THE DENDROCHRONOLOGY OF DORESTAD: PLACING EARLY-MEDIEVAL STRUCTURAL TIMBERS IN A WIDER GEOGRAPHICAL CONTEXT

ESTHER JANSMA & ROWIN VAN LANEN

INTRODUCTION

RESEARCH CONTEXT

At the end of the 7th century Dorestad functioned as the centre of a flourishing North Sea trade network. Located in the central part of the Netherlands near the rivers Rhine and Lek it was important to the Frisian and Carolingian world and many other parts of north-western Europe. Since the 1960s Dorestad was excavated almost continuously for over 30 years.

The significance of this *emporium* is indisputable, not only during the Early Middle Ages itself but also today, for the archaeologists and historians studying this period. Many studies primarily featuring Dorestad have appeared (e.g. Holwerda 1929; Van Es & Verwers 1980; Prummel 1983; Kars 1983; Vos 2002; Van Es & Verwers 2009; Willemsen & Kik 2010). At the same time a large quantity of excavation data still remains unpublished. Recent developments in digital infrastructure within the Humanities and Geosciences now enable researchers to study data from this period in wider contexts, among others focussing on the interaction between landscape and cultural dynamics (Jansma *et al.* 2014a; Van Lanen *et al.* 2015a).

The goal of this study was to develop new geographical and chronological information, using dendrochronology, about the trade and exchange network(s) in which Dorestad was a key player. To this end we made an inventory of all timbers excavated at Dorestad and compared the dendrochronologically measured growth patterns of the site Dorestad-De Geer to other early-medieval dendrochronological data from The Netherlands, Belgium and Germany. Dendrochronological time series are bio-geological data of which the interpretation in part is independent of archaeology.

DENDROCHRONOLOGY

The dendrochronological discipline is concerned with the study of tree growth through time (Jansma *et al.* 2002). Trees extract moisture and minerals from the soil through their roots. As the moisture evaporates through small openings in the leaves (the *stomata*), trees ingest carbon dioxide from the air and transform it into sugars and hormones (photosynthesis). In non(sub)tropical climatic zones the process of photosynthesis slows down towards the end of the year and temporarily comes to a halt when temperature drops below a certain threshold value. This is when deciduous trees loose their leaves. In spring, when temperature rises again, trees awake from their dormant state and start to form new foliage. This growth cycle results in an annually formed growth ring situated directly underneath the bark of trees in their roots, trunks and branches.

The width of an annual tree ring among others depends on the vitality and age of the tree and on the circumstances in its direct surroundings during the period in which the ring was formed, such as the length of the growing season (which is determined by temperature and precipitation) and the soil conditions. Fortunate growth conditions result in a relatively wide ring, unfortunate circumstances lead to a relatively narrow ring. Because annual weather conditions are more or less similar within larger regions, the growth patterns of simultaneously grown trees of the same species are similar over larger distances. This is why these patterns, once measured, can be compared and synchronized using dendrochronology.

By successfully matching the growth patterns of living trees to the patterns of older wood (e.g. timbers used in buildings), long average chronologies of tree growth have been calculated. The youngest, most recent growth

Organization	Archaeological site	Status of material	Nr. of samples
Hamburg University (DE)		Analyzed	647
National Museum of Antiquities (NL)		Stored	743
RING Foundation (NL)	Dorestad-De Geer	Analyzed	70
RING Foundation (NL)	Dorestad-Veilingterrein	Analyzed	151
RING Foundation (NL)	Other	Analyzed	30
Total			1641

Fig. 80. *Dorestad: timber samples.*

value in such chronologies represents the calendar year in which the youngest, living trees were sampled or cut down. By counting back the calendar, years of the preceding values in the chronologies can be determined.

Dendrochronology has become quite important in archaeology as a tool to assess absolute felling dates of timber. The process of dendrochronological dating consists of measuring the annual ring widths in the growth patterns of timbers and comparing the resulting time series to dated chronologies by sliding the curves alongside each other until a match is found. A dendrochronological match implies that for each growth ring in the studied timber we now know the calendar year during which it was formed.

With archaeological and historical samples of oak (*Quercus sp.*) the establishment of felling dates largely depends on the presence of sapwood, which is a one to five centimeter zone of growth rings directly underneath the bark that can be identified based on its light colour and open spring vessels. If a dated wood sample contains all sapwood rings, the felling date is derived from the calendar year assigned to its most recently formed growth ring. If sapwood is incomplete, the felling date is derived from empirically derived sapwood averages (e.g. Jansma 2007). If an oak sample does not contain sapwood it is only possible to establish the *terminus post quem* (*tpq*) date of the year in which the tree was cut down. A dendrochronological *tpq* date indicates the earliest possible calendar year in which a tree could have been felled and is not absolute, since this tree might have been felled many decennia later.

MATERIAL

TIMBER INVENTORY

During the early excavations of Dorestad, dendrochronology was not yet practiced in the Netherlands (Jansma

Preservation state	Nr. of samples
Very good	78
Good	580
Poor	69
Very poor	10
Degraded	6
Total	743

Fig. 81. *Dorestad: preservation state of the samples of unanalyzed structural timbers.*

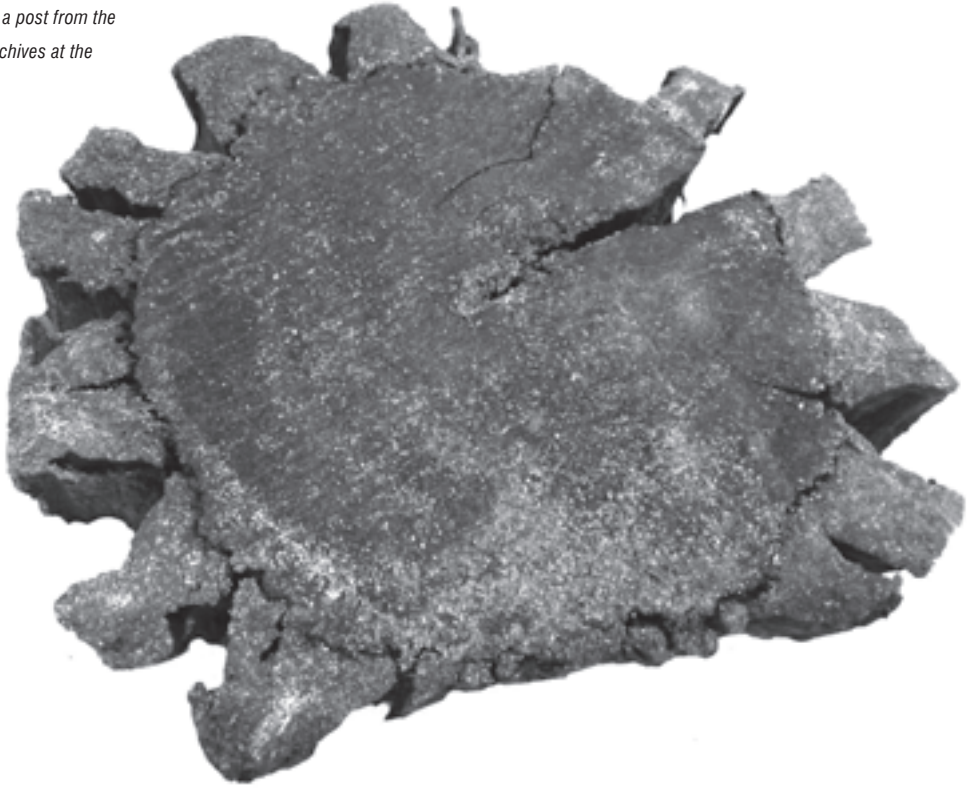

Fig. 82. *Dorestad: preserved sample of a post from the harbor of Dorestad in the archaeological archives at the RMO (find number 210).*

1995; Jansma 2006). Therefore wood samples were sent for analyses to the *Institut für Holzbiologie* at Hamburg University (Germany). This research led to the conclusion that barrels re-used as water wells in Dorestad were derived from the German Rhineland (Eckstein *et al.* 1975).

Dendrochronological research became established in the Netherlands during the 1980s and since then wooden finds from Dorestad have been analysed at the Cultural Heritage Agency of the Netherlands (RCE and its predecessor ROB) and, since the 1990s, at the Netherlands Centre for Dendrochronological Research/RING Foundation. However, to this day a large quantity of unanalysed wood samples from Dorestad is stored in boxes, which at present are archived at the National Museum of Antiquities (RMO) in Leiden.

The first step of our research was to create an overview of timbers from Dorestad that have been analyzed dendrochronologically. This involved database querying and requesting information from the institutions responsible for the datasets. The collected data consisted of digital and analogue (paper) files such as research reports. All analogue data were digitized as part of the project.

The inventory shows that 647 samples derived from 53 individual water wells and at least one jetty were analyzed at Hamburg University between 1972 and 1974 (Fig. 80; Supplementary Material A). The majority of these samples were taken from staves (619). This research resulted in the dating of 235 samples. We were unable to obtain the actual measurements series and additional information from Hamburg University and hence we could not include these data in the subsequent analyses (S. Wröbel of the *Institut für Holzbiologie* in 2011 provided us with a digital list of structures and samples plus their dendrochronological end dates). At RCE and RING Foundation 251 oak samples were analyzed (Fig. 80; Supplementary Material A). Of this material 156 samples have been dated; this research for a large part was executed by students under supervision of E. Jansma and M. Domínguez-Delmás (De Natris 2009; Zandbergen 2010; Pedro Pinto Andrade 2011).

For the timber samples stored at RMO we recorded the find number, object type and find location as well as the wood quality and potential for future dendrochronological research (already in 2009 W.J.H. Verwers and E. Jansma executed a quick scan on this material identifying the most degraded finds). This resulted in an overview of 743 individual samples (Fig. 81). The majority of the material at RMO represents staves from barrels reused as water wells (606), whereas six samples represent timbers from other types of water wells. A relatively small number of 104 samples represent posts (Fig. 82). Some tens of samples were too fragmented to identify the original timber shapes. During this phase of the work we were informed that during the early excavations the structural timbers from Dorestad deemed suitable for dendrochronology were sampled twice in order to create a duplicate archive of the samples sent to Hamburg University (Verwers, personal communication). Regretfully we were unable to identify duplicates at RMO, the sole exception being staves from findnumber 16125 which were analysed in Hamburg in 1972 (see Supplementary material A).

The majority of the samples at RMO have been preserved sufficiently to sustain their dendrochronological potential (658 samples; Fig. 81). The remaining 14% have deteriorated too much to allow for dendrochronological analyses. The differences between the preservation states are related to storage conditions, since most wood stored dry at the time still is in good condition whereas samples stored in wet conditions (e.g. including soil from the find location) have become degraded.

Digital scans were made of analogue (e.g. paper) dendrochronological reports and metadata such as object type, find location and dendrochronological dates were added to available tree-ring measurement files. The expanded inventory was converted and imported into the dendrochronological database TRiDaBASE (Jansma *et al.* 2012a). This MS Access database is fully compatible with the internationally accepted Tree-Ring Data Standard (TRiDaS; Jansma *et al.* 2010) and allows for an easy import, export and editing of dendrochronological data. The results of the inventory were stored and unlocked through the international e-depot for dendroarchaeology DCCD (Jansma *et al.* 2012b; Jansma 2013). The Digital Collaboratory for Cultural Dendrochronology (DCCD) can be accessed through: http://dendro.dans.knaw.nl. This digital and searchable dendrochronological archive stores data developed in many European countries and for the Netherlands at present contains data developed at University of Amsterdam, RCE (and its predecessors ROB and RDMZ), RING Foundation, Wageningen University and private companies BAAC BV, Van Daalen Dendrochronologie and Preßler GmbH Planung und Bauforschung. The Dorestad inventory was stored in the DCCD in 2012 under project identifyer P:2012501.

DENDROCHRONOLOGICAL REFERENCE DATA

Early-medieval reference data representing a wide variety of archaeological finds such as houses, river vessels and natural vegetation remains were harvested from the DCCD repository (Supplementary Material B). In addition we used published tree-ring chronologies as a reference (e.g., Hollstein 1980; Becker 1981; Jansma 1995; Jansma & Hanraets 2004).

Feature	Description	Element type	Find nrs.	DCCD project identifyer	DCCD code of the measurement series
WD761-4-191	Water well (re-used barrel)	Staves	M55	1996072	WYK0007
WD767-3-96	Water well (re-used barrel)	Staves	M60, 61, 62, 64, 65, 66, 73, 75, 78, 79, 81, 82, 84	1990011	C6D0201 to C6D0213
WD768-5-23	Water well (re-used barrel)	Staves	M39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 57, 58, 60, 61, 62, 63	1990011	C6D0301 to C6D0317
WD772-5-114	Water well (re-used barrel)	Staves	M32, 33, 34, 36, 37, 43, 44 (2x), 45, 46, 47, 48, 49, 51	1990011	C6D0401 to C6D0413
WD773-5-121	Water well (square wooden formwork)	Plank	M49, 51, 53, 51, 49, 51	1990011, 2011501	C6D0501 to C6D0503, DDG0002 to DDG0004
WD775-7-123	Water well (hollowed-out tree trunk)	Tree-trunk	M40, 42	1996072	WYK0001, WYK0002
WD775-7-223	Water well (re-used barrel)	Staves	M90, 91, 92 (2x)	1990011	C6D0601 to C6D0604
WD783-7-223	Water well (rods with wickerwork)	Pile	M80	2011501	DDG0011
WD789-3-16	Water well (square wooden formwork)	Plank	M101	2011501	DDG0008
WD791-4-31	Water well (re-used barrel)	Staves	M113	2011501	DDG0005
WD838-3-217	Water well (square wooden formwork)	Planks, pile	M60, 62, 65	1996072	WYK0003 to WYK0006
WD849-3-129	Water well (hollowed-out tree trunk)	Tree trunk	M16	1997078	WYK0008
WD860-2-9	Water well (square wooden formwork)	Planks, beam	M21, 22, 27	2011501	DDG0009, DDG0010, DDG0012
WD860-2-12	Water well (hollowed-out tree trunk)	Tree trunk	M29, 29D	2011501	DDG0006, DDG0007
WD865-4-382	Water well (with wickerwork)	Pile	M21	2011501	DDG0001

Fig. 84. *Dorestad-De Geer: overview of dendrochronologically investigated features and timber samples.*

METHOD

MAPPING THE TIMBERS FROM DORESTAD

Digitized excavation drawings of Dorestad created within the project *Dorestad: Vicus Famosus* include recorded features and a database of surface finds from individual layers (the excavation drawings of Dorestad have been digitized by Benno Ridderhof, mbb/Free University Amsterdam). In GIS we combined these drawings with the Dorestad timber inventory in order to select and locate corresponding find numbers. The timbers from Dorestad-De Geer were looked at in more detail by also checking the original (analogous) excavation drawings. In this manner we could assign timber sample numbers recorded on detailed profile drawings to general find numbers administrated in the digitized drawings. The resulting dataset was used to determine the potential of dendrochronological research for this site.

DENDROCHRONOLOGICAL APPROACH

Dendrochronological comparisons between measurement series were made using standard dendrochronological cross-dating statistics: Student's t-values (*tH*, based on Pearson's cross-correlation coefficients (*r*) between measurement series detrended using a logarithmic transformation (Hollstein, 1980) and the percentage of Parallel Variation (*%PV*) with its significance level *p* (Eckstein and Bauch, 1969). Tree-ring series representing elements derived from the same tree were averaged into single-tree series (TS). Using the approach developed by Jansma *et al.* (2014b) we grouped the TS into timber groups (TGS). Wood provenance was established using published chronologies and unpublished data as a reference. Chronologies showing the highest statistical and visual similarity to the materials from Dorestad-De Geer were taken to represent the region(s) where the trees originally grew.

RESULTS AND INTERPRETATION

Fig. 83 pag. 95

OVERVIEW OF THE TIMBERS

From the dataset of 1641 samples, 928 could be linked to features on the digital excavation maps (Fig. 83). Most of the remaining samples probably represent larger objects, meaning that their specific find or sample numbers are not recorded on the digitized maps but only on more detailed and as yet non-digitized field drawings.

The dendrochronological dataset of Dorestad-De Geer developed at RCE and the RING Foundation represents seventy elements of oak (*Quercus robur/petraea*) derived from fifteen water wells (Fig. 84). Six of these were constructed from re-used barrels (Fig. 85), four consisted of square wooden formwork, three were constructed from hollowed-out tree trunks and two were made using wickerwork.

Fig. 85 pag. 95

EARLY-MEDIEVAL WATER WELLS AT DORESTAD-DE GEER

The ring widths of the seventy elements from Dorestad-De Geer had been measured with a resolution of 0.01mm using software packages CATRAS (Aniol 1989) and PAST4 (Knibbe 2008). Of these elements, 44 could be traced back to eight individual trees (Fig. 86). The remaining 24 series each represent a different tree. This reduced the dataset to 32 TS.

