

ARCHAEOLOGICAL
MONITORING AND
MITIGATION OF
THE INN AT THE FORKS

Submitted to

INN AT THE FORKS INC.

QUATERNARY
CONSULTANTS
LIMITED

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EXECUTIVE SUMMARY

The proposed construction of The Inn at The Forks, on the paved parking lot east of the Manitoba Theatre for Young People, had the potential to result in impact upon heritage resources. A geo-technical drilling program undertaken in February, 2003, was monitored by an archaeologist to ascertain presence/absence of heritage resources. Cultural resources were encountered in one test hole. Based on knowledge derived from previous projects, a cultural resource management strategy was devised which became the terms for a Heritage Permit issued by Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

All subsurface excavations for services installations, the augering of pile seating holes, the pilecap excavations, and the crawlspace excavations were monitored. Some railroad era artifacts were recovered from the surface layers of cinders deposited during the past century. Pre-European cultural evidence was located during the project including an extension of the Avonlea/Laurel occupation site which had been identified during the construction of the parking structure to the west. Occurrence of other cultural layers were recorded, but most were below the impact level. The monitoring enabled the determination of cultural layers which could be impacted by future development. However, this project, due to the design chosen by the proponents, resulted in minimal disruption of cultural resources.

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1.0 INTRODUCTION

The project to construct a hotel at The Forks has been in process for some time. In the summer of 2000, the first proposal was initiated by Lakeview Management Inc. A proposed archaeological assessment, under Heritage Permit A1-01, was never undertaken as the project was shelved. A second proposal by Inn at The Forks Ltd. proceeded with the undertaking of a geo-technical assessment in February, 2002. The drilling of the geo-technical holes was monitored by Quaternary Consultants Ltd. Three holes were drilled with the southeast hole encountering archaeological resources (Quaternary 2002a).

The geo-technical program provided limited data. However, based on information of sub-surface cultural resources derived from adjacent projects: Stage I (Kroker and Goundry 1990); Manitoba Children's Museum (Quaternary 1994a); Parking Lot Extension (Quaternary 1996); Manitoba Theatre for Young People (Quaternary 1995, 1999); and The Forks Parkade (Quaternary 2002b), it was seen as highly probable that significant cultural resources would be encountered within the footprint of the building. Accordingly, the developer decided to construct the building with a crawlspace, rather than a complete basement level. In consultation with the developer and the contractor (PCL Constructors Ltd.), Quaternary Consultants developed a cultural resource management program (Appendix A). This program determined that, with the projected construction format, archaeological resource management could be adequately undertaken by monitoring the construction activities. The cultural resource management program was submitted to Historic Resources Branch, Manitoba Culture, Heritage and Tourism, who concurred with the proposed method and issued Heritage Permit A1-03 (Appendix B).

1.1 Scope of the Project

The initial components were the installation of sub-surface services. Through a combination of vertical shafts (holes drilled with an auger using a 96" bit and backhoe excavated trenches) and horizontal boring, watermains, sanitary sewer, and land drainage sewer services were brought from the mains on Forks Market Road to the perimeter of the building footprint (Figure 1).

A series of 214 piling holes (Figure 1) were drilled using a truck-mounted auger. The holes were drilled to depths approximating seven metres and the monitoring archaeologist recorded the depths and thicknesses of cultural horizons and buried soil horizons. The second phase of construction was the excavation of the piles to cut-off level for the pouring of pilecaps, prior to the construction of grade beams. After the pilecaps had been poured, a large backhoe excavated the central crawlspace and a smaller backhoe excavated the trenches for the installation of weeping tile. All mechanized excavations were monitored and mitigative recovery was undertaken when cultural resources were encountered.

1.2 Study Team

The archaeological monitoring project was directed by Sid Kroker, Senior Archaeologist. The field monitoring was undertaken by Sid Kroker and Barry Greco. Laboratory operations were conducted by Sid Kroker and Pam Goundry. Computer cataloguing of recovered artifacts was conducted by Pam Goundry. Artifact analysis and report preparation was undertaken by Pam Goundry and Sid Kroker.

