ARCHAEOLOGICAL MONITORING OF HYDRO PYLON CAISSON DRILLING AT THE PORTAGE EAST SITE

Prepared for

MANITOBA ENTERTAINMENT COMPLEX INC.
DS-LEA CONSULTANTS LTD

QUATERNARY
CONSULTANTS
LIMITED

March, 1995

EXECUTIVE SUMMARY

In connection with the Winnipeg Hydro pylon re-location at the Portage East location, archaeological monitoring of the drilling operations was conducted. The operations consisted of visual inspection of the auger cuttings for the upper six metres of each of the four holes. Through the examination of the auger cuttings, it was possible to record the sub-surface stratigraphy at each location.

Evidence of the recent Industrial Period was present at each location. The soil layers, deriving from activities since A.D. 1870, ranged in thickness from 3.75 to 4.8 metres. Most of the evidence relates to land modifications that have occurred in the last fifty years.

No evidence of archaeological horizons pre-dating the Industrial Period was observed. These horizons would occur in riverine sediments deposited by various floods over the last 9500 years. No evidence of riverine sediments was observed and the soil horizons of the industrial period rested directly on top of the clays deposited when the entire Winnipeg region was submerged under Glacial Lake Agassiz.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
TABLE OF CONTENTS ii
LIST OF APPENDICES ii
LIST OF FIGURES ii

1.0 INTRODUCTION 1
1.1 Study Team 1

2.0 MONITORING OF CAISSON DRILLING 1
2.1 Observations 1

3.0 DISCUSSION 4

4.0 BIBLIOGRAPHY 5

LIST OF APPENDICES

APPENDIX A: Heritage Permit 6
APPENDIX B: Recovered Artifacts 9

LIST OF FIGURES

Figure 1: Soil Profiles Recorded during Drilling Program 3

1.0 Introduction

Winnipeg Hydro is relocating a large pylon in the Portage East area, adjacent to the elevated dike and the trestle for the CN Main Line. The pylon is oriented at a 45° angle to the dike and is located approximately twenty metres south of the trestle. The project requires the construction of a firm footing by drilling and pouring four concrete caissons, one at each corner forming a square with a distance of six metres between the corners. The holes, 100 cm in diameter, are drilled into the underlying bedrock. Due to the potential for archaeological resources, Quaternary Consultants Limited was contracted to provide archaeological monitoring of the drilling operation. The project was conducted under Heritage Permit A62-94 (Appendix A) issued by Historic Resources Branch, Department of Culture, Heritage and Citizenship.

An earlier project in this vicinity (Quaternary 1994) recorded this location as DlLg-33—the Borden designation for The Forks area. A Borden designation is an alphanumeric archaeological site designator used throughout Canada and is based upon the first four letters demarcating a geographical area based upon latitude and longitude. The numeric suffix is the sequential numbering of archaeological sites recorded within that block.

Due to the distance from other locations also given this designation, Quaternary Consultants suggested to the Data Management Officer of Historic Resources Branch that a distinct Borden designation be provided for the area north of Pioneer Avenue. The suggestion was approved and this location is now designated as DlLg-69. The previously recovered artifacts have been recatalogued as DlLg-69/1 to 5.

1.1 Study Team

The soil test monitoring was conducted by Sid Kroker. Documentation and analysis has been undertaken by Sid Kroker and Pam Goundry.

2.0 Monitoring of Caisson Drilling

The caisson drilling was conducted by KGS Group, utilizing the services of Subterranean Drilling. Archaeological investigations consisted of visual inspection of the moderately disturbed soil column observed from the auger cuttings and visual inspection of the profile of the caisson wall. In most cases, the individual drill drive terminated shortly before the auger bit was full. At this point, the auger was pulled from the hole and could be examined, prior to 'spinning off' the extracted soil. The result of this procedure, combined with the large diameter of the auger, was minimal deformation of the soil column due to the natural plasticity of the soil and the rotating action of the auger. Artifacts were recovered from the extracted soil, both during 'on bit' examination of the soil and after it had been spun off.