Staves from single barrels yield highly variable end dates (Fig. 87). Since most of the original wood samples lacked sapwood, their dendrochronological dates consti-

Object	TS	Nr. of included elements	Archaeological find numbers	DCCD codes of the measurement series	Length (years)
WD767-3-96	A	7	M64 to 66, 79, 81, 82, 84	C6D0204, 0205, 0206, 0210, 0211, 0212, 0213	286
	B	4	M61, 62, 73, 78	C6D0202, 0203, 0207, 0209	166
WD768-5-23	C	17	M39 to 49, 57, 58, 60 to 63	C6D0301 to 0317	103
WD772-5-114	D	8	M32 to 34, 36, 43, 45, 47, 49	C6D0401, 0402, 0403, 0404, 00406, 0408, 0409, 0412	178
	E	3	M37, 46, 51	C6D0405, 0410, 0413	92
	F	2	M44, 48	C6D0407, 0411	112
WD775-7-223	G	3	M90 to 92	C6D0601, 0602, 0603	111

Fig. 86. *Dorestad-De Geer: TS.*

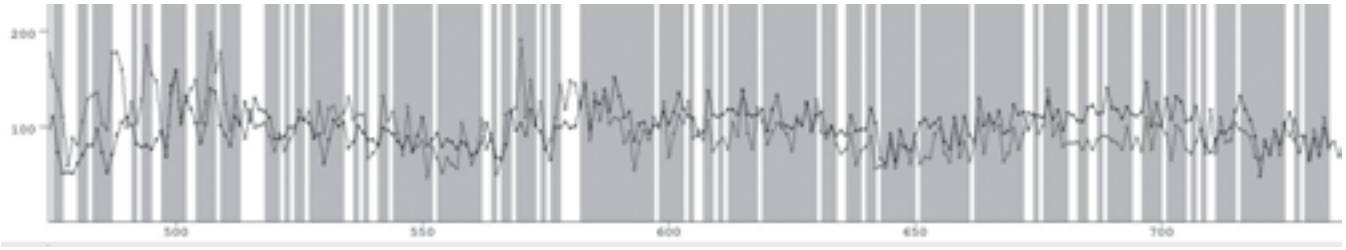

Fig. 87. *Dorestad-De Geer: dendrochronological match between the imported oak from Dorestad-De Geer (blue) and the Steinbach chronology developed by Hollstein (1980; Einhards-Basilika (red)). X-axis: calendar years; Y-axis: ring-width indices; grey: intervals of parallel ring-width variation. The statistical agreement between both chronologies is expressed by: tH = 11.0, %PV = 72.6, n = 261 and p = 0.*

Object	Description	Date of youngest growth ring	Sapwood	Felling date	Reference chronology	n	t_H	%PV	p	Provenance
WD767-3-96	Re-used barrel	717	0	After 749 ± 8	DECENT01 (Hollstein 1980)	291	12.2	70.6	0	DE
WD768-5-23	Re-used barrel	790	boundary	810 ± 6	Someren Waterdael (RING Foundation, unpublished data)	103	5.7	69.4	0.00004	DE
WD772-5-114	Re-used barrel	734	0	After 752 ± 5	NLCAST01 (Jansma & Hanraets 1999)	112	8.3	74.6	0.0000001	DE
		676	0	After 699 ± 9	DESUDE02 (Becker 1981)	178	7.4	68.5	0.0000004	DE
WD773-5-121	Square wooden formwork	544	0	After 559 ± 3	STF Stevensweert (RING Foundation, unpublished data)	74	5.6	70.9	0.0002	NL
WD775-7-123	Hollowed-out tree trunk	711	0	After 726 ± 4	DECENT01 (Hollstein 1980)	84	6.7	69.6	0.0002	DE
WD838-3-217	Square wooden formwork	732	0	After 760 ± 12	DECENT01 (Hollstein 1980)	241	8.0	66.2	0.0000003	DE
WD860-2-9	Square wooden formwork	629	0	After 642 ± 3	Oegstgeest (RING Foundation, unpublished data)	50	6.0	76	0.0002	DE
		474	0	After 489 ± 3	ZLF Zwolle (Sass-Klaassen & Hanraets 2006)	70	7.3	80.7	0.0000002	NL

Fig. 88. *Dorestad-De Geer: dendrochronological dates and wood provenance. Sapwood-based estimations of dendrochronological end dates were calculated using the approach of Jansma (2007). Grey: irrelevant date given younger date for the same feature.*

Object	Dendrochronological curve	Sitekelender Hollstein 1980	n	t_H	%PV	p
WD767-3-96	Dorestad TG_1	Steinbach im Odenwald, Einhards-Basilika, AD 473 - 814 (2)	244	10.1	69.9	0
WD772-5-114	Dorestad TG_2	Steinbach im Odenwald, Einhards-Basilika, AD 473 - 814 (2)	112	6.1	70.5	0. 0.000007
	TS_D	Erpfingen II, Siedlung, AD 410-642 (Hollstein: 400-643) (25)	145	6.7	63.4	0.0007
WD775-7-123	Dorestad TG_3	Steinbach im Odenwald, Einhards-Basilika, AD 473 - 814 (2)	84	6.0	63.1	0.009
WD768-5-23	TS_C	Steinbach im Odenwald, Einhards-Basilika, AD 473 - 814 (2)	103	4.2	69.9	0.00003
WD838-3-217	TS M65	Mainz, Brand, AD 439-653 (11)	162	7.2	68.8	0.0000009

Fig. 89. *Dorestad-De Geer: specification of German wood provenance.*

tute *terminus post quem* (*tpq*) dates of the calendar years in which the trees were cut down (Fig 88). The *tpq* dates of Dorestad-De Geer range from the second half of the 6th century to the second half of the 8th century. The youngest date in AD 810 ± 6 is based on a stave containing sapwood edge and is absolute.

Comparisons with available reference chronologies show that the earliest *tpq* dates in the 5th and 6th century belong to wood that was derived locally (Fig. 88). During the 7th to early 9th centuries wood was brought to Dorestad-De Geer from Germany. Comparisons of this latter group with published site chronologies points at the region of Steinbach as the most likely area of origin (Figs. 89, 90 and 91), thereby confirming the findings of Eckstein *et al.* (1975). Surprisingly, this exogenous provenance not only holds for re-used barrels but also for a water well which had been constructed from a hollowed-out tree (feature WD775-7-123; Figs. 84 and 88).

Fig. 90
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A GERMAN-RHINELAND DISTRIBUTION NETWORK

Comparison of the Dorestad-De Geer/Steinbach timber group with the DCCD reference data set results in an extended TG. This exogenous timber group includes water wells constructed from re-used barrels (Dorestad-De Geer and Dorestad-Veilingterrein, Katwijk-Zanderij and Bruges-St. Andries), a dugout canoe (Oegstgeest) and a river barge (Utrecht Catharijnesingel) (Figs. 92, 93 and 94). The dendrochronological match of the extended German-Rhineland TG against the chronologies of Hollstein (1980) slightly shifts the provenance northwards (Fig. 94; Fig. 91). The geographical distribution of the barrels and the fact that a dugout canoe and a river barge in this TG have the same exogenous provenance shows that the Rhine was used as transport corridor. Our data do not contain information about the routes taken to reach Bruges in the South and Leeuwarden in the North.

According to our results the German-Rhineland network was already in existence early in the 7th century (Fig. 92). The chronological distribution of the dendrochronological series in this timber group indicates that early-medieval Oegstgeest predated Dorestad as a member of this distribution network. We have found no dendrochronological evidence that this network still existed in the second half of the 9th century.

5 DISCUSSION

The spatial distribution map created for Dorestad (Fig. 83) would benefit from a more detailed search of as yet unclassified find numbers. Currently only find numbers recorded on the digitized excavation maps are available in GIS and a complete digital unlocking of the excavation archive greatly would enhance the resolution of the map.

Dendrochronological end dates of staves used in the same barrel may vary considerably (Fig. 87). In addition, staves as a rule do not contain sapwood and their study therefore mostly results in dendrochronological *terminus post quem* dates (Fig. 92). Also, when interpreting dendrochronological dates of barrels one should take into consideration that these objects had a life span as containers prior to their second use as water wells. These aspects lead us to conclude that barrels are unsuited for establishing a detailed (e.g. decadal) chronology of, and within, archaeological sites.

On the other hand we have shown here that the dendroarchaeological analysis of barrels together with other wooden finds from the same period can provide

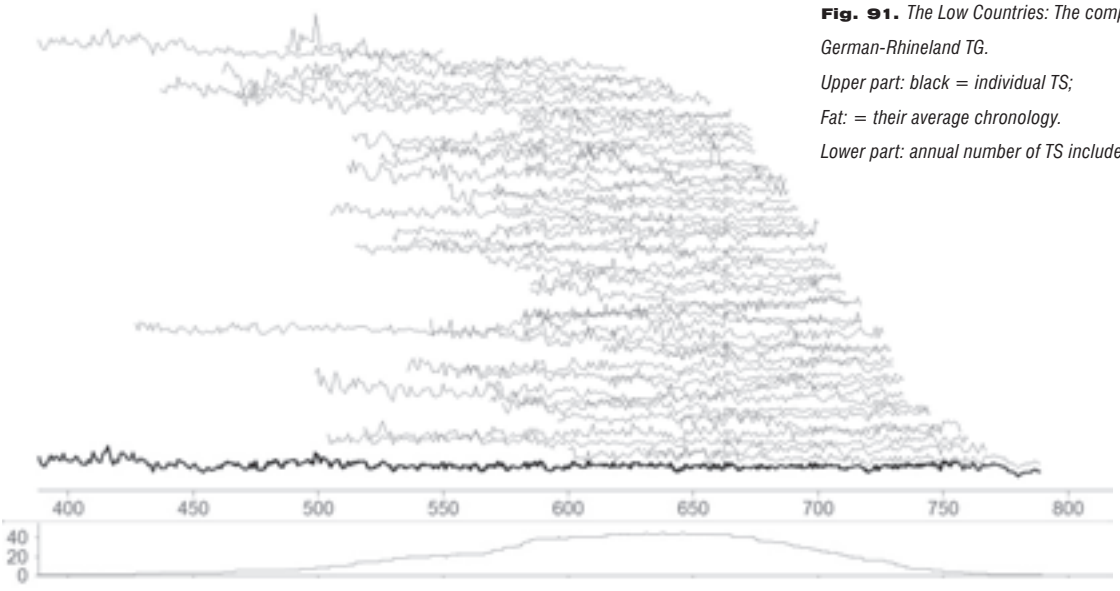

Fig. 91. *The Low Countries: The composition on the extended German-Rhineland TG.*
Upper part: black = individual TS;
Fat: = their average chronology.
Lower part: annual number of TS included in the chronology.

DCCD project number	Location	Object type	Nr. elements	Nr. TS	Comments	*Terminus post quem* date	Absolute date
1998010	Brugge St. Andries Molendorp	Re-used barrel	4	2	Possibly 12 sapwood rings	815 ± 8	803 ± 8
1996015, 1996016	Castricum Oosterbuurt	Water wells	3	3		576 ± 8; 718 ± 8; 793 ± 8	
1999100	Dorestad Singel/Zandweg	water well	1	1	Possibly 18 sapwood rings	746 ± 6	731 ± 6
2009095, 2011026	Dorestad Veilingterrein	Re-used barrels	>50	32		676; 687; 690; 704; 712; 721; 725; 741; 744; 749; 746; 759; 773; 776	726 ± 5; 726 ± 11; 763 ± 5
1996072	Dorestad-De Geer	Hollowed-out tree trunk	1	1		726 ± 4	
1990011	Dorestad-De Geer	Re-used barrels	25	3		749 ± 8; 752 ± 5	
2006095, 2008054	Katwijk de Zanderij	Barrel staves (2), plank (1)	3	3		727 ± 6; 750 ± 6; 798 ± 6	
2006081	Leeuwarden Oldenhooftsterkerkhof	Water well (plank)	1	1		616 ± 6	
2011009	Oegstgeest	Canoe	1	1			612 ± 7
2005010, 2006086	Oegstgeest Rijnfront	Water wells (plank, unknown)	2	2		651 ± 7	664 ± 8
2013502	Utrecht Catharijnesingel	River barge	6	3			667 ± 11

Fig. 92. *Early-medieval German-Rhineland TG. Sapwood-based estimations of dendrochronological end dates have been derived from the original research reports or, in case of missing information, were calculated using the approach of Jansma (2007).*

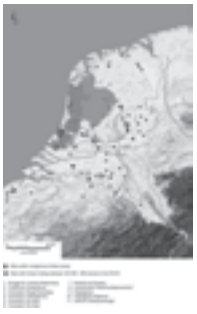

Fig. 93
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new and independent insights into the chronological and geographical development of former exchange networks. The success of such studies wholly depends on the availability and quality of dendrochronological reference datasets developed over decennia. Regretfully we were unable to retrieve the Dorestad tree-ring data developed at Hamburg University. The most likely explanation is that these data no longer exist. Data loss is common for research done in the pre-digital era, since many scientists working at that time have retired and their paper archives have become neglected or even discarded. However, given the present digital opportunities there is no reason anymore to let dendrochronological data go to waste. We have found the international DCCD repository to be an invaluable source of dendrochronological time series and descriptive and interpretative metadata and urge archaeologists and dendrochronologists alike to adopt sustainable digital data storage as part of their best practices.

Fig. 95
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The 7th- to early 9th-century distribution of river vessels and barrels from the German Rhineland was water bound (Fig. 95). Give their distribution into Flanders and the North of the Netherlands we expect that these early-medieval objects from the German Rhineland also may have found their way to e.g. the UK, northern Germany and Denmark. Therefore we recommend extending the dendrochronological analysis of the early-medieval German-Rhineland exchange network to these regions.

Site chronology Hollstein 1980	n	t_H	%PV	p
Steinbach im Odenwald, Einhards-Basilika (AD 473 - 814)	316	13.8	69.8	0
Mainz, Brand (AD 429 - 653)	215	10.5	71.4	0
Münstereifel, tree-trunk coffin (AD 521 - 682)	162	11.7	72.8	0.000000004
Mainz, Brand (AD 582 - 716)	135	10.3	73.0	0.00000005
Mainz, Brand (AD 481 - 673)	193	9.2	68.4	0.0000002
Erpfingen II, settlement (AD 410 - 643)	234	7.6	66.7	0.0000002
Forchtenberg, water well (AD 410 - 610)	201	7.5	66.7	0.000001
Altrip (AD 494 - 691)	198	9.3	65.9	0.000004
Griesheim bei Darmstadt (AD 550 - 691)	142	8.0	66.2	0.00006
Petersberg bei Fulda (AD 639 - 832)	151	6.4	65.2	0.0001

Fig. 94. *Dendrochronological matches of the extended German-Rhineland TG against published chronologies (Hollstein 1980). The most significant matches are marked in grey.*

ACKNOWLEDGEMENTS

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SUPPLEMENTARY MATERIAL A: INVENTORY OF WOODEN FINDS FROM DORESTAD

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
9016	3	Paal-1	69					Yes	Reasonable to Good	Dry	Pile sample. No find number or other administration available.	
9021	383-4 or 383-5	Paal-2	92	383-4-92 383-5-92				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-3	141	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-4	147	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-5	154	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-6	163	385-6				Yes	Reasonable to Good	Dry	Pile sample (fragmented in 3 pieces)	
9022	385-6	Paal-7	164	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-8	166	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021	383-5?	Paal-9	202	383-5?				Yes	Reasonable to Good	Dry	Pile sample (fragmented in 2 pieces)	
9022	385-6	Paal-10	210	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-11	211	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-12	214	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-13	221	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021	383-5?	Paal-14	226	383-5?				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021	383-5?	Paal-15	227	383-5?				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-16	227	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-17	231	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9022	385-6	Paal-18	268	385-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9024		Duig-19	4164		A			Yes	Poor to Reasonable	Dry	Fragmented, very degraded	
9024		Duig-20	4164		B			Yes	Poor to Reasonable	Dry	Fragmented, very degraded	
9024		Duig-21	4164		C			Yes	Poor to Reasonable	Dry	Fragmented, very degraded	
9024		Duig-22	9637		A			Yes	Reasonable to Good	Dry	Gefragmenteerd	
9024		Duig-23	9637		B	WDS00361		Yes	Reasonable to Good	Dry	Stave	
9024		Duig-24	9637		C			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-25	9637		D			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-26	9637		E			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-27	9637		F			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-28	9637		G			No	Very poor	Wet	Completely degraded (liquid)	
9024		Duig-29	9637		H			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-30	9637		I			Yes	Reasonable to Good	Dry	Stave	
9024		Missing-31	9637		J			Missing	Missing	Missing	Missing	
9024		Duig-32	9637		K			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-33	9637		L	WDS00391		Yes	Reasonable to Good	Dry	Stave	
9024		Duig-34	9637		M			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-35	9637		N	WDS00411		Yes	Reasonable to Good	Dry	Stave	
9024		Duig-36	9637		O			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-37	9637		P			No	Reasonable to Good	Dry	Fragmented	
9024		Duig-38	9637		Q			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-39	9637		R			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-40	9637		S			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-41	9637		T			No	Reasonable to Good	Dry	Very small fragment	
9024		Duig-42	9637		U	WDS00431		Yes	Reasonable to Good	Dry	Stave	
9024		Duig-43	9637		V			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-44	9637		W			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-45	9637		X			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-46	9637		Y			Yes	Reasonable to Good	Dry	Very small fragment (Stave)	
9024		Duig-47	9637		Z			Yes	Reasonable to Good	Dry	Stave	
9024		Duig-48	9637		AA			Yes	Reasonable to Good	Dry	Stave	

