NGHP - Expedition 1

Cored Interval - Site 20 - Hole A

Seafloor 1160 (m)

Barrel Sheet Key

Cored & Recovered:

Lithology:


Nannofossil Rich Pyrite Bearing Clay


Pyrite Bearing, Volcanic Glass and Nannofossil Rich Clayey Silt


Nannofossil and Volcanic Glass Rich Silty Clay


Volcanic Glass and Nannofossil Rich Pyrite Bearing Silty Clay


Nannofossil Volcanic Glass, and Pyrite Bearing Silty Clay


Volcanic Glass Bearing Silty Clay


Nannofossil Bearing Clay


Nannofossil and Plant Debris Bearing Clay


Volcanic Glass Rich Nannofossil Bearing Clay


Authigenic Carbonate Rich Clay


Authigenic Carbonate Bearing Clay


Silty Clay


Sandy Silt


Clay


Sampled

Diagenesis:

Pyrite

FeS


Authigenic Carbonate Nodule


Authigenic Carbonate Micro-Nodule

Authigenic Carbonate Band

Fossils:


Shell Fragments


Foraminifera


Gastropod

Disturbance:

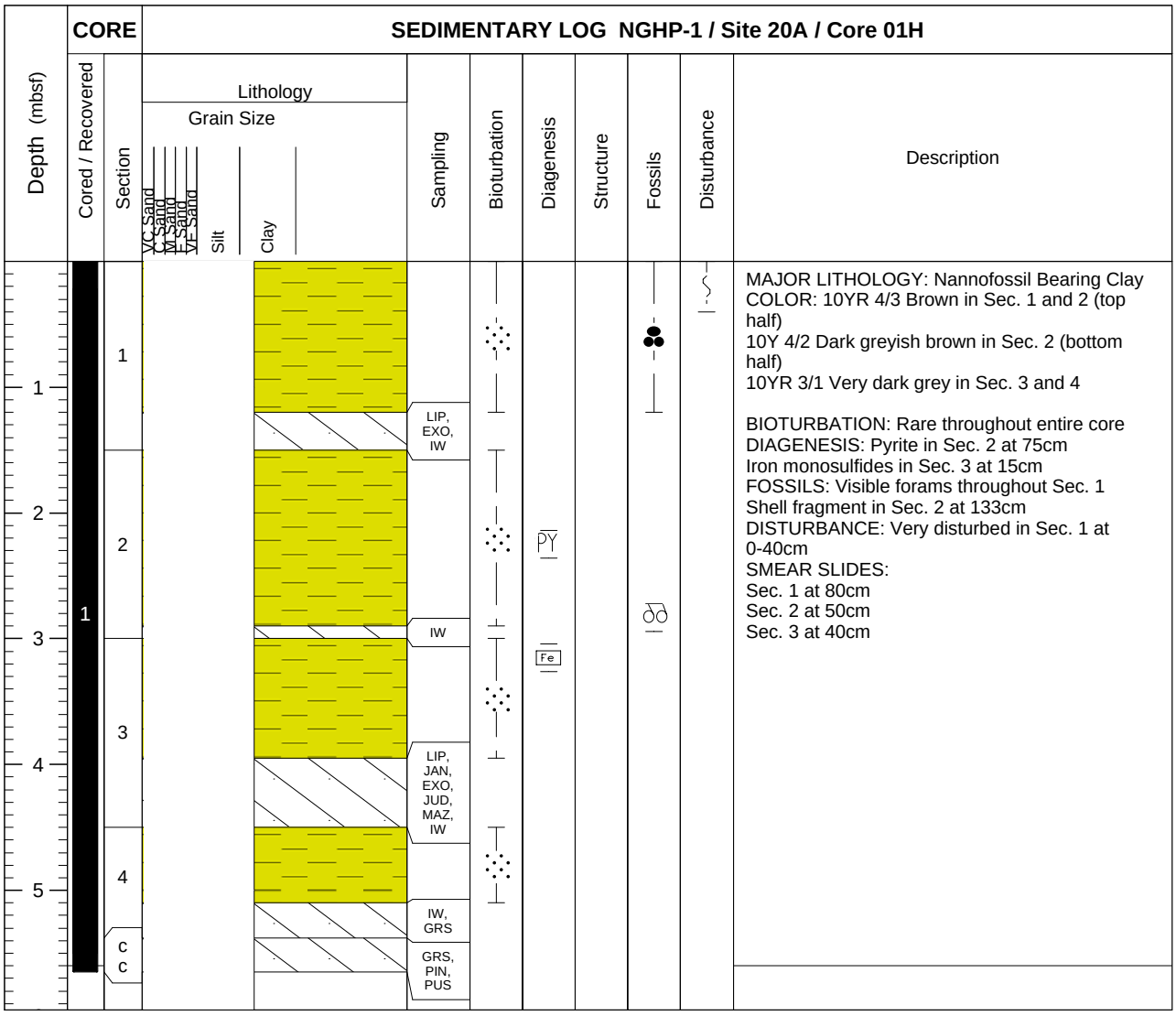
Moderately Disturbed

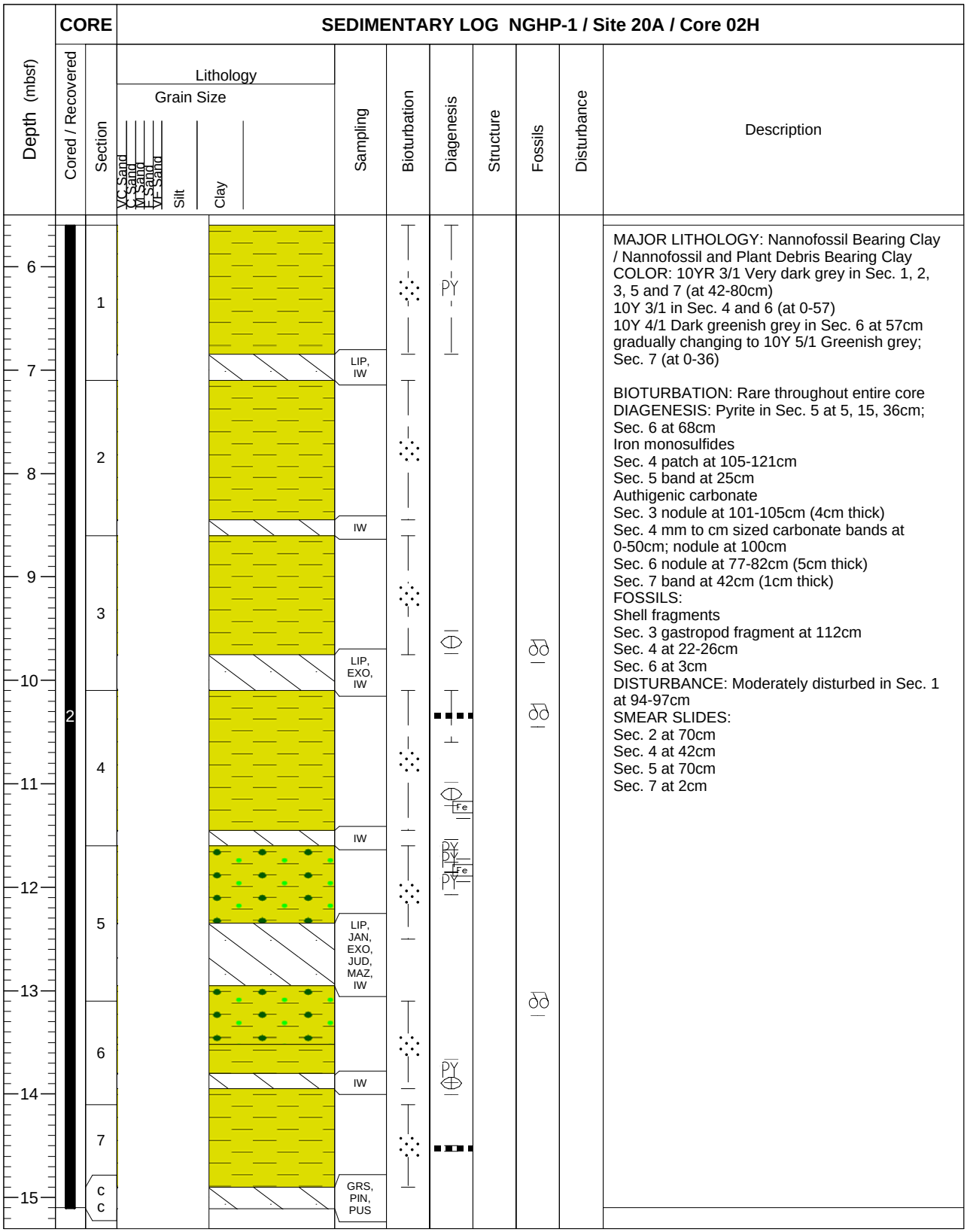

Very Disturbed

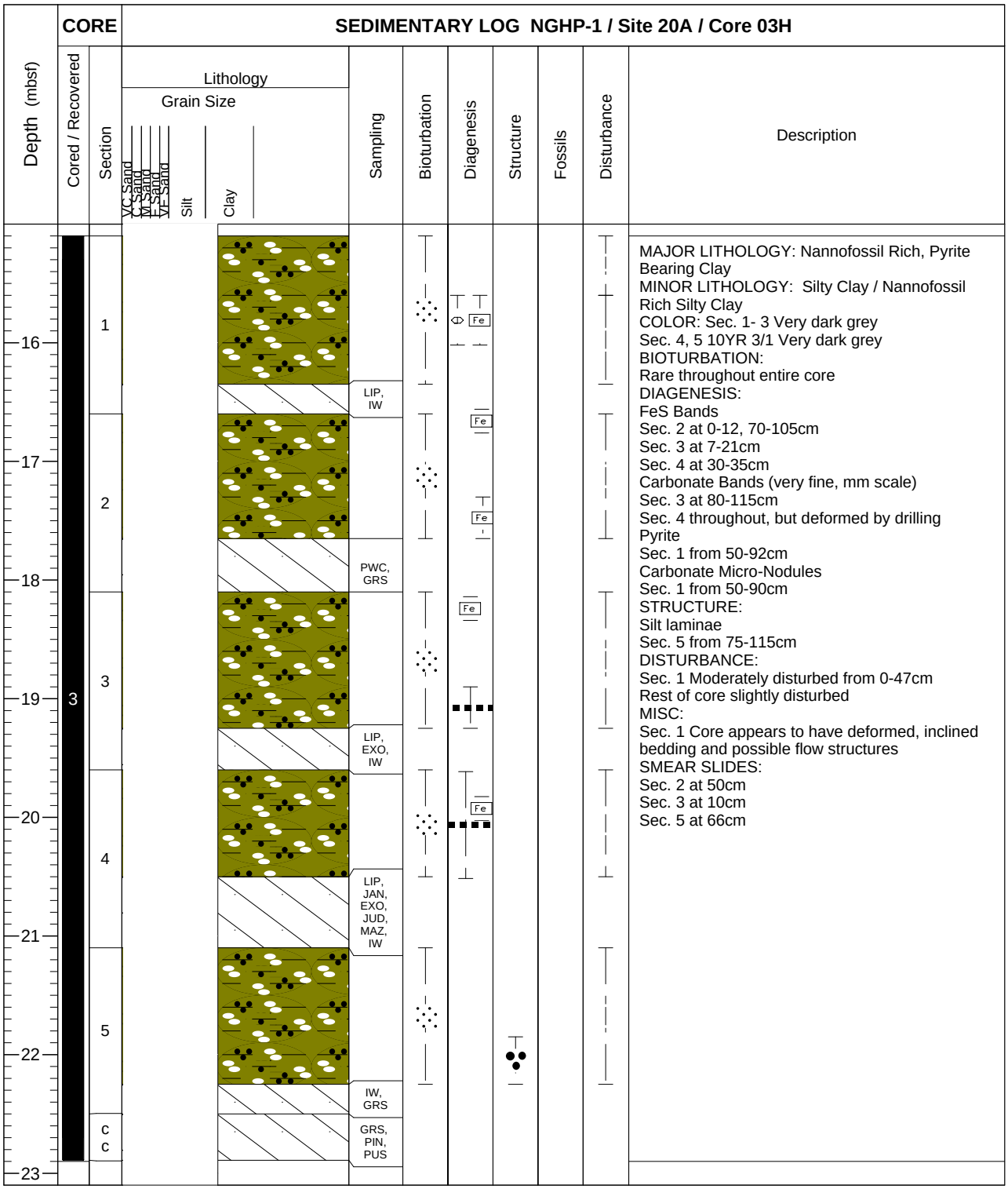

Biscuit & Slurry

Bioturbation:

