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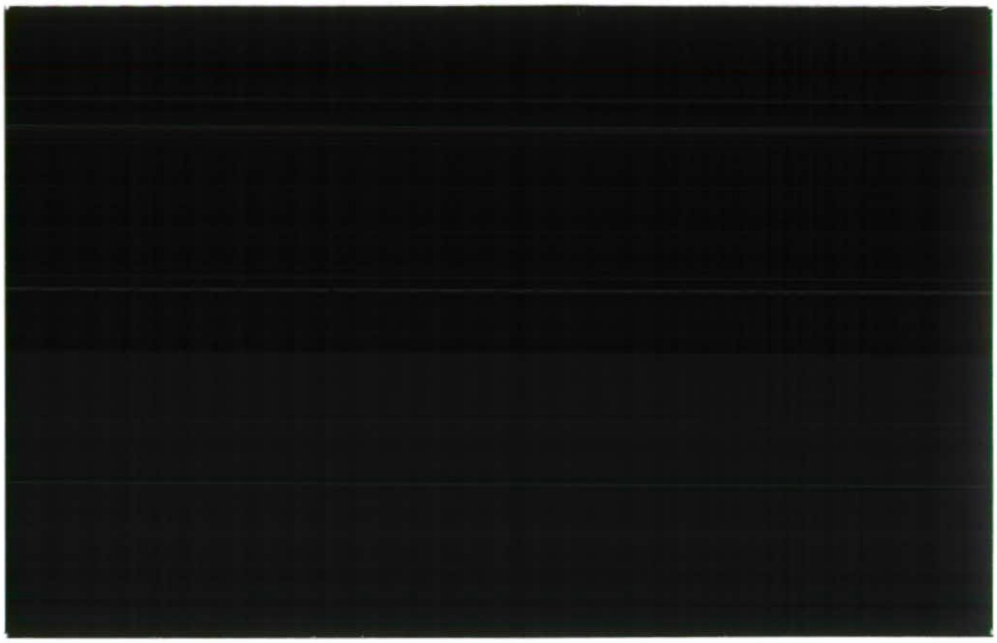
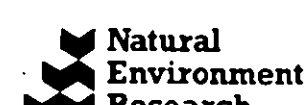


Natural Environment Research Council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LANGLEY'S LANE MEADOW

Records of Wells Installed

April 1995

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June 1995

The Institute of Hydrology was commissioned to drill and install three groundwater monitoring wells at Langley's Lane Meadow, Standlake, Oxfordshire at the request of Frank Graham & Partners on behalf of Drinkwater Sabey plc. The wells are required to act as an early warning of any alteration of water levels associated with nearby gravel extraction. In addition a soil piezometer was installed adjacent to each well to monitor the relationship of any water table conditions in the alluvial clay and soil to the water level in the underlying gravel.

The boreholes were cored to ascertain the nature of the sand and gravel in particular immediately beneath the alluvial clay. Clean sand and gravel was not found in contact with the alluvial clay; however at LL3A it was proved to lie only 0.18 m below the base of the alluvial clay.

The wells completed in the gravel aquifer were sealed with bentonite in the alluvial clay to prevent any preferential drainage path around the well which might have affected water levels recorded by the adjacent soil piezometer.

It has been suggested (Wilson, 1983) that if water levels fall more than about 0.4 m below the base of the alluvial clay, water in the gravel will be unavailable to plants. If the 'natural' fluctuation of water levels is at about the base of the alluvial clay, then a drawdown of 0.5 m may adversely affect plants. It is therefore important to establish the 'natural' fluctuation prior to any nearby quarrying activity. It is also possible that water levels may be raised as a result of quarrying activity, which may also affect plant communities adversely by e.g. waterlogging.

The drilling and installation data has been entered into GRIPS (a Groundwater Information Processing System developed by IH). The well records are presented as output from GRIPS as station details, lithologies, water levels and graphic logs.

REFERENCES

Wilson, I.G. 1983. The effects of gravel extractions on groundwater hydrology. Unpublished PhD thesis, University of Oxford.

A. J. Dixon.

July 1995.

Institute of Hydrology, Sub Surface Hydrology Section

Langley's Lane Meadow

Printed on 24 May 1995 at 13:28

STATION DETAILS

Station LL1A

Grid reference 3909 164
Location Close to N meadow boundary 13m E of Langley's Lane boundary

Contractor IH Rig type jack hammer
Completion date 4 Apr 95 Start date 4 Apr 95
Drilling techniques
flowthrough from 0.00 to 4.00

Drilled diameters
from 0.00 to 4.00 54.00 mm diam.

Reamed diameters
from 0.00 to 1.00 100.00 mm diam.