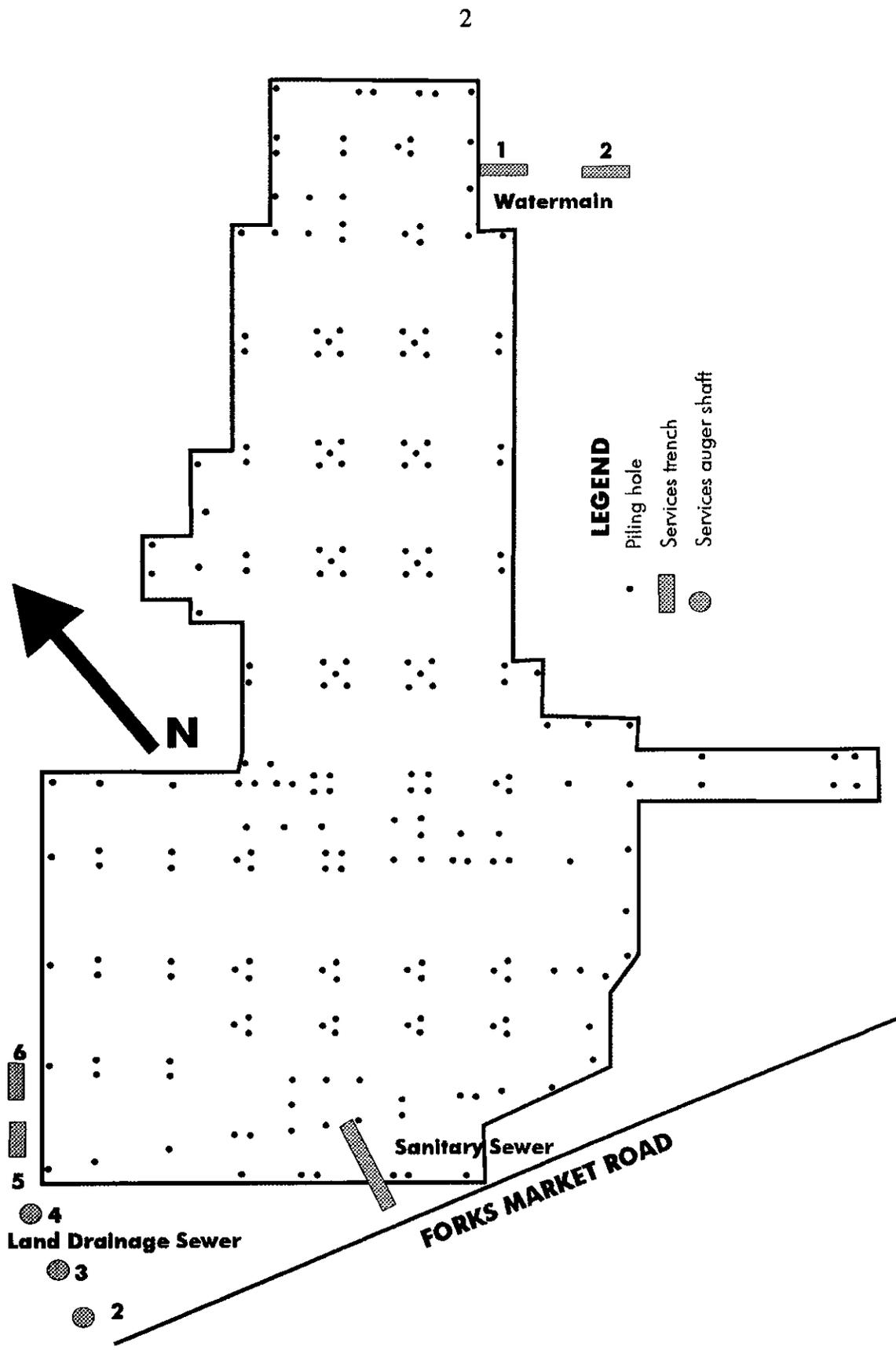


Figure 1: Building Footprint, Services Installations, and Auger Hole Locations

1.3 Legal Challenges

A legal challenge to the project was launched on May 29, 2003 by the Red River Half Breed Association. While the request for an injunction was based upon the Manitoba Environment Act, the archaeological program was also brought into question. This required the project archaeologist, Sid Kroker, to provide affidavits for the court. In providing the decision which dismissed the challenge on June 10, 2003 the judge noted that the cultural resource management program complied with all parameters of the Manitoba Heritage Act and that the archaeological resources were adequately protected.

