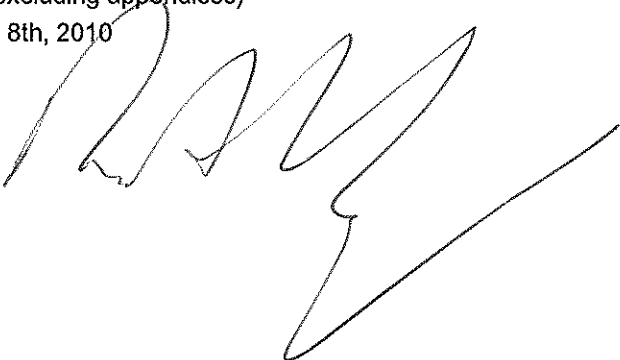


**Phase II Soil and groundwater
investigation Ter Aar,
the Netherlands**

April 8th, 2010

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investigation Ter Aar,
the Netherlands**

Responsibility

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- VCA**-certificate for the safe operation of measuring and inspection services and soil remediation, including high-risk areas with railway infrastructure
- Analyses are done by the by NEN-EN-ISO/IEC 17025 accredited Laboratory of AL-West

Contents

Responsibility and Colophon.....	5
Executive Summary	9
1 Introduction.....	11
2 Site description.....	13
2.1 Site location	13
2.2 Site features	13
2.3 Geo (hydro)logy.....	15
3 Soil and groundwater survey strategy	17
3.1 Survey strategy	17
3.2 Historic search.....	18
3.3 Fieldwork activities and analytical programme	19
3.4 Quality	20
4 Results and discussion	21
4.1 Testing framework.....	21
4.2 Results of the Fieldwork (observation of abnormalities).....	22
4.3 Samples	22
4.4 Results chemical analyses	23
4.4.1 Grassland - west	23
4.4.2 Grassland - east	26
4.4.3 PAOCs	29
4.4.4 Residential house.....	33
4.4.5 Asbestos.....	33
4.4.6 Risk assessment	34
5 Conclusions and recommendations.....	35

Appendices

1. Regional situation and site plans
2. Maps with location of sampling points
3. Bore logs
4. Dutch STI values
5. Analytical results soil and asbestos
6. Analytical results groundwater

Executive Summary

Upon request of Desch HC, Tauw bv has performed a Phase II soil and groundwater investigation at the industrial site of E-PLA in Ter Aar, Netherlands. The purpose of the investigation was to assess the soil and groundwater quality and to evaluate related liabilities in the framework of the contemplated takeover of E-PLA by Desch HC.

The investigation showed that the site is practically not polluted. Slightly raised levels of metals and some other substances were measured in the topsoils though, which can be attributed to very old anthropogenic influence. This phenomenon has been described elsewhere in the region (low-lying Western Netherlands) as so called 'toemaakdekken' (anthropogenic soil covers). These anthropogenic top layers have originated over many centuries in the past through additions of household waste as natural fertilizer and to improve soil structure and bearing capacity of the soft peaty soils. Besides organic matter, this waste also contained glazed pottery fragments, pipe heads, scrap metal and so on. Hence the pollutant levels measured in the topsoils are in fact raised background levels. They bear no relation at all with the industrial use of the site in modern times and as a consequence do not pose any business consequences to Desch HC.

Only at one location at the site a moderately raised pollutant level was measured. This concerned the naphthalene level in the groundwater at the oils and lubricants store located in the front building. Generally naphthalene is known to form part of heavy oils and lubricants. As the front building dates from 1988, it is likely that the naphthalene pollution here dates from 1988 or later. In the Netherlands all pollution that originated after 1 January 1987 is not considered historic pollution anymore for which specific legislation exists, but falls under the so-called duty-of-care principle. This would mean that the naphthalene pollution would need to be cleaned up. Remediation of the naphthalene pollution in the groundwater may worst case cost up to EUR 100,000 or more depending on the size and severity of the pollution.

It is recommended that Desch HC includes a specific indemnity in the SPA (sales contract) for any ground and groundwater pollution, or negotiates a price discount in return for liability transfer of ground and groundwater pollution to Desch HC. Depending on how Desch HC wants to deal with this, re-sampling and re-analysis of the groundwater could be considered as intermediary step to obtain more information on the size and severity of the naphthalene pollution. Costs for this additional investigation are not material.

The present investigation can be used as a basis for preparing the baseline soil and groundwater investigation report that the site is required to submit to the authorities in line with Environmental permit requirements.

1 Introduction

At the request of Desch HC (Desch), Tauw bv (Tauw) carried out a Phase II Soil & Groundwater investigation of a production site plastic plant pots owned by E-PLA. The site is located at the Oude Kerkpad 4e in Ter Aar, the Netherlands. The soil and groundwater investigation was carried out in the framework of the contemplated acquisition of the site by Desch.

The site produces plastic plant pots and containers by extrusion and injection moulding. The total surface area of the site is estimated at 3.5 ha, of which 2.5 ha are grasslands. These are two plots respectively west (1.5 ha) and east (1 ha) of the actual production unit which measures about 1 ha.

This report gives an overview of the soil and groundwater quality at the site. Chapter 2 describes the site setting. Chapter 3 describes the soil and groundwater investigation methodology. The analytical results of the chemical analysis are discussed in chapter 4. The last chapter presents our conclusions.

2 Site description

2.1 Site location

The site is situated in the village of Ter Aar, located within the Nieuwkoop Municipality in the Province of Zuid-Holland, the Netherlands. Ter Aar is located in the western part of the Netherlands, approximately 30 km southwest of the capital Amsterdam.

The site is situated in an agricultural area, located towards the northeast of the village centre with good access to the ring road of the nearby city of Alphen aan den Rijn. The full address of the site is Oude Kerkpad 4e, 2461 EW Ter Aar, the Netherlands.



Figure 2.1 Location of the site is indicated with a red circle

2.2 Site features

E-PLA is a supplier of plastic pots for the horticulture sector and is specialized in the production of decorative pots, hanging pots, pot accessories, and adjoining rings and clips. Plastic products are manufactured by non-stop injection moulding on the basis of granules of polypropylene plastic.

Appendix 1 includes a site layout plan. The site covers approximately 3.5 hectares and can roughly be divided into three different sections: a central industrial plot of about 1.0 hectare accommodating the production facility and associated constructions, and two open grassland plots of approximately 1.5 and 1 hectare respectively on the west and east side.

The site accommodates various constructions, including the one-storey production building covering approximately 2,500 m². The building accommodates the injection moulding machines covering the largest part of the facility, storage areas for bulk granules in silos and packaging materials, a packaging and expedition area, and offices. Several smaller technical areas are distributed over the facility, including a workshop and a plastics recycling area. Plastic greenhouse tunnels, located at the back of the site are used for storage of finished products. A low shed is located on the eastern grassland and is used as a sheepfold. Two residential houses under one roof are located in the northern part of the site.

The front areas are generally asphalted or paved whereas areas at the back were improved with concrete slabs.

The site has no own energy supply source. The facility is connected to the municipal sewer system and storm water is discharged onto a neighbouring ditch. There are no groundwater abstraction wells located on the site.



Figures 2.2 and 2.3, left: view to the main production building, right: view to the grassland-east with low shed (sheepfold)

No industrial uses were observed at neighbouring sites and no observations were made suggesting any evidence that the surrounding land use would have a potential to impact the site where E-PLA is located.

2.3 Geo (hydro)logy

Based on information from previous soil survey reports of sites in the neighbourhood of the site of E-PLA, the site is located at an elevation of 1 metre below sea level and underlain by some 10 metres of sedimentary deposits of the so-called Westland Formation. This formation comprises low permeability clay deposits and peat. This upper layer is underlain by the first aquifer with a thickness of more than 30 metres comprising permeable sandy deposits.

The soil type at the site to a depth of at least 2 m below ground level (bgl) consists of peat with at some drilling points intermittent sandy layers. Typically root fragments are present in the peaty topsoil, whereas shell fragments are common in the sandy layers. Around the production building rubble (for ground enforcement purposes) is encountered in some drillings to a depth of about 0.8 m bgl.

The southern terrain border consists of a drainage canal and an embankment. To the south of the embankment, a polder is situated with a ground level that is at least 2 metres lower than the ground level of the E-PLA site. Regional flow direction of the groundwater is likely to be to the East, however it can safely be assumed that the local hydrology is strongly influenced by the presence of the drainage canal and nearby polder. Local groundwater flow direction can only be precisely determined by groundwater levelling of the monitoring wells to be installed at the site.

Groundwater depth at the site is very shallow. During the soil and groundwater fieldwork by Tauw in February 2010 the groundwater level was at about 25 cm below ground surface.

3 Soil and groundwater survey strategy

3.1 Survey strategy

The overall objective of the present investigation is to assess the current soil and groundwater quality. In addition, the environmental permit for the site (issued on August 30th, 2007) prescribes a baseline soil & groundwater investigation (Clause 9.1.1) to be carried out within six months from the date of issue of the permit. This baseline investigation has not been performed to date. Therefore the present Phase II study may also serve as a basis for the baseline investigation.

The present investigation is to assess soil and groundwater quality at the areas of current industrial activities and historic activities within the site which represent a (potential) risk of soil and groundwater pollution.

The guideline followed in the investigation was the Protocol for combined soil and groundwater investigation - baseline investigation (*Protocol voor gecombineerd bodemonderzoek - nulsituatieonderzoek*) as stipulated in the publication on Soil & Groundwater investigation Environmental Permit and BSB (*Bodemonderzoek Milieuvergunning en BSB*) of 1993. This protocol prescribes the investigation of suspect areas of soil and groundwater contamination, also called Potential Areas Of Concern (PAOC). Nowadays the above protocol is included in the NEN 5740 Instructions (version January 2009).

The Environmental permit furthermore indicates that for the non-suspect parts of the site (i.e. the grasslands to the west and east of the production buildings) it will be assumed that soil and groundwater contaminant levels are below the Dutch Background or Reference values.

During the Phase I assessment (Tauw report R001-4698857DL-V01, dated February 16th, 2010) the following areas were observed to have potential to impact the subsurface (soil and groundwater):

- A. Oils and lubricants stored in drums and waste oil storage tank, located indoors on concrete flooring (about 20 m²)
- B. Technical workshop for maintenance and repairs, located indoors with concrete flooring (about 30 m²)
- C. Oil/water separator, located outdoors
- D. Waste storage facilities, wood and scrap metals containers located outdoors
- E. Production area where oil cooled moulding machines are located on concrete flooring (about 2,000-2,500 m²)

Soil and groundwater quality of the above five PAOCs was investigated and in addition a more extensive investigation (in a grid) of the non-suspect grasslands was performed following the NEN 5740 Instructions (version January 2009). Furthermore a soil sample was taken at the location of two on-site residential houses under one roof situated to the north of the production building. This latter sample was taken to obtain a reference for the local background levels in the soils.

In cooperation with Desch and the current owner of the site (E-PLA), it was decided not to drill in indoors in order not to hinder production and to avoid damage to the liquid tight floors in the production area.

3.2 Historic search

Site management stated that the site was originally used for market gardening (greenhouse cultures). These operations have likely started somewhere in the 1960s. Production of plastic pots was started by this same company in later years and although site management had no knowledge of the precise locations, it was believed that the first production activities had taken place in the area that is now agricultural land.

It cannot be excluded that the operations of the former market gardening company involved activities that may have impacted the site, for instance as a result of fuel storage for heating or fuelling, or as a result of the mixing and application of fertilizers and pesticides.

Information on these previous activities is however lacking and as such there is no evidence of an actual impact due to such activities.

The historic search carried out in the framework of this investigation entailed visits to Milieudienst West-Holland (environmental agency) and Groenehart Archieven (the archives located at Streekarchief Rijnlands Midden) and a data search by the Municipality of Ter Aar.

- At Milieudienst West-Holland, soil investigation data were present of surrounding sites, but not for the Oude Kerkpad 4b/4d/4e. The general impression obtained from the reviewed soil and groundwater reports is that slightly elevated heavy metal contaminations are common in the topsoils of the surrounding sites
- The visit to Groenehart Archieven (the archives located at Streekarchief Rijnlands Midden) learned that no information was available for the site on older construction permits, soil investigations and the like
- A search by the Municipality of Ter Aar yielded a number soil reports concerning Oude Kerkpad 4b. These reports concerned the location of the current production area of about 1,000 m² at the back of the site, constructed in 1995.

Prior to construction a soil investigation, further soil investigation, remediation plan and remediation evaluation report were prepared, all dated 1994. The remediated case of soil contamination consisted of a 40 m² spot in which a maximum concentration of 1 mg/kg of PCBs was measured. Remediation was carried out by excavation to 0.3 m bgl and subsequent removal of the contaminated soil. The remediation was evaluated as successful with no rest contamination present after the excavation¹

From the interview with site management, the reviewed documentation and the historic search the following picture emerges on the successive development of the site and the building constructions:

- In 1988 operations at the site within the current facility were started with the construction of the front building
- The expedition area was constructed as an add-on in 1992
- In 1995, the back of the facility was constructed and from that period on the site had attained its current shape and size

Furthermore it appeared that operations on site have always been injection moulding of polypropylene plastics. E-PLA has always been serviced by natural gas and no fuels have reportedly been applied for heating or fuelling purposes.

3.3 Fieldwork activities and analytical programme

The fieldwork was conducted on February 23rd, 24th and 25th, 2010. The sampling locations are presented on the maps in appendix 2.

The soil profile of each borehole was described (see appendix 3) and the different soil horizons were sampled. Individual as well as representative composite soil samples were submitted for chemical analysis to the laboratory. Groundwater observation wells (tube wells) were installed with a one meter filter starting at least half a meter below groundwater level. Groundwater samples were collected one week after installation of the monitoring wells.

During the fieldwork, the samples collected were kept refrigerated. After the fieldwork, the samples were transported under a cold chain to NEN-EN-ISO/IEC 17025 accredited Laboratory of AL-West (Deventer, Netherlands) for broad spectrum analyses on chemical parameters to provide a thorough assessment of the soil and groundwater quality.

The table below presents an overview of the number of drillings and analyses performed per identified PAOC A to E (see overview in previous section) and for each of the two grasslands.

¹ Evaluatierapport grondsanerling Oude Kerkpad 4b Ter Aar, Geo-Logic Milieu, Geotechniek & Delfstoffen, Projectcode 166-1189, september 1994

Location	Drilling to 0,5 m bgl	Drilling to 2,0 m bgl	Monitoring well installation	Analyses soil	Analyses groundwater
PAOC					
A	2	-	1	1 NEN ¹	1 NEN
B	2	-	1	1 NEN	1 NEN
C	2	-	1	1 NEN	1 NEN
D	2	-	1	1 NEN, 1 OCP ²	1 NEN
E	2	-	3	1 NEN	3 NEN
Non-suspect parts					
Grassland-east	14	4	2	5 NEN, 1 EOX ³	2 NEN
Grassland-west	22	5	3	6 NEN, 1 EOX ³	3 NEN
Residential house	1	5	-	1 NEN	-

¹ NEN: NEN 5740 analytical package, for soil this package includes: 9 metals (Ba, Cd, Co, Cu, Hg, Mo, Ni, Pb, Zn), TPH (GC), PAH, PCB. For groundwater, the package includes: 9 metals (Ba, Cd, Co, Cu, Hg, Mo, Ni, Pb, Zn), aromatic hydrocarbons (BTEXNS), chlorinated hydrocarbons (17 CHCs including vinyl chloride), TPH (GC)

² OCP: Organo Chlorine Pesticides

³ EOX: Extractable Organohalogen compounds

3.4 Quality

Prior to the execution of the fieldwork, a so-called 'KLIC-melding' was done, i.e. a check with the authorities and underground infrastructure owners to verify the exact locations of underground infrastructure such as electricity cables, gas pipes and sewerage. For every drilling near underground infrastructure, careful manual excavation was performed to ensure no underground infrastructure would accidentally be hit.

The field and analysis activities were carried out following the Dutch BRL SIKB 2000 Protocol including the underlain relevant protocols for fieldwork in the context of environmental soil investigations.



The chemical analyses were performed according to the KWALIBO Guidelines in conformance with the Protocol AS3000 by the NEN-EN-ISO/IEC 17025 accredited laboratory of AL-West.

4 Results and discussion

4.1 Testing framework

The analytical results were evaluated against the different limit values defined in the formal Dutch Circular on Soil Remediation 2009 (*Circulaire bodemsanering 2009*), and the Decree on Soil Quality (*Besluit bodemkwaliteit*) of 1 July 2008.

This so called 'STI evaluation frame' distinguishes between background values (*Achtergrondwaarden*, **AW**) for soil, reference values (*Streefwaarden*) for groundwater, and intervention values (*Interventiewaarden*) for both soil and groundwater. The testing values (*Tussenwaarden*) are defined as $T = \frac{1}{2} (AW + I)$ for soil and $T = \frac{1}{2} (S + I)$ for groundwater.

The used indications for the soil and groundwater assessment in the following sections are:

Concentration level	Indication	Meaning
$\leq AW / S$ value (or $<$ detection limit)	-	Not contaminated
$> AW / S$ value $\leq T$ value	+	Slightly contaminated
$> T$ value $\leq I$ value	++	Moderately contaminated
$> I$ value	+++	Strongly contaminated

The limit values for soil are depending on soil texture, specifically clay content (% *Lutum*) and organic matter content (% *Humus*). For the interpretation and assessment of the soil analytical data, clay and organic matter content were analysed for six representative samples.

In the Dutch regulatory framework a so called 'Case of serious contamination' (*Geval van ernstige bodemverontreiniging*) is determined by the severity and volume of contamination as follows:

- For soil: if the volume of Intervention value exceedence for a contaminant or parameter, is more than 25 m³ of soil
- For groundwater: if the volume of Intervention value exceedence for a contaminant or parameter, is more than 100 m³ of groundwater (by soil volume)

An identified case of serious contamination requires remediation because of possible risks involved (risk to humans on site and off site, risk to flora and fauna (ecological risk) and risk of spreading). To this end a quantitative risk assessment needs to be performed determining the urgency (*spoedeisend karakter*) of the remediation.

For soil contamination caused after 1 January 1987 the above framework is not applicable. Contamination of this category, often the result of accidental spills, fall under the general duty-of-care principle and need clean-up irrespective of contaminant levels or volumes. The calculated limit values applicable for the different soil types encountered are presented in appendix 4. This appendix also presents the STI values for the groundwater.

The analytical results of the soil samples are presented in appendix 5, the results for the groundwater samples are presented in appendix 6.

4.2 Results of the Fieldwork (observation of abnormalities)

In drillings 71 and 74 some slight oil patches were observed. Samples from drilling 71 (0.6-0.8 m bgl) and drilling 74 (0.15-0.30 bgl) were submitted for analysis (in Composite Soil Samples CSS B and CSS C respectively, see table below). A piece of suspected asbestos containing material was collected on the ground surface near the sheepfold and was also submitted for analysis.

4.3 Samples

An overview of the sampling locations and a map of the location of the PAOCs are presented in appendix 2.

Table 4.1 lists the composite soil samples (CSS) prepared from individual soil samples and also gives the applicable DIMM laboratory reference number between brackets. Depth ranges are given in parentheses in m bgl (below ground level).

Table 4.1 Composite soil sample (CSS) composition

CSS No.	Individual sampling points and depth trajectories
Grassland - west (sampled 23-02-2010)	
<i>Verification of topsoil quality</i>	
CSS 1	[8] 1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 7 (0-0.5) + 8(0-0.5) + 58 (0-0.5) + 67 (0-0.5)
CSS 2	[16] 4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 9 (0-0.5) + 10(0-0.5) + 57 (0-0.5) + 66 (0-0.5)
CSS 3	[24] 11 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 20 (0-0.5)+ 21 (0-0.5) + 59 (0-0.5) + 61 (0-0.5)
CSS 4	[33] 12 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5)+ 18 (0-0.5) + 19 (0-0.5) + 60 (0-0.5) + 68(0-0.5)
<i>Verification of subsoil quality</i>	
CSS 5	[38] 58 (1-1.5) + 60 (1-1.5) + 67 (1-1.5) + 68 (1-1.5)
CSS 6	[43] 57 (1-1.5) + 59 (1-1.5) + 61 (1-1.5) + 66 (1-1.5)
Grassland - east (sampled 23-02-2010)	
<i>Verification of topsoil quality</i>	
CSS 7	[50] 22 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 45 (0-0.5)+ 63 (0-0.5) + 69 (0-0.5)

CSS No.	Individual sampling points and depth trajectories
CSS 9	[8] 23 (0-0.5) + 24 (0-0.5) + 25 (0-0.5) + 26 (0-0.5) + 27 (0-0.5) + 62 (0-0.5) + 64 (0-0.5)
CSS 10	[16] 30 (0-0.5) + 31 (0-0.5) + 32 (0-0.5) + 33 (0-0.5) + 34 (0-0.5) + 65 (0-0.5) + 70 (0-0.5)
<i>Verification of subsoil quality</i>	
CSS 8	[53] 63 (1-1.5) + 69 (1-1.5)
CSS 11	[21] 62 (1-1.5) + 64 (1-1.5) + 65 (1-1.5) + 70 (1-1.5)
PAOC (sampled 25-02-2010)	
<i>Verification of soil quality at each PAOC</i>	
CSS A	[25] 39 (0.08-0.5) + 40 (0.08-0.5) + 73 (0.08-0.5)
CSS B	[29] 36 (0-0.5) + 71 (0.15-0.3) + 71 (0.6-0.8)
CSS C	[32] 42 (0.08-0.2) + 74 (0.15-0.3)
CSS D	[41] 37 (0.3-0.8) + 72 (0.7-1)
CSS E	[38] 43 (0-0.5) + 44 (0-0.2) + 75 (0.15-0.35) + 76(0-0.5) + 76 (1.5-2)
Residential house (sampled 25-02-2010)	
<i>Verification of soil quality</i>	
CSS O	[42] 46 (0-0.5)
Asbestos	90 (sample consists of a piece of suspected asbestos, taken near the sheepfold)

4.4 Results chemical analyses

This chapter assesses the analysis results against the Dutch STI testing framework.

4.4.1 Grassland - west

Table 4.1 presents the analytical results (and evaluation against the Dutch STI framework) for the topsoil of grassland - west. For the analytical results of the subsoil of grassland - west, see table 4.2. The analytical results of the groundwater are presented in table 4.3.

Table 4.1 Analysis results and interpretation topsoil (mg/kg) grassland - west

CSS (depth m bgl)	1 (0-0.5)	2 (0-0.5)	3 (0-0.5)	4 (0-0.5)
Lutum (%)	8,9	6,4	6,4	6,4
Organic matter (%)	35,4	35,0	35,0	35,0
METALS				
barium (Ba)	110	n/a	120	n/a
cadmium (Cd)	0,54	-	0,72	-
cobalt (Co)	14	+	8,9	+
copper (Cu)	43	-	51	+
mercury (Hg)	0,32	+	0,43	+
lead (Pb)	130	+	170	+
molybdenum (Mo)	<1,5	-	<1,5	-
nickel (Ni)	17	-	12	-
zinc (Zn)	80	-	130	+

CSS (depth m bgl)	1 (0-0.5)	2 (0-0.5)	3 (0-0.5)	4 (0-0.5)
Lutum (%)	8,9	6,4	6,4	6,4
Organic matter (%)	35,4	35,0	35,0	35,0
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)				
PAH (sum 10)	1,8	- 1,3	- 2,4	- 2,5
CHLORINATED HYDROCARBONS				
monochlorobenzene				<0,040 -
dichlorobenzenes (sum)				n.d.
trichlorobenzenes (sum)				n.d.
tetrachlorobenzenes				n.d.
pentachlorobenzene				<0,0010 -
hexachlorobenzene				<0,0010 -
PCB's (sum 7)	0,012	- n.d.	n.d.	n.d.
PESTICIDES				
drins (som)				n.d.
alfa-endosulfan				<0,0010 -
alfa-HCH				<0,0010 -
beta-HCH				<0,0010 -
gamma-HCH				<0,0010 -
heptachlor				<0,0010 -
heptachlorepoxyde				<0,0010 -
DDT/DDE/DDD (sum)				0,029 -
TOTAL PETROLEUM HYDROCARBONS (TPH)				
TPH (C10-C40)	62	- <20	- 59	- <40

n.d.: not detectable

n/a: not applicable (testing values for Ba were withdrawn)

Interpretation results topsoil

In the topsoil, the AW-value (Dutch background value) is exceeded for cobalt, mercury and lead in CSS 1, 2, 3 and 4. In CSS 2 and 3, the AW-value is also exceeded for copper and zinc.

A screening for organochlorine pesticides in CSS 4 (the alleged location of the former greenhouse) revealed the presence of DDT and decomposition products at a concentration below the AW-value.

All other analyses were present in concentrations below the Dutch background values.

Table 4.2 Analysis results and interpretation subsoil (mg/kg) grassland - west

CSS (depth m bgl)	5 (1-1.5)		6 (1-1.5)	
Lutum (%)	1,2		1	
Organic matter (%)	77,9		81	
METALS				
barium (Ba)	91	n/a	81	n/a
cadmium (Cd)	< 0,17	-	< 0,17	-
cobalt (Co)	17	+	10	+
copper (Cu)	< 5	-	< 5	-
mercury (Hg)	< 0,05	-	< 0,05	-
lead (Pb)	< 13	-	< 13	-
molybdenum (Mo)	< 1,5	-	< 1,5	-
nickel (Ni)	< 3	-	< 3	-
zinc (Zn)	< 17	-	< 17	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)				
PAH (sum 10)	0,1	-	n.d.	-
CHLORINATED HYDROCARBONS				
PCB (sum 7)	0,025	-	n.d.	-
TOTAL PETROLEUM HYDROCARBONS (TPH)				
TPH (C10-C40)	310	-	< 120	-

n.a.: not detectable

n/a: not applicable (testing values for Ba were withdrawn)

Interpretation results subsoil

In the subsoil, the AW-value (Dutch background value) is exceeded for cobalt. All other analyses were present in concentrations below the Dutch background values.

Table 4.3 Analysis results and interpretation groundwater (µg/l) grassland - west

Monitoring well	66		67		68	
Filter Depth (m bgl)	(1-2)		(1-2)		(1-2)	
METALS						
Barium (Ba)	71	+	53	+	72	+
Cadmium (Cd)	<0.80	-	<0.80	-	<0.80	-
Cobalt (Co)	<5.0	-	<5.0	-	<5.0	-
Copper (Cu)	<5.0	-	<5.0	-	<5.0	-
Mercury (Hg)	<0.05	-	<0.05	-	<0.05	-
Lead (Pb)	<10	-	<10	-	<10	-
Molybdenum (Mo)	<3.0	-	<3.0	-	<3.0	-

Monitoring well	66		67		68	
Filter Depth (m bgl)	(1-2)		(1-2)		(1-2)	
Nickel (Ni)	<10	-	<10	-	<10	-
Zinc (Zn)	<20	-	<20	-	<20	-
AROMATIC COMPOUNDS						
Benzene	<0.20	-	<0.20	-	<0.20	-
Ethylbenzene	<0.30	-	<0.30	-	<0.30	-
Toluene	<0.30	-	<0.30	-	<0.30	-
Sum of Xylene	n.d.	-	n.d.	-	n.d.	-
Styrene	<0.30	-	<0.30	-	<0.30	-
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	<0.050	-	0.10	+	<0.050	-
CHLORINATED HYDROCARBONS						
Vinyl Chloride	<0.10	-	<0.10	-	<0.10	-
Dichloromethane	<0.20	-	<0.20	-	<0.20	-
1,1-Dichloroethane	<0.60	-	<0.60	-	<0.60	-
1,2-Dichloroethane	<0.60	-	<0.60	-	<0.60	-
1,1-Dichloroethylene	<0.10	-	<0.10	-	<0.10	-
Sum of 1,2-Dichloroethenes	n.d.	-	n.d.	-	n.d.	-
dichloorpropaan	n.d.	-	n.d.	-	n.d.	-
Chloroform	<0.60	-	<0.60	-	<0.60	-
1,1,1-Trichloroethane	<0.10	-	<0.10	-	<0.10	-
1,1,2-Trichloroethane	<0.10	-	<0.10	-	<0.10	-
Trichloroethylene (TCE)	<0.60	-	<0.60	-	<0.60	-
Carbontetrachloride (tetra)	<0.10	-	<0.10	-	<0.10	-
Perchloroethylene (PCE)	<0.10	-	<0.10	-	<0.10	-
OTHER COMPOUNDS						
TPH (C10-C40)	<100	-	<100	-	<100	-
Tribromomethane (bromoform)	<0.60	<<	<0.60	<<	<0.60	<<
Not in STI-list						
pH (-)	6.6		6.0		6.4	
EC (µS/cm)	515		619		536	

n.d.: not detectable.

<<: concentration is smaller then reported limit and/or T-value

>>: concentration is bigger then the S-value

Interpretation results groundwater

In the groundwater, the reference value (S-value) is exceeded for barium in monitoring wells 66, 67 and 68. In monitoring well 67, the reference value is also exceeded for naphthalene.

All other analyses were present in concentrations below the reference values

4.4.2 Grassland - east

Table 4.4 presents the analytical results (and evaluation against the Dutch STI framework) for the topsoil and subsoil of grassland - east. The analytical results of the groundwater are presented in table 4.5.

Table 4.4 Analysis results and interpretation topsoil and subsoil (mg/kg) grassland - east

CSS (depth m bgl)	7 (0-0.5)		9 (0-0.5)		10 (0-0.5)		11 (1-1.5)		8 (1-1.5)	
Lutum (%)	3,8		6,4		6,4		1		1	
Organic matter (%)	35,7		35		35		85		85	
METALS										
barium (Ba)	82	n/a	110	n/a	120	n/a	73	n/a	61	n/a
cadmium (Cd)	0,55	-	0,63	-	1,6	+	< 0,17	-	< 0,17	-
cobalt (Co)	7,8	+	7,3	+	6,4	+	8,6	+	16	+
copper (Cu)	46	+	51	+	85	+	< 5	-	< 5	-
mercury (Hg)	0,46	+	0,63	+	1,2	+	< 0,05	-	< 0,05	-
lead (Pb)	94	+	140	+	260	+	< 13	-	< 13	-
molybdenum (Mo)	< 1,5	-	< 1,5	-	< 1,5	-	< 1,5	-	< 1,5	-
nickel (Ni)	12	-	11	-	13	-	< 3	-	< 3	-
zinc (Zn)	83	-	150	+	260	+	< 17	-	< 17	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)										
PAH (sum 10)	1,4	-	2,3	-	6,8	+	n.d.	-	n.d.	-
CHLORINATED HYDROCARBONS										
PCB (sum 7)	0,0025	-	0,0064	-	0,011	-	n.d.	-	n.d.	-
TOTAL PETROLEUM HYDROCARBONS (TPH)										
TPH (C10-C40)	67	-	80	-	47	-	190	-	320	-

n.d.: not detectable

n/a: not applicable (testing values for Ba were withdrawn)

Interpretation results topsoil

In the topsoil, the AW-value (Dutch background value) is exceeded for cobalt, copper, mercury and lead in CSS 7, 9 and 10. In CSS 9 and 10, the AW-value is also exceeded for zinc.

In addition, in CSS 10 the AW-value is exceeded for cadmium and PAH.

All other analyses were present in concentrations below the Dutch background values.

Interpretation results subsoil

In the subsoil, the AW-value (Dutch background value) is exceeded for cobalt. All other analyses were present in concentrations below the Dutch background values.