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
9024		Duig-49	9637		BB			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-50	10428		A			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-51	10428		B			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-52	10428		C			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-53	10428		D			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-54	10428		E			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-55	10428		F			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-56	10428		G			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-57	10428		H			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-58	10428		I			Yes	Reasonable to Good	Dry	Stave	
9024	169	Missing-59	10428		J			Missing	Missing	Missing	Missing	
9024	169	Duig-60	10428		K			No	Very poor	Wet	Completely degraded (liquid)	
9024	169	Duig-61	10428		L			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-62	10428		M			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-63	10428		N			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-64	10428		O			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-65	10428		P			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-66	10428		Q			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-67	10428		R			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-68	10428		S			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-69	10428		T			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-70	10428		U			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-71	10428		V			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-72	10428		W			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-73	10428		X			Yes	Reasonable to Good	Dry	Stave	
9024	169	Missing-74	10428		Y			Missing	Missing	Missing	Missing	
9024	169	Duig-75	10428		Z			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-76	10428		AA			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-77	10428		BB			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-78	10428		CC			Yes	Reasonable to Good	Dry	Stave	
9024	169	Duig-79	10428		DD			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-80	10751		D			Yes	Good	Dry	Stave	
9026		Duig-81	10824		A			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-82	10824		B			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-83	10824		C			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-84	10824		D			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-85	10824		E			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-86	10824		F			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-87	10824		G			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-88	10824		H			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-89	10824		I			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-90	10824		J			No	Reasonable to Good	Dry	Very small fragments (Stave)	
9026		Duig-91	10824		K			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-92	10824		L			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-93	10824		M			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-94	10824		N			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-95	10824		O			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-96	10824		P			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-97	10824		Q			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-98	10824		R			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-99	11139		A			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-100	11139		B			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-101	11139		C			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-102	11139		D			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-103	11139		E			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-104	11139		F			Yes	Reasonable to Good	Dry	Stave	

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
9026		Duig-105	11139		G			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-106	11139		H			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-107	11139		I			Yes	Reasonable to Good	Dry	Stave	
9026		Missing-108	11139		J			Missing	Missing	Missing	Missing	
9026		Duig-109	11139		K			Yes	Reasonable to Good	Wet/Dry	Stave (degraded)	
9026		Duig-110	11139		L			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-111	11139		M			No	Reasonable to Good	Dry	Very small fragments (Stave)	
9019	261,8	Paal-112	12112	261-8				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	261,8	Paal-113	12143	261-8				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9020	266,4	Paal-114	12165	266-4				Yes	Good	Dry	Pile sample (disk)	
9019	266	Paal-115	12166	12166 pit 266				Yes	Reasonable to Good	Dry	Pile sample (disk)	Only 12…66 visible on sample adm. (probably 12166)
9019	267,6	Paal-116	12450	267-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	267,7	Paal-117	12467	267-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	267,7	Paal-118	12490	267-7				Yes	Reasonable to Good	Dry	Large pile sample (disk)	
9021	267,7	Paal-119	12496	267-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	Only 12…96 visible on sample adm. (probably 12496)
9020	267,7	Paal-120	12520	267-7				Yes	Good	Dry	Large pile sample (disk)	
9019	267,7	Paal-121	12571	267-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	267,7	Paal-122	12578	267-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	267,7	Paal-123	12633	267-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	267,7	Paal-124	12645	267-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	266,5	Paal-125	12667	266-5				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	266,5	Paal-126	12692	266-5				Yes/No (difficult material)	Reasonable to Good	Dry	Very small fragments (pile sample)	
9019	266,5	Paal-127	12693	266-5				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	266,5	Paal-128	12746	266-5				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	266,5	Paal-129	12751	266-5				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9020	266,5	Paal-130	12805	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-131	12806	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-132	12807	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-133	12811	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-134	12812	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-135	12865	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-136	12877	266-5				Yes	Good	Dry	Pile sample (disk)	
9020	266,5	Paal-137	12879	266-5				Yes	Good	Dry	Pile sample (disk)	
9021	268,6	Paal-138	12990	268-6				Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021		Duig-139	13324		D			Yes	Reasonable to Good	Dry	Stave	
9021		Duig-140	13324		C			Yes	Reasonable to Good	Dry	Stave	
9021	268,7	Paal-141	13367	268-7				Yes	Reasonable to Good	Dry	Pile sample (disk)	
8602		Duig-142	13414		A			No	Reasonable to Good	Dry	Stave (fragmented)	
8602		Duig-143	13414		B			Yes	Reasonable to Good	Dry	Stave	
8602		Duig-144	13414		C			Yes	Reasonable to Good	Dry	Stave	
9026		Duig-145	14965					Yes	Reasonable to Good	Dry	Fragments	
8602		Duig-146	16125		A		Possibly analyzed (although administration differs, they refer to 1-22, here A-G)	Yes	Reasonable	Dry	Stave	
8602		Duig-147	16125		B			No	Reasonable to Poor	Dry	Stave (too fragmented)	
8602		Duig-148	16125		C			No	Reasonable to Poor	Dry	Stave (too fragmented)	
8602		Duig-149	16125		D			No	Reasonable to Poor	Dry	Stave (too fragmented)	
8602		Duig-150	16125		F			No	Reasonable to Poor	Dry	Stave (too fragmented)	
8602		Duig-151	16125		G			No	Reasonable to Poor	Dry	Stave (too fragmented)	
9022	385,6	Paal-152	166	385-6				Yes	Reasonable to Good	Dry	Pile sample (part of disk)	

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
9016	388-6	Paal-153	388-6-33 (448-6-33)					Yes	Reasonable to Good	Dry	Fragmented pile samples	
9024	343	Duig-154	343-2-20		A			Yes	Good	Dry	Stave	
9024	343	Duig-155	343-2-20		B			Yes	Good	Dry	Stave	
9024	343	Duig-156	343-2-20		C			Yes	Good	Dry	Stave	
9024	343	Duig-157	343-2-20		D			Yes	Good	Dry	Stave	
9024	343	Duig-158	343-2-20		E			Yes	Good	Dry	Stave	
9024	343	Duig-159	343-2-20		F			Yes	Good	Dry	Stave	
9024	343	Duig-160	343-2-20		G			Yes	Good	Dry	Stave	
9024	343	Duig-161	343-2-20		H			Yes	Good	Dry	Stave	
9024	343	Duig-162	343-2-20		I			Yes	Good	Dry	Stave	
9024	343	Duig-163	343-2-20		J			Yes	Good	Dry	Stave	
9024	343	Duig-164	343-2-20		K			Yes	Good	Dry	Stave	
9024	343	Duig-165	343-2-20		L			Yes	Good	Dry	Stave	
9024	343	Duig-166	343-2-20		M			Yes	Good	Dry	Stave	
9024	343	Duig-167	343-2-20		N			Yes	Good	Dry	Stave	
9024	343	Duig-168	343-2-20		O			Yes	Good	Dry	Stave	
9024	343	Duig-169	343-2-20		P			Yes	Good	Dry	Stave	
9024	343	Duig-170	343-2-20		Q			Yes	Good	Dry	Stave	
9024	343	Duig-171	343-2-20		R			Yes	Good	Dry	Stave	
8602	343	Duig-172	343-2-20		A			Yes	Reasonable	Dry	Stave	
8602	343	Duig-173	343-2-20		B			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-174	343-2-20		C			Yes	Reasonable	Dry	Stave	
8602	343	Duig-175	343-2-20		D			Yes	Reasonable	Dry	Stave	
8602	343	Duig-176	343-2-20		E			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-177	343-2-20		F			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-178	343-2-20		G			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-179	343-2-20		H			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-180	343-2-20		I			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-181	343-2-20		J			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-182	343-2-20		K			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-183	343-2-20		L			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-184	343-2-20		M			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-185	343-2-20		N			Yes	Reasonable	Dry	Stave	
8602	343	Duig-186	343-2-20		O			Yes	Reasonable to Good	Dry	Stave	
8602	343	Duig-187	343-2-20		P			Yes	Reasonable	Dry	Stave	
8602	343	Duig-188	343-2-20		Q			Yes	Reasonable	Dry	Stave	
8602	343	Duig-189	343-2-20		R			Yes	Reasonable	Dry	Stave	
8602	343	Duig-190	343-2-21		A			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-191	343-2-21		C			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-192	343-2-21		D			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-193	343-2-21		E			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-194	343-2-21		F			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-195	343-2-21		G			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-196	343-2-21		H			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-197	343-2-21		I			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-198	343-2-21		J			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-199	343-2-21		K			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-200	343-2-21		L			Yes/No (difficult material)	Reasonable to Poor	Dry	Stave	
8602	343	Duig-201	343-2-21		N			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-202	343-2-21		O			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-203	343-2-21		P			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
8602	343	Duig-204	343-2-21		Q			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-205	343-2-21		R			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	343	Duig-206	343-2-21		S			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-207	347-3-55		A			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-208	347-3-55		C			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-209	347-3-55		D			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-210	347-3-55		E			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-211	347-3-55		F			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-212	347-3-55		G			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-213	347-3-55		I			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-214	347-3-55		J			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-215	347-3-55		K			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-216	347-3-55		L			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-217	347-3-55		M			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-218	347-3-55		N			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-219	347-3-55		O			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-220	347-3-55		P			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-221	347-3-55		Q			No	Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-222	347-3-55		S			No	Poor	Dry	Stave. Too small/ fragmented	
9024	347	Duig-223	347-3-56		A			No	To fragmented	Dry	Stave	
9024	347	Duig-224	347-3-56		B			No	To fragmented	Dry	Stave	
9024	347	Duig-225	347-3-56		C			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-226	347-3-56		D			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-227	347-3-56		E			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-228	347-3-56		F			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-229	347-3-56		G			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-230	347-3-56		H			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-231	347-3-56		J			No	To fragmented	Dry	Stave	
9024	347	Duig-232	347-3-56		K			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-233	347-3-56		L			No	To fragmented	Dry	Stave	
9024	347	Duig-234	347-3-56		M			No	To fragmented	Dry	Stave	
9024	347	Duig-235	347-3-56		N			No	To fragmented	Dry	Stave	
9024	347	Duig-236	347-3-56		O			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-237	347-3-56		P			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-238	347-3-56		Q			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-239	347-3-56		R			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-240	347-3-56		S			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-241	347-3-56		T			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-242	347-3-56		U			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-243	347-3-56		V			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-244	347-3-56		W			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-245	347-3-56		X			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-246	347-3-56		Y			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-247	347-3-56		Z			Yes	Reasonable to Good	Dry	Stave	
8602	347	Duig-248	347-3-56		A			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-249	347-3-56		C			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-250	347-3-56		D			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-251	347-3-56		E			Yes	Reasonable	Dry	Stave. Too small/ fragmented	

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8602	347	Duig-252	347-3-56		G			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-253	347-3-56		H			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-254	347-3-56		I			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-255	347-3-56		J			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-256	347-3-56		P			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-257	347-3-56		R			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-258	347-3-56		S			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
8602	347	Duig-259	347-3-56		X			Yes	Reasonable	Dry	Stave. Too small/ fragmented	
9024	347	Duig-260	347-3-58		A			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-261	347-3-58		B			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-262	347-3-58		C			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-263	347-3-58		D			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-264	347-3-58		E			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-265	347-3-58		F			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-266	347-3-58		G			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-267	347-3-58		H			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-268	347-3-58		I (1)			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-269	347-3-58		I (2)			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-270	347-3-58		J			No	Very poor	Wet	Stave	
9024	347	Duig-271	347-3-58		K			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-272	347-3-58		L			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-273	347-3-58		M			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-274	347-3-58		N			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-275	347-3-58		O			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-276	347-3-58		P			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-277	347-3-58		Q			Yes	Reasonable to Good	Dry	Stave	
9024	347	Duig-278	347-3-58		R			Yes	Reasonable to Good	Dry	Stave	
8602	347	Duig-279	347-3-58		B			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-280	347-3-58		H			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-281	347-3-58		Ia			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	Sample 'I' appears twice in bag, added 'a' and 'b' to samples.
8602	347	Duig-282	347-3-58		Ib			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-283	347-3-58		L			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-284	347-3-58		M			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-285	347-3-58		N			No	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
8602	347	Duig-286	347-3-58		O			Yes/No (difficult material)	Reasonable to Poor	Dry	Stave. Too small/ fragmented	
9017	354	Paal-287	354-8-35					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	354	Paal-288	354-8-45					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	354	Paal-289	354-8-47					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	354	Paal-290	354-8-48					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	356	Paal-291	356-8-85					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	356	Paal-292	356-8-86					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-293	357-8-13					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-294	357-8-16					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-295	357-8-19					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-296	357-8-214					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-297	357-8-38					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-298	357-8-39					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	357	Paal-299	357-8-42					Yes	Reasonable to Good	Dry	Pile sample (half of disk)	
9017	357	Paal-300	357-8-47					Yes	Reasonable to Good	Dry	Pile sample (half of disk)	

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9017	357	Paal-301	357-8-57					Yes	Reasonable to Good	Dry	Pile sample (disk) central part degraded	
9017	357	Paal-302	357-8-7					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	358	Paal-303	358-7-39					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9024	359	Duig-304	359-5-18		A			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-305	359-5-18		B			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-306	359-5-18		C			No	Reasonable to Good	Dry	Stave. Too small/ fragmented	
9024	359	Duig-307	359-5-18		D			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-308	359-5-18		F			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-309	359-5-18		G			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-310	359-5-18		H			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-311	359-5-18		I			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-312	359-5-18		J			No	Reasonable to Good	Dry	Stave. Too small/ fragmented	
9024	359	Duig-313	359-5-18		K			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-314	359-5-18		L			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-315	359-5-18		M			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-316	359-5-18		N			No	Reasonable to Good	Dry	Stave. Too small/ fragmented	
9024	359	Duig-317	359-5-18		O			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-318	359-5-18		P			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-319	359-5-18		Q			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-320	359-5-18		R			Yes	Reasonable to Good	Dry	Stave	
9024	359	Duig-321	359-5-18		S			Yes	Reasonable to Good	Dry	Stave	
8602	359	Duig-322	359-5-18		F			No	Reasonable	Dry	Stave. Too small/ fragmented	
8602	359	Duig-323	359-5-18		G			Yes	Reasonable	Dry	Stave	
8602	359	Duig-324	359-5-18		H			Yes	Reasonable	Dry	Stave	
8602	359	Duig-325	359-5-18		I			Yes	Reasonable	Dry	Stave	
8602	359	Duig-326	359-5-18		N			No	Reasonable	Dry	Stave. Too small/ fragmented	
8602	359	Duig-327	359-5-18		O			Yes	Reasonable	Dry	Stave	
8602	359	Duig-328	359-5-18		P			Yes	Reasonable	Dry	Stave	
8602	359	Duig-329	359-5-18		Q			Yes	Reasonable	Dry	Stave	
8602	359	Duig-330	359-5-18		R			No	Reasonable	Dry	Stave. Too small/ fragmented	
8602	359	Duig-331	359-5-18		S			Yes	Reasonable	Dry	Stave	
9016	361	Paal-332	361-6-35					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	363	Paal-333	363-1-64					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9019	363	Paal-334	363-1-65					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	365	Paal-335	365-2-19					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	366	Paal-336	366-4-11					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	366	Paal-337	366-4-14					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	366	Paal-338	366-4-23					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	366	Paal-339	366-4-44					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	372	Paal-340	372-6-187					Yes	Reasonable to Good	Dry	Pile sample (disk) central part degraded	
9017	372	Paal-341	372-6-193					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9017	372	Paal-342	372-6-195					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	380	Paal-343	380-5-46					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021	383	Paal-344	383-4-26					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021	383	Paal-345	383-4-47					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9021	383	Paal-346	383-5-231					Yes	Reasonable to Good	Dry	Grote ronde schijf	
9021	383	Paal-347	383-5-233					Yes	Reasonable to Good	Dry	Pile sample (disk) fragmented	
9016	384	Paal-348	384-6-16					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	388	Paal-349	388-4-6-32					Yes	Reasonable to Good	Dry	Pile sample (disk)	No available extra admi-nistration found at sample
9016	388	Paal-350	388-5-55					Yes	Reasonable to Good	Dry	Pile sample (disk)	