1.4 Archaeological Monitoring Methods

During both the drilling of auger holes and the backhoe excavations, the monitoring archaeologist visually monitored the excavations. During the drilling of holes, both the large diameter holes for the installation of the land drainage sewer and the smaller (40 cm) pile seating holes, a strategy was worked out with the driller. The driller would auger downward until the bit length was filled. When the auger was brought to the surface, the monitoring archaeologist examined the soil on the auger and recorded changes in soil stratigraphy including the depths and thicknesses of different soil layers. Due to the rotary action of the auger, thin soil layers (less than 1 cm thick) are seldom discernable. In addition to recording the soil stratigraphy, the archaeologist recovered all artifacts present. In the upper levels, these artifacts were from the historic fill horizons and included some diagnostic artifacts, i.e., those which can provide evidence of time period, company of manufacture, and/or function.

The monitoring archaeologist watched for buried soil horizons and changes in soil texture which could indicate possible former ground surfaces. The indicators watched for are charcoal layers, ash lenses, and/or reddish stained soil. The colour change is usually indicative of oxidation of the iron particles in Red River silt by heat—the more intense the heat, the redder the soil. These features can indicate either a natural event such as a brush or prairie fire or a cultural event such as a campfire. When evidence of fire is observed, the layer is investigated to ascertain if the cause was natural or cultural. The presence of food remains, particularly mammal or fish bones, resting upon a buried soil is a positive indicator of an archaeological occupation horizon. Other positive indicators are fragments of earthenware containers and/or lithic tools or flakes resulting from tool manufacture.

After the piles had been driven, the backhoe would excavate to cut-off depth. Generally, the cut-off depth was 150 cm below the original surface of the parking lot. The hole around the pile, or cluster of piles, extended one metre from the pile. As the buried soils and, in a few instances, the cultural layers had been recorded during the drilling, the archaeologist was able to alert the backhoe operator to potential layers that would require cautious excavation. Where cultural resources were encountered, the backhoe operator would remove the layer, with the encapsulating soil matrix, and place it to the side of the excavation where the archaeologist could examine it at a later time, thereby enabling the construction to continue.

After the piles had been cut-off and the pilecaps poured, a large backhoe, outfitted with a ditching bucket, excavated the crawlspace. The cross-section was generally a gentle concave basin with the

deepest portion between the central clusters of five piles. At this point, the depth was generally 130 centimetres below surface. The majority of the excavated material was railroad fill layers, consisting of gravel, sand, and cinder with some Industrial Era artifacts. After the crawlspace was excavated, the small backhoe, outfitted with a narrow (30 cm) bucket excavated a main trench down the centre of the footprint for the installation of the weeping tile. This trench was approximately 50 centimetres deep. Branches of the weeping tile trench fanned out from the main trench and sloped upward to the edges of the footprint.

1.5 Laboratory Procedures

During the project, all recovered artifacts were brought to Quaternary Consultants laboratory facilities, where they were washed and sorted by material class and identified by the lab personnel. The Pre-Contact cultural layer was wet-screened through diminishing meshes. Larger artifacts were retrieved on the 4 mm mesh, while smaller artifacts and fragments of artifacts were recovered on the 2 mm and 1 mm meshes.

A total of 1330 artifacts—29 historic and 1301 Pre-Contact—were curated. Material of the same type (e.g., plain white dinnerware plate sherds, bison rib bones) from the same location and the same depth were combined under a single catalogue number. Identification was carried to the limit permitted by the condition of the artifact. Obviously, severely fragmented or eroded specimens cannot be identified as completely as whole artifacts.

Each artifact received a catalogue number consisting of the Borden designation (Borden 1954) for the site and a sequential number for permanent identification. The area of The Forks, bounded by the Red and Assiniboine Rivers to the east and south, the CNR Main Line embankment to the west, and Water Avenue to the north, had been previously designated as DILg-33. As this was the latest of several projects to be conducted at the site, the practice of adding a year and project identifier (03A) was continued. This indicates that this is the first project of 2003 at this site. The identifier is added to the Borden number to produce a catalogue number (DILg-33:03A/#####). All pertinent data associated with the artifact was entered into a computer cataloguing system, based upon the Canadian Heritage Inventory Network (CHIN) system (Manitoba Museum of Man and Nature 1986; Kroker and Goundry 1993a:Appendix B). The cataloguing program, derived from **DBASE3®**, generates individual artifact catalogue cards.

