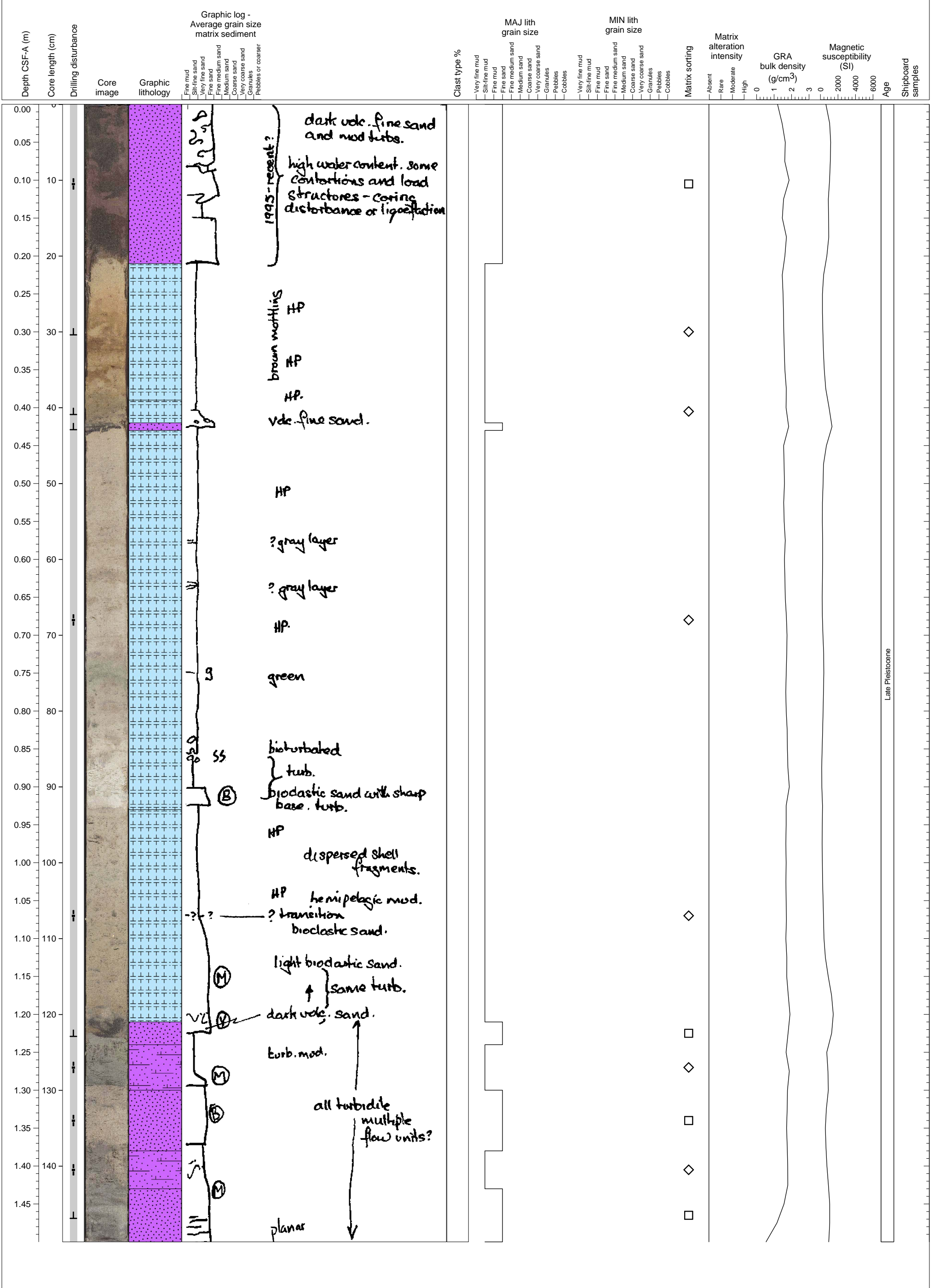
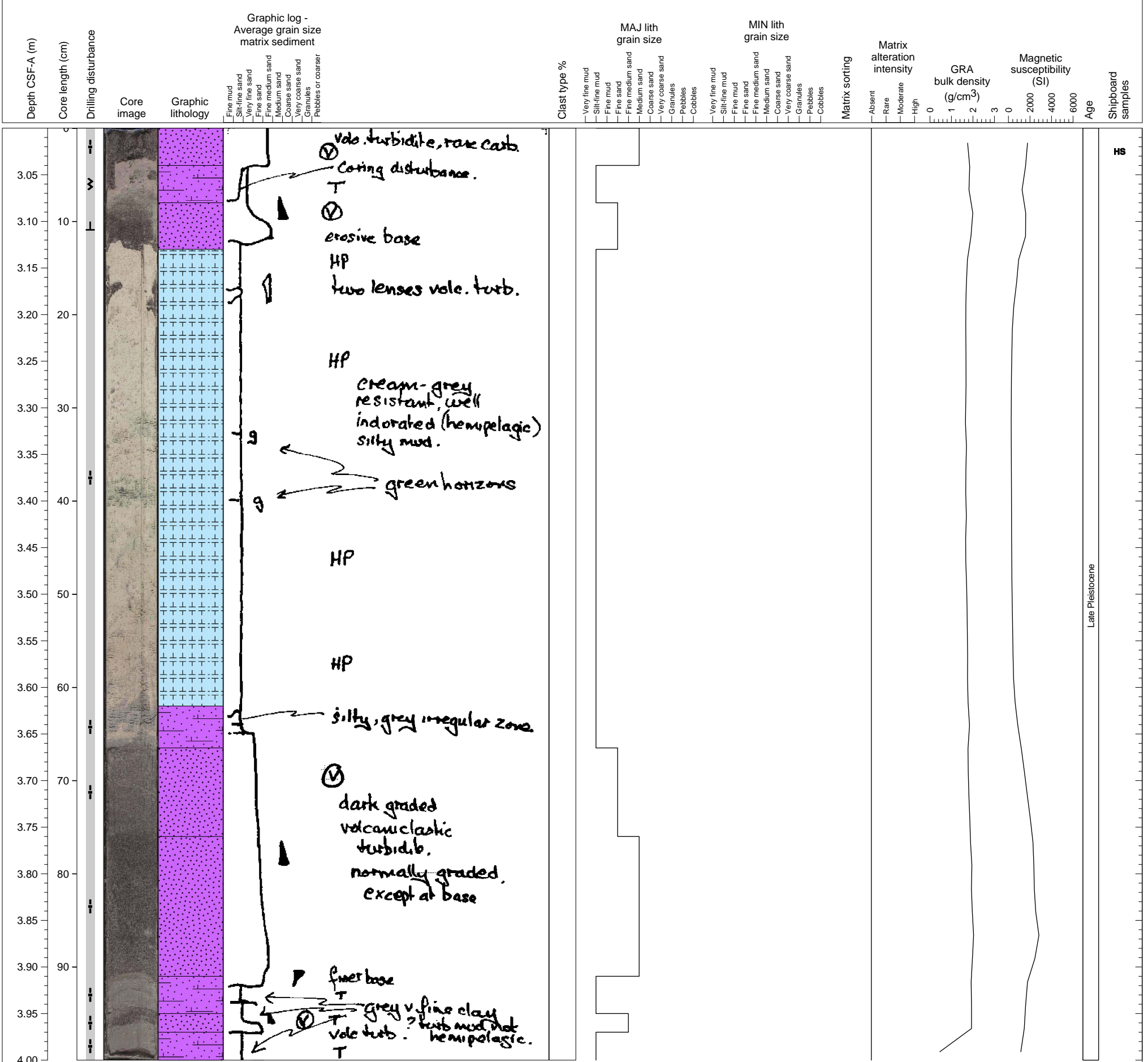


Series of volcanoclastic turbidites immediately below the sea floor from 1995-recent eruptions. Two thin turbidites within coarse hemipelagic sediment. A stack of mixed bioclastic-volcanoclastic turbidites at base of core.

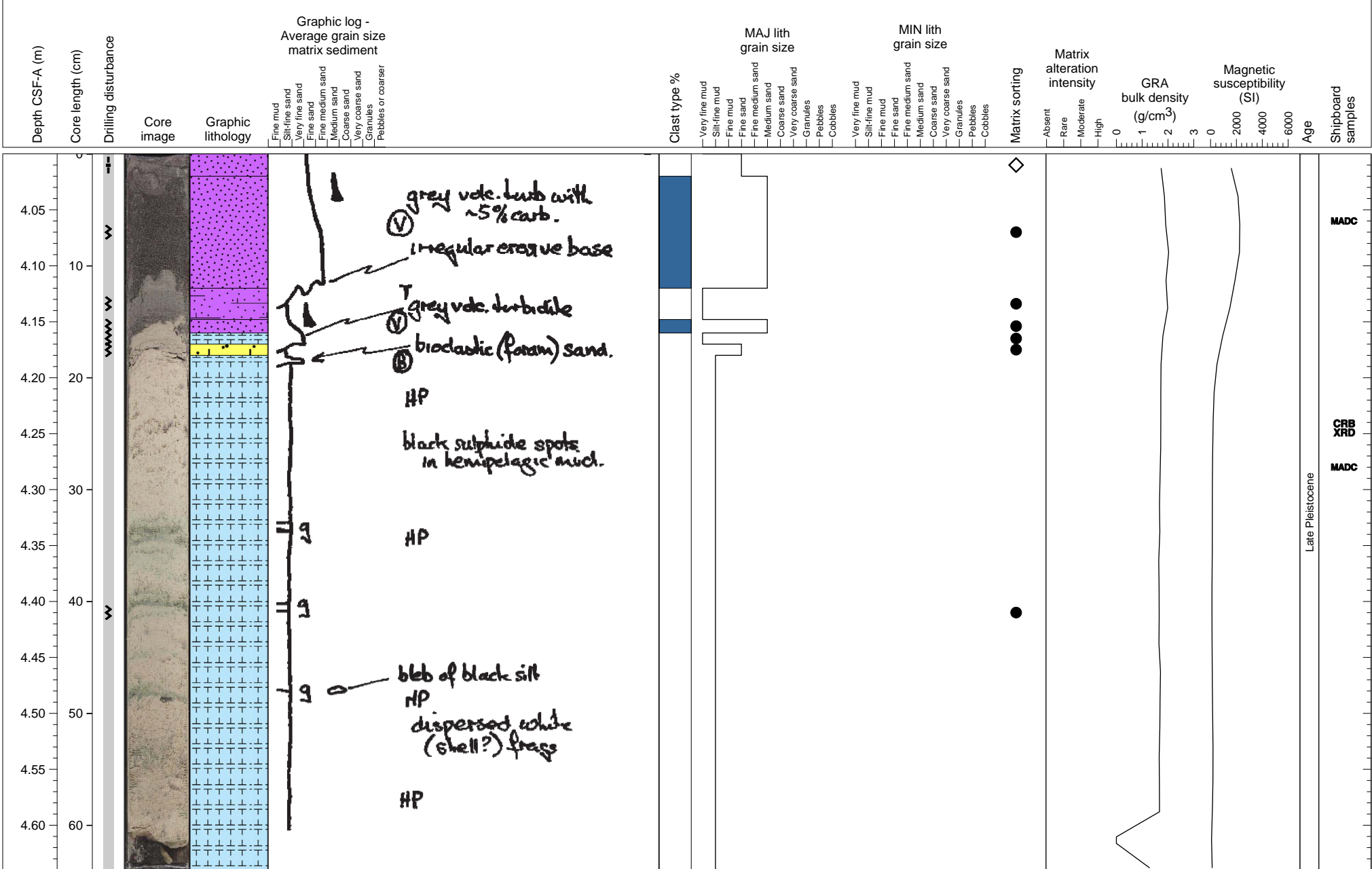


Late Pleistocene

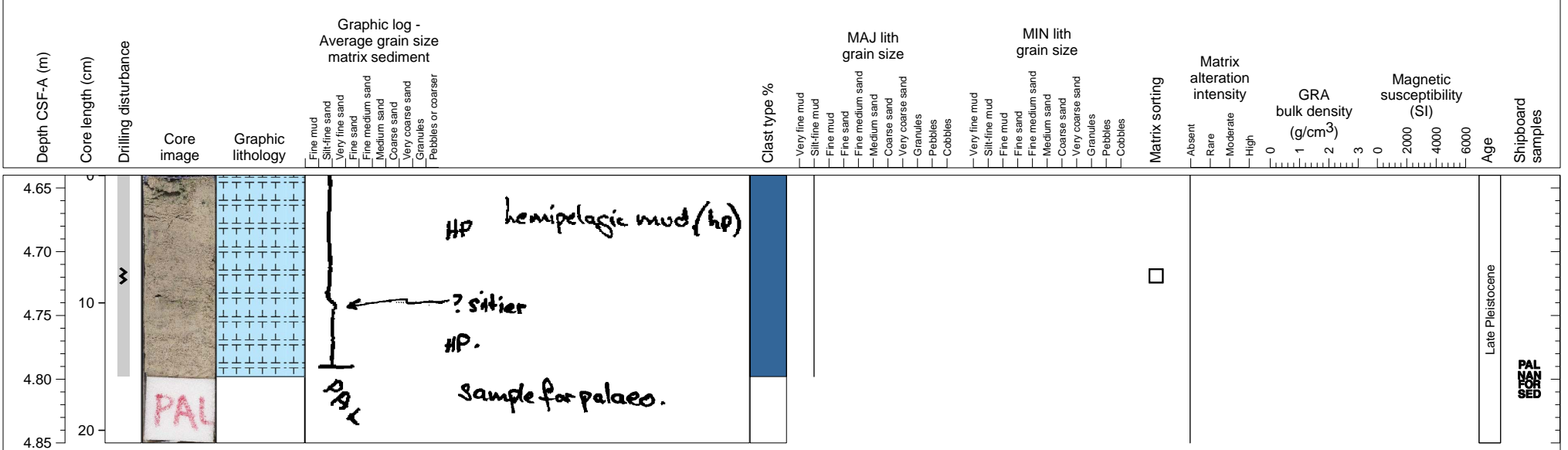
"One hemipelagic calcareous ooze (13-62 cm) sits sandwiched between volcanic turbidite layers. Three turbidites grading from mud to fine sand (4-13 cm), silt-fine mud to medium sand (62-91 cm) and silt-fine mud to fine-medium sand (91-97 cm), respectively, are observed. The top (0-4 cm) and the bottom (97-100 cm) of this section comprises turbidites. Two vague greenish layers are observed in the background hemipelagic sediment (31-34 cm and 39-41 cm), which may be related with volcanic eruptions during this quiet period."



Volcaniclastic sand overlying hemipelagic mud

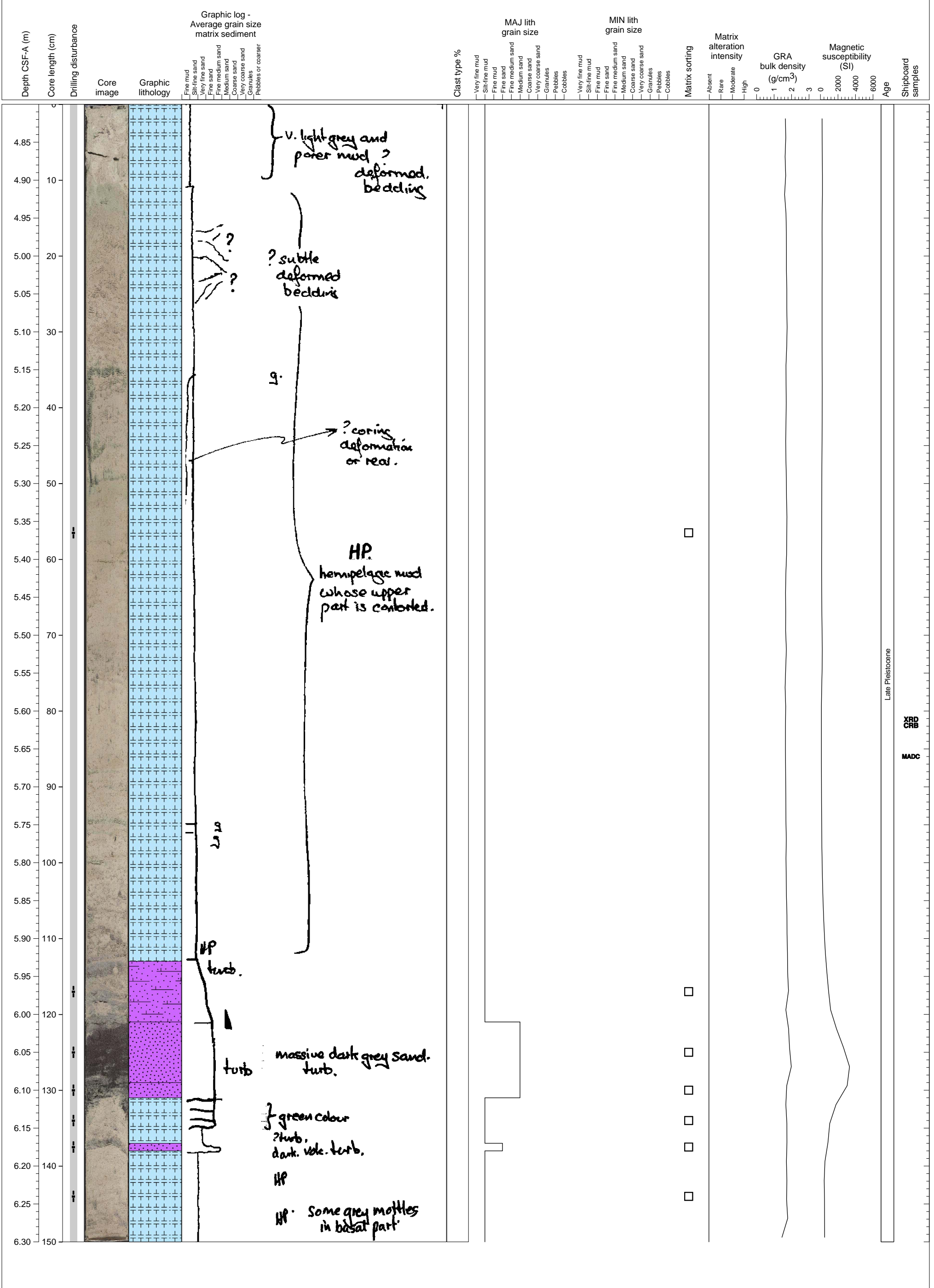


Hemipelagic mud with a small amount of biogenic clasts of medium sand size. PAL sample at base of section.

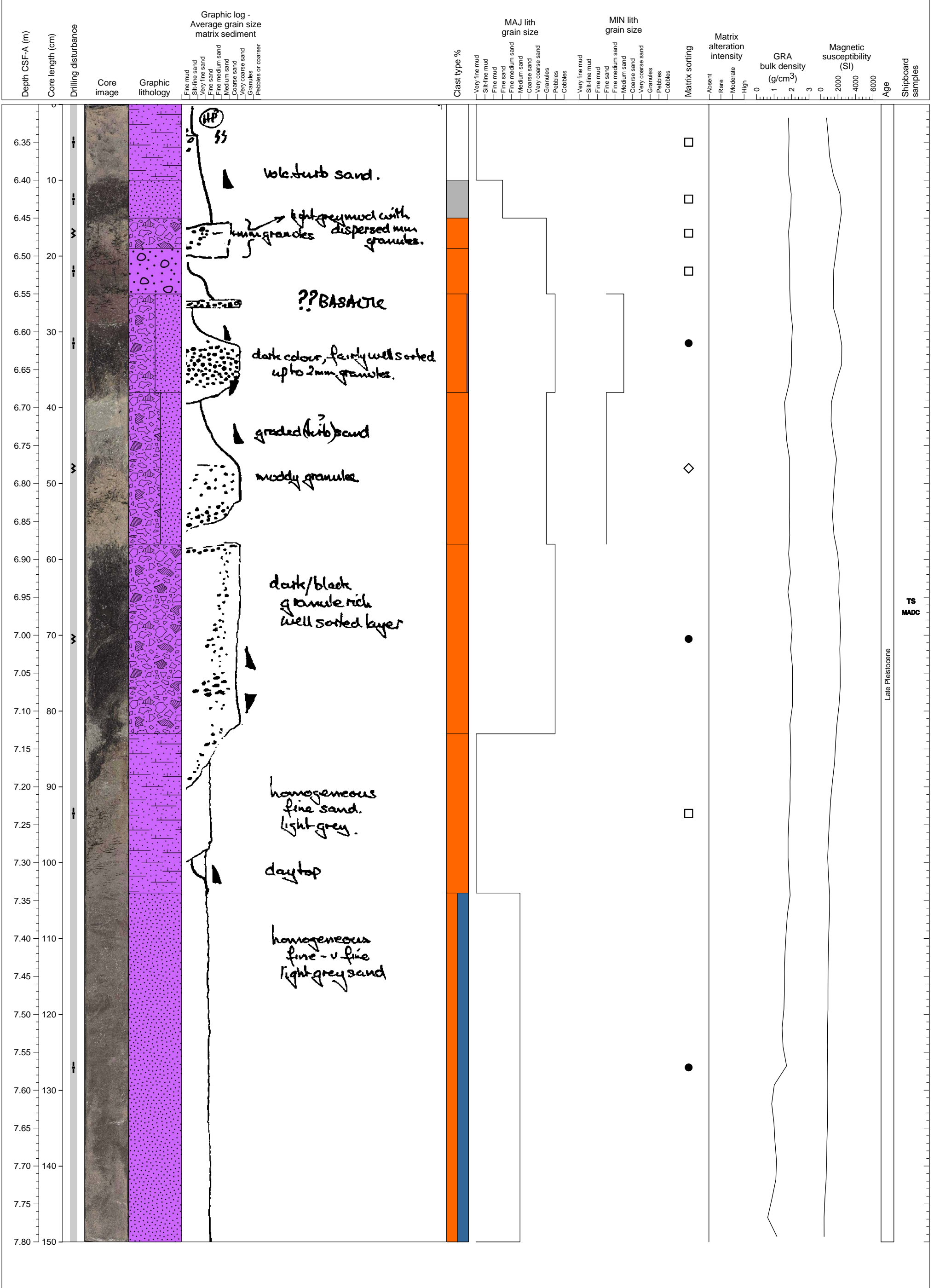


Hole 340-U1394A-2H Section 1, Top of Section: 4.8 CSF-A (m)

The upper part of this section (0-113 cm) is a hemipelagic sediment containing a vague green layer at 35-36 cm. There is a volcanic turbidite (113-129 cm) below this hemipelagic layer grading from silt-fine mud to medium sand. Below this layer, there is a distinct medium-sand sized greenish layer (129-131 cm), which may be a volcanic fallout deposit. Hemipelagic layers start again at 131 cm until 150 cm, but volcanic fine sand is sandwiched between at 137 and 138 cm.

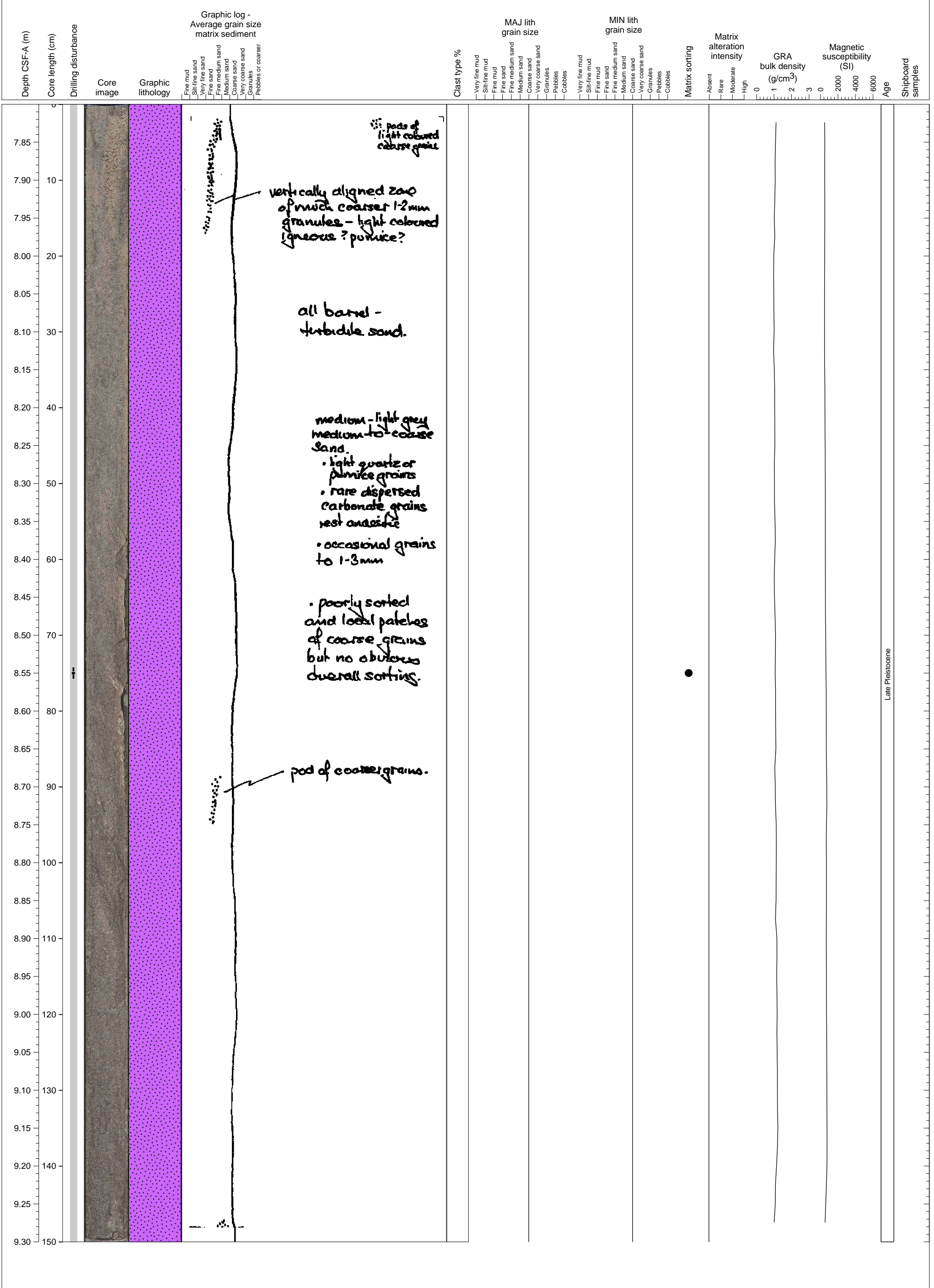


Volcaniclastic unit containing three basaltic fall/flow? pyroclastic units. The basaltic units are normally graded, fining upward. These units are separated from each other by volcaniclastic sand and mud units which contain angular scoriaceous clasts mixed throughout.