Formation sampling method unlined flowthrough bit
Coring/sampling depths
from 0.00 to 1.05 from 1.05 to 2.10
from 2.10 to 3.05 from 3.05 to 4.00

Water struck at **********

Casing type 2" galv. steel
from 0.00 to 1.88 50.00 mm diam.

Screen type perf. drive tip
from 1.88 to 2.48 50.00 mm diam. 6.00 mm slot size

Pack type natural
Pack construction
bent.pel from 0.00 to 1.00
sand from 1.00 to 1.30
natural from 1.30 to 4.00

Development method air lift for 60 mins
poor yield

[NB all depths in metres]

Langley's Lane Meadow Construction Details

Station LL1B

Location same as LL1A

Contractor IH Rig type hand auger
Completion date 4 Apr 95 Start date 4 Apr 95
Drilling techniques
augering from 0.00 to 0.75

Drilled diameters
from 0.00 to 0.75 100.00 mm diam.

Casing type PVC
from 0.00 to 0.40 19.00 mm diam.

Screen type C.grande cer tip
from 0.40 to 0.55 50.00 mm diam.

Pack type sand
Pack construction

bent.pel	from 0.00	to 0.30
sand	from 0.30	to 0.65
bent pel	from 0.65	to 0.75

[NB all depths in metres]

Langley's Lane Meadow — Construction Details

Station LL2A

Grid reference 3905 144
Location At W corner of meadow 5m from boundary

Contractor IH — Rig type jack hammer
Completion date 10 Apr 95 — Start date 10 Apr 95
Drilling techniques
flowthrough from 0.00 to 4.08

Drilled diameters
from 0.00 to 4.08 54.00 mm diam.

Reamed diameters
from 0.00 to 1.60 100.00 mm diam.

Formation sampling method lined flowthrough bit
Coring/sampling depths
from 0.00 to 1.23 from 1.23 to 2.18
from 2.18 to 3.13 from 3.13 to 4.08

Water struck at **********

Casing type 2" galv. steel
from 0.00 to 2.75 50.00 mm diam.

Screen type perf. drive tip
from 2.75 to 3.35 50.00 mm diam. 6.00 mm slot size

Pack type natural
Pack construction
bent.gnl from 0.00 to 1.60
natural from 1.60 to 4.08

Development method air lft for 60 mins
mod. yield

[NB all depths in metres]

Station LL2B

Location same as LL2B

Contractor IH
Completion date 10 Apr 95
Rig type hand auger
Start date 10 Apr 95
Drilling techniques
augering from 0.00 to 1.30

Drilled diameters
from 0.00 to 1.30 100.00 mm diam.

Casing type PVC
from 0.00 to 0.85 19.00 mm diam.

Screen type C.grande cer.tip
from 0.85 to 1.00 50.00 mm diam.

Pack type sand
Pack construction

concrete	from 0.00	to 0.25
bent.pel	from 0.25	to 0.60
sand	from 0.60	to 1.25
bent.pel	from 1.25	to 1.30

[NB all depths in metres]

Station LL3A

Grid reference 3916 147
Location Close to E boundary of meadow 9m S of junct. of adjac. boundary

Contractor IH
Rig type jack hammer
Completion date 10 Apr 95
Start date 10 Apr 95
Drilling techniques
flowthrough from 0.00 to 4.08

Drilled diameters
from 0.00 to 4.08 54.00 mm diam.

Reamed diameters
from 0.00 to 1.30 100.00 mm diam.

Formation sampling method lined flowthrough bit
Coring/sampling depths
from 0.00 to 1.23 from 1.23 to 2.18
from 2.18 to 3.13 from 3.13 to 4.08

Casing type 2" galv. steel
from 0.00 to 2.12 50.00 mm diam.

Screen type perf. drive tip
from 2.12 to 2.72 50.00 mm diam. 6.00 mm slot size

Pack type natural
Pack construction
bent.pel from 0.00 to 1.10
sand from 1.10 to 1.60
natural from 1.60 to 4.08

Development method air lift for 30 mins
good yield

[NB all depths in metres]

Langley's Lane Meadow Construction Details

Station LL3B

Location same as LL3B

Contractor IH
Rig type hand auger
Completion date 10 Apr 95
Start date 10 Apr 95
Drilling techniques
augering from 0.00 to 0.90

Drilled diameters
from 0.00 to 0.90 100.00 mm diam.

Casing type PVC
from 0.00 to 0.75 19.00 mm diam.

Screen type C.grande cer.tip
from 0.75 to 0.90 50.00 mm diam.