Processed artifacts were prepared for storage by inserting the specimens and the catalogue card into standard plastic storage bags, then stapling the bags closed. At the end of the project, all recovered artifacts will be delivered to the Manitoba Museum which has been the repository designated by The Forks North Portage Partnership and the City of Winnipeg for artifacts recovered during projects near The Forks.

2.0 STRATIGRAPHY

The monitoring of the sub-surface components has provided a generalized picture of the stratigraphy within the building footprint. A layer of fill covered the entire area. In the portion of the site that was the original parking lot constructed during Stage I (Kroker and Goundry 1990), the upper 50 to 80 centimetres were recently deposited gravel. The parking lot had been prepared by excavation of much of the railroad fill layers and then refilling with gravel prior to laying the asphalt surface. During the parking lot expansion (Quaternary 1996), only a thin layer (approximately 20 centimetres) of railroad fill was removed and replaced with gravel.

The thickness of the fill layers varied (Figure 2). Instances of prior impact, such as the former land drainage system, had fill reaching depths of 5 metres. The deepest deposits of railroad fill occurred in the northeast portion of the site, where depths up to 180 centimetres were recorded. On average, the fill in the northeast was 150 centimetres in depth and consisted of sequential layers of cinder and gravel which had been deposited from 1888 on. The depths of fill were considerably less in the northwest area where some auger holes only encountered 60 centimetres of fill before penetrating into riverine silty clays. Generally, the undisturbed riverine sediments are a brown silty clay. Variations in texture (clayey silt, silty clay, sandy silt, sand) and colour indicate different flood episodes. The sand and/or sandy silt layers indicate fast moving waters from a larger flood episode, while the finer grained sediments indicate deposition from slower water. All of the riverine sediments overlay the lacustrine clays deposited in Glacial Lake Agassiz, which drained circa 8500 years ago. None of the auger holes drilled deep enough to encounter the lacustrine clays which have been recorded at depths of 10.4 to 11.0 metres at the north bank of the Assiniboine River (Kroker and Goundry 1990:147).

During the drilling of pile seating holes, the monitoring archaeologist recorded the buried soil horizons as each of these layers could have the potential for containing cultural resources, albeit at a location other than the current auger hole. A buried soil horizon would have been the surface of the ground upon which any evidence of occupation would occur. When a flood deposited sediment over the ground surface, the upper humic layer (loam) remains as an indicator of that former ground surface. As the rotary action of the drill can distort or smear thin layers, many of the thinner soil horizons are not discernible. Also, due to the necessity for minimizing construction slow-down, the focus of the archaeologist is on recording cultural layers rather than changes in soil texture or colour. These changes are of scientific interest for determining flood sequences and the geologic history of the area. Detailed stratigraphic profiles are recorded from the wall of vertical shafts for services installations and pilecap excavations.

Examples of the detailed stratigraphy are provided in Table 1. The major stratigraphic problem in flood deposition areas is that of correlating strata across intervening distances. With sediments deposited by floods, the layers are not placed in uniform horizontal bands. Tree falls and ice jams can result in erosion at one spot while only a few metres away, a thick layer of sediment is deposited on the existing ground surface. Thus, linkages of layers across more than five metres becomes tenuous.