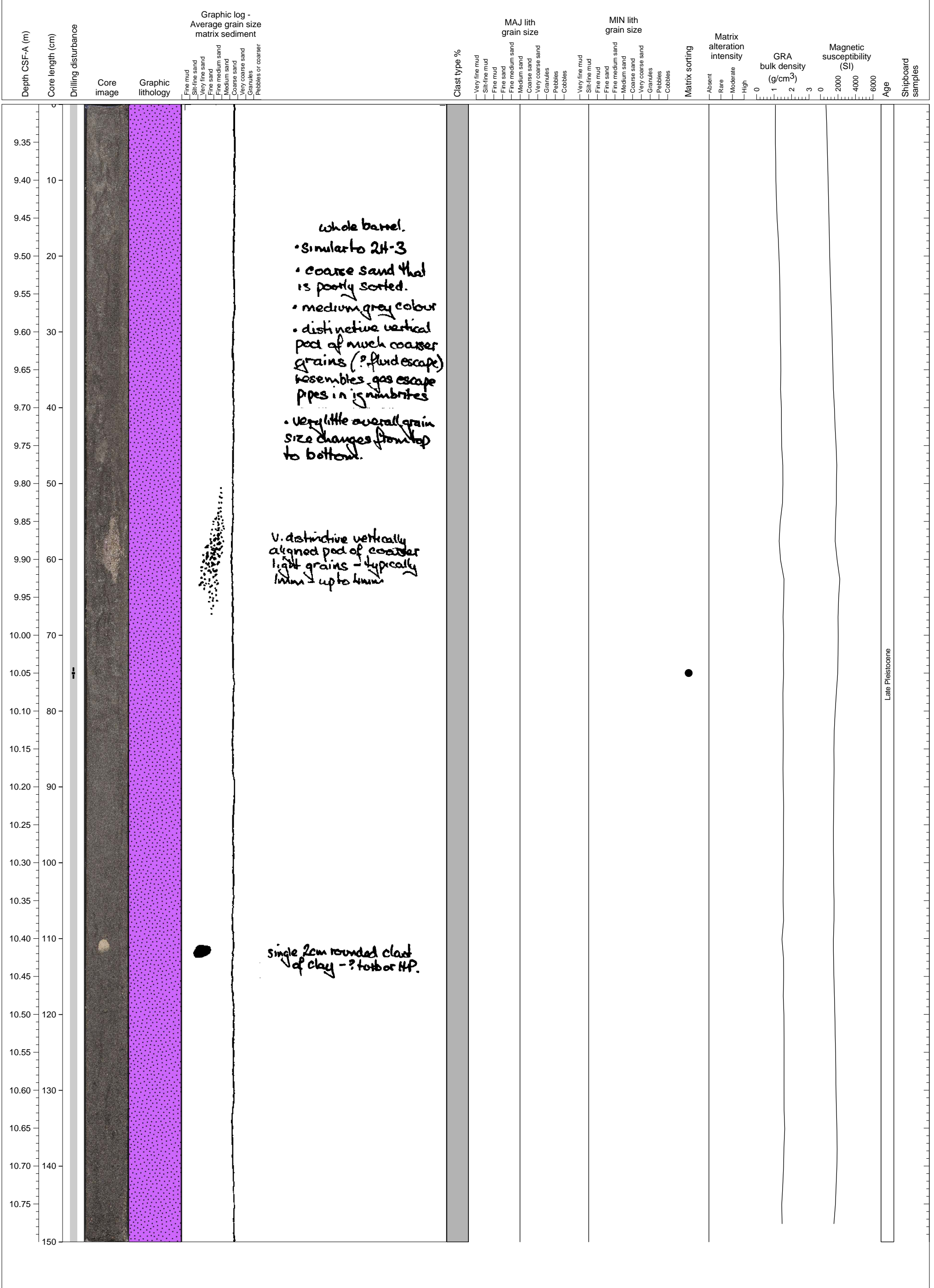
Hole 340-U1394A-2H Section 3, Top of Section: 7.8 CSF-A (m)

This section is entirely composed of volcanoclastic sand. Most of the section is dominated by coarse grained sand, some medium sand parts exist. Biogenic clasts (less than 2 mm) are scattered.

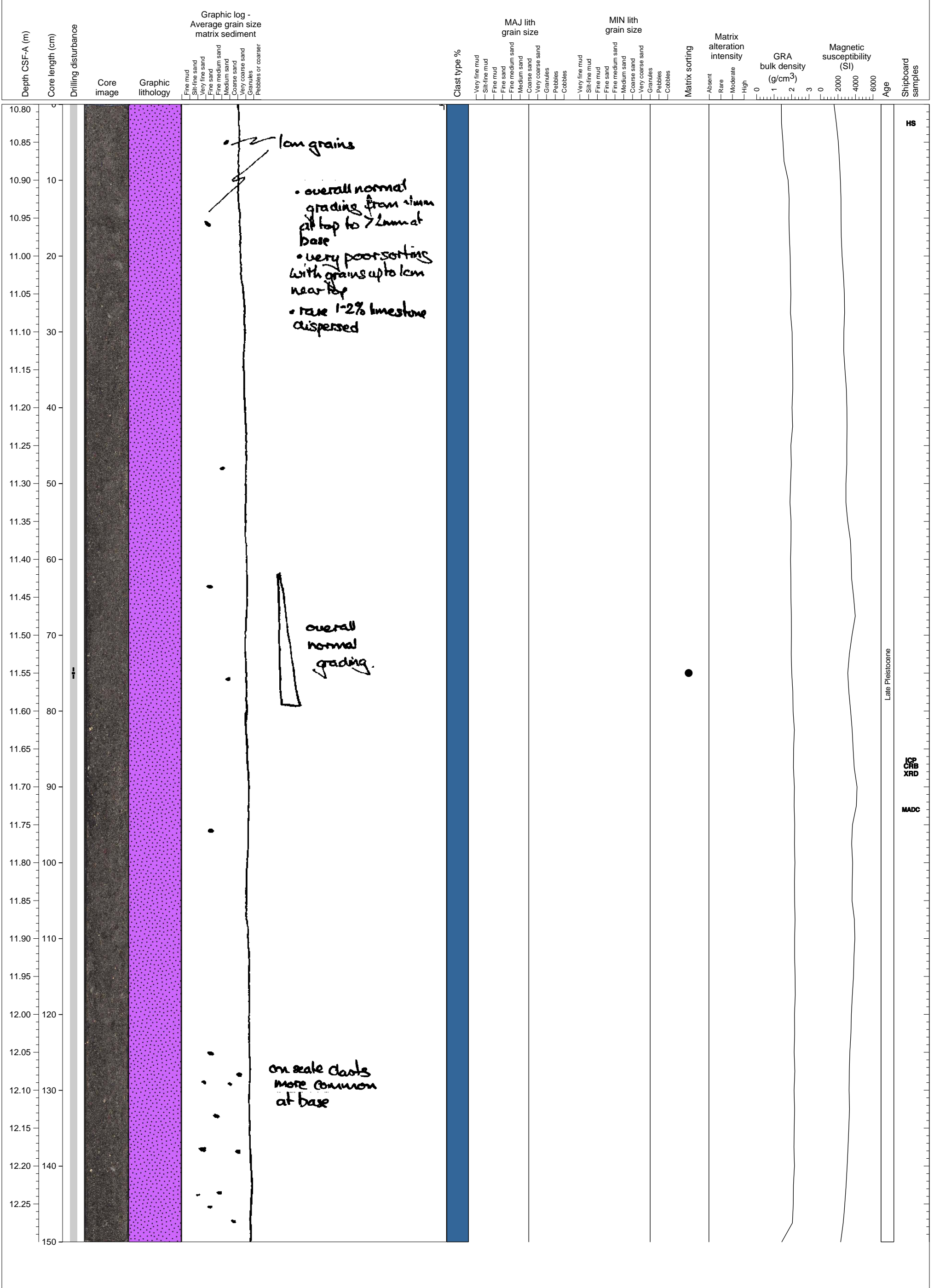


Late Pleistocene

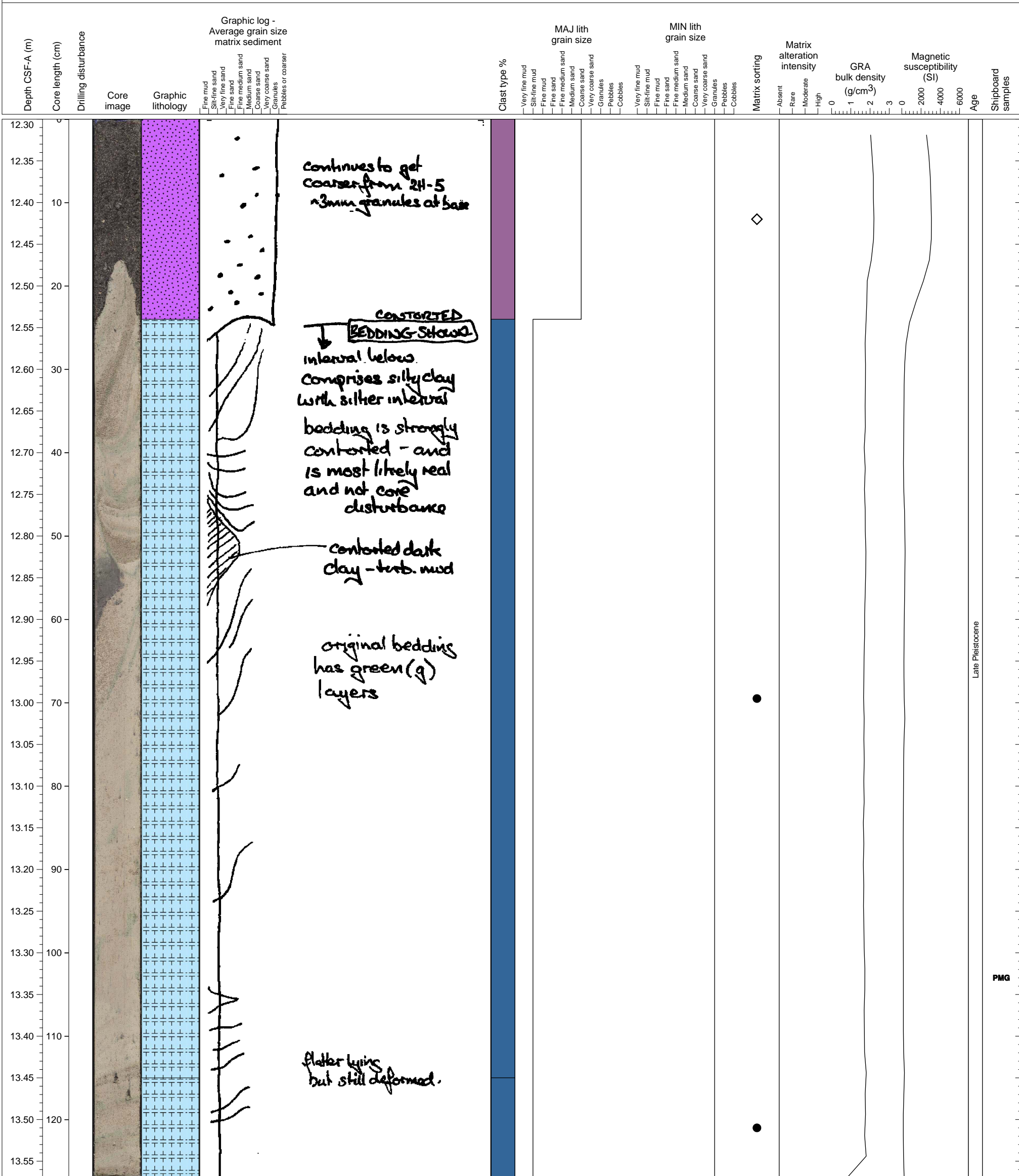
This section is entirely composed of medium-sized volcanoclastic sand. A patch of very coarse sand to granule consisting of lava fragments is included in the middle part.



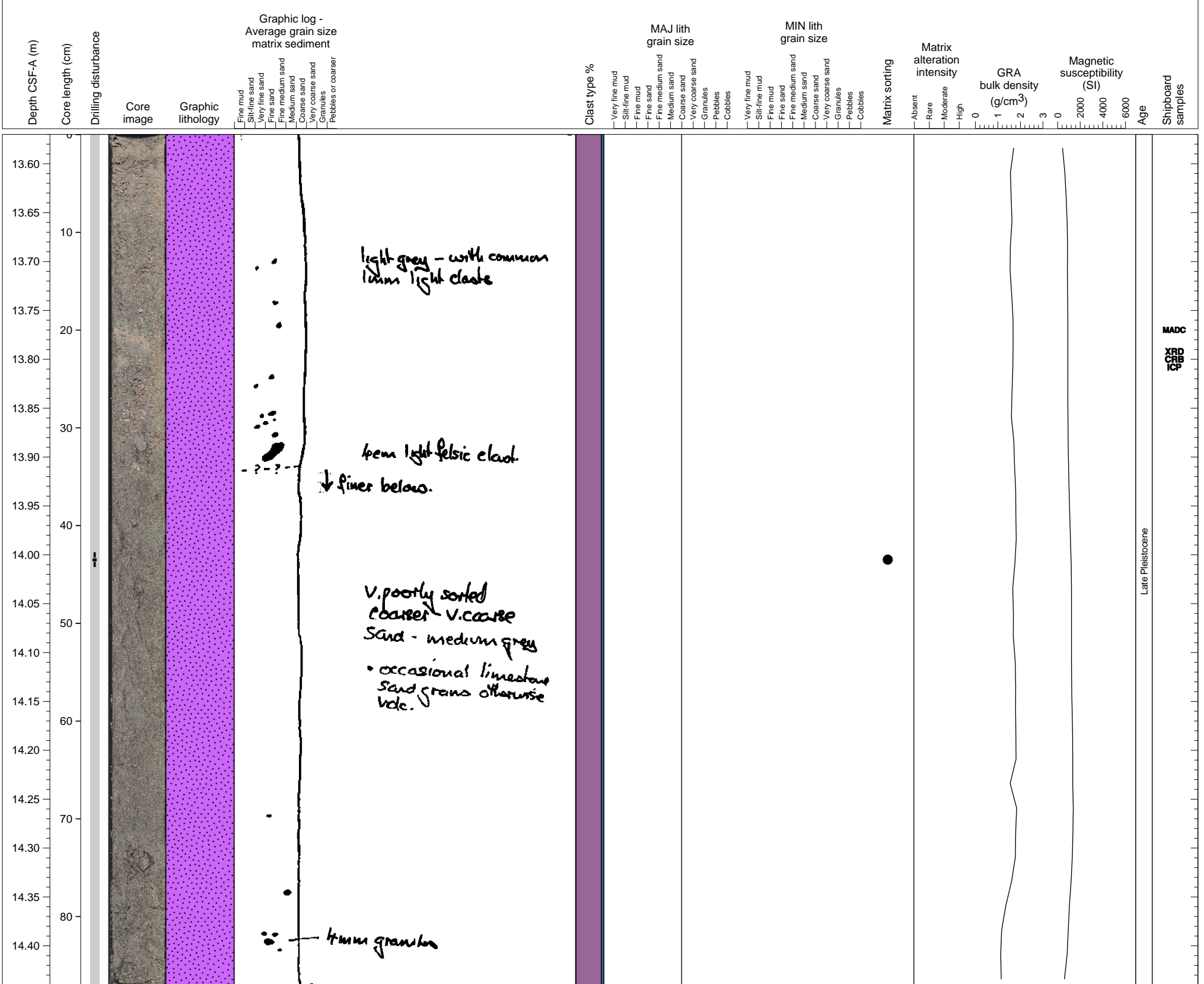
Basically coarse sand but granule grains are occasionally included. Biogenic clasts (< 5 mm) are also included.



Upper 24 cm is composed of coarse to very coarse sand. Lower part is contorted muddy carbonate ooze with limestone fragments. The boundary between these layers is contorted.

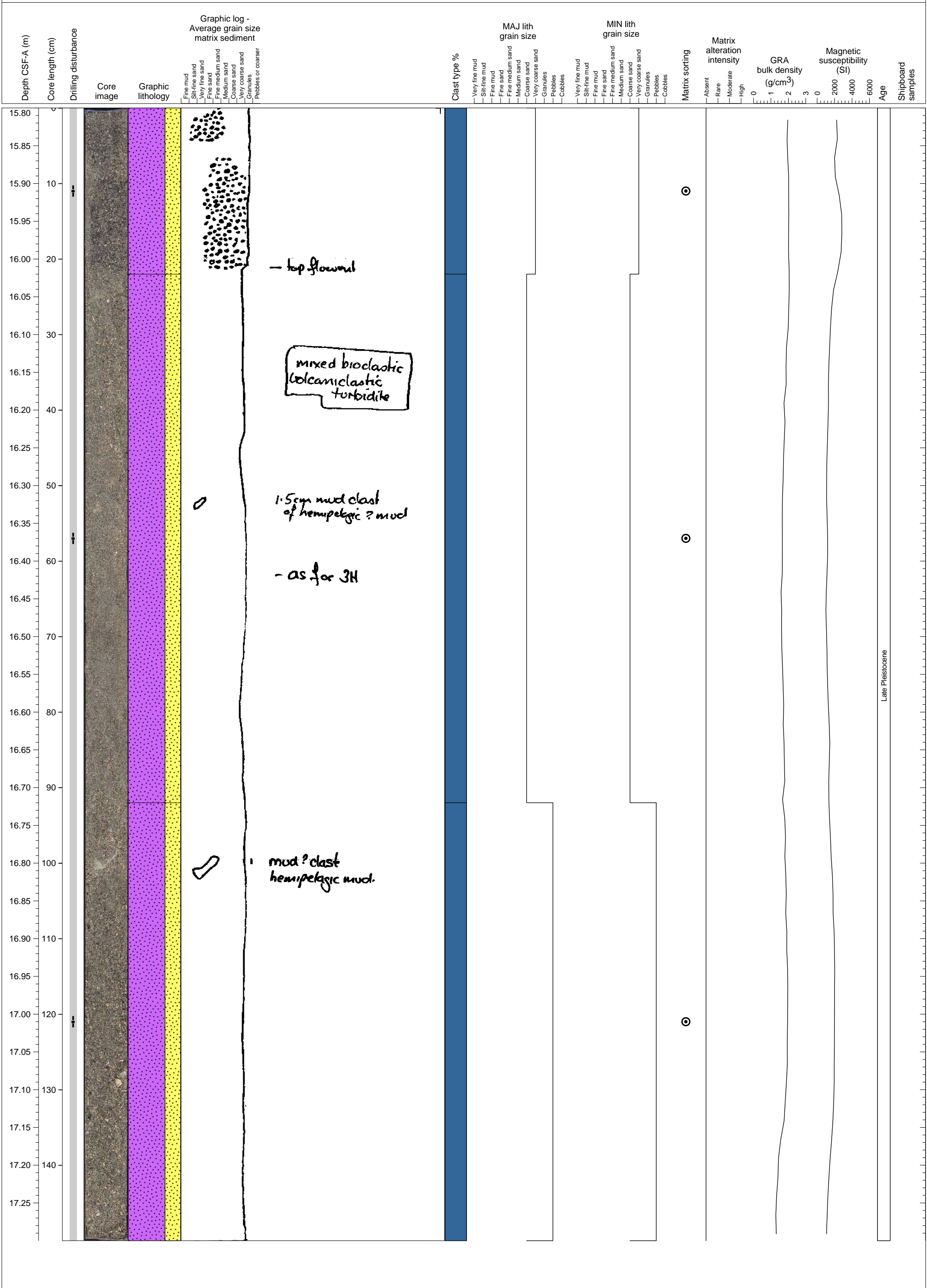


Coarse volcanoclastic sand unit containing massive igneous clasts and minor mud clasts.

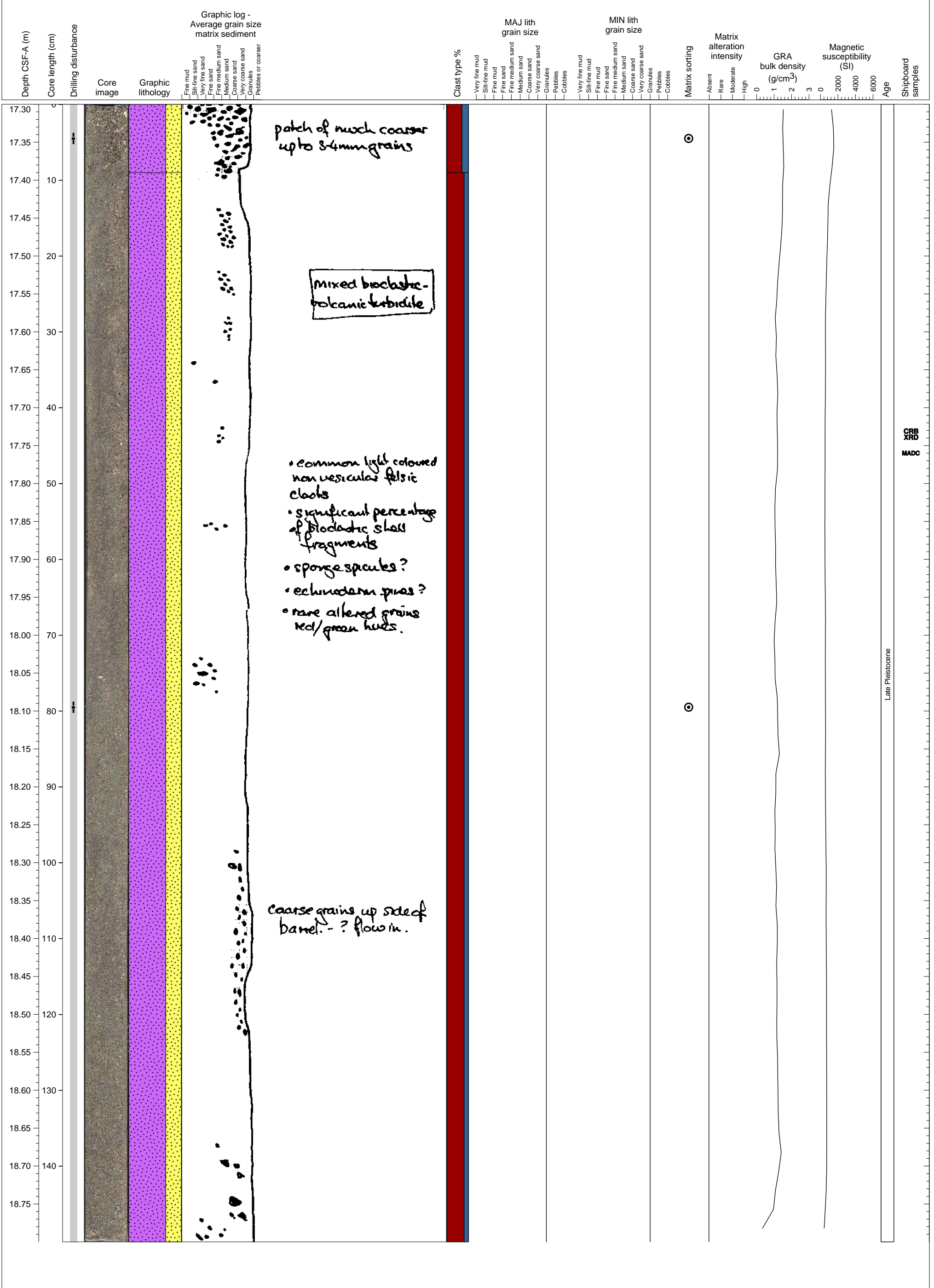


Hole 340-U1394A-3H Section 2, Top of Section: 15.8 CSF-A (m)

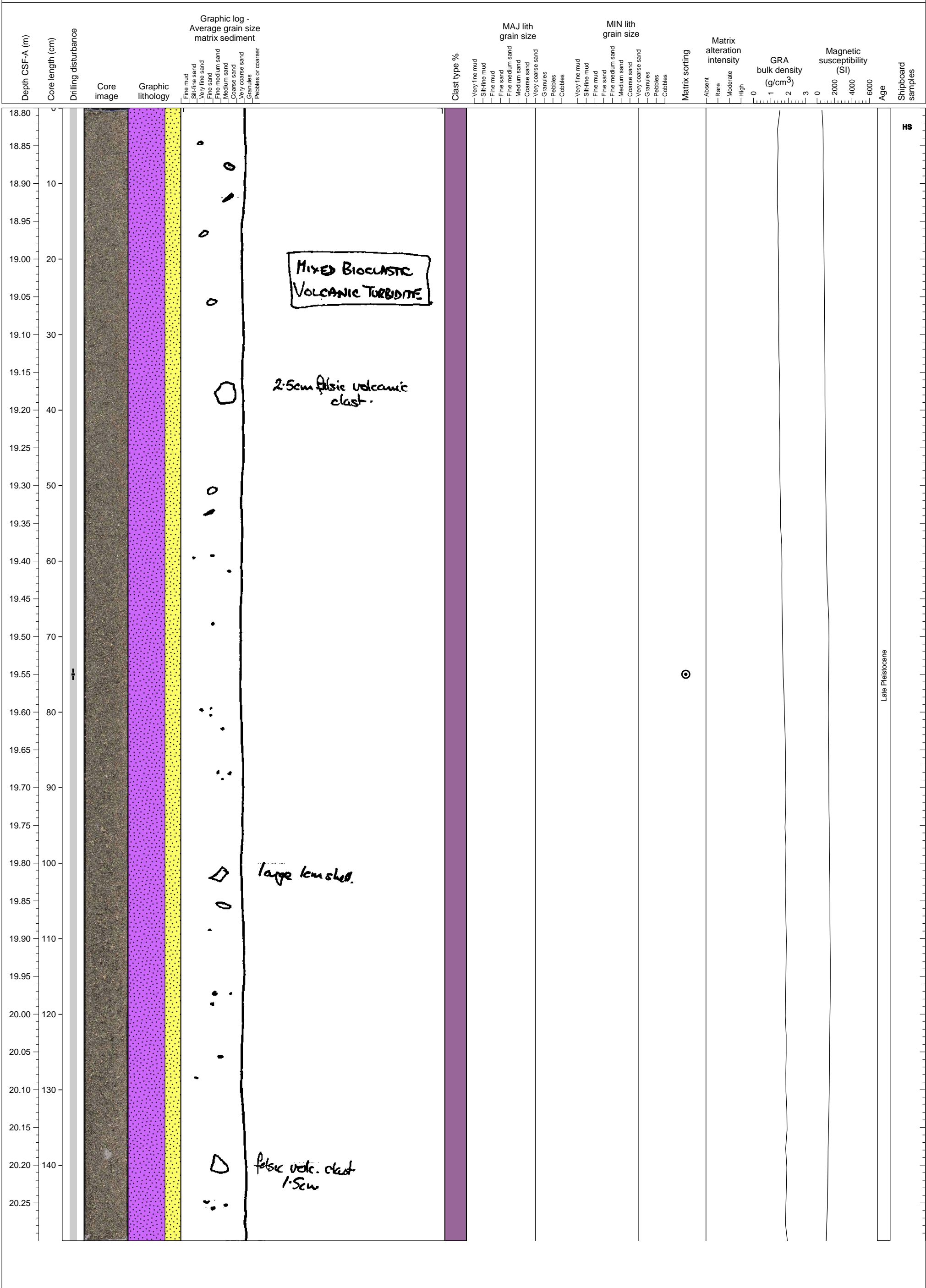
Very poorly sorted volcanoclastic and hemipelagic sand with calcareous ooze. This section might represent turbidites derived from landslides, which are mixtures of volcanoclastic and sedimentary rocks, but both grain sizes are similar. Poorly sorted but weak normal grading is observed from 92 to 150 cm.



