

Annex II : Relevant geological information found on geological surveys

Hereafter, available information obtained from geological surveys carried out in the study area is presented. The location of these works is specified in **¡Error! No se encuentra el origen de la referencia..**

1. Terme Antica Querciolaia (TAQ)

Few years ago the Terme Antica Querciolaia thermal springs enlarged its services adding a covered *kneipp walk*, a particular walking path with hydrotherapy features. The used healing techniques were developed by Sebastian Kneipp (1821-1897). Before the construction, a geological report has been carried out¹. The relevant information for this thesis consist in a 30m deep borehole (Table 1).

Depth (m)	Stratigraphy
0 - 6,5	Travertines (Tcs or f1b)
6,5 - 30	Jaspers (DSD)

Table 1. Borehole stratigraphy (pozzo 5).

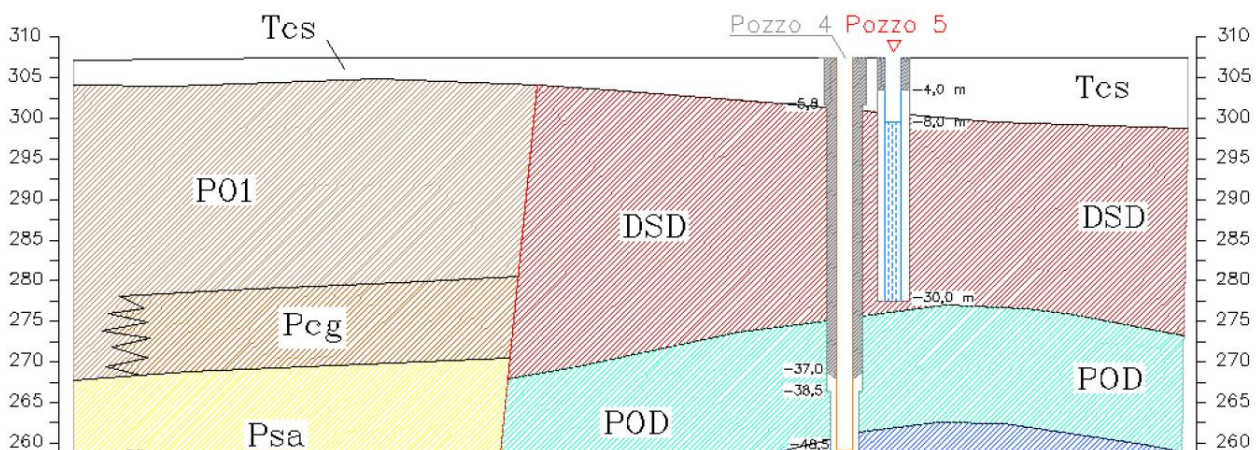


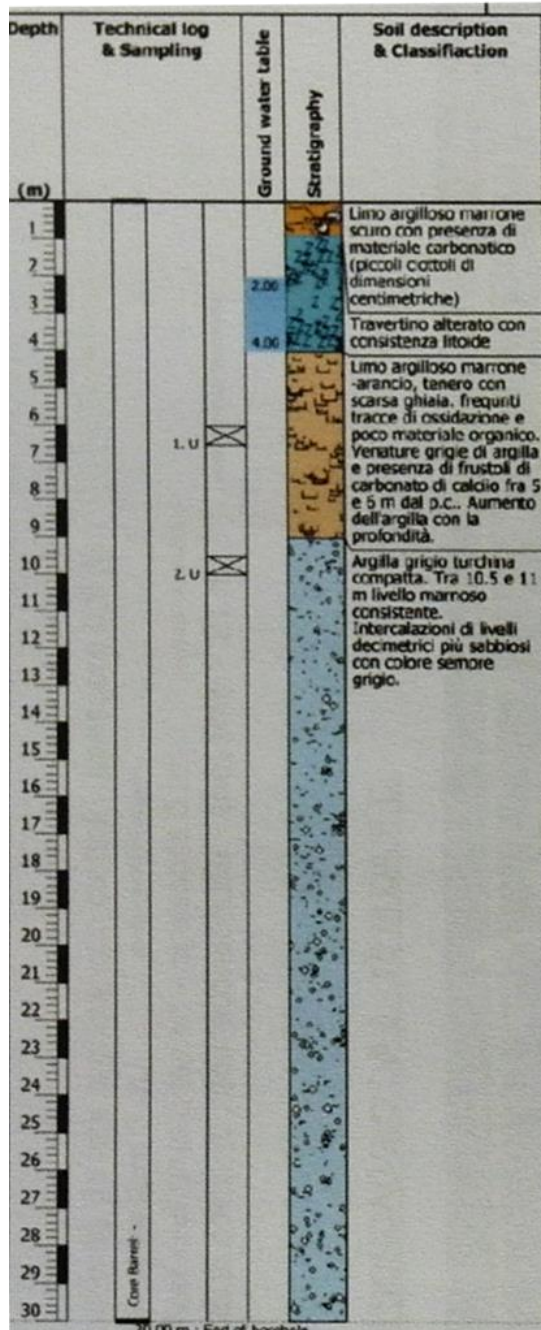
Figure 1. Geological section (orientation WSW-ENE).