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9016	388	Paal-351	388-6-21					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	388	Paal-352	388-6-4					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	394	Paal-353	394-6-13					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	394	Paal-354	394-6-3					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	394	Paal-355	394-6-4					Yes	Reasonable to Good	Dry	Pile sample (disk)	
8602	396	Duig-356	396-3-15		1			Yes/No (difficult material)	Reasonable to Good	Dry	Stave	
8602	396	Duig-357	396-3-15		2			No	Reasonable	Dry	Stave. Too small/ fragmented	
8602	396	Duig-358	396-3-15		3			No	Reasonable	Dry	Stave. Too small/ fragmented	
8602	396	Duig-359	396-3-15		4			No	Reasonable	Dry	Stave. Too small/ fragmented	
8602	396	Duig-360	396-3-15		5			Yes/No (difficult material)	Reasonable to Good	Dry	Stave	
8602	396	Duig-361	396-3-15		6			Yes/No (difficult material)	Reasonable to Good	Dry	Stave	
9016	401	Paal-362	401-5-5-41					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	403	Paal-363	403-5-20					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	405	Paal-364	405-6-16					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	405	Paal-365	405-6-22					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9016	405	Paal-366	405-6-320					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9024	406	Duig-367	406-6-		124			No	Reasonable to Good	Dry	Stave	
9024	406	Duig-368	406-6-		125			No	Very poor	Wet	Completely degraded (liquid)	
9024	406	Duig-369	406-6-		126			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-370	406-6-		127			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-371	406-6-		128			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-372	406-6-		129			No	Very poor	Wet	Completely degraded (liquid)	
9024	406	Duig-373	406-6-		130			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-374	406-6-		131			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-375	406-6-		132			Yes	Very poor	Dry	Degraded	
9024	406	Duig-376	406-6-		133			Yes	Poor	Wet	Stave (degraded)	
9024	406	Duig-377	406-6-		134			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-378	406-6-		135			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-379	406-6-		136			No	Very poor	Wet	Completely degraded (liquid)	
9024	406	Duig-380	406-6-		137			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-381	406-6-		138			No	Very poor	Wet	Completely degraded (liquid)	
9024	406	Duig-382	406-6-		139			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-383	406-6-		140			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-384	406-6-		141			No	Very poor	Wet	Completely degraded (liquid)	
9024	406	Duig-385	406-6-		142			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-386	406-6-		143			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-387	406-6-		144			Yes	Poor	Wet	Stave (degraded)	
9024	406	Duig-388	406-6-		145			No	Very poor	Wet	Completely degraded (liquid)	
9024	406	Duig-389	406-6-		146			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-390	406-6-		147			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-391	406-6-		148			Yes	Reasonable to Good	Wet/Dry	Stave (degraded)	
9024	406	Duig-392	406-6-		149			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-393	406-6-		150			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-394	406-6-		151			Yes	Reasonable to Good	Dry	Stave	
9024	406	Duig-395	406-6-		152			Yes	Reasonable to Good	Dry	Stave	
9024	406	Boomstamput-396	406-6-158		A			Yes	Reasonable to Good	Dry	Part of water well (tree trunk)	found in bag 406-6-124 t/m 152
9024	406	Boomstamput-397	406-6-158		B			Yes	Reasonable to Good	Dry	Part of water well (tree trunk)	
9024	415	Duig-398	415-3-5		1			Yes	Reasonable	Dry/Wet	Stave (degraded)	
9024	415	Duig-399	415-3-5		2			Yes	Reasonable	Wet/Dry	Stave (degraded)	
9024	415	Duig-400	415-3-5		3			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-401	415-3-5		4			Yes	Reasonable to Good	Dry	Stave	

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9024	415	Duig-402	415-3-5		5			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-403	415-3-5		6			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-404	415-3-5		7			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-405	415-3-5		8			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-406	415-3-5		9			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-407	415-3-5		10			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-408	415-3-5		11			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-409	415-3-5		12			Yes	Reasonable	Wet/Dry	Stave (degraded)	
9024	415	Duig-410	415-3-5		13			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-411	415-3-5		14			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-412	415-3-5		15			Yes	Reasonable	Wet/Dry	Stave (degraded)	
9024	415	Duig-413	415-3-5		16			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-414	415-3-5		17			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-415	415-3-5		18			Yes	Reasonable to Good	Dry	Stave	
9024	415	Duig-416	415-3-5		19			Yes	Reasonable	Dry	Stave (degraded)	
9024	415	Duig-417	415-3-5		20			Yes	Reasonable to Good	Dry	Stave (fragmented)	
9024	425	Duig-418	425-4-17		1			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-419	425-4-17		2			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-420	425-4-17		3			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-421	425-4-17		4			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-422	425-4-17		5			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-423	425-4-17		6			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-424	425-4-17		7			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-425	425-4-17		8			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-426	425-4-17		9			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-427	425-4-17		10			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-428	425-4-17		11			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-429	425-4-17		12			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-430	425-4-17		13			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-431	425-4-17		14			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-432	425-4-17		15			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-433	425-4-17		16			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-434	425-4-17		17			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-435	425-4-17		18			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-436	425-4-17		19			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-437	425-4-17		20			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-438	425-4-17		21			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-439	425-4-17		22			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-440	425-4-17		23			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-441	425-4-17		24			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-442	425-4-17		25			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-443	425-4-17		26			Yes	Reasonable to Good	Dry	Stave	
9024	425	Duig-444	425-4-17		27			No	Reasonable to Good	Dry	Stave (fragmented)	
8602	425	Duig-445	425-4-17		1			Yes	Good	Dry	Stave	
8602	425	Duig-446	425-4-17		2			Yes	Good	Dry	Stave	
8602	425	Duig-447	425-4-17		3			Yes	Good	Dry	Stave	
8602	425	Duig-448	425-4-17		4			Yes	Good	Dry	Stave	
8602	425	Duig-449	425-4-17		5			Yes	Good	Dry	Stave	
8602	425	Duig-450	425-4-17		6			Yes	Good	Dry	Stave	
8602	425	Duig-451	425-4-17		7			Yes	Good	Dry	Stave	
8602	425	Duig-452	425-4-17		8			Yes	Good	Dry	Stave	
8602	425	Duig-453	425-4-17		9			Yes	Good	Dry	Stave	
8602	425	Duig-454	425-4-17		10			Yes	Good	Dry	Stave	
8602	425	Duig-455	425-4-17		11			Yes	Good	Dry	Stave	
8602	425	Duig-456	425-4-17		12			Yes	Good	Dry	Stave	
8602	425	Duig-457	425-4-17		13			Yes	Good	Dry	Stave	

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8602	425	Duig-458	425-4-17		14			Yes	Good	Dry	Stave	
8602	425	Duig-459	425-4-17		15			Yes	Good	Dry	Stave	
8602	425	Duig-460	425-4-17		16			Yes	Good	Dry	Stave	
8602	425	Duig-461	425-4-17		17			Yes	Good	Dry	Stave	
8602	425	Duig-462	425-4-17		18			Yes	Good	Dry	Stave	
8602	425	Duig-463	425-4-17		19			Yes	Good	Dry	Stave	
8602	425	Duig-464	425-4-17		20			Yes	Good	Dry	Stave	
8602	425	Duig-465	425-4-17		21			Yes	Good	Dry	Stave	
8602	425	Duig-466	425-4-17		22			Yes	Good	Dry	Stave	
8602	425	Duig-467	425-4-17		23			Yes	Good	Dry	Stave	
8602	425	Duig-468	425-4-17		24			Yes	Good	Dry	Stave	
8602	425	Duig-469	425-4-17		25			Yes	Good	Dry	Stave	
8602	425	Duig-470	425-4-17		26			Yes	Good	Dry	Stave	
9024	428	Duig-471	428-3-19		1			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-472	428-3-19		2			Yes	Reasonable to Good	Dry	Stave (fragmented)	
9024	428	Duig-473	428-3-19		3			Yes	Reasonable to Good	Dry	Stave (fragmented)	
9024	428	Duig-474	428-3-19		4			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-475	428-3-19		5			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-476	428-3-19		6			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-477	428-3-19		7			No	Reasonable to Good	Dry	Stave (fragmented)	
9024	428	Duig-478	428-3-19		8			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-479	428-3-19		9			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-480	428-3-19		10			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-481	428-3-19		11			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-482	428-3-19		12			Yes	Reasonable to Good	Dry	Stave	
9024	428	Duig-483	428-3-19		13			Yes	Reasonable to Good	Dry	Too few rings	
9024	428	Duig-484	428-3-19		14			Yes	Reasonable to Good	Dry	Too few rings	
9027	434	Duig-485	434-2-52		B			Yes	Reasonable to Good	Dry	Stave (fragmented)	
9027	442	Duig-486	442-3-19		2	WDS00451		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-487	442-3-19		3	WDS00461		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-488	442-3-19		4			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-489	442-3-19		5			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-490	442-3-19		6			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-491	442-3-19		7			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-492	442-3-19		8	WDS00471		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-493	442-3-19		9	WDS00481		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-494	442-3-19		10	WDS00491		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-495	442-3-19		11	WDS00501		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-496	442-3-19		12	WDS00511		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-497	442-3-19		13			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-498	442-3-19		14			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-499	442-3-19		15	WDS00521		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-500	442-3-19		16	WDS00531		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-501	442-3-19		17	WDS00541		Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-502	442-3-19		18			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	442	Duig-503	442-3-1		1			Yes	Reasonable to Good	Dry	Stave	Pine?
9027	443	Duig-504	443-5-12					Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-505	445-4-		51			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-506	445-4-		52			No	Reasonable to Good	Dry	Too fragmented	
9024	445	Duig-507	445-4-		53			No	Reasonable to Good	Dry	Too fragmented	
9024	445	Duig-508	445-4-		54			No	Reasonable to Good	Dry	Too fragmented	
9024	445	Duig-509	445-4-		55			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-510	445-4-		56			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-511	445-4-		57			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-512	445-4-		58			Yes	Reasonable to Good	Dry	Stave	

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9024	445	Duig-513	445-4-		59			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-514	445-4-		60			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-515	445-4-		61			No	Reasonable to Good	Dry	Fragmented	
9024	445	Duig-516	445-4-		62			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-517	445-4-		63			Yes	Reasonable to Good	Dry	Stave	
9024	445	Duig-518	445-4-		64			No	Reasonable to Good	Dry	Fragmented	
8602	445	Duig-519	445-4-		51			Yes/No (difficult material)	Reasonable	Wet	Stave	
8602	445	Duig-520	445-4-		52			No	Poor	Dry	Stave. Too small/ fragmented	
8602	445	Duig-521	445-4-		53			No	Poor	Dry	Stave. Too small/ fragmented	
8602	445	Duig-522	445-4-		54			Yes/No (difficult material)	Reasonable to Poor	Dry/Wet	Stave (fragmented)	
8602	445	Duig-523	445-4-		55			Yes/No (difficult material)	Reasonable to Poor	Dry/Wet	Stave	
8602	445	Duig-524	445-4-		57			No	Reasonable to Poor	Dry/Wet	Stave (fragmented)	
8602	445	Duig-525	445-4-		58			No	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-526	445-4-		59			No	Reasonable	Dry/Wet	Stave	
8602	445	Duig-527	445-4-		60			Yes	Reasonable	Dry/Wet	Stave	
8602	445	Duig-528	445-4-		61			No	Poor	Dry	Stave (fragmented)	
8602	445	Duig-529	445-4-		62			Yes	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-530	445-4-		63			Yes	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-531	445-4-		64			No	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-532	445-4-		70			No	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-533	445-4-		71			No	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-534	445-4-		72			Yes	Reasonable to Good	Dry/Wet	Stave	
8602	445	Duig-535	445-4-		73			No	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-536	445-4-		74			No	Reasonable	Dry/Wet	Stave (fragmented)	
8602	445	Duig-537	445-4-		75			Yes	Reasonable	Wet/Dry	Stave	
8602	445	Duig-538	445-4-		76			Yes	Reasonable	Dry/Wet	Stave	
8602	445	Duig-539	445-4-		77			No	Poor	Dry	Stave (fragmented)	
8602	445	Duig-540	445-4-		78			No	Poor	Wet	Stave (degraded)	
8602	445	Duig-541	445-4-		79			No	Poor	Wet	Stave (degraded)	
8602	445	Duig-542	445-4-		80			Yes	Reasonable	Dry/Wet	Stave	
8602	445	Duig-543	445-4-		81			No	Poor	Dry	Stave (degraded)	
8602	445	Duig-544	445-4-		82			Yes	Reasonable to Good	Dry/Wet	Stave	
8602	445	Duig-545	445-4-		83			No	Reasonable	Wet/Dry	Stave (fragmented)	
8602	445	Duig-546	445-4-		84			No	Reasonable	Wet/Dry	Stave (fragmented)	
8602	445	Duig-547	445-4-		85			No	Reasonable	Dry	Stave (fragmented)	
8602	445	Duig-548	445-4-		86			No	Reasonable	Dry	Stave (fragmented)	
8602	445	Duig-549	445-4-		87			No	Reasonable	Dry	Stave (fragmented)	
8602	445	Duig-550	445-4-		88			No	Reasonable	Dry	Stave (fragmented)	
4365	447	Duig-551	447-3-		2			Yes	Good	Dry	Stave	
4365	447	Duig-552	447-3-		3			Yes	Good	Dry	Stave	
4365	447	Duig-553	447-3-		4			Yes	Good	Dry	Stave	
4365	447	Duig-554	447-3-		5			Yes	Good	Dry	Stave	
4365	447	Duig-555	447-3-		6			Yes	Good	Dry	Stave	
4365	447	Duig-556	447-3-		7			Yes	Good	Dry	Stave	
4365	447	Duig-557	447-3-		8			Yes	Good	Dry	Stave	
4365	447	Duig-558	447-3-		9			Yes	Good	Dry	Stave (fragmented)	
4365	447	Duig-559	447-3-		10			Yes	Good	Dry	Stave	
4365	447	Duig-560	447-3-		11			Yes	Good	Dry	Stave	
4365	447	Duig-561	447-3-		12			Yes	Good	Dry	Stave	

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4365	447	Duig-562	447-3-		13			Yes	Good	Dry	Stave	
4365	447	Duig-563	447-3-		14			Yes	Good	Dry	Stave	
4365	447	Duig-564	447-3-		15			Yes	Good	Dry	Stave	
4365	447	Duig-565	447-3-		16			Yes	Good	Dry	Stave	
4365	447	Duig-566	447-3-		17			Yes	Good	Dry	Stave	
4365	447	Duig-567	447-3-		18			Yes	Good	Dry	Stave	
4365	447	Duig-568	447-3-		19			Yes	Good	Dry	Stave	
4365	447	Duig-569	447-3-		20			Yes	Good	Dry	Stave (fragmented)	
4365	447	Duig-570	447-3-		21			Yes	Good	Dry	Stave	
4365	447	Duig-571	447-3-		22			Yes	Good	Dry	Stave	
4365	447	Duig-572	447-3-		23			Yes	Good	Dry	Stave	
8602	447	Duig-573	447-3-		55			No	Poor	Dry	Stave (fragmented)	
8602	447	Duig-574	447-3-		56			No	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-575	447-3-		57			No	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-576	447-3-		58			Yes/No (difficult material)	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-577	447-3-		59			No	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-578	447-3-		60			No	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-579	447-3-		61			No	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-580	447-3-		62			Yes/No (difficult material)	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-581	447-3-		63			Yes/No (difficult material)	Reasonable to Poor	Dry	Stave (fragmented)	
8602	447	Duig-582	447-3-		24			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-583	447-3-		25			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-584	447-3-		26			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-585	447-3-		27			No	Reasonable	Dry	Stave (fragmented)	
8602	447	Duig-586	447-3-		28			No	Reasonable	Dry	Stave (fragmented)	
8602	447	Duig-587	447-3-		29			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-588	447-3-		30			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-589	447-3-		31			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-590	447-3-		32			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-591	447-3-		33			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-592	447-3-		34			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-593	447-3-		35			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-594	447-3-		36			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-595	447-3-		37			No	Poor	Dry	Stave (fragmented)	
8602	447	Duig-596	447-3-		38			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-597	447-3-		39			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-598	447-3-		40			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-599	447-3-		41			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-600	447-3-		42			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-601	447-3-		43			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-602	447-3-		44			Yes	Reasonable to Good	Dry	Stave	
8602	447	Duig-603	447-3-		45			No	Poor	Dry	Stave (fragmented)	
8602	447	Duig-604	447-3-		46			No	Poor	Dry	Stave (fragmented)	
8602	447	Duig-605	447-3-		47			No	Poor	Dry	Stave (fragmented)	
8602	447	Duig-606	447-3-		48			No	Poor	Dry	Stave (fragmented)	
4365	447	Duig-607	447-3-1		1			Yes	Good	Dry	Stave	
9024	447	Duig-608	447-3-24					Yes	Reasonable to Good	Dry	Stave	Probable sample samples as found in box 8602 findnumber: 447-3-24 t/m 48.
9024	447	Duig-609	447-3-25					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-610	447-3-26					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-611	447-3-27					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-612	447-3-28					Yes	Reasonable to Good	Dry	Stave	