Very poorly sorted volcanoclastic sand with calcareous sand.



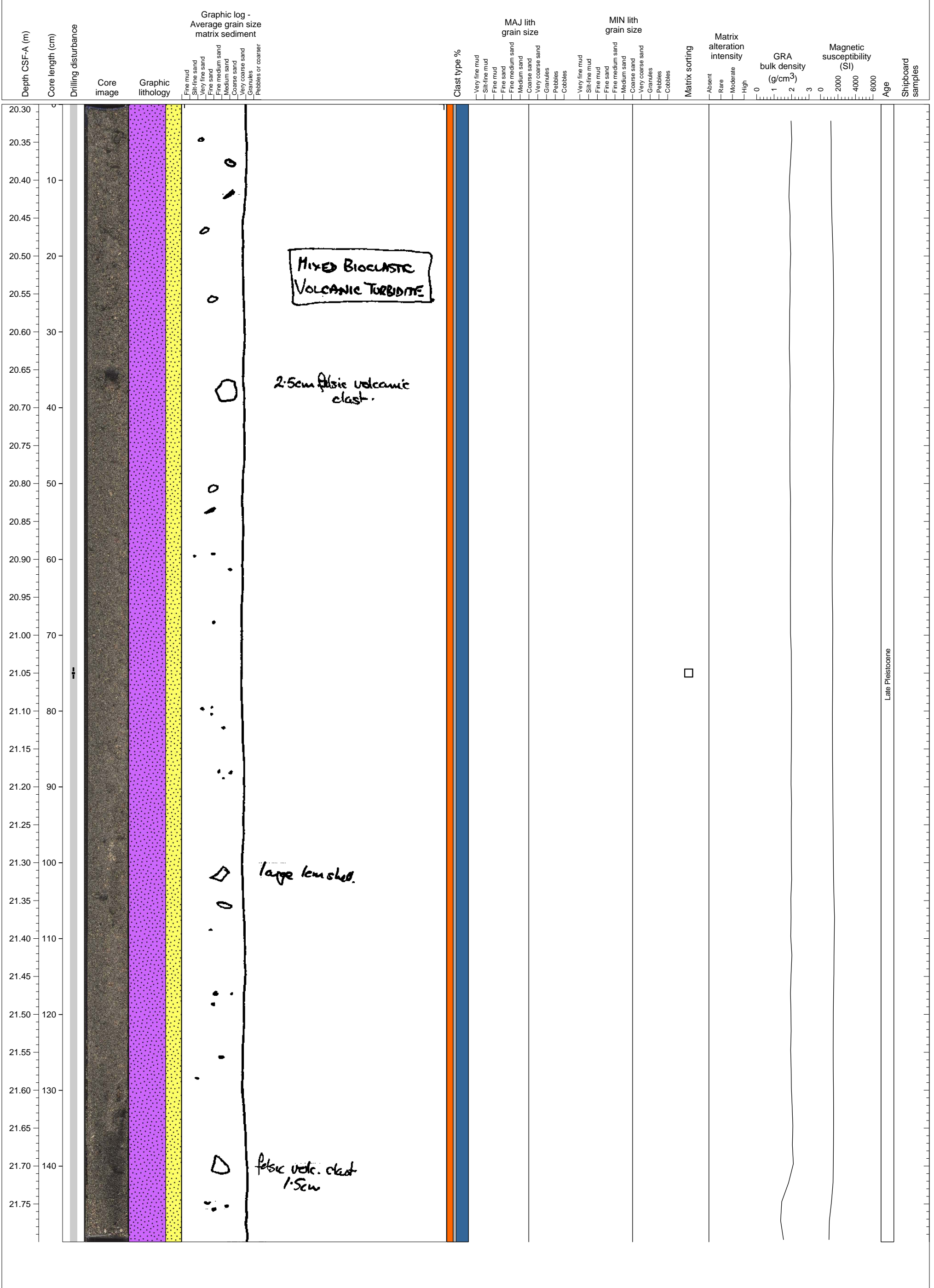
Very poorly sorted volcanoclastic sand with 30 % biogenic clasts.



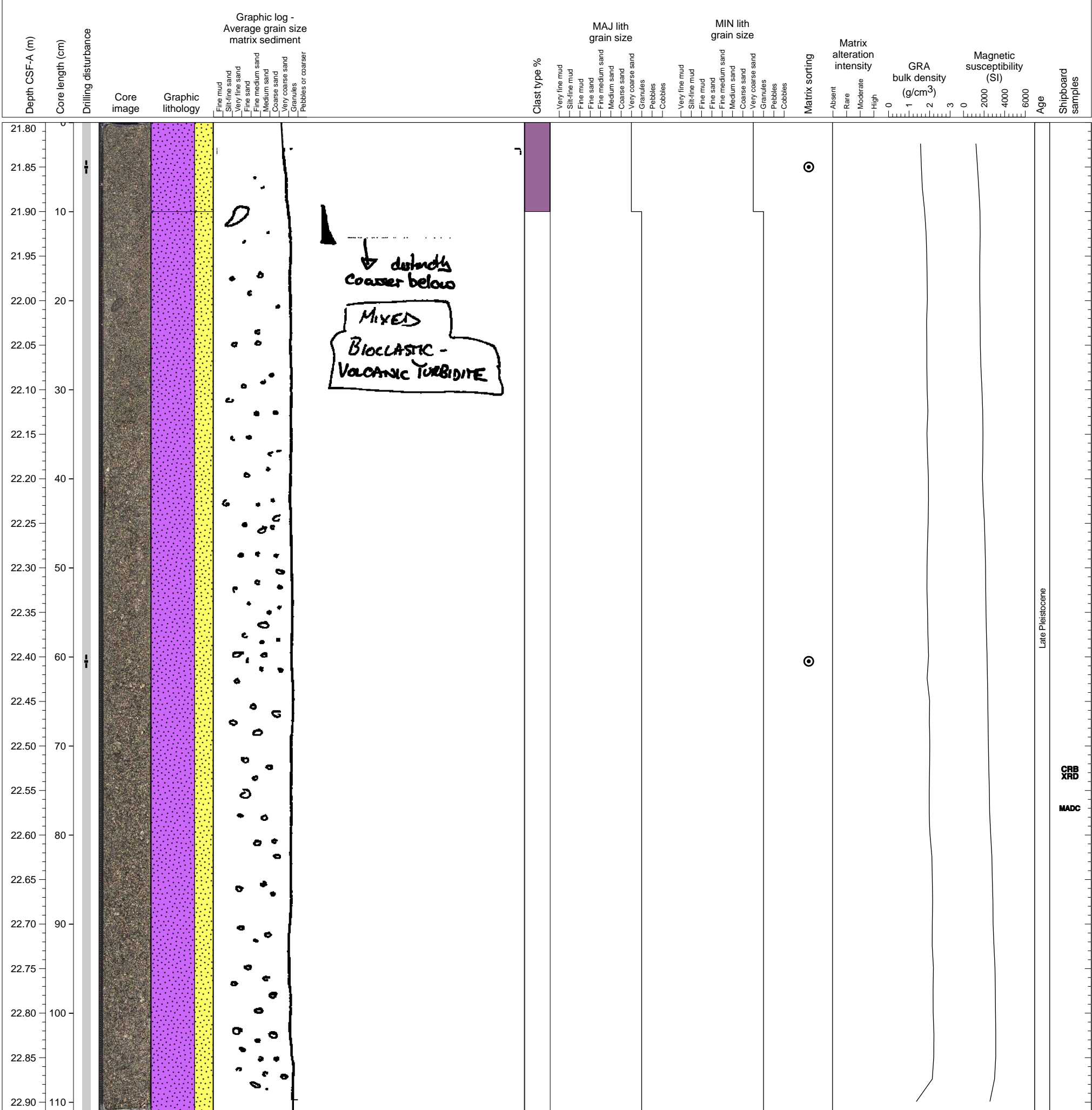
Late Pleistocene

HS

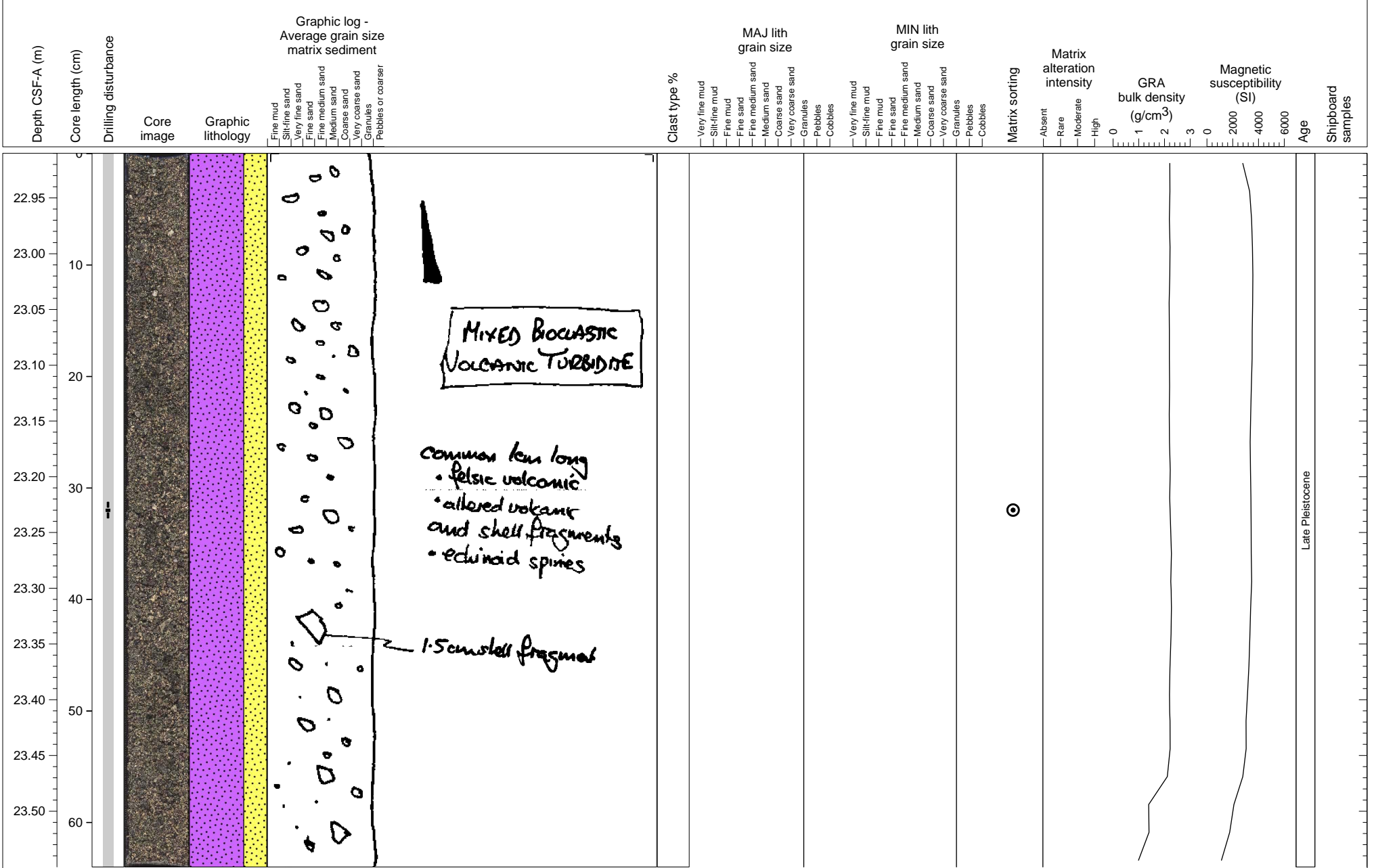
Very poorly sorted volcanoclastic sand with 30 % biogenic clasts.



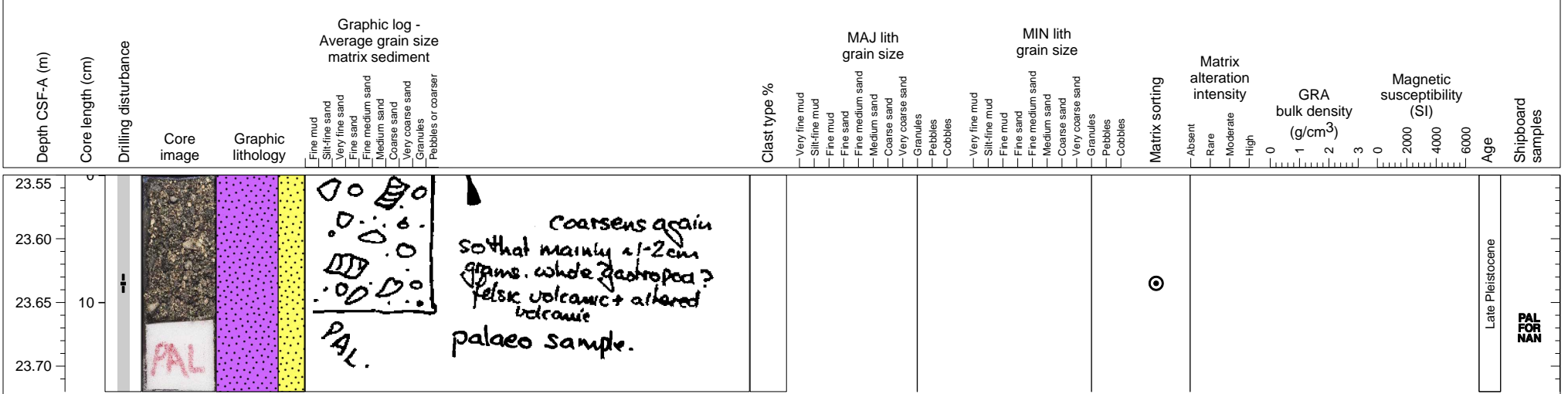
Very poorly sorted volcanoclastic sand with 30 % biogenic clasts.



Very poorly sorted volcanoclastic sand with 30 % biogenic clasts.





Volcaniclastic coarse material in the core catcher.



Late Pleistocene

PAL FOR NAN

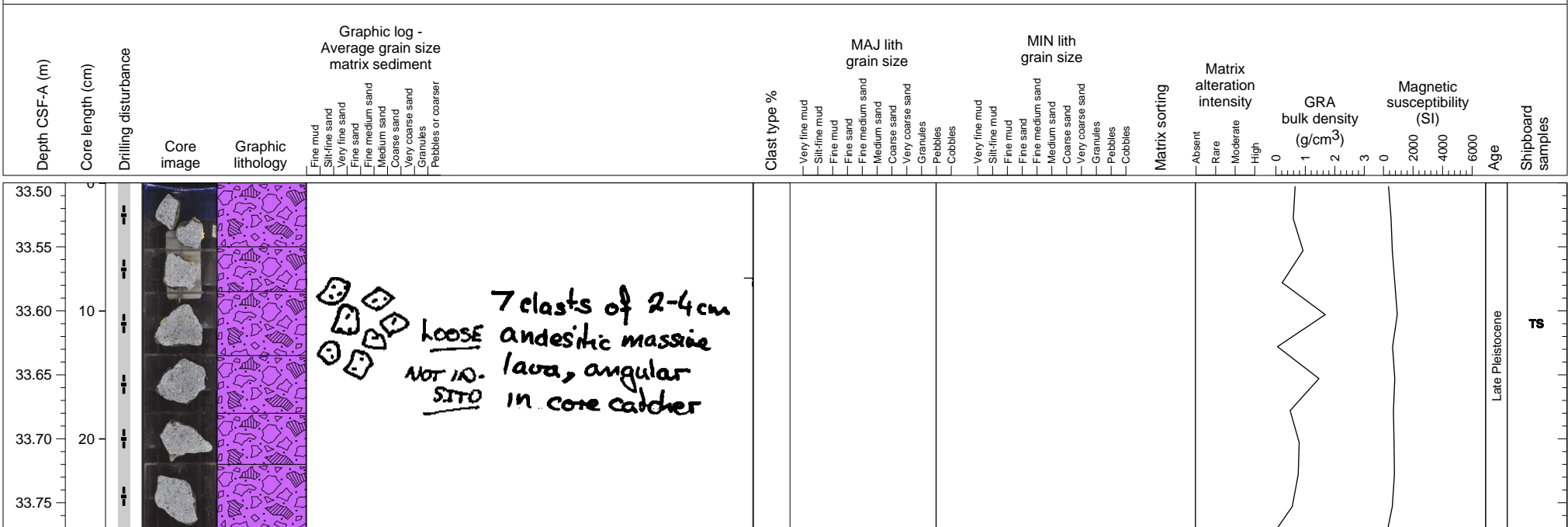
Volcaniclastic sand with small amount of carbonate sand mixed in.

Depth CSF-A (m)	Core length (cm)	Drilling disturbance	Core image	Graphic lithology	Graphic log - Average grain size matrix sediment	Clast type %	MAJ lith grain size	MIN lith grain size	Matrix sorting	Matrix alteration intensity	GRA bulk density (g/cm ³)	Magnetic susceptibility (SI)	Age	Shipboard samples
23.80					med-dark grey medium sand - med finer than ~250µm above in 3H. PAL. palaeo sample				<input type="checkbox"/>				Late Pleistocene	FOR NAN PAL

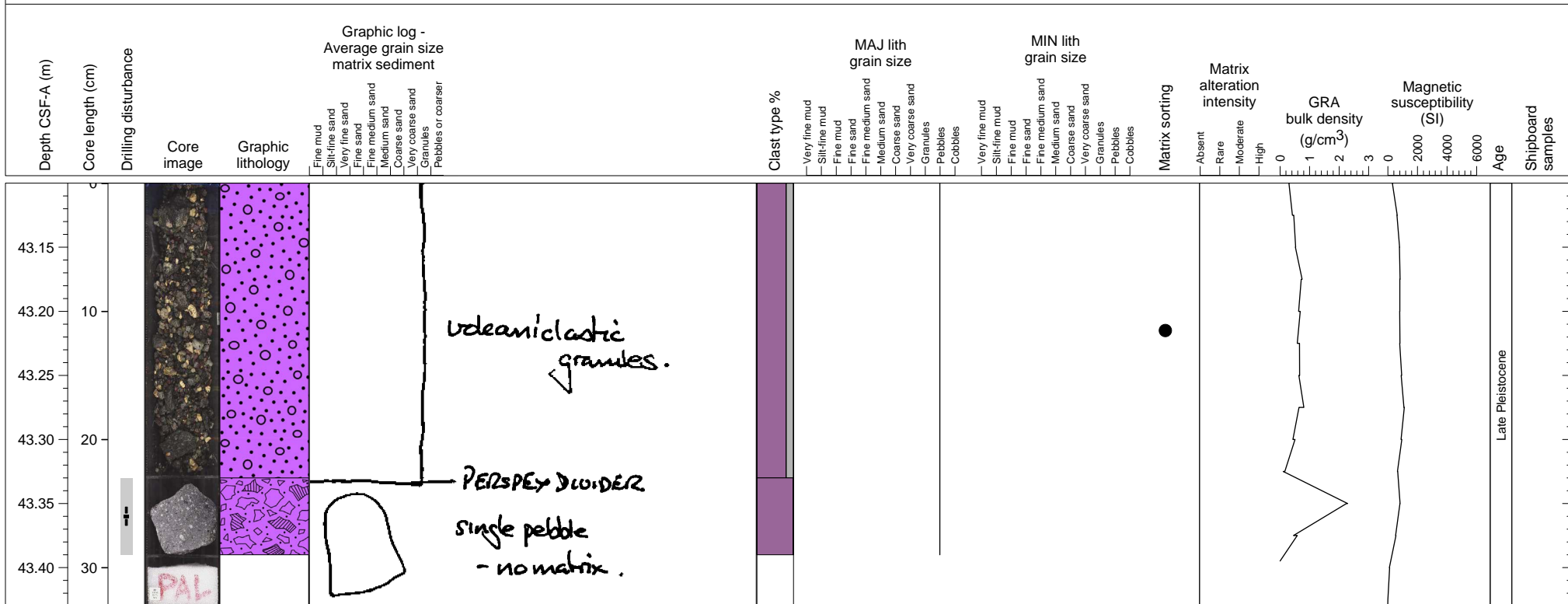
Two igneous pebbles: one andesite, one basalt.



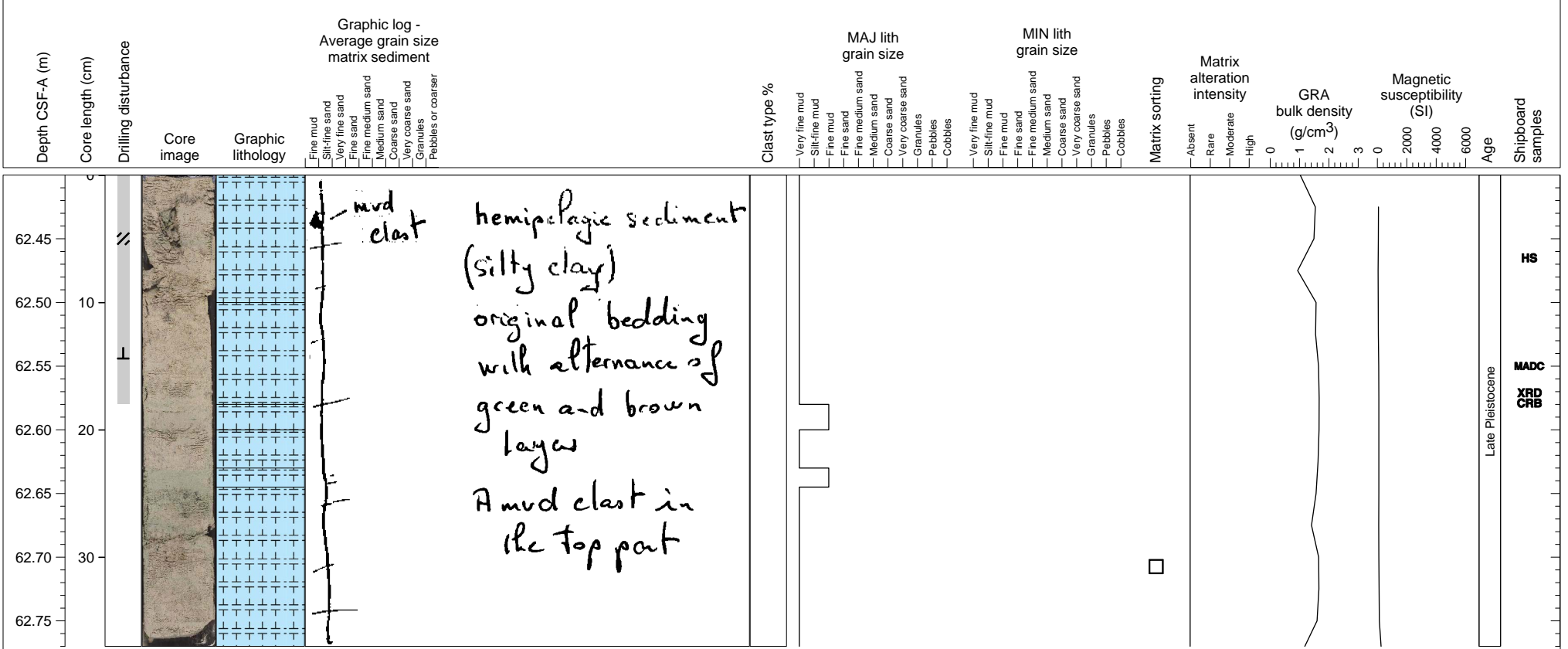
Six andesitic pebbles up to 50 mm in diameter. No alteration. Sub angular shape.