2.1 Observations

The visual inspection of the soil recoveries during the drilling program enabled the determination of the sub-surface stratigraphy of the upper six metres for each caisson hole. The profiles of the holes are depicted in Figure 1. Separate layers within each of the two main components—recent fill and Lake Agassiz clays—are distinguished where significant. Materials in the recent fill horizon are varied: structural debris, cinders, gravel, sand, non-local silts and clays used as fill, and sawdust. The Lake Agassiz clays are a grey to dark grey plastic sediment which was deposited while the Winnipeg area was covered by this massive post-glacial lake. These clays became exposed when Glacial Lake Agassiz drained approximately 9500 years ago (Last and Teller 1983). Often a buried soil zone or an oxidization horizon occurs at the top of the Lake Agassiz clays.

Hole 1 is located approximately one metre from the dike. The fill deposits extended to a depth of 4.95 metres. The fill layer consisted primarily of relocated Agassiz clays with some intermixed loam. Small fragments of milled wood were observed at 1.8 metres and at 2.75 metres. A white ceramic plate sherd (DlLg-69/6) was recovered from a depth of 3.5 metres. The basal component of the fill horizon was the most complex—a layer of short milled wood fragments (2" x 4" and 2" x 6"), overlaying a dark grey black silty clay horizon (5 cm thick), resting on top of the Agassiz clays. This would have been the original ground level when the lumber-based firms operated in the area during the 1870s to 1890s.

Hole 2 consisted of fill deposits to a depth of 4.25 metres. The upper metre consisted grey black clay with brick fragments. This stratum yielded a railroad spike (DlLg-69/8) and a basal sherd deriving from a globular, clear glass lamp globe (DlLg-69/7). The thickest layer, to a depth of 3.35 metres, consisted of a mix of relocated Agassiz clays and black loamy silt. Traces of stratification were suggested with occasional bands of primarily marly clay followed by bands with a high loam percentage. Some wood, brick, and limestone fragments occurred throughout. A round nail (DlLg-69/9) was recovered at 3.0 metres. The original soil horizon was encountered at 4.25 metres. It consisted of a 2 cm layer of manure and wood chips resting on a moderately developed A horizon, derived from the immediately underlying Agassiz clays. A sheet-cut nail (DlLg-69/10) was recovered from this horizon. Of interest to researchers on the history of Glacial Lake Agassiz was the discovery of a thin (1 - 2 cm) band of organic material (leaf litter and twigs) encapsulated within the undisturbed Agassiz sediments at a depth of 5.5 metres. This may represent a diminishment of the lake subsequent to a later enlargement which re-flooded the location.

Hole 3 yielded the most distinct profile with discrete horizons evident in the 4.25 metres of fill overlying the undisturbed Agassiz clays. Cinder and gravel, the residue of the former railroad spur line, extended to a depth of 0.9 metres. A railroad spike (DlLg-69/11) and a ribbed, clear glass taillight fragment (DlLg-69/12) derived from this layer. The next stratum, dark grey clay with inclusions of grey ash and yellow brick fragments, extended to 1.5 metres. A layer of grey-black sand, containing red brick fragments, continued to 1.75 metres. Below the sand layer, the deposits consisted primarily of relocated Agassiz clays with admixture of loam. A square nail (DlLg-69/14) and a dark brown, stoneware, body sherd from a crock or a jug (DlLg-69/13) were recovered from this horizon at a depth of 2.25 metres. A moderate amount of sawdust was mixed in with the Agassiz clays beginning at a depth of 2.75 metres. Some milled wood fragments were also present