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9024	447	Duig-613	447-3-29					Yes	Reasonable to Good	Dry	Stave	Probable sample samples as found in box 8602 findnumber: 447-3-24 t/m 48.
9024	447	Duig-614	447-3-30					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-615	447-3-31					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-616	447-3-32					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-617	447-3-33					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-618	447-3-34					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-619	447-3-35					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-620	447-3-36					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-621	447-3-37					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-622	447-3-38					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-623	447-3-39					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-624	447-3-40					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-625	447-3-41					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-626	447-3-42					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-627	447-3-43					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-628	447-3-44					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-629	447-3-45					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-630	447-3-46					No	Reasonable to Good	Dry	Stave	
9024	447	Duig-631	447-3-47					Yes	Reasonable to Good	Dry	Stave	
9024	447	Duig-632	447-3-48					Yes	Reasonable to Good	Dry	Stave	
9026	449	Paal-633	449-5-303					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9026	449	Paal-634	449-5-307					Yes/No (difficult material)	Reasonable to Good	Dry	Small fragments	
9026	449	Paal-635	449-5-311					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9026	449	Paal-636	449-5-314					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9026	449	Paal-637	449-5-322					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9027	449	Paal-638	449-5-370					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9027	449	Paal-639	449-5-384					Yes/No	Reasonable to Good	Dry	Pile sample (disk)	
9027	449	Paal-640	449-5-387					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9027	453	Paal-641	453-6-42					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9027	453	Paal-642	453-6-43					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9027	453	Paal-643	453-6-48					Yes	Reasonable to Good	Dry	Pile sample (disk)	
9027	455	Duig-644	455-2-22		B			Yes	Reasonable to Good	Dry	Stave/plank?	
9027	455	Duig-645	455-2-23		B			Yes	Reasonable to Good	Dry	Stave/plank?	
9027	455	Duig-646	455-2-23		C			Yes	Reasonable to Good	Dry	Stave/plank?	
9027	455	Duig-647	455-2-23		D			Yes	Reasonable to Good	Dry	Stave/plank?	
9027	455	Duig-648	455-2-23		F			Yes	Reasonable to Good	Dry	Stave/plank?	
4365	468	Duig-649	468-3-13		A			No	Poor	Dry	Stave (fragmented)	
4365	468	Duig-650	468-3-13		B			No	Poor	Dry	Stave (fragmented)	
4365	468	Duig-651	468-3-15		1			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-652	468-3-15		2			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-653	468-3-15		3			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-654	468-3-15		4			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-655	468-3-15		5			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-656	468-3-15		6			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-657	468-3-15		7			Yes	Reasonable to Poor	Dry	Stave	Pine
4365	468	Duig-658	468-3-15		8			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-659	468-3-15		9			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-660	468-3-15		10			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-661	468-3-15		11			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-662	468-3-15		12			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-663	468-3-15		13			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-664	468-3-15		14			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-665	468-3-15		15			Yes	Reasonable to Good	Dry	Stave	Pine
4365	468	Duig-666	468-3-15		16			Yes	Reasonable to Good	Dry	Stave (small fragment)	Pine
4365	468	Duig-667	468-3-15		17			Yes	Reasonable to Good	Dry	Stave	Pine

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
4365	468	Duig-668	468-3-15		18			Yes	Reasonable to Good	Dry	Stave	Pine
9027	477	Duig-669	477-3-		2			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-670	477-3-		3			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-671	477-3-		4			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-672	477-3-		5			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-673	477-3-		6			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-674	477-3-		7			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-675	477-3-		8			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-676	477-3-		9			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-677	477-3-		10			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-678	477-3-		11			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-679	477-3-		12			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-680	477-3-		13			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-681	477-3-		14			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-682	477-3-		15			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-683	477-3-		16			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-684	477-3-		17			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-685	477-3-		18			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-686	477-3-		19			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-687	477-3-		20			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-688	477-3-		21			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-689	477-3-		22			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-690	477-3-		23			Yes	Reasonable to Good	Dry	Stave (small fragment)	
9027	477	Duig-691	477-3-1		1			Yes	Reasonable to Good	Dry	Stave (small fragment)	
4365	490	Duig-692	490-2-		34			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-693	490-2-		35			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-694	490-2-		36			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-695	490-2-		37			Yes/No (difficult material)	Poor to Reasonable	Wet/Dry	Stave (small fragment)	
4365	490	Duig-696	490-2-		38			Yes/No (difficult material)	Poor to Reasonable	Wet/Dry	Stave (small fragment)	
4365	490	Duig-697	490-2-		39			Yes/No (difficult material)	Poor to Reasonable	Wet/Dry	Stave (small fragment)	
4365	490	Duig-698	490-2-		40			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-699	490-2-		41			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-700	490-2-		42			No	Poor	Wet/Dry	Stave (small fragment)	
4365	490	Duig-701	490-2-		43			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-702	490-2-		44			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-703	490-2-		45			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-704	490-2-		46			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-705	490-2-		47			No	Poor	Wet/Dry	Stave (small fragment)	
4365	490	Duig-706	490-2-		48			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-707	490-2-		49			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-708	490-2-		50			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-709	490-2-		51			No	Poor	Dry/Wet	Stave (small fragment)	

Storage box number	Excavation pit with layer	RING Identifier	Find number	Additional data on excavation pit and layer (provided by Dr. Verwers, 2014)	Sample code	(when analysed) RING Foundation code	Researched by University Hamburg	Potential for dendrochrono-logical analysis	Preservation state of material	Preser-vation Context	Remarks on object type	General remarks
4365	490	Duig-710	490-2-		52			No	Poor	Dry/Wet	Stave (small fragment)	
4365	490	Duig-711	490-2-30					Yes/No (very difficult)	Poor to Reasonable	Dry/Wet	Stave (small fragment)	
4365	490	Duig-712	490-2-33		33			No	Poor	Dry/Wet	Stave (small fragment)	
4365	491	Duig-713	491-6-		31			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-714	491-6-		32			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-715	491-6-		33			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-716	491-6-		34			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-717	491-6-		35			Yes	Reasonable to Good	Dry	Stave	
4365	491	Duig-718	491-6-		36			Yes/No (difficult material)	Reasonable	Dry	Stave	
4365	491	Duig-719	491-6-		37			Yes	Reasonable to Good	Dry	Stave	
4365	491	Duig-720	491-6-		38			No	Poor	Dry	Stave	
4365	491	Duig-721	491-6-		39			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-722	491-6-		40			Yes/No (difficult material)	Reasonable	Dry	Stave	
4365	491	Duig-723	491-6-		41			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-724	491-6-30		30			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-725	491-7-		65			No	Poor	Dry	Stave (small fragment)	Reused wine barrel as water well.
4365	491	Duig-726	491-7-		66			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-727	491-7-		67			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-728	491-7-		68			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-729	491-7-		69			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-730	491-7-		60			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-731	491-7-		61			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-732	491-7-		62			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-733	491-7-		63			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-734	491-7-59		59			No	Poor	Dry	Stave (small fragment)	
4365	491	Duig-735	491-7-64		64			No	Poor	Dry	Stave (small fragment)	
9297	881	Waterput-736	881-3-100					Yes/No (difficult material)	Reasonable to Good	Wet/Dry	Stave (small fragment)	
9296	881	Duig-737	881-3-237		75			Yes	Reasonable	Wet	Stave	
9298	881	Duig-738	881-3-296		101			Yes	Reasonable to Good	Dry/Wet	Stave	
9298	881	Duig-739	881-3-296		101			Yes	Reasonable to Good	Wet/Dry	Stave	
9298	881	Duig-740	881-3-296		101			Yes	Reasonable to Good	Dry	Stave	
9296	881	Duig-741	881-3-300		77			Yes	Poor to Reasonable	Wet	Stave	
9296	881	Duig-742	881-3-300		77			Yes	Reasonable	Dry	Stave (fragmented)	
9296	881	Waterput-743	881-3-67					Yes	Reasonable	Dry	Small fragments water well	
9296	881	Duig-744	881-3-87					Yes	Reasonable to Good	Dry	Fragments water well	
9297	881	Duig-745	881-3-311		87 (part A)			Yes	Reasonable to Good	Dry/Wet	6 staves	
9297	881	Duig-746	881-3-311		87 (part B)			Yes	Reasonable to Good	Dry/Wet	7 staves	
9297	881	Paal-747	881-3-99					Yes	Reasonable to Good	Wet/Dry	Pile sample (disk)	

SUPPLEMENTARY MATERIAL A: TREE-RING DATA FROM WIJK BIJ DUURSTEDE: DE GEER

DCCD report number	DCCD project-code	DCCD element-code	Elementtype	Find number (archaeological)	Nr. Of rings
1996072	WYK	WYK0007	Unknown	761-4-55	
1990011	C6D	C6D0201	Stave	767-3-60	189
1990011	C6D	C6D0202	Stave	767-3-61	128
1990011	C6D	C6D0203	Stave	767-3-62	157
1990011	C6D	C6D0204	Stave	767-3-64	259
1990011	C6D	C6D0205	Stave	767-3-65	192
1990011	C6D	C6D0206	Stave	767-3-66	181
1990011	C6D	C6D0207	Stave	767-3-73	125
1990011	C6D	C6D0208	Stave	767-3-75	200
1990011	C6D	C6D0209	Stave	767-3-78	140
1990011	C6D	C6D0210	Stave	767-3-79	241
1990011	C6D	C6D0211	Stave	767-3-81	247
1990011	C6D	C6D0212	Stave	767-3-82	232
1990011	C6D	C6D0213	Stave	767-3-84	261
1990011	C6D	C6D0301	Stave	768-5-39	70
1990011	C6D	C6D0302	Stave	768-5-40	79
1990011	C6D	C6D0303	Stave	768-5-41	64
1990011	C6D	C6D0304	Stave	768-5-42	58
1990011	C6D	C6D0305	Stave	768-5-43	57
1990011	C6D	C6D0306	Stave	768-5-44	83
1990011	C6D	C6D0307	Stave	768-5-45	51
1990011	C6D	C6D0308	Stave	768-5-46	73
1990011	C6D	C6D0309	Stave	768-5-47	72
1990011	C6D	C6D0310	Stave	768-5-48	75
1990011	C6D	C6D0311	Stave	768-5-49	73
1990011	C6D	C6D0312	Stave	768-5-57	49
1990011	C6D	C6D0313	Stave	768-5-58	61
1990011	C6D	C6D0314	Stave	768-5-60	51
1990011	C6D	C6D0315	Stave	768-5-61	63
1990011	C6D	C6D0316	Stave	768-5-62	67
1990011	C6D	C6D0317	Stave	768-5-63	65
1990011	C6D	C6D0401	Stave	772-5-32	133
1990011	C6D	C6D0402	Stave	772-5-33	93
1990011	C6D	C6D0403	Stave	772-5-34	112
1990011	C6D	C6D0404	Stave	772-5-36	126
1990011	C6D	C6D0405	Stave	772-5-37	86
1990011	C6D	C6D0406	Stave	772-5-43	121
1990011	C6D	C6D0407	Stave	772-5-44	103
1990011	C6D	C6D0408	Stave	772-5-44	125
1990011	C6D	C6D0410	Stave	772-5-46	85
1990011	C6D	C6D0409	Stave	772-5-47	112
1990011	C6D	C6D0411	Stave	772-5-48	98
1990011	C6D	C6D0412	Stave	772-5-49	123
1990011	C6D	C6D0413	Stave	772-5-51	236
1990011	C6D	C6D0501	Unknown	773-15-49	65
1990011	C6D	C6D0502	Unknown	773-15-51	64
2011501	DDG	DDG0004	Unknown	773-5-49	37
2011501	DDG	DDG0002	Unknown	773-5-51	51
1990011	C6D	C6D0503	Unknown	773-5-53	
1996072	WYK	WYK0002	Water well	775-7-40	43
1996072	WYK	WYK0001	Water well	775-7-42	81
1990011	C6D	C6D0601	Unknown	775-7-90	

DCCD report number	DCCD project-code	DCCD element-code	Elementtype	Find number (archaeological)	Nr. Of rings
1990011	C6D	C6D0602	Unknown	775-7-91	
1990011	C6D	C6D0603	Unknown	775-7-92	
1990011	C6D	C6D0604	Unknown	775-7-92	
2011501	DDG	DDG0011	Unknown	783-7-80	32
2011501	DDG	DDG0008	Unknown	789-3-101	100
1996072	WYK	WYK0004	Unknown	838-3-60	
1996072	WYK	WYK0005	Unknown	838-3-62	
1996072	WYK	WYK0003	Water well	838-3-65	241
1996072	WYK	WYK0006	Unknown	838-3-65	
1996072	WYK	WYK0008	Unknown	849-3-16	
2011501	DDG	DDG0012	Unknown	860-2-21	50
2011501	DDG	DDG0010	Unknown	860-2-22	70
2011501	DDG	DDG0007	Unknown	860-2-29D	97
2011501	DDG	DDG0001	Unknown	865-4-21	69
2011501	DDG	DDG0003	Unknown	773-5-51	44
2011501	DDG	DDG0005	Unknown	791-4-113	43
2011501	DDG	DDG0006	Unknown	860-2-29	82
2011501	DDG	DDG0009	Unknown	860-2-27	

SUPPLEMENTARY MATERIAL A: TREE-RING DATA FROM DORESTAD ANALYSED BY HAMBURG UNIVERSITY (BETWEEN 1972 AND 1974)