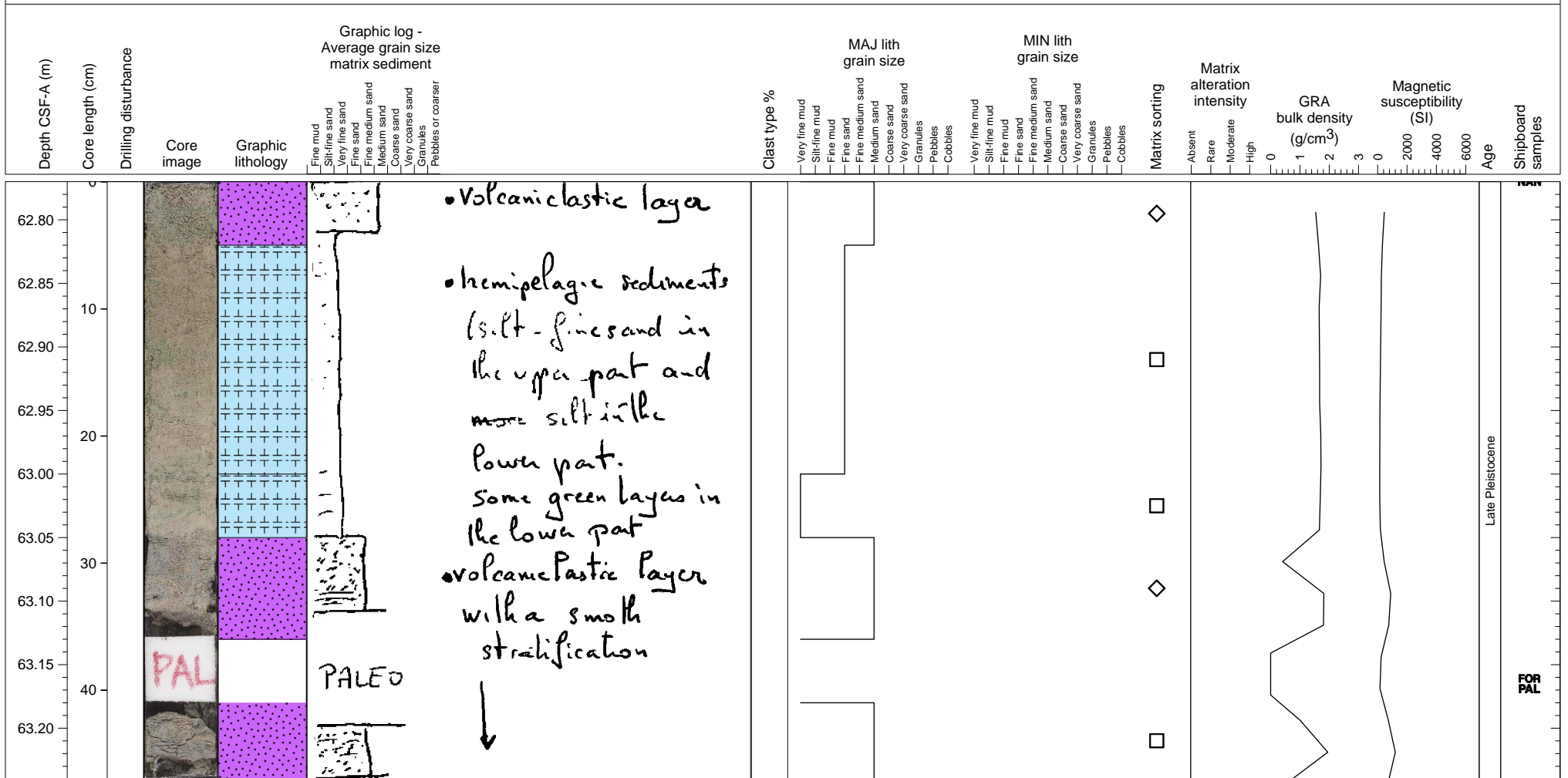
Loose andesitic pebbles, PAL sample from base.



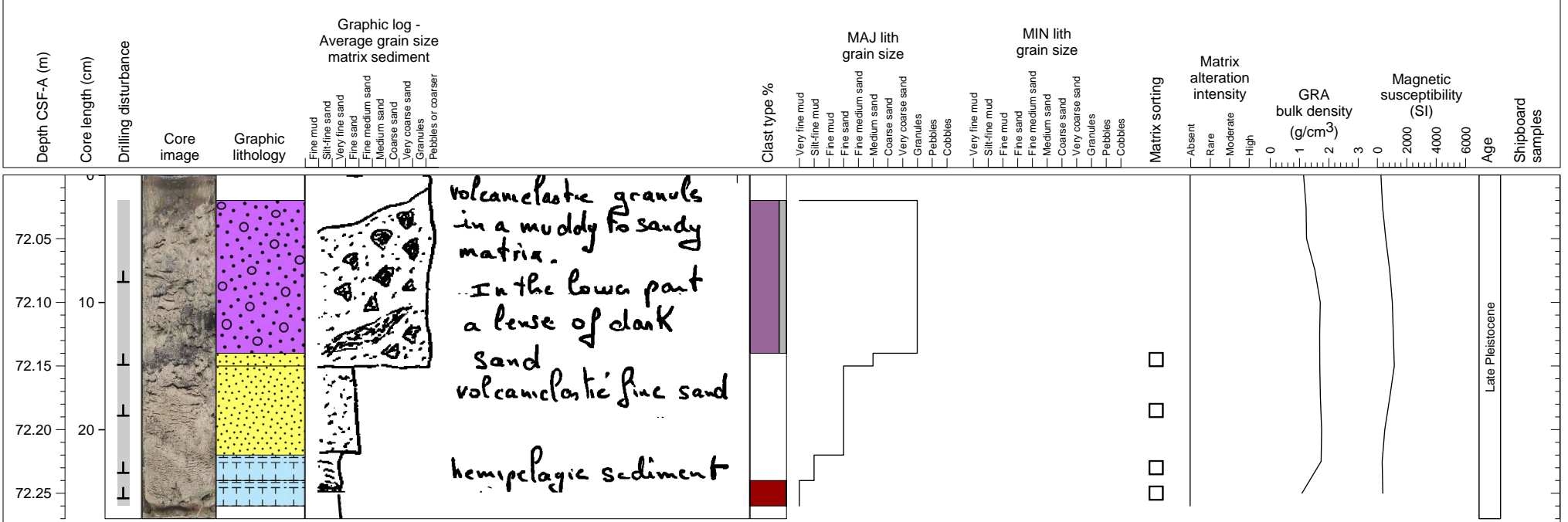
Hemipelagic mud with thin turbidite layers. A mud clast in the top part of the section.



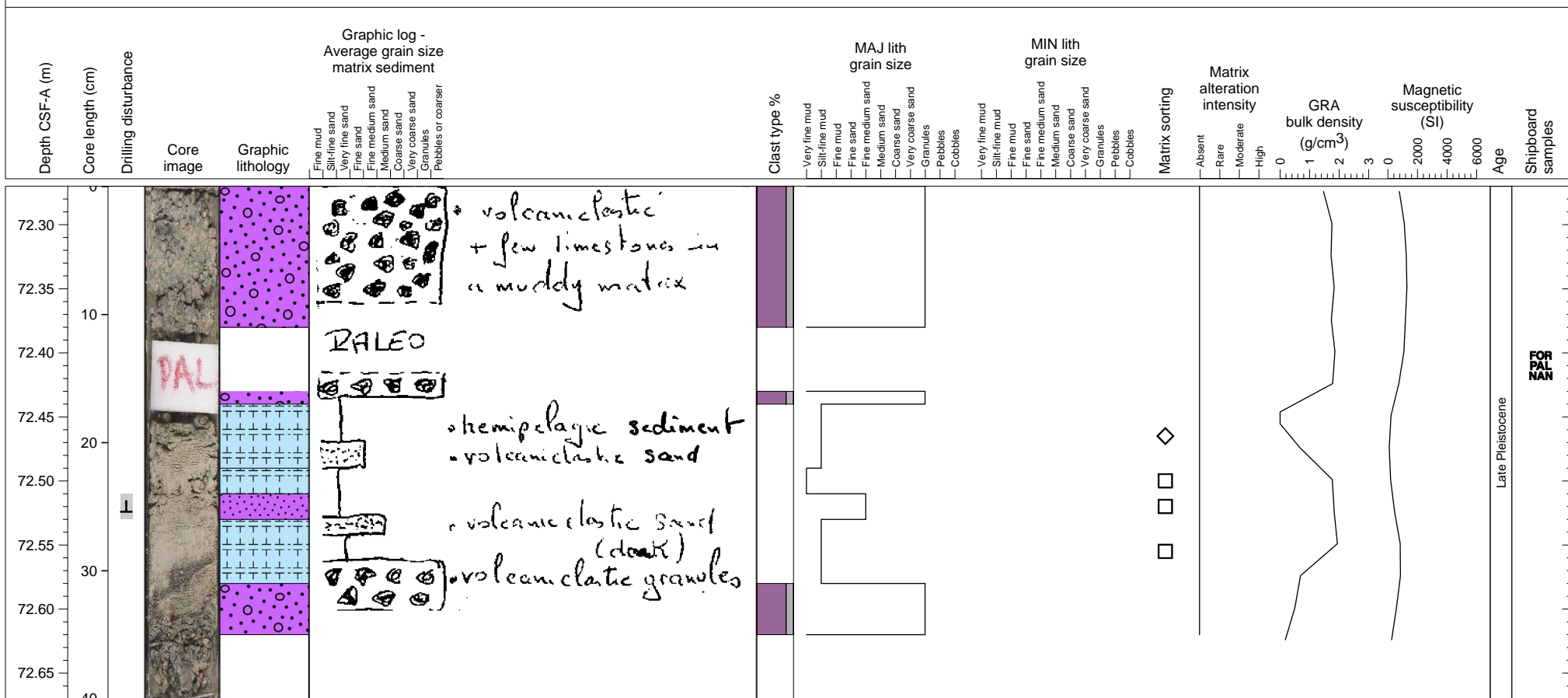
Volcaniclastic sand at top, hemipelagic sediments in middle, lower part volcaniclastic sand.



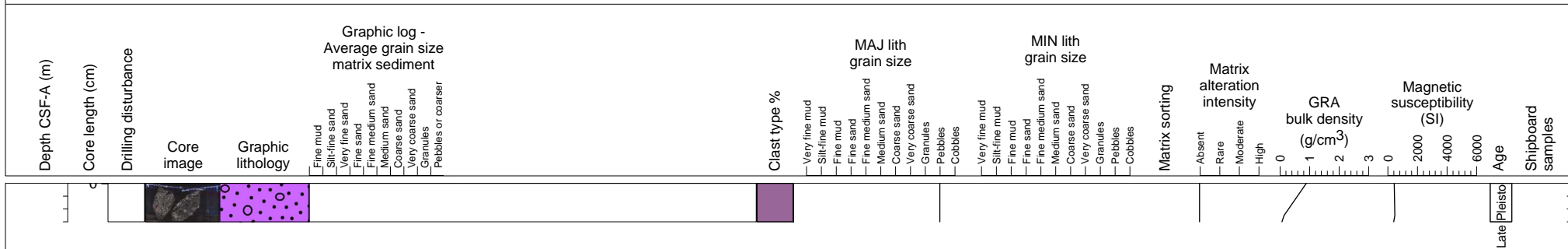
Stratified hemipelagic sediments with thin turbidite(?) sand.



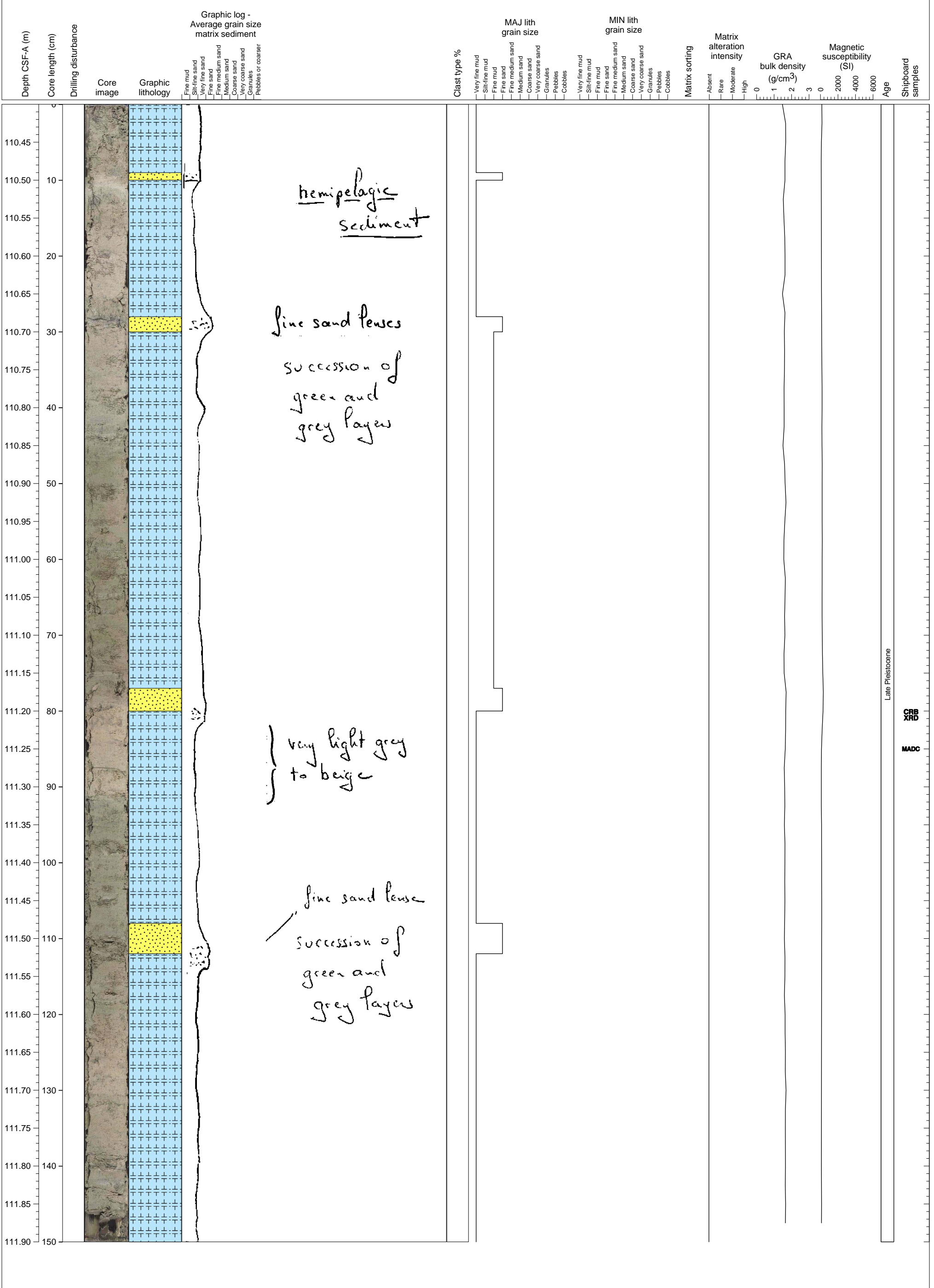
Volcaniclastic sand and hemipelagic mud



Two pieces of andesite clasts with a diameter of 4 cm.



Hemipelagic sediments. Muddy to sandy with few lenses of fine sand.



hemipelagic sediment

fine sand lenses
succession of
green and
grey layers

very light grey
to beige

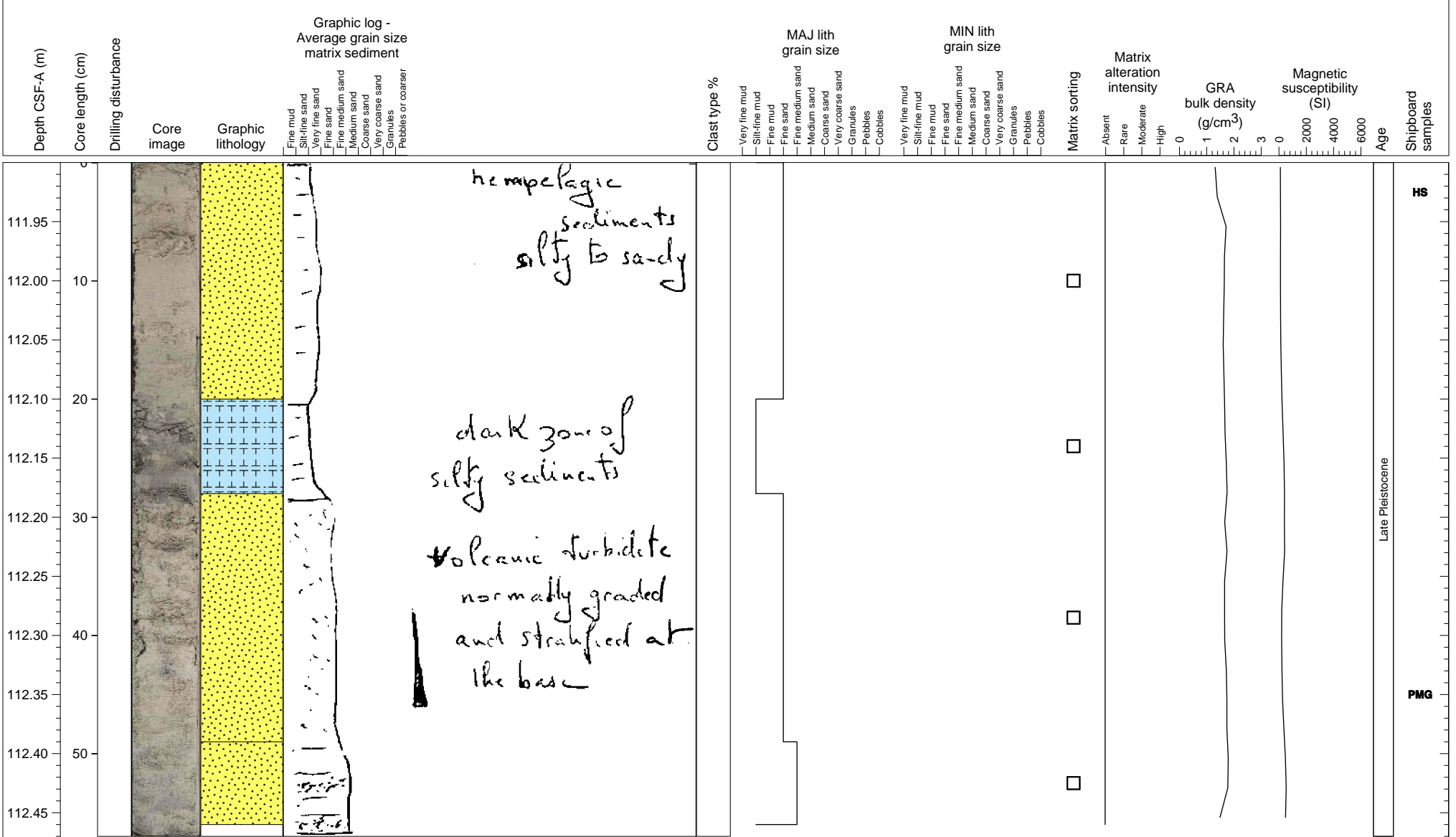
fine sand lens
succession of
green and
grey layers

Late Pleistocene

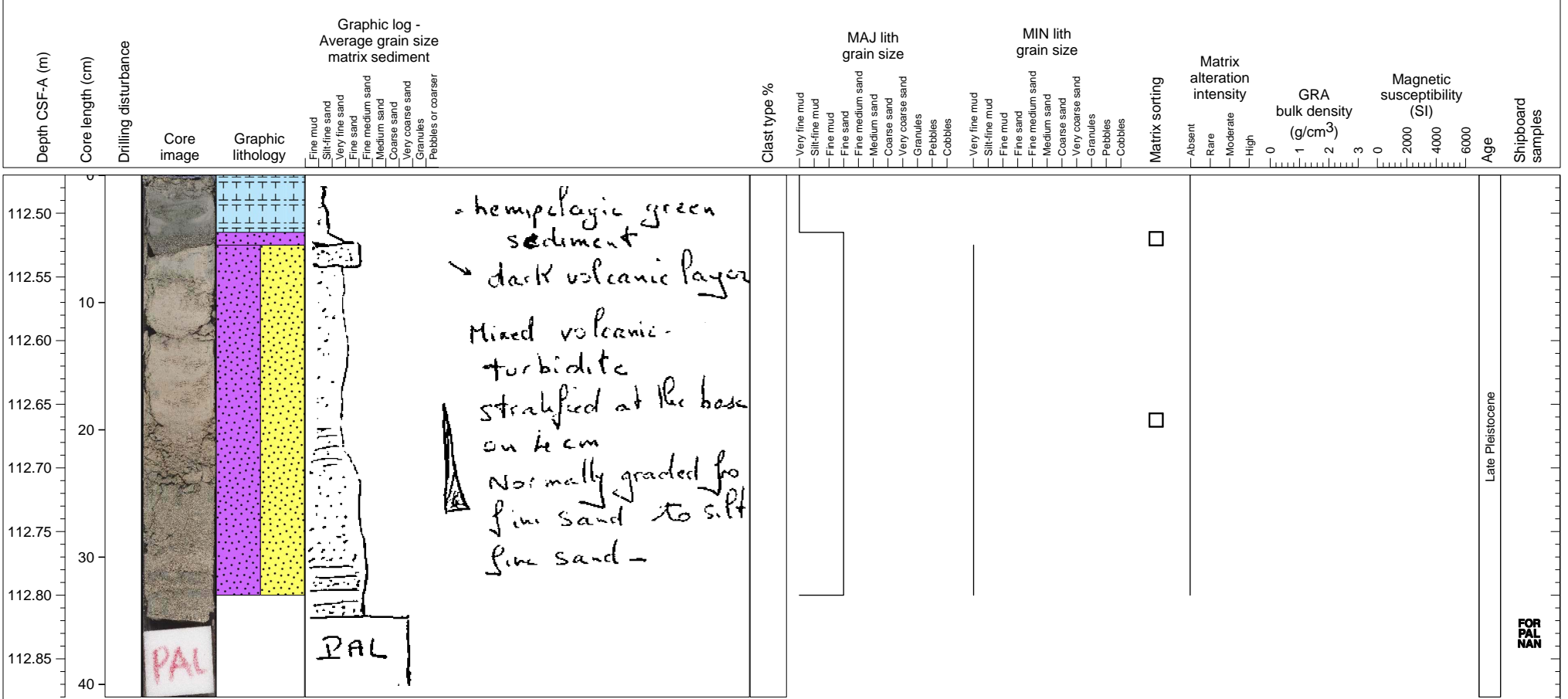
CRB
XRD

MADC

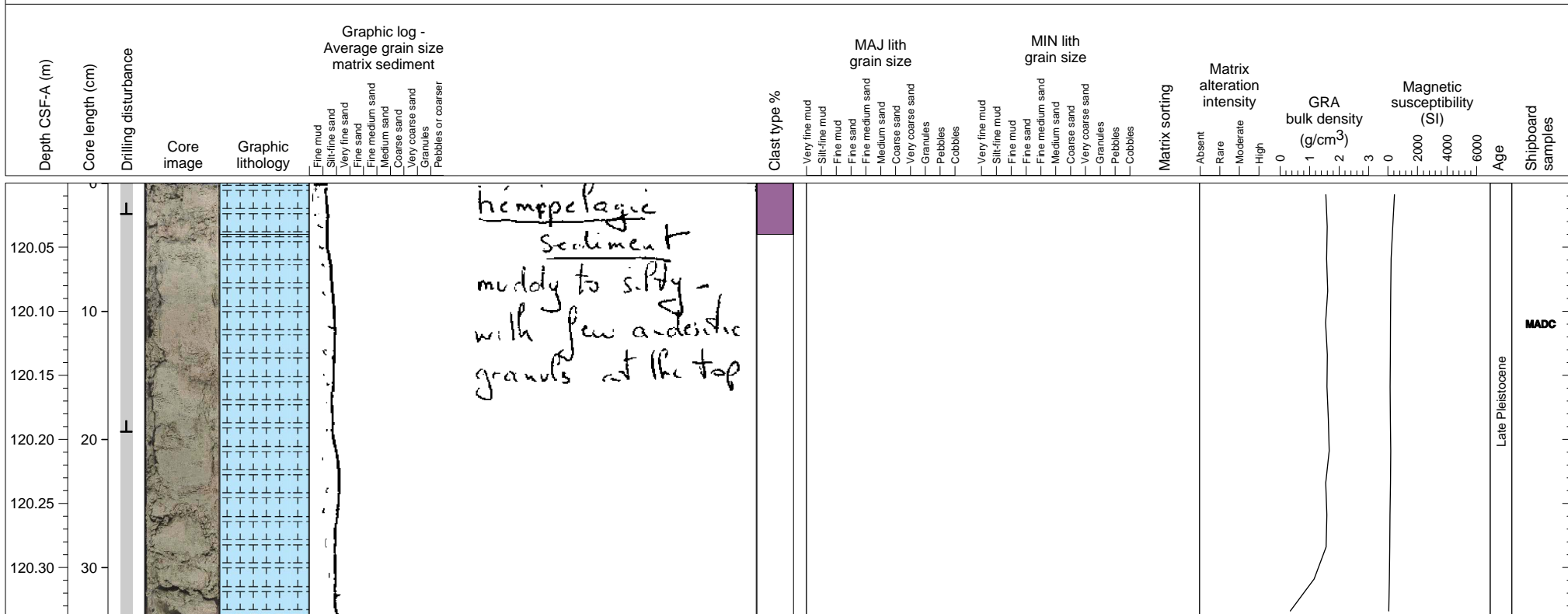
Grey colored hemipelagic silt sediments with fine- medium sand.