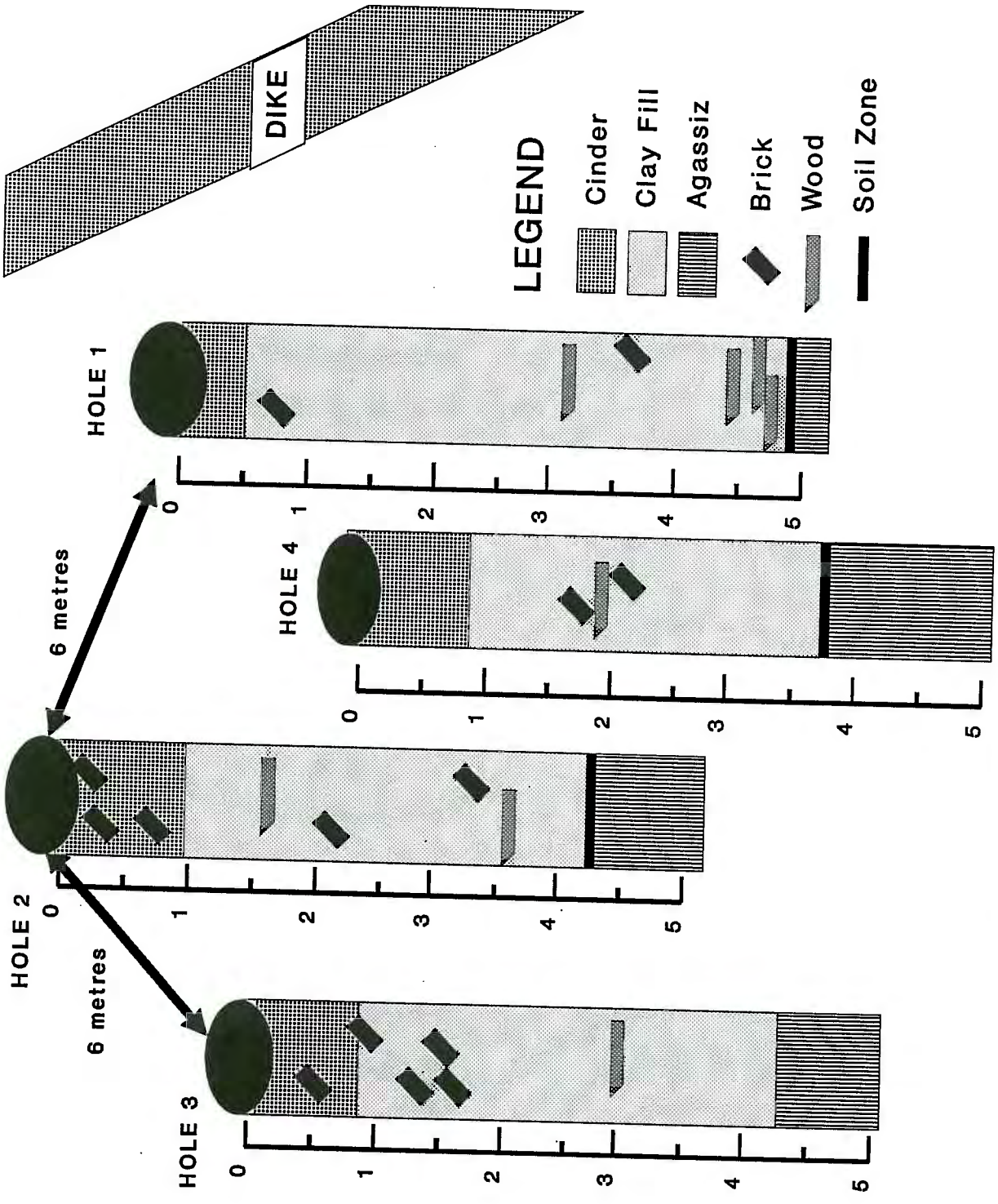

Figure 1: Soil Profiles Recorded during Drilling Program

at this depth. The remaining 1.5 metres of fill consisted of Agassiz clays mixed with sawdust and varying percentages of loam.

Hole 4 presented a profile similar to Hole 3. The upper metre consisted of coal cinders, coal dust, and gravel. Two small blue glass sherds were recovered. DlLg-69/15 is a thin windowpane sherd which has a large-diameter stippled pattern on one side. The second sherd, DlLg-69/16, is a minute body sherd, probably deriving from a bottle. The colour is similar to that used for Bromo-Seltzer and Milk of Magnesia bottles. The second layer consisted of greyish clay intermixed with black loam and extended to 2.25 metres. Numerous brick fragments, both red and yellow, were observed in this layer. A two inch diameter pipe was observed at a depth of 1.5 metres and had probably extended across the width of the hole. A thin layer of dark grey clay was present between 2.25 metres and 2.5 metres. Lumber fragments were present in this stratum. Below the clay layer, a band of dark grey sand, containing brick fragments extended to 2.9 metres. The next drive with the auger encountered water, either the water table in an aquifer or a trapped pocket, resulting in the material at the bottom of the hole instantly turning into a grey soup. The auger bit was exchanged for a retaining bucket, which brought up a clump of Agassiz clay with a thin black organic band. It is estimated that this evidence of the original soil horizon occurred at 3.75 metres.

3.0 Discussion

Evidence of the recent period was present in all four drill holes. The depth of the recent deposits varied from 3.75 metres at Hole 4 to 4.95 metres at Hole 1. In all cases, the evidence consisted of stratigraphic sequences of land modification and fill.