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
1	Stave (water well)	144	no	undated		around or after 757					Quercus
2	Stave (water well)	117	no	yes		around or after 757					Quercus
3	Stave (water well)	116	no	undated		around or after 757					Quercus
4	Stave (water well)	75	no	yes		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
5	Stave (water well)	62	no	yes		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
6	Stave (water well)	86	no	yes		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
7	Stave (water well)	80	no	yes		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
8	Stave (water well)	93	no	yes		around or after 757					Quercus
9	Stave (water well)	80	no	yes		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
10	Stave (water well)	41	no	yes		around or after 757					Quercus
11	Stave (water well)	102	no	undated		around or after 757					Quercus
12	Stave (water well)	200	no	yes		around or after 757					Quercus
13	Stave (water well)	107	no	yes		around or after 757	Hollstein-Mainz	4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
14	Stave (water well)	57	no	yes		around or after 757					Quercus
15	Stave (water well)	62	no	yes		around or after 757					Quercus
16	Stave (water well)	65	no	yes	1 ring counted	around or after 757					Quercus
17	Stave (water well)	59	no	-737		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
18	Stave (water well)	104	no	undated		around or after 757					Quercus
19	Stave (water well)	53	no	yes		around or after 757					Quercus
20	Stave (water well)	59	no	yes		around or after 757		4-7+9+13-17+20 = 189 (482-735 AD)			Quercus
21	Stave (water well)	<30	no	undated		around or after 757					Quercus
22	Stave (water well)	<30	no	undated		around or after 757					Quercus
23	Stave (water well)	<30	no	undated		around or after 757					Quercus
24	Stave (water well)	<30	no	undated		around or after 757					Quercus
25	Stave (water well)	<30	no	undated		around or after 757					Quercus
26	Stave (water well)	<30	no	undated		around or after 757					Quercus
27	Stave (water well)	<30	no	undated		around or after 757					Quercus
28	Stave (water well)	<30	no	undated		around or after 757					Quercus
1	Stave (water well)	49	no	undated				1+11 = 49			Quercus
2	Stave (water well)	66	no	undated				2+8 = 66			Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
3	Stave (water well)	48	no	undated							Quercus
4	Stave (water well)	33	no	undated							Quercus
5	Stave (water well)	37	no	undated							Quercus
6	Stave (water well)	61	no	undated							Quercus
7	Stave (water well)	40	no	undated							Quercus
8	Stave (water well)	55	no	undated				2+8 = 66			Quercus
9	Stave (water well)	30	no	undated							Quercus
10	Stave (water well)	55	no	undated							Quercus
11	Stave (water well)	45	no	undated				1+11 = 49			Quercus
12	Stave (water well)	42	no	undated							Quercus
13	Stave (water well)	38	no	undated							Quercus
14	Stave (water well)	40	no	undated							Quercus
15	Stave (water well)	37	no	undated							Quercus
16	Stave (water well)	<30	no	undated							Quercus
17	Stave (water well)	<30	no	undated							Quercus
18	Stave (water well)	<30	no	undated							Quercus
19	Stave (water well)	<30	no	undated							Quercus
20	Stave (water well)	<30	no	undated							Quercus
21	Stave (water well)	<30	no	undated							Quercus
22	Stave (water well)	<30	no	undated							Quercus
23	Stave (water well)	<30	no	undated							Quercus
24	Stave (water well)	<30	no	undated							Quercus
25	Stave (water well)	<30	no	undated							Quercus
26	Stave (water well)	<30	no	undated							Quercus
27	Stave (water well)	<30	no	undated							Quercus
28	Stave (water well)	<30	no	undated							Quercus
29	Stave (water well)	<30	no	undated							Quercus
1	Stave (water well)	119	no	yes		around or after 693	dated with Hollstein-Mainz				Quercus
2	Stave (water well)	131	no	yes		around or after 693					Quercus
3	Stave (water well)	88	no	yes		around or after 693					Quercus
4	Stave (water well)	108	no	yes		around or after 693					Quercus
5	Stave (water well)	128	no	-671/73		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
6	Stave (water well)	114	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
7	Stave (water well)	127	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
8	Stave (water well)	72	no	yes		around or after 693					Quercus
9	Stave (water well)	140	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
10	Stave (water well)	112	no	yes		around or after 693					Quercus
11	Stave (water well)	107	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
12	Stave (water well)	106	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
13	Stave (water well)	104	no	yes		around or after 693					Quercus
14	Stave (water well)	90	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
15	Stave (water well)	120	no	yes		around or after 693					Quercus
16	Stave (water well)	107	no	yes		around or after 693		2 rings counted. 5-7+9+11+12+14+16 = 169 (503-671 AD)			Quercus
1	Stave (water well)	161	no	yes		around or after 725		1+4-8+10+12 = 184 (518-703 AD)			Quercus
2	Stave (water well)	150	no	581-732	reparation -later:around/ after 752	around or after 725					Quercus
3	Stave (water well)	108	no	yes		around or after 725					Quercus
4	Stave (water well)	147	no	yes		around or after 725		1+4-8+10+12 = 184 (518-703 AD)			Quercus
5	Stave (water well)	153	no	yes		around or after 725					Quercus
6	Stave (water well)	153	no	yes		around or after 725					Quercus
7	Stave (water well)	160	no	yes		around or after 725					Quercus
8	Stave (water well)	171	no	yes		around or after 725		1+4-8+10+12 = 184 (518-703 AD)			Quercus
9	Stave (water well)	137	no	yes		around or after 725					Quercus
10	Stave (water well)	169	no	yes		around or after 725		1+4-8+10+12 = 184 (518-703 AD)			Quercus
11	Stave (water well)	105	no	yes		around or after 725					Quercus
12	Stave (water well)	181	no	yes		around or after 725		1+4-8+10+12 = 184 (518-703 AD)			Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
13	Stave (water well)	67	no	yes		around or after 725	dated with Hollstein-Mainz				Quercus
14	Stave (water well)	101	no	-705		around or after 725					Quercus
15	Stave (water well)	64	no	yes		around or after 725					Quercus
16	Stave (water well)	72	no	yes		around or after 725					Quercus
17	Stave (water well)	68	no	yes		around or after 725					Quercus
18	Stave (water well)	45	no	yes		around or after 725					Quercus
19	Stave (water well)	53	no	yes		around or after 725					Quercus
20	Stave (water well)	93	no	yes		around or after 725					Quercus
21	Stave (water well)	45	no	yes		around or after 725					Quercus
22	Stave (water well)	58	no	yes		around or after 725					Quercus
23	Stave (water well)	47	no	yes		around or after 725					Quercus
24	Stave (water well)	65	no	yes		around or after 725					Quercus
25	Stave (water well)	110	no	yes		around or after 725					Quercus
26	Stave (water well)	105	no	yes		around or after 725					Quercus
1	Stave (water well)	110	no	yes		around or after 740					Quercus
2	Stave (water well)	126	no	yes		around or after 740					Quercus
3	Stave (water well)	111	no	yes		around or after 740					Quercus
4	Stave (water well)	107	no	yes		around or after 740					Quercus
5	Stave (water well)	84	no	yes		around or after 740					Quercus
6	Stave (water well)	119	no	yes		around or after 740					Quercus
7	Stave (water well)	102	no	-717/720	3 rings counted	around or after 740					Quercus
8	Stave (water well)	108	no	yes		around or after 740					Quercus
9	Stave (water well)	81	no	yes		around or after 740					Quercus
10	Stave (water well)	164	no	yes		around or after 740					Quercus
11	Stave (water well)	140	no	yes		around or after 740					Quercus
12	Stave (water well)	100	no	yes		around or after 740					Quercus
13	Stave (water well)	109	no	yes		around or after 740					Quercus
14	Stave (water well)	81	no	yes		around or after 740					Quercus
15	Stave (water well)	36	no	undated		around or after 740					Quercus
16	Stave (water well)	40	no	yes		around or after 740					Quercus
17	Stave (water well)	66	no	yes		around or after 740					Quercus
18	Stave (water well)	72	no	yes		around or after 740					Quercus
19	Stave (water well)	40	no	undated		around or after 740		1-5+10	186	531-716	Quercus
1	Stave (water well)	55	no	undated	similar to Haithabu, Well IV						Abies
2	Stave (water well)	56	no	undated	similar to Haithabu, Well IV						Abies
3	Stave (water well)	53	no	undated	similar to Haithabu, Well IV						Abies
4	Stave (water well)	47	no	undated	similar to Haithabu, Well IV						Abies
5	Stave (water well)	56	no	undated	similar to Haithabu, Well IV						Abies
6	Stave (water well)	47	no	undated	similar to Haithabu, Well IV						Abies
7	Stave (water well)	51	no	undated	similar to Haithabu, Well IV						Abies
8	Stave (water well)	48	no	undated	similar to Haithabu, Well IV						Abies
9	Stave (water well)	53	no	undated	similar to Haithabu, Well IV						Abies
10	Stave (water well)	46	no	undated	similar to Haithabu, Well IV						Abies
11	Stave (water well)	50	no	undated	similar to Haithabu, Well IV						Abies
12	Stave (water well)	35	no	undated	similar to Haithabu, Well IV						Abies
13	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies
14	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies
15	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
16	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies
17	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies
18	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies
19	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV						Abies
20	Stave (water well)	<30	no	undated	similar to Haithabu, Well IV			1+2+3+4+6+7+9+11	79		Abies
1	Stave (water well)	169	no	yes		around or after 768	dated with Hollstein-Mainz				Quercus
2	Stave (water well)	164	no	yes		around or after 768					Quercus
3	Stave (water well)	154	no	yes		around or after 768					Quercus
4	Stave (water well)	161	no	yes		around or after 768					Quercus
5	Stave (water well)	199	no	yes		around or after 768					Quercus
6	Stave (water well)	175	no	yes		around or after 768					Quercus
7	Stave (water well)	149	no	yes		around or after 768					Quercus
8	Stave (water well)	152	no	yes		around or after 768					Quercus
9	Stave (water well)	117	no	yes		around or after 768					Quercus
10	Stave (water well)	143	no	yes		around or after 768					Quercus
11	Stave (water well)	164	no	yes		around or after 768		2+3+5+7-11	199	550-748	Quercus
1	Stave (water well)	35	no	undated							Quercus
2	Stave (water well)	61	no	undated							Quercus
3	Stave (water well)	100	no	undated							Quercus
4	Stave (water well)	29	no	undated							Quercus
5	Stave (water well)	44	no	undated							Quercus
6	Stave (water well)	88	no	undated							Quercus
7	Stave (water well)		no	undated				no meancurve			Abies
1	Stave (water well)	206	no	yes	probably all from 1 stem	around or after 837	dated with Hollstein-Mainz				Quercus
2	Stave (water well)	185	no	yes	probably all from 1 stem	around or after 837					Quercus
3	Stave (water well)	149	no	yes	probably all from 1 stem	around or after 837					Quercus
4	Stave (water well)	129	no	yes	probably all from 1 stem	around or after 837					Quercus
5	Stave (water well)	176	no	yes	probably all from 1 stem	around or after 837					Quercus
6	Stave (water well)	137	no	yes	probably all from 1 stem	around or after 837					Quercus
7	Stave (water well)	150	no	yes	probably all from 1 stem	around or after 837					Quercus
8	Stave (water well)	157	no	yes	probably all from 1 stem	around or after 837					Quercus
9	Stave (water well)	182	no	yes	probably all from 1 stem	around or after 837					Quercus
10	Stave (water well)	134	no	yes	probably all from 1 stem	around or after 837					Quercus
11	Stave (water well)	132	no	yes	probably all from 1 stem	around or after 837					Quercus
12	Stave (water well)	158	no	yes	probably all from 1 stem	around or after 837					Quercus
13	Stave (water well)	168	no	yes	probably all from 1 stem	around or after 837					Quercus
14	Stave (water well)	85	no	yes	probably all from 1 stem	around or after 837					Quercus
15	Stave (water well)	68	no	yes	probably all from 1 stem	around or after 837					Quercus
16	Stave (water well)	156	no	yes	probably all from 1 stem	around or after 837		1+2+4-7+11-16	254	564-817	Quercus
154	Stave (water well)	154	13	-740		around 745					Quercus
215	Stave (water well)	215	no	yes		around 745					Quercus
177	Stave (water well)	177	16	-739		around 745					Quercus
238	Stave (water well)	238	no	yes		around 745					Quercus
127	Stave (water well)	127	no	undated		around 745					Quercus
152	Stave (water well)	152	no	yes		around 745					Quercus
176	Stave (water well)	176	no	yes		around 745					Quercus
227	Stave (water well)	227	no	yes		around 745					Quercus
214	Stave (water well)	214	no	yes		around 745					Quercus
210	Stave (water well)	210	no	yes		around 745					Quercus
131	Stave (water well)	131	no	yes		around 745					Quercus
247	Stave (water well)	247	no	yes		around 745					Quercus
170	Stave (water well)	170	no	yes		around 745					Quercus
235	Stave (water well)	235	no	yes		around 745		1-4+10	265	474-738	Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
a	Stave (water well)	149	no	yes		around (or after) 737					Quercus
b	Stave (water well)	134	3?	yes		around (or after) 737					Quercus
c	Stave (water well)	118	no	yes		around (or after) 737					Quercus
d	Stave (water well)	150	no	yes		around (or after) 737					Quercus
e	Stave (water well)	105	no	yes		around (or after) 737					Quercus
f	Stave (water well)	145	no	yes		around (or after) 737					Quercus
g	Stave (water well)	122	no	yes		around (or after) 737					Quercus
h	Stave (water well)	133	no	yes		around (or after) 737		a+b+c+d+e+f+g+h	183	535-717	Quercus
a	Stave (water well)	162	no	yes		around or after 715					Quercus
b	Stave (water well)	113	no	yes		around or after 715		a+b	162	534-695	Quercus
1	Stave (water well)	106	14	628-733		around 739					Quercus
2	Stave (water well)	107	10	621-727/28	1 ring counted	around 739					Quercus
3	Stave (water well)	115	8	613-727		around 739					Quercus
4	Stave (water well)	128	8	598-725		around 739					Quercus
5	Stave (water well)	128	8	596-724	?? timespan and number of rings??	around 739					Quercus
6	Stave (water well)	124	1	592-715	sap dropped down	around 739					Quercus
7	Stave (water well)	93	no	615-707		around 739					Quercus
8	Stave (water well)	119	7	606-724		around 739					Quercus
9	Stave (water well)	102	no	609-710		around 739					Quercus
10	Stave (water well)	112	no	600-711		around 739					Quercus
11	Stave (water well)	100	no	609-708		around 739					Quercus
12	Stave (water well)	118	12	611-728		around 739					Quercus
13	Stave (water well)	129	14	602-730		around 739					Quercus
14	Stave (water well)	125	5	598-722		around 739					Quercus
15	Stave (water well)	102	no	614-715		around 739					Quercus
16	Stave (water well)	92	no	613-704		around 739					Quercus
17	Stave (water well)	123	no	590-712		around 739					Quercus
1	Stave (water well)	<30	no	undated	tangential board	around or after 818					Quercus
1	Stave (water well)	126	no	607-736	?? timespan and number of rings??	around or after 818					Quercus
2	Stave (water well)	183	no	614-796		around or after 818					Quercus
3	Stave (water well)	130	no	627-756		around or after 818					Quercus
4	Stave (water well)	179	no	608-786		around or after 818					Quercus
5	Stave (water well)	166	no	611-776		around or after 818					Quercus
6	Stave (water well)	158	no	608-765		around or after 818					Quercus
7	Stave (water well)	186	no	602-787		around or after 818					Quercus
8	Stave (water well)	115	no	641-745		around or after 818					Quercus
9	Stave (water well)	167	no	595-762	?? timespan and number of rings??	around or after 818					Quercus
10	Stave (water well)	185	no	601-785		around or after 818					Quercus
11	Stave (water well)	222	no	-768	measurement-mistake? End date is ok	around or after 818					Quercus
12	Stave (water well)	150	no	undated		around or after 818					Quercus
13	Stave (water well)	133	no	623-755		around or after 818					Quercus
14	Stave (water well)	117	no	682-798		around or after 818					Quercus
15	Stave (water well)	83	no	692-774		around or after 818					Quercus
a	Stave (water well)	164	14	yes		around 726					Quercus
b	Stave (water well)	180	17	yes		around 726					Quercus
c	Stave (water well)	193	no	undated		around 726					Quercus
d	Stave (water well)	175	no	yes		around 726		a+b+d+e	199	525-723	Quercus
e	Stave (water well)	176	no	yes		around 726					Quercus
1	Stave (water well)	153	no	yes		around or after 733					Quercus
2	Stave (water well)	132	no	yes		around or after 733					Quercus
3	Stave (water well)	167	no	yes		around or after 733					Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
4	Stave (water well)	169	no	undated		around or after 733					Quercus
5	Stave (water well)	116	no	yes		around or after 733		1+2+3+5	184	530-713	Quercus
a	Stave (water well)	107	no	undated							Quercus
b	Stave (water well)	127	no	undated							Quercus
c	Stave (water well)	177	no	undated							Quercus
d	Stave (water well)	114	no	undated							Quercus
e	Stave (water well)	154	no	undated							Quercus
f	Stave (water well)	135	no	undated				no meancurve			Quercus
1	Stave (water well)	102	no	552-663		around or after 685					Quercus
2	Stave (water well)	178	no	474-651		around or after 685					Quercus
3	Stave (water well)	128	no	517-644		around or after 685					Quercus
4	Stave (water well)	110	no	542-651		around or after 685					Quercus
5	Stave (water well)	123	no	519-641		around or after 685					Quercus
6	Stave (water well)	156	no	494-650		around or after 685					Quercus
7	Stave (water well)	176	no	490-665	?? timespan and number of rings??	around or after 685					Quercus
8	Stave (water well)	226	no	undated		around or after 685					Quercus
9	Stave (water well)	77	no	undated		around or after 685					Quercus
10	Stave (water well)	119	no	undated		around or after 685					Quercus
11	Stave (water well)	227	no	420-646		around or after 685					Quercus
12	Stave (water well)	172	no	493-664		around or after 685					Quercus
13	Stave (water well)	219	no	undated		around or after 685					Quercus
1	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
2	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
3	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
4	Stave (water well)	47	no	undated							Quercus
5	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
6	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
7	Stave (water well)	53	no	undated							Quercus
8	Stave (water well)	65	no	undated							Quercus
9	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
10	Stave (water well)	64	no	undated							Quercus
11	Stave (water well)	59	no	undated							Quercus
12	Stave (water well)	50	no	undated							Quercus
13	Stave (water well)	57	no	undated							Quercus
14	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
15	Stave (water well)	61	no	undated							Quercus
16	Stave (water well)	57	no	undated							Quercus
17	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
18	Stave (water well)	64	no	undated							Quercus
19	Stave (water well)	59	no	undated							Quercus
20	Stave (water well)	53	no	undated				8+15+16+19	68		Quercus
a	Stave (water well)	59	no	629-687		around or after 758					Quercus
b	Stave (water well)	58	no	624-683	??timespan and number of rings??	around or after 758					Quercus
c	Stave (water well)	62	no	626-687		around or after 758					Quercus
d	Stave (water well)	87	no	636-722		around or after 758					Quercus
e	Stave (water well)	59	no	650-708		around or after 758					Quercus
f	Stave (water well)	40	no	631-670		around or after 758					Quercus
g	Stave (water well)	72	no	644-715		around or after 758					Quercus
h	Stave (water well)	129	no	571-699		around or after 758					Quercus
i	Stave (water well)	72	no	637-708		around or after 758					Quercus
k	Stave (water well)	74	no	616-689		around or after 758					Quercus
l	Stave (water well)	87	no	640-727	??timespan and number of rings??	around or after 758					Quercus
m	Stave (water well)	86	no	639-724		around or after 758					Quercus
n	Stave (water well)	134	no	579-712		around or after 758					Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
o	Stave (water well)	41	no	631-671		around or after 758					Quercus
p	Stave (water well)	86	no	646-731		around or after 758					Quercus
q	Stave (water well)	72	no	656-726	??timespan and number of rings??	around or after 758					Quercus
r	Stave (water well)	55	no	678-732		around or after 758					Quercus
s	Stave (water well)	79	no	654-732		around or after 758					Quercus
t	Stave (water well)	78	no	648-717	??timespan and number of rings??	around or after 758					Quercus
u	Stave (water well)	113	no	622-734		around or after 758					Quercus
v	Stave (water well)	70	no	653-722		around or after 758					Quercus
w	Stave (water well)	107	no	623-729		around or after 758					Quercus
x	Stave (water well)	110	no	629-738		around or after 758					Quercus
a	Stave (water well)	113	no	580-692		around or after 730					Quercus
b	Stave (water well)	128	no	543-668	??timespan and number of rings??	around or after 730					Quercus
c	Stave (water well)	153	no	540-692		around or after 730					Quercus
d	Stave (water well)		no	undated	sample damaged	around or after 730					Quercus
e	Stave (water well)		no	undated	Fagus	around or after 730					Fagus
f	Stave (water well)	115	no	548-662		around or after 730					Quercus
g	Stave (water well)	115	no	565-679		around or after 730					Quercus
h	Stave (water well)	115	no	560-674		around or after 730					Quercus
i	Stave (water well)	95	no	573-667		around or after 730					Quercus
k	Stave (water well)	168	no	502-669		around or after 730					Quercus
l	Stave (water well)	146	no	529-674		around or after 730					Quercus
m	Stave (water well)	168	no	530-697		around or after 730					Quercus
n	Stave (water well)	133	no	571-705	??timespan and number of rings??	around or after 730					Quercus
o	Stave (water well)	142	no	501-692		around or after 730					Quercus
p	Stave (water well)		no	undated	sample damaged	around or after 730					Quercus
r	Stave (water well)	147	no	564-710		around or after 730					Quercus
s	Stave (water well)	150	no	556-705		around or after 730					Quercus
t	Stave (water well)	144	no	523-666/67	1 ring counted	around or after 730					Quercus
a	Stave (water well)	130	no	599-729		around or after 764					Quercus
b	Stave (water well)	116	no	603-718		around or after 764					Quercus
c	Stave (water well)	125	no	614-738		around or after 764					Quercus
d	Stave (water well)	134	no	589-722		around or after 764					Quercus
e	Stave (water well)	119	no	605-723		around or after 764					Quercus
f	Stave (water well)	135	no	610-744		around or after 764					Quercus
g	Stave (water well)	129	no	605-733/34	1 ring counted	around or after 764					Quercus
h	Stave (water well)	140	no	599-738/39	1 ring counted	around or after 764					Quercus
i	Stave (water well)	116	no	615-730		around or after 764					Quercus
k	Stave (water well)	119	no	589-707		around or after 764					Quercus
l	Stave (water well)	131	no	599-729		around or after 764					Quercus
m	Stave (water well)	86	no	620-705		around or after 764					Quercus
n	Stave (water well)	145	no	587-731/33	2 rings counted	around or after 764					Quercus
o	Stave (water well)	69	no	597-665	sample 2 parts	around or after 764					Quercus
p	Stave (water well)	139	no	594-732		around or after 764					Quercus
q	Stave (water well)	70	no	631-700		around or after 764					Quercus
r	Stave (water well)	133	no	578-710		around or after 764					Quercus
s	Stave (water well)	112	no	586-697		around or after 764					Quercus
a	Stave (water well)	107	no	564-670		around or after 718					Quercus
b	Stave (water well)	109	no	579-687		around or after 718					Quercus
c	Stave (water well)	124	no	570-693		around or after 718					Quercus
d	Stave (water well)	120	no	575-694		around or after 718					Quercus
e	Stave (water well)	132	no	554-685		around or after 718					Quercus
f	Stave (water well)	110	no	587-695	??timespan and number of rings??	around or after 718					Quercus
g	Stave (water well)	145	no	523-667/68	1 ring counted	around or after 718					Quercus
h	Stave (water well)	111	no	574-684		around or after 718					Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
i	Stave (water well)	95	no	594-688		around or after 718					Quercus
k	Stave (water well)	106	no	593-698		around or after 718					Quercus
a	Stave (water well)	162	no	yes		around or after 794					Quercus
b	Stave (water well)	152	no	undated		around or after 794					Quercus
c	Stave (water well)	125	no	yes		around or after 794					Quercus
d	Stave (water well)	141	no	undated		around or after 794					Quercus
e	Stave (water well)	140	no	yes		around or after 794					Quercus
f	Stave (water well)		no	undated	sample missing	around or after 794					Quercus
g	Stave (water well)	160	no	yes		around or after 794					Quercus
h	Stave (water well)	179	no	yes		around or after 794					Quercus
i	Stave (water well)	151	no	yes		around or after 794		a+c+e+g+h+i	183	592-774	Quercus
a	Stave (water well)	51	no	598-648/49	1 ring counted	around or after 702					Quercus
b	Stave (water well)	87	no	596-682		around or after 702					Quercus
c	Stave (water well)	67	no	614-680		around or after 702					Quercus
e	Stave (water well)	61	no	600-660		around or after 702					Quercus
f	Stave (water well)	61	no	609-669		around or after 702					Quercus
g	Stave (water well)	73	no	610-682		around or after 702					Quercus
h	Stave (water well)	45	no	622-666		around or after 702					Quercus
i	Stave (water well)	56	no	602-657		around or after 702					Quercus
k	Stave (water well)	52	no	629-680		around or after 702					Quercus
l	Stave (water well)	59	no	608-666		around or after 702					Quercus
m	Stave (water well)	81	no	574-654		around or after 702					Quercus
n	Stave (water well)	75	no	602-676		around or after 702					Quercus
o	Stave (water well)	59	no	593-651		around or after 702					Quercus
p	Stave (water well)	56	no	608-663		around or after 702					Quercus
q	Stave (water well)	55	no	625-679		around or after 702					Quercus
s	Stave (water well)	70	no	608-677		around or after 702					Quercus
o?	Stave (water well)	52	no	604-655		around or after 702					Quercus
a	Stave (water well)	92	no	undated							Quercus
a	Stave (water well)	119	no	593-711		around or after 731					Quercus
b	Stave (water well)	73	no	623-695		around or after 731					Quercus
c	Stave (water well)	80	no	622-701		around or after 731					Quercus
d	Stave (water well)	103	2?	608-710		around or after 731					Quercus
e	Stave (water well)	111	no	600-710		around or after 731					Quercus
f	Stave (water well)	117	no	589-705		around or after 731					Quercus
g	Stave (water well)	99	no	602-700		around or after 731					Quercus
h	Stave (water well)	131	no	558-688		around or after 731					Quercus
j	Stave (water well)	100	no	602-701		around or after 731					Quercus
k	Stave (water well)	84	no	622-705		around or after 731					Quercus
l	Stave (water well)	97	no	610-706		around or after 731					Quercus
m	Stave (water well)	65	no	579-645		around or after 731					Quercus
n	Stave (water well)	109	no	599-707/708	1 ring counted	around or after 731					Quercus
o	Stave (water well)	76	no	588-665		around or after 731					Quercus
p	Stave (water well)	113	no	587-699		around or after 731					Quercus
d1	Stave (water well)	202	no	undated							Quercus
d2	Stave (water well)	283	no	undated							Quercus
i	Stave (water well)	198	no	undated							Quercus
m	Stave (water well)	377	no	undated							Quercus
n	Stave (water well)	189	no	undated							Quercus
o	Stave (water well)	198	no	undated							Quercus
r	Stave (water well)	201	no	undated							Quercus
s	Stave (water well)	90	no	undated							Quercus
u	Stave (water well)	125	no	undated							Quercus
v	Stave (water well)	125	no	undated							Quercus
d1+n	Stave (water well)	202	no	undated							Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
i+r	Stave (water well)	212	no	undated							Quercus
d2+m	Stave (water well)	377	no	undated							Quercus
u+v	Stave (water well)	127	no	undated							Quercus
a	Stave (water well)	119	no	undated		around 799					Quercus
b	Stave (water well)	110	no	647-756		around 799					Quercus
c	Stave (water well)	87	no	678-764		around 799					Quercus
d	Stave (water well)	105	no	643-747		around 799					Quercus
e/1	Stave (water well)	135	no	undated	2 samples, unlabelled	around 799					Quercus
e/2	Stave (water well)	122	no	undated		around 799					Quercus
f	Stave (water well)	87	no	657-743/744	1 ring counted	around 799					Quercus
g	Stave (water well)	123	no	657-779		around 799					Quercus
h	Stave (water well)	110	no	627-736		around 799					Quercus
i	Stave (water well)	114	no	630-743		around 799					Quercus
j	Stave (water well)	128	no	617-744		around 799					Quercus
k	Stave (water well)		no	undated	sample missing	around 799					Quercus
l	Stave (water well)	98	no	649-746/747	1 ring counted	around 799					Quercus
m	Stave (water well)	97	no	661-757/759	2 rings counted	around 799					Quercus
n	Stave (water well)	107	no	662-768		around 799					Quercus
a	Stave (water well)	89	no	617-704		around 727					Quercus
b	Stave (water well)		no	undated	sample missing	around 727					Quercus
c	Stave (water well)		no	undated	sample missing	around 727					Quercus
d	Stave (water well)	73	no	569-651		around 727					Quercus
e	Stave (water well)	45	no	undated		around 727					Quercus
f	Stave (water well)	126	no	581-706/707	1 ring counted	around 727					Quercus
g	Stave (water well)	36	no	undated		around 727					Quercus
h	Stave (water well)	52	no	612-665		around 727					Quercus
i	Stave (water well)	49	no	618-666		around 727					Quercus
j	Stave (water well)	63	no	625-687		around 727					Quercus
k	Stave (water well)	64	11	655-718		around 727					Quercus
l	Stave (water well)	59	no	594-651/652	1 ring counted	around 727					Quercus
m	Stave (water well)	91	no	610-700/701	1 ring counted	around 727					Quercus
n	Stave (water well)	47	no	undated		around 727					Quercus
o	Stave (water well)	91	no	611-701		around 727					Quercus
p	Stave (water well)	67	no	644-710		around 727					Quercus
q	Stave (water well)	75	no	undated		around 727					Quercus
r	Stave (water well)	90	no	609-698		around 727					Quercus
s	Stave (water well)	78	no	622-699		around 727					Quercus
a	Stave (water well)	106	no	undated	3 pieces						Quercus
b	Stave (water well)	88	no	undated							Quercus
c	Stave (water well)	136	no	undated							Quercus
d	Stave (water well)	98	no	undated							Quercus
e	Stave (water well)	94+52	no	undated	broken, 2 parts						Quercus
g	Stave (water well)	52+65	no	undated	broken, 2 parts						Quercus
j	Stave (water well)	83	no	undated							Quercus
k	Stave (water well)	77	no	undated							Quercus
l	Stave (water well)	107	no	undated							Quercus
m	Stave (water well)	92+79	no	undated	broken, 2 parts						Quercus
n	Stave (water well)	120	no	undated							Quercus
o	Stave (water well)	36	no	undated							Quercus
p	Stave (water well)	76	no	undated							Quercus
q	Stave (water well)	113	no	undated							Quercus
r	Stave (water well)	31+44	no	undated	broken, 2 parts			e+d+g	151		Quercus
a	Stave (water well)	191	no	undated							Quercus
b/1	Stave (water well)	86+74	no	undated	broken 2 parts						Quercus
b/2	Stave (water well)	40	no	undated							Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
a	Stave (water well)	158	no	undated		around or after 749					Quercus
b	Stave (water well)	78	no	undated		around or after 749					Quercus
c	Stave (water well)	112	no	589-700		around or after 749					Quercus
d	Stave (water well)	97	no	undated		around or after 749					Quercus
e	Stave (water well)		no	undated	Fagus	around or after 749					Fagus
f	Stave (water well)	129	no	undated		around or after 749					Quercus
g	Stave (water well)	112	no	594-706		around or after 749					Quercus
h	Stave (water well)	68	no	628-696		around or after 749					Quercus
i	Stave (water well)	39+11	no	undated	sample broken	around or after 749					Quercus
j	Stave (water well)	81	no	639-719		around or after 749					Quercus
k	Stave (water well)	67	no	undated		around or after 749					Quercus
l	Stave (water well)	181	no	521-707	?? timespan and number of rings??	around or after 749					Quercus
m	Stave (water well)	131	no	596-726		around or after 749					Quercus
n	Stave (water well)	121	no	607-727		around or after 749					Quercus
o	Stave (water well)	77	no	650-726		around or after 749					Quercus
q	Stave (water well)	122	no	590-708	?? timespan and number of rings??	around or after 749					Quercus
r	Stave (water well)	132	no	565-696		around or after 749					Quercus
t	Stave (water well)	81	no	631-711		around or after 749					Quercus
u	Stave (water well)	139	no	578-716		around or after 749					Quercus
v	Stave (water well)	81	no	626-706		around or after 749					Quercus
w	Stave (water well)	115	no	604-718/19	1 ring counted	around or after 749					Quercus
x	Stave (water well)	122	no	576-697		around or after 749					Quercus
y	Stave (water well)	85	no	631-715		around or after 749					Quercus
z	Stave (water well)	132	no	592-723/24	1 ring counted	around or after 749					Quercus
Z	Stave (water well)	144	no	586-729		around or after 749					Quercus
a	Stave (water well)	68	no	undated							Quercus
b	Stave (water well)	45	no	undated							Quercus
c	Stave (water well)	53	no	undated							Quercus
d	Stave (water well)		no	undated	less than 30 rings						Quercus
e	Stave (water well)	40	no	undated							Quercus
f	Stave (water well)		no	undated	less than 30 rings						Quercus
g	Stave (water well)	63	no	undated							Quercus
h	Stave (water well)	77	no	undated							Quercus
i	Stave (water well)		no	undated	less than 30 rings						Quercus
j	Stave (water well)	52	no	undated							Quercus
k	Stave (water well)		no	undated	less than 30 rings						Quercus
l	Stave (water well)		no	undated	less than 30 rings						Quercus
n	Stave (water well)	61	no	undated							Quercus
o	Stave (water well)	59	no	undated							Quercus
p	Stave (water well)	47	no	undated							Quercus
q	Stave (water well)	58	no	undated							Quercus
r	Stave (water well)	40	no	undated							Quercus
s	Stave (water well)	63	no	undated							Quercus
t	Stave (water well)	66	no	undated							Quercus
u	Stave (water well)	67	no	undated				a+g+h+n+p+s+t+u	82		Quercus
a	Stave (water well)	148	no	undated		around or after 718					Quercus
b	Stave (water well)	97	no	undated		around or after 718					Quercus
c	Stave (water well)	86	no	undated		around or after 718					Quercus
e	Stave (water well)	115	no	undated		around or after 718					Quercus
f	Stave (water well)	135	no	undated		around or after 718					Quercus
g	Stave (water well)		no	undated	less than 30 rings	around or after 718					Quercus
h	Stave (water well)	88	no	undated		around or after 718					Quercus
i	Stave (water well)	133+82	no	undated	broken, 2 parts	around or after 718					Quercus
j	Stave (water well)	150	no	544-693		around or after 718					Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
k	Stave (water well)	135	no	552-686		around or after 718					Quercus
l	Stave (water well)	91	no	undated		around or after 718					Quercus
m	Stave (water well)	89	no	609-697		around or after 718					Quercus
n	Stave (water well)	82	no	undated		around or after 718					Quercus
o	Stave (water well)	104	no	undated		around or after 718					Quercus
p	Stave (water well)	77	no	593-669		around or after 718					Quercus
r	Stave (water well)	87	no	undated		around or after 718					Quercus
s	Stave (water well)	100	no	589-698		around or after 718					Quercus
t	Stave (water well)	64	no	undated		around or after 718					Quercus
a	Stave (water well)	109	no	608-716		around or after 736					Quercus
b	Stave (water well)	161	no	554-714		around or after 736					Quercus
a	Stave (water well)	153	no	undated							Quercus
a	Stave (water well)	106	no	undated							Quercus
b	Stave (water well)	120	no	undated				no meancurve			Quercus
a	Stave (water well)	147	no	undated		around or after 715					Quercus
b	Stave (water well)	122	no	undated		around or after 715		a+b	147	549-695	Quercus
a	Stave (water well)	205	no	528-731		around 763	n:around or after 788				Quercus
b	Stave (water well)	150	no	595-745		around 763					Quercus
c	Stave (water well)		no	undated	Abies, not measured	around 763					Abies
d	Stave (water well)	124	no	590-713		around 763					Quercus
e	Stave (water well)	190	11	553-742		around 763					Quercus
f	Stave (water well)	232	10	522-753		around 763					Quercus
g	Stave (water well)		no	undated	Abies, not measured	around 763					Abies
h	Stave (water well)	162	no	594-755		around 763					Quercus
i	Stave (water well)	162	no	555-716		around 763					Quercus
j	Stave (water well)	210	no	518-727		around 763					Quercus
k	Stave (water well)	189	no	558-746		around 763					Quercus
l	Stave (water well)	199	no	550-748		around 763					Quercus
m	Stave (water well)	219	13	538-756		around 763					Quercus
n	Stave (water well)	150	no	618-767/768	1 ring counted	around 763					Quercus
o	Stave (water well)	215	no	519-735		around 763					Quercus
p	Stave (water well)	139	no	589-727		around 763					Quercus
b	Stave (water well)	164	no	yes		around 747	dated with Holstein-chrono				Quercus
c	Stave (water well)	155	no	yes		around 747					Quercus
e	Stave (water well)	162	3	yes		around 747					Quercus
g	Stave (water well)	179	7	yes		around 747					Quercus
j	Stave (water well)	199	10	yes		around 747					Quercus
l	Stave (water well)	189	no	undated		around 747					Quercus
n	Stave (water well)	178	no	undated		around 747					Quercus
o	Stave (water well)	145	no	yes		around 747					Quercus
p	Stave (water well)	142	no	undated		around 747					Quercus
r	Stave (water well)	176	no	yes		around 747					Quercus
s	Stave (water well)	168	no	yes		around 747					Quercus
t	Stave (water well)	156	no	yes		around 747					Quercus
u	Stave (water well)	183	no	yes		around 747					Quercus
w	Stave (water well)	163	no	yes		around 747					Quercus
x	Stave (water well)	186	no	yes		around 747					Quercus
y	Stave (water well)	193	no	yes		around 747		b+c+e+g+j+o+r+s+t+u+w+x+y	243	495-737	Quercus
a	Stave (water well)	119	no	yes		around or after 728					Quercus
b	Stave (water well)	176	no	yes		around or after 728		a+b	176	533-708	Quercus
a	Stave (water well)	135	no	undated							Quercus
b	Stave (water well)	165	no	undated							Quercus
c	Stave (water well)	138	no	undated							Quercus
d	Stave (water well)	102	no	undated				no meancurve			Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
a	Stave (water well)	202	no	539-741/42	1 ring counted ??timespan and number of rings??	around or after 762					Quercus
b	Stave (water well)	225	no	511-736	??timespan and number of rings??	around or after 762					Quercus
c	Stave (water well)	172	no	552-724	??timespan and number of rings??	around or after 762					Quercus
a	Stave (water well)	157	no	undated							Quercus
b	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
c	Stave (water well)	50	no	undated							Quercus
a	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
b	Stave (water well)		no	undated	Abies, not measured						Abies
c	Stave (water well)		no	undated	Abies, not measured						Abies
d	Stave (water well)	147	no	undated							Quercus
e	Stave (water well)		no	undated	Abies, not measured						Abies
f	Stave (water well)		no	undated	Abies, not measured						Abies
g	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
h	Stave (water well)	149	no	undated							Quercus
i	Stave (water well)		no	undated	Abies, not measured						Abies
l	Stave (water well)	<30	no	undated	less than 30 rings						Quercus
m	Stave (water well)	115	no	undated							Quercus
n	Stave (water well)		no	undated	Abies, not measured						Abies
o	Stave (water well)	66	no	undated				h+m+o	149		Quercus
1	Stave (water well)	42	7	undated							Quercus
2	Stave (water well)	68	no	undated							Quercus
3	Stave (water well)	54	no	undated							Quercus
4	Stave (water well)	60	no	undated							Quercus
5	Stave (water well)	51	no	undated							Quercus
6	Stave (water well)	49	no	undated							Quercus
7	Stave (water well)	61	no	undated							Quercus
8	Stave (water well)	34	no	undated							Quercus
9	Stave (water well)	39	no	undated							Quercus
10	Stave (water well)	30	no	undated							Quercus
11	Stave (water well)	33	no	undated							Quercus
12	Stave (water well)	26	no	undated							Quercus
13	Stave (water well)	34	no	undated							Quercus
14	Stave (water well)	22	no	undated							Quercus
15	Stave (water well)	16	no	undated				1+3+5+13	61		Quercus
a	Stave (water well)	136	no	undated							Quercus
a	Stave (water well)	130	no	yes	3 wells with the same nr.	around or after 724					Quercus
b	Stave (water well)	100	no	yes		around or after 724					Quercus
c	Stave (water well)	152	no	yes		around or after 724					Quercus
d	Stave (water well)	112	no	yes		around or after 724					Quercus
e	Stave (water well)	104	no	yes		around or after 724					Quercus
f	Stave (water well)	117	no	yes		around or after 724					Quercus
g	Stave (water well)	88	no	yes		around or after 724		a-g	166	539-704	Quercus
1	Stave (water well)	147	no	542-688		around or after 713					Quercus
2	Stave (water well)	118	no	547-664		around or after 713					Quercus
3	Stave (water well)	146	no	548-693		around or after 713					Quercus
4	Stave (water well)	107	no	577-683		around or after 713					Quercus
5	Stave (water well)	94	no	543-636		around or after 713					Quercus
6	Stave (water well)	118	no	557-674		around or after 713					Quercus
7	Stave (water well)	73	no	536-608		around or after 713					Quercus