Table 4.5 Analysis results and interpretation groundwater (µg/l) grassland - east

Monitoring well	69		70	
Filter Depth (m bgl)	(1-2)		(1-2)	
METALS				
Barium (Ba)	39	-	89	+
Cadmium (Cd)	<0.80	-	<0.80	-
Cobalt (Co)	<5.0	-	<5.0	-
Copper (Cu)	21	+	<5.0	-
Mercury (Hg)	0.07	+	<0.05	-
Lead (Pb)	<10	-	<10	-
Molybdenum (Mo)	<3.0	-	<3.0	-
Nickel (Ni)	12	-	<10	-
Zinc (Zn)	140	+	<20	-
AROMATIC COMPOUNDS				
Benzene	<0.20	-	<0.20	-
Ethylbenzene	<0.30	-	<0.30	-
Toluene	<0.30	-	<0.30	-
Sum of Xylene	n.d.	-	n.d.	-
Styrene	<0.30	-	<0.60	-
POLYCYCLIC AROMATIC HYDROCARBONS				
Naphthalene	<0.050	-	0.11	+
CHLORINATED HYDROCARBONS				
Vinyl Chloride	<0.10	-	<0.10	-
Dichloromethane	<0.20	-	<0.20	-
1,1-Dichloroethane	<0.60	-	<0.60	-
1,2-Dichloroethane	<0.60	-	<0.60	-
1,1-Dichloroethylene	<0.10	-	<0.10	-
Sum of 1,2-Dichloroethenes	n.d.	-	n.d.	-
dichloorpropaan	n.d.	-	n.d.	-
Chloroform	<0.60	-	<0.60	-
1,1,1-Trichloroethane	<0.10	-	<0.10	-
1,1,2-Trichloroethane	<0.10	-	<0.10	-
Trichloroethylene (TCE)	<0.60	-	<0.60	-
Carbontetrachloride (tetra)	<0.10	-	<0.10	-
Perchloroethylene (PCE)	<0.10	-	<0.10	-
OTHER COMPOUNDS				
TPH (C10-C40)	<100	-	<100	-
Tribromomethane (bromoform)	<0.60	<<	<0.60	<<
Not in STI-list				
pH (-)	6.5		6.9	
EC (µS/cm)	268		979	

n.d.: not detectable.

<<: concentration is smaller then reported limit and/or T-value

>>: concentration is bigger then the S-value

Interpretation results groundwater

In the groundwater, the reference values are exceeded for copper, mercury, zinc and barium in monitoring well 69. In monitoring well 70, the reference values are exceeded for barium and naphthalene.

All other analyses were present in concentrations below the reference values.

4.4.3 PAOCs

Table 4.6 presents the analytical results (and evaluation against the Dutch STI framework) for the soil samples of the identified PAOCs A to E. The analytical results of the groundwater are presented in tables 4.7 and 4.8.

Table 4.6 Analysis results and interpretation soil (mg/kg) PAOCs A to E

CSS (depth m bgl)	A (0.08-0.5)		B (0-0.8)		C (0.08-0.3)		D (0.3-1)		E (0-2)	
Lutum (%)	1		1		1		1		1	
Organic matter (%)	0,1		0,1		0,1		81		0,1	
METALS										
barium (Ba)	31	n/a	54	n/a	110	n/a	130	n/a	16	n/a
cadmium (Cd)	< 0,17	-	< 0,17	-	< 0,17	-	0,79	-	< 0,17	-
cobalt (Co)	4,6	+	17	+	6,9	+	14	+	7,5	+
copper (Cu)	< 5	-	7,4	-	< 5	-	51	-	11	-
mercury (Hg)	< 0,05	-	0,07	-	0,18	+	0,48	+	< 0,05	-
lead (Pb)	< 13	-	< 13	-	< 13	-	160	+	< 13	-
molybdenum (Mo)	< 1,5	-	< 1,5	-	2,5	+	< 1,5	-	< 1,5	-
nickel (Ni)	4,1	-	5,6	-	< 3	-	14	+	5,2	-
zinc (Zn)	< 17	-	54	-	27	-	110	-	52	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)										
PAH (sum 10)	0,056	-	1,2	-	0,48	-	1,8	-	0,088	-
CHLORINATED HYDROCARBONS										
PCB (sum 7)	n.d.	-	n.d.	-	n.d.	-	n.d.	-	n.d.	-
PESTICIDES										
chloordane							n.d.	-		
DDT (total)							n.a.	-		
DDE (total)							0,01	-		
DDD (total)							0,079	+		
drins (sum)							n.d.	-		
alfa-endosulfan							< 0,001	-		
alfa-HCH							< 0,001	-		
beta-HCH							< 0,001	-		
gamma-HCH							< 0,001	-		

CSS (depth m bgl)	A (0.08-0.5)	B (0-0.8)	C (0.08-0.3)	D (0.3-1)	E (0-2)
Lutum (%)	1	1	1	1	1
Organic matter (%)	0,1	0,1	0,1	81	0,1

heptachlor	< 0,001	-
heptachlorepoxide	< 0,001	-

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	< 20	-	< 20	-	< 20	-	160	-	< 20	-
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n.d.: not detectable

n/a: not applicable (testing values for Ba were withdrawn)

Interpretation results soil

The AW-value is exceeded for cobalt in all CSS. In the CSS from PAOC nr C (oil/water separator) the AW-value is exceeded for mercury and molybdenum, too. In the CSS from PAOC nr D (waste storage) the AW-value is also exceeded for mercury, lead, nickel and DDD (a metabolite of the pesticide DDT), apart from cobalt.

All other analyses were present in concentrations below the Dutch background values.

Table 4.7 Analysis results and interpretation groundwater (µg/l) PAOCs A to D

Location	A		B		C		D	
Monitoring well	73		71		74		72	
Filter Depth (m bgl)	(1-2)		(1-2)		(1-2)		(1-2)	
METALS								
Barium (Ba)	110	+	27	-	66	+	36	-
Cadmium (Cd)	<0.80	-	<0.80	-	<0.80	-	<0.80	-
Cobalt (Co)	<5.0	-	<5.0	-	<5.0	-	<5.0	-
Copper (Cu)	<5.0	-	<5.0	-	<5.0	-	<5.0	-
Mercury (Hg)	<0.05	-	<0.05	-	<0.05	-	<0.05	-
Lead (Pb)	<10	-	<10	-	<10	-	<10	-
Molybdenum (Mo)	17	+	13	+	5.5	+	11	+
Nickel (Ni)	<10	-	<10	-	<10	-	<10	-
Zinc (Zn)	<20	-	<20	-	<20	-	<20	-
AROMATIC COMPOUNDS								
Benzene	<0.20	-	<0.20	-	<0.20	-	<0.20	-
Ethylbenzene	<0.30	-	<0.30	-	<0.30	-	<0.30	-
Toluene	<0.30	-	<0.30	-	<0.30	-	<0.30	-
Sum of Xylene	0.41	+	n.d.	-	n.d.	-	0.95	+
Styrene	<0.60	-	<0.30	-	0.31	-	0.34	-
POLYCYCLIC AROMATIC HYDROCARBONS								
Naphthalene	43	++	<0.050	-	0.16	+	<0.050	-

Reference R001-4707529BKT-beb-V02-NL

Location	A		B		C		D	
Monitoring well	73		71		74		72	
Filter Depth (m bgl)	(1-2)		(1-2)		(1-2)		(1-2)	
CHLORINATED HYDROCARBONS								
Vinyl Chloride	<0.10	-	<0.10	-	<0.10	-	<0.10	-
Dichloromethane	<0.20	-	<0.20	-	<0.20	-	<0.20	-
1,1-Dichloroethane	<0.60	-	<0.60	-	<0.60	-	<0.60	-
1,2-Dichloroethane	<0.60	-	<0.60	-	<0.60	-	<0.60	-
1,1-Dichloroethylene	<0.10	-	<0.10	-	<0.10	-	<0.10	-
Sum of 1,2-Dichloroethenes	n.d.	-	n.d.	-	n.d.	-	n.d.	-
dichloorpropaan	n.d.	-	n.d.	-	n.d.	-	n.d.	-
Chloroform	<0.60	-	<0.60	-	<0.60	-	<0.60	-
1,1,1-Trichloroethane	<0.10	-	<0.10	-	<0.10	-	<0.10	-
1,1,2-Trichloroethane	<0.10	-	<0.10	-	<0.10	-	<0.10	-
Trichloroethylene (TCE)	<0.60	-	<0.60	-	<0.60	-	<0.60	-
Carbontetrachloride (tetra)	<0.10	-	<0.10	-	<0.10	-	<0.10	-
Perchloroethylene (PCE)	<0.10	-	<0.10	-	<0.10	-	<0.10	-
OTHER COMPOUNDS								
TPH (C10-C40)	280	+	<100	-	<100	-	<100	-
Tribromomethane (bromoform)	<0.60	<<	<0.60	<<	<0.60	<<	<0.60	<<
Not in STI-list								
pH (-)	11.5		9.7		7.5		8.9	
EC (µS/cm)	1153		555		1295		337	
n.d.: not detectable.								
<<: concentration is smaller then reported limit and/or T-value								
>>: concentration is bigger then the S-value								

Table 4.8 Analysis results and interpretation groundwater (µg/l) for PAOC nr E

Location	E		E		E	
Monitoring well	75		76		77	
Filter Depth (m bgl)	(1-2)		(1-2)		(1-2)	
METALS						
Barium (Ba)	88	+	100	+	130	+
Cadmium (Cd)	<0.80	-	<0.80	-	<0.80	-
Cobalt (Co)	5.5	-	13	-	<5.0	-
Copper (Cu)	<5.0	-	<5.0	-	<5.0	-
Mercury (Hg)	<0.05	-	<0.05	-	<0.05	-
Lead (Pb)	<10	-	<10	-	<10	-
Molybdenum (Mo)	<3.0	-	12	+	<3.0	-
Nickel (Ni)	<10	-	<10	-	<10	-
Zinc (Zn)	<20	-	<20	-	<20	-
AROMATIC COMPOUNDS						
Benzene	<0.20	-	<0.20	-	<0.20	-
Ethylbenzene	<0.30	-	<0.30	-	<0.30	-
Toluene	<0.30	-	<0.30	-	<0.30	-
Sum of Xylene	n.d.	-	n.d.	-	n.d.	-
Styrene	<0.30	-	<0.30	-	<0.30	-

Location	E	E	E
Monitoring well	75	76	77
Filter Depth (m bgl)	(1-2)	(1-2)	(1-2)

POLYCYCLIC AROMATIC HYDROCARBONS

Naphthalene	<0.050	-	<0.050	-	<0.050	-
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CHLORINATED HYDROCARBONS

Vinyl Chloride	<0.10	-	<0.10	-	<0.10	-
Dichloromethane	<0.20	-	<0.20	-	<0.20	-
1,1-Dichloroethane	<0.60	-	<0.60	-	<0.60	-
1,2-Dichloroethane	<0.60	-	<0.60	-	<0.60	-
1,1-Dichloroethylene	<0.10	-	<0.10	-	<0.10	-
Sum of 1,2-Dichloroethenes	n.d.	-	n.d.	-	n.d.	-
dichloorpropaan	n.d.	-	n.d.	-	n.d.	-
Chloroform	<0.60	-	<0.60	-	<0.60	-
1,1,1-Trichloroethane	<0.10	-	<0.10	-	<0.10	-
1,1,2-Trichloroethane	<0.10	-	<0.10	-	<0.10	-
Trichloroethylene (TCE)	<0.60	-	<0.60	-	<0.60	-
Carbontetrachloride (tetra)	<0.10	-	<0.10	-	<0.10	-
Perchloroethylene (PCE)	<0.10	-	<0.10	-	<0.10	-

OTHER COMPOUNDS

TPH (C10-C40)	<100	-	<100	-	<100	-
Tribromomethane (bromoform)	<0.60	<<	<0.60	<<	<0.60	<<

Not in STI-list

pH (-)	6.5	6.8	6.3
EC (µS/cm)	855	1328	824

n.d.: not detectable

<<: concentration is smaller then reported limit and/or T-value

>>: concentration is bigger then the S-value

Interpretation results groundwater

In the groundwater at PAOC nr A (oils and lubricants store) the reference values are exceeded for barium, molybdenum, xylene and mineral oil, whereas the level of naphthalene exceeds the intermediate value (T-value). At PAOC nr B (technical workshop) the reference value is exceeded for molybdenum. At PAOC nr C (oil/water separator) the reference values are exceeded for barium, molybdenum and naphthalene. At PAOC nr D (waste storage) the reference values are exceeded for molybdenum and xylene. At PAOC nr E (production area), the reference value is exceeded for barium in monitoring wells 75, 76 and 77. In monitoring well 76, the AW-value is also exceeded for molybdenum.

All other analyses were present in concentrations below the Dutch reference values.

4.4.4 Residential house

Table 4.9 presents the analytical results (and evaluation against the Dutch STI framework) for the soil sample taken at the residential houses under one roof situated north of the production building. This sample was taken to obtain a reference soil sample for assessing local background values.

Table 4.9 Analysis results and interpretation topsoil (mg/kg) residential house

CSS (depth m bgl)	46 (0-0.5)	
Lutum (%)	3,7	
Organic matter (%)	17,7	
METALS		
barium (Ba)	32	n/a
cadmium (Cd)	< 0,17	-
cobalt (Co)	12	+
copper (Cu)	10	-
mercury (Hg)	< 0,05	-
lead (Pb)	< 13	-
molybdenum (Mo)	< 1,5	-
nickel (Ni)	9,3	-
zinc (Zn)	< 17	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)		
PAH (sum 10)	1,1	-
CHLORINATED HYDROCARBONS		
PCB (sum 7)	n.d.	-
TOTAL PETROLEUM HYDROCARBONS (TPH)		
TPH (C10-C40)	< 20	-
n.d.: not detectable		
n/a: not applicable (testing values for Ba were withdrawn)		

Interpretation results topsoil

The AW-value is exceeded for cobalt. All other analyses were present in concentrations below the Dutch background values.

4.4.5 Asbestos

A piece of alleged roofing plate from the small shed (sheepfold) suspected of containing asbestos was collected on the soil surface on the grassland-east. This piece was analysed and contained 10-15 % of Chrysotile (white asbestos, by far the most commonly encountered type) and 2-5 % of Crocydolite (blue asbestos).

Given the fact that the asbestos is present in a bound compacted product form, and not in free fibre form, there are no health risks anticipated. It is recommended however to properly maintain the roof of the sheepfold as a matter of good housekeeping. Extra costs for the controlled removal of the asbestos containing roof plating will have to be reckoned with in case of demolition of the sheepfold or replacement of the roof. These costs however are not likely to be material.

4.4.6 Risk assessment

In the soil and the groundwater, the concentration levels of all analysed parameters were measured below the Dutch I-values. As the measured values do not exceed soil and groundwater quality threshold limits it can be concluded that these substances do not constitute a health risk or a risk to the environment.

5 Conclusions and recommendations

At the request of Desch, Tauw carried out a Phase II Soil & Groundwater investigation of the production site of E-PLA along the Oude Kerkpad 4e in Ter Aar, the Netherlands. The soil and groundwater investigation was carried out in relation to the contemplated acquisition of the site by Desch. The overall objective of the present investigation is to assess soil and groundwater quality.

The site produces plastic plant pots and containers by extrusion and injection moulding on the basis of granules of polypropylene plastic. The total surface area of the site is estimated at 3.5 ha, of which 2.5 ha are grasslands, located to the west and east of the production building.

The following potential areas of concern (PAOC) were observed to have potential to impact the subsurface (soil and groundwater):

- F. Oils and lubricants stored in drums and waste oil storage tank, located indoors on concrete flooring (about 20 m²)
- G. Technical workshop for maintenance and repairs, located indoors with concrete flooring (about 30 m²)
- H. Oil/water separator, located outdoors
- I. Waste storage facilities, wood and scrap metals containers located outdoors
- J. Production area where oil cooled moulding machines are located on concrete flooring (about 2,000-2,500 m²)

Soil and groundwater at these five PAOCs were investigated. In addition the two non-suspect grassland areas were investigated. An additional soil sample was taken at the location of two on-site residential houses under one roof situated to the north of the production building. This latter sample was taken to obtain a reference for the local background levels in the soils.

The fieldwork was conducted on February 23rd, 24th and 25th, 2010. Samples were taken from each different soil layer logged at the 77 drilling points. 17 (individual or composite) soil samples, 12 groundwater samples and one asbestos sample were submitted for chemical analyses (metals, PAH, Chlorinated hydrocarbons, Pesticides, TPH and EOX) in the NEN-EN-ISO/IEC 17025 accredited Laboratory of AL-West, Deventer, Netherlands.

The analytical results were evaluated against the formal Dutch testing framework (the Dutch Circular on Soil Remediation 2009 (*Circulaire bodemsanering 2009*), and the Decree on Soil Quality (*Besluit bodemkwaliteit*) of 1 July 2008). This is the so called 'STI evaluation frame'.

Results soil

When tested against the Dutch testing framework, the AW-values (Dutch background values) are exceeded for metals (lead, copper mercury and zinc) in most analysed topsoil samples from the grasslands. These slightly elevated levels can be explained by the fact that the topsoil on the grasslands in this area consists of an anthropogenic layer ('toemaakdek' in Dutch).

In the past for centuries household waste was applied as a natural fertilizer and to improve soil structure and bearing capacity of the peaty soils in the western low-lying part of the Netherlands. Besides organic matter, this waste also contained glazed pottery fragments, pipe heads, scrap metal and so on. The resulting anthropogenic layer is a relatively dark layer in which elevated levels of lead, mercury, copper, zinc and PAH can be present². Most of the peat lands in the western part of The Netherlands have an anthropogenic layer hence this is a well known phenomenon, also by the competent authorities. As no T- or I-values are exceeded there are no business consequences anticipated for Desch.

The background value (AW-value) for cobalt is exceeded in all analysed samples regardless of location or sampling depth. This includes the reference soil sample taken at the location of two residential houses under one roof to the north of the production building. This leads to the assumption that these cobalt concentrations have a natural origin.

Besides some background level exceeding concentrations of metals (which can be explained by the presence of an anthropogenic top layer), there is no soil contamination present at the Potential Areas Of Concern (PAOC) that may suggest impact of the production processes on soil quality. The slightly elevated level of DDD in the soil at PAOC nr D (waste storage) can be explained by the fact that DDT (and metabolites like DDE and DDD) is very persistent in the environment and still can be measured decades after use in agricultural production.

Results groundwater

At both grasslands the applicable reference levels are exceeded for barium and naphthalene. At the identified PAOCs the reference levels are exceeded for barium (nrs A, C and E), molybdenum (nrs A, B, C, D, and E), xylene (nrs A and D), naphthalene (nr C) and mineral oil (nr A).

At PAOC nr A, the oils and lubricants store, the measured concentration level of naphthalene is above the T-value (Intermediate value indicating moderate pollution). There may be a relation with the storage activities here, because naphthalene is known to form part of certain heavy oils and lubricants. The slightly raised level of mineral oil at this PAOC (exceeding the reference value) also points into this direction.

² Karakterisatie van lood in toemaakdekken in de Provincie Zuid-Holland, N. Walraven, Provincie Zuid-Holland, Maart 2007

There are no other exceedences of T-values at the site. There are no exceedences of I-values at the site.

Asbestos

A piece of alleged roofing plate from the small shed (sheepfold) suspected of containing asbestos was collected on the soil surface on the grassland-east. This piece was analysed and contained 10-15 % of Chrysotile (white asbestos, by far the most commonly encountered type) and 2-5 % of Crocidolite (blue asbestos).

Risk assessment

In the soil and the groundwater the concentration levels of all analysed parameters were measured below the Dutch I-values. As the measured values do not exceed soil and groundwater quality threshold limits it can be concluded that these analysed substances do not constitute a health risk or a risk to the environment.

Recommendations

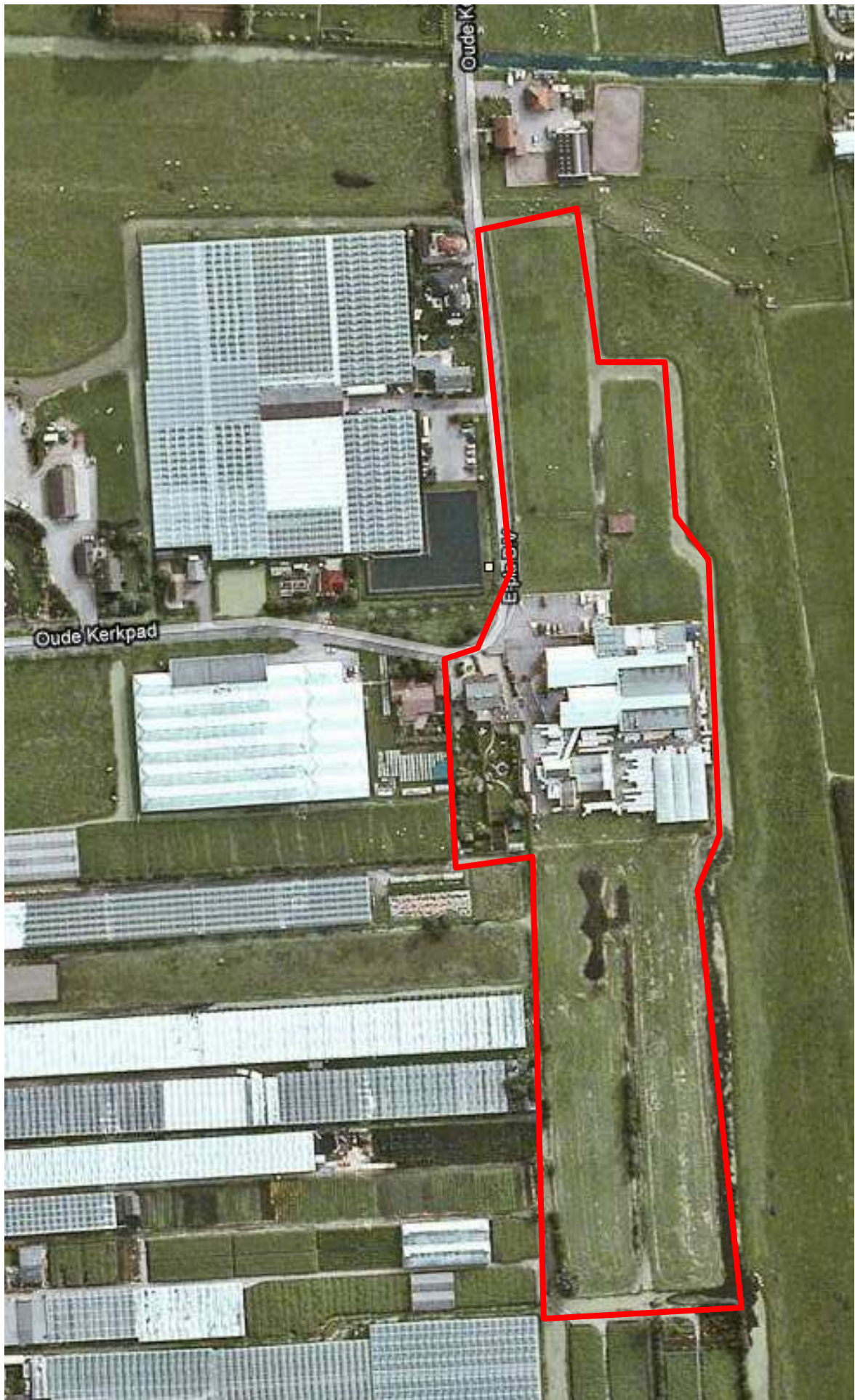
- In the framework of the present transaction the T-value exceedence of naphthalene in the groundwater at the storage for oils and lubricants (PAOC nr A) requires attention. As the front building (including the oils and lubricants storage) dates from 1988, it is likely that the naphthalene pollution here dates from 1988 or later. In the Netherlands all pollution that originated after 1 January 1987 is not considered historic pollution anymore for which specific legislation exists, but falls under the so-called duty-of-care principle. This would mean that the naphthalene pollution would need to be cleaned up. Remediation of the naphthalene pollution in the groundwater may worst case cost up to EUR 100,000 or more depending on the size and severity of the pollution. It is recommended that Desch includes a specific indemnity in the SPA (sales contract) for any ground and groundwater pollution, or negotiates a price discount in return for liability transfer of ground and groundwater pollution to Desch. Depending on how Desch wants to deal with this, re-sampling and re-analysis of the groundwater at the oils and lubricants store could be considered as intermediary step to obtain more information on the size and severity of the naphthalene pollution. Costs for this additional investigation are not material
- It is recommended to properly maintain the roof of the sheepfold as a matter of good housekeeping. Extra costs for the controlled removal of the asbestos containing roof plating will have to be reckoned with in case of demolition of the sheepfold or replacement of the roof. These costs however are not likely to be material

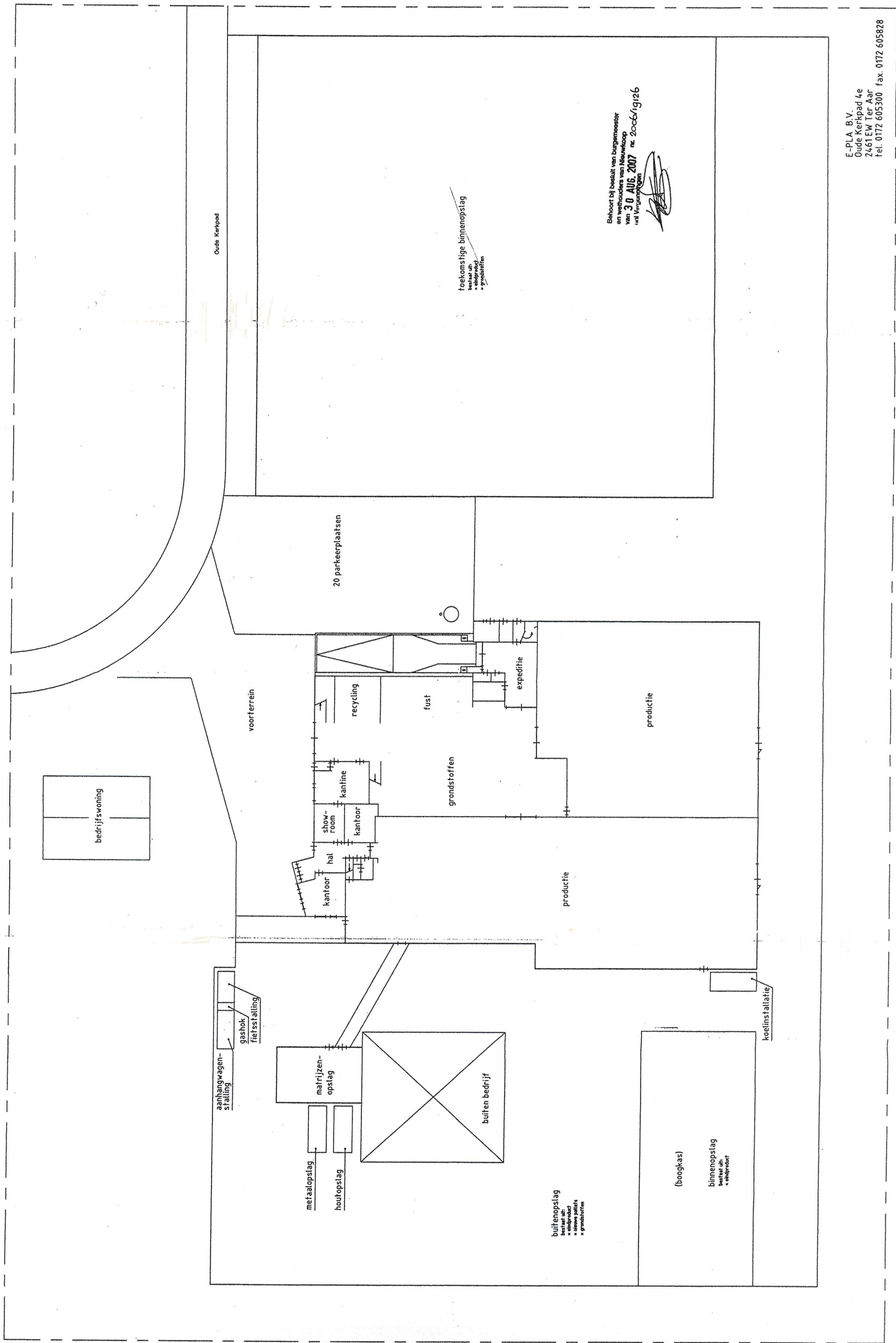
- It is recommended not to use the present Phase II report directly as baseline soil and groundwater report for submission to the authorities. The baseline investigation report however can easily be derived from the present report, but should be edited to become a factual report only. Furthermore the baseline investigation report should be submitted in Dutch language

Appendix

1

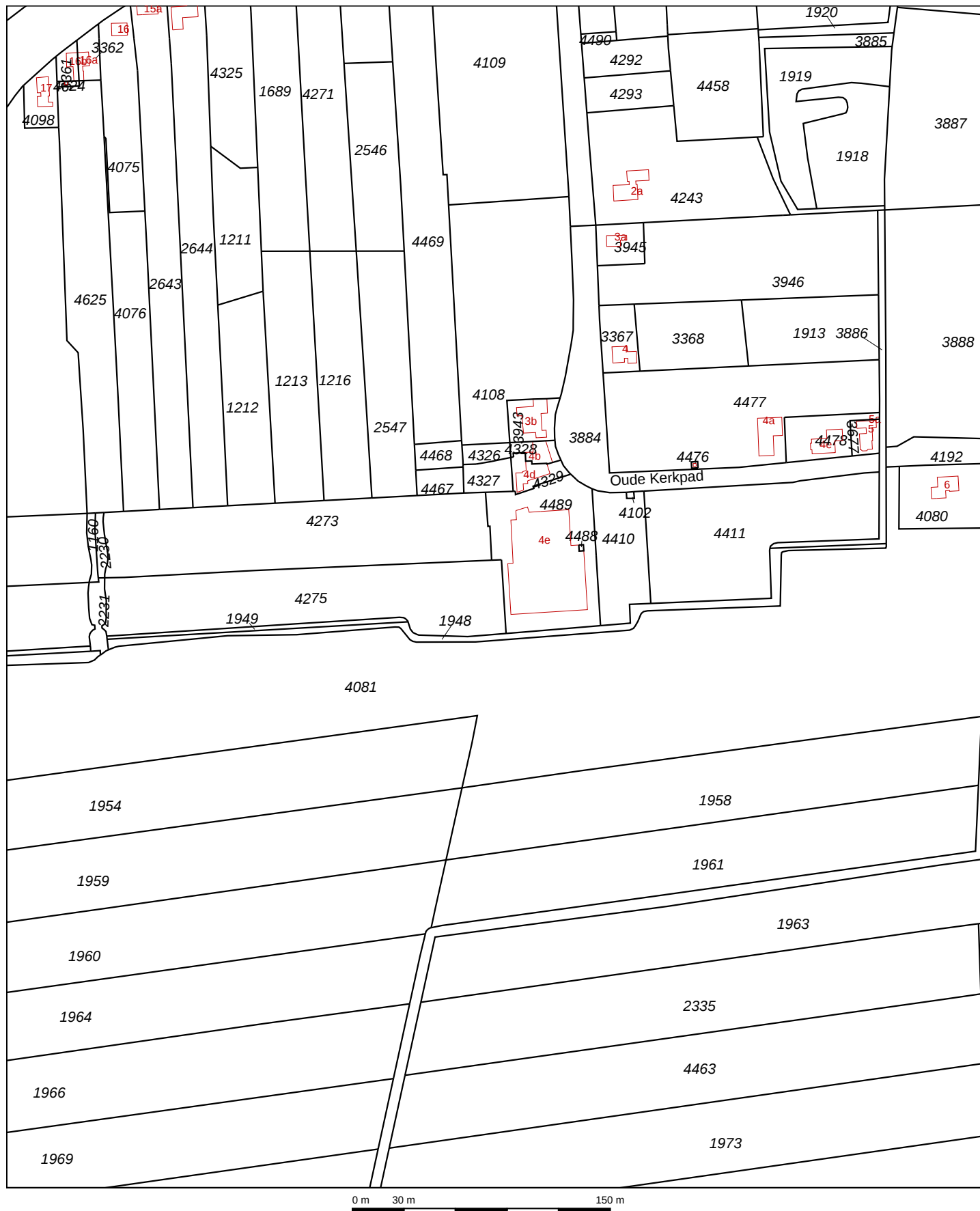
Regional situation and site plans





E-PLA B.V.
Oude Kerkpad 4e
2461 EW Ter Aar
tel. 0172 605300 fax. 0172 605828

PROJECTIE	SCHAAL: 1 : 100	GETUIGEND: J. van Berckel	OPMERKINGEN
	MAATSCHAP	TEKENING NR.: 01	
	DATE: 06-12-2006	GEORIE: -	
EMPEROR PLASTICS B.V.	AANVRAAG VERGUNNING		NOMMER
			1 06-12-06



0 m 30 m 150 m

Deze kaart is noordgericht

Schaal 1:3000

12345 Perceelnummer

25 Huisnummer

— Kadastrale grens

— Voorlopige grens

— Bebouwing

— Overige topografie

Kadastrale gemeente
Sectie
PerceelTER AAR
B
1948Voor een eensluidend uittreksel, ZOETERMEER, 17 februari 2010
De bewaarder van het kadaster en de openbare registersAan dit uittreksel kunnen geen betrouwbare maten worden ontleend.
De Dienst voor het kadaster en de openbare registers behoudt zich de intellectuele
eigendomsrechten voor, waaronder het auteursrecht en het databankenrecht.