Key: Quaternary deposits: **P01** - Sands and silty sands marron-pink with granules, locally jasper and travertine intercalations; **Tcs** (f1b): Pale travertines, stratified, stromatolites. Marine Pliocene deposits: **Psa** (PLIs): Yellow silty sands and sandstone poorly cemented; **Pcg** (PLIb): Polymictic conglomerates and pebbles poorly selected. Pre-neogen Tuscan succession: **DSD:** Jaspers; **POD:** Posidonomya marls.

¹ Studio di geologia e geofisica S.R.L., 'Relazione Geologica: Progetto Di Ampliamento per La Realizzazione Di Un Nuovo Percorso Kneipp Coperto.' (Stablimento Terme Antica Querciolaia - Comune di Rapolano Terme (SI), Set 2014).

2. North Rapolano (NR)

Another geological survey was carried out at North of Rapolano Terme urban area before the construction of residential habitations ². The pertinent information for the work is summarised by a borehole (Figure 2). As well, a seismic down-hole test carried out up to 30 meters deep which gives V_{S30} ranging between 325 m/s and 383 m/s.



Depth (m)	Soil description and classification
0 - 1	Dark-brown clayey silt, presence of carbonatic content
1 - 4	Altered travertines, rocky consistency
4 - 9	Brownish-orange clayey silt, soft. Clay content increases with depth.
9 - 30	Grey clays compacted, with grey sandy decimetric intercalations

Sample Depth	Sample 1	Sample 2	
	6 - 6,5	9,5 - 10	
Grain size analysis	Gravel	4,0	0,0
	Sand	17,2	17,3
	Fines < 76 μm	50,1	61,8
	Clay < 2 μm	28,7	20,9
Physical characteristics	Bulk densiti	19,4	19,9
	Dry density	15,3	16,4
	Spec. Density	26,8	26,7
	Void ratio	0,75	0,63
Shear test	Saturated degree	97,3	92,7
	phi ($^{\circ}$)	23,3	22,9
	c' (kPa)	10	23

Figure 2. North Rapolano borehole information. left) Schematic borehole; right-up) Soil description and classification; right-down) Samples characteristics.

² Studio di Geologia Alessandro Lorenzini, 'Indagine Geologica E Sismica Relativa Al "Progetto Realizzazione Di Un Fabbricato Di Civile Abitazione All'interno Del Lotto B Del Piano Di Lottizzazione "I PIANI" - CTO2 a Rapolano Terme"', February 2013.

3. West Rapolano boreholes (S6 and S7)

It has been possible to retrieve the log records from two boreholes which location is precised in **¡Error! No se encuentra el origen de la referencia..**