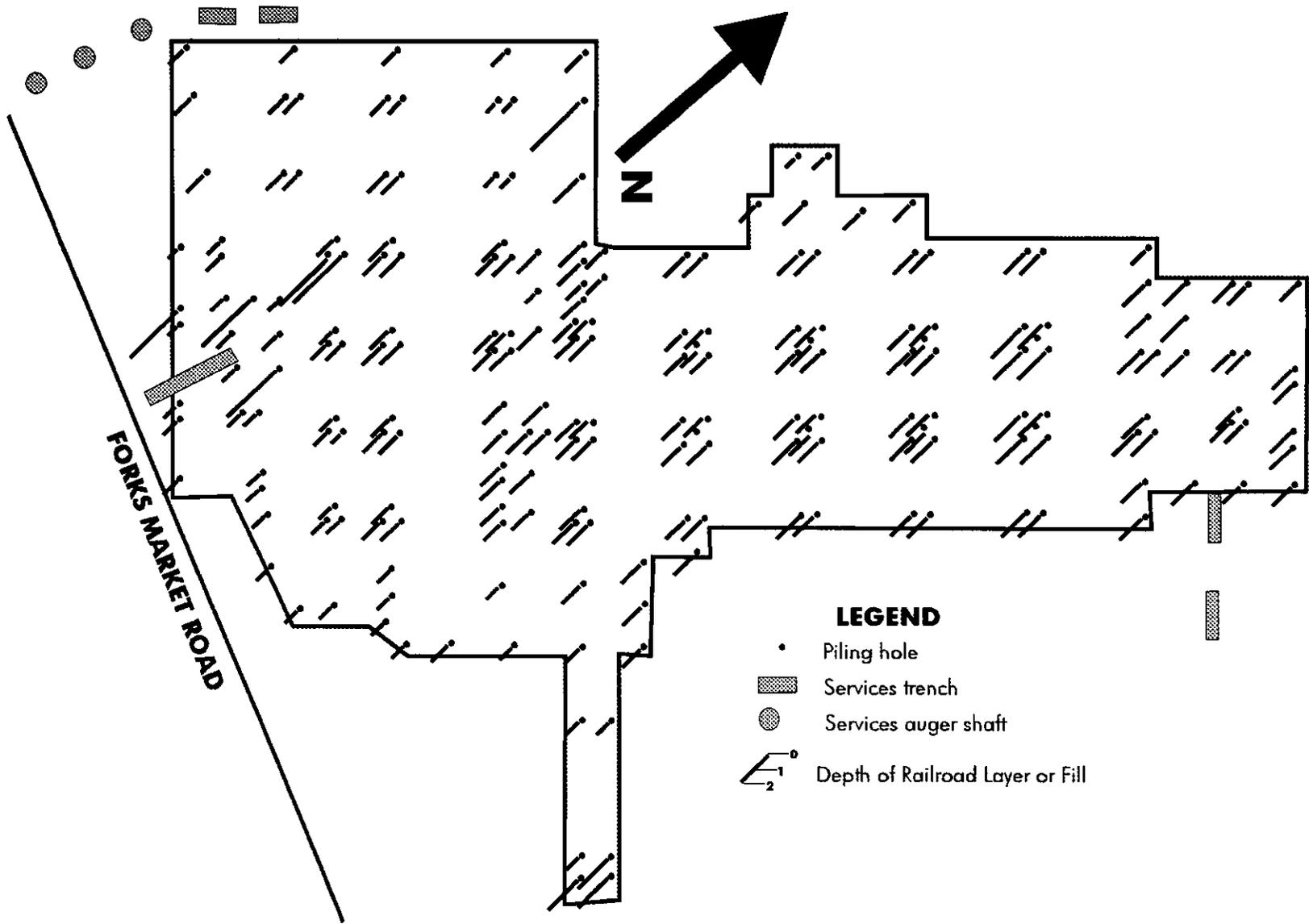


Figure 2: Map Showing Depth of Fill Recorded at Auger Holes

STRATUM	Water #1	Water #2	Sanitary South End	Sanitary North End	Land #5	Land #6
Asphalt	0 - 5		0 - 8	0 - 8	0 - 8	0 - 5
Sod		0 - 10				
Gravel	5 - 40		8 - 84	8 - 83	8 - 47	5 - 35
Clay Fill		10 - 30				
Railroad Gravel	40 - 70					
Railroad Cinder	70 - 90	30 - 100	84 - 96			35 - 46
Railroad Gravel	90 - 110					
Sand	110 - 111	100 - 108				
Clay Fill						46 - 66
Disturbed top soil				83 - 93	47 - 59	66 - 73
Buried soil horizon		108 - 108		93 - 103		
Med. brown silty clay					59 - 86	73 - 80
Railroad Cinder/Sand						80 - 82
Buried soil horizon					86 - 88	
Med. brown silty clay					88 - 105	82 - 128
Buried soil horizon					105 - 108	
Med. brown silty clay					108 - 114	
Buried soil horizon					114 - 114	
Med. brown silty clay					114 - 119	
Buried soil horizon					119 - 119	128 - 128
Med. brown silty clay					119 - 123	128 - 138
Buried soil horizon					123 - 123	138 - 138
Dark brown silty clay	111 - 151	108 - 133	96 - 141	103 - 170	123 - 168	138 - 146
Buried soil horizon	151 - 151	133 - 136	141 - 141		168 - 170	
CULTURAL LAYER						146 - 146
Med. brown silty clay	151 - 191	136 - 167	141 - 154		170 - 182	146 - 182
Marly brown silty clay			154 - 164	170 - 174		
Flood churned layer	191 - 195	167 - 173				
Buried soil horizon					182 - 182	182 - 182
Med. brown silty clay	195 - 201	173 - 203	164 - 172		182 - 213	182 - 207
Buried soil horizon	201 - 201				213 - 213	207 - 210
Med. brown silty clay	201 - 211					210 - 232
Sand	211 - 213	203 - 206				
Med. brown silty clay		206 - 230				
Grey brown silty clay	213 - 231		172 - 199			
Sandy silt			199 - 205	174 - 193		
Sand	231 - 233	230 - 231				
Marly brown silty clay			205 - 241	193 - 212	213 - 224	
CULTURAL LAYER				212 - 214		
Buried soil horizon						232 - 234
Med. brown silty clay	233 - 239	231 - 242		214 - 228		234 - 260
Sand	239 - 240				224 - 264	260 - 270
Med. brown silty clay	240 - 252				264 - 266	
Buried soil horizon	252 - 253	242 - 242				
Sandy silt					266 - 283	
Med. brown silty clay	253 - 289	242 - 276			283 - 285	
Buried soil horizon	289 - 289	276 - 276			285 - 285	
Silty clay/hematite						270 - 285
Med. brown silty clay	289 - 316	276 - 283			285 - 328	
Burned soil layer					328 - 341	
Sandy silt					341 - 357	
Redeposited grey clay		283 - 286				
Med. brown silty clay		286 - 330			357 - 385	285 - 360
	base	base	base	base	base	base