Stave nr.	Description	N rings	Sapwood	Dated/ undated	Comments	Date		Meancurve part 1	Meancurve part 2	Meancurve part 3	Taxon
a	Stave (water well)	87	no	yes	3 wells with the same nr.	around or after 704					Quercus
b	Stave (water well)	78	no	yes		around or after 704					Quercus
c	Stave (water well)	92	no	yes		around or after 704					Quercus
d	Stave (water well)	56	no	undated		around or after 704					Quercus
e	Stave (water well)	80	no	yes		around or after 704					Quercus
f	Stave (water well)	44	no	yes		around or after 704					Quercus
g	Stave (water well)	40	no	yes		around or after 704					Quercus
h	Stave (water well)	39	no	yes		around or after 704		a+b+c+e+f+g+h	141	544-684	Quercus
1	Stave (water well)	140	no	545-684		around or after 729					Quercus
2	Stave (water well)	145	no	561-705		around or after 729					Quercus
3	Stave (water well)	102	no	574-675		around or after 729					Quercus
4	Stave (water well)	145	no	547-691		around or after 729					Quercus
5	Stave (water well)	78	no	577-654		around or after 729					Quercus
6	Stave (water well)	126	no	572-697		around or after 729					Quercus
7	Stave (water well)	82	no	557-638		around or after 729					Quercus
8	Stave (water well)	147	no	546-692		around or after 729					Quercus
9	Stave (water well)	167	no	544-709		around or after 729					Quercus
10	Stave (water well)	77	no	588-663		around or after 729					Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge	<30	Unknown	undated							Quercus
	Landing Bridge		Unknown	undated	Not oak, not determinded						Not Quercus
	Landing Bridge		Unknown	undated	Not oak, not determinded						Not Quercus
	Landing Bridge		Unknown	undated	Not oak, not determinded						Not Quercus
	Landing Bridge		Unknown	undated	Not oak, not determinded						Not Quercus
	Landing Bridge		Unknown	undated	Not oak, not determinded						Not Quercus
	Landing Bridge		Unknown	undated	Not oak, not determinded						Not Quercus