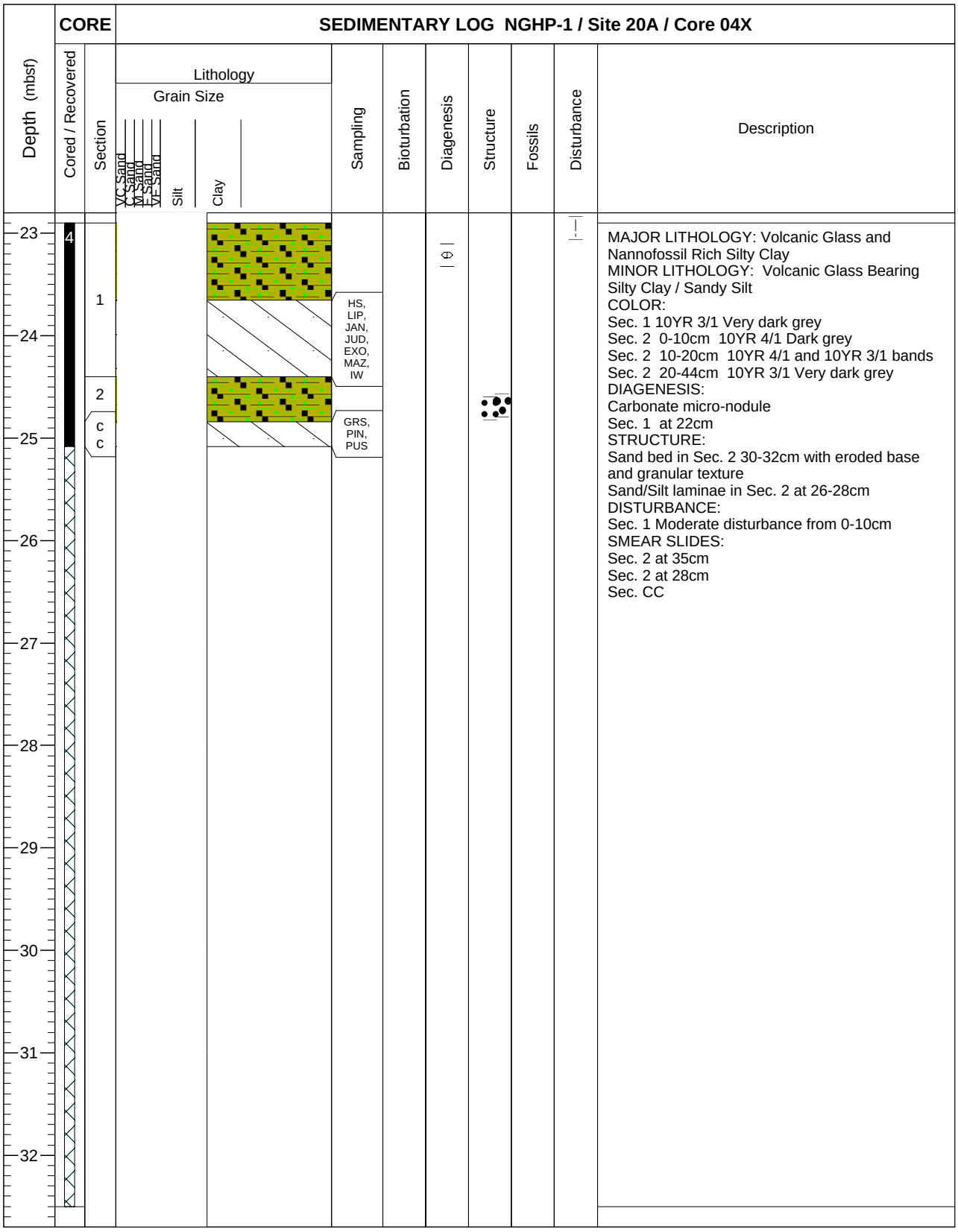

Rare


CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 01H
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
1
2
3
4
5
1
2
3
4
C
C
LIP, EXO, IW
IW
LIP, JAN, EXO, JUD, MAZ, IW
IW, GRS
GRS, PIN, PUS
PY
Fe
MAJOR LITHOLOGY: Nannofossil Bearing Clay
COLOR: 10YR 4/3 Brown in Sec. 1 and 2 (top half)
10Y 4/2 Dark greyish brown in Sec. 2 (bottom half)
10YR 3/1 Very dark grey in Sec. 3 and 4
BIOTURBATION: Rare throughout entire core
DIAGENESIS: Pyrite in Sec. 2 at 75cm
Iron monosulfides in Sec. 3 at 15cm
FOSSILS: Visible forams throughout Sec. 1
Shell fragment in Sec. 2 at 133cm
DISTURBANCE: Very disturbed in Sec. 1 at 0-40cm
SMEAR SLIDES:
Sec. 1 at 80cm
Sec. 2 at 50cm
Sec. 3 at 40cm

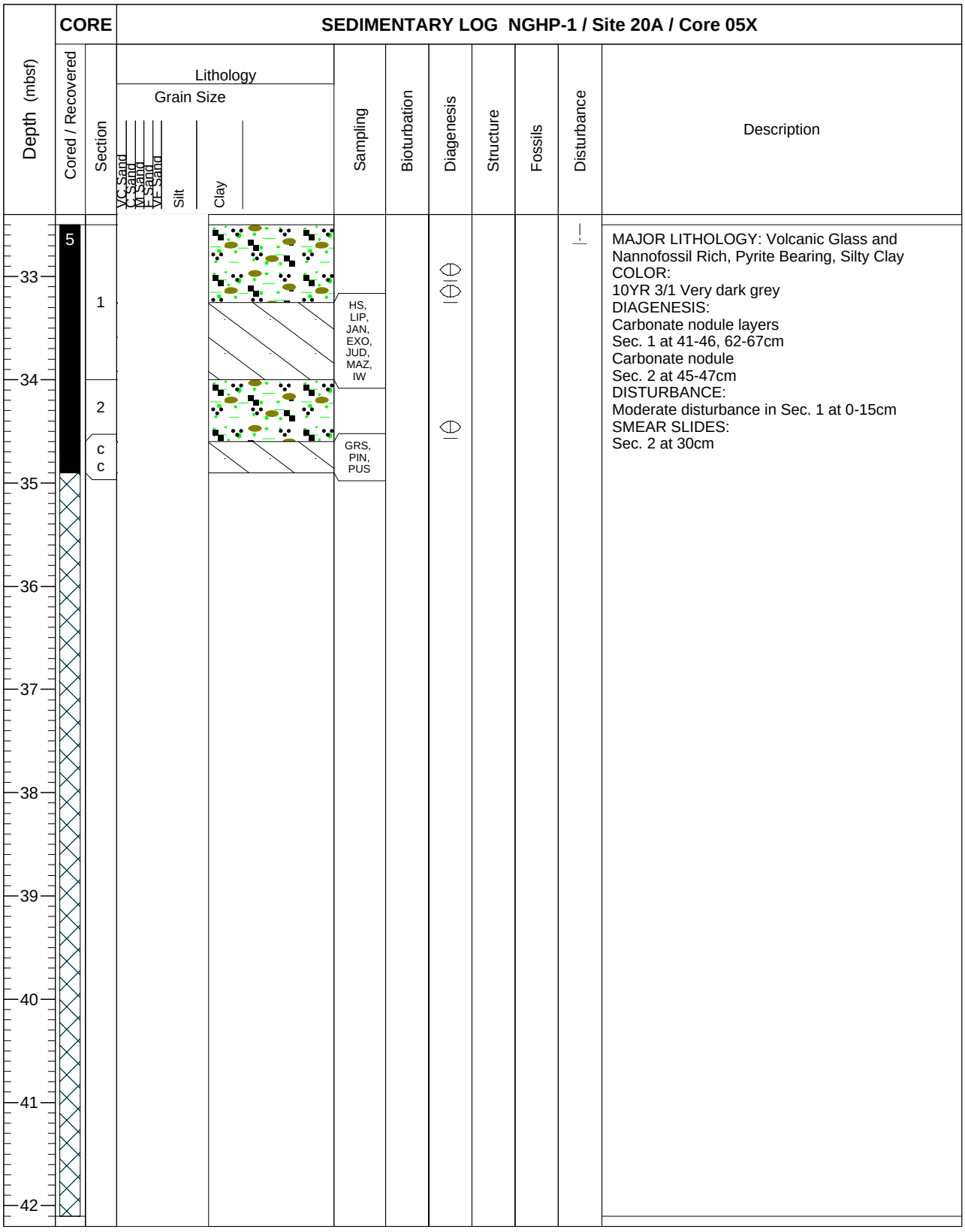

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 02H
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
6
7
8
9
10
11
12
13
14
15
1
2
3
4
5
6
7
c
c
LIP, IW
IW
LIP, EXO, IW
IW
LIP, JAN, EXO, JUD, MAZ, IW
IW
GRS, PIN, PUS
PY
Fe
MAJOR LITHOLOGY: Nannofossil Bearing Clay / Nannofossil and Plant Debris Bearing Clay
COLOR: 10YR 3/1 Very dark grey in Sec. 1, 2, 3, 5 and 7 (at 42-80cm)
10Y 3/1 in Sec. 4 and 6 (at 0-57)
10Y 4/1 Dark greenish grey in Sec. 6 at 57cm gradually changing to 10Y 5/1 Greenish grey; Sec. 7 (at 0-36)
BIOTURBATION: Rare throughout entire core
DIAGENESIS: Pyrite in Sec. 5 at 5, 15, 36cm; Sec. 6 at 68cm
Iron monosulfides
Sec. 4 patch at 105-121cm
Sec. 5 band at 25cm
Authigenic carbonate
Sec. 3 nodule at 101-105cm (4cm thick)
Sec. 4 mm to cm sized carbonate bands at 0-50cm; nodule at 100cm
Sec. 6 nodule at 77-82cm (5cm thick)
Sec. 7 band at 42cm (1cm thick)
FOSSILS:
Shell fragments
Sec. 3 gastropod fragment at 112cm
Sec. 4 at 22-26cm
Sec. 6 at 3cm
DISTURBANCE: Moderately disturbed in Sec. 1 at 94-97cm
SMEAR SLIDES:
Sec. 2 at 70cm
Sec. 4 at 42cm
Sec. 5 at 70cm
Sec. 7 at 2cm