Table 1: Comparisons of Stratigraphic Profiles from Backhoe Excavation Units

Examination of the profiles recorded during backhoe excavations of the services installations show that there is a reasonable degree of correlation between excavation units. The trenches were situated approximately 15 metres apart and variations in depths and thickness of obviously related sediment layers are noticeable. Direct correlation between widely spaced excavation units is extremely tenuous. Some areas, such as the land drainage units show numerous buried soil horizons in the upper 1.5 metres while at both the watermain units and the sanitary sewer trench, such layers were largely absent.

Even along continuous excavation walls, correlation of levels at intervals can be tenuous as existing levels pinch out while new layers occur. This can be seen in the profiles recorded along the row of piles in the south central areas. The location of the trench wall is where cultural resources were encountered at 180 cm (Figure 3). The wall extended approximately 8 metres parallel to the southern line of piles. Profiles were recorded at both ends and approximately every 2.5 metres in between (Table 2).

STRATUM	#1	#2	#3	#4	#5
Asphalt	0 - 8	0 - 8	0 - 8	0 - 8	0 - 8
Gravel	8 - 84	8 - 80	8 - 79	8 - 86	8 - 73
Railroad Cinder	84 - 91	80 - 132	79 - 109	86 - 130	73 - 121
Clay Fill					121 - 124
Dark brown silty clay	91 - 108	132 - 148		130 - 148	124 - 132
Buried soil horizon	108 - 110	148 - 150	109 - 116		
Medium brown silty clay	110 - 113	150 - 154	116 - 123	148 - 163	
Marly brown silty clay				163 - 180	132 - 143
Sandy silt with marl					143 - 147
Buried soil horizon	113 - 114		123 - 124		
Medium brown silty clay	114 - 141		124 - 133		
Buried soil horizon	141 - 143		133 - 133		
Medium brown silty clay	143 - 154		133 - 149		
Buried soil horizon	154 - 155	154 - 156	149 - 149		
Medium brown silty clay	155 - 180	156 - 173	149 - 159		147 - 160
Dark brown silty clay			159 - 168		
Medium brown silty clay			168 - 180		
CULTURAL LAYER	180 - 183				
Buried soil horizon			180 - 180		
Medium brown silty clay	183 - 210		180 - 183		
Buried soil horizon			183 - 183		
Medium brown silty clay			183 - 185	180 - 186	
Buried soil horizon			185 - 185		
Light brown silty clay		173 - 194			
Sandy silt		194 - 210		186 - 194	160 - 179
Marly brown silty clay		210 - 219	185 - 218	194 - 217	179 - 184
Sandy silt		219 - 225			184 - 195
Marly brown silty clay	210 - 235	225 - 245			195 - 204
	base	base	base	base	base