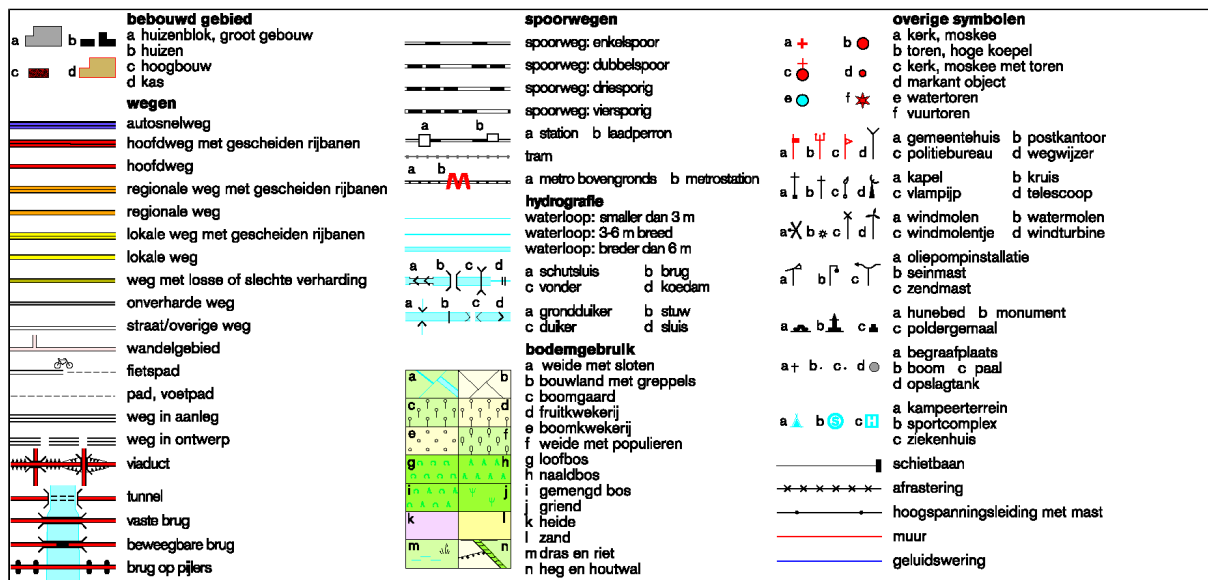
Deze kaart is noordgericht.

Schaal 1: 12500

Hier bevindt zich Kadastraal object TER AAR B 1948

Oostkanaalweg, TER AAR

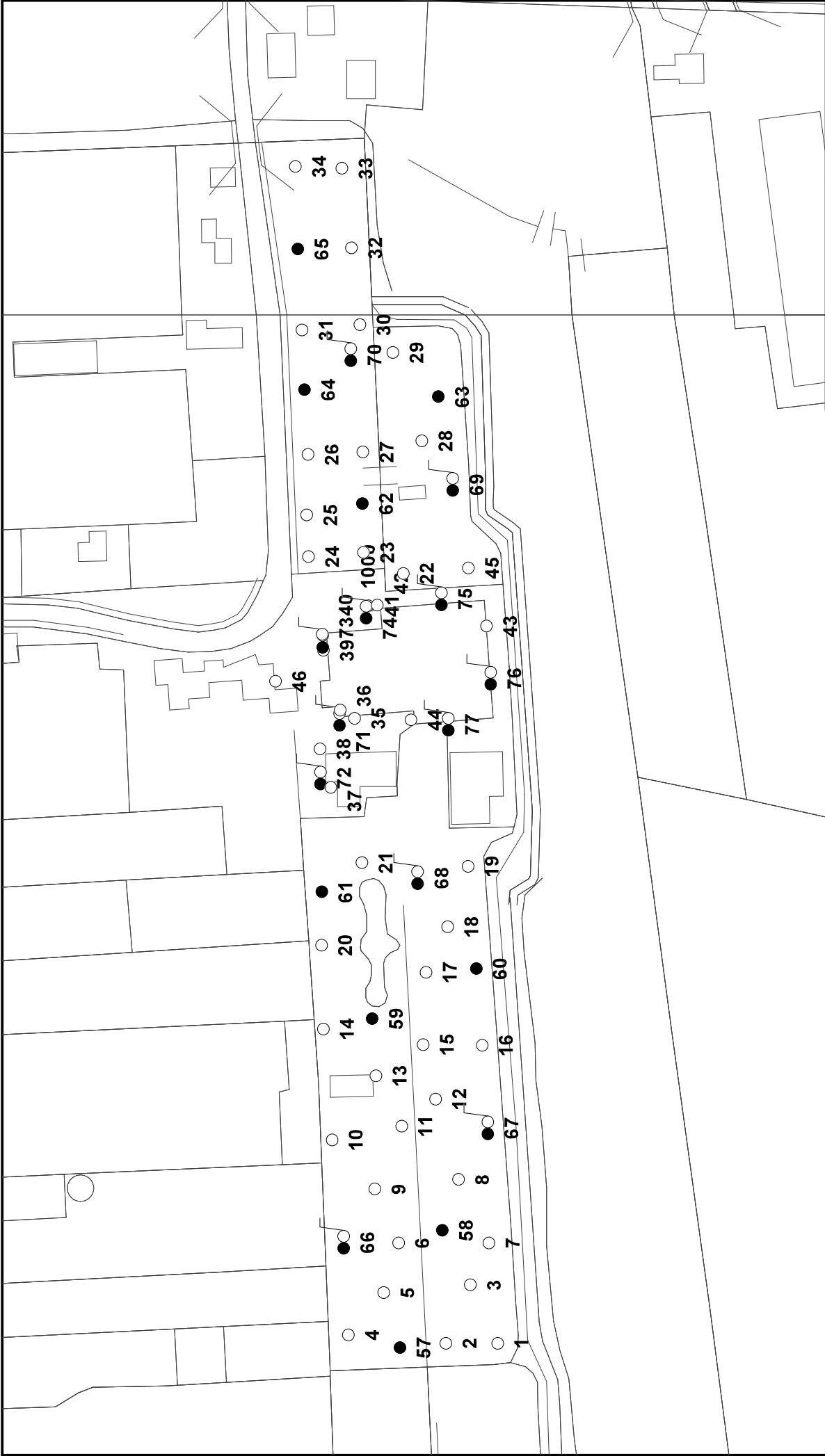
© De auteursrechten en databankenrechten zijn voorbehouden aan de Topografische Dienst Kadaster.



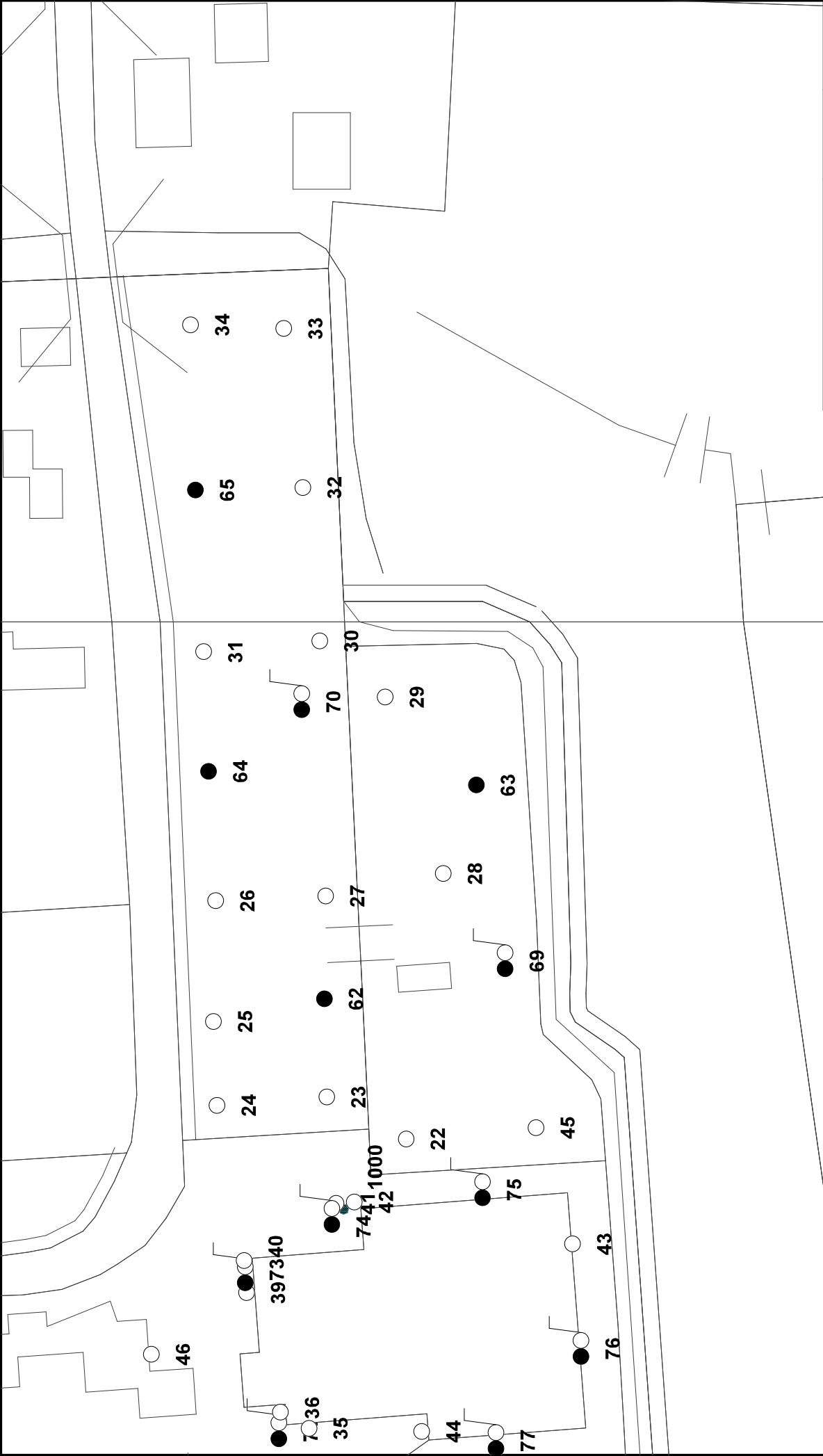
Appendix

2

Maps with location of sampling points



Opdrachtgever Desch-Plantpak	Schaal 1 : 2.000	Status Concept
Project Phase II soil & gw Ter Aar, NL	Formaat A4 210x297 mm	Projectnummer 4707529
Opdracht Overview of all sampling points	Dat. 10.3.2010 11:27	Tekeningnummer P00007
	Gebruik TEGSIS	
	Geoc. bkt	
Pagina 133 7400 AC Overzicht Fax (0570) 694656		



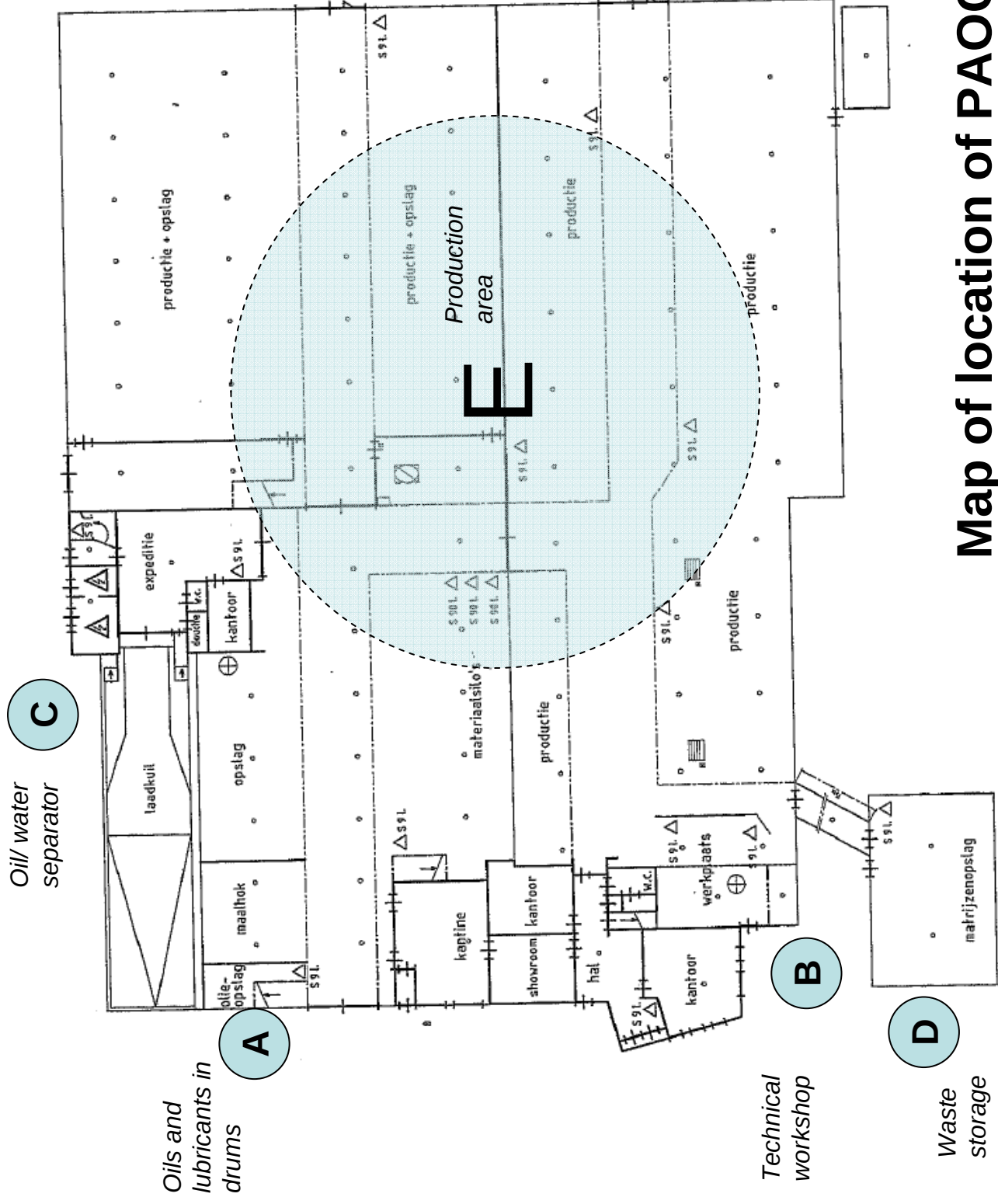
Opdrachtgever Desch-Plantpak	Schaal	1 : 1.000		Status	Concept
	Project	Phase II soil & gw Ter Aar, NL		Projectnummer	4707529
	Formaat	A4 210x297 mm		Tekeningnummer	P00009
	Ordeformaat	Dati. 10.3.2010 11:29		Gebruik	TEGSIS
Sampling points Grassland-east		Gec.		bkt	
Pagina 133 7400 AC, Dinsdijk Fax (0571) 694656					

- Boring
- Boring tot 0.5 m
- Peilbuis
- Vlak Monsters
- Gebouwen

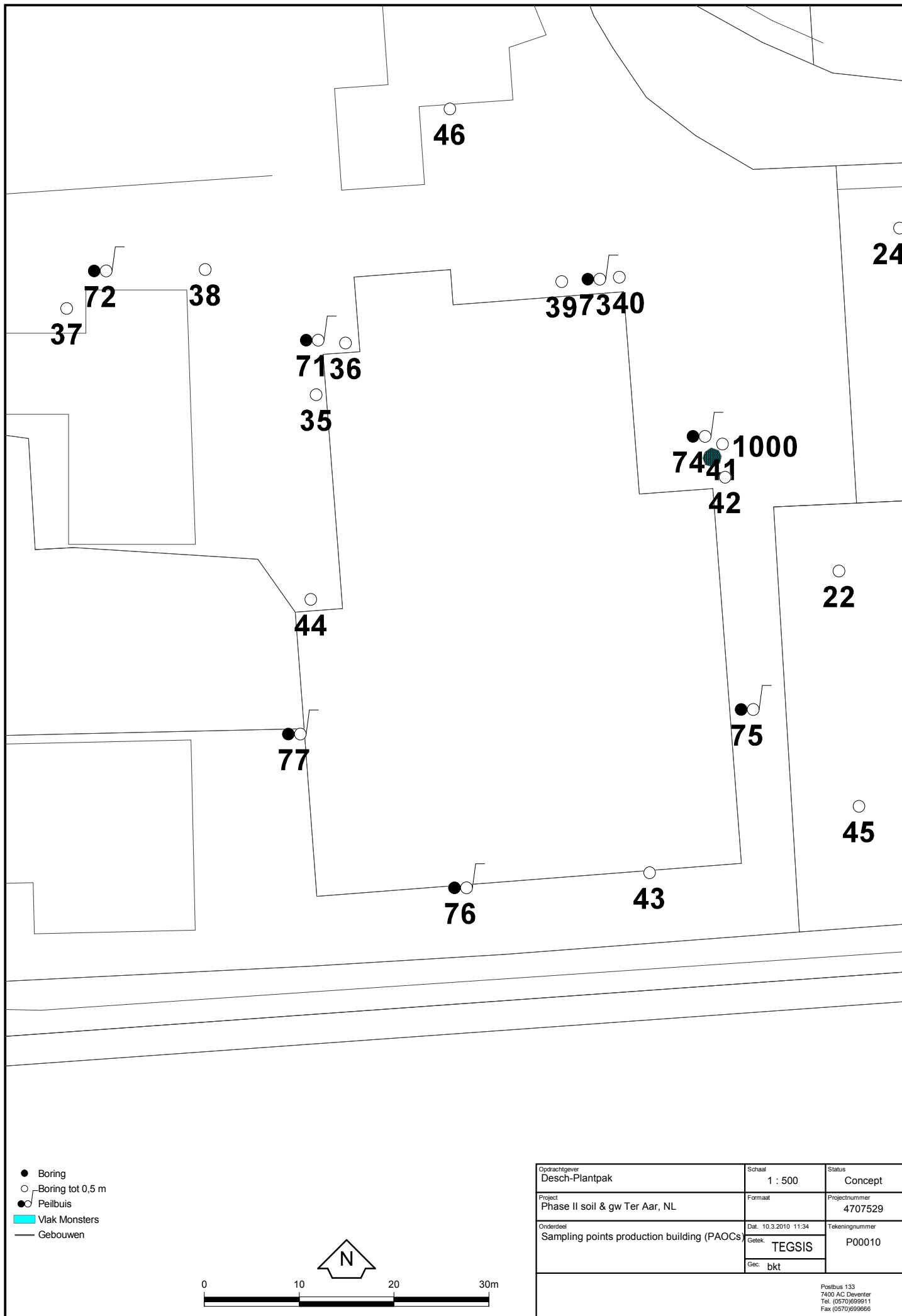


Opdrachtgever Desch-Plantpak		Schaal	1 : 1.250	Status	Concept
Project Phase II soil & gw Ter Aar, NL		Formaat	A4 210x297 mm	Projectnummer	4707529
Ondersdeel Sampling points Grassland West		Dat.	10.3.2010 11:28	Tekeningnummer	P00008
		Gebruik	TEGSIS		
		Geoc.	bkt		

Page 133
7400 AC, Dender
Fax (0571) 694656



Map of location of PAOCs

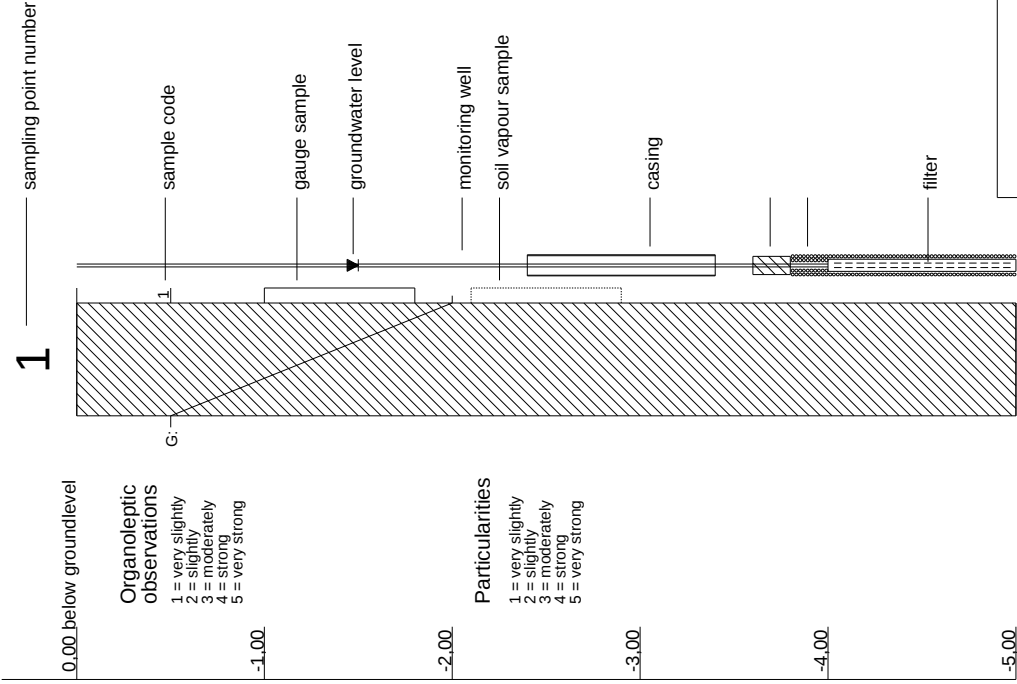
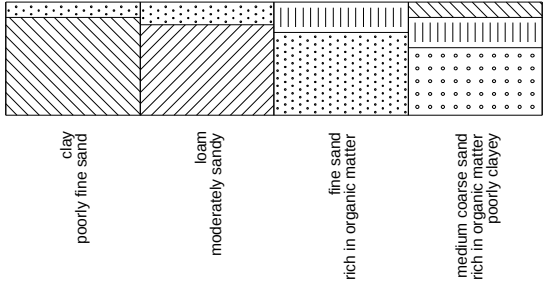
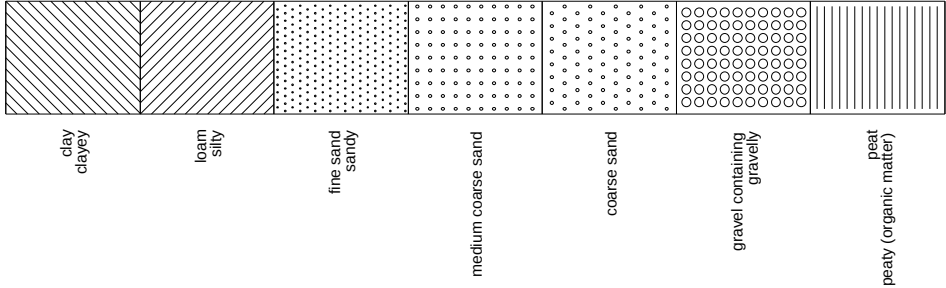