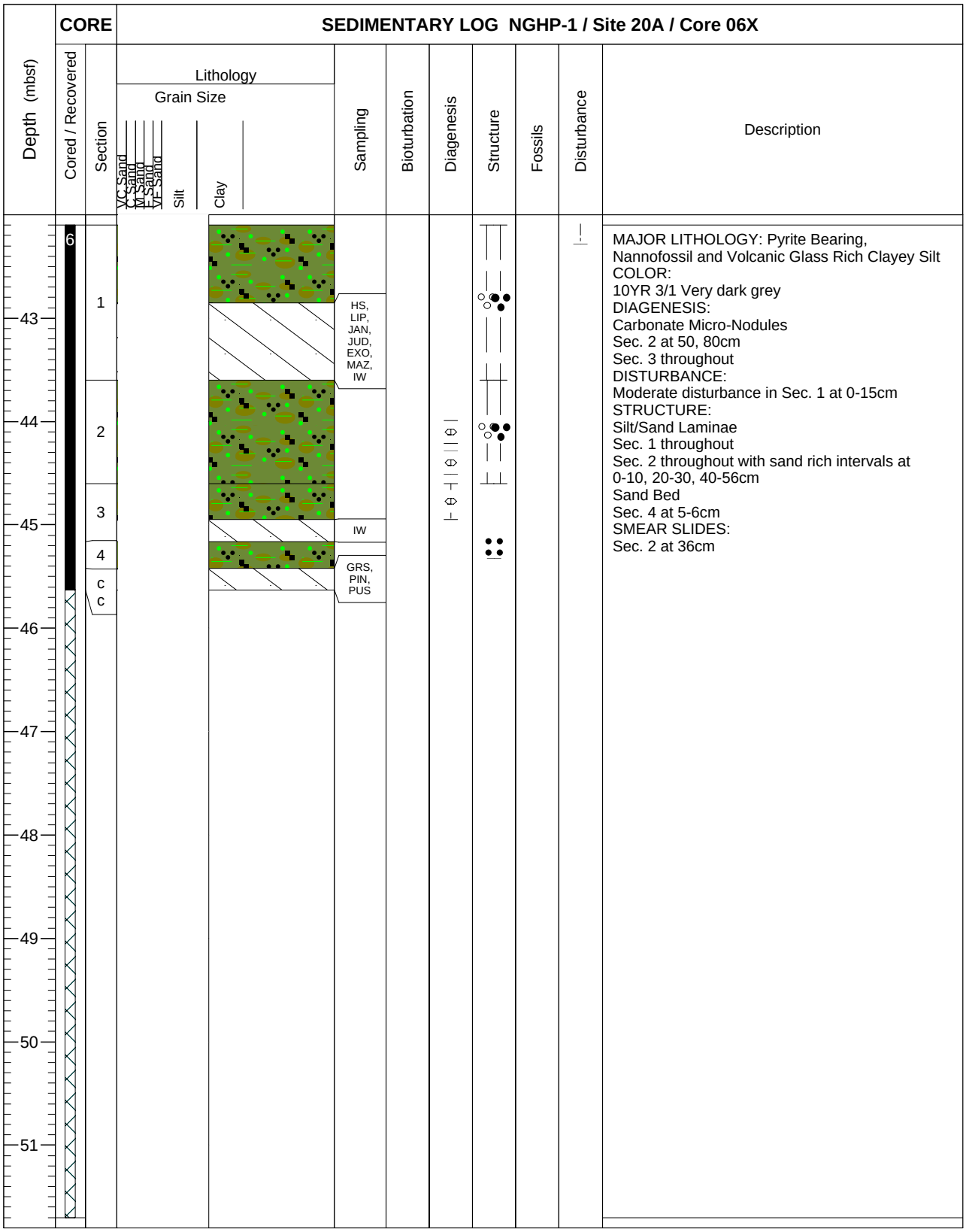

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 03H
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
16
17
18
19
20
21
22
23
3
1
2
3
4
5
c
c
LIP, IW
PWC, GRS
LIP, EXO, IW
LIP, JAN, EXO, JUD, MAZ, IW
IW, GRS
GRS, PIN, PUS
Fe
MAJOR LITHOLOGY: Nannofossil Rich, Pyrite Bearing Clay
MINOR LITHOLOGY: Silty Clay / Nannofossil Rich Silty Clay
COLOR: Sec. 1- 3 Very dark grey
Sec. 4, 5 10YR 3/1 Very dark grey
BIOTURBATION:
Rare throughout entire core
DIAGENESIS:
FeS Bands
Sec. 2 at 0-12, 70-105cm
Sec. 3 at 7-21cm
Sec. 4 at 30-35cm
Carbonate Bands (very fine, mm scale)
Sec. 3 at 80-115cm
Sec. 4 throughout, but deformed by drilling
Pyrite
Sec. 1 from 50-92cm
Carbonate Micro-Nodules
Sec. 1 from 50-90cm
STRUCTURE:
Silt laminae
Sec. 5 from 75-115cm
DISTURBANCE:
Sec. 1 Moderately disturbed from 0-47cm
Rest of core slightly disturbed
MISC:
Sec. 1 Core appears to have deformed, inclined bedding and possible flow structures
SMEAR SLIDES:
Sec. 2 at 50cm
Sec. 3 at 10cm
Sec. 5 at 66cm

CORE | **SEDIMENTARY LOG NGHP-1 / Site 20A / Core 04X**



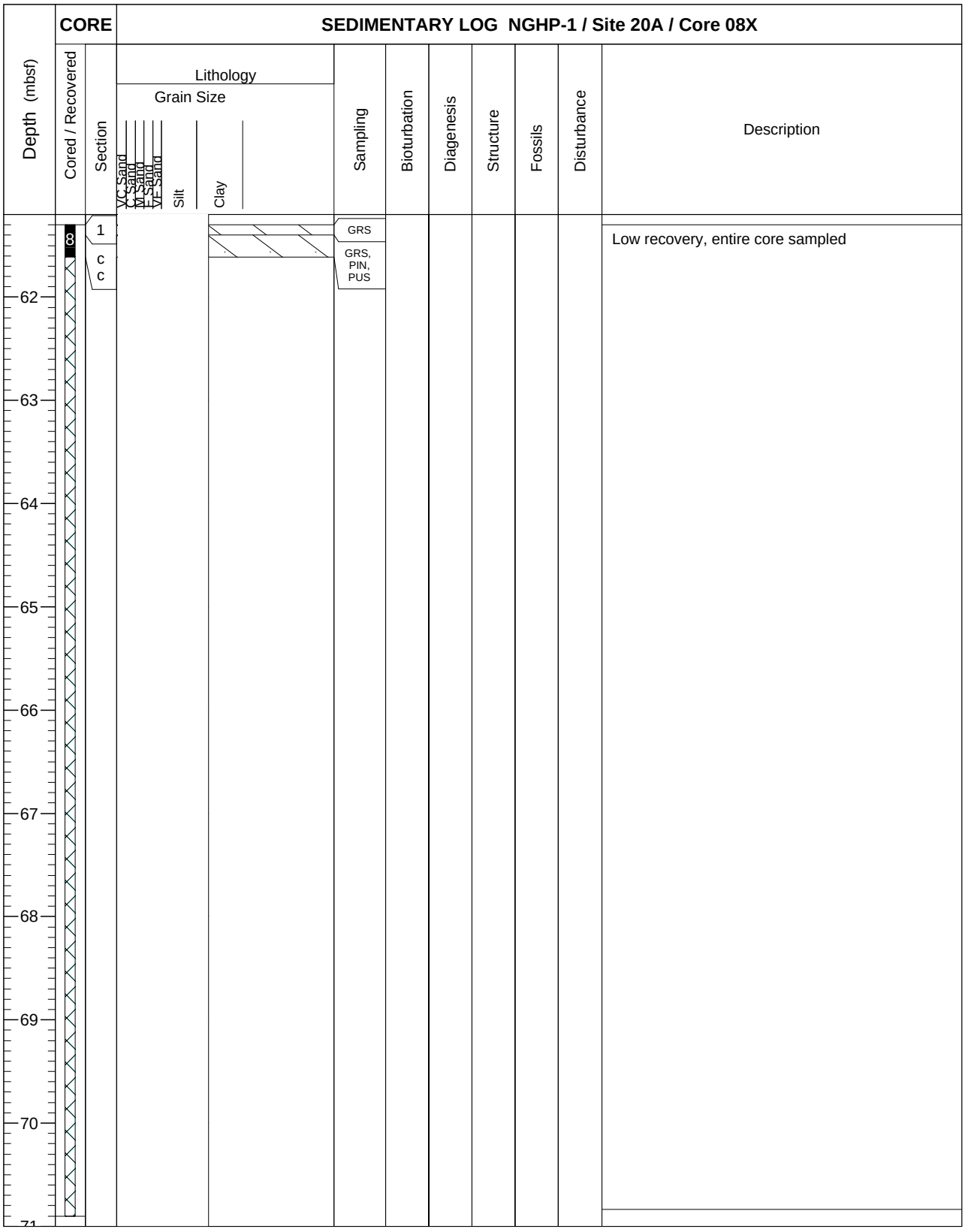
MAJOR LITHOLOGY: Volcanic Glass and Nannofossil Rich Silty Clay
MINOR LITHOLOGY: Volcanic Glass Bearing Silty Clay / Sandy Silt
COLOR:
Sec. 1 10YR 3/1 Very dark grey
Sec. 2 0-10cm 10YR 4/1 Dark grey
Sec. 2 10-20cm 10YR 4/1 and 10YR 3/1 bands
Sec. 2 20-44cm 10YR 3/1 Very dark grey
DIAGENESIS:
Carbonate micro-nodule
Sec. 1 at 22cm
STRUCTURE:
Sand bed in Sec. 2 30-32cm with eroded base and granular texture
Sand/Silt laminae in Sec. 2 at 26-28cm
DISTURBANCE:
Sec. 1 Moderate disturbance from 0-10cm
SMEAR SLIDES:
Sec. 2 at 35cm
Sec. 2 at 28cm
Sec. CC

