		
0.30													Interval (0.412m to 0.60m) fine gravels		
0.40													Interval (0.60m to 0.908m) gravels		
0.50													Interval (0.908m to 0.96m) willow layer		
0.60													Interval (0.96m to 1.156m) gravels		
0.70													Interval (1.156m to 1.208m) willow layer		
0.80															
0.90															
1.00															
1.10															
1.20															
1.30															
1.40															

Pit

45

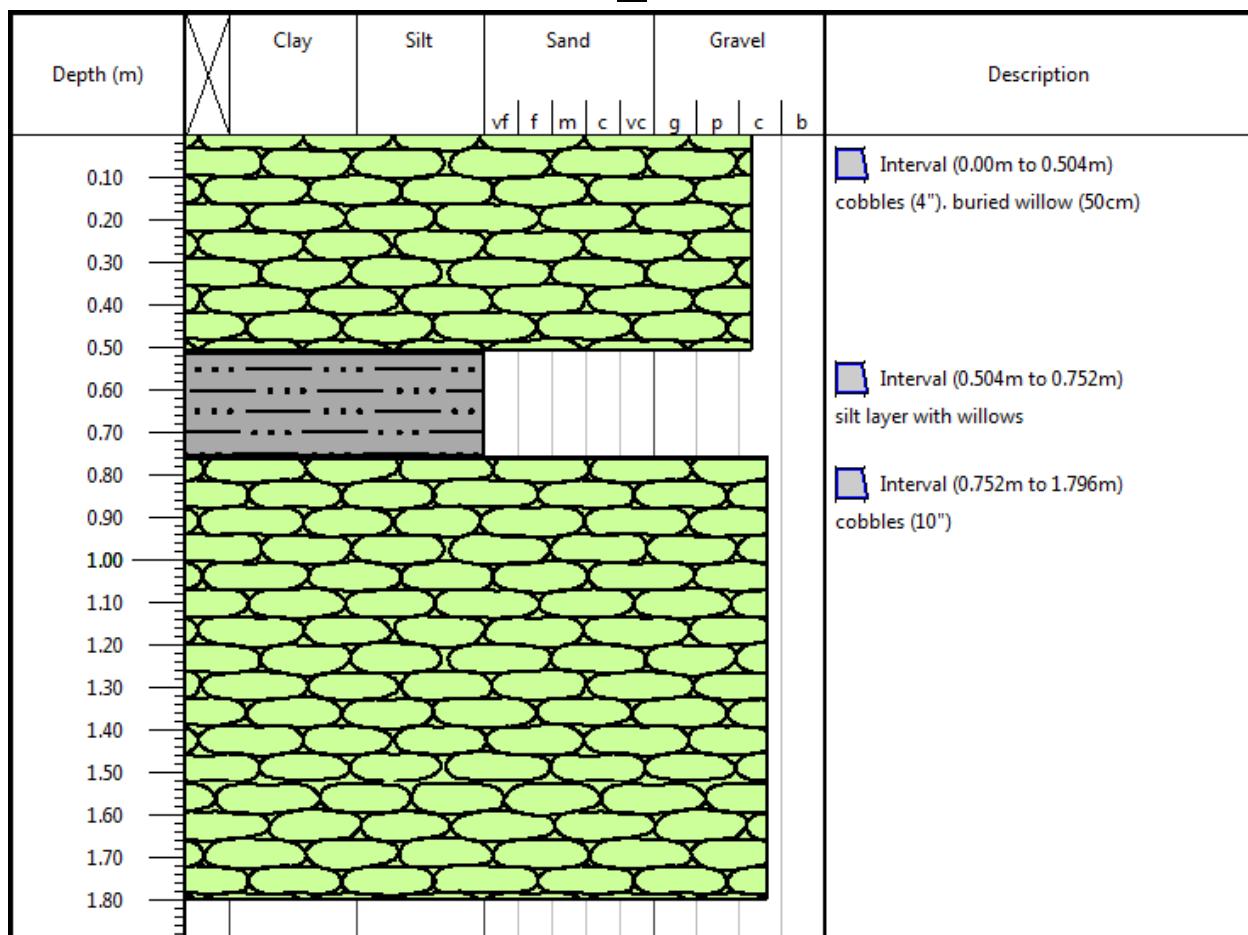
Pit

46

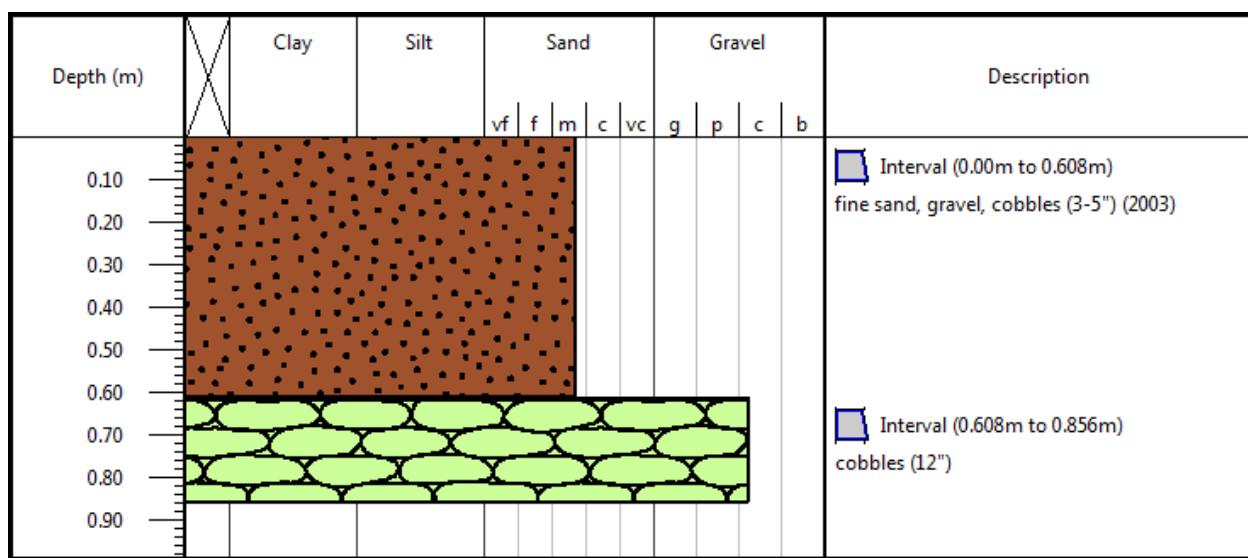


Pit

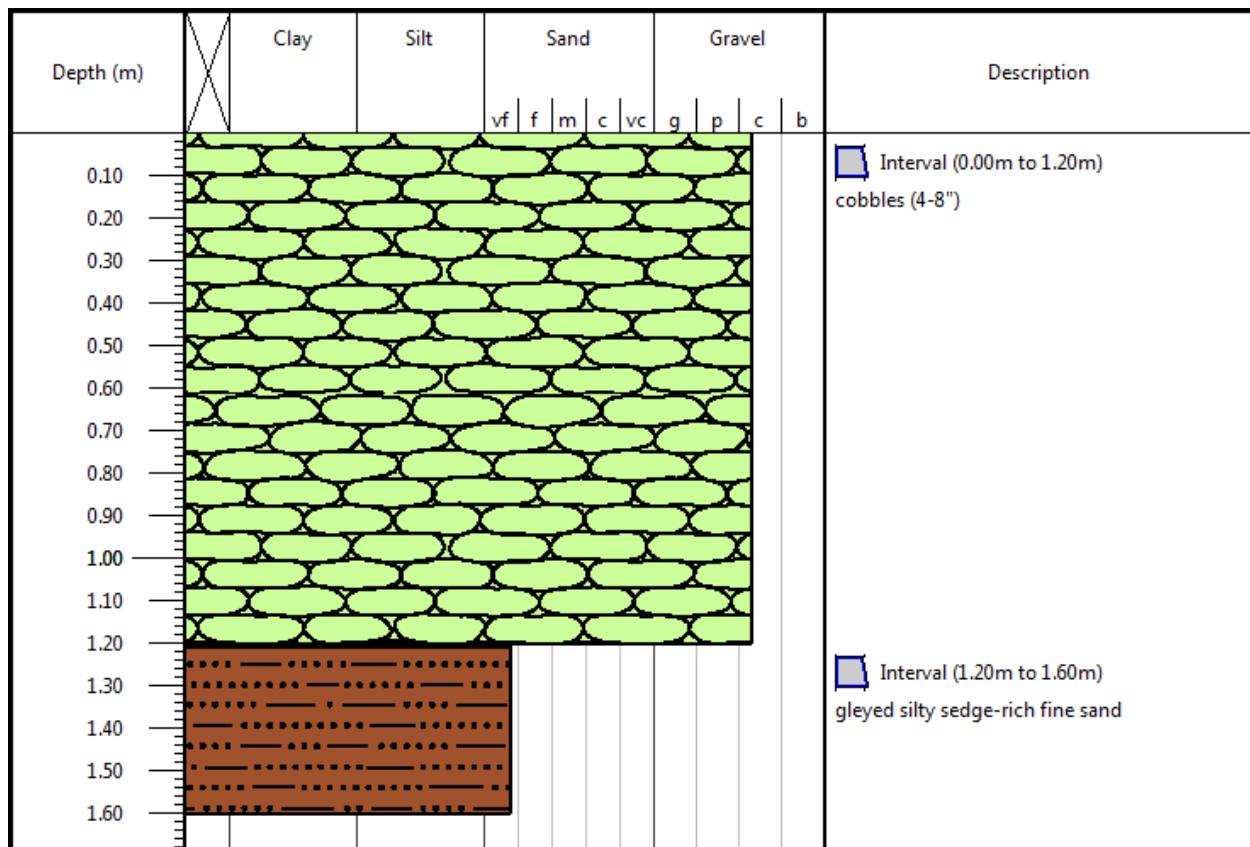
47



Pit 48

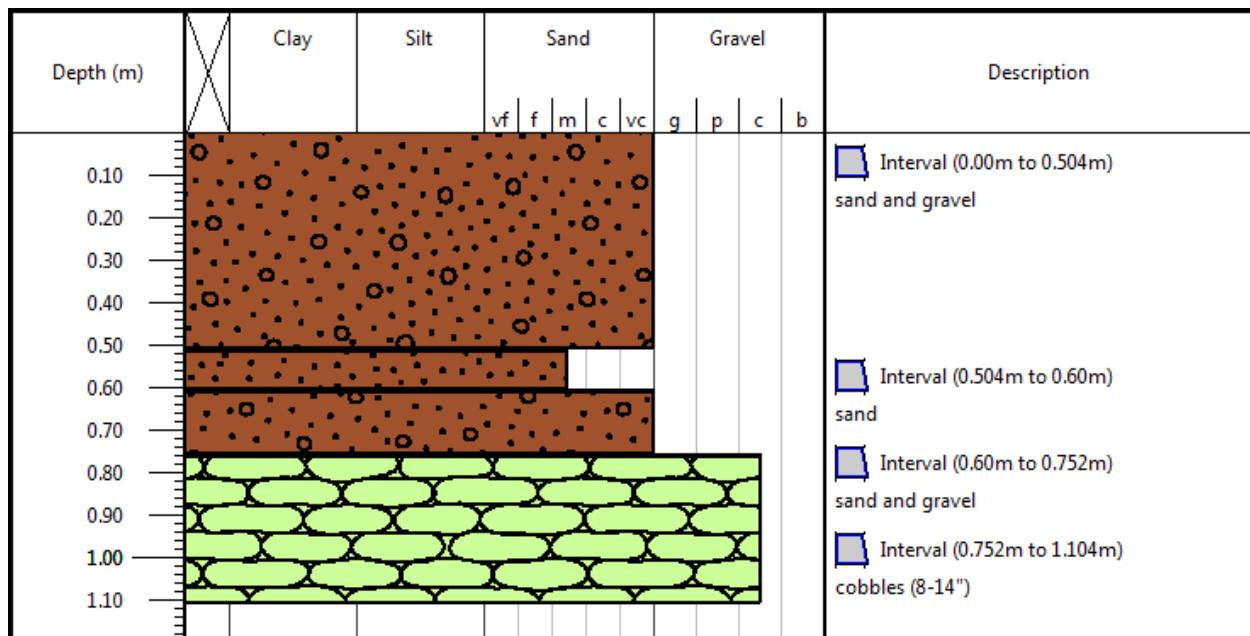


Pit 49



Pit

50



Pit 51