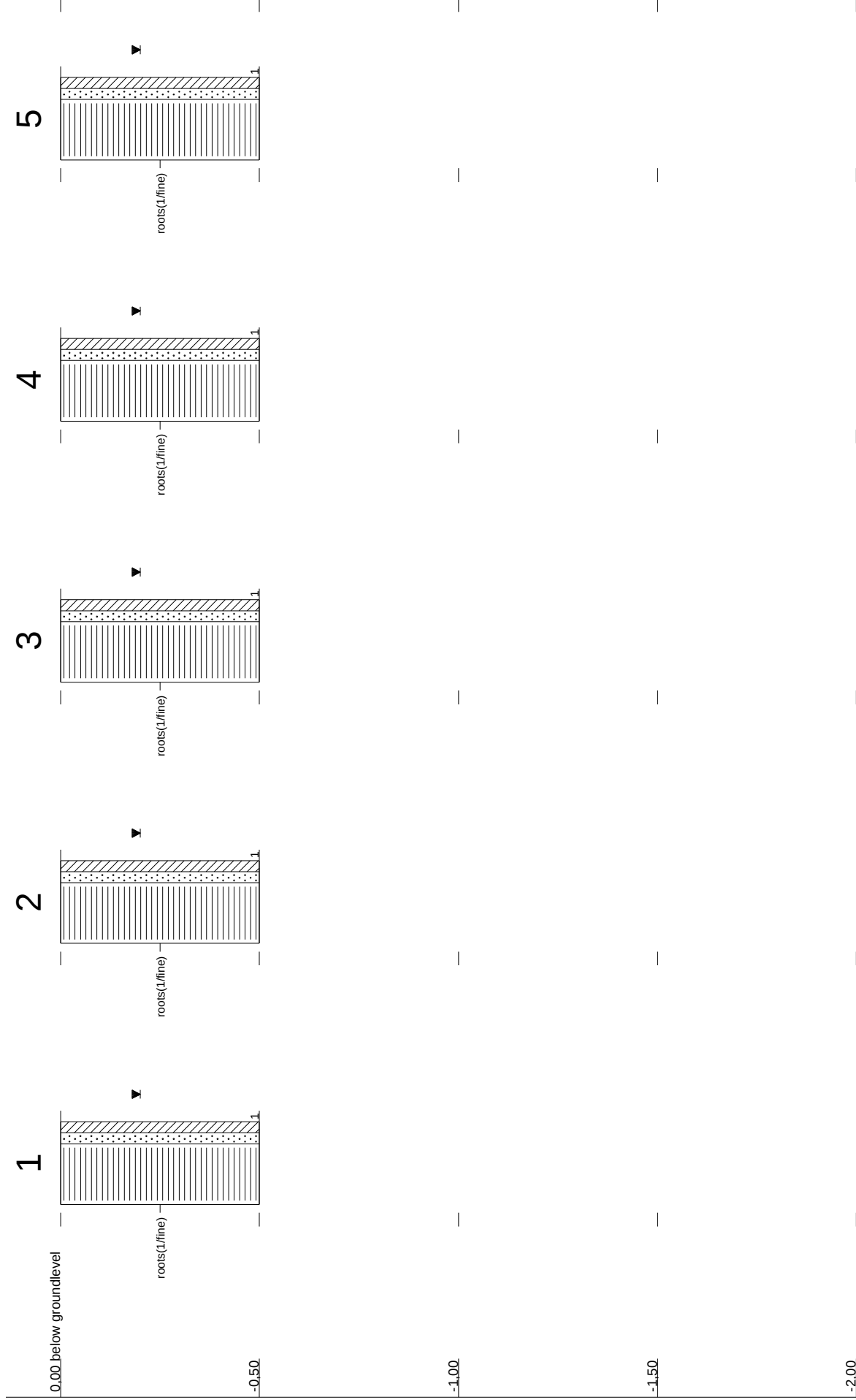
Appendix

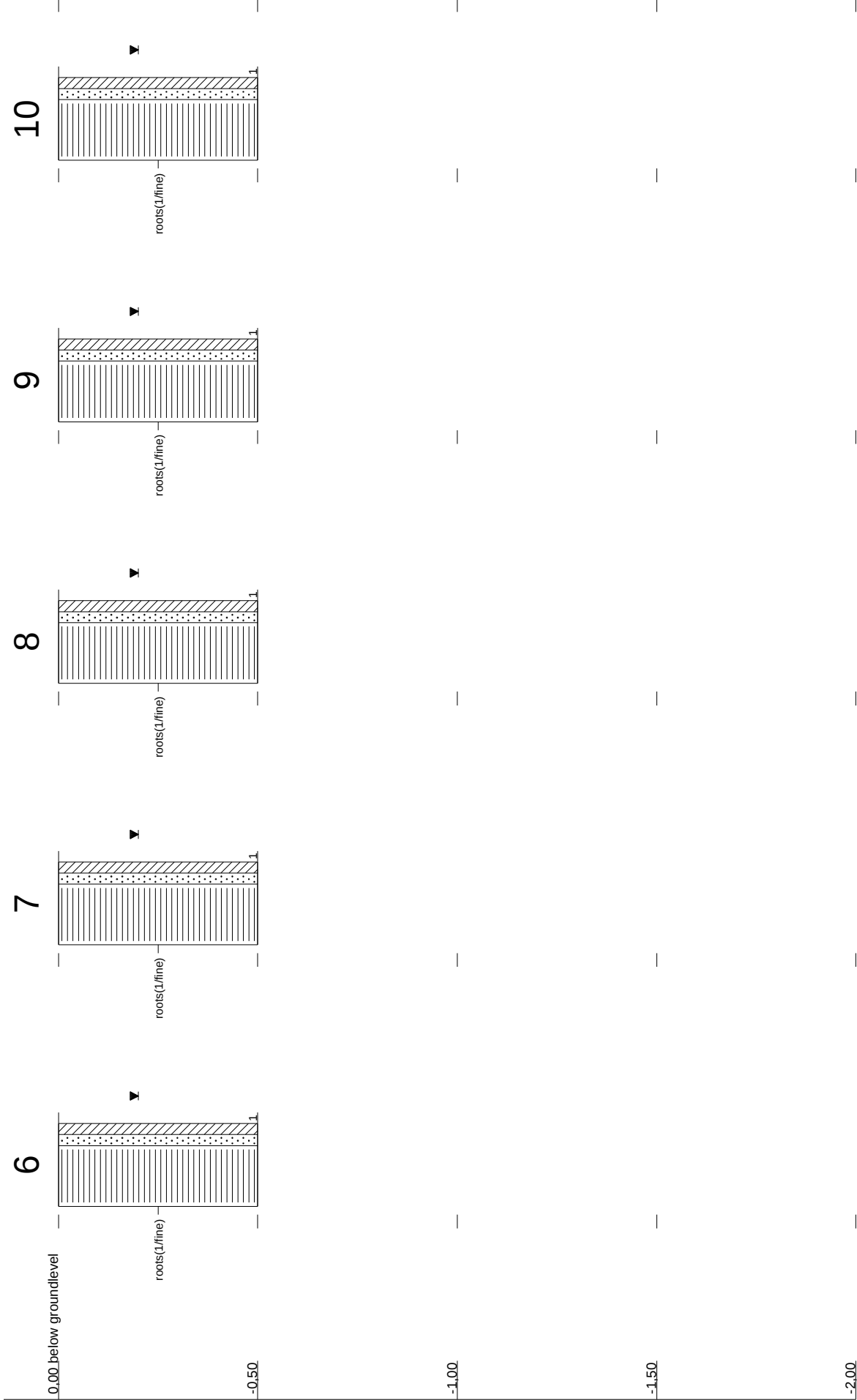
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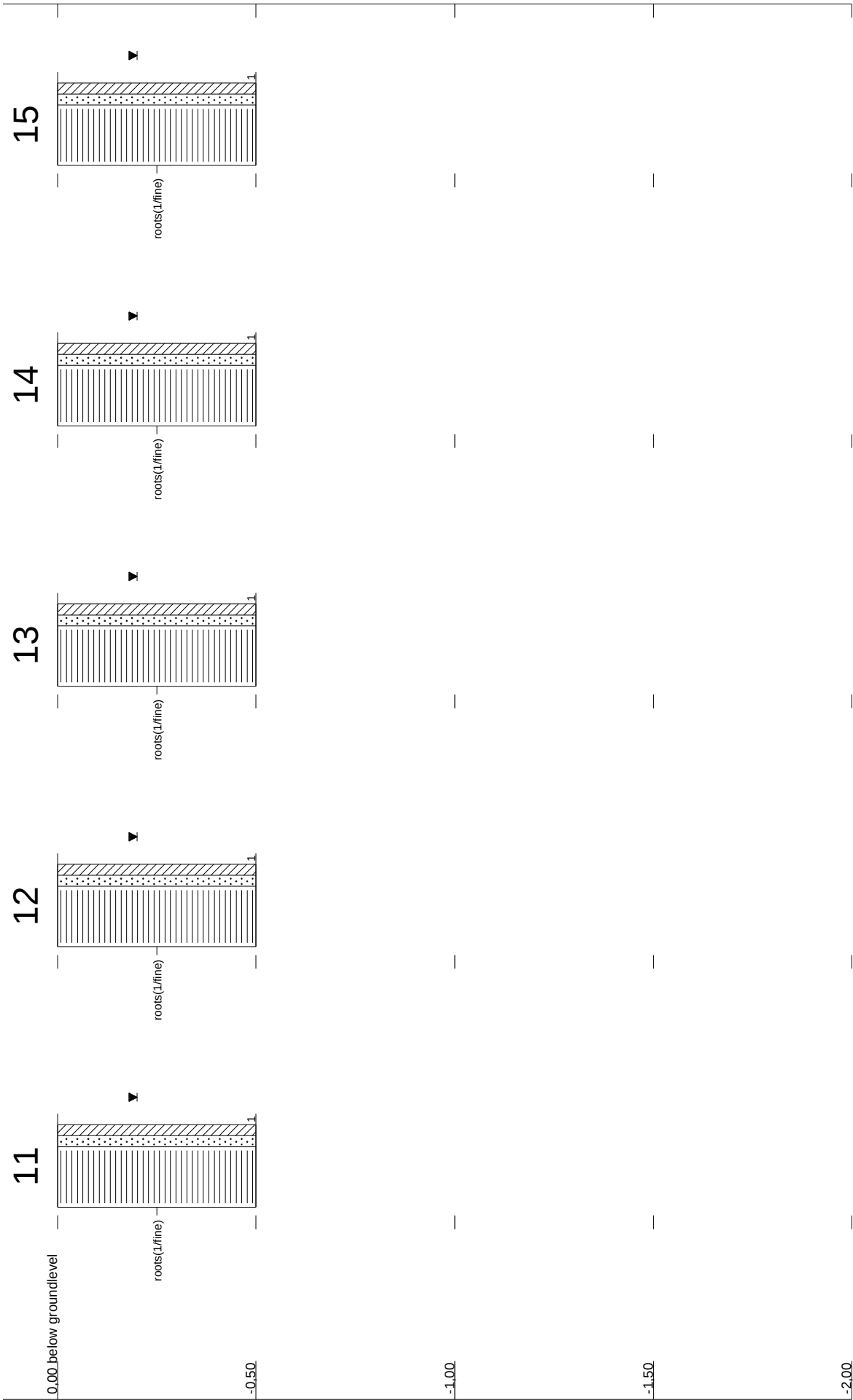
Bore logs