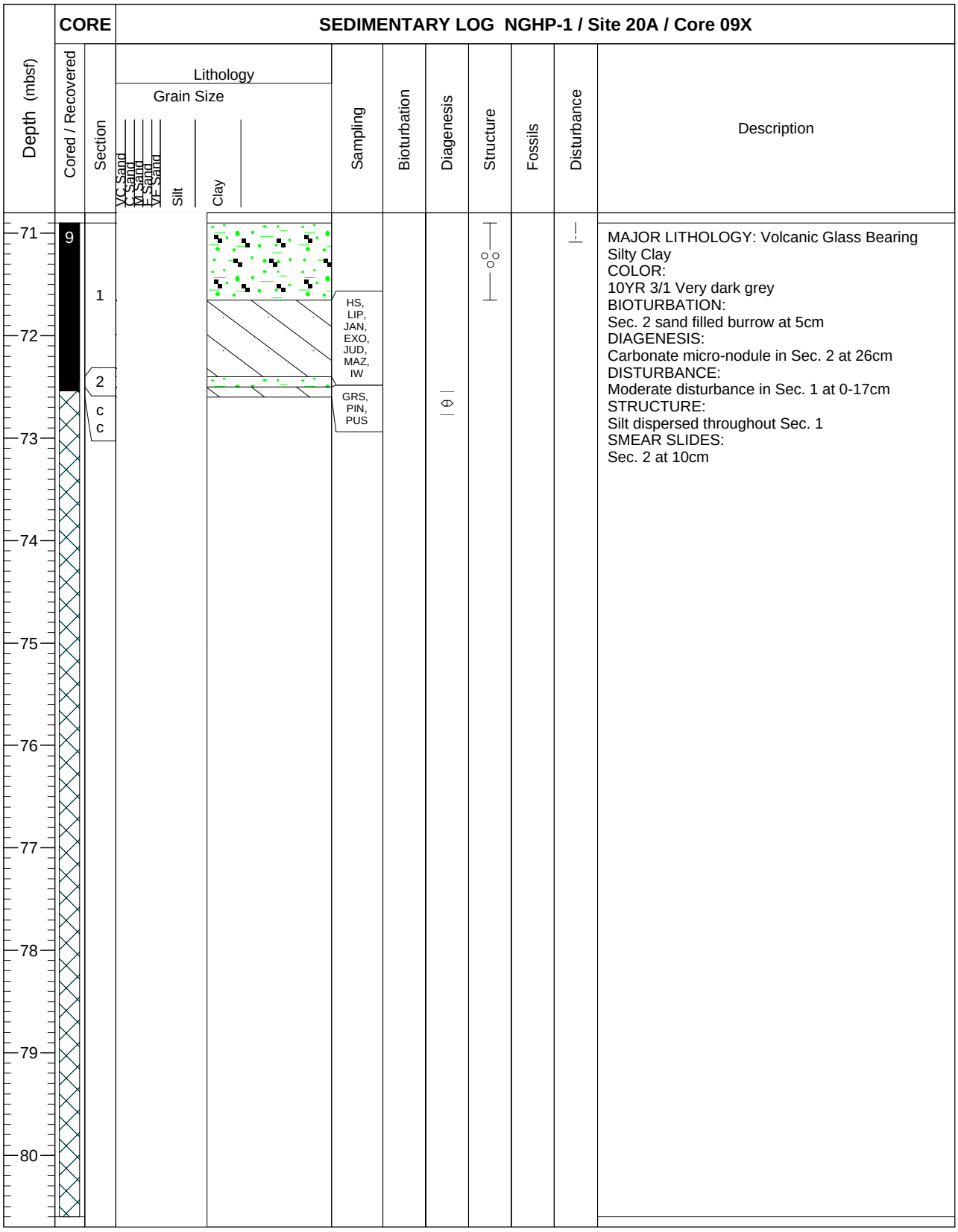

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 05X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
5
1
2
c
c
33
34
35
36
37
38
39
40
41
42
HS, LIP, JAN, EXO, JUD, MAZ, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Volcanic Glass and Nannofossil Rich, Pyrite Bearing, Silty Clay
COLOR:
10YR 3/1 Very dark grey
DIAGENESIS:
Carbonate nodule layers
Sec. 1 at 41-46, 62-67cm
Carbonate nodule
Sec. 2 at 45-47cm
DISTURBANCE:
Moderate disturbance in Sec. 1 at 0-15cm
SMEAR SLIDES:
Sec. 2 at 30cm

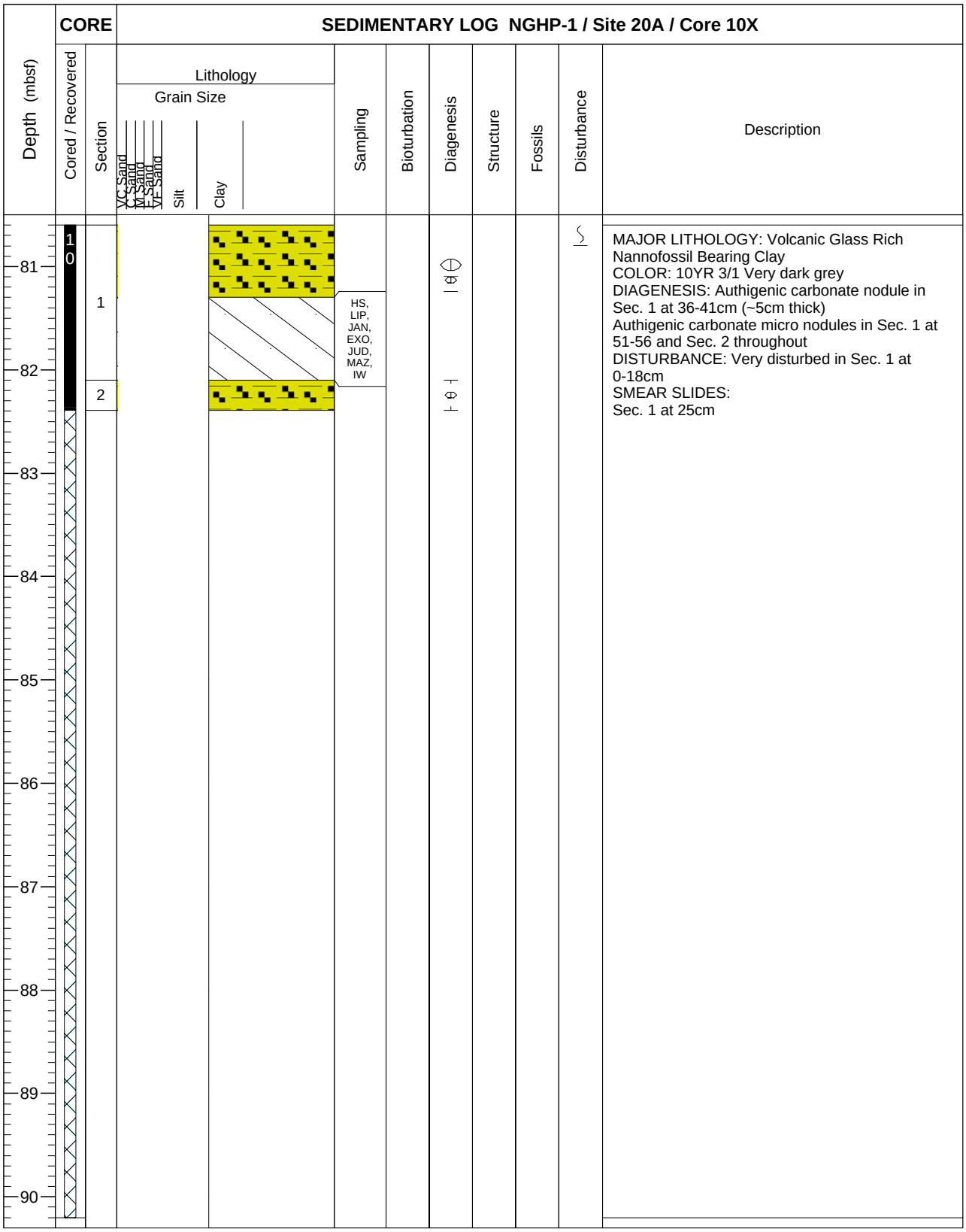

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 06X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
6
1
2
3
4
cc
43
44
45
46
47
48
49
50
51
HS, LIP, JAN, JUD, EXO, MAZ, IW
IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Pyrite Bearing, Nannofossil and Volcanic Glass Rich Clayey Silt
COLOR:
10YR 3/1 Very dark grey
DIAGENESIS:
Carbonate Micro-Nodules
Sec. 2 at 50, 80cm
Sec. 3 throughout
DISTURBANCE:
Moderate disturbance in Sec. 1 at 0-15cm
STRUCTURE:
Silt/Sand Laminae
Sec. 1 throughout
Sec. 2 throughout with sand rich intervals at 0-10, 20-30, 40-56cm
Sand Bed
Sec. 4 at 5-6cm
SMEAR SLIDES:
Sec. 2 at 36cm

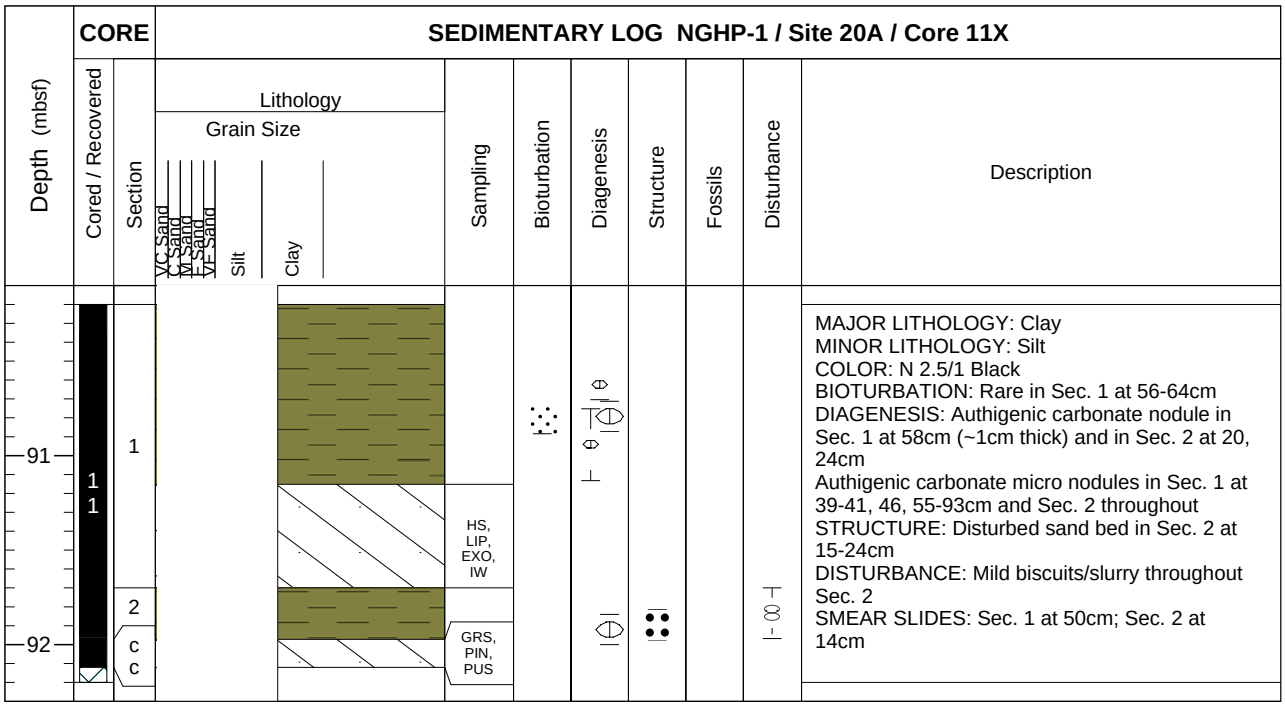
CORE | **SEDIMENTARY LOG NGHP-1 / Site 20A / Core 07X**