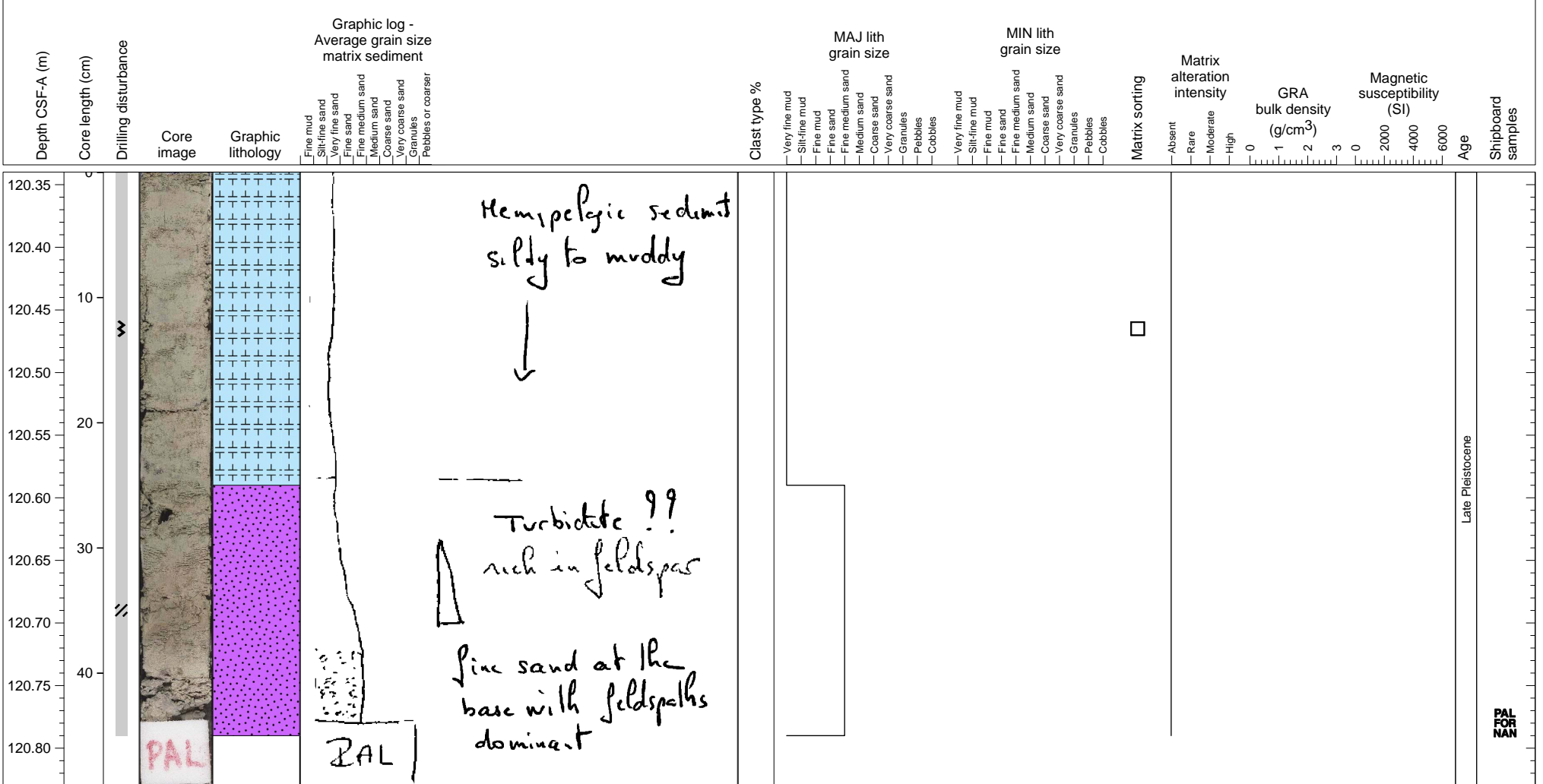
Hemipelagic sediments (green dark color) with volcanic-bioclastic turbidites.



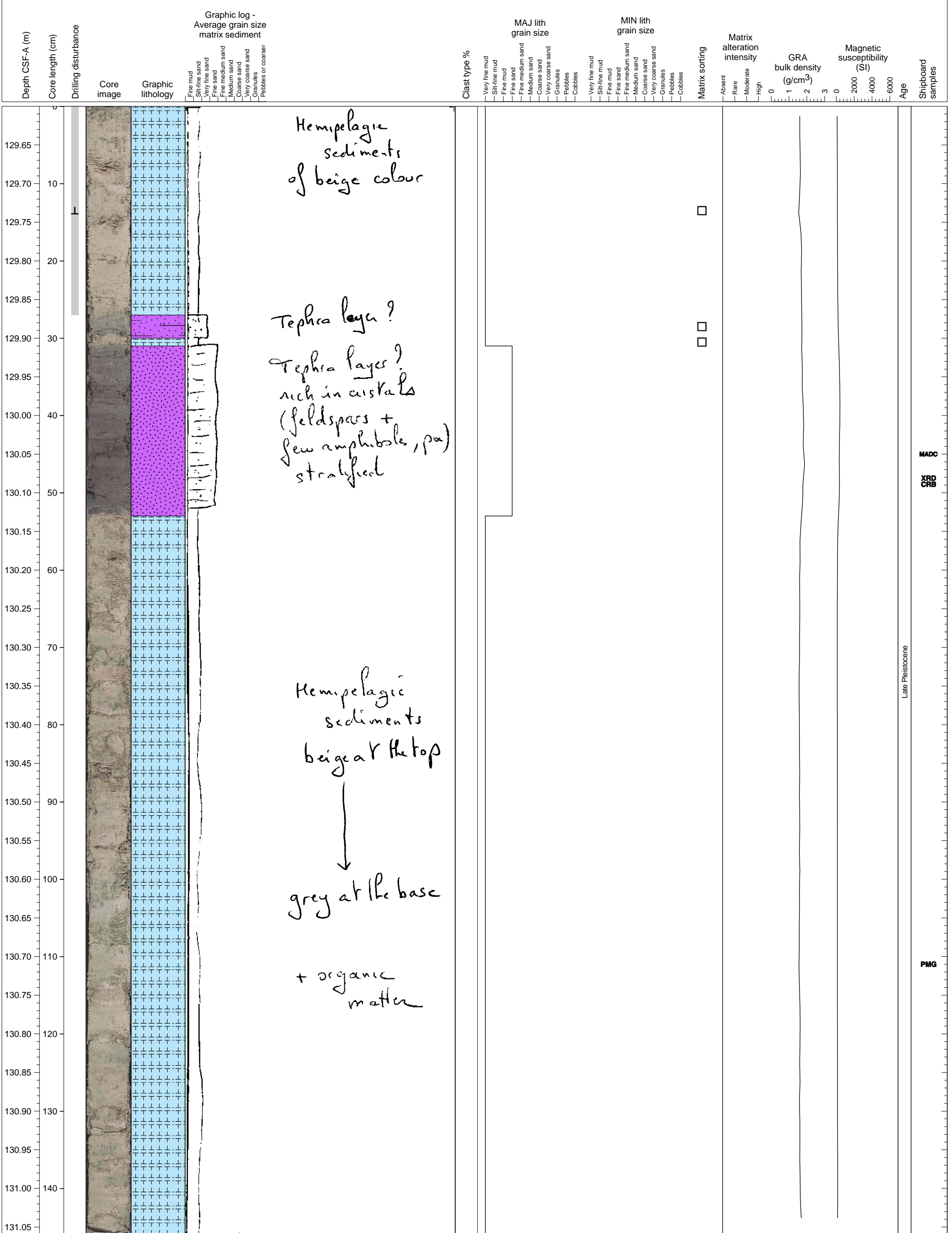
Carbonate ooze (hemipelagic sediment) containing small granules of andesitic lava.



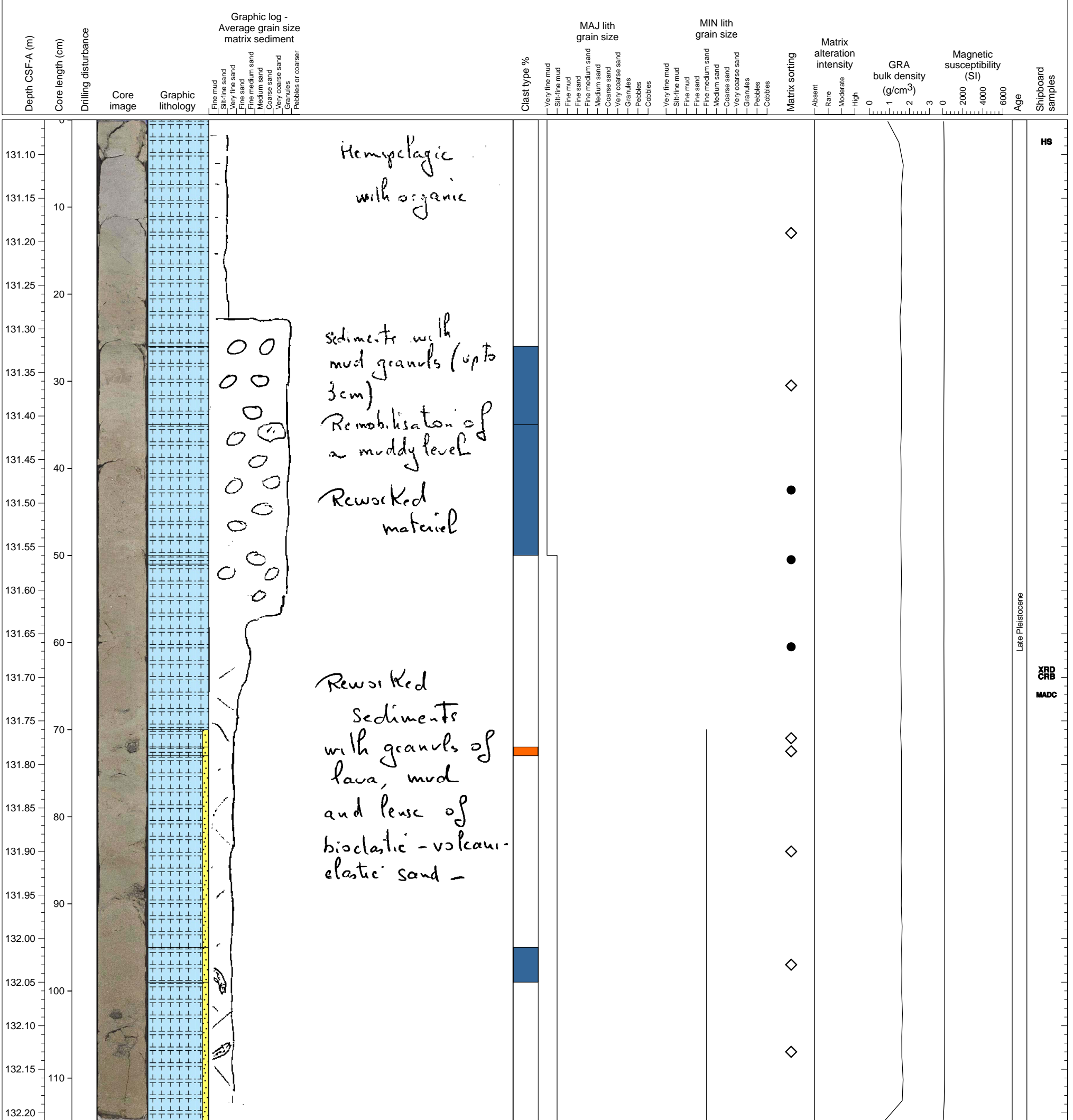
Hemipelagic fine mud and fine-medium sand.



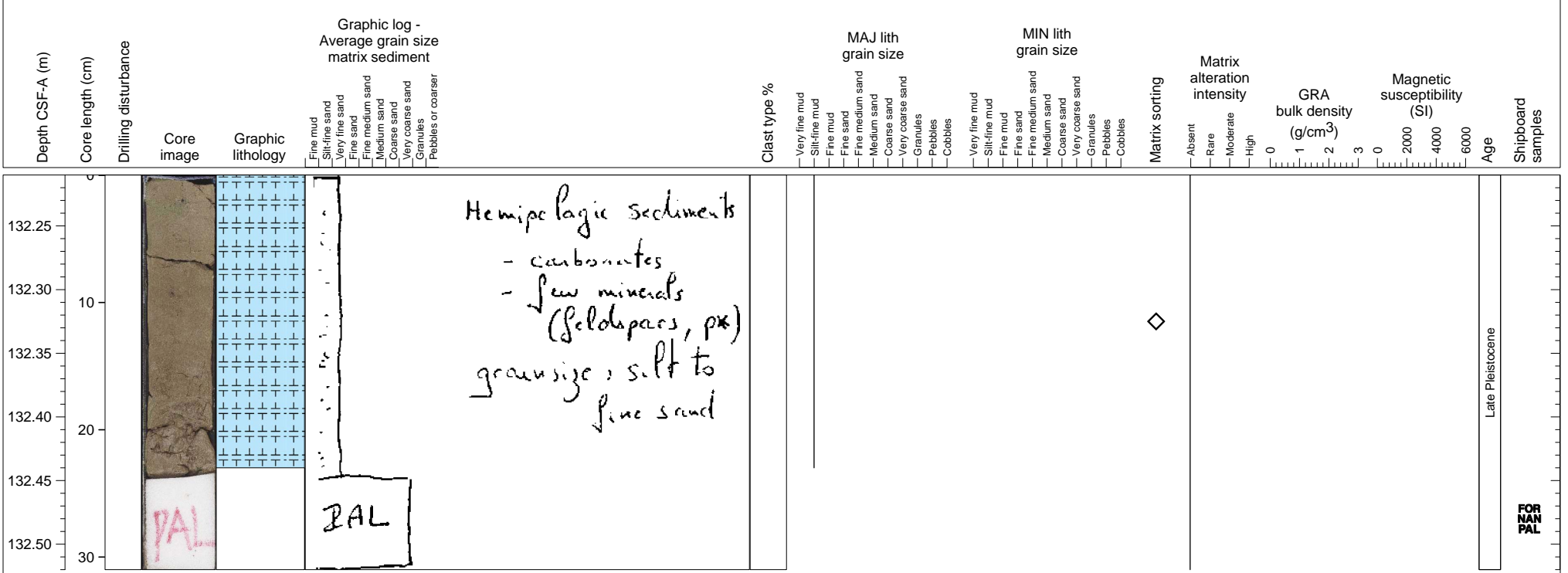
Hemipelagic sediment, tephra layers, and hemipelagic below.



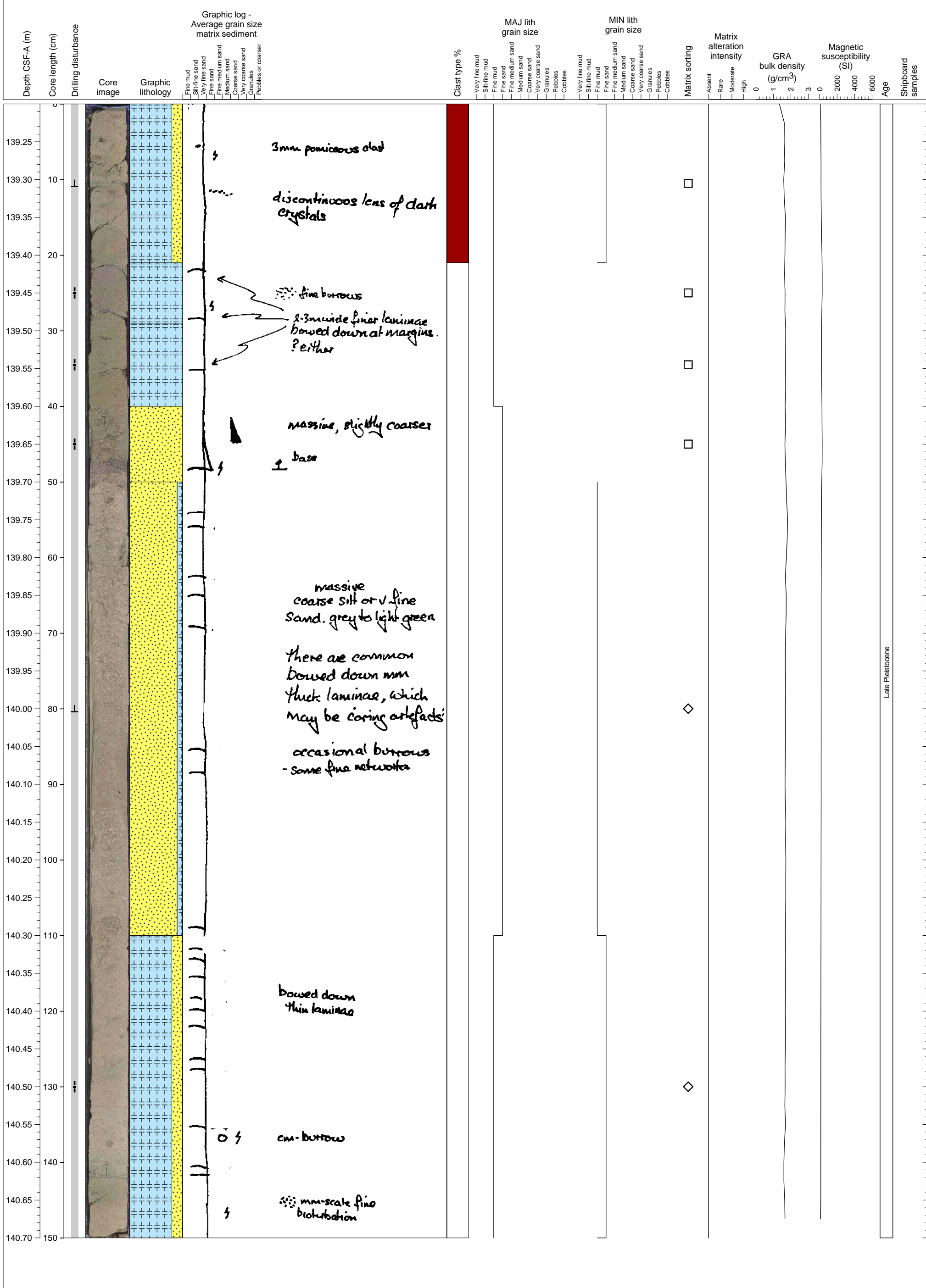
Hemipelagic muddy sediments with mud clasts, bioclastics.



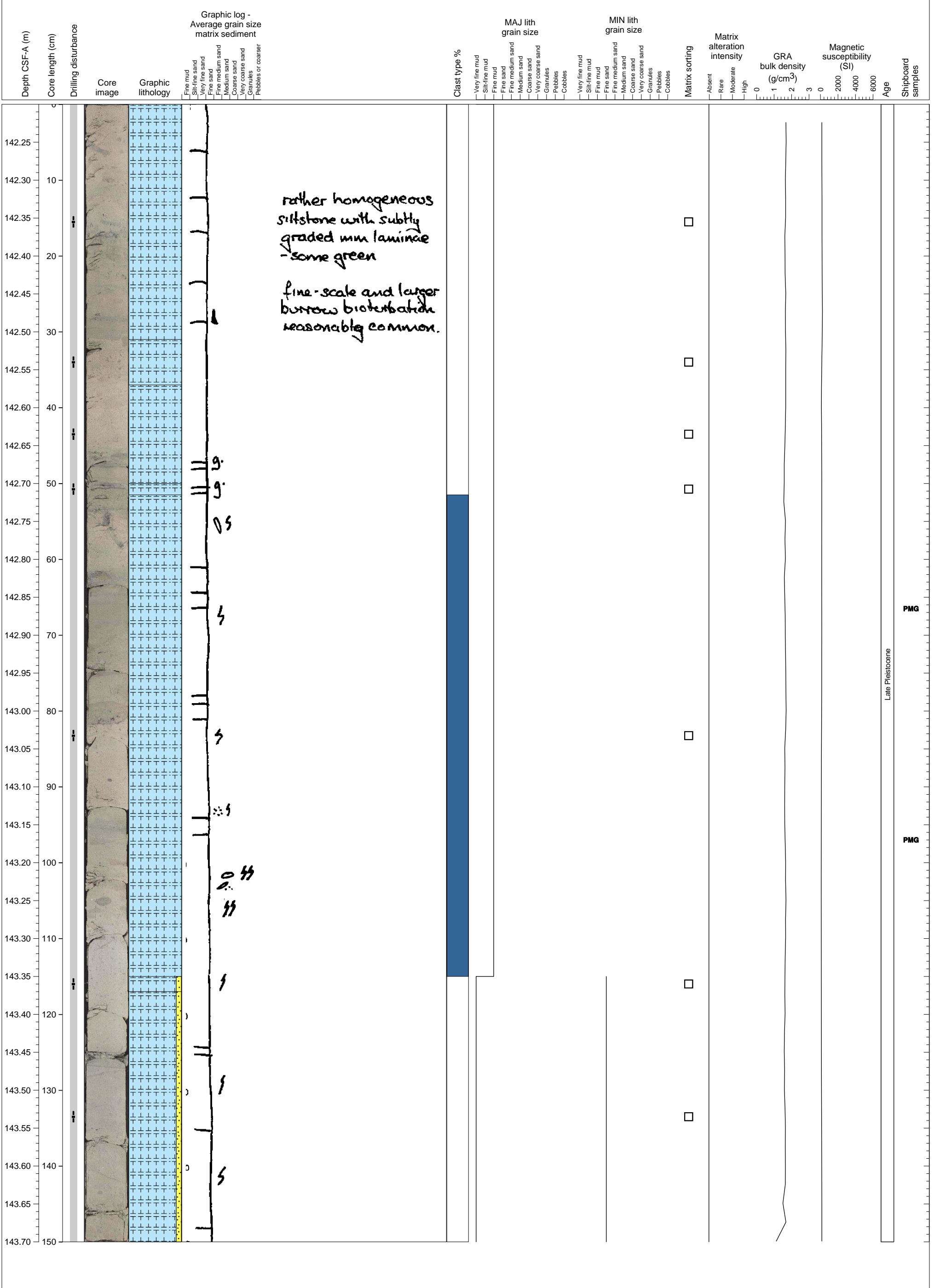
Hemipelagic fines with thin laminated fine sand. Bioturbation present.



Hemipelagic sediment with thin laminae and green laminae.



Hemipelagic sediment with thin turbidite laminae, bioturbation common.



rather homogeneous siltstone with subtly graded mm laminae - some green

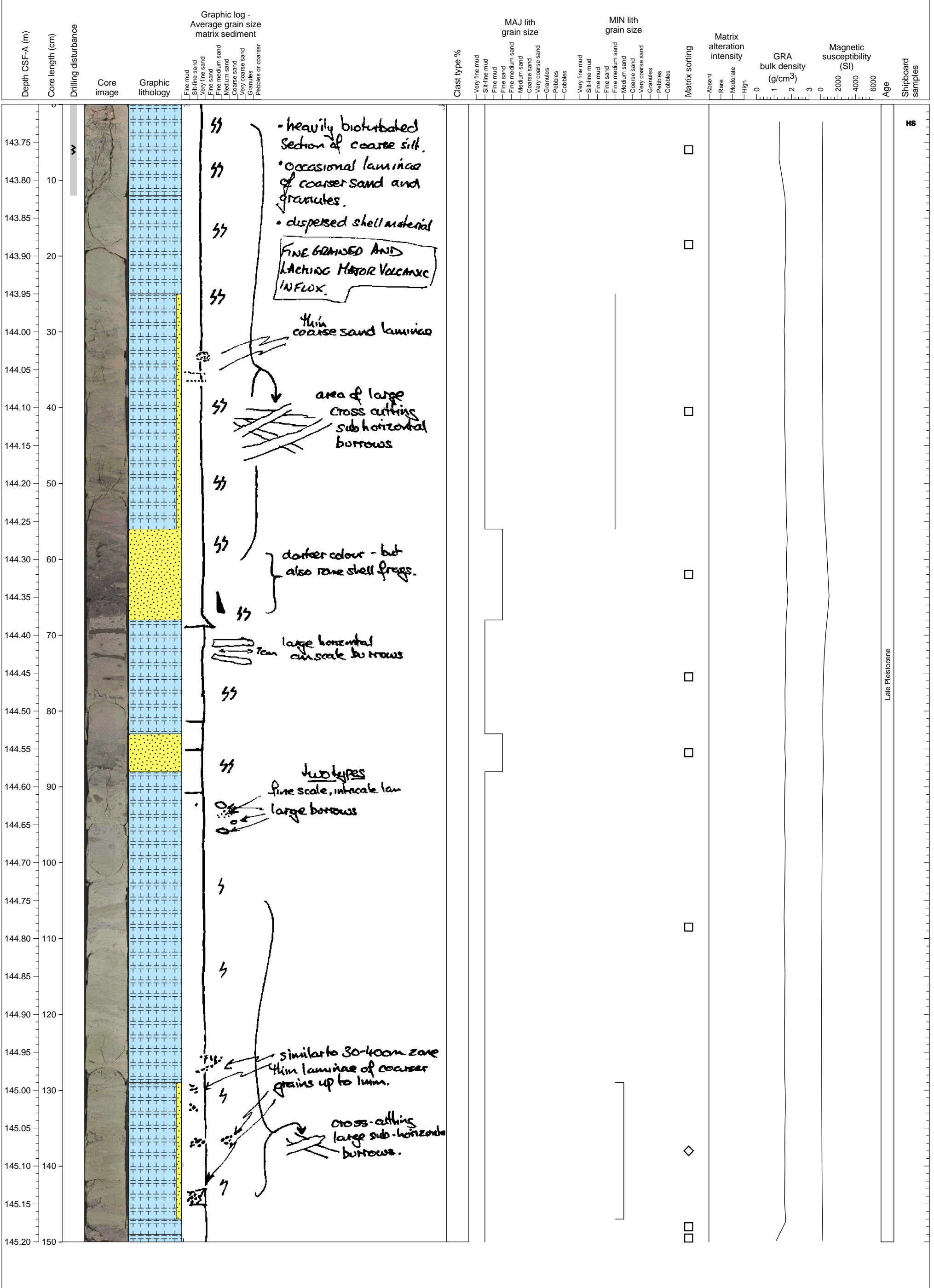
fine-scale and larger burrow bioturbation reasonably common.