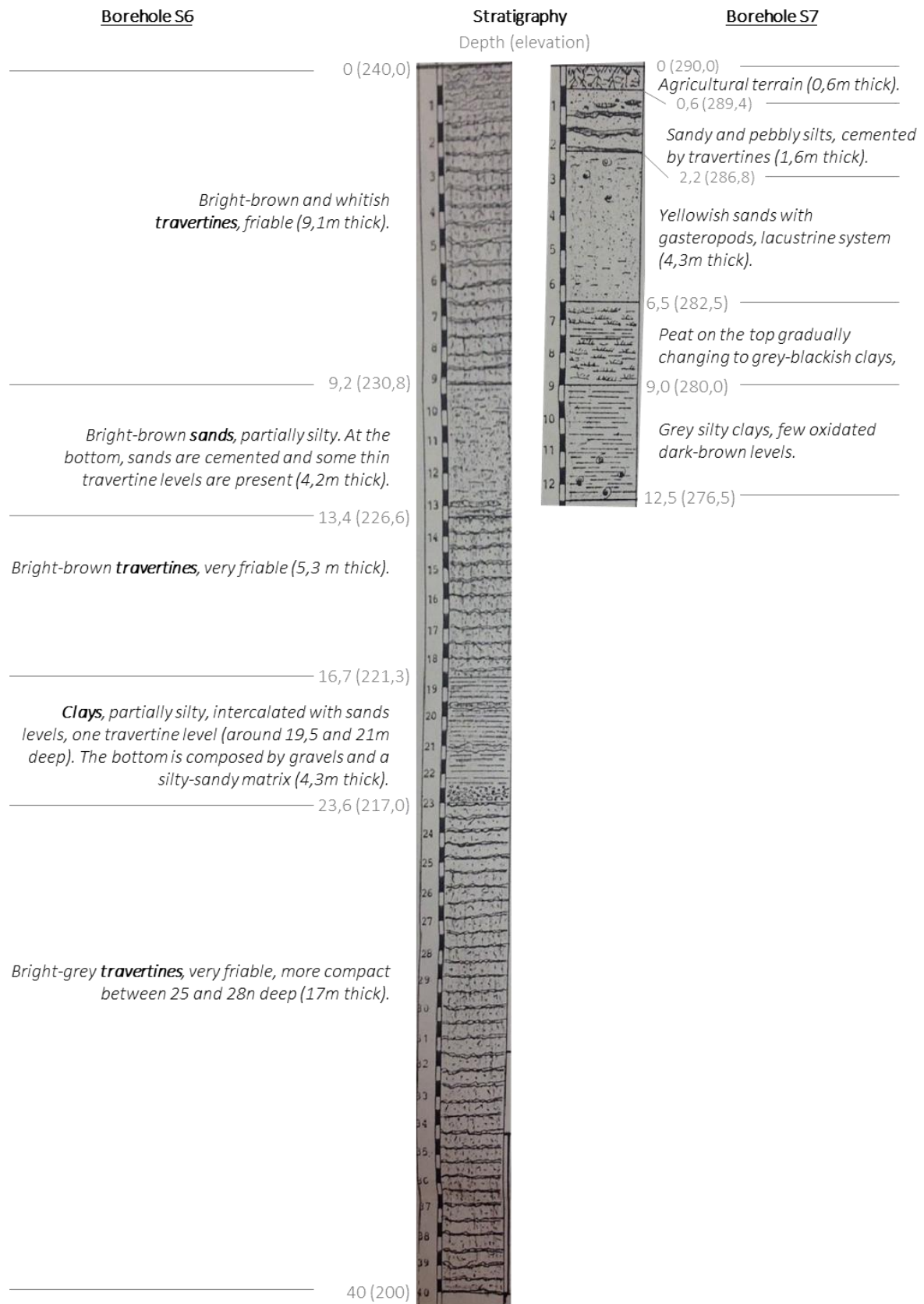


Figure 3. West Rapolano boreholes: S6 (left) and S7 (right).

4. South Rapolano (SR)

A geological survey carried out at Rapolano South ³ contains information about a shallow borehole of 15 meters deep (Figure 4).

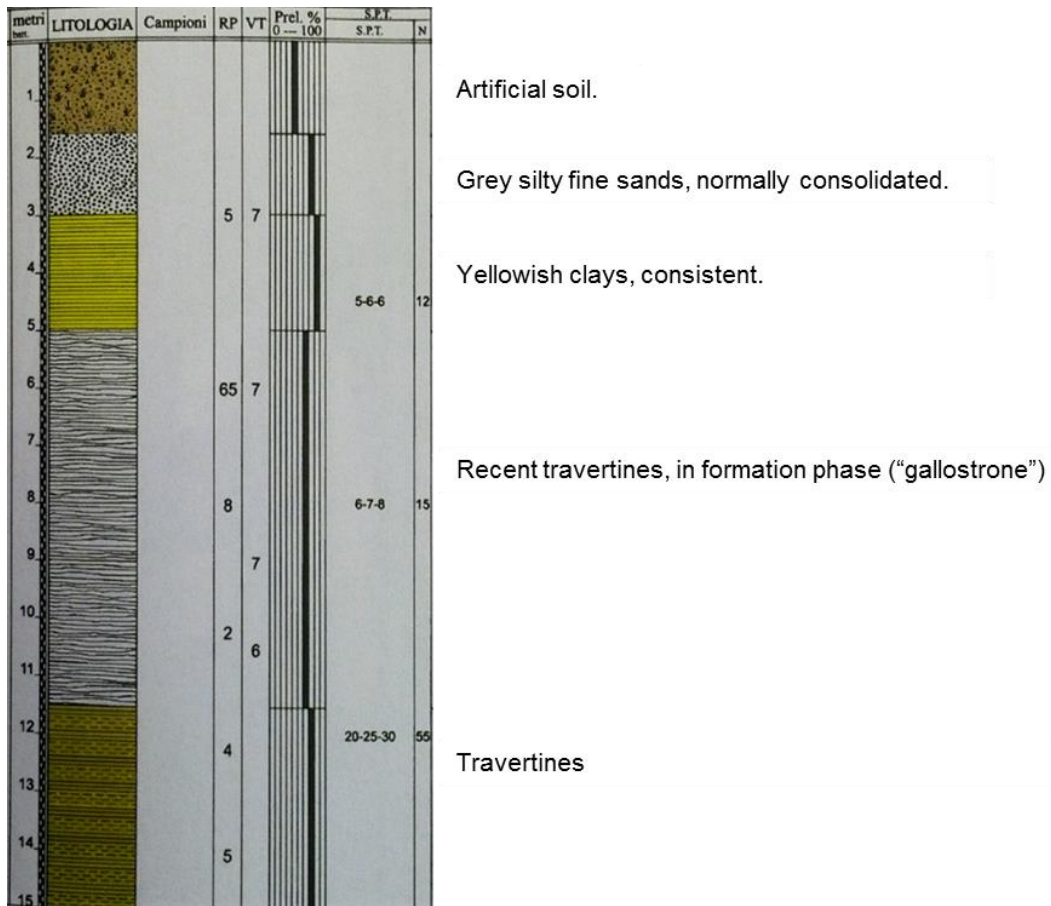


Figure 4. South Rapolano Borehole stratigraphy and SPT results.

³ Studio tecnico I.T.G., 'Indagine Geologica', September 2011.