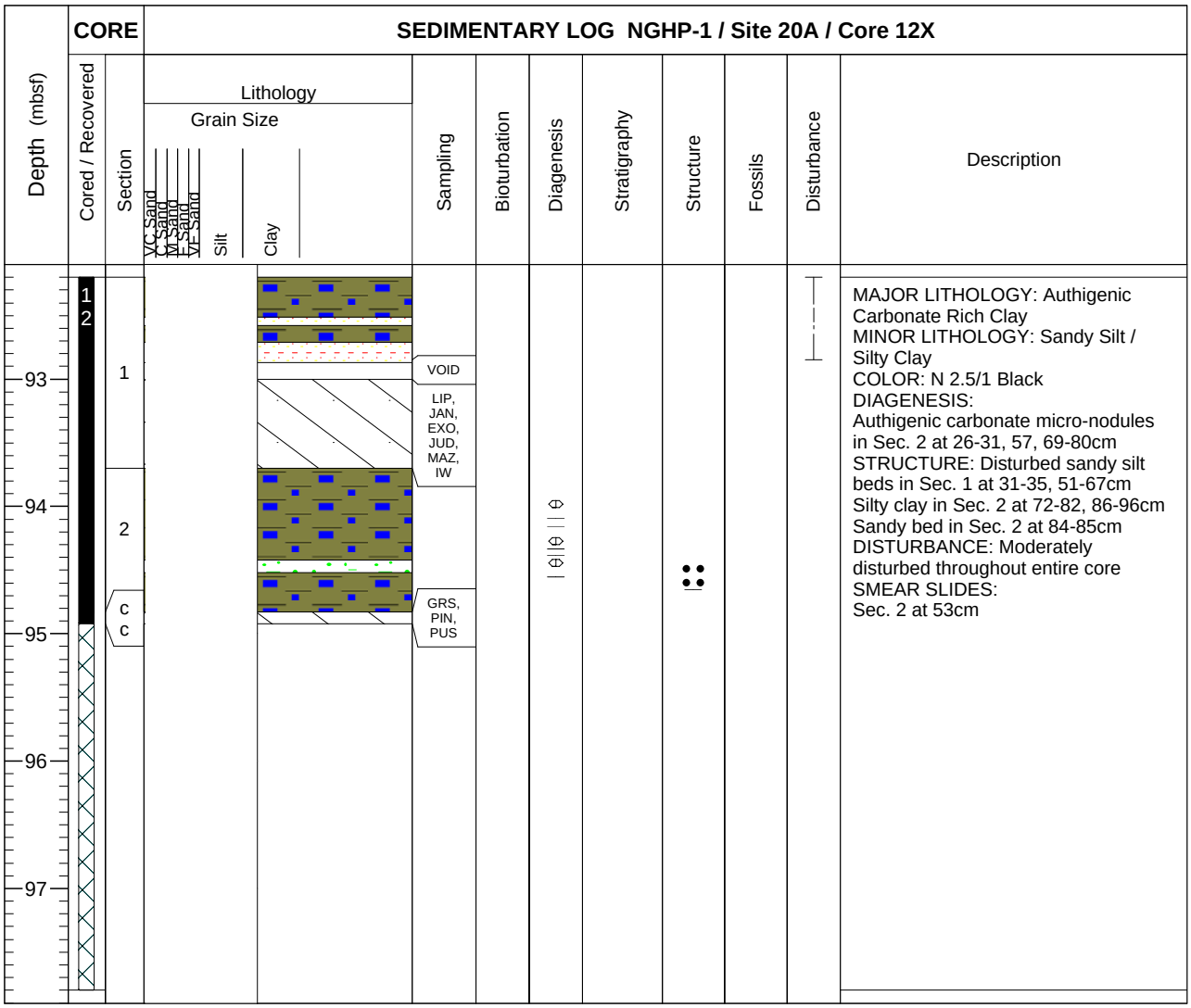
Depth (mbsf)	Cored / Recovered	Section	Lithology / Grain Size (VC Sand, C Sand, M Sand, F Sand, VF Sand, Silt, Clay)	Sampling	Bioturbation	Diagenesis	Structure	Fossils	Disturbance	Description
52–61	7	1		IW						MAJOR LITHOLOGY: Pyrite, Nannofossil and Volcanic Glass Bearing Silty Clay COLOR: 10YR 3/1 Very dark grey STRUCTURE: Burrow filled with sand or disturbed sand layer at 8-10cm Sand silt laminae and grains dispersed throughout Thin sand beds at 37, 44cm SMEAR SLIDES: Sec. 1 at 28cm

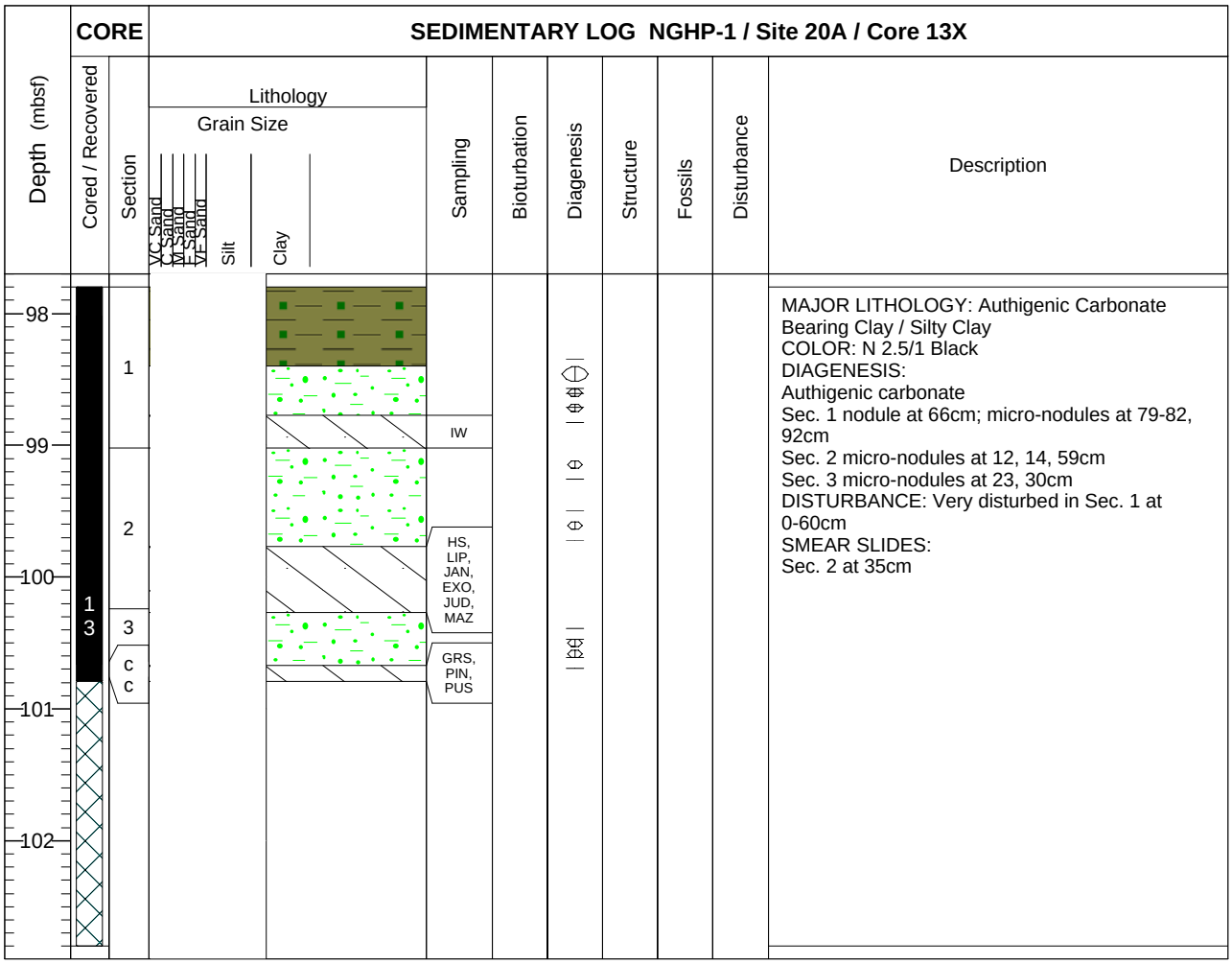

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 08X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
08
1
c
c
GRS
GRS, PIN, PUS
62
63
64
65
66
67
68
69
70
71
Low recovery, entire core sampled