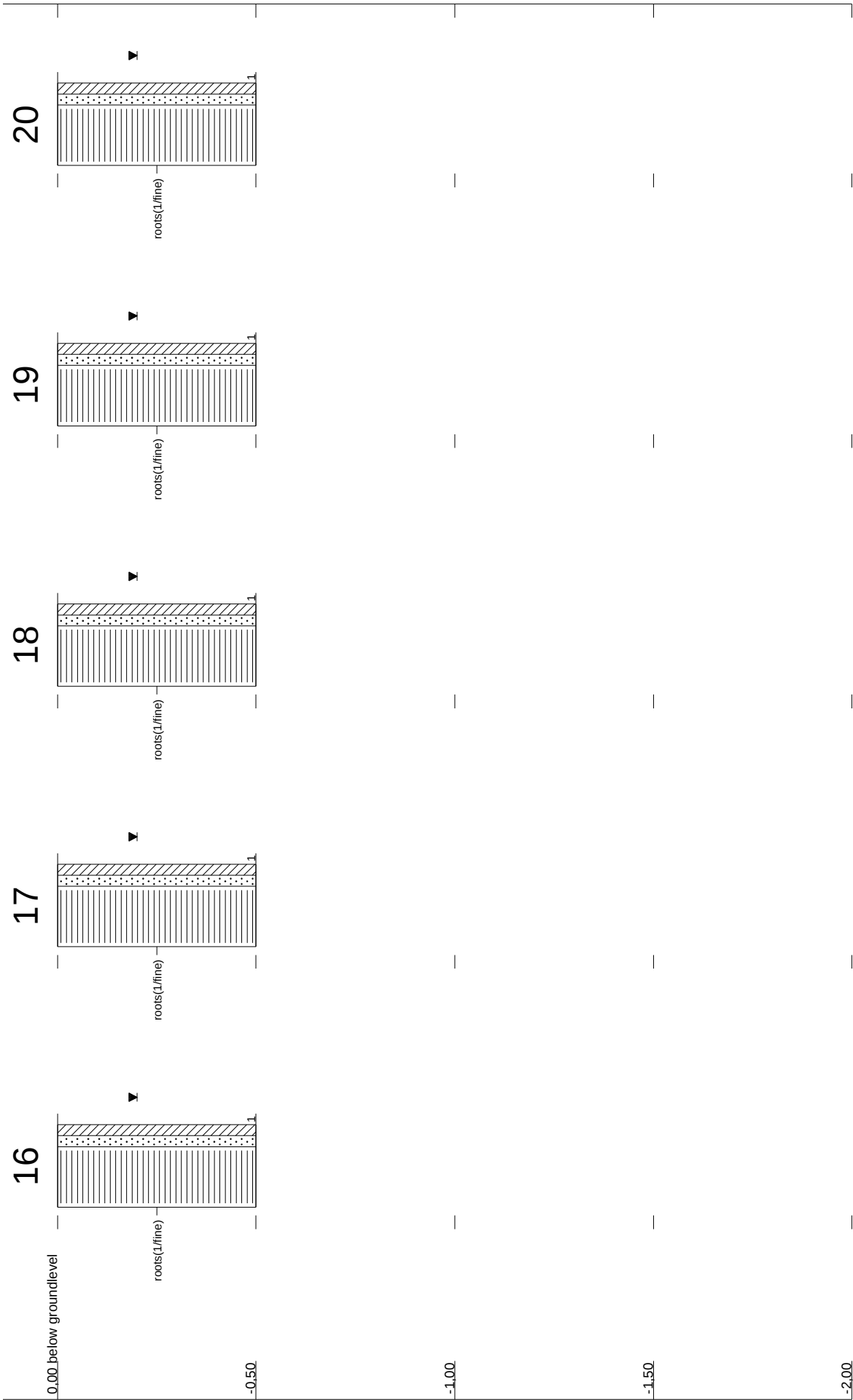
Legend boreholes

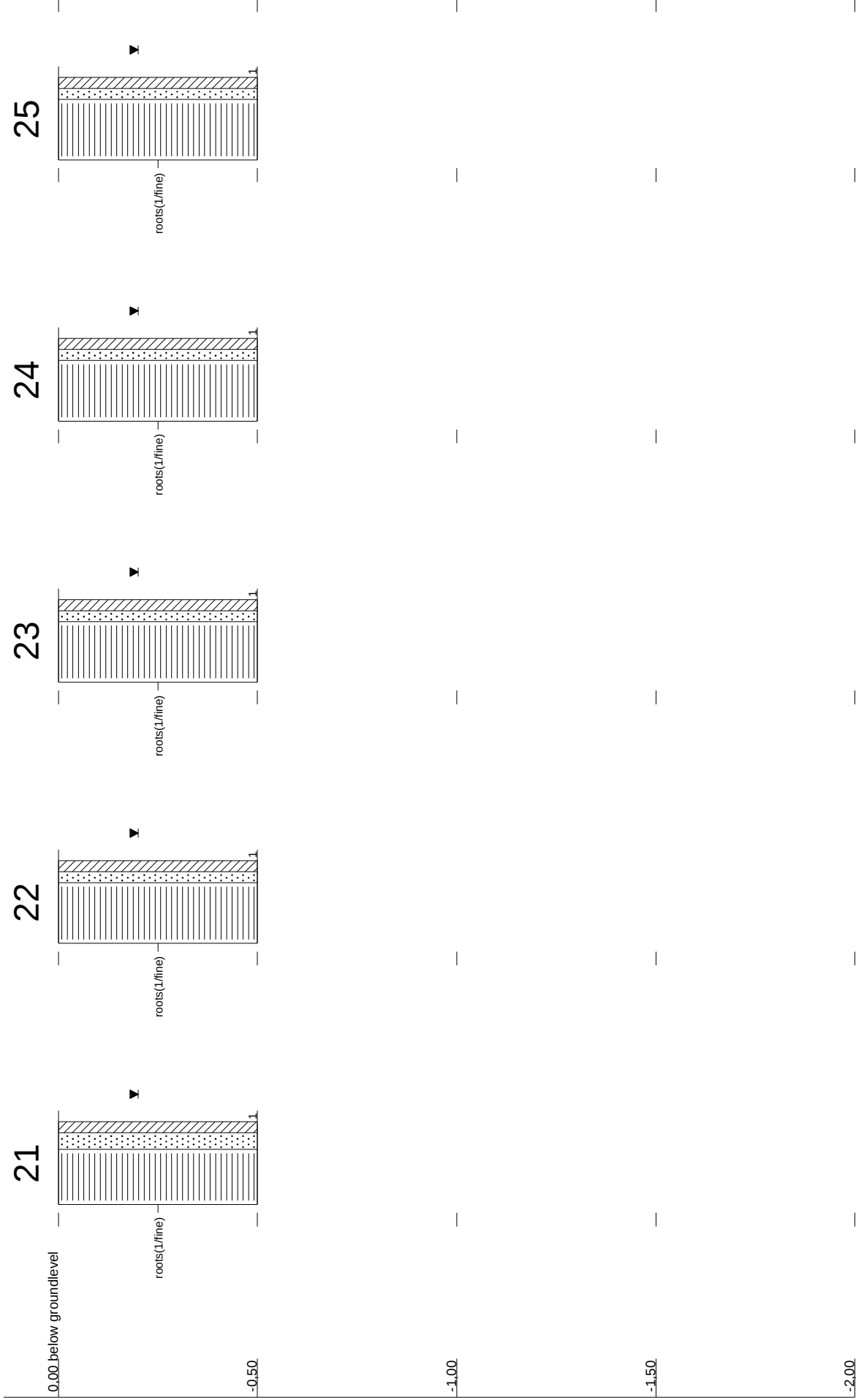


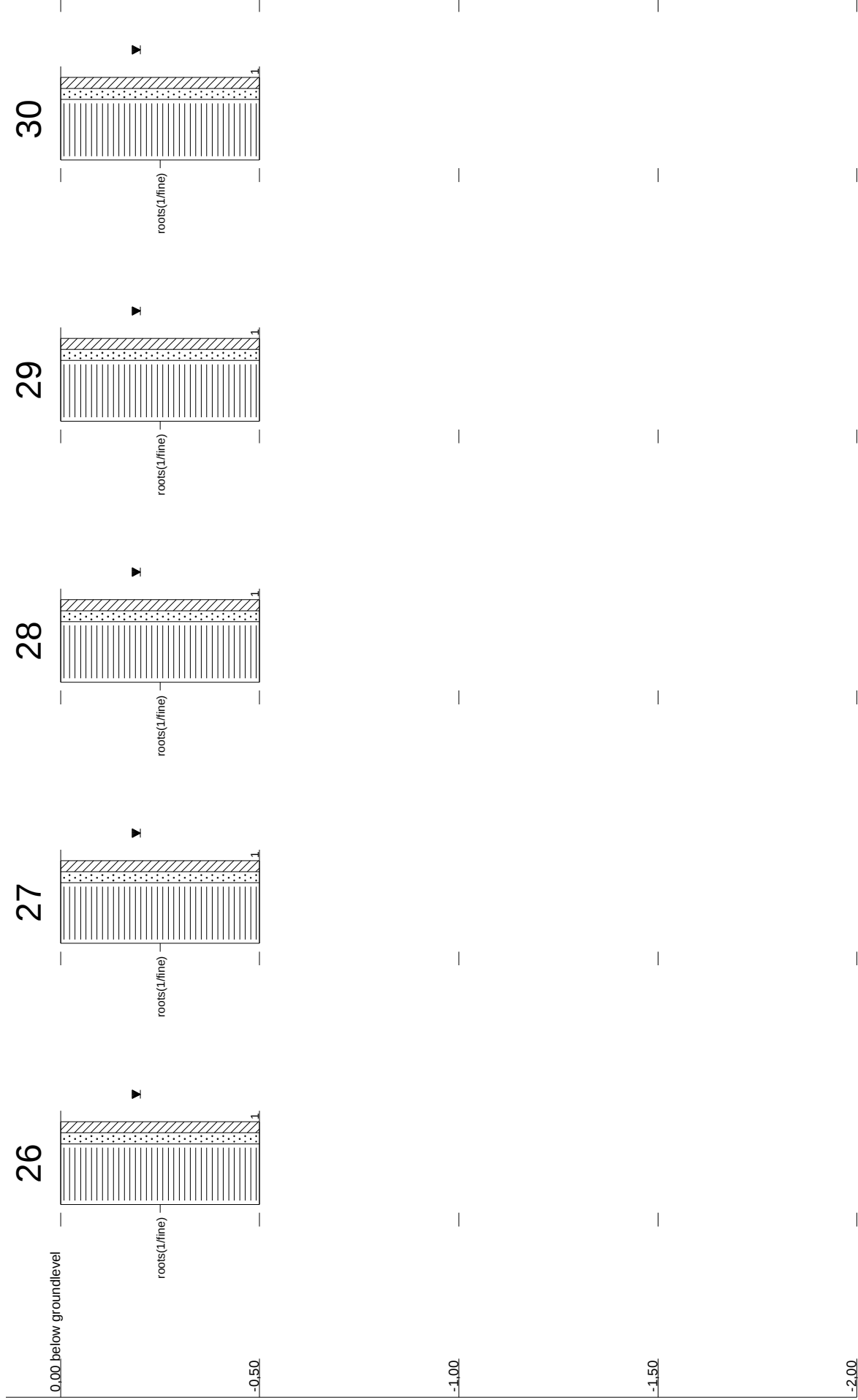


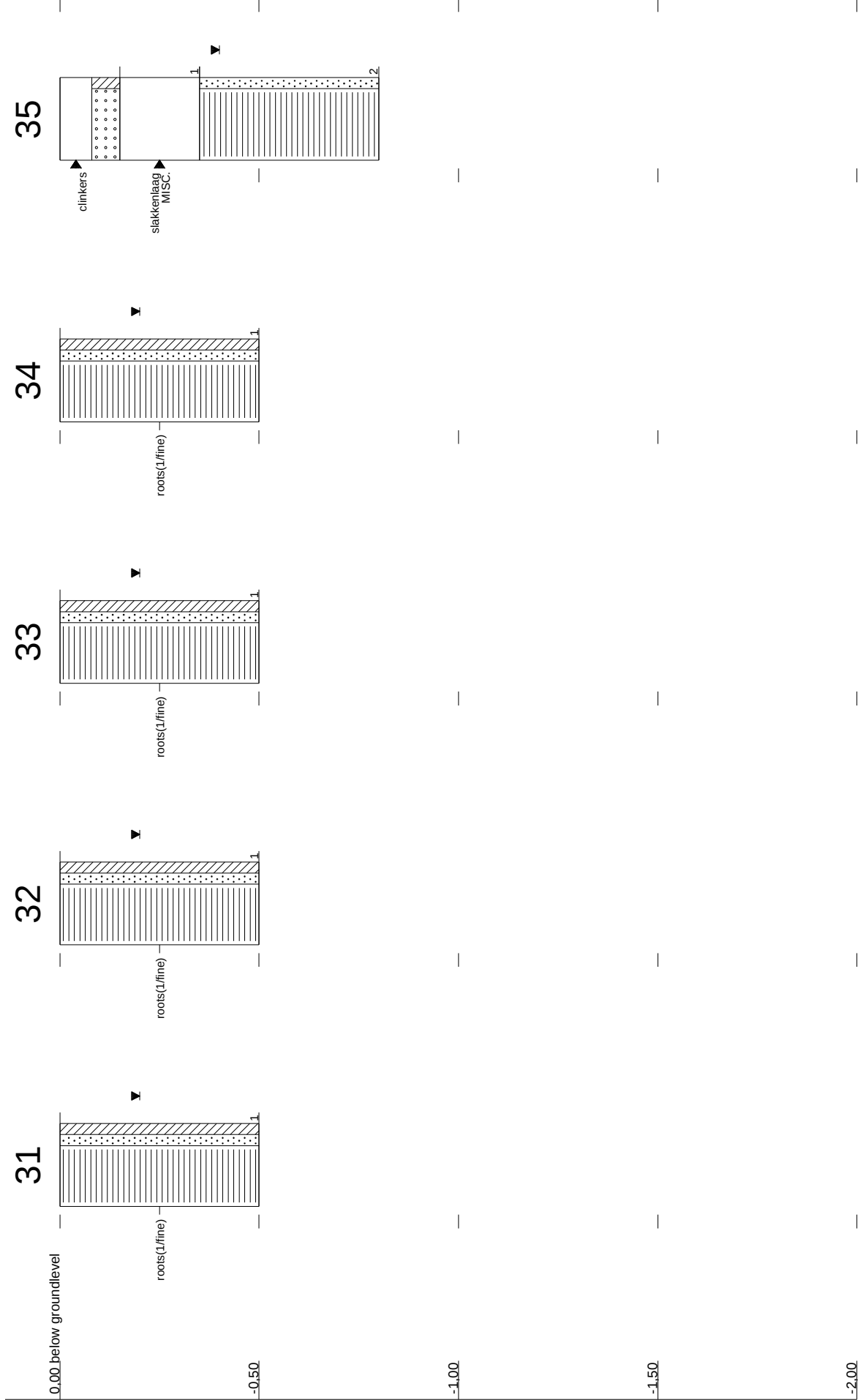


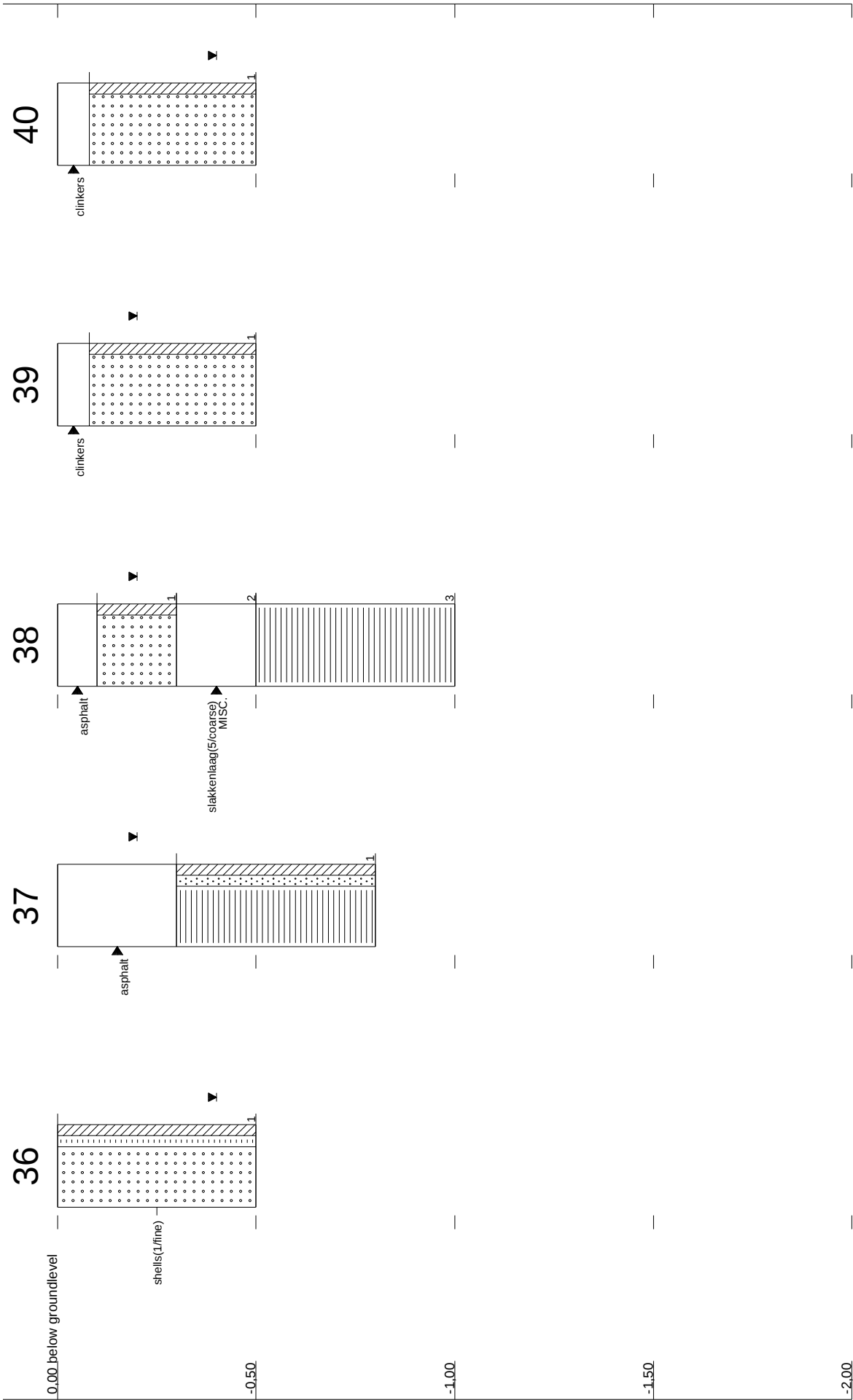


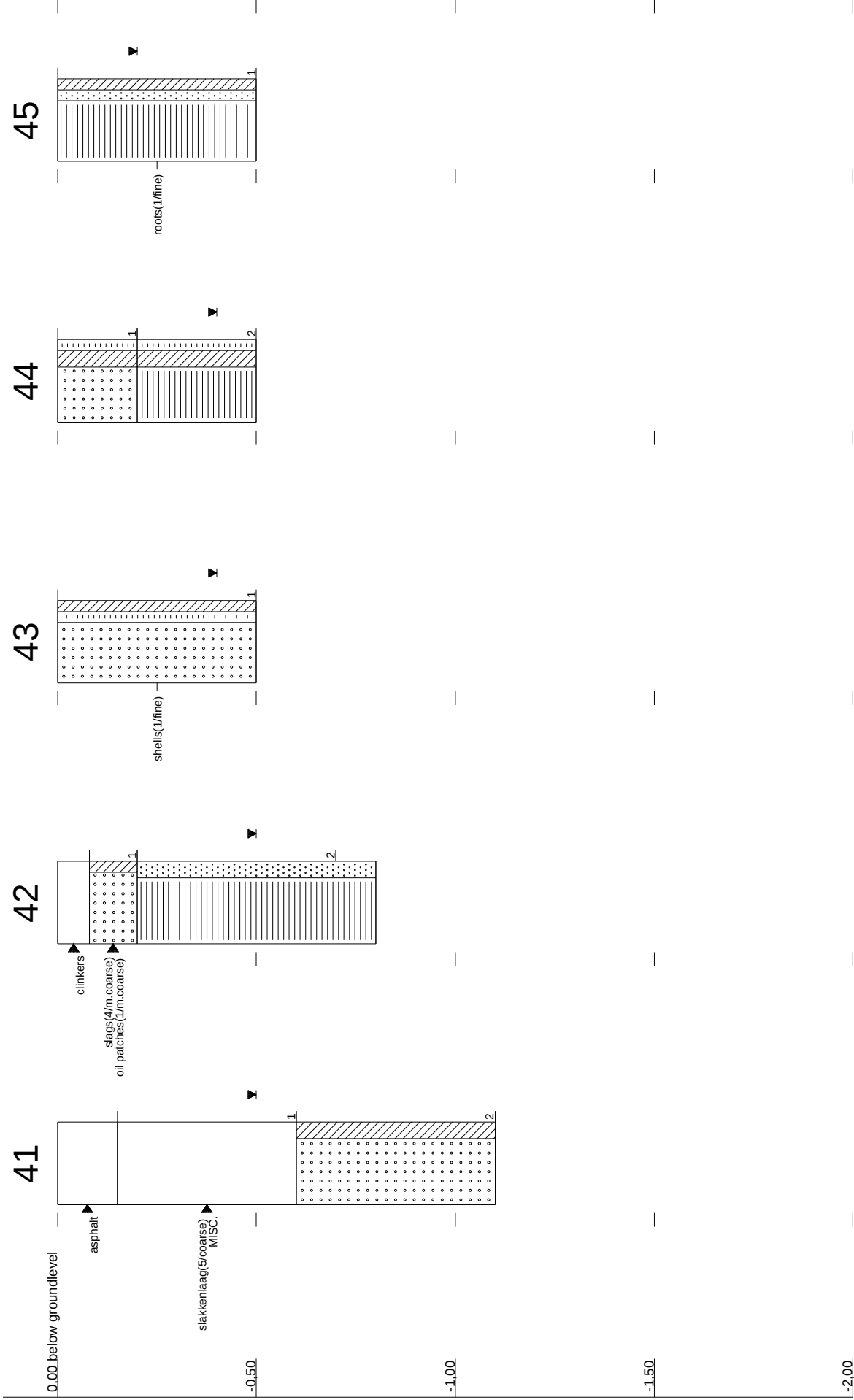


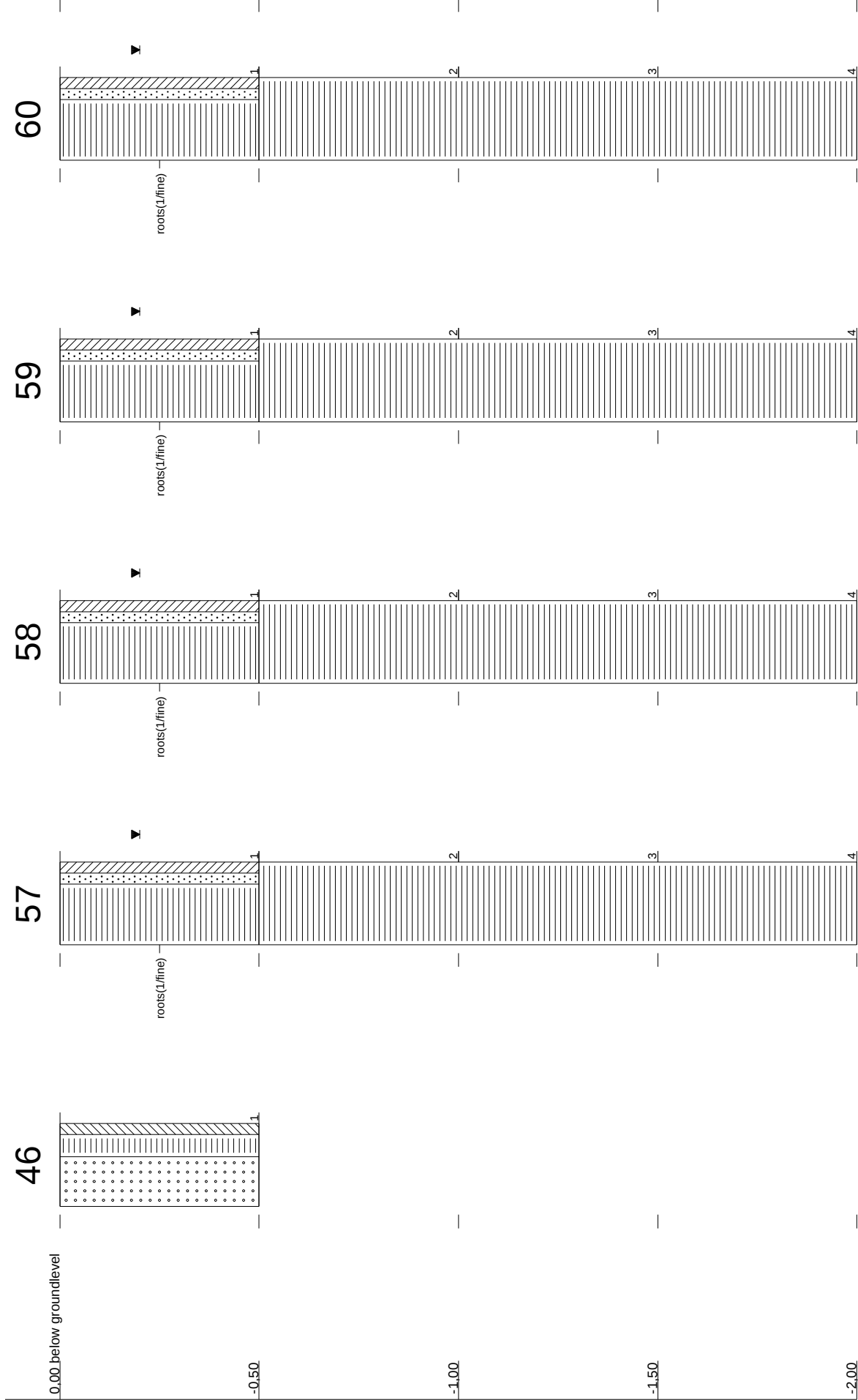


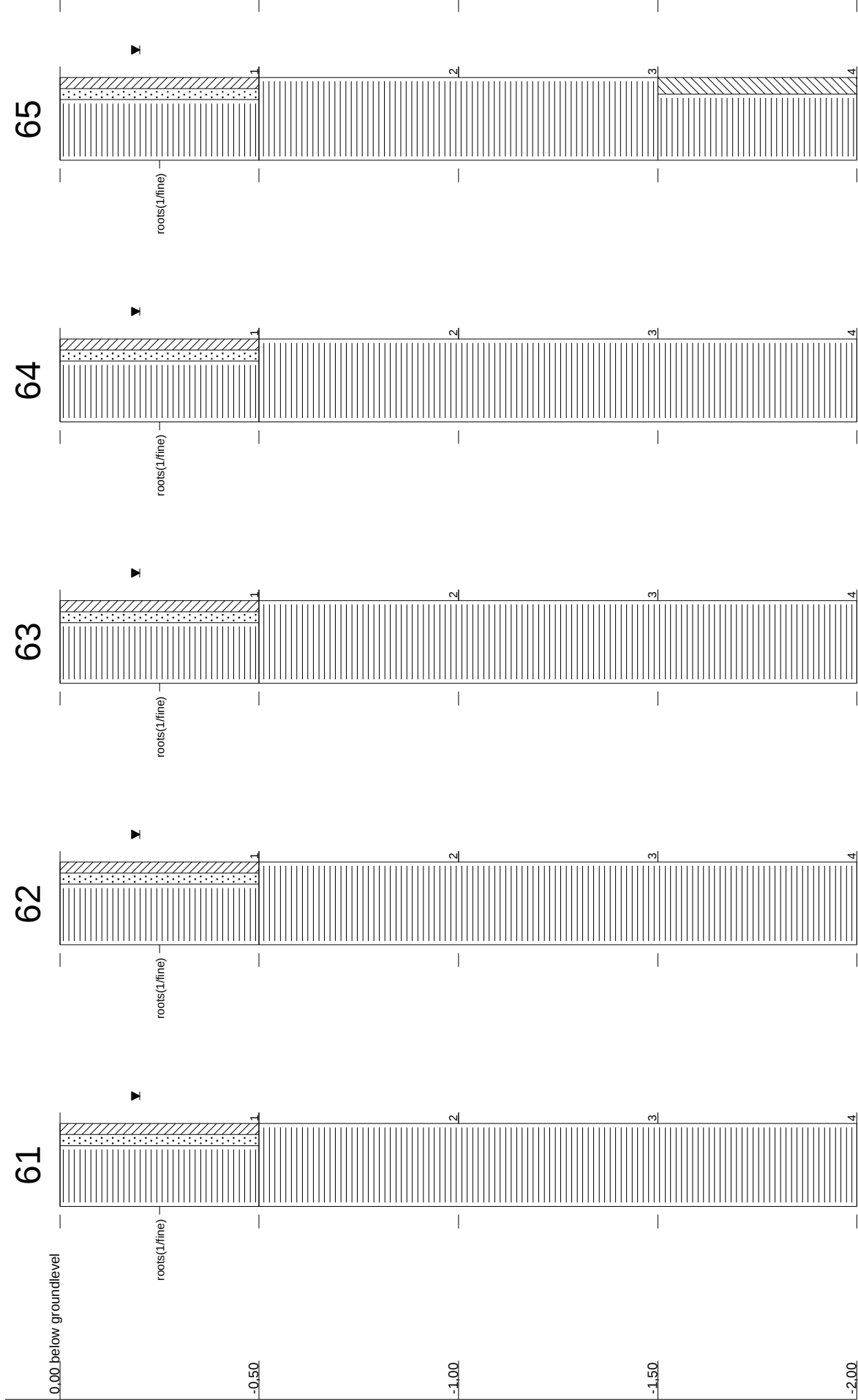


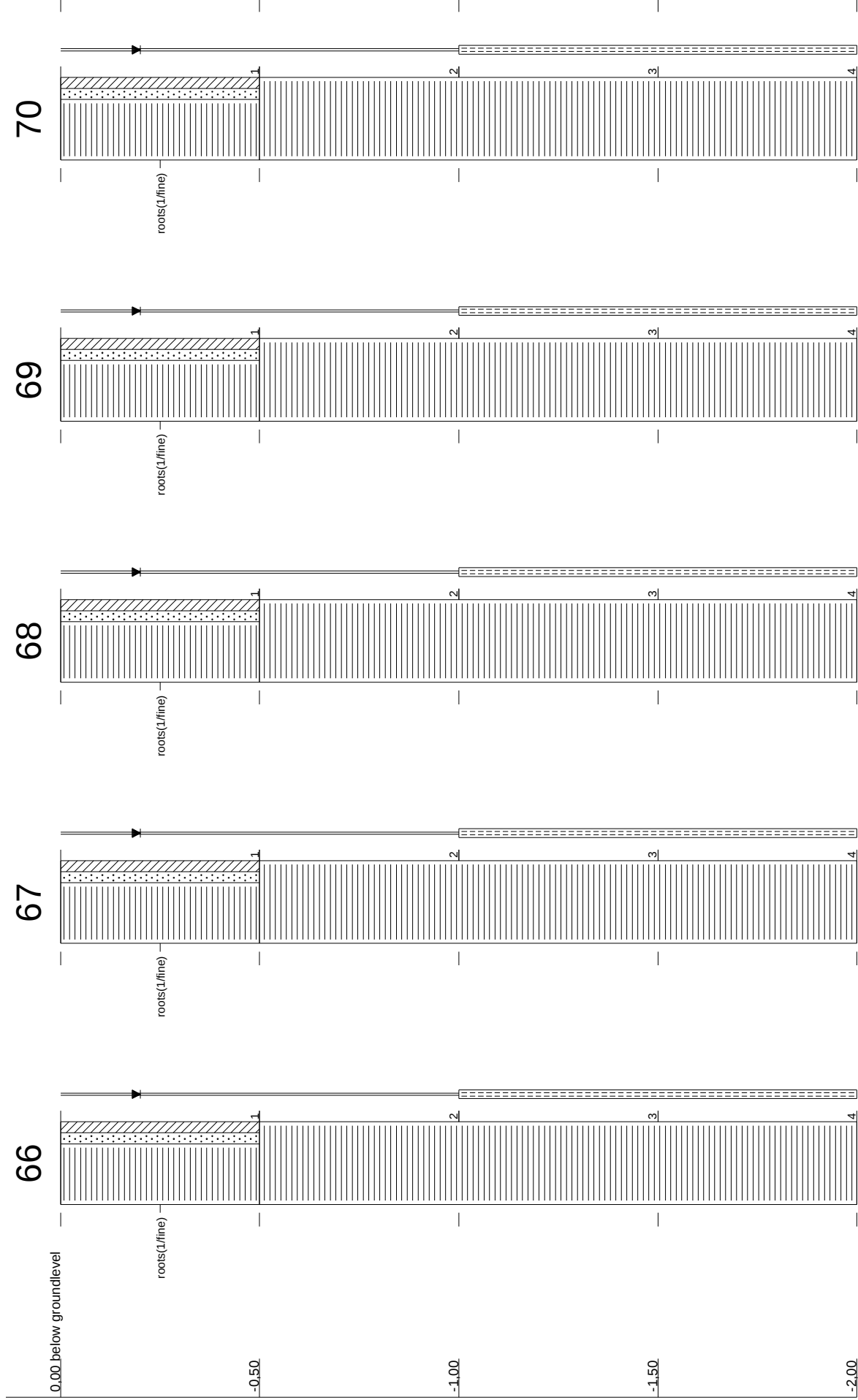


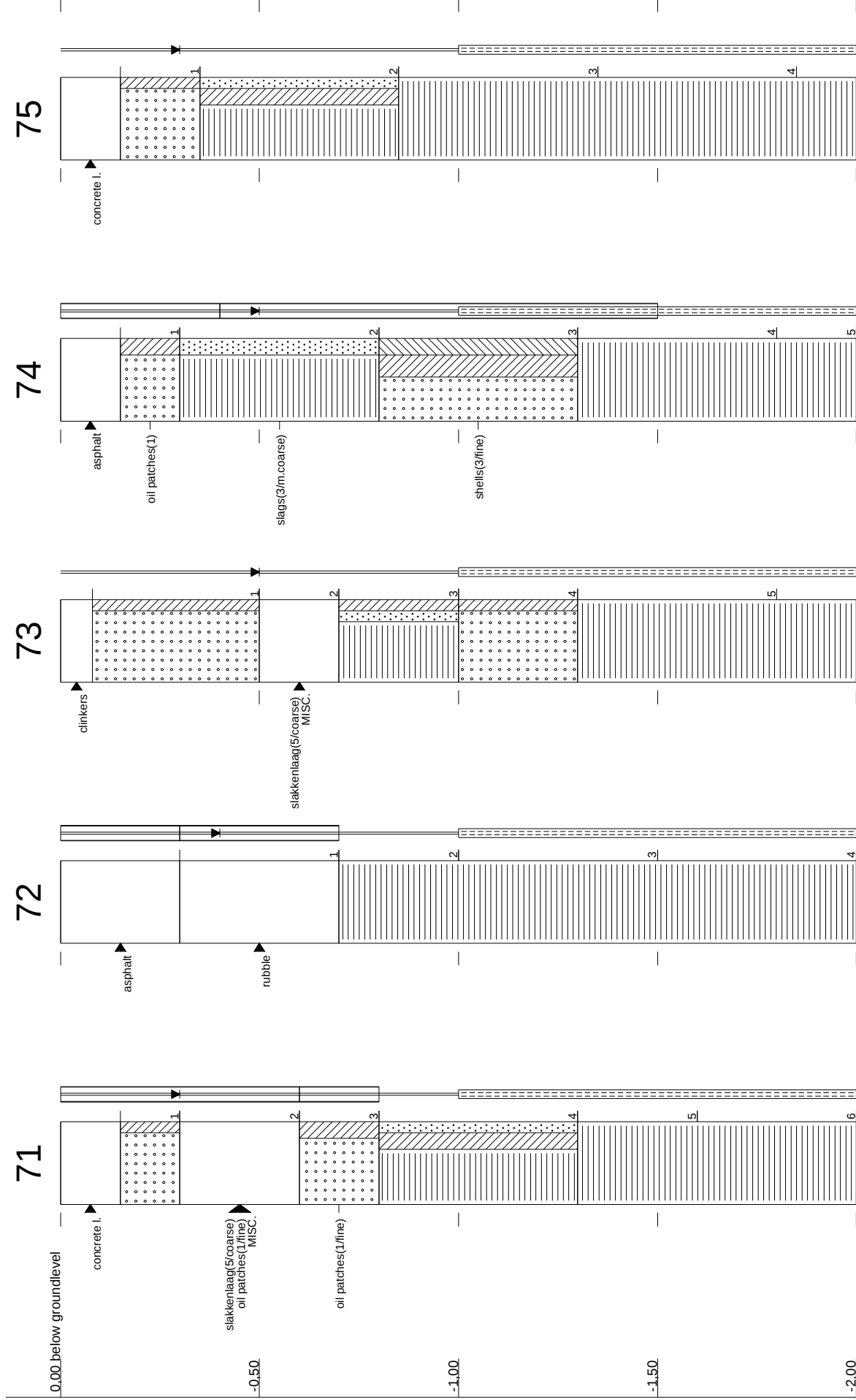


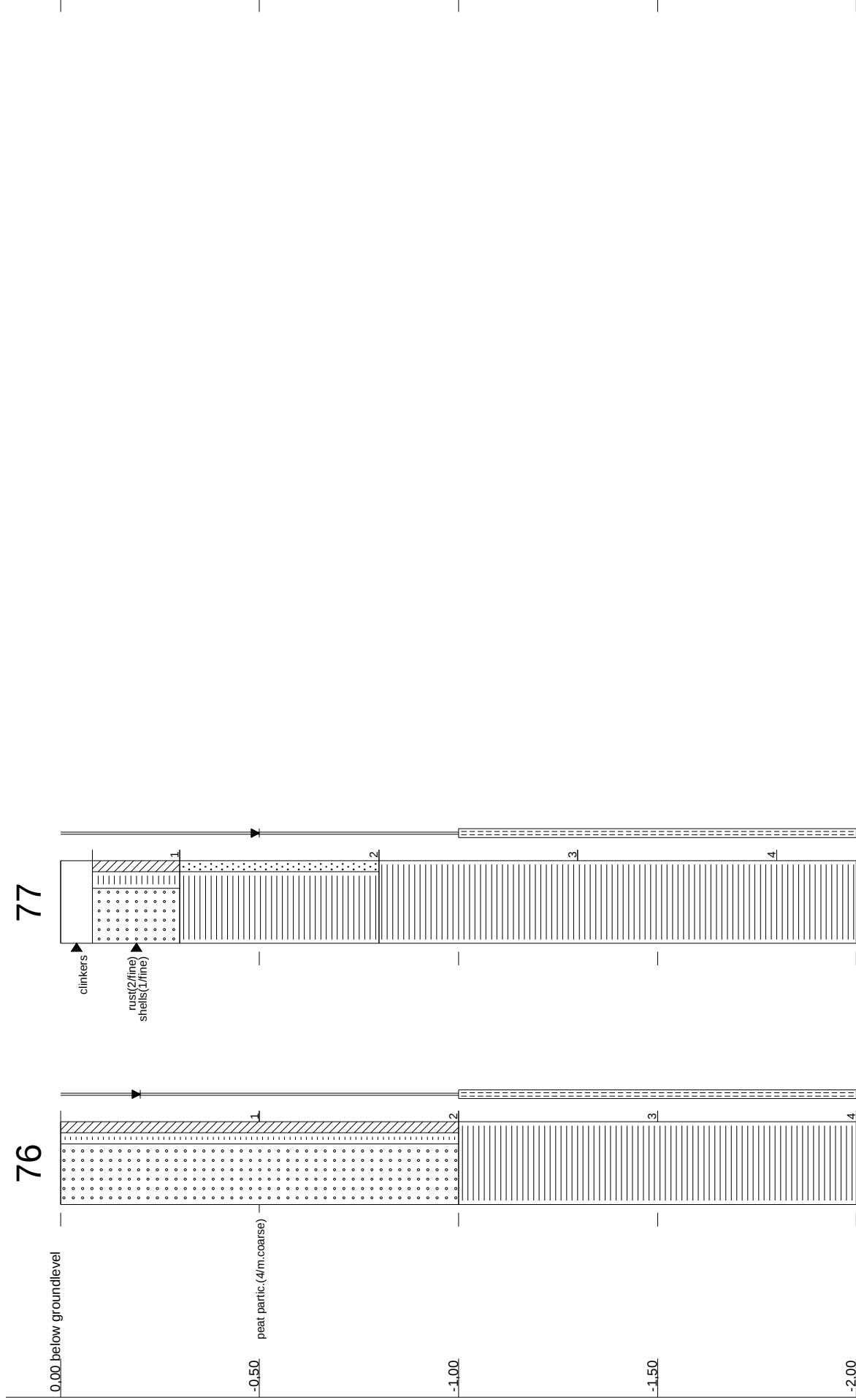












Appendix

4

Dutch STI values

STI VALUES SOIL

Lutum (%)	8,9%
Organic matter (%)	35,4%
CSS:	1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 7 (0-0.5) + 8 (0-0.5) + 58 (0-0.5) + 67 (0-0.5)

gAW	T	I
------------	----------	----------

METALS

barium (Ba)	-	-	442
cadmium (Cd)	0,92	10	20
cobalt (Co)	7,5	51	95
copper (Cu)	46	133	219
mercury (Hg)	0,14	17	35
lead (Pb)	55	322	588
molybdenum (Mo)	1,5	96	190
nickel (Ni)	19	36	54
zinc (Zn)	130	399	668

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	6,4%
Organic matter (%)	35%
CSS:	4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 9 (0-0.5) + 10 (0-0.5) + 57 (0-0.5) + 66 (0-0.5) 11 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 20 (0-0.5) + 21 (0-0.5) + 59 (0-0.5) + 61 (0-0.5) 12 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5) + 18 (0-0.5) + 19 (0-0.5) + 60 (0-0.5) + 68 (0-0.5) 23 (0-0.5) + 24 (0-0.5) + 25 (0-0.5) + 26 (0-0.5) + 27 (0-0.5) + 62 (0-0.5) + 64 (0-0.5) 30 (0-0.5) + 31 (0-0.5) + 32 (0-0.5) + 33 (0-0.5) + 34 (0-0.5) + 65 (0-0.5) + 70 (0-0.5)
gAW	T
	I

METALS

barium (Ba)	-	-	368
cadmium (Cd)	0,90	10	20
cobalt (Co)	6,3	43	80
copper (Cu)	44	127	210
mercury (Hg)	0,14	17	34
lead (Pb)	54	312	570
molybdenum (Mo)	1,5	96	190
nickel (Ni)	16	32	47
zinc (Zn)	122	374	626

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

monochloorbenzeen	0,60	23	45
dichloorbenzenen (som)	6,0	32	57
trichloorbenzenen (som)	0,045	17	33
tetrachloorbenzenen (som)	0,027	3,3	6,6
pentachloorbenzeen	0,0075	10	20
hexachloorbenzeen (HCB)	0,026	3,0	6,0
PCB (sum 7)	0,060	1,5	3,0

PESTICIDES

aldrin	-	0,48	0,96
drins (sum)	0,045	6,0	12
alfa-endosulfan	0,0027	6,0	12
alfa-HCH	0,0030	26	51
beta-HCH	0,0060	2,4	4,8
gamma-HCH	0,0090	1,8	3,6
heptachlor	0,0021	6,0	12
heptachlorepoxyde	0,0060	6,0	12

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1,2%
Organic matter (%)	77,9%
CSS:	58 (1-1.5) + 60 (1-1.5) + 67 (1-1.5) + 68 (1-1.5)
	gAW T I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	1,6	18	34
cobalt (Co)	4,3	29	54
copper (Cu)	70	201	332
mercury (Hg)	0,17	20	40
lead (Pb)	76	443	810
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	173	531	889

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1%		
Organic matter (%)	81%		
CSS:	57 (1-1.5) + 59 (1-1.5) + 61 (1-1.5) + 66 (1-1.5)		
	37 (0.3-0.8) + 72 (0.7-1)		
	gAW	T	I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	1,6	18	35
cobalt (Co)	4,3	29	54
copper (Cu)	72	207	342
mercury (Hg)	0,17	21	41
lead (Pb)	78	454	829
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	178	545	913

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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PESTICIDES

chloordane	0,0060	6,0	12
DDT (total)	0,60	2,9	5,1
DDE (total)	0,30	3,6	6,9
DDD (total)	0,060	51	102
aldrin	-	0,48	0,96
drins (sum)	0,045	6,0	12
alfa-endosulfan	0,0027	6,0	12
alfa-HCH	0,0030	26	51
beta-HCH	0,0060	2,4	4,8
gamma-HCH	0,0090	1,8	3,6
heptachlor	0,0021	6,0	12
heptachlorepoxyde	0,0060	6,0	12

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1%
Organic matter (%)	85%
CSS:	63 (1-1.5) + 69 (1-1.5)
	62 (1-1.5) + 64 (1-1.5) + 65 (1-1.5) + 70 (1-1.5)
	gAW T I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	1,7	19	36
cobalt (Co)	4,3	29	54
copper (Cu)	75	215	355
mercury (Hg)	0,17	21	42
lead (Pb)	81	467	854
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	184	564	944

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
-------------	-------	-----	-----

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1%
Organic matter (%)	0,1%
CSS:	39 (0.08-0.5) + 40 (0.08-0.5) + 73 (0.08-0.5)
	36 (0-0.5) + 71 (0.15-0.3) + 71 (0.6-0.8)
	42 (0.08-0.2) + 74 (0.15-0.3)
	43 (0-0.5) + 44 (0-0.2) + 75 (0.15-0.35) + 76 (0-0.5) + 76 (1.5-2)
	gAW T I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	0,35	4,0	7,6
cobalt (Co)	4,3	29	54
copper (Cu)	19	56	92
mercury (Hg)	0,10	13	25
lead (Pb)	32	184	337
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	59	181	303

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	1,5	21	40
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,0040	0,10	0,20
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	38	519	1000
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	3,8%
Organic matter (%)	35,7%
CSS:	22 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 45 (0-0.5) + 63 (0-0.5) + 69 (0-0.5)
gAW	T
	I

METALS

barium (Ba)	-	-	291
cadmium (Cd)	0,90	10	19
cobalt (Co)	5,1	35	65
copper (Cu)	43	124	204
mercury (Hg)	0,14	16	33
lead (Pb)	53	305	558
molybdenum (Mo)	1,5	96	190
nickel (Ni)	14	27	39
zinc (Zn)	115	353	591

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
--------------	-----	----	-----

CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
-------------	-------	-----	-----

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	3,7%		
Organic matter (%)	17,7%		
CSS:	46 (0-0.5)		
	gAW	T	I

METALS

barium (Ba)	-	-	288
cadmium (Cd)	0,61	6,9	13
cobalt (Co)	5,1	35	64
copper (Cu)	31	89	147
mercury (Hg)	0,12	15	29
lead (Pb)	42	244	445
molybdenum (Mo)	1,5	96	190
nickel (Ni)	14	26	39
zinc (Zn)	88	269	451

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	2,7	37	71
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,035	0,90	1,8
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	336	4593	8850
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

STI VALUES SOIL

Lutum (%)	8,9%
Organic matter (%)	35,4%
CSS:	1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 7 (0-0.5) + 8 (0-0.5) + 58 (0-0.5) + 67 (0-0.5)

gAW	T	I
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METALS

barium (Ba)	-	-	442
cadmium (Cd)	0,92	10	20
cobalt (Co)	7,5	51	95
copper (Cu)	46	133	219
mercury (Hg)	0,14	17	35
lead (Pb)	55	322	588
molybdenum (Mo)	1,5	96	190
nickel (Ni)	19	36	54
zinc (Zn)	130	399	668

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	6,4%	
Organic matter (%)	35%	
CSS:	4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 9 (0-0.5) + 10 (0-0.5) + 57 (0-0.5) + 66 (0-0.5) 11 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 20 (0-0.5) + 21 (0-0.5) + 59 (0-0.5) + 61 (0-0.5) 12 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5) + 18 (0-0.5) + 19 (0-0.5) + 60 (0-0.5) + 68 (0-0.5) 23 (0-0.5) + 24 (0-0.5) + 25 (0-0.5) + 26 (0-0.5) + 27 (0-0.5) + 62 (0-0.5) + 64 (0-0.5) 30 (0-0.5) + 31 (0-0.5) + 32 (0-0.5) + 33 (0-0.5) + 34 (0-0.5) + 65 (0-0.5) + 70 (0-0.5)	
gAW	T	I

METALS

barium (Ba)	-	-	368
cadmium (Cd)	0,90	10	20
cobalt (Co)	6,3	43	80
copper (Cu)	44	127	210
mercury (Hg)	0,14	17	34
lead (Pb)	54	312	570
molybdenum (Mo)	1,5	96	190
nickel (Ni)	16	32	47
zinc (Zn)	122	374	626

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

monochloorbenzeen	0,60	23	45
dichloorbenzenen (som)	6,0	32	57
trichloorbenzenen (som)	0,045	17	33
tetrachloorbenzenen (som)	0,027	3,3	6,6
pentachloorbenzeen	0,0075	10	20
hexachloorbenzeen (HCB)	0,026	3,0	6,0
PCB (sum 7)	0,060	1,5	3,0

PESTICIDES

aldrin	-	0,48	0,96
drins (sum)	0,045	6,0	12
alfa-endosulfan	0,0027	6,0	12
alfa-HCH	0,0030	26	51
beta-HCH	0,0060	2,4	4,8
gamma-HCH	0,0090	1,8	3,6
heptachlor	0,0021	6,0	12
heptachlorepoxyde	0,0060	6,0	12

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1,2%
Organic matter (%)	77,9%
CSS:	58 (1-1.5) + 60 (1-1.5) + 67 (1-1.5) + 68 (1-1.5)
	gAW T I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	1,6	18	34
cobalt (Co)	4,3	29	54
copper (Cu)	70	201	332
mercury (Hg)	0,17	20	40
lead (Pb)	76	443	810
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	173	531	889

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1%		
Organic matter (%)	81%		
CSS:	57 (1-1.5) + 59 (1-1.5) + 61 (1-1.5) + 66 (1-1.5)		
	37 (0.3-0.8) + 72 (0.7-1)		
	gAW	T	I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	1,6	18	35
cobalt (Co)	4,3	29	54
copper (Cu)	72	207	342
mercury (Hg)	0,17	21	41
lead (Pb)	78	454	829
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	178	545	913

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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PESTICIDES

chloordane	0,0060	6,0	12
DDT (total)	0,60	2,9	5,1
DDE (total)	0,30	3,6	6,9
DDD (total)	0,060	51	102
aldrin	-	0,48	0,96
drins (sum)	0,045	6,0	12
alfa-endosulfan	0,0027	6,0	12
alfa-HCH	0,0030	26	51
beta-HCH	0,0060	2,4	4,8
gamma-HCH	0,0090	1,8	3,6
heptachlor	0,0021	6,0	12
heptachlorepoxyde	0,0060	6,0	12

TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1%
Organic matter (%)	85%
CSS:	63 (1-1.5) + 69 (1-1.5)
	62 (1-1.5) + 64 (1-1.5) + 65 (1-1.5) + 70 (1-1.5)
	gAW T I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	1,7	19	36
cobalt (Co)	4,3	29	54
copper (Cu)	75	215	355
mercury (Hg)	0,17	21	42
lead (Pb)	81	467	854
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	184	564	944

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	1%
Organic matter (%)	0,1%
CSS:	39 (0.08-0.5) + 40 (0.08-0.5) + 73 (0.08-0.5)
	36 (0-0.5) + 71 (0.15-0.3) + 71 (0.6-0.8)
	42 (0.08-0.2) + 74 (0.15-0.3)
	43 (0-0.5) + 44 (0-0.2) + 75 (0.15-0.35) + 76 (0-0.5) + 76 (1.5-2)
	gAW T I

METALS

barium (Ba)	-	-	237
cadmium (Cd)	0,35	4,0	7,6
cobalt (Co)	4,3	29	54
copper (Cu)	19	56	92
mercury (Hg)	0,10	13	25
lead (Pb)	32	184	337
molybdenum (Mo)	1,5	96	190
nickel (Ni)	12	23	34
zinc (Zn)	59	181	303

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	1,5	21	40
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,0040	0,10	0,20
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	38	519	1000
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	3,8%
Organic matter (%)	35,7%
CSS:	22 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 45 (0-0.5) + 63 (0-0.5) + 69 (0-0.5)
gAW	T
	I

METALS

barium (Ba)	-	-	291
cadmium (Cd)	0,90	10	19
cobalt (Co)	5,1	35	65
copper (Cu)	43	124	204
mercury (Hg)	0,14	16	33
lead (Pb)	53	305	558
molybdenum (Mo)	1,5	96	190
nickel (Ni)	14	27	39
zinc (Zn)	115	353	591

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	4,5	62	120
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,060	1,5	3,0
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	570	7785	15000
---------------	-----	------	-------

The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

Lutum (%)	3,7%		
Organic matter (%)	17,7%		
CSS:	46 (0-0.5)		
	gAW	T	I

METALS

barium (Ba)	-	-	288
cadmium (Cd)	0,61	6,9	13
cobalt (Co)	5,1	35	64
copper (Cu)	31	89	147
mercury (Hg)	0,12	15	29
lead (Pb)	42	244	445
molybdenum (Mo)	1,5	96	190
nickel (Ni)	14	26	39
zinc (Zn)	88	269	451

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH (sum 10)	2,7	37	71
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CHLORINATED HYDROCARBONS

PCB (sum 7)	0,035	0,90	1,8
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TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH (C10-C40)	336	4593	8850
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The Dutch testing framework consists of background values (AW-values), testing values for additional investigation (T-values) and intervention values (I-values) in milligram per kilogram of soil dry matter [mg/kg].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67) Achtergrondwaarden uit Toepassen van grond en baggerspecie in oppervlaktewater conform de Staatscourant 2007, 247

STI VALUES GROUNDWATER

	S	T	I
METALS			
barium	50	338	625
cadmium	0,40	3,2	6,0
cobalt	20	60	100
copper	15	45	75
mercury	0,050	0,18	0,30
lead	15	45	75
molybdenum	5,0	153	300
nickel	15	45	75
zinc	65	433	800
AROMATIC COMPOUNDS			
benzene	0,20	15	30
toluene	7,0	504	1000
ethylbenzene	4,0	77	150
xylenes (sum)	0,20	35	70
styrene (vinylbenzene)	6,0	153	300
PAHs			
naphtalene	0,010	35	70
CHLORINATED HYDROCARBONS			
dichloromethane	0,010	500	1000
trichloromethane	6,0	203	400
tetrachloromethane	0,010	5,0	10
11-dichloroethane	7,0	454	900
12-dichloroethane	7,0	204	400
111-trichloroethane	0,010	150	300
112-trichloroethane	0,010	65	130
vinylchloride	0,010	2,5	5,0
11-dichloroethylene	0,010	5,0	10
12-dichloroethylene (c&t)	0,010	10	20
dichloropropanes (sum)	0,80	40	80
trichloroethylene	24	262	500
tetrachloroethylene	0,010	20	40
OTHER COMPOUNDS			
petroleum hydrocarbons	50	325	600
tribromomethane	-	315	630

The Dutch testing framework consists of reference values (S-values), testing values for additional investigation (T-values) and intervention values (I-values) in microgram per litre [ug/l].

Source:

Streefwaarden grondwater en Interventiewaarden bodemsanering uit de Circulaire Bodemsanering 2009 (Staatscourant 17 april 2009, 67)

Appendix

5

Analytical results soil and asbestos



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TAUW DEVENTER
Karen de Roo
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Datum 03.03.2010
Relatienr 35003840
Opdrachtnr. 173663
Blad 1 van 7

ANALYSERAPPORT

Opdracht 173663 Bodem / Eluaat

Opdrachtgever 35003840 TAUW DEVENTER
Referentie 4707529 Phase II soil & gw Ter Aar, NL.
Opdrachtacceptatie 24.02.10
Monsternemer Opdrachtgever

Geachte heer, mevrouw,

Hierbij zenden wij U de resultaten van het door u aangevraagde laboratoriumonderzoek.
De analyses zijn, tenzij anders vermeld, uitgevoerd overeenkomstig onze erkenning voor de werkzaamheid
"Analyse voor milieuhygiënisch bodemonderzoek" van het Besluit Bodemkwaliteit.

Indien u gegevens wenst over de meetonzekerheden van een methode, kunnen wij u deze op verzoek verstrekken.

Dit rapport mag alleen in zijn geheel worden gereproduceerd. Eventuele bijlagen zijn onderdeel van het rapport.

Indien u nog vragen heeft of aanvullende informatie wenst, verzoeken wij u om contact op te nemen met
Klantenservice.

Wij vertrouwen U met de toegezonden informatie van dienst te zijn.