PMG

Late Pleistocene

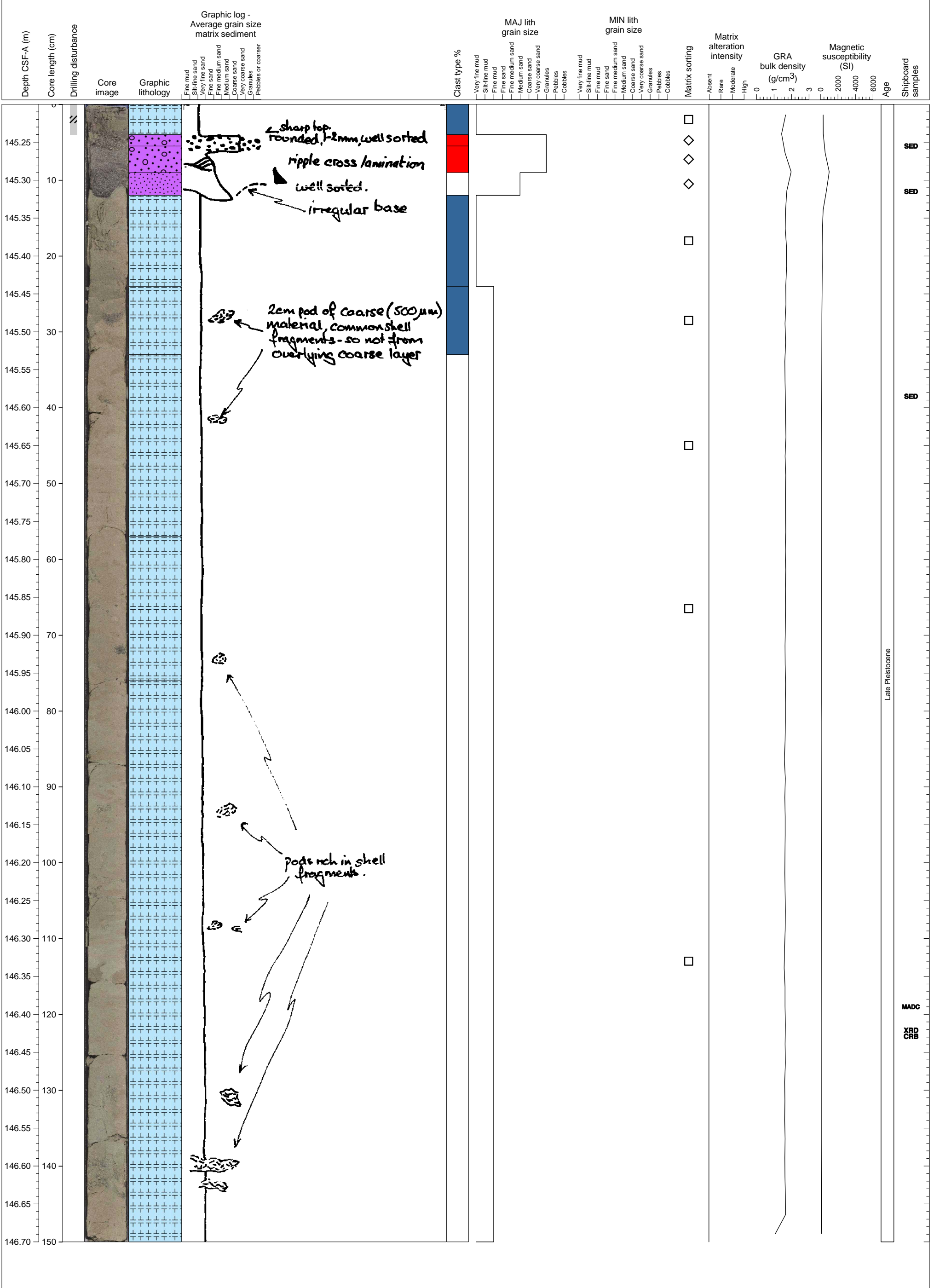
PMG

Grey-green (hemipelagic) coarse silty-mud with common thin fine (turbidite) beds. Pervasive large scale overlapping bioturbation.

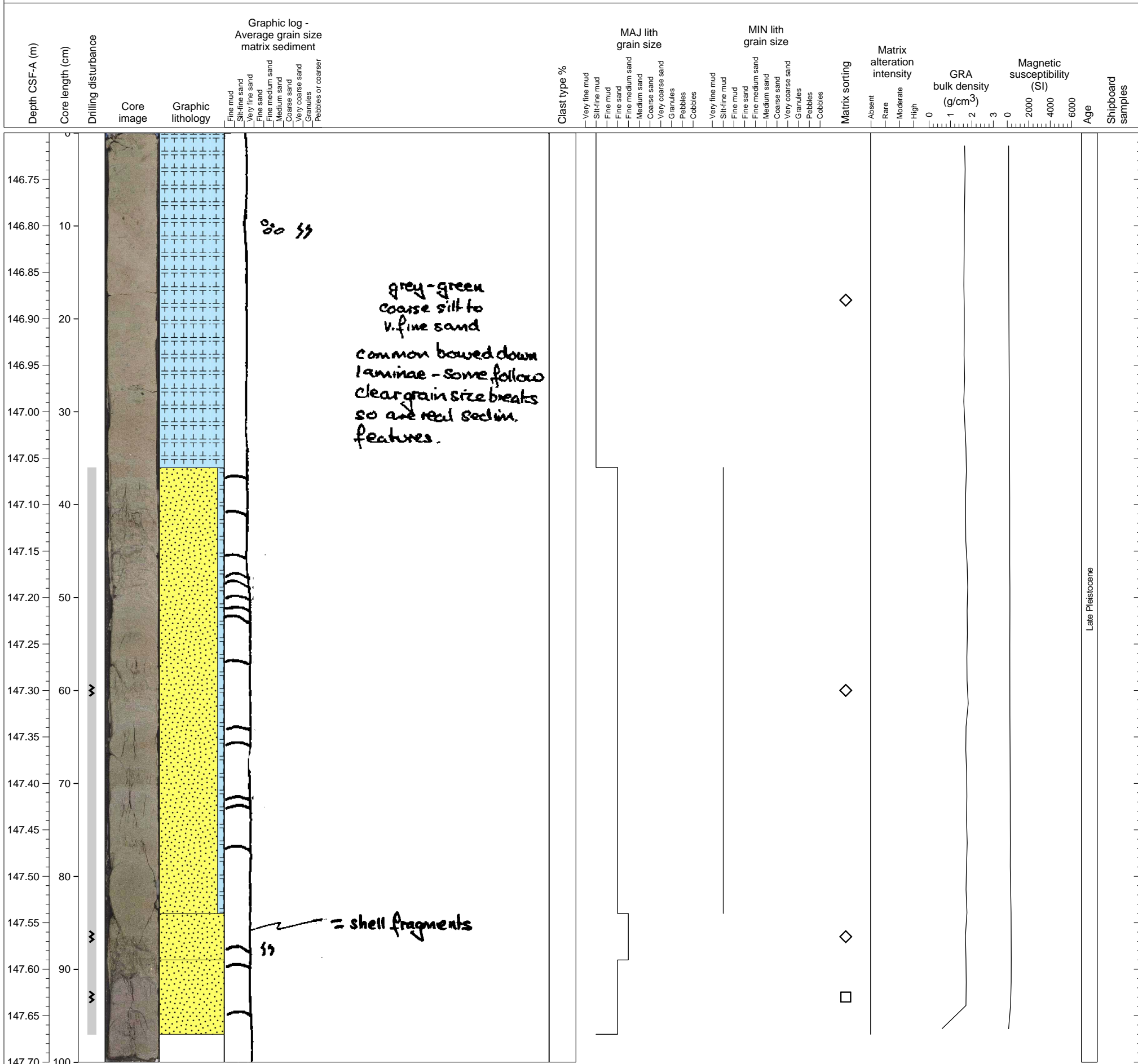


Hole 340-U1394A-17X Section 5, Top of Section: 145.2 CSF-A (m)

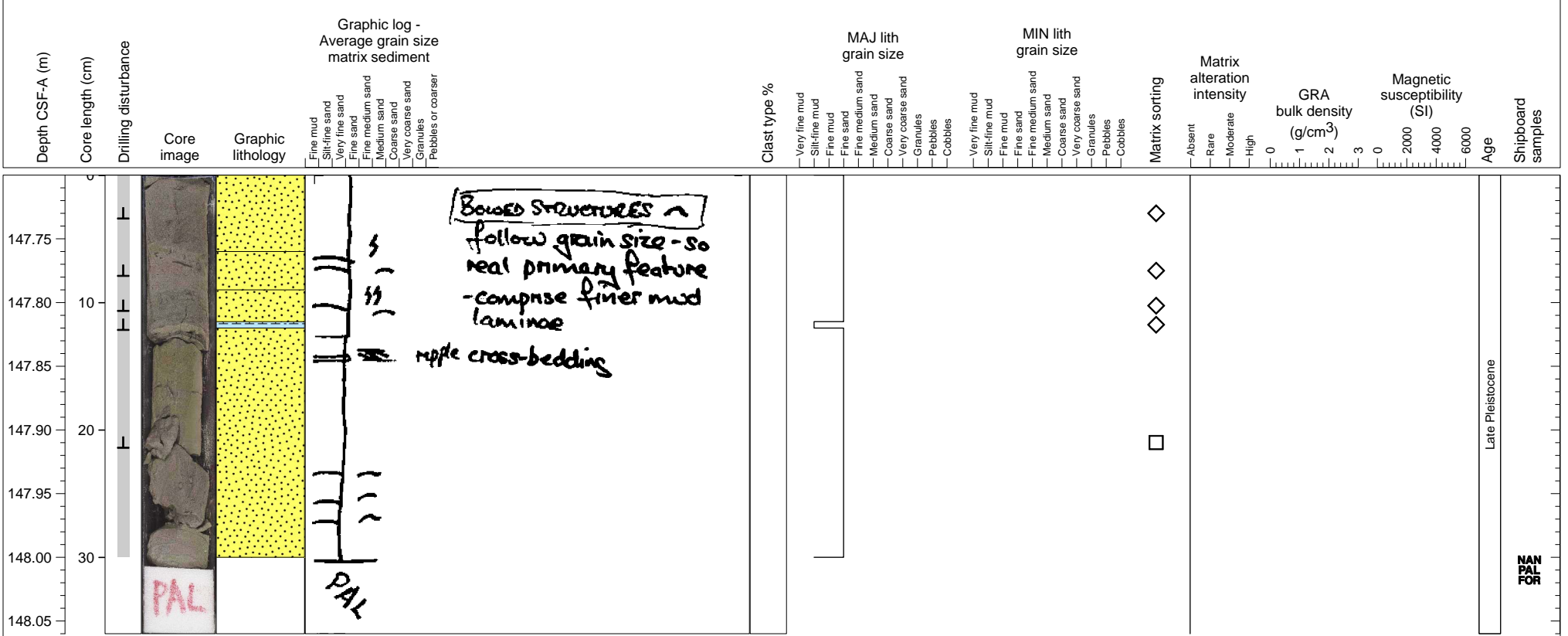
Grey-green (hemipelagic) coarse silty-mud. Thin (turbidite) sand layer overlain by well sorted granule (ash fallout) deposit. Pods of coarser sand (bioturbated?) lower down.



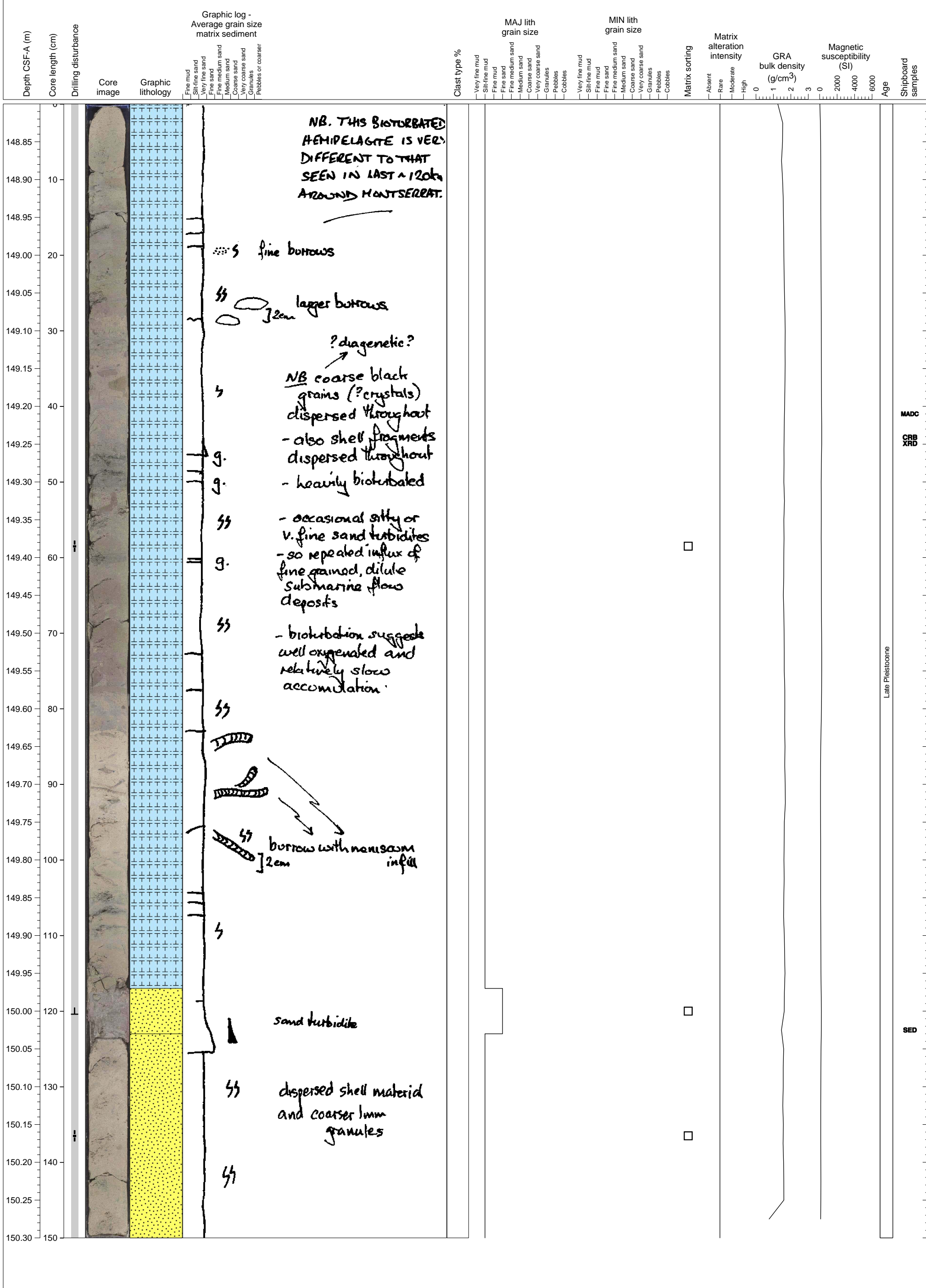
Grey-green (hemipelagic) coarse silty-mud with common thin fine (turbidite) beds. Common bioturbation.



Grey-green (hemipelagic) coarse silty-mud with common thin fine (turbidite) beds. Common bioturbation.



Strongly bioturbated grey-green hemipelagic silty mud, occasional thin (turbidite) fine sand. Black grains and shell fragments distributed throughout.



NB. THIS BIOTURBATED HEMIPELAGITE IS VERY DIFFERENT TO THAT SEEN IN LAST ~120km AROUND MONTSERRAT.

fine burrows

larger burrows

? diagenetic?

NB coarse black grains (? crystals) dispersed throughout - also shell fragments dispersed throughout

- heavily bioturbated

- occasional silty or v. fine sand turbidites - so repeated influx of fine grained, dilute submarine flow deposits

- bioturbation suggests well oxygenated and relatively slow accumulation

burrow with nonisom infill

sand turbidite

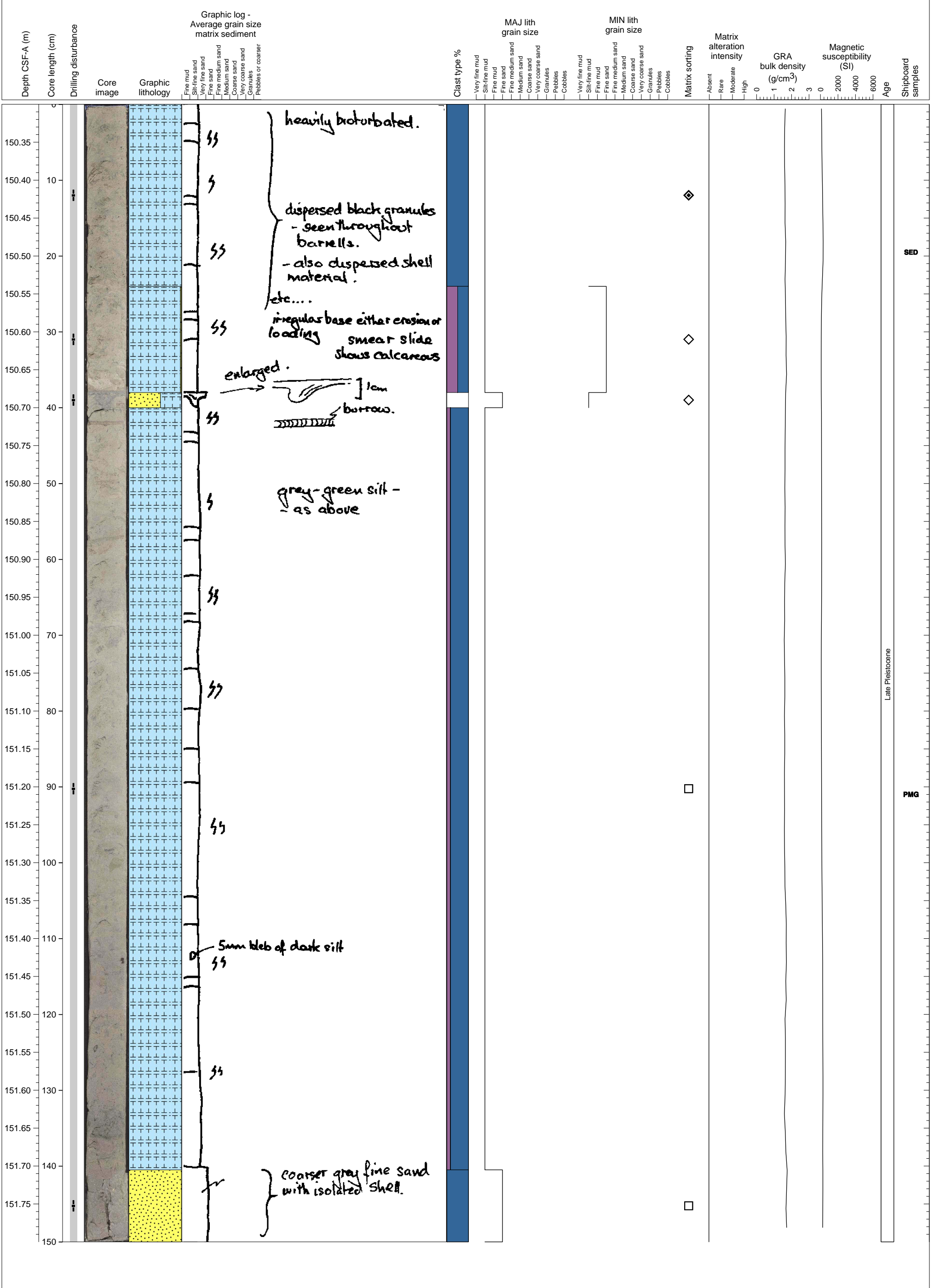
dispersed shell material and coarser 1mm granules

MADC
CRB
XRD

Late Pleistocene

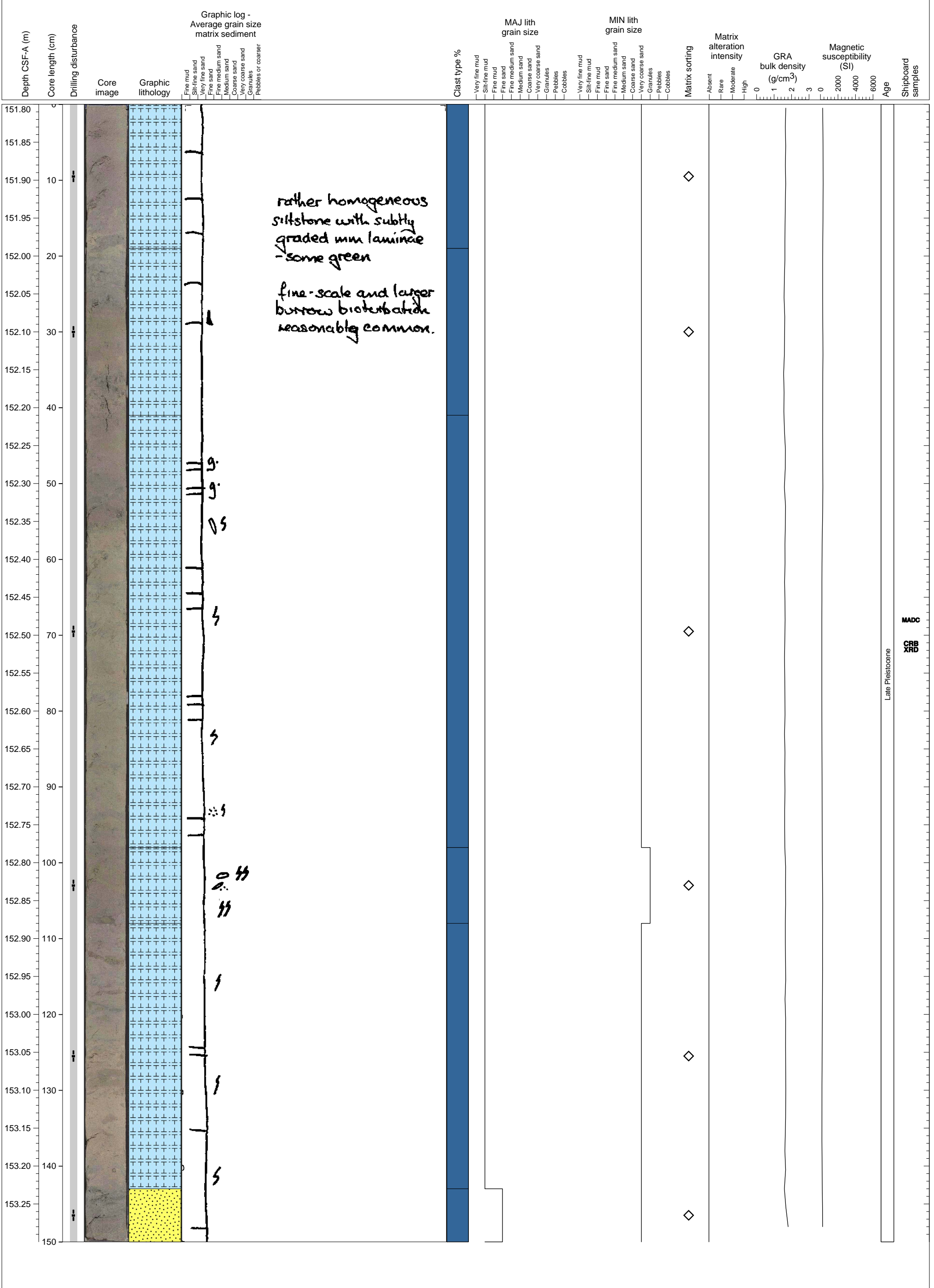
SED

Hemipelagic clay with significant bioturbation containing clasts of biogenic material and mafic fragments.