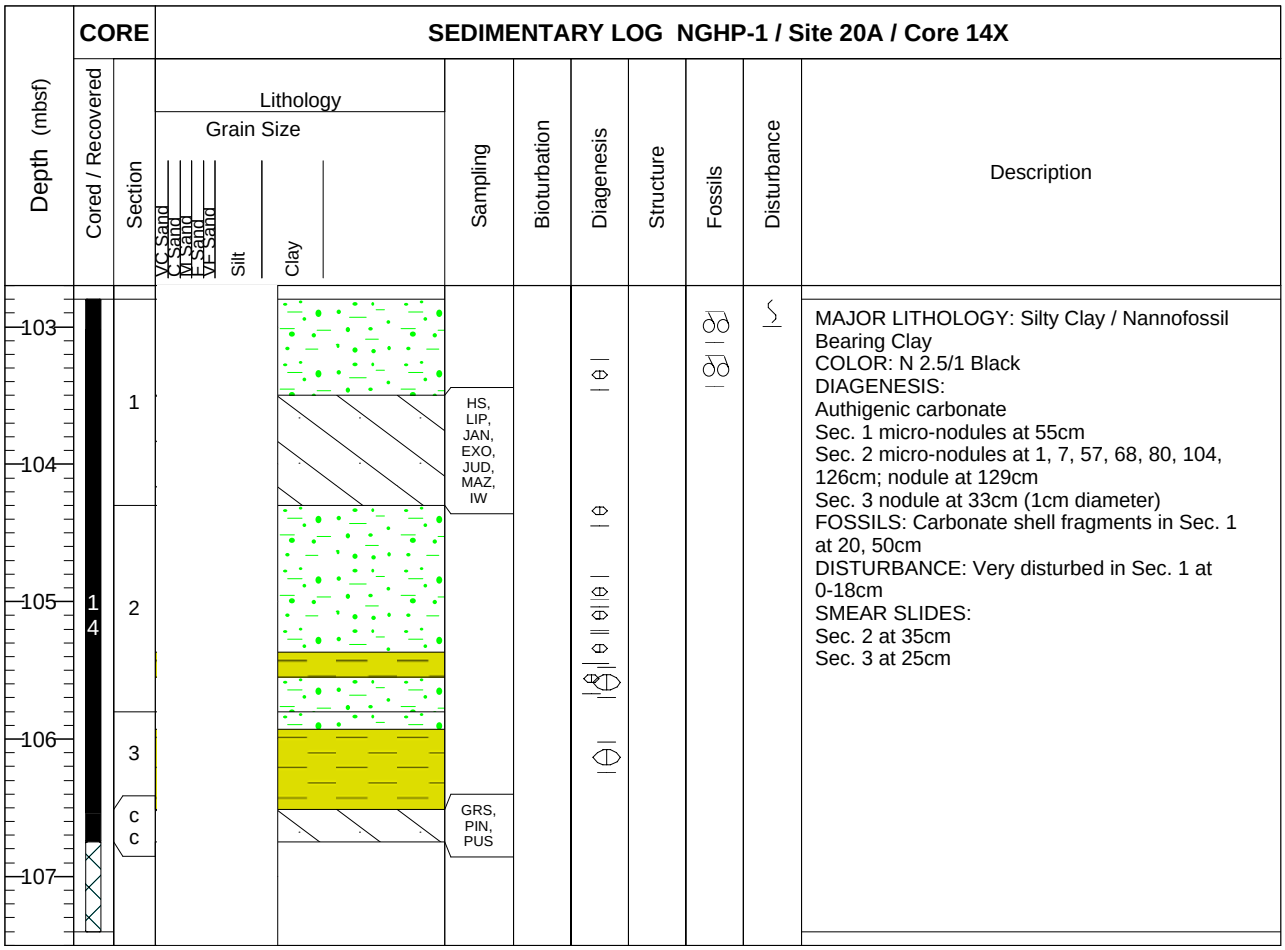

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 09X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
71
72
73
74
75
76
77
78
79
80
9
1
2
c
c
HS, LIP, JAN, EXO, JUD, MAZ, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Volcanic Glass Bearing Silty Clay
COLOR:
10YR 3/1 Very dark grey
BIOTURBATION:
Sec. 2 sand filled burrow at 5cm
DIAGENESIS:
Carbonate micro-nodule in Sec. 2 at 26cm
DISTURBANCE:
Moderate disturbance in Sec. 1 at 0-17cm
STRUCTURE:
Silt dispersed throughout Sec. 1
SMEAR SLIDES:
Sec. 2 at 10cm

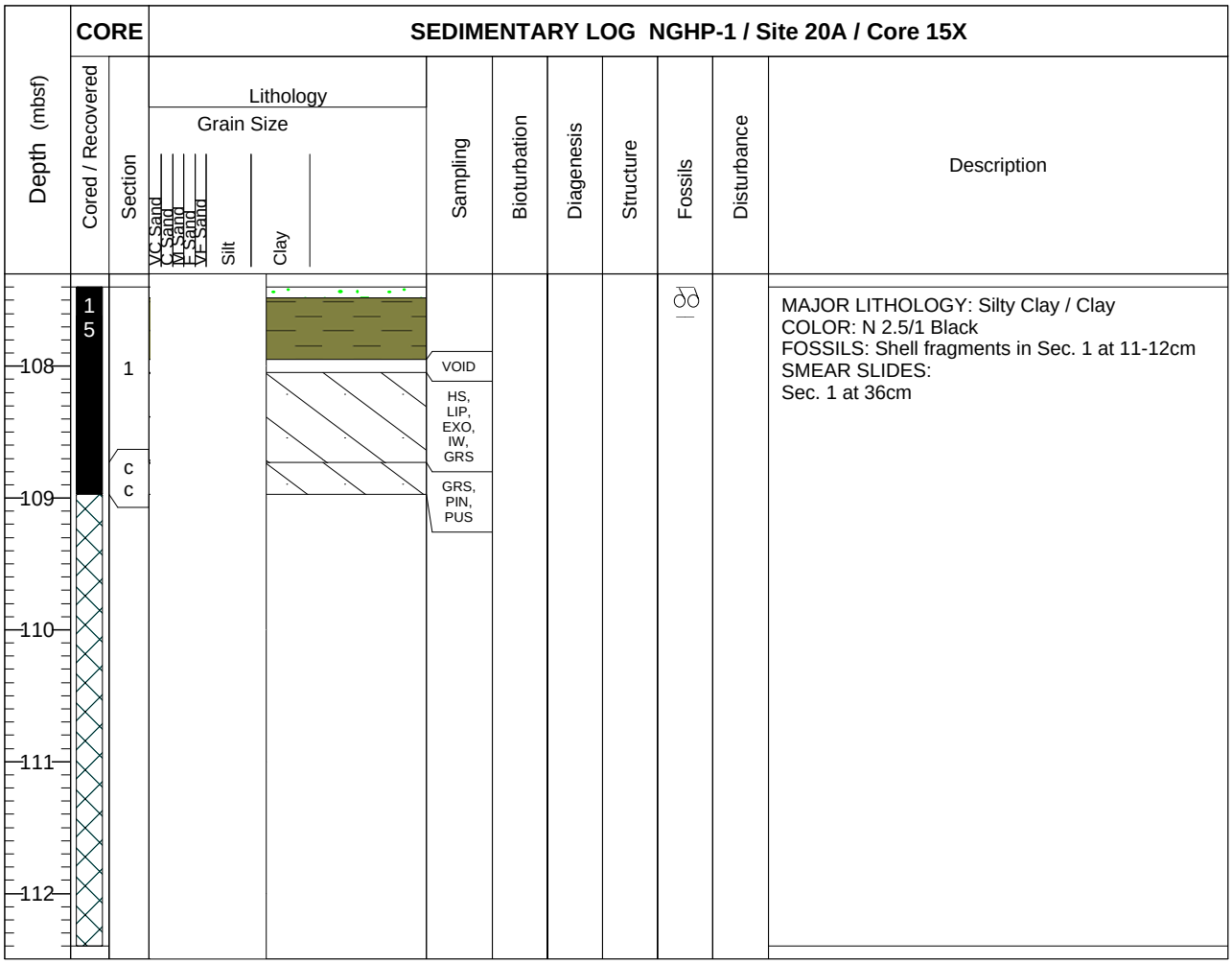

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 10X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
10
1
2
81
82
83
84
85
86
87
88
89
90
HS, LIP, JAN, EXO, JUD, MAZ, IW
MAJOR LITHOLOGY: Volcanic Glass Rich Nannofossil Bearing Clay
COLOR: 10YR 3/1 Very dark grey
DIAGENESIS: Authigenic carbonate nodule in Sec. 1 at 36-41cm (~5cm thick)
Authigenic carbonate micro nodules in Sec. 1 at 51-56 and Sec. 2 throughout
DISTURBANCE: Very disturbed in Sec. 1 at 0-18cm
SMEAR SLIDES:
Sec. 1 at 25cm

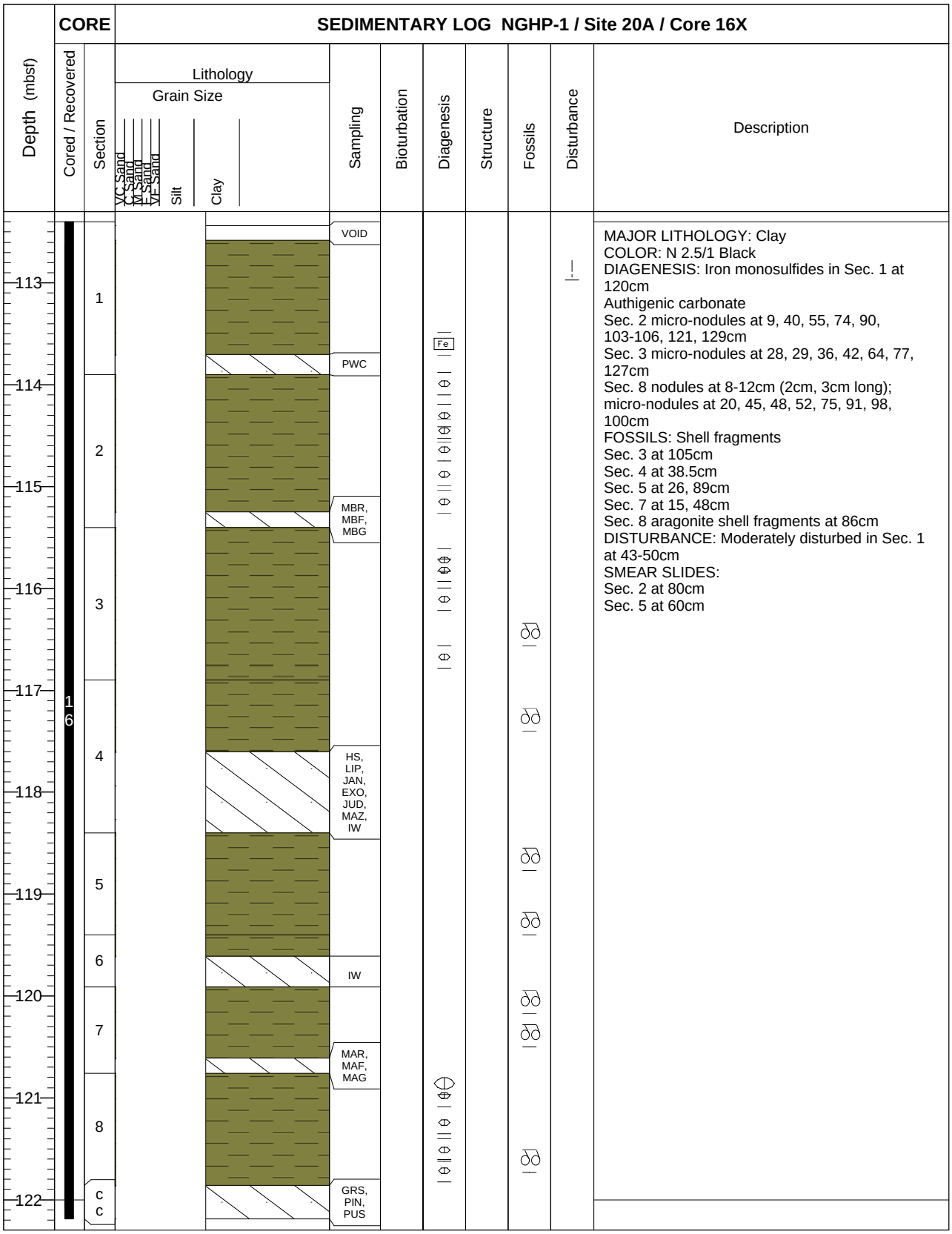

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 11X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
91
92
1
1
1
2
c
c
HS, LIP, EXO, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Clay
MINOR LITHOLOGY: Silt
COLOR: N 2.5/1 Black
BIOTURBATION: Rare in Sec. 1 at 56-64cm
DIAGENESIS: Authigenic carbonate nodule in Sec. 1 at 58cm (~1cm thick) and in Sec. 2 at 20, 24cm
Authigenic carbonate micro nodules in Sec. 1 at 39-41, 46, 55-93cm and Sec. 2 throughout
STRUCTURE: Disturbed sand bed in Sec. 2 at 15-24cm
DISTURBANCE: Mild biscuits/slurry throughout Sec. 2
SMEAR SLIDES: Sec. 1 at 50cm; Sec. 2 at 14cm