Pack type sand
Pack construction
concrete from 0.00 to 0.25
bent.pel from 0.25 to 0.40
sand from 0.40 to 0.90

[NB all depths in metres]

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Langley's Lane Meadow

Printed on 5 Jun 1995 at 14:48

LITHOLOGIES

Grid Reference 3909 164

0.00 to 0.20	SOIL: firm brown (10YR4/3) silty CLAY
0.20 to 0.90	Firm brownish yellow (10YR6/6) silty CLAY
0.90 to 1.00	Medium dense yellowish brown (10YR5/8) very clayey silty sandy GRAVEL becoming more sandy with depth
1.00 to 1.68	Medium dense yellowish brown (10YR5/8) slightly clayey v. sandy GRAVEL
1.68 to 2.05	Dense yellowish brown (10YR5/4) very sandy GRAVEL
2.05 to 2.24	Loose yellowish brown (10YR5/4) fine openwork GRAVEL
2.24 to 2.76	Medium dense yellowish brown (10YR5/8) slightly clayey v. sandy GRAVEL
2.76 to 2.84	Medium dense strong brown (7.5YR5/8) silty very sandy GRAVEL
2.84 to 3.24	Dense yellow (10YR7/6) very sandy GRAVEL
3.24 to 3.29	Dense yellow (10YR7/6) fine SAND
3.29 to 3.37	Dense yellow (10YR7/6) very sandy GRAVEL
3.37 to 3.42	Medium dense yellow (10YR7/6) medium SAND
3.42 to 3.83	Dense yellow (10YR7/6) very sandy GRAVEL
3.83 to 3.88	Firm- stiff dark grey (N5) sandy gravelly CLAY
3.88 to 4.00	Stiff dark grey (N4) fissured CLAY

Grid Reference 3905 144

0.00 to 0.30	SOIL: firm very dark greyish brown(10YR3/2) silty CLAY
0.30 to 0.60	Firm yellowish brown (10YR5/6) silty CLAY with strong brown (7.5YR5/6) mottling
0.60 to 1.60	Soft-firm grey (N6) silty CLAY with brown (7.5YR5/4) mottling and roots
1.60 to 1.71	Loose-medium dense brownish yellow (10YR6/6) very clayey silty sandy GRAVEL
1.71 to 1.82	Dense strong brown (7.5YR5/8) silty very sandy GRAVEL
1.82 to 1.93	Dense brownish yellow (10YR6/6) silty very sandy GRAVEL
1.93 to 2.09	Dense pale olive (5Y6/3) silty very sandy GRAVEL becoming light yellowish brown (2.5Y6/4) with depth
2.09 to 2.42	Dense light yellowish brown (2.5Y6/4) very sandy GRAVEL
2.42 to 2.53	Medium dense light yellowish brown (2.5Y6/4) SAND
2.53 to 2.58	Dense light yellowish brown (2.5Y6/4) fine openwork GRAVEL
2.58 to 3.29	Dense light yellowish brown (2.5Y6/4) very sandy GRAVEL with fine openwork gravel between 2.64-2.81 and 2.86-2.89
3.29 to 3.30	Dense dark olive grey (5Y3/2) SAND
3.30 to 3.34	Dense light yellowish brown (2.5Y6/4) very sandy GRAVEL
3.34 to 3.35	Dense dark olive grey (5Y3/2) SAND
3.35 to 3.47	Dense olive grey (5Y5/2) SAND with some gravel at top
3.47 to 4.08	Stiff dark grey (N4) fissured CLAY

Grid Reference 3916 147

0.00 to 0.20	SOIL: firm very dark greyish brown(10YR3/2) silty CLAY
0.20 to 1.23	Soft-firm yellowish brown (10YR5/8) CLAY with grey (10YR5/1) mottling and some fine gravel and roots
1.23 to 1.41	Medium dense light yellowish brown (2.5Y6/4) silty clayey GRAVEL/SAND
1.41 to 1.64	Medium dense brownish yellow (10YR6/6) very sandy GRAVEL
1.64 to 1.71	Medium dense strong brown (7.5YR5/8) silty very sandy GRAVEL
1.71 to 2.58	Medium dense light yellowish brown (2.5Y6/4) SAND with grey (10YR5/1) SAND laminae at 1.87 1.98 and 2.01
2.58 to 3.59	Dense brownish yellow (10YR6/6) very sandy GRAVEL
3.59 to 4.08	Stiff dark grey (N4) fissured CLAY

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Langley's Lane Meadow

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WATER LEVELS

Langley's Lane Meadow

Water levels

Station No	Date	Time	Depth to water (m below datum level)	Elevation of water table (m above sea level)
LL1A	4 Apr 95		2.170	-
LL2A	10 Apr 95		2.170	-
LL3A	10 Apr 95		1.580	-