Table 2: Stratigraphic Profiles from Continuous Excavation Wall

Even though the recording locations are relatively close, the various layers cannot be compared between Station 1 and Station 5. The most obvious difference is that marly silty clay layers are prevalent throughout the lower depths at Station 5 but only occurs at the extreme base of Station 1. Similarly, the buried soil horizons can be compared between Station 1 and Station 3 but are largely absent in the other three locations. Most noticeable is the presence of the cultural layer, represented by butchered bison bone, at Station 1 with no manifestations at other locations except for a series of buried soil horizons at Station 3. One of the three soil horizons at Station 3 probably, although not positively, correlates with the cultural layer.

A similar problem occurs with correlating the buried soil horizons recorded during the drilling of the auger holes. If a soil layer is thick enough, it can be observed on the auger when the soil is extracted. As the thickness can vary from one or two millimetres to two or three centimetres when it is traced along a continuous trench excavation, the thinner manifestations of a buried soil horizon are not observed during the drilling process. The buried soil horizons that were observed are recorded on Figure 3 in depths below surface in centimetres. There is some degree of correlation, especially between adjacent pile holes and within clusters of pile holes.

A noteworthy profile was observed on the north wall of the pilecap excavation for Hole 43/44 (Figure 3). This profile, immediately underlying the 1888 topsoil upon which railroad cinder rested, has representations of all four of the major floods that occurred during the 19th century. The entire profile is only 11 centimetres thick but does have sediment layers which can be correlated with each of the floods (Figure 4).

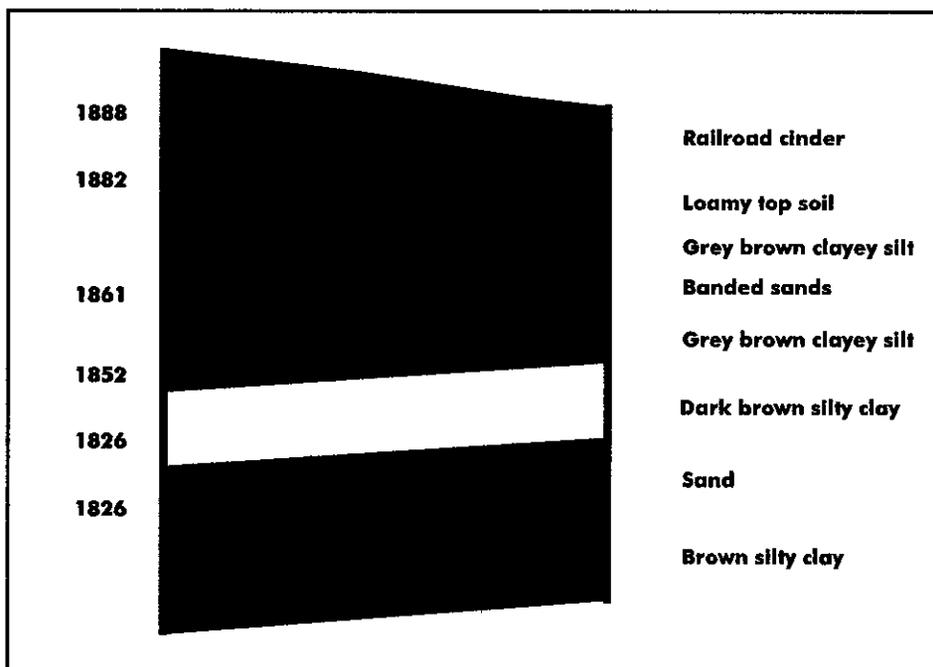


Figure 4: Representation of 19th Century Flood Episodes

The topsoil layer would have formed on the upper portion of the silty clay deposited by the 1882 flood. Each of the other floods only deposited a single layer of sediment except for the massive 1826 flood which is represented by two distinct strata—the coarser sand layer which would have been carried during the period of fast water and the upper silty clay layer which would have settled out of standing or slow moving water. The 1861 flood is represented by a layer of sand indicating fast moving water. The thicknesses and textures of the deposits correlate with the size of the flood episode. The 1826 flood, the largest recorded historical flood, has, with its combined layers, the thickest deposit. The 1861 flood is represented by sands and may have had an upper silty clay layer which became blended with the deposits from the smaller 1882 flood. The 1861 flood was second in size to the 1826 flood. Historical descriptions of these events are in the literature (Bumsted 1997; Rannie 1998) and correlations with archaeological strata have been described by Kroker (1997, 1999).