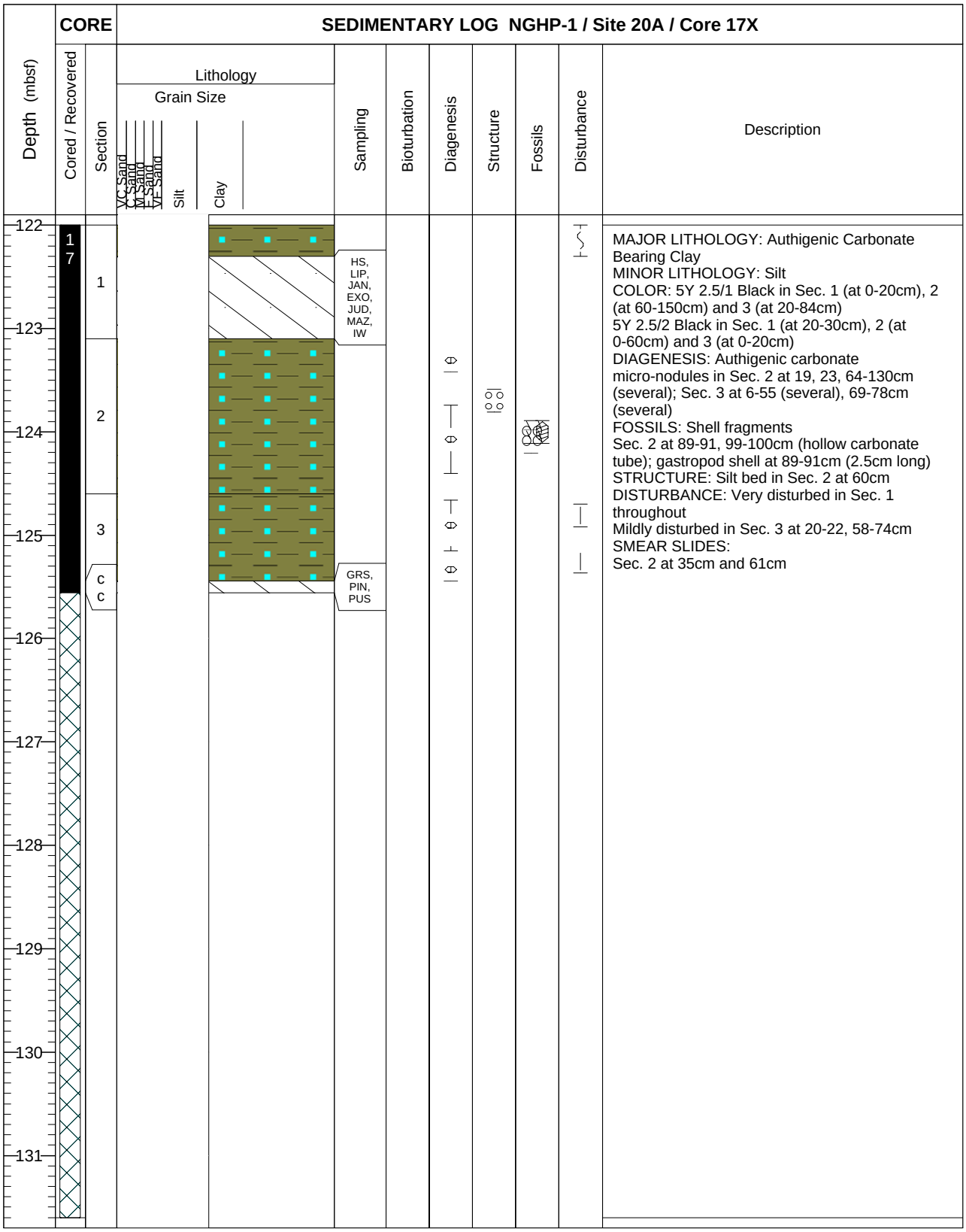

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 12X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Stratigraphy
Structure
Fossils
Disturbance
Description
93
94
95
96
97
1
2
1
2
C
C
VOID
LIP, JAN, EXO, JUD, MAZ, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Authigenic Carbonate Rich Clay
MINOR LITHOLOGY: Sandy Silt / Silty Clay
COLOR: N 2.5/1 Black
DIAGENESIS:
Authigenic carbonate micro-nodules in Sec. 2 at 26-31, 57, 69-80cm
STRUCTURE: Disturbed sandy silt beds in Sec. 1 at 31-35, 51-67cm
Silty clay in Sec. 2 at 72-82, 86-96cm
Sandy bed in Sec. 2 at 84-85cm
DISTURBANCE: Moderately disturbed throughout entire core
SMEAR SLIDES:
Sec. 2 at 53cm

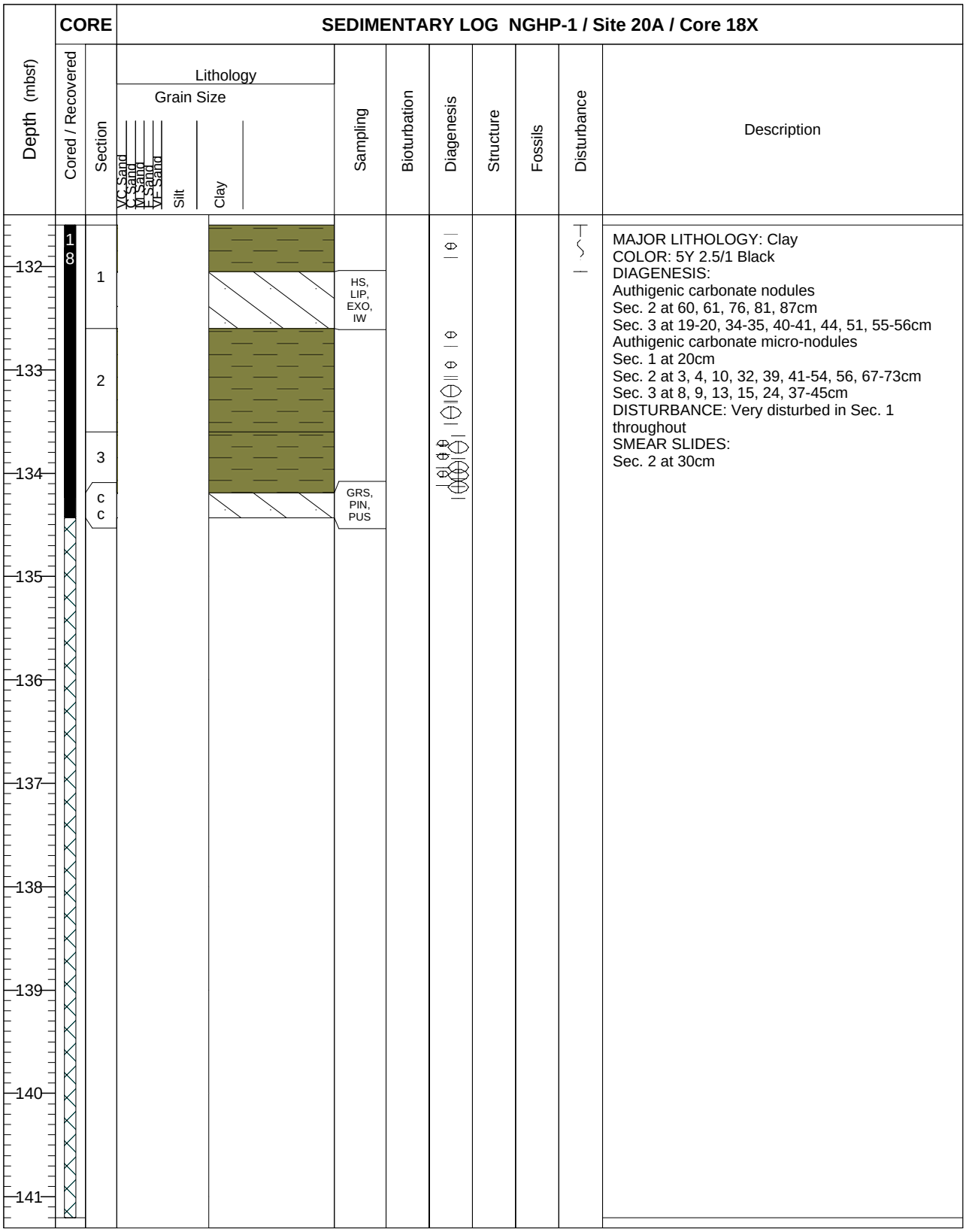

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 13X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
98
99
100
101
102
13
1
2
3
C
C
IW
HS, LIP, JAN, EXO, JUD, MAZ
GRS, PIN, PUS
MAJOR LITHOLOGY: Authigenic Carbonate Bearing Clay / Silty Clay
COLOR: N 2.5/1 Black
DIAGENESIS:
Authigenic carbonate
Sec. 1 nodule at 66cm; micro-nodules at 79-82, 92cm
Sec. 2 micro-nodules at 12, 14, 59cm
Sec. 3 micro-nodules at 23, 30cm
DISTURBANCE: Very disturbed in Sec. 1 at 0-60cm
SMEAR SLIDES:
Sec. 2 at 35cm