Hole 340-U1394A-18X Section 3, Top of Section: 151.8 CSF-A (m)

Gray-light to gray colored silt-muddy carbonate ooze with occasional thin greenish layers. The entire unit is heavily bioturbated. Biogenic clasts are also included.



rather homogeneous siltstone with subtly graded mm laminae - some green

fine-scale and larger burrow bioturbation reasonably common.

gs
gs
os

⚡

⚡

⚡

os
os
os

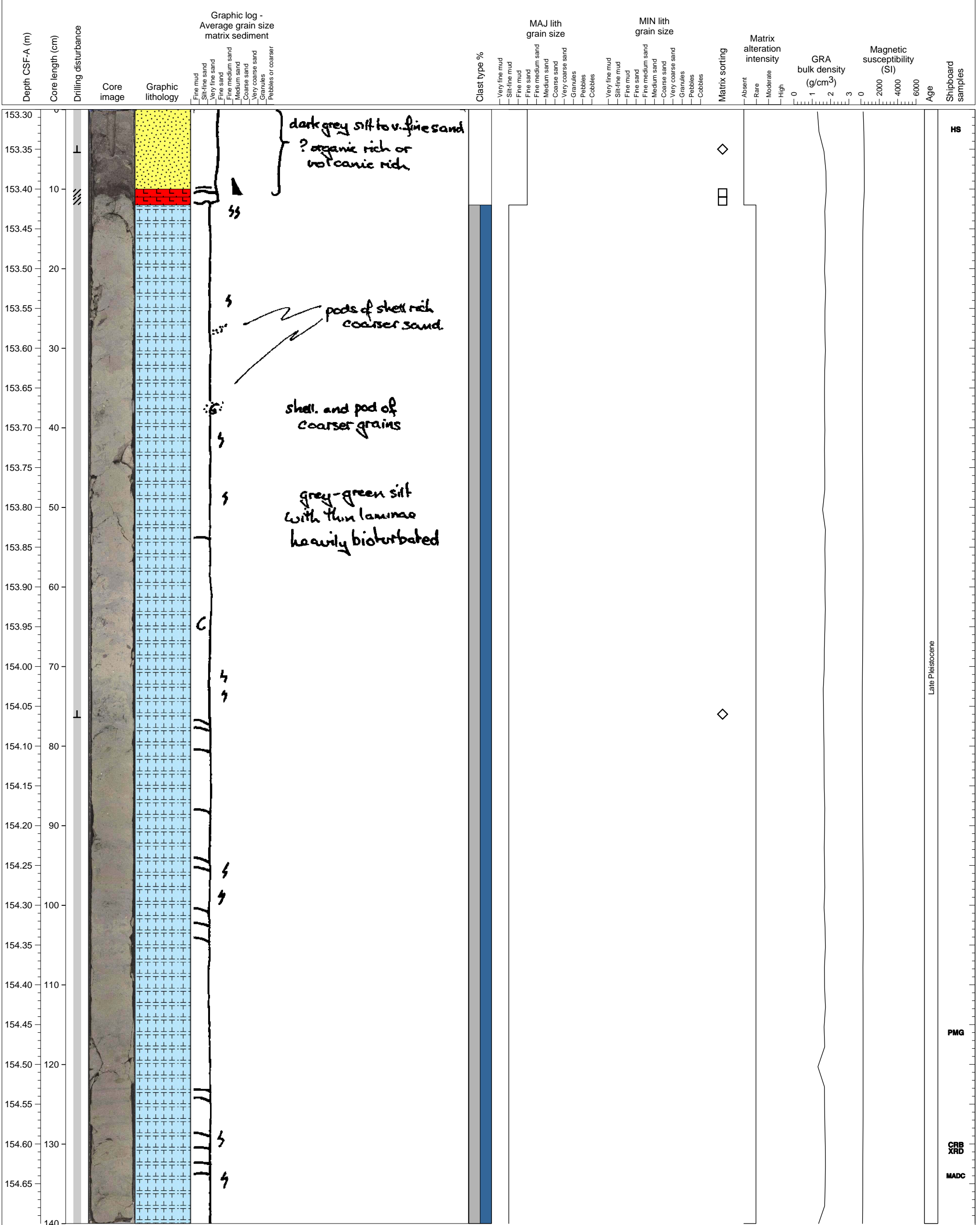
⚡

⚡

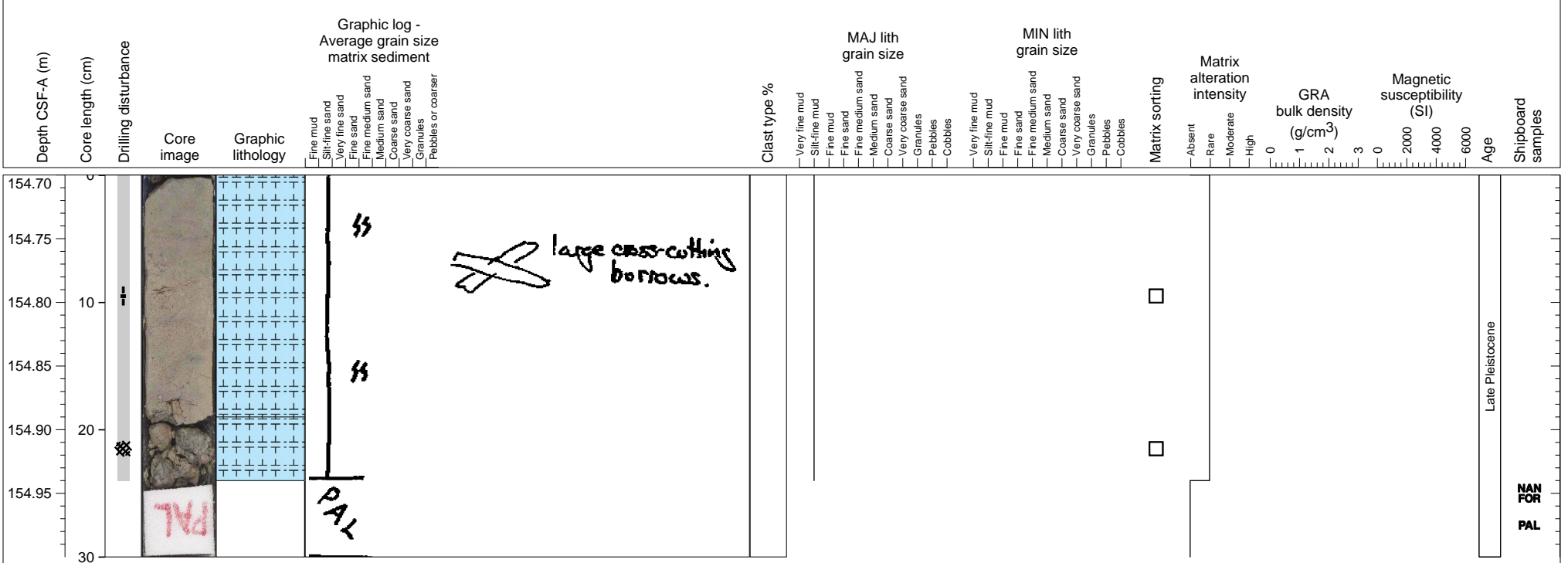
⚡

MADC
CRB
XRD
Late Pleistocene

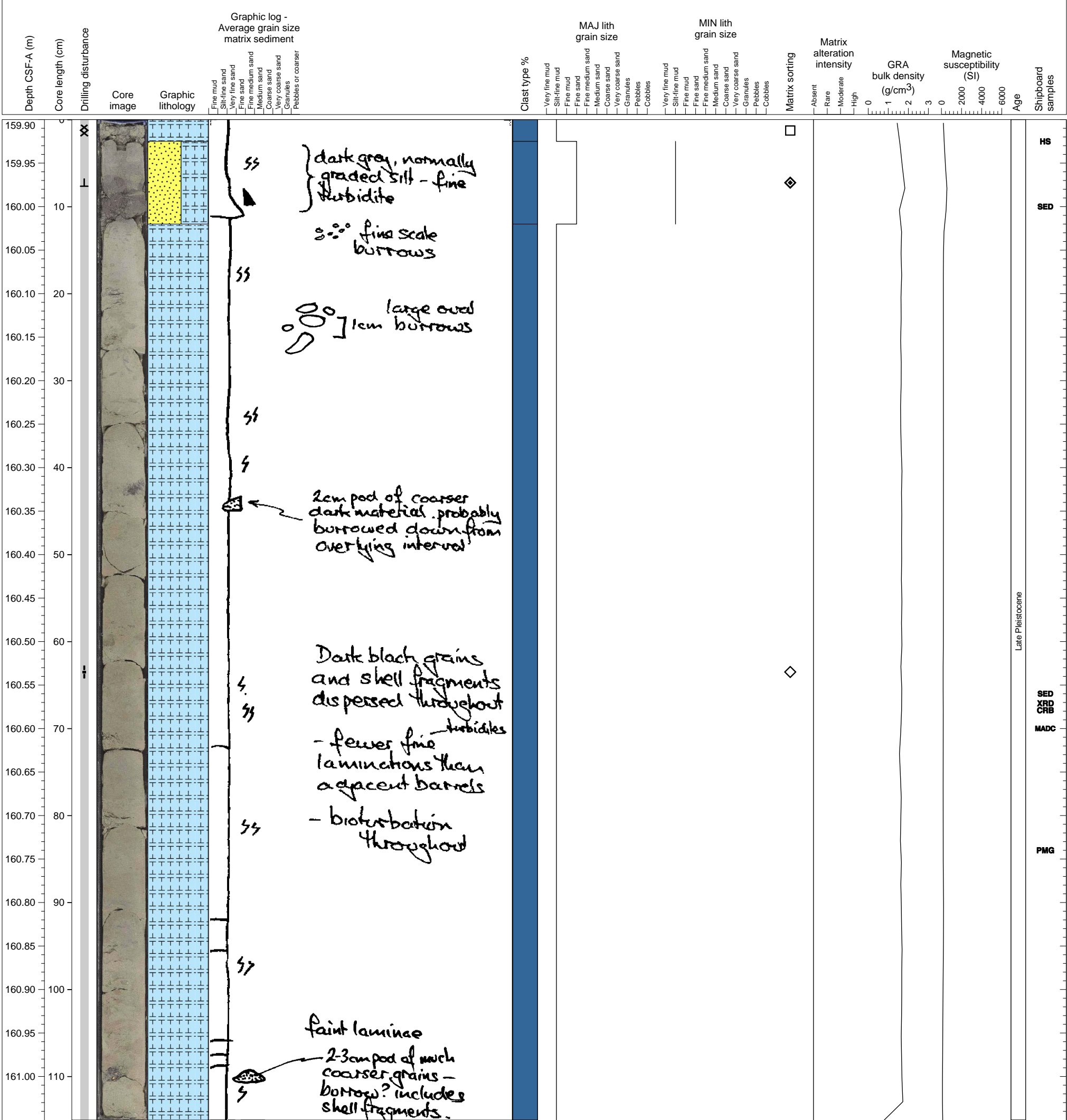
Strongly bioturbated grey-green hemipelagic silty mud, occasional thin (turbidite) fine sand. Black grains and shell fragments distributed throughout.



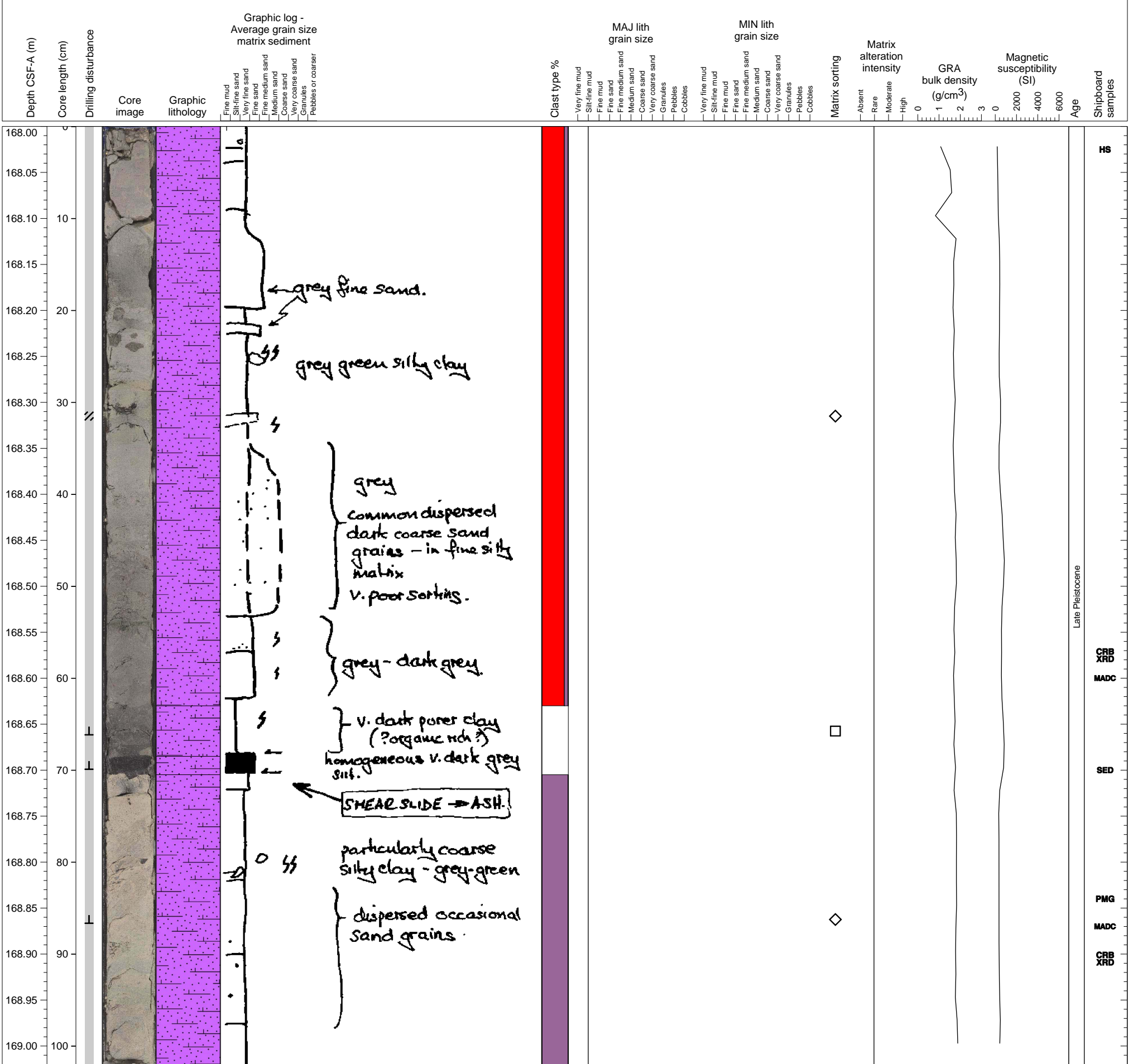
Strongly bioturbated grey-green hemipelagic silty mud, occasional thin (turbidite) fine sand. Black grains and shell fragments distributed throughout.



Section consists mainly of hemipelagic mud with significant bioturbation and a small amount of calcareous fine sand. Biogenic clasts are present with some shell fragments ranging up to granule size.



This section contain 2 cm thick black layer, which is well sorted silt and could be a fallout volcanic product. When the upper and lower parts of this section is compared to the lower sections such as 24X, it is obvious that these are poorly sorted and contain quite a few amount of granule-size lava fragments. This may suggest very active volcanic activity during the deposition of these layers. The upper and lower parts of the black tephra are volcanic turbidities.



Late Pleistocene

HS

CRB XRD

MADC

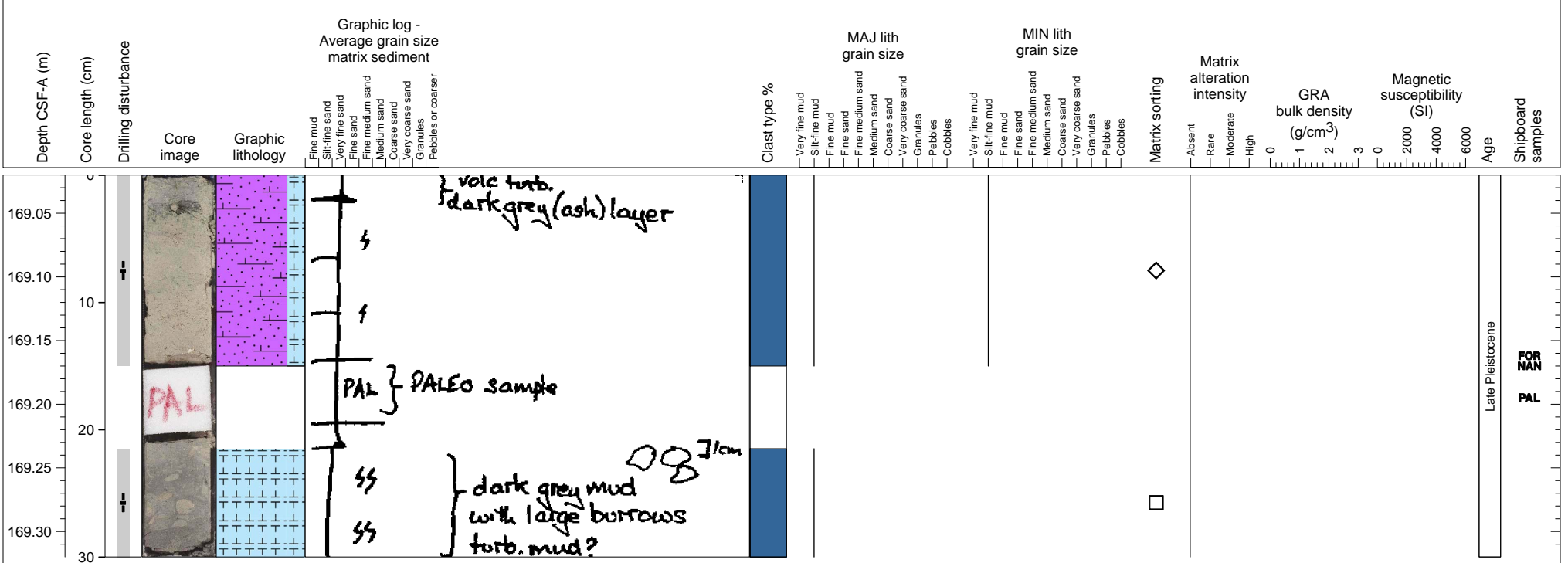
SED

PMG

MADC

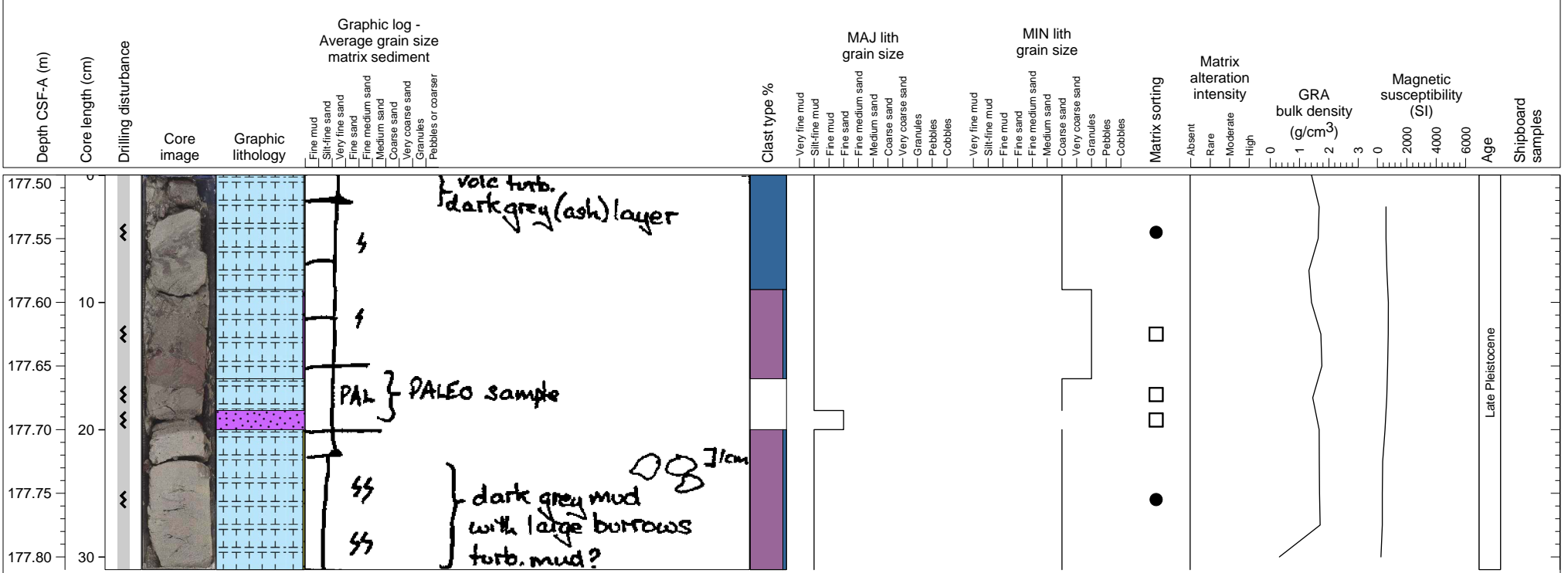
CRB XRD

Hemipelagic clay/volcaniclastic clay mix with differing amounts of bioturbation. PAL sample removed.

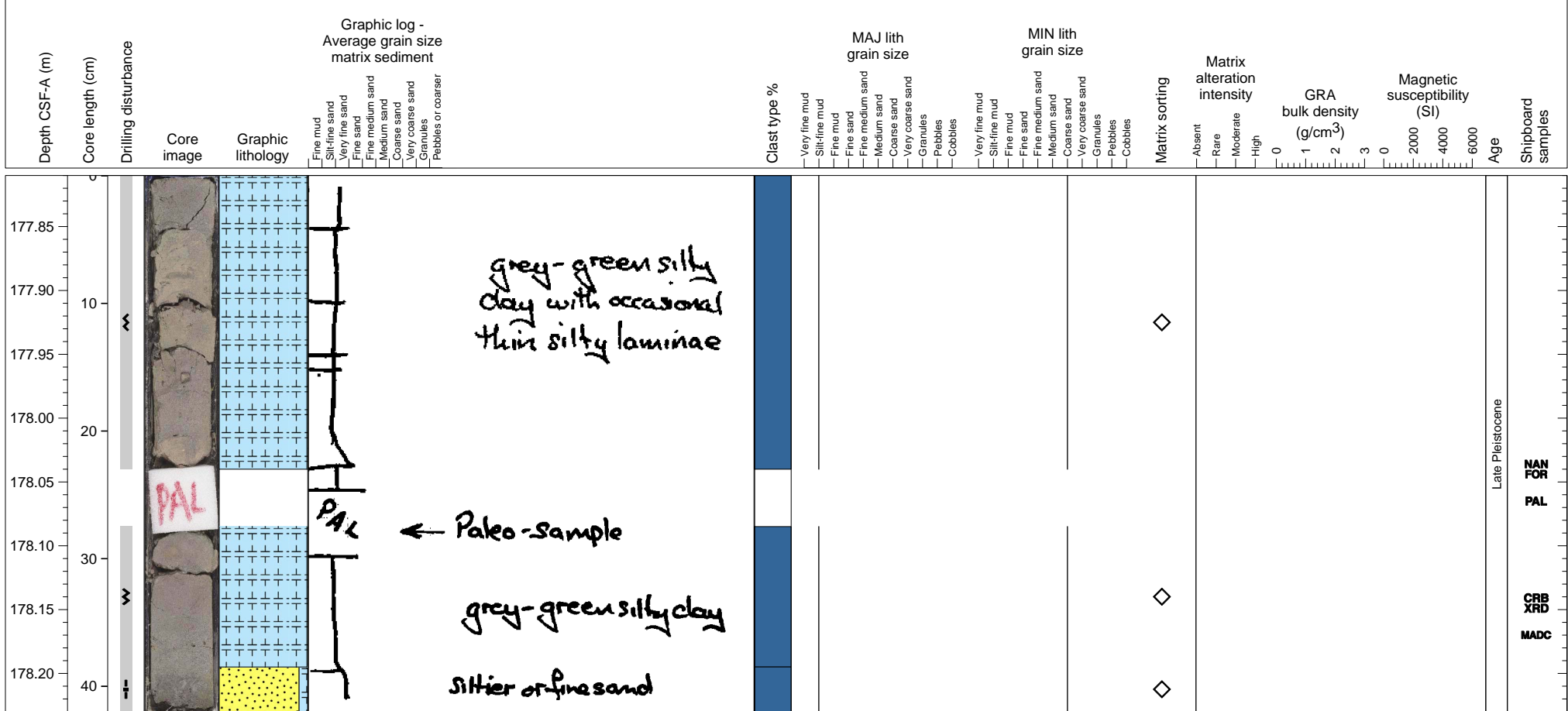


Hole 340-U1394A-21X Section 1, Top of Section: 177.5 CSF-A (m)

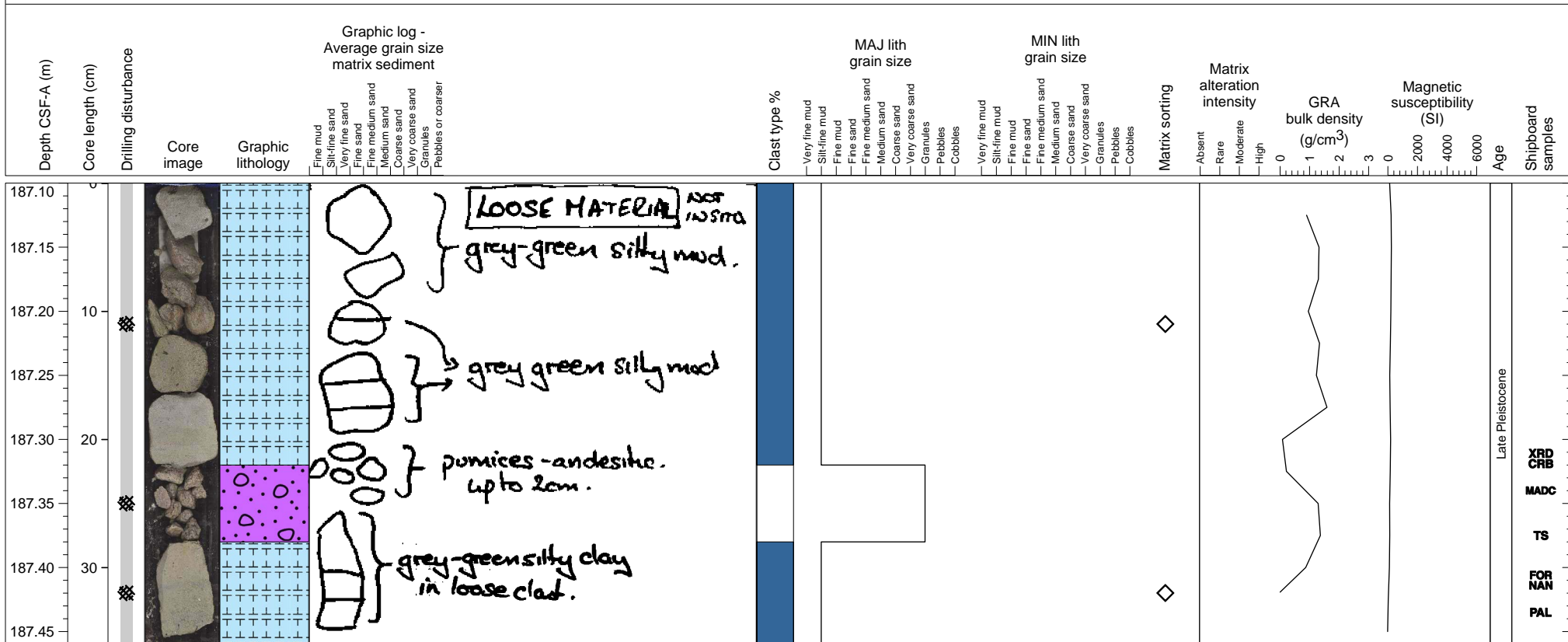
Top and bottom is bioturbated silty-muddy hemipelagic sediment. A dark-gray colored, well sorted layer in the middle of this unit (18.5-20 cm) may originate from an ash fall but not sure. Some volcanoclastic gravel is included.