The presence of the upper cinder horizon, as well as the recovery of the two railroad spikes, are evidence of the former spur line which extended through this location. In all of the holes, fragments of bricks and sawn lumber were present. These non-diagnostic artifacts were not curated. Their broken state, plus their irregular placement in the grey clay/loam layers, indicate that their presence is due to structure demolition and subsequent dumping into this location. It is impossible to ascertain the location of the original structures. It is noteworthy that a minimum of 3.75 metres of fill rests on top of the original soil horizon of the late nineteenth century. The date of the deposition of this fill is unknown and probably is the result of more than one episode. The construction of the dike, after the 1950 flood, is a likely event for the deposition of a considerable amount of this material.

Minimal evidence of the industrial nature of the area in the 1870s to 1890s was present. Traces of manure and wood chips were observed at the basal soil horizon in Hole 2 (4.25 metres). A small number of short planks (2" x 6") were encountered at 4.70 metres in Hole 1. Some sawdust was mixed in with the clay/loam fill in Hole 3 at a depth of 2.75 metres. In no cases were thick sawdust horizons encountered as had occurred during the Geo-Technical Study (Quaternary 1994).

The presence of the manure layer suggests that there was a stable facility in the nearby vicinity. The sawdust, wood chips, and lumber fragments would relate to the various lumber-based industries located in this area in the latter part of the nineteenth century. These firms consisted of Macauley Lumber Mill (1872-1890?), Dick & Banning Saw Mill (1872-1885?), Sash & Door Factory (1876-

1890?), and Jarvis Saw Mill (1876-1890?) (Forks Renewal Corporation 1988). In addition to these businesses, the McMillan Grist Mill (established 1877) and McArthurs' Warehouse (built 1885) were nearby. This riverbank location became Winnipeg's first industrial area, due to the use of river steamboats to transport materials. Debris from lumber production and demolition of the buildings would account for the presence of wood fragments throughout the area. The completeness of any of these potential resources is unknown. Many of the structures were probably totally eradicated during demolition and subsequent land-levelling activities.

In the caisson holes, the recent fill horizons rest directly upon clays deposited while Glacial Lake Agassiz covered the southern part of Manitoba. Based upon the soil profiles observed during the geo-technical drilling program (Quaternary 1994) and this project, the area adjacent to the Red River has not experienced any soil deposition over the past nine millennia or, any soils which have been deposited during flood episodes have later been eroded by other floods. As a result, no archaeological material pre-dating the industrial period can be expected in the vicinity of the Hydro pylon.

4.0 Bibliography

Forks Renewal Corporation, The (FRC)

1988 *The Forks Archaeological Impact Assessment and Development Plan (The Forks Archaeological Plan)*. The Forks Renewal Corporation, Winnipeg.

Last, William M. and James T. Teller

1983 Holocene Climate and Hydrology of the Lake Manitoba Basin. In *Glacial Lake Agassiz*. James T. Teller and Lee Clayton (Eds.). Geological Association of Canada, *Special Paper* 26.

Quaternary Consultants Ltd.

1994 *Archaeological Monitoring of Geo-Technical Investigations at the Portage East Site*. Report on file with Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

APPENDIX A

HERITAGE PERMIT

The Heritage Resources Act (Subsection 14(2) and Sections 52 and 53)

Manitoba
Culture, Heritage
and Citizenship

Heritage Permit No. A62-94

FORM 11

PURSUANT to Section/~~Subsection~~ 53 of *The Heritage Resources Act:*

Name: Quaternary Consultants Ltd.
Address: 130 Fort Street
Winnipeg MB R3C 1C7

ATTENTION Mr. Sid Kroker

(hereinafter referred to as "the Permittee"),

is hereby granted permission to:

carry out the monitoring of pile caisson drilling for hydro pylon relocation at DlLg-33 in Downtown Winnipeg, to determine the presence or absence of cultural strata and to recover any artifacts present;

during the period:

February 8 to March 15, 1995

This permit is issued subject to the following conditions:

(1) That the information provided in the application for this permit dated the 8th day of February 1995, is true in substance and in fact;

(2) That the Permittee shall comply with all the provisions of *The Heritage Resources Act* and any regulations or orders thereunder; PLEASE NOTE ATTACHMENT RE CUSTODY AND OWNERSHIP OF HERITAGE OBJECTS