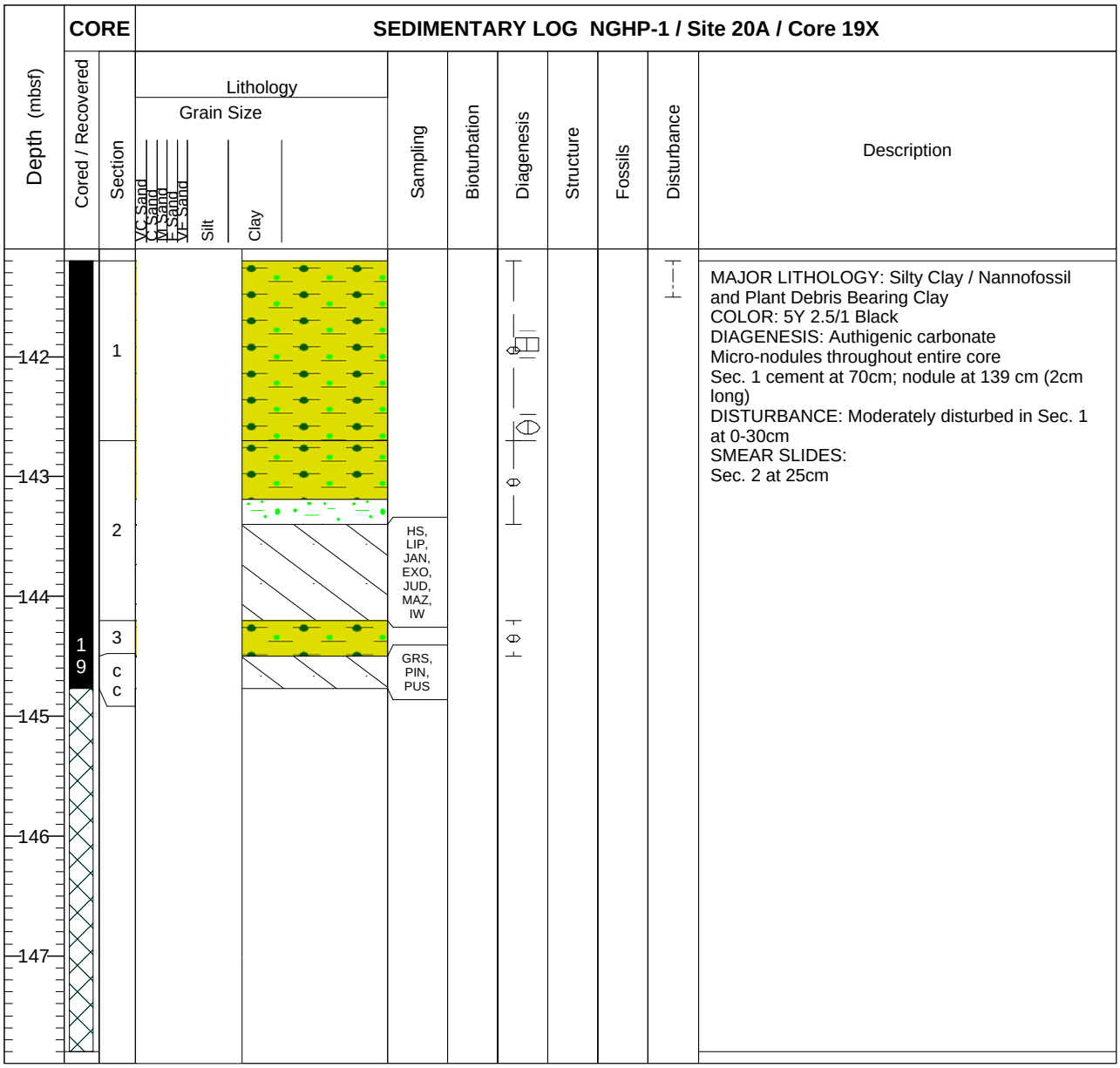

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 14X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
103
104
105
106
107
14
1
2
3
CC
HS, LIP, JAN, EXO, JUD, MAZ, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Silty Clay / Nannofossil Bearing Clay
COLOR: N 2.5/1 Black
DIAGENESIS:
Authigenic carbonate
Sec. 1 micro-nodules at 55cm
Sec. 2 micro-nodules at 1, 7, 57, 68, 80, 104, 126cm; nodule at 129cm
Sec. 3 nodule at 33cm (1cm diameter)
FOSSILS: Carbonate shell fragments in Sec. 1 at 20, 50cm
DISTURBANCE: Very disturbed in Sec. 1 at 0-18cm
SMEAR SLIDES:
Sec. 2 at 35cm
Sec. 3 at 25cm

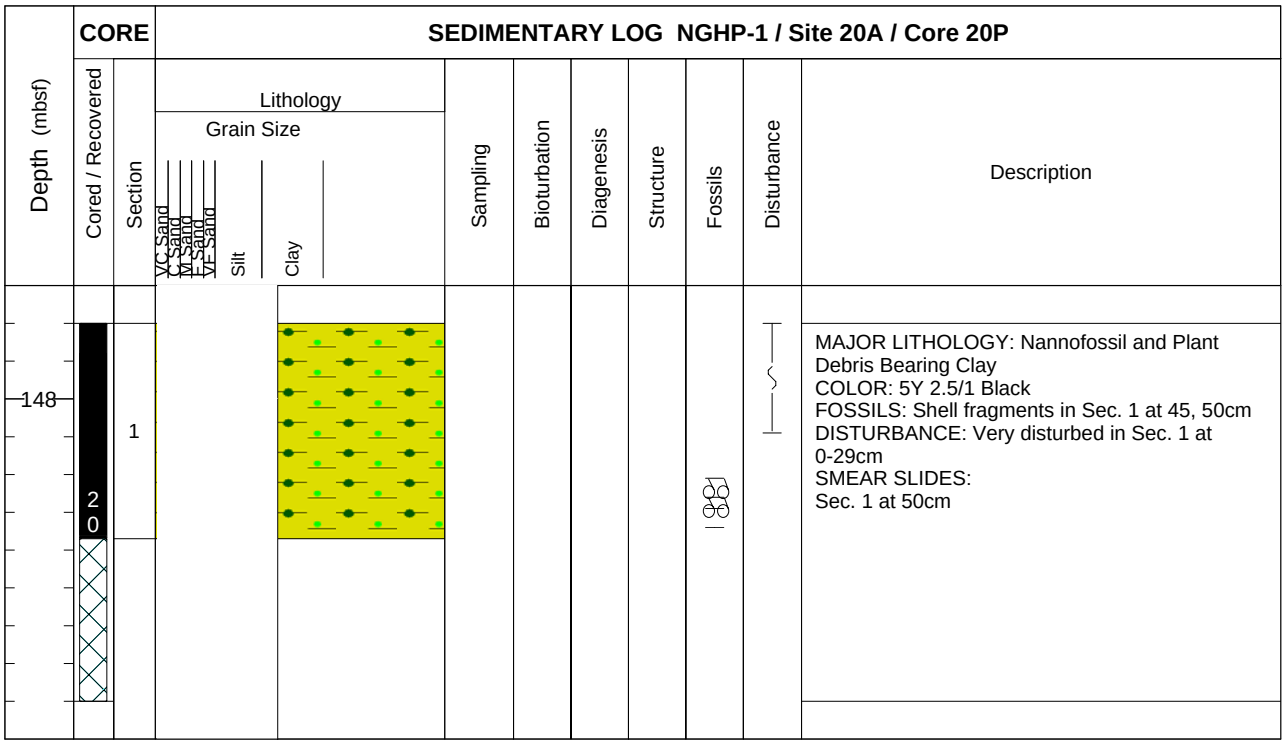

CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 15X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
15
108
109
110
111
112
1
CC
VOID
HS, LIP, EXO, IW, GRS
GRS, PIN, PUS
MAJOR LITHOLOGY: Silty Clay / Clay
COLOR: N 2.5/1 Black
FOSSILS: Shell fragments in Sec. 1 at 11-12cm
SMEAR SLIDES:
Sec. 1 at 36cm


CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 16X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
113
114
115
116
117
118
119
120
121
122
16
1
2
3
4
5
6
7
8
C
C
VOID
PWC
MBR, MBF, MBG
HS, LIP, JAN, EXO, JUD, MAZ, IW
IW
MAR, MAF, MAG
GRS, PIN, PUS
Fe
MAJOR LITHOLOGY: Clay
COLOR: N 2.5/1 Black
DIAGENESIS: Iron monosulfides in Sec. 1 at 120cm
Authigenic carbonate
Sec. 2 micro-nodules at 9, 40, 55, 74, 90, 103-106, 121, 129cm
Sec. 3 micro-nodules at 28, 29, 36, 42, 64, 77, 127cm
Sec. 8 nodules at 8-12cm (2cm, 3cm long); micro-nodules at 20, 45, 48, 52, 75, 91, 98, 100cm
FOSSILS: Shell fragments
Sec. 3 at 105cm
Sec. 4 at 38.5cm
Sec. 5 at 26, 89cm
Sec. 7 at 15, 48cm
Sec. 8 aragonite shell fragments at 86cm
DISTURBANCE: Moderately disturbed in Sec. 1 at 43-50cm
SMEAR SLIDES:
Sec. 2 at 80cm
Sec. 5 at 60cm


CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 17X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
122
123
124
125
126
127
128
129
130
131
17
1
2
3
c
c
HS, LIP, JAN, EXO, JUD, MAZ, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Authigenic Carbonate Bearing Clay
MINOR LITHOLOGY: Silt
COLOR: 5Y 2.5/1 Black in Sec. 1 (at 0-20cm), 2 (at 60-150cm) and 3 (at 20-84cm)
5Y 2.5/2 Black in Sec. 1 (at 20-30cm), 2 (at 0-60cm) and 3 (at 0-20cm)
DIAGENESIS: Authigenic carbonate micro-nodules in Sec. 2 at 19, 23, 64-130cm (several); Sec. 3 at 6-55 (several), 69-78cm (several)
FOSSILS: Shell fragments
Sec. 2 at 89-91, 99-100cm (hollow carbonate tube); gastropod shell at 89-91cm (2.5cm long)
STRUCTURE: Silt bed in Sec. 2 at 60cm
DISTURBANCE: Very disturbed in Sec. 1 throughout
Mildly disturbed in Sec. 3 at 20-22, 58-74cm
SMEAR SLIDES:
Sec. 2 at 35cm and 61cm


CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 18X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
18
1
2
3
cc
HS, LIP, EXO, IW
GRS, PIN, PUS
132
133
134
135
136
137
138
139
140
141
MAJOR LITHOLOGY: Clay
COLOR: 5Y 2.5/1 Black
DIAGENESIS:
Authigenic carbonate nodules
Sec. 2 at 60, 61, 76, 81, 87cm
Sec. 3 at 19-20, 34-35, 40-41, 44, 51, 55-56cm
Authigenic carbonate micro-nodules
Sec. 1 at 20cm
Sec. 2 at 3, 4, 10, 32, 39, 41-54, 56, 67-73cm
Sec. 3 at 8, 9, 13, 15, 24, 37-45cm
DISTURBANCE: Very disturbed in Sec. 1 throughout
SMEAR SLIDES:
Sec. 2 at 30cm


CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 19X
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
142
143
144
145
146
147
19
1
2
3
c
c
HS, LIP, JAN, EXO, JUD, MAZ, IW
GRS, PIN, PUS
MAJOR LITHOLOGY: Silty Clay / Nannofossil and Plant Debris Bearing Clay
COLOR: 5Y 2.5/1 Black
DIAGENESIS: Authigenic carbonate Micro-nodules throughout entire core
Sec. 1 cement at 70cm; nodule at 139 cm (2cm long)
DISTURBANCE: Moderately disturbed in Sec. 1 at 0-30cm
SMEAR SLIDES:
Sec. 2 at 25cm


CORE
SEDIMENTARY LOG NGHP-1 / Site 20A / Core 20P
Depth (mbsf)
Cored / Recovered
Section
Lithology
Grain Size
VC Sand
C Sand
M Sand
F Sand
VF Sand
Silt
Clay
Sampling
Bioturbation
Diagenesis
Structure
Fossils
Disturbance
Description
148
1
2
0
MAJOR LITHOLOGY: Nannofossil and Plant Debris Bearing Clay
COLOR: 5Y 2.5/1 Black
FOSSILS: Shell fragments in Sec. 1 at 45, 50cm
DISTURBANCE: Very disturbed in Sec. 1 at 0-29cm
SMEAR SLIDES:
Sec. 1 at 50cm