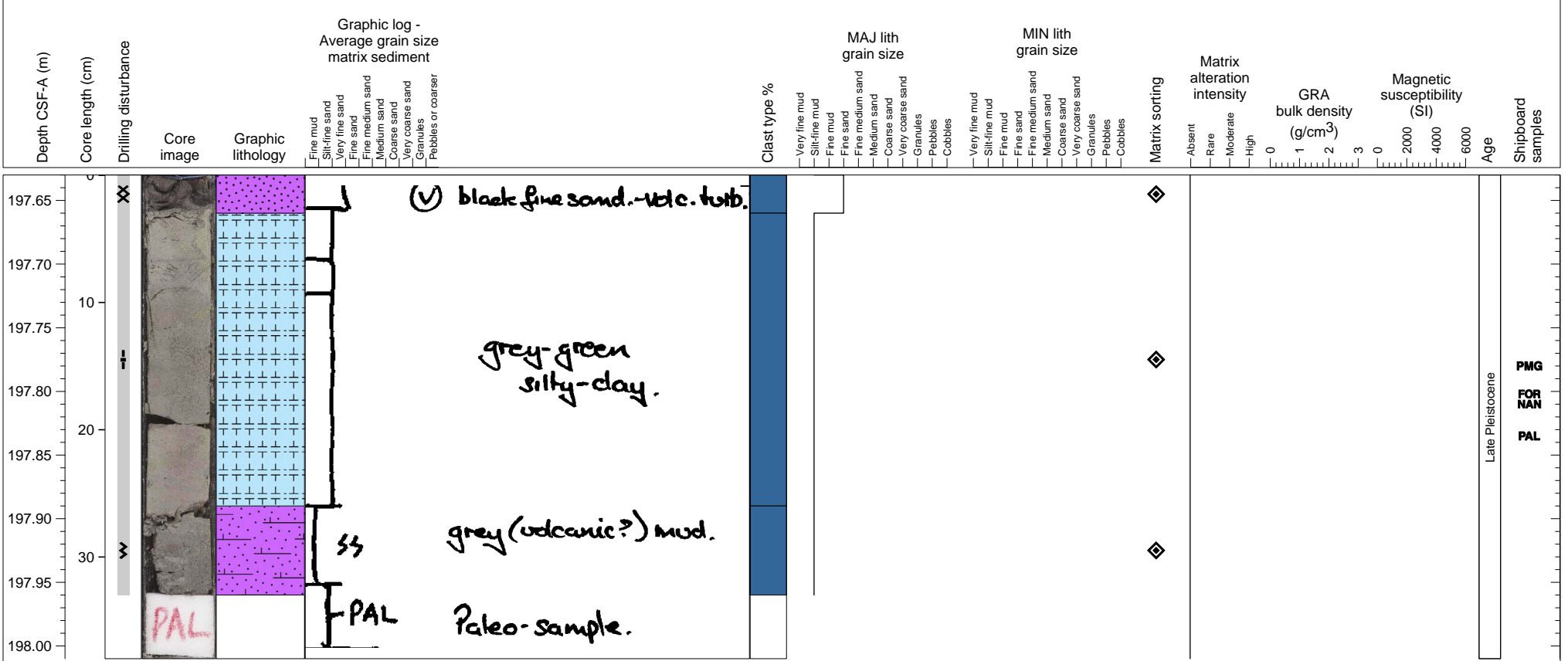
Gray silty-mud carbonate sediments with moderate bioturbation. Coarse sand sized biogenic clasts are included.



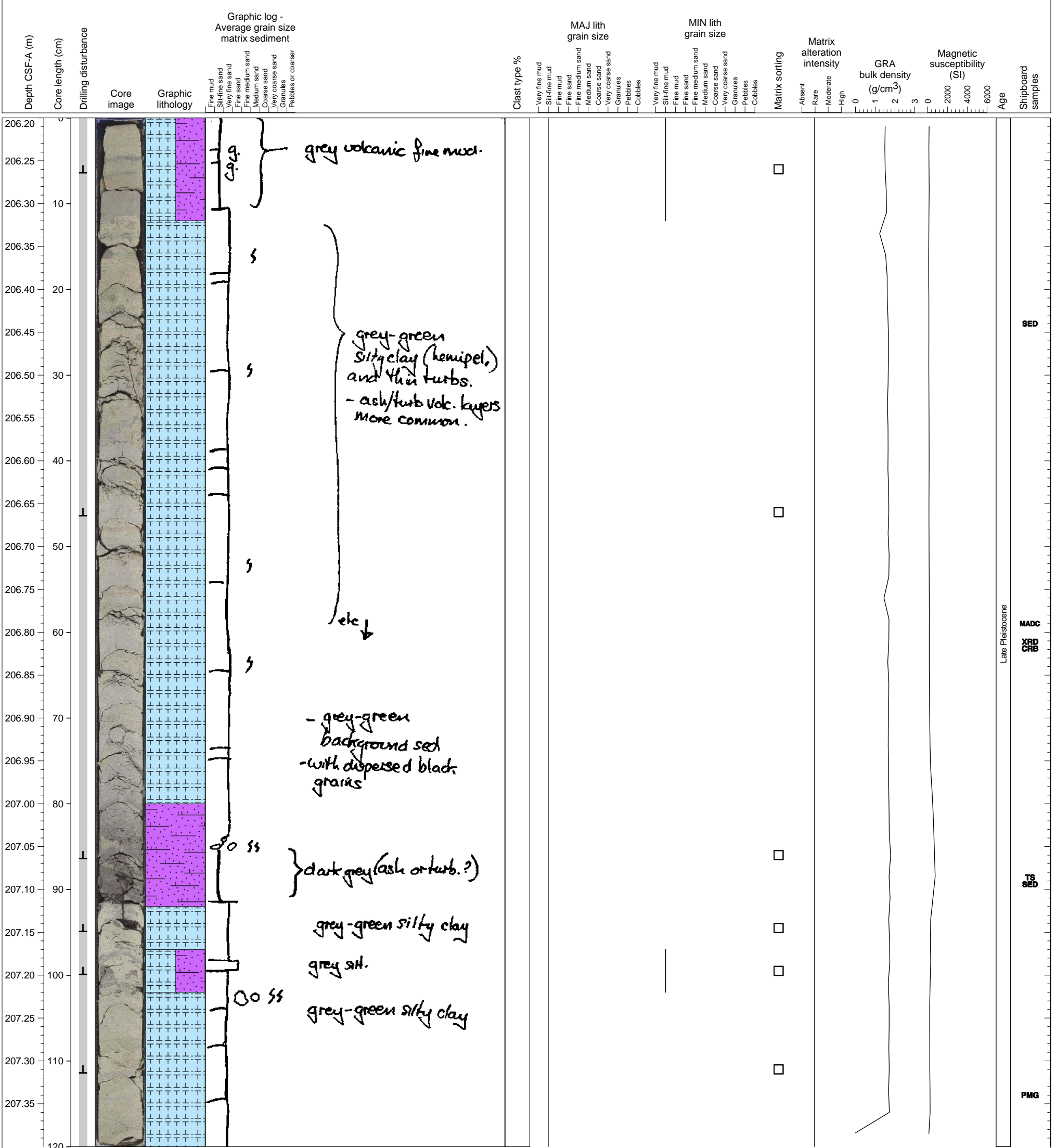
Pieces from core catcher consisting of hemipelagic clay and pumice pebbles.



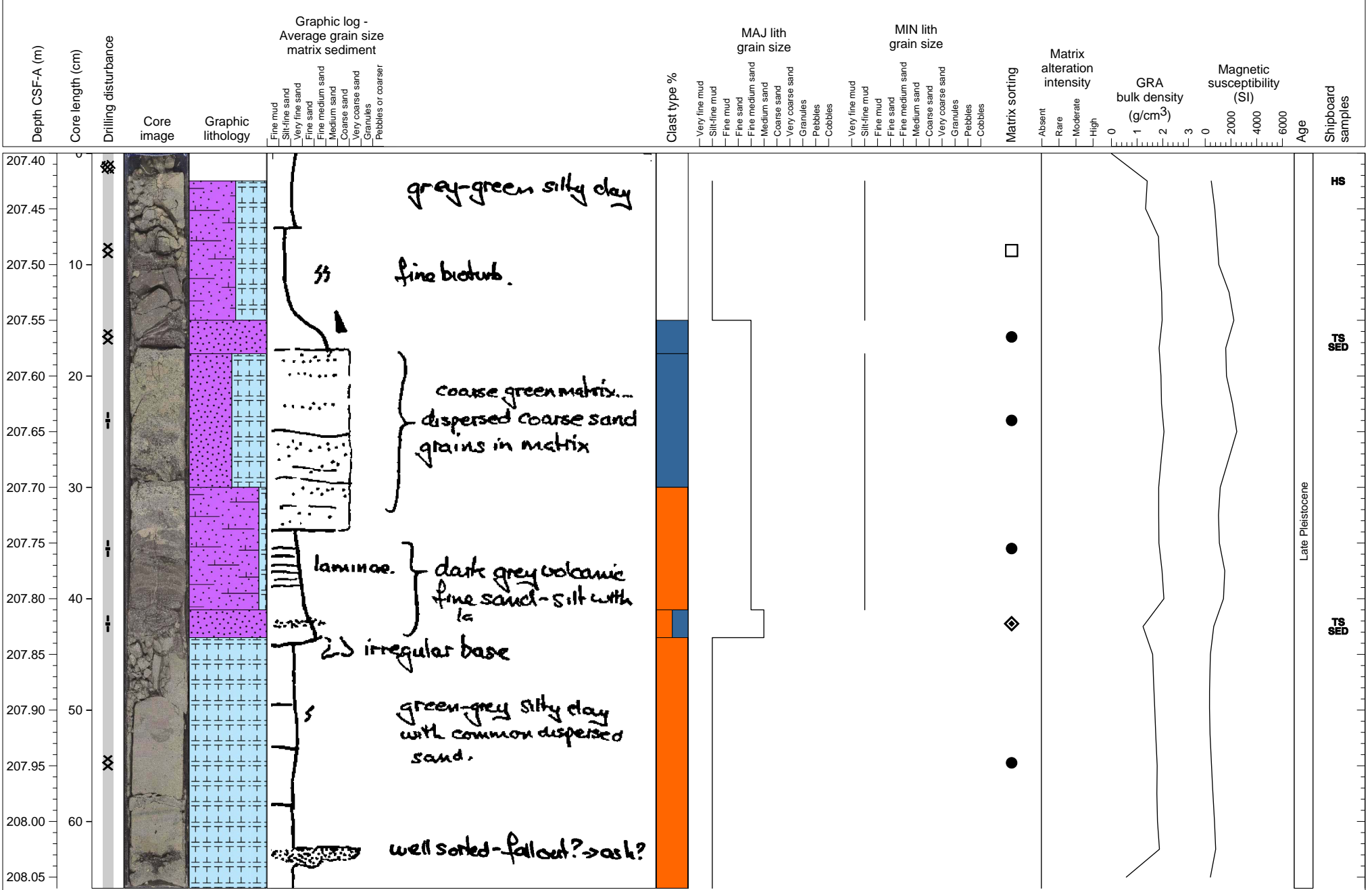
Volcaniclastic sand overlying hemipelagic clay/volcaniclastic clay with bioturbation. PAL sample from base.



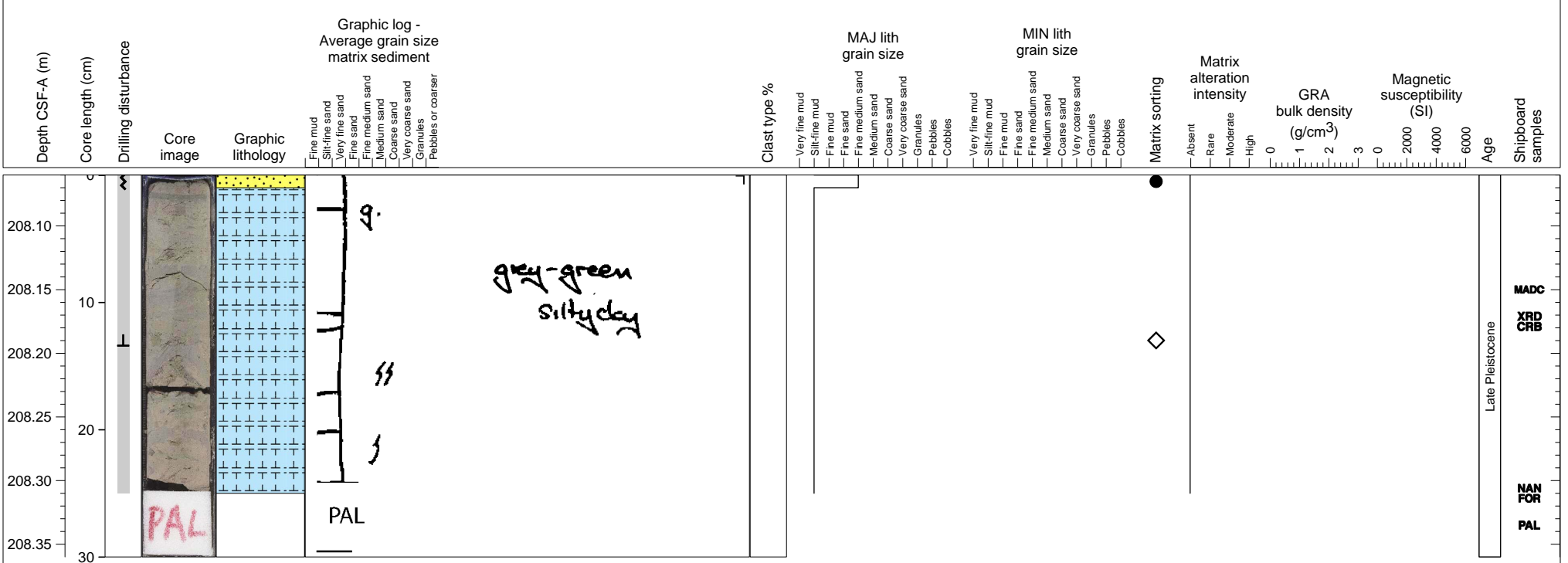
This section contains distinct dark gray layer of volcanic turbidite or fall out, which has normal grading in hemi-pelagic light gray sediments. Clear difference of this section from upper section is the absence of granules of volcanic lithic fragments, which may suggest relatively quiet period before destruction stage of nearby volcano.



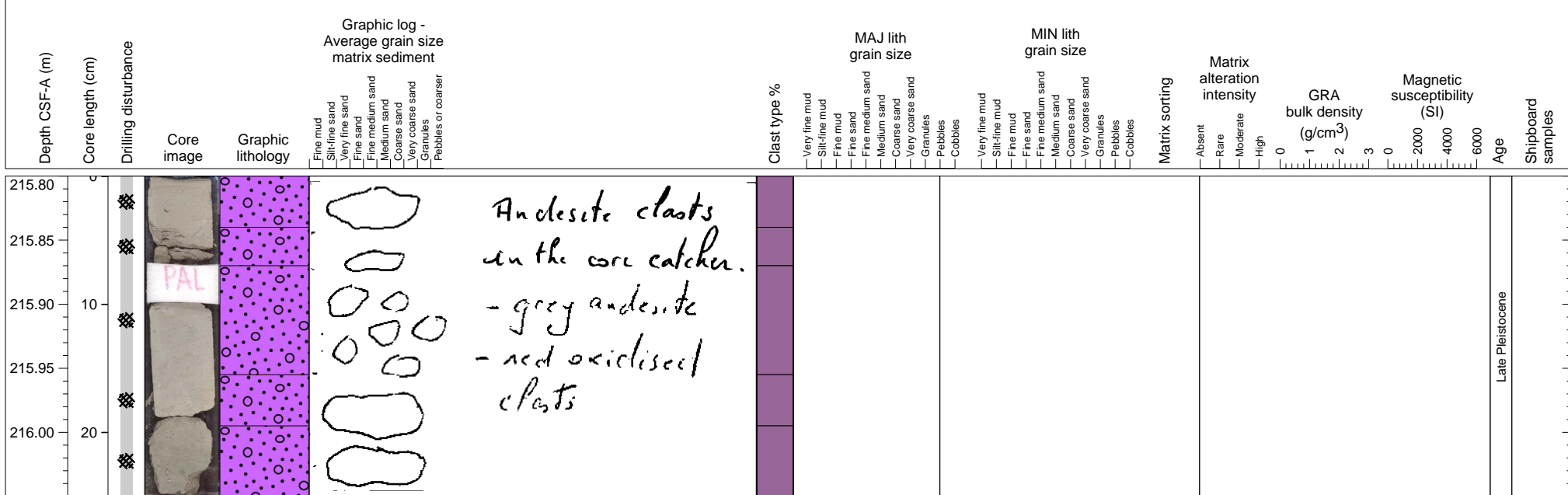
Mix of volcanoclastic mud and hemipelagic clay interspersed with volcanoclastic sand layers. All have suffered significant bioturbation.



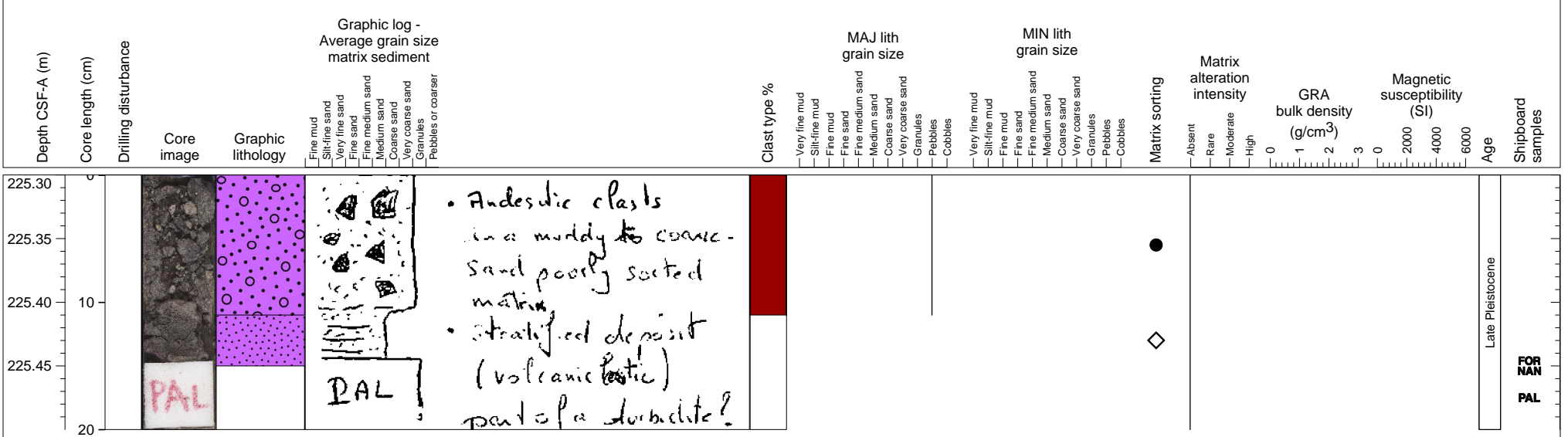
Hemipelagic carbonate mud with high intensity bioturbation.



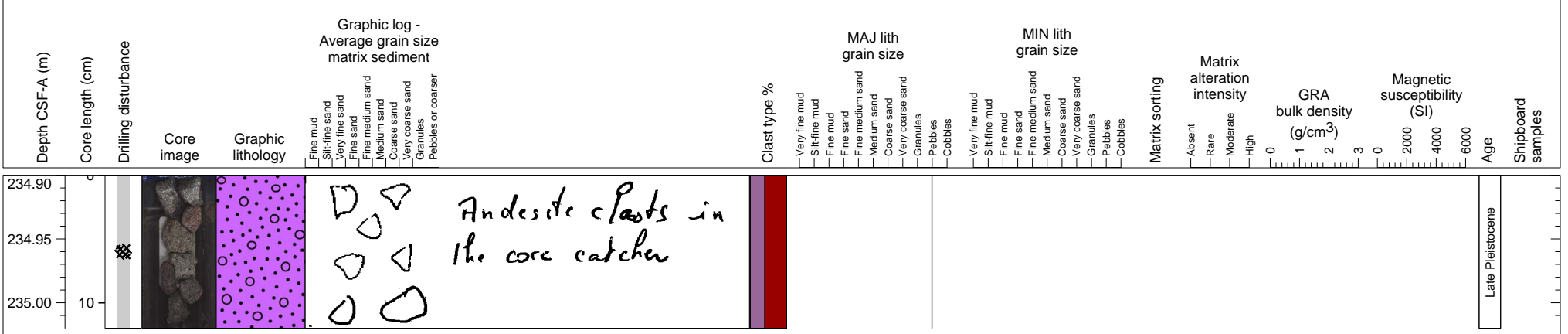
All rocks recovered are pebbles of hornblende andesite. Upper three are grey in color (5Y5/1) and lower two are reddish (5YR3/2).



Volcaniclastic pebble (vesiculated, white to grey, brown color) and sand in core catcher.



Basaltic to andesitic clasts in core catcher.



Thin sections

Sample	Top [cm]	Bottom [cm]	Top Depth [m]	Bottom Depth [m]	Groundmass percentage [%]	Groundmass modal grain size [mm]	Groundmass comments	Volcanic grain [%]	Volcanic grain modal size [mm]	Biogenic grain [%]	Mineral grain [%]	Mineral grain modal size [mm]	Lithic grain [%]	Lithic grain modal size [mm]	Olivine present [%]	Olivine size MIN [mm]	Olivine shape	Olivine comment	Plagioclase present [%]	Plagioclase size MAX [mm]	Plagioclase shape	Plagioclase habit	Plagioclase comment	Clinopyroxene present [%]	Clinopyroxene size MAX [mm]	Clinopyroxene shape	Clinopyroxene habit	Clinopyroxene special features	Orthopyroxene present [%]	Orthopyroxene size MAX [mm]	Orthopyroxene shape	Orthopyroxene habit	Orthopyroxene comments	Amphibolite present [%]	Amphibolite size MAX [mm]	Amphibolite shape	Amphibolite habit	Amphibolite comments	Oxides present [%]	Oxides size MAX [mm]	Oxides shape	Oxides habit	Oxides comments	Quartz present [%]	Quartz size MAX [mm]	Quartz shape	Quartz habit	Comment		
340-U1394A-2H-2-W 65/66-TSB-TS#6	0	1	6.95	6.96	5	Grain mount so groundmass is only present as small isolated pieces. Appears to be a microcrystalline matrix that is heavily oxidized.									30	0.58	subrounded	Grain mount therefore fragmental.	40	0.6		lath	Grain mount therefore fragmental.	20	1		elongate	Grain mount therefore fragmental.										5	0.58	subhedral					Grain mount therefore fragmental.					Grain mount therefore fragmental.
340-U1394A-6X-CC-W 9/13-TSB-TS#8	0	1	33.59	33.63	60	Microcrystalline matrix with plag, oxide, and amphibole (? microlites.													70	3.5	euohedral	lath											25	4.6	euohedral	elongate	Two populations - large grains are completely reacted through; small grains only have thin rims.	5	0.58	subhedral										
340-U1394A-22X-1-W 27/28-TSB-TS#9	0	1	187.37	187.38	70	Glassy matrix with visible flow features.													70	1.54	euohedral		Fumice fragment so many grains are fragments.						1	0.1	subhedral			25	0.7	subhedral	elongate	Pale green, unrimmed.	4	0.10	subhedral									