(3) That the Permittee shall provide to the Minister a written report or reports with respect to the Permittee's activities pursuant to this permit, the form and content of which shall be satisfactory to the Minister and which shall be provided on the following dates:

March 31, 1995

(4) That this permit is not transferable;

(5) This permit may be revoked by the Minister where, in the opinion of the Minister, there has been a breach of any of the terms or conditions herein or of any provision of *The Heritage Resources Act* or any regulations thereunder;

(6) Special Conditions:

a. All surface collections, excavations, etc. are to be carried out using the provenience system established for use at The Forks and this project will be designated 94B;
b. All heritage objects (artifacts) recovered from The Forks are to be catalogued according to the CHIN system and the relevant Borden designation will be DlLg-33/94B;
c. All heritage objects from The Forks are to be deposited with the Manitoba Museum of Man and Nature by March 31, 1995, for permanent curation and storage, unless appropriate loan requirements are arranged with the Curator of Archaeology prior to that date;
d. A complete set of archaeological field records, catalogue sheets, laboratory analysis records, photographs, reports, etc. are to be deposited with the Manitoba Museum of Man and Nature upon completion of the archaeological research, or sooner if required; and any subsequent revisions or additions to these records are to be filed as soon as possible thereafter;
e. All computer systems and programs employed in archaeological research should be compatible with the computer system established for The Forks;
f. Appropriate arrangements and funds should be made available for the conservation of perishable heritage objects collected from The Forks;
g. In the event that any human remains are encountered during the excavations, all activity in that particular locus will cease immediately, and the Historic Resources Branch notified immediately so that appropriate action can be determined and taken;
h. The Permittee will be on-site supervising all aspects of the field work, including the removal of the railroad overburden during site preparation, at least 75% of the time, but when the Permittee must be absent, a qualified designate acceptable to Historic Resources Branch (copy of vita to be filed prior to commencement of field work) shall be present;
i. The Permittee shall be responsible for the conduct of the laboratory analysis of recovered heritage objects and information to be included in the permit report;
j. The report identified in #3 above shall conform at a minimum to "The Contents and Format of a Heritage Resource Impact Assessment" (copy attached)
k. Neither the Government of Manitoba nor the party issuing this permit be liable for any damages resulting from any activities carried out pursuant to this permit, and the Permittee specifically agrees, in consideration for receiving this permit, to indemnify and hold harmless the Minister and the Government of Manitoba, the Minister and any employees and officials of the Government, against any and all action, liens, demands, loss, liability, cost, damage and expense including, without limitation, reasonable legal fees, which the Government, Minister or any employee or official of the Government may suffer or incur by reason of any of the activities pursuant to or related to this permit.

8280h

Dated at the City of Winnipeg, in Manitoba , this 8th day of February 1995.

N. Finlayson
for Minister of Culture, Heritage and Citizenship

APPENDIX B

RECOVERED ARTIFACTS

SPECIMEN CATALOGUE RECORD

Site: DLLG-69 PORTAGE EAST Area: RED RIVER

Client: WINNIPEG HYDRO Acc. No.:

Cat. #	Qty	Object Name / Object Type	Material / Cultural Phase	Location / Unit	Coll. Date
6	1	SHERD PLATE	PORCELAIN INDUSTRIAL	HOLE 1	19940214
7	1	SHERD LAMP	GLASS INDUSTRIAL	HOLE 2	19940215
8	1	SPIKE	IRON INDUSTRIAL	HOLE 2	19940215
9	1	NAIL ROUND	IRON INDUSTRIAL	HOLE 2	19940215
10	1	NAIL SQUARE	IRON INDUSTRIAL	HOLE 2	19940215
11	1	SPIKE	IRON INDUSTRIAL	HOLE 3	19940216
12	1	TAIL LIGHT	GLASS INDUSTRIAL	HOLE 3	19940216
13	1	SHERD CROCK	STONEWARE INDUSTRIAL	HOLE 3	19940216
14	1	NAIL SQUARE	IRON INDUSTRIAL	HOLE 3	19940216
15	1	WINDOWPANE	GLASS INDUSTRIAL	HOLE 4	19940217
16	1	SHERD BOTTLE	GLASS INDUSTRIAL	HOLE 4	19940217
	11				