Langley's Lane Meadow

LL1A

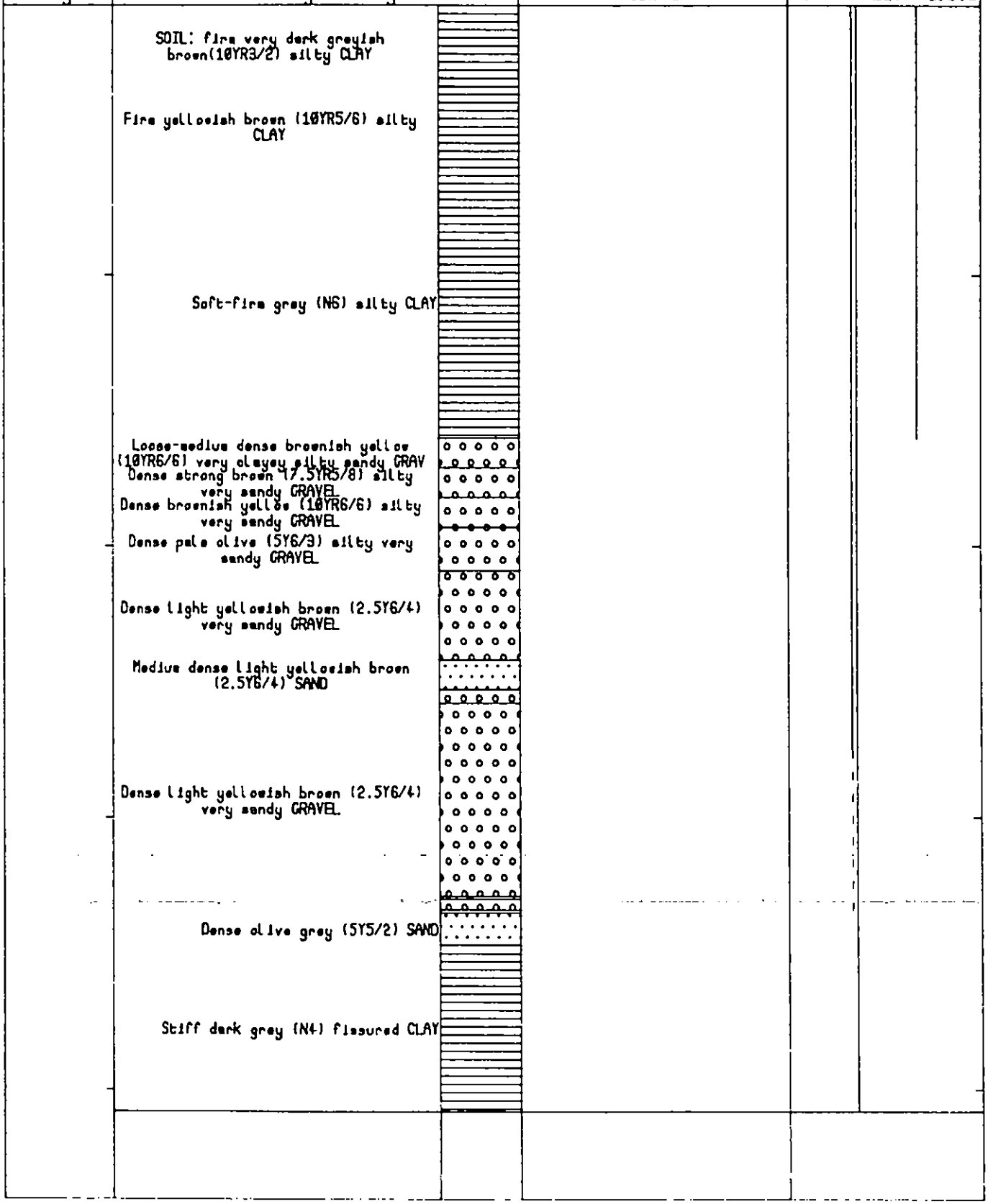
Grid reference 3909 164

Depth a bgl	Lithological log	Penetration Rate log (min/m)	Construction diameters 0.0 (mm) 150.0
	SOIL: firm brown (10YR4/3) silty CLAY		
	Firm brownish yellow (10YR6/6) silty CLAY		
	Medium dense yellowish brown (10YR5/8) very clayey silty sandy GRAV.		
	Medium dense yellowish brown (10YR5/8) slightly clayey v. sandy GRAV		
	Dense yellowish brown (10YR5/4) very sandy GRAVEL		
	Loose yellowish brown (10YR5/4) fine openwork GRAVEL		
	Medium dense yellowish brown (10YR5/8) slightly clayey v. sandy GRAV		
	Dense yellow (10YR7/6) very sandy GRAVEL		
	Dense yellow (10YR7/6) fine SAND		
	Dense yellow (10YR7/6) very sandy GRAVEL		
	Stiff dark grey (N4) fissured CLAY		

Langley's Lane Meadow

LL2A

Grid reference 3905 144



Langley's Lane Meadow

LL3A

Grid reference 3916 147