Met vriendelijke groet,

AL-West B.V. Dhr. Peter Wijers, Tel. +31/570699557
Klantenservice



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Opdracht 173663 Bodem / Eluaat

Blad 2 van 7

Monsternr.	Monstername	Monsteromschrijving
982899	23.02.2010	1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 7 (0-0.5) + 8 (0-0.5) + 58 (0-0.5) + 67 (0-0.5)
982907	23.02.2010	4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 9 (0-0.5) + 10 (0-0.5) + 57 (0-0.5) + 66 (0-0.5)
982915	23.02.2010	11 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 20 (0-0.5) + 21 (0-0.5) + 59 (0-0.5) + 61 (0-0.5)
982923	23.02.2010	12 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5) + 18 (0-0.5) + 19 (0-0.5) + 60 (0-0.5) + 68 (0-0.5)
982932	23.02.2010	58 (1-1.5) + 60 (1-1.5) + 67 (1-1.5) + 68 (1-1.5)

Eenheid	982899	982907	982915	982923	982932
	1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 7 (0-0.5) + 8 (0-0.5) + 58 (0-0.5) + 67 (0-0.5)	4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 9 (0-0.5) + 10 (0-0.5) + 57 (0-0.5) + 66 (0-0.5)	11 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 20 (0-0.5) + 21 (0-0.5) + 59 (0-0.5) + 61 (0-0.5)	12 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5) + 18 (0-0.5) + 19 (0-0.5) + 60 (0-0.5) + 68 (0-0.5)	58 (1-1.5) + 60 (1-1.5) + 67 (1-1.5) + 68 (1-1.5)

Algemene monstervoorbehandeling

Koningswater ontsluiting		++	++	++	++	++
Voorbehandeling conform AS3000		++	++	++	++	++
Droge stof (Ds)	%	37,3	41,4	49,5	39,0	12,7
IJzer (Fe2O3)	% Ds	<5,0	--	--	--	<5,0

Klassiek Chemische Analyses

Organische stof	% Ds	35,4 ^{xj}	--	--	--	77,9 ^{xj}
Carbonaten dmv asrest (AS3000)	% Ds	1,6	--	--	--	9,7

Fracties (sedigraaf)

Fractie < 2 µm	% Ds	8,9	--	--	--	1,2
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Metalen

Barium (Ba)	mg/kg Ds	110	120	120	88	91
Cadmium (Cd)	mg/kg Ds	0,54	0,72	0,71	0,51	<0,17
Cobalt (Co)	mg/kg Ds	14	8,9	10	13	17
Koper (Cu)	mg/kg Ds	43	51	59	36	<5,0
Kwik (Hg)	mg/kg Ds	0,32	0,43	0,53	0,31	<0,05
Lood (Pb)	mg/kg Ds	130	170	240	95	<13
Molybdeen (Mo)	mg/kg Ds	<1,5	<1,5	<1,5	<1,5	<1,5
Nikkel (Ni)	mg/kg Ds	17	12	13	12	<3,0
Zink (Zn)	mg/kg Ds	80	130	150	92	<17

PAK

Anthraceen	mg/kg Ds	0,038	<0,010	<0,010	0,038	<0,10 ^{mj}
Benzo(a)anthraceen	mg/kg Ds	0,21	0,13	0,28	0,24	<0,10 ^{mj}
Benzo(a)pyreen	mg/kg Ds	0,19	0,13	0,24	0,26	<0,10 ^{mj}
Benzo(ghi)perylene	mg/kg Ds	0,12	0,087	0,20	0,19	<0,10 ^{mj}
Benzo(k)fluorantheen	mg/kg Ds	0,12	0,072	0,15	0,16	<0,10 ^{mj}
Chryseen	mg/kg Ds	0,23	0,16	0,34	0,38	<0,10 ^{mj}
Fenanthreen	mg/kg Ds	0,18	0,18	0,28	0,25	<0,10 ^{mj}
Fluorantheen	mg/kg Ds	0,48	0,36	0,61	0,67	0,10
Indeno-(1,2,3-c,d)pyreen	mg/kg Ds	0,20	0,15	0,30	0,28	<0,10 ^{mj}
Naftaleen	mg/kg Ds	<0,020 ^{mj}	0,031	0,020	<0,020 ^{mj}	<0,50 ^{mj}
Som PAK (VROM)	mg/kg Ds	1,8 ^{xj}	1,3 ^{xj}	2,4 ^{xj}	2,5 ^{xj}	0,10 ^{xj}
Som PAK (VROM) (Factor 0,7)	mg/kg Ds	1,8 ^{sj}	1,3 ^{sj}	2,4 ^{sj}	2,5 ^{sj}	1,0 ^{sj}

Minerale olie

Koolwaterstoffractie C10-C40	mg/kg Ds	62	<20	59	<40 ^{tsj}	310
Koolwaterstoffractie C10-C12	mg/kg Ds	<8,0 ^{tsj}	<8,0 ^{tsj}	<4,0	<8,0 ^{tsj}	<24 ^{tsj}
Koolwaterstoffractie C12-C16	mg/kg Ds	<8,0 ^{tsj}	<8,0 ^{tsj}	<4,0	<8,0 ^{tsj}	<4,0
Koolwaterstoffractie C16-C20	mg/kg Ds	<4,0 ^{tsj}	<4,0 ^{tsj}	5,1	<4,0 ^{tsj}	18
Koolwaterstoffractie C20-C24	mg/kg Ds	6,2	6,3	9,5	<4,0 ^{tsj}	30


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Blad 3 van 7

Opdracht 173663 Bodem / Eluaat

Monsternr.	Monstername	Monsteromschrijving
982937	23.02.2010	57 (1-1.5) + 59 (1-1.5) + 61 (1-1.5) + 66 (1-1.5)
982942	23.02.2010	22 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 45 (0-0.5) + 63 (0-0.5) + 69 (0-0.5)
982949	23.02.2010	63 (1-1.5) + 69 (1-1.5)

Eenheid	982937	982942	982949
	57 (1-1.5) + 59 (1-1.5) + 61 (1-1.5) + 66 (1-1.5)	22 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 45 (0-0.5)	63 (1-1.5) + 69 (1-1.5)

Algemene monstervoorbehandeling

Koningswater ontsluiting		++	++	++
Voorbehandeling conform AS3000		++	++	++
Droge stof (Ds)	%	13,7	43,5	12,4
IJzer (Fe2O3)	% Ds	--	<5,0	<5,0

Klassiek Chemische Analyses

Organische stof	% Ds	--	35,7 ^{x)}	85,0 ^{x)}
Carbonaten dmv asrest (AS3000)	% Ds	--	1,3	2,0

Fracties (sedigraaf)

Fractie < 2 µm	% Ds	--	3,8	<1,0
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Metalen

Barium (Ba)	mg/kg Ds	81	82	61
Cadmium (Cd)	mg/kg Ds	<0,17	0,55	<0,17
Cobalt (Co)	mg/kg Ds	10	7,8	16
Koper (Cu)	mg/kg Ds	<5,0	46	<5,0
Kwik (Hg)	mg/kg Ds	<0,05	0,46	<0,05
Lood (Pb)	mg/kg Ds	<13	94	<13
Molybdeen (Mo)	mg/kg Ds	<1,5	<1,5	<1,5
Nikkel (Ni)	mg/kg Ds	<3,0	12	<3,0
Zink (Zn)	mg/kg Ds	<17	83	<17

PAK

Anthraceen	mg/kg Ds	<0,10 ^{m)}	<0,010	<0,10 ^{m)}
Benzo(a)anthraceen	mg/kg Ds	<0,10 ^{m)}	0,13	<0,10 ^{m)}
Benzo(a)pyreen	mg/kg Ds	<0,10 ^{m)}	0,20	<0,10 ^{m)}
Benzo(ghi)peryleen	mg/kg Ds	<0,10 ^{m)}	0,11	<0,10 ^{m)}
Benzo(k)fluorantheen	mg/kg Ds	<0,10 ^{m)}	0,094	<0,10 ^{m)}
Chryseen	mg/kg Ds	<0,10 ^{m)}	0,20	<0,10 ^{m)}
Fenanthreen	mg/kg Ds	<0,10 ^{m)}	0,11	<0,10 ^{m)}
Fluorantheen	mg/kg Ds	<0,10 ^{m)}	0,34	<0,10 ^{m)}
Indeno-(1,2,3-c,d)pyreen	mg/kg Ds	<0,10 ^{m)}	0,19	<0,10 ^{m)}
Naftaleen	mg/kg Ds	<0,50 ^{m)}	0,032	<1,0 ^{m)}
Som PAK (VROM)	mg/kg Ds	n.a.	1,4 ^{x)}	n.a.
Som PAK (VROM) (Factor 0,7)	mg/kg Ds	0,98 ^{#)}	1,4 ^{#)}	1,3 ^{#)}

Minerale olie

Koolwaterstoffractie C10-C40	mg/kg Ds	<120 ^{ts)}	67	320
Koolwaterstoffractie C10-C12	mg/kg Ds	<24 ^{ts)}	<8,0 ^{ts)}	<24 ^{ts)}
Koolwaterstoffractie C12-C16	mg/kg Ds	<24 ^{ts)}	<8,0 ^{ts)}	<4,0
Koolwaterstoffractie C16-C20	mg/kg Ds	<12 ^{ts)}	5,7	18
Koolwaterstoffractie C20-C24	mg/kg Ds	<12 ^{ts)}	9,7	31


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Blad 4 van 7

	Eenheid	982899 1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 7 (0-0.5) + 8 (0-0.5) + 9 (0-0.5) + 10 (0-0.5) + 11 (0-0.5) + 12 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5) + 18 (0-0.5) + 19 (0-0.5) + 20 (0-0.5) + 21 (0-0.5) + 22 (0-0.5) + 23 (0-0.5) + 24 (0-0.5) + 25 (0-0.5) + 26 (0-0.5) + 27 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 30 (0-0.5) + 31 (0-0.5) + 32 (0-0.5) + 33 (0-0.5) + 34 (0-0.5) + 35 (0-0.5) + 36 (0-0.5) + 37 (0-0.5) + 38 (0-0.5) + 39 (0-0.5) + 40 (0-0.5) + 41 (0-0.5) + 42 (0-0.5) + 43 (0-0.5) + 44 (0-0.5) + 45 (0-0.5) + 46 (0-0.5) + 47 (0-0.5) + 48 (0-0.5) + 49 (0-0.5) + 50 (0-0.5) + 51 (0-0.5) + 52 (0-0.5) + 53 (0-0.5) + 54 (0-0.5) + 55 (0-0.5) + 56 (0-0.5) + 57 (0-0.5) + 58 (0-0.5) + 59 (0-0.5) + 60 (0-0.5) + 61 (0-0.5) + 62 (0-0.5) + 63 (0-0.5) + 64 (0-0.5) + 65 (0-0.5) + 66 (0-0.5) + 67 (0-0.5) + 68 (0-0.5) + 69 (0-0.5) + 70 (0-0.5) + 71 (0-0.5) + 72 (0-0.5) + 73 (0-0.5) + 74 (0-0.5) + 75 (0-0.5) + 76 (0-0.5) + 77 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Minerale olie						
Koolwaterstof fractie C24-C28	mg/kg Ds	16	6,3	12	<4,0 ^(ts)	49
Koolwaterstof fractie C28-C32	mg/kg Ds	25	11	13	7,7	39
Koolwaterstof fractie C32-C36	mg/kg Ds	12	11	12	5,6	71
Koolwaterstof fractie C36-C40	mg/kg Ds	<4,0 ^(ts)	<4,0 ^(ts)	<2,0	<4,0 ^(ts)	61
Polychloorbifenylen						
Som PCB (7 Ballschmüter)	mg/kg Ds	0,012 ^{x)}	n.a.	n.a.	n.a.	0,025 ^{x)}
Som PCB (7 Ballschmüter) (Factor 0,7)	mg/kg Ds	0,014 ^{x)}	0,0049 ^{x)}	0,0049 ^{x)}	0,0049 ^{x)}	0,029 ^{x)}
PCB 28	mg/kg Ds	<0,0010	<0,0010	<0,0010	<0,0010	<0,0010
PCB 52	mg/kg Ds	<0,0010	<0,0010	<0,0010	<0,0010	<0,0010
PCB 101	mg/kg Ds	<0,0010	<0,0010	<0,0010	<0,0010	<0,0010
PCB 118	mg/kg Ds	0,0046	<0,0010	<0,0010	<0,0010	<0,0010
PCB 138	mg/kg Ds	0,0035	<0,0010	<0,0010	<0,0010	0,013
PCB 153	mg/kg Ds	0,0035	<0,0010	<0,0010	<0,0010	0,012
PCB 180	mg/kg Ds	<0,0010	<0,0010	<0,0010	<0,0010	<0,0010
Pesticiden (OCB's)						
2,4-DDD (ortho, para-DDD)	mg/kg Ds	--	--	--	0,0026	--
4,4-DDD (para, para-DDD)	mg/kg Ds	--	--	--	0,0069	--
2,4-DDE (ortho, para-DDE)	mg/kg Ds	--	--	--	<0,0010	--
4,4-DDE (para, para-DDE)	mg/kg Ds	--	--	--	0,011	--
2,4-DDT (ortho, para-DDT)	mg/kg Ds	--	--	--	<0,0010	--
4,4-DDT (para, para-DDT)	mg/kg Ds	--	--	--	0,0085	--
Som DDT/DDE/DDD	mg/kg Ds	--	--	--	0,029 ^{x)}	--
Aldrin	mg/kg Ds	--	--	--	<0,0010	--
Dieldrin	mg/kg Ds	--	--	--	<0,0010	--
Endrin	mg/kg Ds	--	--	--	<0,0010	--
Isodrin	mg/kg Ds	--	--	--	<0,0010	--
Telodrin	mg/kg Ds	--	--	--	<0,0010	--
Som Drins (STI)	mg/kg Ds	--	--	--	n.a.	--
alfa-HCH	mg/kg Ds	--	--	--	<0,0010	--
beta-HCH	mg/kg Ds	--	--	--	<0,0010	--
gamma-HCH	mg/kg Ds	--	--	--	<0,0010	--
Som HCH (STI)	mg/kg Ds	--	--	--	n.a.	--
Pentachloorbenzeen (QCB)	mg/kg Ds	--	--	--	<0,0010	--
Hexachloorbenzeen (HCB)	mg/kg Ds	--	--	--	<0,0010	--
cis-Chloordaan	mg/kg Ds	--	--	--	<0,0010	--
trans-Chloordaan	mg/kg Ds	--	--	--	<0,0010	--
cis-Heptachloorepoxide	mg/kg Ds	--	--	--	<0,0010	--
trans-Heptachloorepoxide	mg/kg Ds	--	--	--	<0,0010	--
Som cis/trans- Heptachloorepoxide	mg/kg Ds	--	--	--	n.a.	--
Heptachloor	mg/kg Ds	--	--	--	<0,0010	--
alfa-Endosulfan	mg/kg Ds	--	--	--	<0,0010	--
Chloorbenzenen						
Monochloorbenzeen	mg/kg Ds	--	--	--	<0,040 ^(ts)	--


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Opdracht 173663 Bodem / Eluaat

Blad 5 van 7

Eenheid	982937	982942	982949
	57 (1-1.5) + 59 (1-1.5)	22 (0-0.5) + 28 (0-0.5)	63 (1-1.5) + 69 (1-1.5)
	+ 61 (1-1.5) + 66 (1-1.5)	+ 29 (0-0.5) + 45 (0-0.5)	

Minerale olie

Koolwaterstof fractie C24-C28	mg/kg Ds	<12 ^{ts)}	12	53
Koolwaterstof fractie C28-C32	mg/kg Ds	<12 ^{ts)}	16	41
Koolwaterstof fractie C32-C36	mg/kg Ds	<12 ^{ts)}	17	89
Koolwaterstof fractie C36-C40	mg/kg Ds	<12 ^{ts)}	<4,0 ^{ts)}	63

Polychloorbifenylen

Som PCB (7 Ballschmüter)	mg/kg Ds	n.a.	0,0025 ^{x)}	n.a.
Som PCB (7 Ballschmüter) (Factor 0,7)	mg/kg Ds	0,0049 ^{y)}	0,0067 ^{y)}	0,0049 ^{y)}
PCB 28	mg/kg Ds	<0,0010	<0,0010	<0,0010
PCB 52	mg/kg Ds	<0,0010	<0,0010	<0,0010
PCB 101	mg/kg Ds	<0,0010	0,0025	<0,0010
PCB 118	mg/kg Ds	<0,0010	<0,0010	<0,0010
PCB 138	mg/kg Ds	<0,0010	<0,0010	<0,0010
PCB 153	mg/kg Ds	<0,0010	<0,0010	<0,0010
PCB 180	mg/kg Ds	<0,0010	<0,0010	<0,0010

Pesticiden (OCB's)

2,4-DDD (ortho, para-DDD)	mg/kg Ds	--	--	--
4,4-DDD (para, para-DDD)	mg/kg Ds	--	--	--
2,4-DDE (ortho, para-DDE)	mg/kg Ds	--	--	--
4,4-DDE (para, para-DDE)	mg/kg Ds	--	--	--
2,4-DDT (ortho, para-DDT)	mg/kg Ds	--	--	--
4,4-DDT (para, para-DDT)	mg/kg Ds	--	--	--
Som DDT/DDE/DDD	mg/kg Ds	--	--	--
Aldrin	mg/kg Ds	--	--	--
Dieldrin	mg/kg Ds	--	--	--
Endrin	mg/kg Ds	--	--	--
Isodrin	mg/kg Ds	--	--	--
Telodrin	mg/kg Ds	--	--	--
Som Drins (STI)	mg/kg Ds	--	--	--
alfa-HCH	mg/kg Ds	--	--	--
beta-HCH	mg/kg Ds	--	--	--
gamma-HCH	mg/kg Ds	--	--	--
Som HCH (STI)	mg/kg Ds	--	--	--
Pentachloorbenzeen (QCB)	mg/kg Ds	--	--	--
Hexachloorbenzeen (HCB)	mg/kg Ds	--	--	--
cis-Chloordaan	mg/kg Ds	--	--	--
trans-Chloordaan	mg/kg Ds	--	--	--
cis-Heptachloorepoxide	mg/kg Ds	--	--	--
trans-Heptachloorepoxide	mg/kg Ds	--	--	--
Som cis/trans-Heptachloorepoxide	mg/kg Ds	--	--	--
Heptachloor	mg/kg Ds	--	--	--
alfa-Endosulfan	mg/kg Ds	--	--	--

Chloorbenzenen

Monochloorbenzeen	mg/kg Ds	--	--	--
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AGROLAB
group



Opdracht 173663 Bodem / Eluaat

Blad 6 van 7

Eenheid	982899	982907	982915	982923	982932
	1 (0-0.5) + 2 (0-0.5) + 3 (0-0.5) + 4 (0-0.5) + 5 (0-0.5) + 6 (0-0.5) + 7 (0-0.5) + 8 (0-0.5) + 9 (0-0.5) + 10 (0-0.5)	11 (0-0.5) + 12 (0-0.5) + 13 (0-0.5) + 14 (0-0.5) + 15 (0-0.5) + 16 (0-0.5) + 17 (0-0.5) + 18 (0-0.5) + 19 (0-0.5) + 20 (0-0.5)	21 (0-0.5) + 22 (0-0.5) + 23 (0-0.5) + 24 (0-0.5) + 25 (0-0.5) + 26 (0-0.5) + 27 (0-0.5) + 28 (0-0.5) + 29 (0-0.5) + 30 (0-0.5)	31 (0-0.5) + 32 (0-0.5) + 33 (0-0.5) + 34 (0-0.5) + 35 (0-0.5) + 36 (0-0.5) + 37 (0-0.5) + 38 (0-0.5) + 39 (0-0.5) + 40 (0-0.5)	41 (0-0.5) + 42 (0-0.5) + 43 (0-0.5) + 44 (0-0.5) + 45 (0-0.5) + 46 (0-0.5) + 47 (0-0.5) + 48 (0-0.5) + 49 (0-0.5) + 50 (0-0.5)

Chloorbenzenen

1,2-Dichloorbenzeen	mg/kg Ds	--	--	--	<0,040 ^{ts)}	--
1,3-Dichloorbenzeen	mg/kg Ds	--	--	--	<0,040 ^{ts)}	--
1,4-Dichloorbenzeen	mg/kg Ds	--	--	--	<0,040 ^{ts)}	--
Som Dichloorbenzenen	mg/kg Ds	--	--	--	n.a.	--
1,2,3-Trichloorbenzeen	mg/kg Ds	--	--	--	<0,0030	--
1,2,4-Trichloorbenzeen	mg/kg Ds	--	--	--	<0,0030	--
1,3,5-Trichloorbenzeen	mg/kg Ds	--	--	--	<0,0030	--
Som Trichloorbenzenen	mg/kg Ds	--	--	--	n.a.	--
1,2,3,4-Tetrachloorbenzeen	mg/kg Ds	--	--	--	<0,0010	--
1,2,3,5/1,2,4,5-Tetrachloorbenzeen	mg/kg Ds	--	--	--	<0,0010	--
Som Tetrachloorbenzenen	mg/kg Ds	--	--	--	n.a.	--

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Opdracht 173663 Bodem / Eluaat

Blad 7 van 7

Eenheid	982937	982942	982949
	57 (1-1.5) + 59 (1-1.5)	22 (0-0.5) + 28 (0-0.5)	63 (1-1.5) + 69 (1-1.5)
	+ 61 (1-1.5) + 66 (1-1.5)	+ 29 (0-0.5) + 45 (0-0.5)	

Chloorbenzenen

1,2-Dichloorbenzeen	mg/kg Ds	--	--	--
1,3-Dichloorbenzeen	mg/kg Ds	--	--	--
1,4-Dichloorbenzeen	mg/kg Ds	--	--	--
Som Dichloorbenzenen	mg/kg Ds	--	--	--
1,2,3-Trichloorbenzeen	mg/kg Ds	--	--	--
1,2,4-Trichloorbenzeen	mg/kg Ds	--	--	--
1,3,5-Trichloorbenzeen	mg/kg Ds	--	--	--
Som Trichloorbenzenen	mg/kg Ds	--	--	--
1,2,3,4-Tetrachloorbenzeen	mg/kg Ds	--	--	--
1,2,3,5/1,2,4,5-Tetrachloorbenzeen	mg/kg Ds	--	--	--
Som Tetrachloorbenzenen	mg/kg Ds	--	--	--

Verklaring: "<" of n.a. betekent dat het gehalte van de component lager is dan de rapportagegrens. Verklaring: "<.....(+)" of n.a. betekent dat de betreffende component kwalitatief is aangetoond in het gebied tussen de detectiegrens en de rapportagegrens.

de daadwerkelijke rapportagegrens kan in sommige gevallen afwijken van de standaard waarde voor de betreffende analyse door bijvoorbeeld matrixeffecten of te weinig monstermateriaal.

++ Deze handeling is uitgevoerd.

x) Gehaltes beneden de rapportagegrens zijn niet mee inbegrepen.

#) Bij deze som zijn resultaten "<rapportagegrens" vermenigvuldigd met 0,7; indien een som is berekend uit minimaal één verhoogde rapportagegrens, dan dient voor het resultaat "<" gelezen te worden.

m) De bepalingsgrens is verhoogd, omdat door matrixeffecten, resp. co-elutie een kwantificering bemoeilijkt wordt.

ts) De bepalingsgrens is verhoogd vanwege het lage droge stofgehalte.

Het organische stof gehalte wordt gecorrigeerd voor het lutum gehalte, als geen lutum bepaald is wordt gecorrigeerd als ware het lutum gehalte 5,4%

De onderzoeksresultaten hebben alleen betrekking op het aangeleverde monstermateriaal. De onderzoekstijd omvat de periode tussen acceptatie van de opdracht en rapportage. Monsters met onbekende herkomst, kunnen slechts beperkt gecontroleerd worden op plausibiliteit.

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Klantenservice**Toegepaste methoden****Grond**

conform AS 3000: Monochloorbenzenen Som Dichloorbenzenen Som Trichloorbenzenen Som Tetrachloorbenzenen
Koolwaterstof fractie C10-C40 Som PAK (VROM) Som PCB (7 Ballschmider) Som PCB (7 Ballschmider) (Factor 0,7)
Som PAK (VROM) (Factor 0,7) Som DDT/DDE/DDD Isodrin Telodrin Som Drins (STI) Som HCH (STI)
Pentachloorbenzeen (QCB) Hexachloorbenzeen (HCB) cis-Chloordaan trans-Chloordaan Som cis/trans-Heptachlorepoxyde
Heptachloor alfa-Endosulfan

conform AS 3000: n) Carbonaten dmv asrest (AS3000) Koolwaterstof fractie C10-C12 Koolwaterstof fractie C12-C16
Koolwaterstof fractie C16-C20 Koolwaterstof fractie C20-C24 Koolwaterstof fractie C24-C28 Koolwaterstof fractie C28-C32
Koolwaterstof fractie C32-C36 Koolwaterstof fractie C36-C40

conform AS 3000: Voorbehandeling conform AS3000 Droge stof (Ds) Barium (Ba) Lood (Pb) Cadmium (Cd) Cobalt (Co) IJzer (Fe2O3)
Koper (Cu) Molybdeen (Mo) Nikkel (Ni) Kwik (Hg) Zink (Zn) Fractie < 2 µm

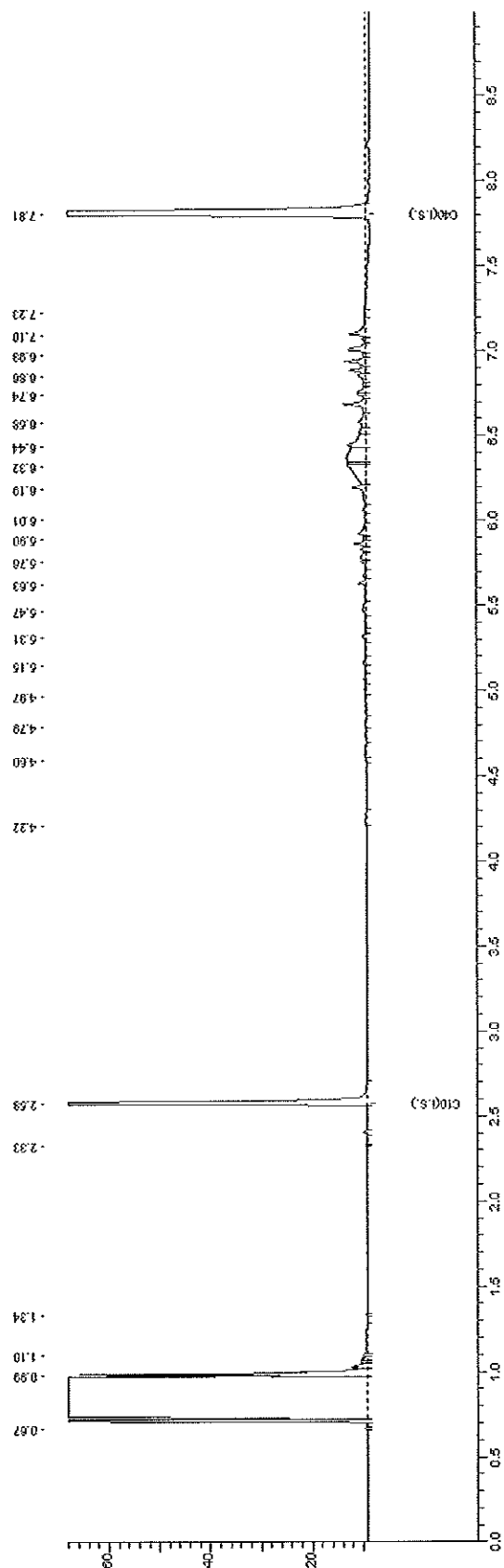
conform AS 3000 en NEN 5754: Organische stof

conform AS 3000/NEN 6961/NEN-EN 13657/ISO 11466: Koningswater ontsluiting

n) Niet geaccrediteerd

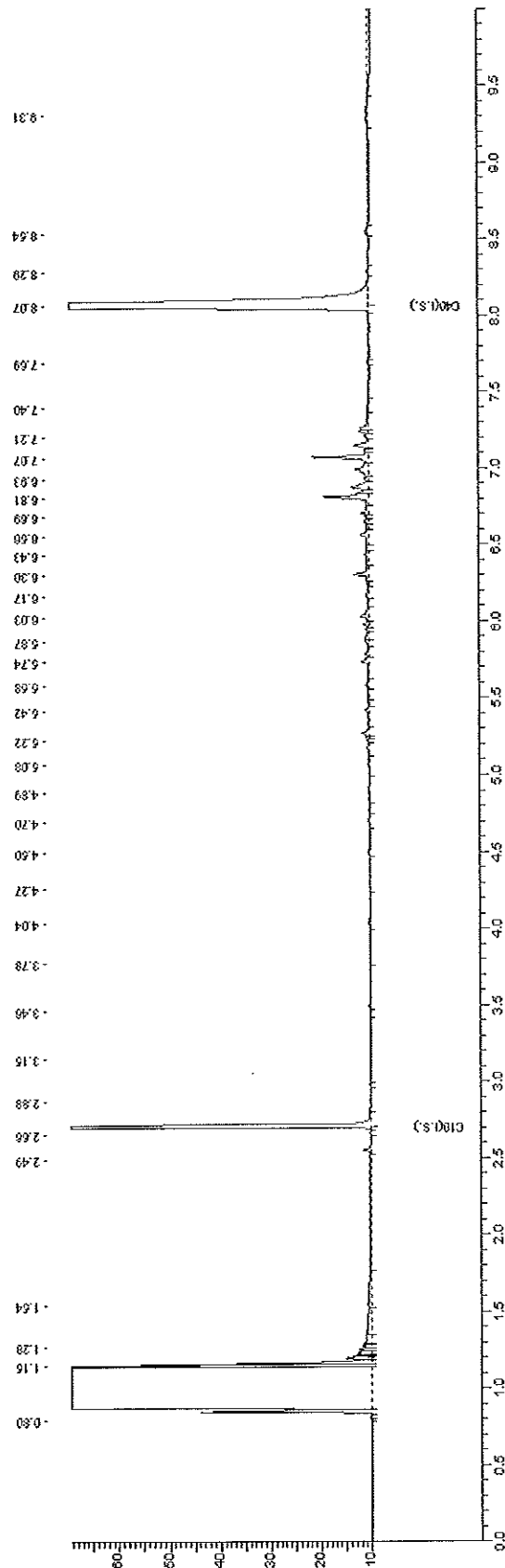


Chromatogram for Order No. 173663, Analysis No. 982899, created at 26.02.2010 21:52:12



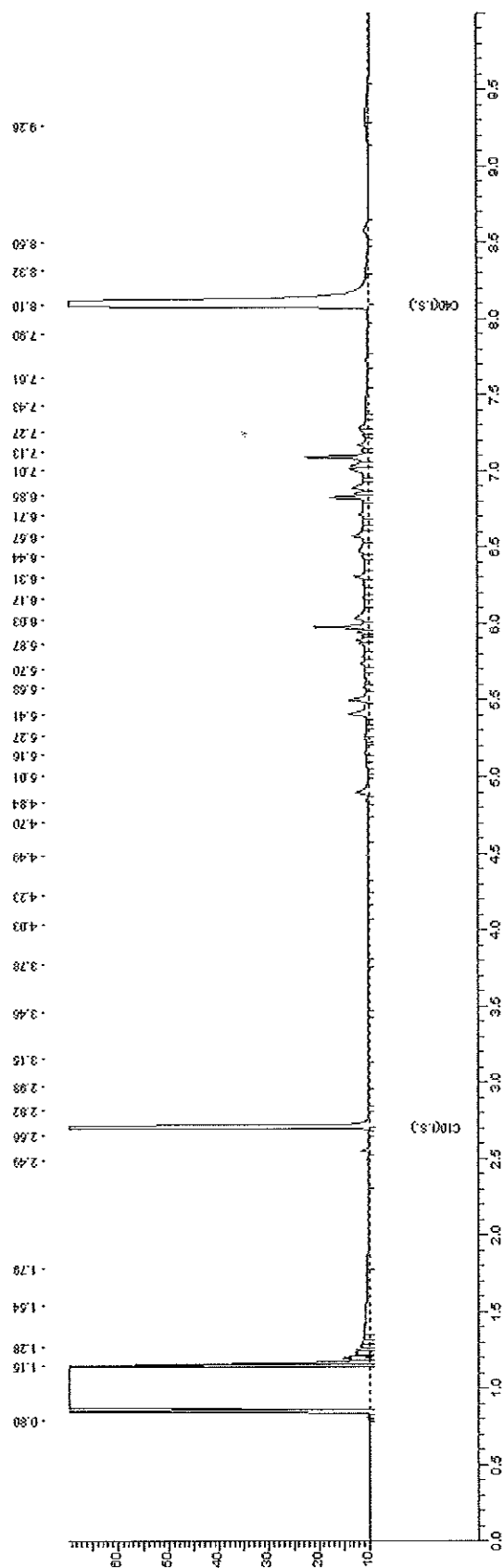


Chromatogram for Order No. 173663, Analysis No. 982907, created at 26.02.2010 16:17:07