SUPPLEMENTARY MATERIAL A: DENDROCHRONOLOGICALLY ANALYSED FINDS FROM DORESTAD: VEILINGTEREIN

Findnumbers Dorestad: Veilingterrein research 2009 (Zandbergen 2010)	Taxon
6475	Quercus
6467	Quercus
6487	Quercus
6471	Quercus
6486	Quercus
6480	Quercus
6474	Quercus
6477	Quercus
6465	Quercus
6482	Quercus
6469	Quercus
6476	Quercus
6479	Quercus
6485	Quercus
6481	Quercus
6483	Quercus
6484	Fagus
6468	Quercus
6466	Quercus
6463	Quercus
6470	Quercus
6472	Quercus
6464	Quercus
6478	Quercus
5252A	Quercus
5252B	Quercus
5252C	Quercus
5589	Quercus
742	Quercus
744	Quercus
746	Quercus
745	Quercus
741	Quercus
768	Quercus
807A	Quercus
807B	Quercus
807C	Quercus
807D	Quercus
807E	Quercus

Findnumbers Dorestad: Veilingterrein research 2011 (J. Pinto Andrade 2010)	Remarks
403A	Quercus
403B	Quercus
403C	Quercus
403D	Quercus
403E	Quercus
403F	Quercus
403G	Quercus
403H	Quercus
403I	Quercus
403J	Quercus
5274	Quercus
4606A	Quercus
4606B	Quercus
4312A	Quercus
4312B	Quercus
5951A	Quercus
5951B	Quercus
4155A	Quercus
4155B	Quercus
4555A	Quercus
4555B	Quercus
4607A	Quercus
4607B	Quercus
6173A	Quercus
6173B	Quercus
6173C	Quercus
405	Quercus
5047A	Quercus
5047B	Quercus
4945A	Quercus
4945B	Quercus
4945C	Quercus
2936A	Quercus
2936B	Quercus
2936C	Quercus
2461A	Quercus
2461B	Quercus
2461C	Quercus
4167A	Quercus

Findnumbers Dorestad: Veilingterrein research 2011 (J. Pinto Andrade 2010)	Remarks
4167B	Quercus
4167C	Quercus
2828A	Quercus
2828B	Quercus
5245	Quercus
6418A	Quercus
6418B	Quercus
6418C	Quercus
6418D	Quercus
6418E	Quercus
2891A	Quercus
2891B	Quercus
2891C	Quercus
6655A	Quercus
6655B	Quercus
0755A	Quercus
0755B	Quercus
0755C	Quercus
0755D	Quercus
3708A	Quercus
3708B	Quercus
3708C	Quercus

SUPPLEMENTARY MATERIAL A:

DENDROCHRONOLOGICALLY ANALYSED ABIES ALBA MILL.

BARRELS FROM DORESTAD

Findnumber	Excavation pit	Taxon
10428	169	Abies alba Mill.
9637	155	Abies alba Mill.
442-3-1	442	Abies alba Mill.
359-5-18	359	Abies alba Mill.

SUPPLEMENTARY MATERIAL B: TREE-RING DATASET RING FOUNDATION AD 500-900 EXCLUDING DORESTAD-DE GEER (RING FOUNDATION & RCE) Grey: Material from Dorestad excluding Dorestad-De Geer

DCCD ProjectIdentfier	Location	Object type
P:2010067	Aalst Tongelreep (NL)	Revetment (river)
P:2002129	Aarle-Rixtel Strijp (NL)	Water well
P:2005016	Alphen-Chaam Kerkakkers (NL)	Water well
P:2007024	Anjum Schanskerwei (NL)	Settlement
P:2009028	Antwerp Nijlen-Mussenpad (BE)	Water well
P:2003084	Assebroek St.Kruisstraat (BE)	Water well
P:2003085	Assebroek St.Kruisstraat (BE)	Water well
P:2003083	Assebroek St.Kruisstraat (BE)	Water well
P:2010068	Azelo (NL)	Water well (hollowed-out tree)
P:1996012	Breda (NL)	Water well
P:2001020	Breda Bierensweg (NL)	Water well
P:2008047	Breda Heilaar-Noord-Noord (NL)	Water well
P:2002002	Breda West (NL)	Water wells
P:2001023	BredaWestrik (NL)	Water well
P:2002140	BrugesASK IV (BE)	Water well
P:2002021	Bruges SAKM XXIV(BE)	Water well
P:2002139	Bruges SAKM XXVI (BE)	Water well
P:2002122	Bruges SAM302 (BE)	Water well
P:1998010	Bruges St Andries Molendorp (BE)	Water well (re-used barrel)
P:2001008	Bruges St Andries Molendorp (BE)	Water well
P:1999089	Bruges St. Andries (BE)	Water well
P:1999091	Bruges St. Andries (BE)	Water well
P:1999092	Bruges St. Andries (BE)	Water well
P:1999094	Bruges St. Andries (BE)	Water well
P:1999095	Bruges St. Andries (BE)	Water well
P:1999096	Bruges St. Andries (BE)	Water well
P:1996015	Castricum Oosterbuurt (NL)	Settlement
P:1996016	Castricum Oosterbuurt (NL)	Settlement
P:2003023	Colmschate (NL)	Water well
P:1998042	Cothen (NL)	Ship timbers
P:2006034	Deurne Binderen Zuid III (NL)	Water well
P:1992009	Deventer (NL)	Revetments and ship
P:1996019	Deventer Oxersteeg (NL)	Water well
P:1992011	Domburg (NL)	Coffin
P:2011020	Dordrecht (NL)	Foundation (church)
P:2000040	Dreumelsche Waard (NL)	Ship
P:2001100	Eindhoven (NL)	Water wells
P:2002052	Eindhoven Strijp (NL)	Water well
P:2013048	Galder Bollemeer (NL)	Water wells
P:2012001	Geel-Eikenvelden (BE)	Water wells
P:1998035	Geldrop (NL)	Water well
P:2011027	Groenlo De Woerd (NL)	Water well
P:2007023	Groningen Lutkenieuwstraat (NL)	Water well
P:1996031	Haren (Groningen)	Water well
P:2011070	Hilvarenbeek Diessen Kroonakkers (HILK-10)	Unknown
P:1993049	Hoge Andjoen (BE)	Motte
P:2008075	Hulsel Kerkekkers (NL)	Water well
P:2003026	Katwijk (NL)	Water well
P:2006072	Katwijk Blekerij (NL)	Water well
P:2003066	Katwijk Zanderij (NL)	Settlement
P:2005075	Katwijk Zanderij (NL)	Settlement
P:2006020	Katwijk Zanderij (NL)	Farm house

DCCD ProjectIdentfier	Location	Object type
P:2006095	Katwijk Zanderij (NL)	House and water well
P:2008054	Katwijk Zanderij (NL)	Water well
P:2010005	Katwijl Zanderij Westerbaan (NL)	Unknown
P:2006031	Leeuwarden Oldehoofsterkerkhof (NL)	Re-used ship timbers
P:2006081	Leeuwarden Oldehoofsterkerkhof (NL)	Settlement
P:1995026	Leiden Roomburg (NL)	Canal (Corbulo)
P:1995027	Leiden Roomburg (NL)	Canal (Corbulo)
P:1996043	Leiden Roomburg (NL)	Canal (Corbulo)
P:2004004	Leiderdorp Samsonterrein (NL)	Revetment (river)
P:1997012	Lochem (NL)	Water well
P:2004087	Lochem Zutphenseweg (NL)	Water well
P:2011003	Maasbree 1 Plangebied Siberie (NL)	Water well
P:1993051	Marienberg Hardenberg (NL)	Tree trunks (natural vegetation remains)
P:2004026	Markelo de Esch (NL)	Water wells
P:2005051	Midlaren De Bloemert (NL)	Water well
P:2011009	Oegstgeest (NL)	Canoe
P:2009086	Oegstgeest Nieuw Rhijngeest (OEGT-09) (NL)	Water wells
P:2009087	Oegstgeest Nieuw Rhijngeest (OEGT-09) (NL)	Water well
P:2005029	Oegstgeest Rijnfront Zuid (NL)	Water well
P:2006086	Oegstgeest Rijnfront-Corpusterrein (NL)	Revetment (river) and water well
P:2005010	Oegstgeest Rijnfront-Zuid (NL)	Water well
P:2011066	Oegstgeest SL Plaza (NL)	Bridge
P:1992043	Olst (NL)	Tree trunks (natural vegetation remains)
P:1995068	Olst (NL)	Tree trunks (natural vegetation remains)
P:2005098	Oosterhout 't Klumke (NL)	Water well
P:2001017	Oudenburg Roksem Hoge Dijken (BE)	Water well
P:2001122	Oudenburg Roksem Hoge Dijken (BE)	Water wells
P:2003095	Raalte Zegge VI (NL)	Water well
P:2004044	Raalte Zegge VI (NL)	Water well
P:1998074	Reusel (NL)	Water well
P:1998073	Reusel (NL)	Water well
P:2004108	Sittard Koeweide (NL)	Water well
P:1991037	Someren (NL)	Water well
P:2000076	Someren (NL)	Water well
P:1997066	Someren Waterdael (NL)	Water well
P:2008041	Someren Waterdael (NL)	Water wells
P:1965015	Stevensweert (NL)	Tree trunks (natural vegetation remains)
P:1997064	Stevensweert (NL)	Tree trunks (natural vegetation remains)
P:2001001	Strijp Aarle-Rixtel (NL)	Water well
P:1996061	Tiel (NL)	Revetments (including re-used ship timbers)
P:1997044	Tiel Tol-Zuid (NL)	Ship
P:2002082	Uden (NL)	Water wells (hollowed-out trees)
P:1995012	Ulrum (NL)	Farm house
P:2013502	Utrecht Catharijnesingel (NL)	Ship
P:2010059	Utrecht De Meern (NL)	Schip
P:2011001	Utrecht De Meern (NL)	Ship
P:2009078	Utrecht Leidsche Rijn (NL)	Piles
P:2011072	Utrecht Leidsche Rijn (NL)	Piles (river)
P:2004007	Utrecht Leidsche Rijn LR-42 (NL)	Bridge
P:2009013	Utrecht Veuten de Meern LR55 (NL)	Settlement
P:2009001	Utrecht Vleuten de Meern Appellaantje LR55 (NL)	Settlement
P:1999035	Utrecht Korte Minderbroederstraat (NL)	Revetment (river)
P:2001014	Varsenare d'Hooghe Noene (BE)	Water well
P:2010062	Veldhoven NL)	Water well (hollowed-out tree)
P:2013021	Veldhoven-Zilverackers verlengde Heerbaan/Oersebaan (NL)	Water wells
P:1994035	Venray (NL)	Water wells

DCCD ProjectIdentfier	Location	Object type
P:1996078	Venray (NL)	Water wells
P:2003049	Vlaardingen Gat in de markt (NL)	Coffins
P:1999074	Warnsveld (NL)	Water well
P:2012011	Weert Stationskwartier (NL)	Water well (hollowed-out tree)
P:2005043	Wierden (NL)	Settlement
P:2001068	Wijk bij Duurstede (Dorestad) (NL)	Ship timbers
P:1999100	Wijk bij Duurstede Singel/Zandweg (Dorestad) (NL)	Water wells
P:2011026	Wijk bij Duurstede Veilingterrein (Dorestad) (NL)	Water wells, pile
P:2009095	Wijk bij Duurstede Veillingterrein (Dorestad)	Water wells (re-used barrel and hollowed-out tree)
P:2002025	Wijk bij Duurstede Zandweg-Frankenweg (Dorestad) (NL)	Settlement
P:1995058	Wijnaldum (NL)	Water well
P:2002130	Wilgendaal Herpen (NL)	Settlement
P:2001117	Zelhem (NL)	Water well (hollowed-out tree)
P:2007013	Zelhem (NL)	Water well
P:2002008	Zelhem Soerlant (NL)	Water wells
P:2004099	Zelhem Vinkenkamp (NL)	Piles
P:1995014	Zulphen Eme Ooyerhoek (NL)	Water wells
P:1992058	Zutphen Eme (NL)	Water wells (hollowed-out trees)
P:1999002	Zutphen Eme Ooyerhoek (NL)	Water wells
P:1999118	Zutphen Eme Ooyerhoek (NL)	Water well
P:1998102	Zutphen Ooyerhoek (NL)	Water wells
P:2000087	Zwolle Millingerplas (NL)	Tree trunks (natural vegetation remains)
P:2000085	Zwolle Stadshagen (NL)	Tree trunks (natural vegetation remains)
P:2000086	Zwolle Stadshagen (NL)	Tree trunks (natural vegetation remains)
P:2001120	Zwolle Stadshagen (NL)	Tree trunks (natural vegetation remains)