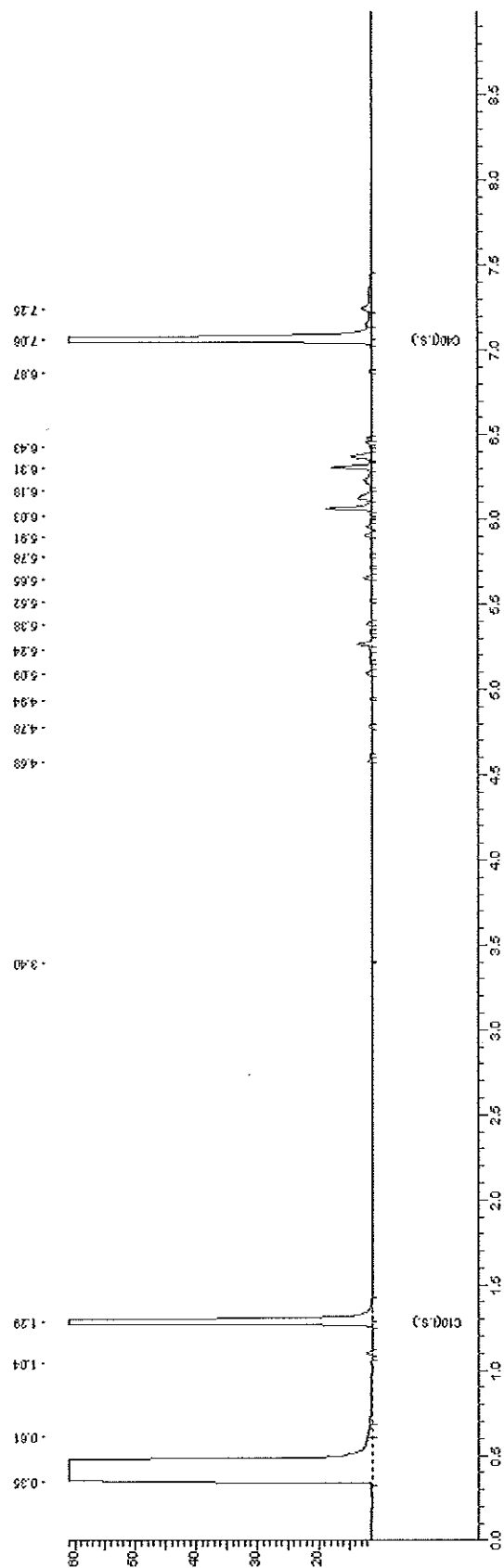


Chromatogram for Order No. 173663, Analysis No. 982915, created at 26.02.2010 14:32:07



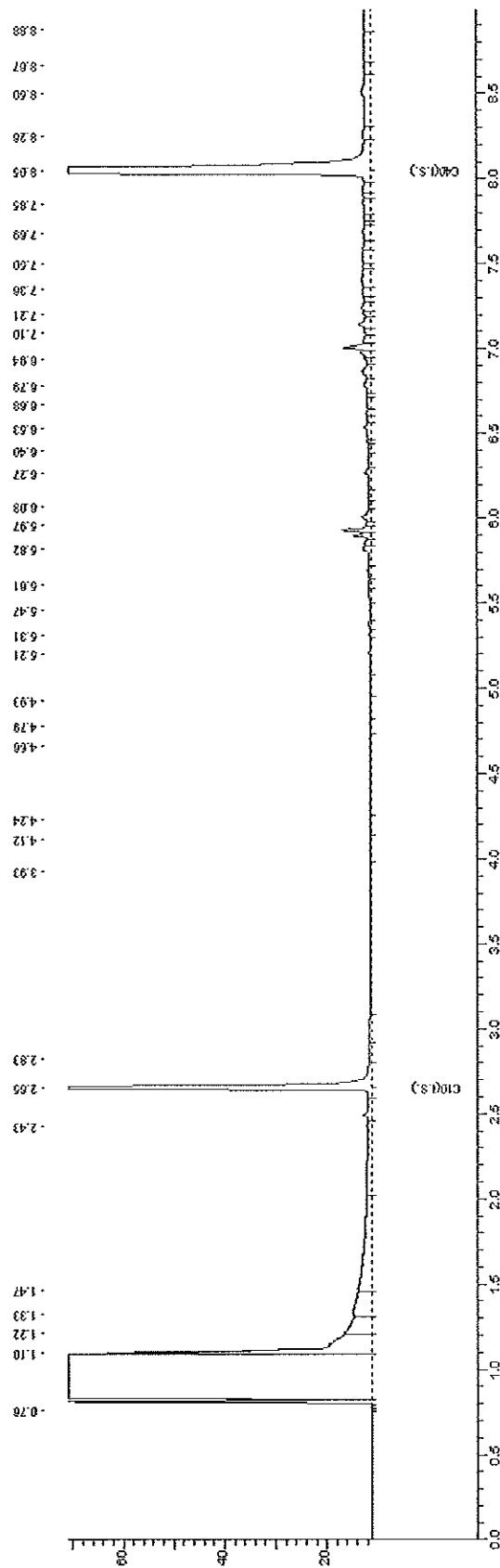


Chromatogram for Order No. 173663, Analysis No. 982923, created at 26.02.2010 23:42:07



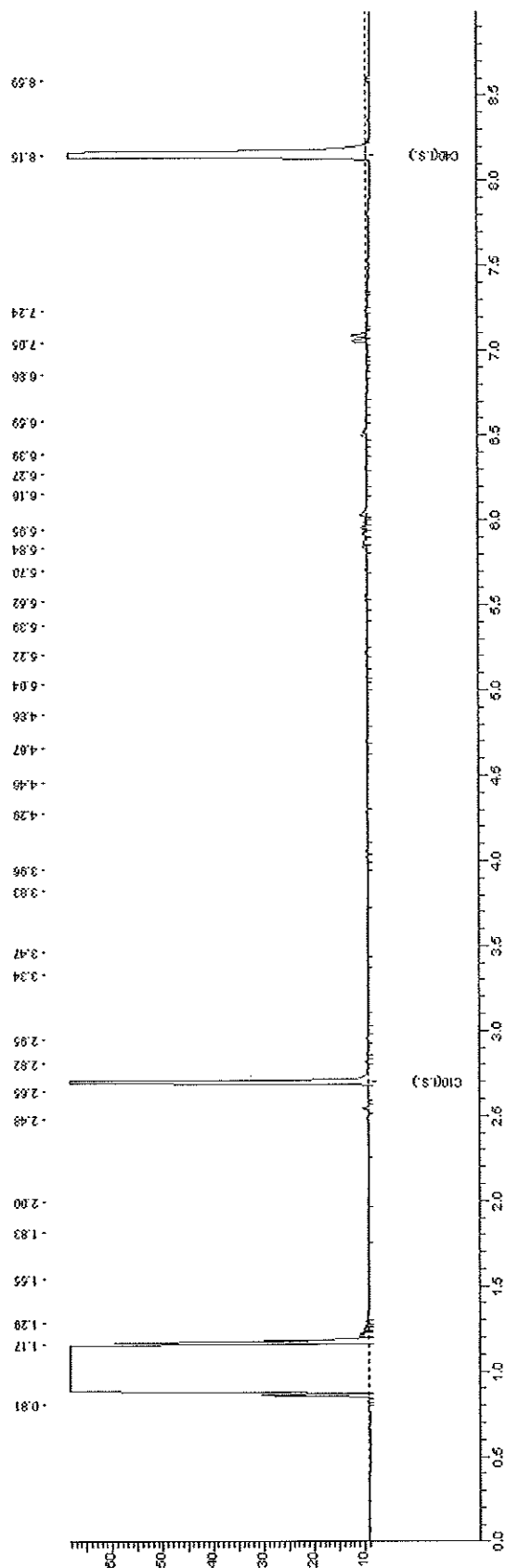


Chromatogram for Order No. 173663, Analysis No. 982932, created at 27.02.2010 00:17:09



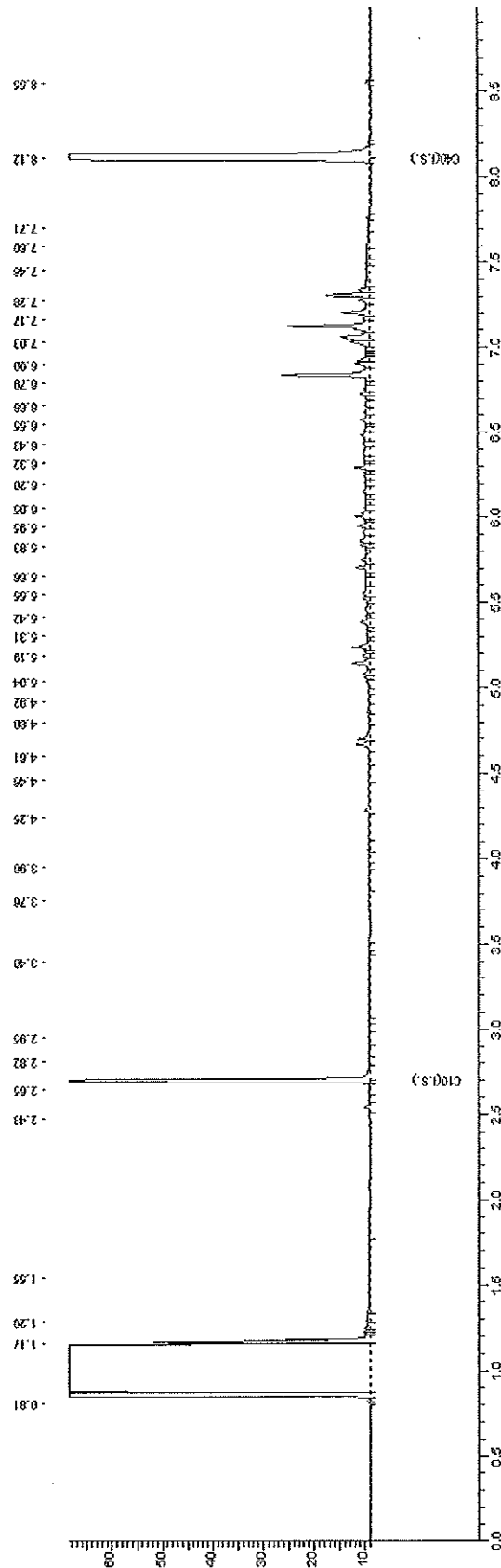


Chromatogram for Order No. 173663, Analysis No. 982937, created at 01.03.2010 13:57:08



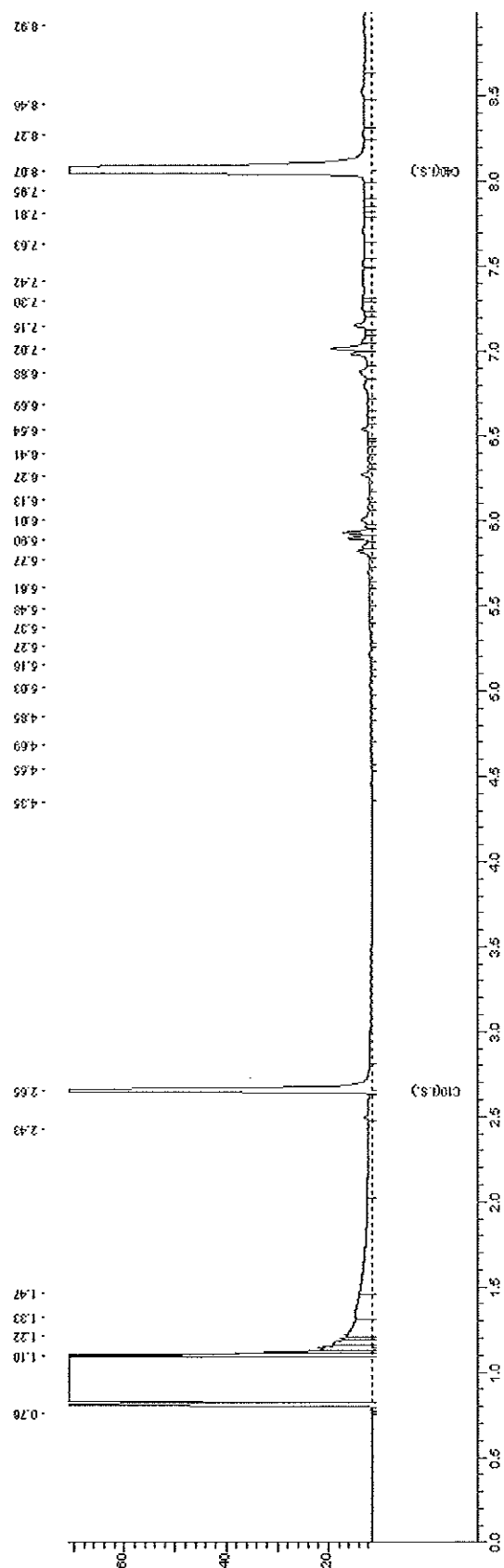


Chromatogram for Order No. 173663, Analysis No. 982942, created at 01.03.2010 12:22:07





Chromatogram for Order No. 173663, Analysis No. 982949, created at 26.02.2010 23:52:10





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Karen de Roo
POSTBUS 133
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Datum 03.03.2010
Relatienr 35003840
Opdrachtnr. 174327
Blad 1 van 2

ANALYSERAPPORT

Opdracht 174327 Overig afval

Opdrachtgever 35003840 TAUW DEVENTER
Referentie 4707529 Phase II soil & gw Ter Aar, NL
Opdrachtacceptatie 01.03.10
Monsternemer Opdrachtgever

Geachte heer, mevrouw,

Hierbij zenden wij u de resultaten van het door u aangevraagde laboratoriumonderzoek.
De analyses zijn geaccrediteerd volgens NEN-EN-ISO/IEC 17025, tenzij anders vermeld bij toegepaste methoden en uitgevoerd overeenkomstig de onderzoeksmethoden die worden genoemd in de meest actuele versie van onze verrichtingenlijst van de Raad voor Accreditatie, accreditatienummer L005.

Indien u gegevens wenst over de meetonzekerheden van een methode, kunnen wij u deze op verzoek verstrekken.

Dit rapport mag alleen in zijn geheel worden gereproduceerd. Eventuele bijlagen zijn onderdeel van het rapport.

Indien u nog vragen heeft of aanvullende informatie wenst, verzoeken wij u om contact op te nemen met Klantenservice.

Wij vertrouwen erop u met de toegezonden informatie van dienst te zijn.

Met vriendelijke groet,

AL-West B.V. Dhr. Peter Wijers, Tel. +31/570699557
Klantenservice

**AL-West B.V.**

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Blad 2 van 2

Opdracht 174327 Overig afval

Monsternr.	Monstername	Monsteromschrijving
986924	25.02.2010	90

Eenheid 986924
90

Asbest

Asbest (Bulk) - Aktinooliet	% (m/m)	<0,1
Asbest (Bulk) - Anthophylliet	% (m/m)	<0,1
Asbest (Bulk) - Amosiet	% (m/m)	<0,1
Asbest (Bulk) - Chrysotiel	% (m/m)	10-15
Asbest (Bulk) - Crocydooliet	% (m/m)	2-5
Asbest (Bulk) - Tremooliet	% (m/m)	<0,1
Asbest (Bulk) - Hechtgebonden	% (m/m)	ja

Verklaring: "<" of n.a. betekent dat het gehalte van de component lager is dan de rapportagegrens. Verklaring: "<.....(+)" of n.a. betekent dat de betreffende component kwalitatief is aangetoond in het gebied tussen de detectiegrens en de rapportagegrens.
de daadwerkelijke rapportagegrens kan in sommige gevallen afwijken van de standaard waarde voor de betreffende analyse door bijvoorbeeld matrixeffecten of te weinig monstermateriaal.

++ Deze handeling is uitgevoerd.

De onderzoeksresultaten hebben alleen betrekking op het aangeleverde monstermateriaal. De onderzoekstijd omvat de periode tussen acceptatie van de opdracht en rapportage. Monsters met onbekende herkomst, kunnen slechts beperkt gecontroleerd worden op plausibiliteit.

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Klantenservice

Toegepaste methoden**Grond**

conform NEN 5896: Asbest (Bulk) - Aktinooliet Asbest (Bulk) - Anthophylliet Asbest (Bulk) - Amosiet Asbest (Bulk) - Chrysotiel
Asbest (Bulk) - Crocydooliet Asbest (Bulk) - Tremooliet Asbest (Bulk) - Hechtgebonden

Appendix

6

Analytical results groundwater



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Datum 12.03.2010
Relatienr 35003840
Opdrachtnr. 175284
Blad 1 van 7

ANALYSERAPPORT

Opdracht 175284 Water

Opdrachtgever 35003840 TAUW DEVENTER
Referentie 4707529 Phase II soil & gw Ter Aar, NL
Opdrachtacceptatie 05.03.10
Monsternemer Opdrachtgever

Geachte heer, mevrouw,

Hierbij zenden wij U de resultaten van het door u aangevraagde laboratoriumonderzoek.
De analyses zijn, tenzij anders vermeld, uitgevoerd overeenkomstig onze erkenning voor de werkzaamheid
"Analyse voor milieuhygiënisch bodemonderzoek" van het Besluit Bodemkwaliteit.

Indien u gegevens wenst over de meetonzekerheden van een methode, kunnen wij u deze op verzoek verstrekken.

Dit rapport mag alleen in zijn geheel worden gereproduceerd. Eventuele bijlagen zijn onderdeel van het rapport.

Indien u nog vragen heeft of aanvullende informatie wenst, verzoeken wij u om contact op te nemen met
Klantenservice.

Wij vertrouwen U met de toegezonden informatie van dienst te zijn.

Met vriendelijke groet,

AL-West B.V. Dhr. Peter Wijers, Tel. +31/570699557
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Blad 2 van 7

Opdracht 175284 Water

Monsternr.	Monsteromschrijving	Monstername	Monsternamepunt
992230	Pb 66 F(1-2)	05.03.2010	
992231	Pb 67 F(1-2)	05.03.2010	
992232	Pb 68 F(1-2)	05.03.2010	
992233	Pb 69 F(1-2)	05.03.2010	
992234	Pb 70 F(1-2)	05.03.2010	

	Eenheid	992230 Pb 66 F(1-2)	992231 Pb 67 F(1-2)	992232 Pb 68 F(1-2)	992233 Pb 69 F(1-2)	992234 Pb 70 F(1-2)
Metalen						
Barium (Ba)	µg/l	71	53	72	39	89
Cadmium (Cd)	µg/l	<0,80	<0,80	<0,80	<0,80	<0,80
Cobalt (Co)	µg/l	<5,0	<5,0	<5,0	<5,0	<5,0
Koper (Cu)	µg/l	<5,0	<5,0	<5,0	21	<5,0
Kwik (Hg)	µg/l	<0,05	<0,05	<0,05	0,07	<0,05
Lood (Pb)	µg/l	<10	<10	<10	<10	<10
Molybdeen (Mo)	µg/l	<3,0	<3,0	<3,0	<3,0	<3,0
Nikkel (Ni)	µg/l	<10	<10	<10	12	<10
Zink (Zn)	µg/l	<20	<20	<20	140	<20

Aromaten						
Benzeen	µg/l	<0,20	<0,20	<0,20	<0,20	<0,20
Tolueen	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
Ethylbenzeen	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
<i>m,p</i> -Xyleen	µg/l	<0,20	<0,20	<0,20	<0,20	<0,20
<i>o</i> -Xyleen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
Som Xylenen	µg/l	n.a.	n.a.	n.a.	n.a.	n.a.
Som Xylenen (Factor 0,7)	µg/l	0,21 ⁿ⁾	0,21 ⁿ⁾	0,21 ⁿ⁾	0,21 ⁿ⁾	0,21 ⁿ⁾
Naftaleen	µg/l	<0,050	0,10	<0,050	<0,050	0,11
Styreen	µg/l	<0,30	<0,30	<0,30	<0,30	<0,60 ^{m)}

Chloorhoudende koolwaterstoffen						
Dichloormethaan	µg/l	<0,20	<0,20	<0,20	<0,20	<0,20
Trichloormethaan (Chloroform)	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
Tetrachloormethaan (Tetra)	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1-Dichloorethaan	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
1,2-Dichloorethaan	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
1,1,1-Trichloorethaan	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1,2-Trichloorethaan	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
Vinylchloride	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1-Dichlooretheen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
<i>Cis</i> -1,2-Dichlooretheen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
<i>trans</i> -1,2-Dichlooretheen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
Som <i>cis/trans</i> - 1,2-Dichlooretheen	µg/l	n.a.	n.a.	n.a.	n.a.	n.a.
Som <i>cis/trans</i> -1,2-Dichlooretheen (Factor 0,7)	µg/l	0,14 ⁿ⁾	0,14 ⁿ⁾	0,14 ⁿ⁾	0,14 ⁿ⁾	0,14 ⁿ⁾
Trichlooretheen (Tri)	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
Tetrachlooretheen (Per)	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1-Dichloorpropaan	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
1,2-Dichloorpropaan	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30



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Blad 3 van 7

Opdracht 175284 Water

Monsternr.	Monsteromschrijving	Monstername	Monsternamepunt
992235	Pb 71 F(1-2)	05.03.2010	
992236	Pb 72 F(1-2)	05.03.2010	
992237	Pb 73 F(1-2)	05.03.2010	
992238	Pb 74 F(1-2)	05.03.2010	
992239	Pb 75 F(1-2)	05.03.2010	

	Eenheid	992235 Pb 71 F(1-2)	992236 Pb 72 F(1-2)	992237 Pb 73 F(1-2)	992238 Pb 74 F(1-2)	992239 Pb 75 F(1-2)
Metalen						
Barium (Ba)	µg/l	27	36	110	66	88
Cadmium (Cd)	µg/l	<0,80	<0,80	<0,80	<0,80	<0,80
Cobalt (Co)	µg/l	<5,0	<5,0	<5,0	<5,0	5,5
Koper (Cu)	µg/l	<5,0	<5,0	<5,0	<5,0	<5,0
Kwik (Hg)	µg/l	<0,05	<0,05	<0,05	<0,05	<0,05
Lood (Pb)	µg/l	<10	<10	<10	<10	<10
Molybdeen (Mo)	µg/l	13	11	17	5,5	<3,0
Nikkel (Ni)	µg/l	<10	<10	<10	<10	<10
Zink (Zn)	µg/l	<20	<20	<20	<20	<20
Aromaten						
Benzeen	µg/l	<0,20	<0,20	<0,20	<0,20	<0,20
Tolueen	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
Ethylbenzeen	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
m,p-Xyleen	µg/l	<0,20	0,81	0,29	<0,20	<0,20
o-Xyleen	µg/l	<0,10	0,14	0,12	<0,10	<0,10
Som Xylenen	µg/l	n.a.	0,95	0,41	n.a.	n.a.
Som Xylenen (Factor 0,7)	µg/l	0,21 ^{*)}	0,95	0,41	0,21 ^{*)}	0,21 ^{*)}
Naftaleen	µg/l	<0,050	<0,050	43	0,16	<0,050
Styreen	µg/l	<0,30	0,34	<0,60 ^{m)}	0,31	<0,30
Chloorhoudende koolwaterstoffen						
Dichloormethaan	µg/l	<0,20	<0,20	<0,20	<0,20	<0,20
Trichloormethaan (Chloroform)	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
Tetrachloormethaan (Tetra)	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1-Dichloorethaan	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
1,2-Dichloorethaan	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
1,1,1-Trichloorethaan	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1,2-Trichloorethaan	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
Vinylchloride	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1-Dichlooretheen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
Cis-1,2-Dichlooretheen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
trans-1,2-Dichlooretheen	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
Som cis/trans- 1,2-Dichlooretheen	µg/l	n.a.	n.a.	n.a.	n.a.	n.a.
Som cis/trans-1,2-Dichlooretheen (Factor 0,7)	µg/l	0,14 ^{*)}	0,14 ^{*)}	0,14 ^{*)}	0,14 ^{*)}	0,14 ^{*)}
Trichlooretheen (Tri)	µg/l	<0,60	<0,60	<0,60	<0,60	<0,60
Tetrachlooretheen (Per)	µg/l	<0,10	<0,10	<0,10	<0,10	<0,10
1,1-Dichloorpropaan	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
1,2-Dichloorpropaan	µg/l	<0,30	<0,30	<0,30	<0,30	<0,30


Opdracht 175284 Water

Blad 4 van 7

Monsternr.	Monsteromschrijving	Monstername	Monsternamepunt
992240	Pb 76 F(1-2)	05.03.2010	
992241	Pb 77 F(1-2)	05.03.2010	

Eenheid	992240 Pb 76 F(1-2)	992241 Pb 77 F(1-2)
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Metalen

Barium (Ba)	µg/l	100	130
Cadmium (Cd)	µg/l	<0,80	<0,80
Cobalt (Co)	µg/l	13	<5,0
Koper (Cu)	µg/l	<5,0	<5,0
Kwik (Hg)	µg/l	<0,05	<0,05
Lood (Pb)	µg/l	<10	<10
Molybdeen (Mo)	µg/l	12	<3,0
Nikkel (Ni)	µg/l	<10	<10
Zink (Zn)	µg/l	<20	<20

Aromaten

Benzeen	µg/l	<0,20	<0,20
Tolueen	µg/l	<0,30	<0,30
Ethylbenzeen	µg/l	<0,30	<0,30
<i>m,p</i> -Xyleen	µg/l	<0,20	<0,20
<i>o</i> -Xyleen	µg/l	<0,10	<0,10
Som Xylenen	µg/l	n.a.	n.a.
Som Xylenen (Factor 0,7)	µg/l	0,21 ^{h)}	0,21 ^{h)}
Naftaleen	µg/l	<0,050	<0,050
Styreen	µg/l	<0,30	<0,30

Chloorhoudende koolwaterstoffen

Dichloormethaan	µg/l	<0,20	<0,20
Trichloormethaan (Chloroform)	µg/l	<0,60	<0,60
Tetrachloormethaan (Tetra)	µg/l	<0,10	<0,10
1,1-Dichloorethaan	µg/l	<0,60	<0,60
1,2-Dichloorethaan	µg/l	<0,60	<0,60
1,1,1-Trichloorethaan	µg/l	<0,10	<0,10
1,1,2-Trichloorethaan	µg/l	<0,10	<0,10
Vinylchloride	µg/l	<0,10	<0,10
1,1-Dichlooretheen	µg/l	<0,10	<0,10
<i>Cis</i> -1,2-Dichlooretheen	µg/l	<0,10	<0,10
<i>trans</i> -1,2-Dichlooretheen	µg/l	<0,10	<0,10
Som <i>cis/trans</i> -1,2-Dichlooretheen	µg/l	n.a.	n.a.
Som <i>cis/trans</i> -1,2-Dichlooretheen (Factor 0,7)	µg/l	0,14 ^{h)}	0,14 ^{h)}
Trichlooretheen (Tri)	µg/l	<0,60	<0,60
Tetrachlooretheen (Per)	µg/l	<0,10	<0,10
1,1-Dichloorpropaan	µg/l	<0,30	<0,30
1,2-Dichloorpropaan	µg/l	<0,30	<0,30



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Blad 5 van 7

Opdracht 175284 Water

Eenheid	992230 Pb 66 F(1-2)	992231 Pb 67 F(1-2)	992232 Pb 68 F(1-2)	992233 Pb 69 F(1-2)	992234 Pb 70 F(1-2)
Chloorhoudende koolwaterstoffen					
1,3-Dichloorpropaan µg/l	<0,30	<0,30	<0,30	<0,30	<0,30
Som Dichloorpropanen µg/l	n.a.	n.a.	n.a.	n.a.	n.a.
Som Dichloorpropanen (Factor 0,7) µg/l	0,63 ⁿ⁾	0,63 ⁿ⁾	0,63 ⁿ⁾	0,63 ⁿ⁾	0,63 ⁿ⁾
Minerale olie					
Koolwaterstof fractie C10-C40 µg/l	<100	<100	<100	<100	<100
Koolwaterstof fractie C10-C12 µg/l	<20	<20	<20	<20	<20
Koolwaterstof fractie C12-C16 µg/l	<20	<20	<20	<20	<20
Koolwaterstof fractie C16-C20 µg/l	<10	<10	<10	<10	<10
Koolwaterstof fractie C20-C24 µg/l	<10	<10	<10	<10	<10
Koolwaterstof fractie C24-C28 µg/l	<10	<10	<10	<10	<10
Koolwaterstof fractie C28-C32 µg/l	<10	<10	<10	<10	<10
Koolwaterstof fractie C32-C36 µg/l	<10	<10	<10	<10	<10
Koolwaterstof fractie C36-C40 µg/l	<10	<10	<10	<10	<10
Broomhoudende koolwaterstoffen					
Tribroommethaan (bromoform) µg/l	<0,60	<0,60	<0,60	<0,60	<0,60



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Blad 6 van 7

Opdracht 175284 Water

Eenheid	992235 Pb 71 F(1-2)	992236 Pb 72 F(1-2)	992237 Pb 73 F(1-2)	992238 Pb 74 F(1-2)	992239 Pb 75 F(1-2)
Chloorhoudende koolwaterstoffen					
1,3-Dichloorpropan	µg/l	<0,30	<0,30	<0,30	<0,30
Som Dichloorpropanen	µg/l	n.a.	n.a.	n.a.	n.a.
Som Dichloorpropanen (Factor 0,7)	µg/l	0,63 ^{aj}	0,63 ^{aj}	0,63 ^{aj}	0,63 ^{aj}
Minerale olie					
Koolwaterstof fractie C10-C40	µg/l	<100	<100	280	<100
Koolwaterstof fractie C10-C12	µg/l	<20	<20	100	<20
Koolwaterstof fractie C12-C16	µg/l	<20	<20	99	<20
Koolwaterstof fractie C16-C20	µg/l	<10	<10	24	<10
Koolwaterstof fractie C20-C24	µg/l	<10	<10	20	<10
Koolwaterstof fractie C24-C28	µg/l	<10	<10	22	<10
Koolwaterstof fractie C28-C32	µg/l	<10	<10	13	<10
Koolwaterstof fractie C32-C36	µg/l	<10	<10	<10	<10
Koolwaterstof fractie C36-C40	µg/l	<10	<10	<10	<10
Broomhoudende koolwaterstoffen					
Tribroommethaan (bromoform)	µg/l	<0,60	<0,60	<0,60	<0,60

**AL-West B.V.**

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Opdracht 175284 Water

Blad 7 van 7

Eenheid	992240 Pb 76 F(1-2)	992241 Pb 77 F(1-2)
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Chloorhoudende koolwaterstoffen

1,3-Dichloorpropaan	µg/l	<0,30	<0,30
Som Dichloorpropanen	µg/l	n.a.	n.a.
Som Dichloorpropanen (Factor 0,7)	µg/l	0,63 ^{m)}	0,63 ^{m)}

Minerale olie

Koolwaterstof fractie C10-C40	µg/l	<100	<100
Koolwaterstof fractie C10-C12	µg/l	<20	<20
Koolwaterstof fractie C12-C16	µg/l	<20	<20
Koolwaterstof fractie C16-C20	µg/l	<10	<10
Koolwaterstof fractie C20-C24	µg/l	<10	<10
Koolwaterstof fractie C24-C28	µg/l	15	<10
Koolwaterstof fractie C28-C32	µg/l	11	<10
Koolwaterstof fractie C32-C36	µg/l	<10	<10
Koolwaterstof fractie C36-C40	µg/l	<10	<10

Broomhoudende koolwaterstoffen

Tribroommethaan (bromoform)	µg/l	<0,60	<0,60
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Verklaring: "<" of n.a. betekent dat het gehalte van de component lager is dan de rapportagegrens. Verklaring: "<.....(+)" of n.a. betekent dat de betreffende component kwalitatief is aangetoond in het gebied tussen de detectiegrens en de rapportagegrens.

de daadwerkelijke rapportagegrens kan in sommige gevallen afwijken van de standaard waarde voor de betreffende analyse door bijvoorbeeld matrixeffecten of te weinig monstermateriaal.

++ Deze handeling is uitgevoerd.

#) Bij deze som zijn resultaten "<rapportagegrens" vermenigvuldigd met 0,7; indien een som is berekend uit minimaal één verhoogde rapportagegrens, dan dient voor het resultaat "<" gelezen te worden.

m) De bepalingsgrens is verhoogd, omdat door matrixeffecten, resp. co-elutie een kwantificering bemoeilijkt wordt.

De onderzoeksresultaten hebben alleen betrekking op het aangeleverde monstermateriaal. De onderzoekstijd omvat de periode tussen acceptatie van de opdracht en rapportage. Monsters met onbekende herkomst, kunnen slechts beperkt gecontroleerd worden op plausibiliteit.

AL-West B.V. Dhr. Peter Wijers, Tel. +31/570699557**Klantenservice****Toegepaste methoden**

conform AS 3000: Dichloormethaan Tribroommethaan (bromoform) Benzeen Trichloormethaan (Chloroform) Tetrachloormethaan (Tetra)
Tolueen Ethylbenzeen 1,1-Dichloorethaan 1,2-Dichloorethaan Som Xylenen Naftaleen Styreen 1,1,1-Trichloorethaan
1,1,2-Trichloorethaan Vinylchloride 1,1-Dichlooretheen Som cis/trans- 1,2-Dichlooretheen Trichlooretheen (Tri)
Tetrachlooretheen (Per) Som Dichloorpropanen Koolwaterstof fractie C10-C40

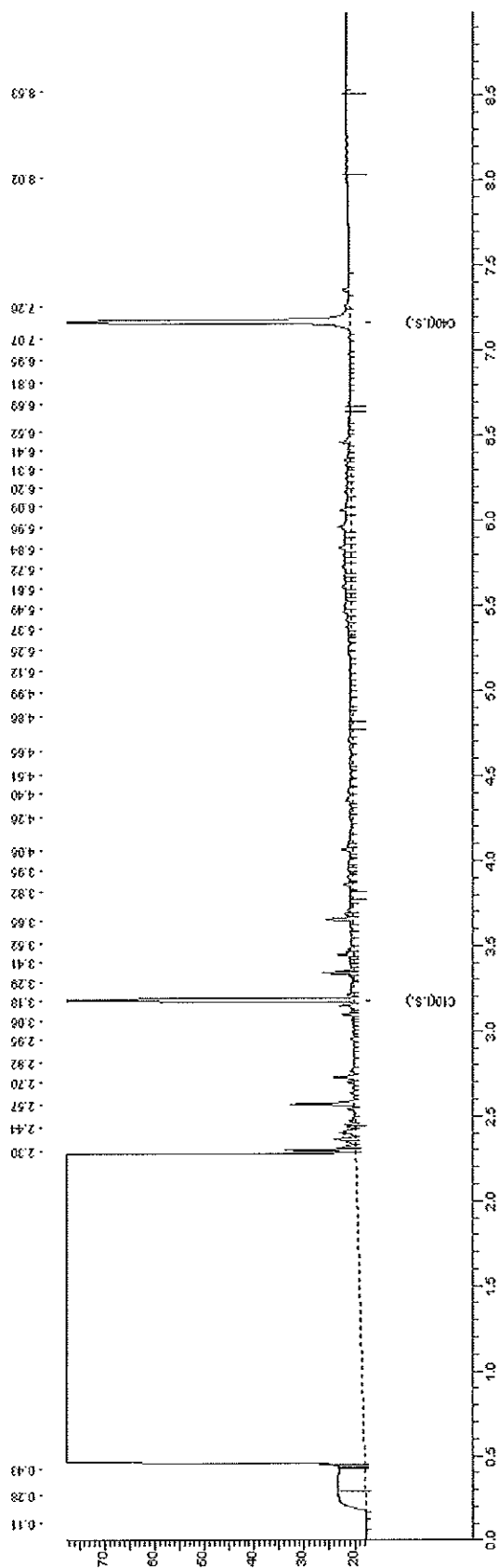
conform AS 3000: n) Koolwaterstof fractie C10-C12 Koolwaterstof fractie C12-C16 Koolwaterstof fractie C16-C20 Koolwaterstof fractie C20-C24
Koolwaterstof fractie C24-C28 Koolwaterstof fractie C28-C32 Koolwaterstof fractie C32-C36 Koolwaterstof fractie C36-C40

conform AS 3000: Barium (Ba) Lood (Pb) Cadmium (Cd) Cobalt (Co) Koper (Cu) Molybdeen (Mo) Nikkel (Ni) Kwik (Hg) Zink (Zn)
Som Xylenen (Factor 0,7) Som cis/trans-1,2-Dichlooretheen (Factor 0,7) Som Dichloorpropanen (Factor 0,7)

n) Niet geaccrediteerd

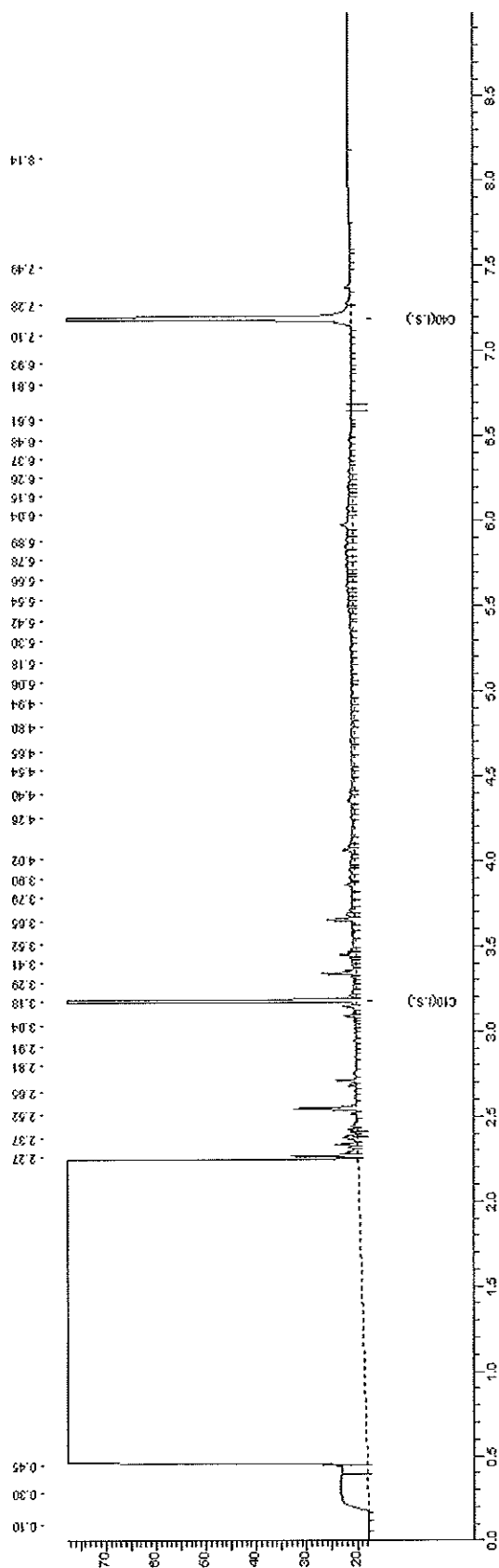


Chromatogram for Order No. 175284, Analysis No. 992230, created at 10.03.2010 18:22:07



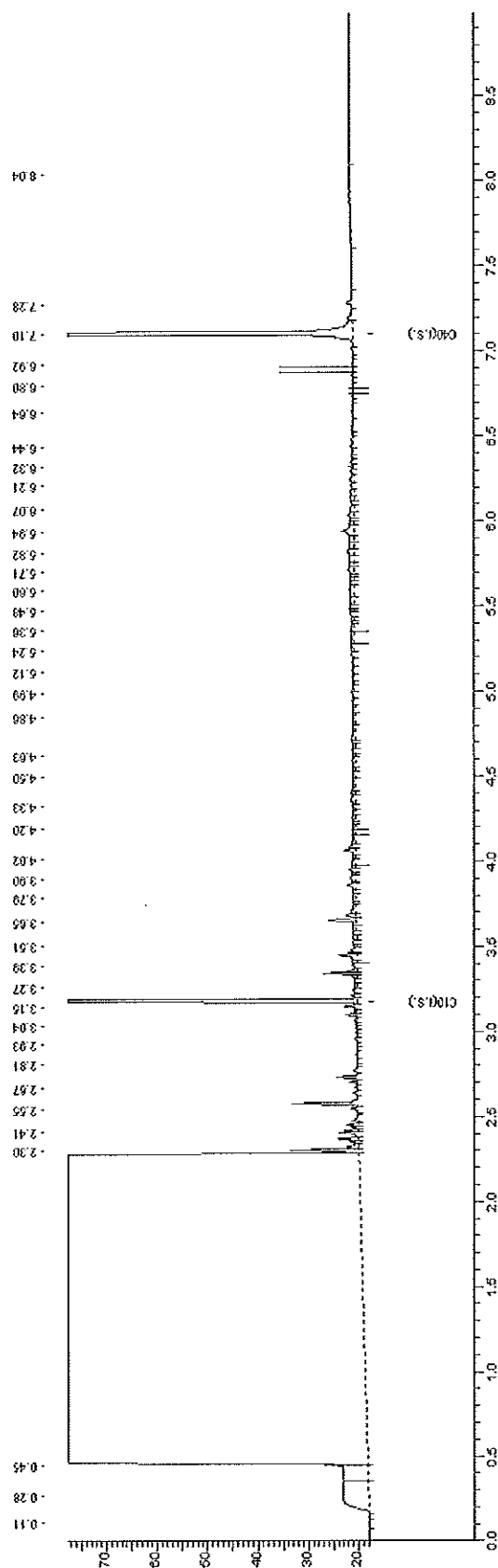


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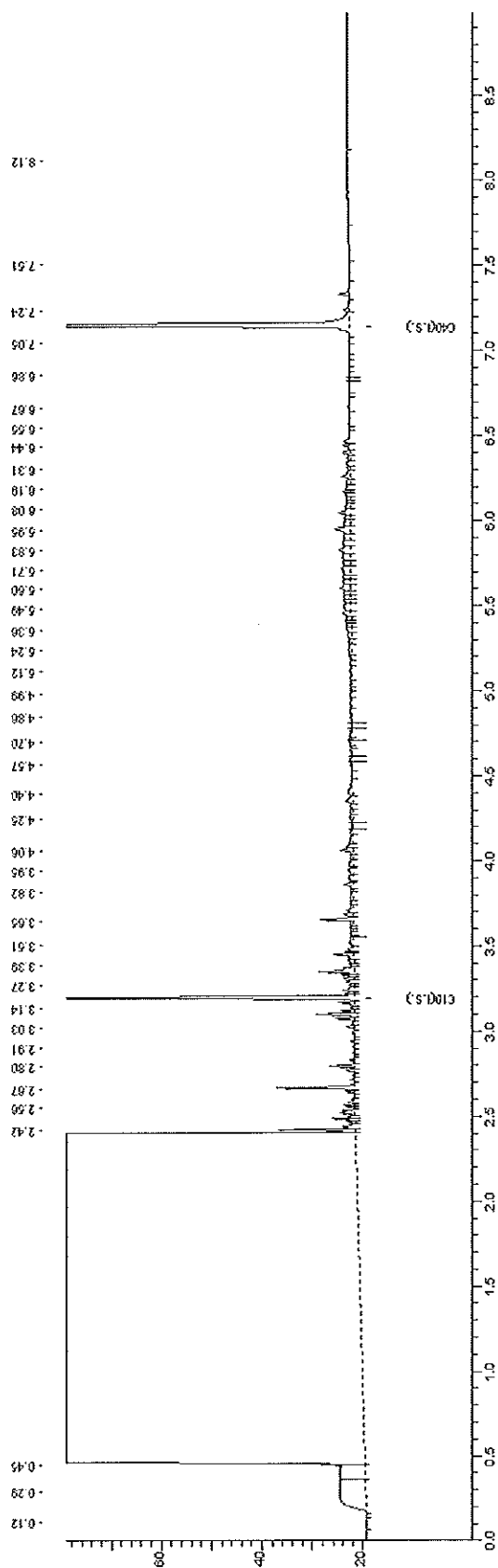


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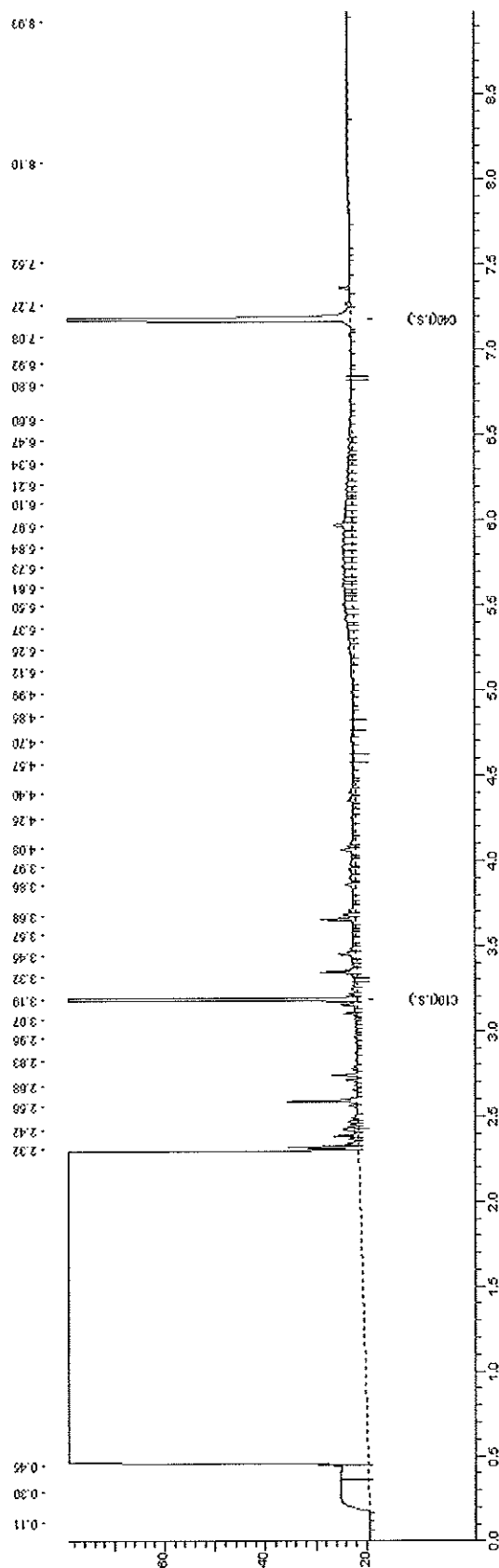


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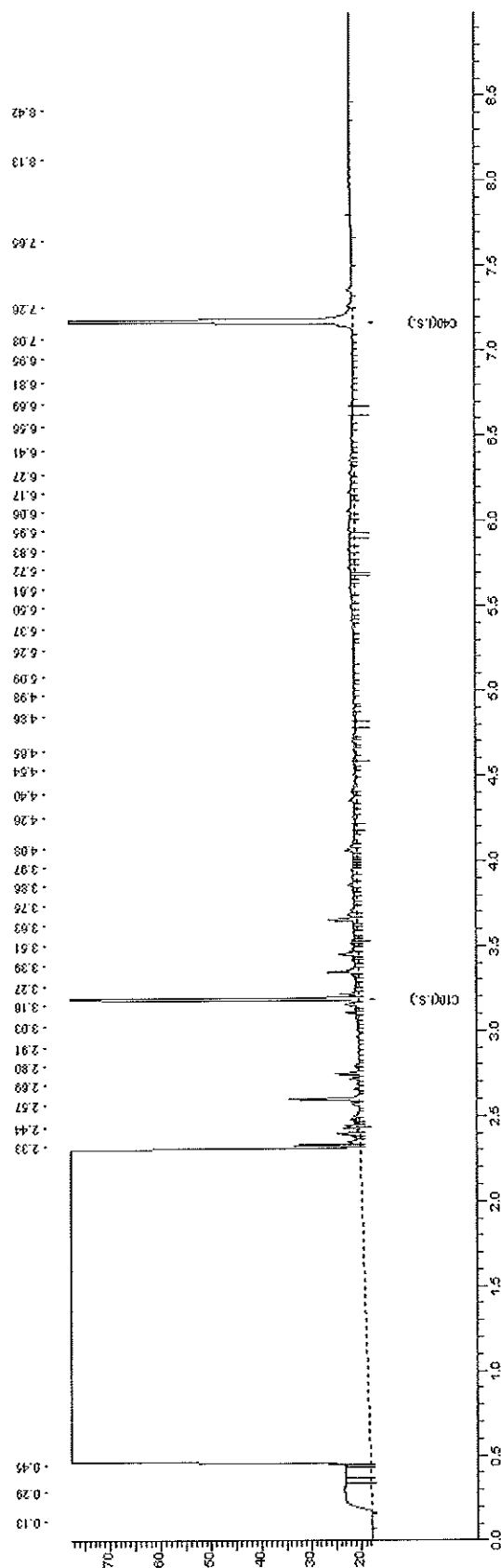


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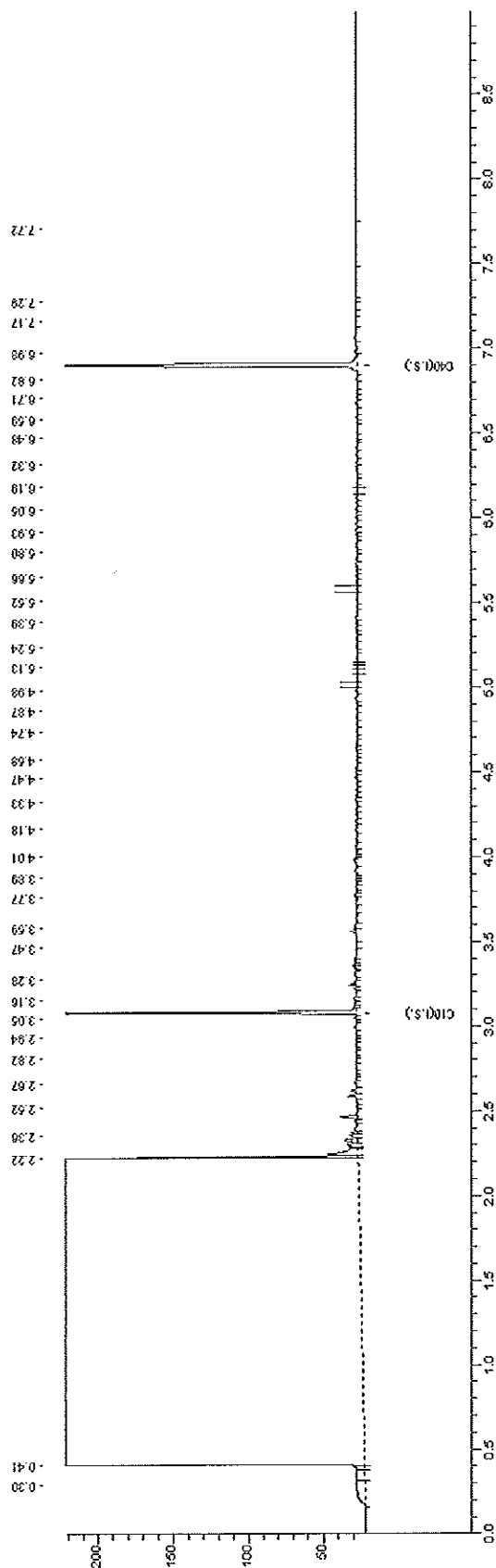


Chromatogram for Order No. 175284, Analysis No. 992235, created at 10.03.2010 22:42:06



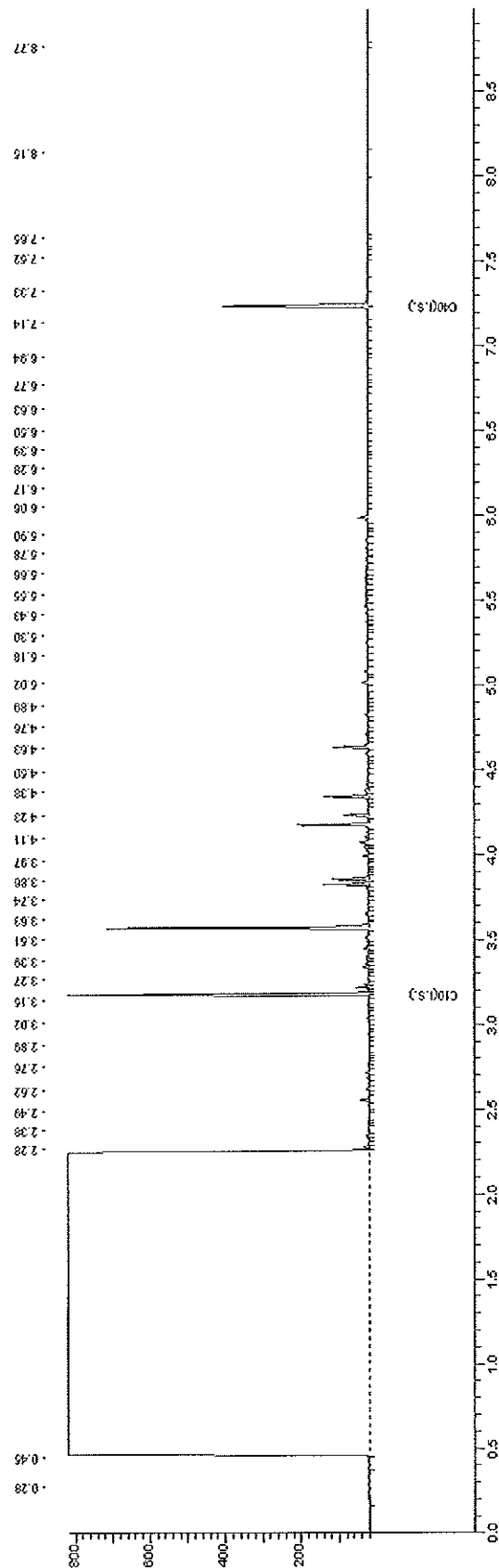


Chromatogram for Order No. 175284, Analysis No. 992236, created at 11.03.2010 00:12:07



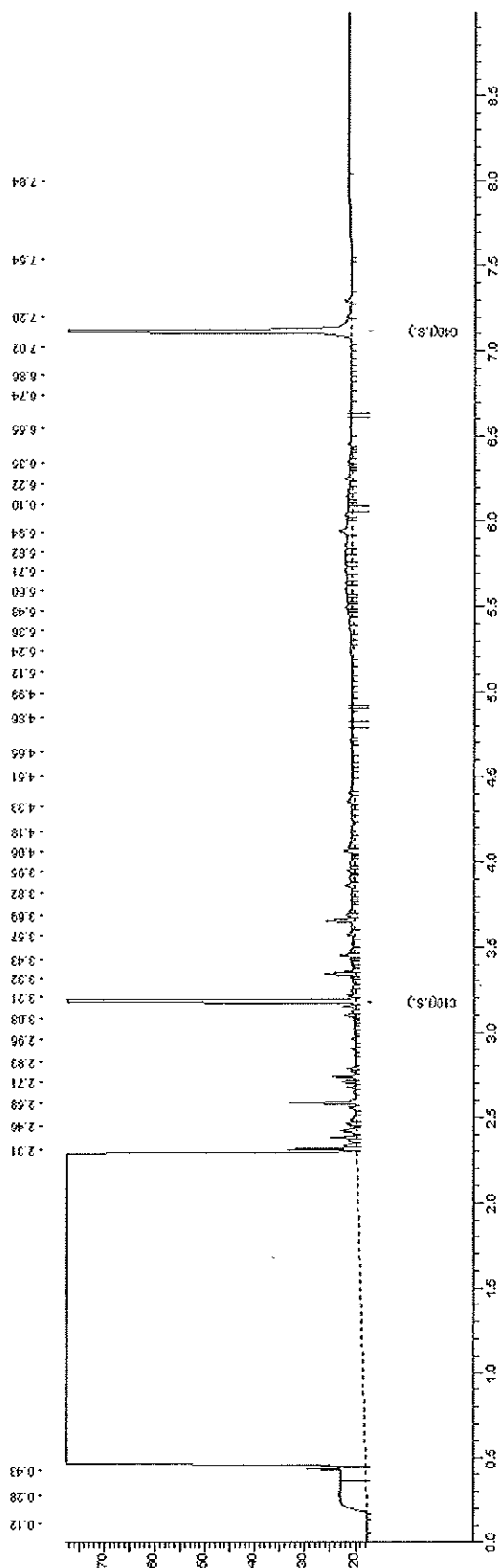


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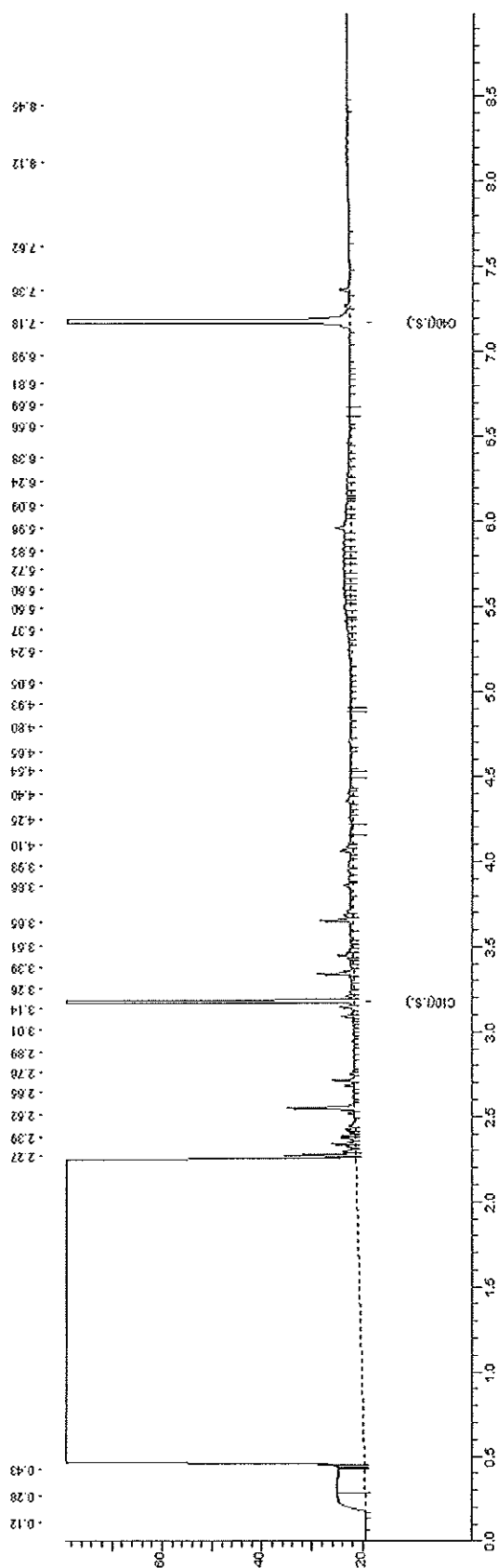


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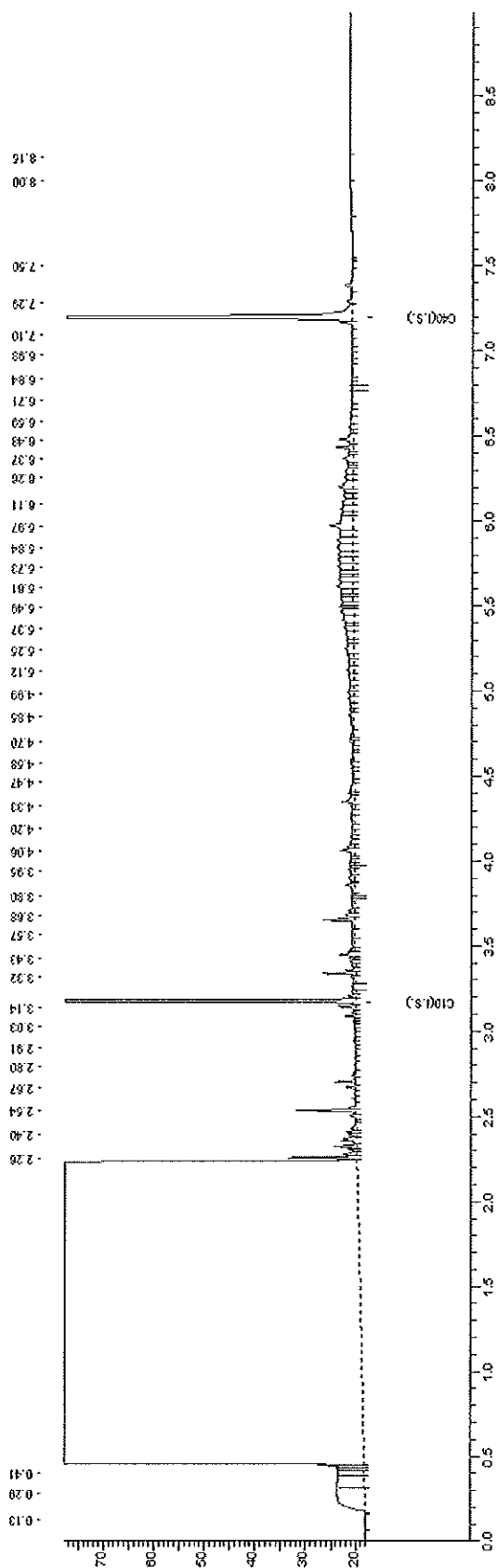


Chromatogram for Order No. 175284, Analysis No. 992239, created at 10.03.2010 06:32:08





Chromatogram for Order No. 175284, Analysis No. 992240, created at 10.03.2010 17:27:06





Chromatogram for Order No. 175284, Analysis No. 992241, created at 10.03.2010 18:57:08