Soil profiles were recorded at all pilecap excavations. Buried soil horizons below the railroad fill layer are present in most excavations. However, none could be correlated with layers which contained cultural resources. The data, while useful to a geologist who studies recent geological history, is not germane to the cultural resource management plan and hence, is not published. It will be readily disseminated to interested researchers.

The existence of several Pre-Contact cultural horizons had already been determined during prior projects. They had been recorded at various depths during services installations along Pioneer Boulevard and Forks Market Road (Kroker and Goundry 1990), in the parking lot area (Quaternary 1996, 2002a), at the Theatre for Young People (Quaternary 1995, 1999), and to the immediate northwest in The Forks Parkade (Quaternary 2002b). During the monitoring process, cultural layers were observed at 14 locations (Figure 3), while two had been recorded during the excavations for the services installations. An additional two locations were recorded during pilecap excavation and a final location was encountered during the installation of weeping tile. Details of each of these locations are provided during the analysis of the recoveries in Section 4. It is possible that some of the layers, tentatively identified as the result of cultural activities based upon the presence of ash and charcoal, could in fact derive from natural fires that burned the gallery forest along the rivers. The presence of faunal material, lithic artifacts, or ceramic sherds from cooking pots confirm the charcoal and ash as resulting from campfires that were used during the occupation. However, absence of these artifacts does not disconfirm the possibility, especially in such a limited area of exploration. Artifacts may have been present, only centimetres away from the auger. Thus, it is advisable to assume, until disproved by further investigation, that the layers could represent pre-European campsite locations.

3.0 HISTORIC ARTIFACTS

The historic artifacts were recovered from the upper fill layers of the building footprint, primarily during excavation for the land drainage sewer line, the pile cap excavations, and excavations of the crawlspace area. They tend to derive from the railroad/cinder deposits which were spread over the area by the rail companies to both raise the ground level and to get rid of the copious quantities of cinder produced by steam locomotives and the coal-fired steam plant.

The 29 historic artifacts have been analysed within functional categories based on the Canadian Heritage Inventory Network (CHIN) cataloguing format (Kroker and Goundry 1993a:Appendix B; Manitoba Museum of Man and Nature 1986).

3.1 *Architectural Objects*

Architectural objects include all artifacts which are used for the construction, the maintenance, and the furnishing of structures. Due to corrosion and fragmentation, many of these objects are seldom identifiable to manufacturer or time period. Three artifacts were catalogued as architectural objects, all in the Hardware sub-category.

DILg-33:03A/21 is a circular, white porcelain door knob. It has a diameter of 58.1 mm and a thickness of 25.2 mm. A very small portion of the spindle is embedded in the central hole on the reverse side. The 1909 Ashdown Hardware Company Catalogue lists similar door knobs, as well as mineral, jet, or metal knobs (Ashdown 1909:273).

DILg-33:03A/22 is a complete, very rusty, iron carriage bolt with a domed head and square shank. It measures 113.7 mm (4½ inches) in length and has a diameter of 17.1 mm (¾ inches). Ashdown lists this size of bolt as being sold at \$6.56 per 100 (Ashdown 1909:422).

DILg-33:03A/23 is a single piece of heavily corroded iron strap which is bent in two on one end and spiralled back on itself on the other end. The width of this strap measures 16.2 mm and the thickness is 1.8 mm. The functional category of this type of object is still open to debate. Some strap could have been used as a structural component, i.e., a wall brace, while other strap could have been part of a machine or used as packing strap.

3.2 *Manufacturing Equipment*

This category refers to tools and/or implements used to manufacture other artifacts. Two artifacts, both catalogued in the sub-category of Metalworking, were recovered.

DILg-33:03A/24 is a large, complete, corroded iron square file. The length is 36.2 centimetres and it is approximately 2 centimetres square. It is a coarse single-cut style (Ashdown 1909:97) and has an elongated tapering tang.

DILg-33:03A/25 is a large, single, open-end iron wrench. The open-end is canted at an angle of 60° from the tapering cylindrical shaft. In addition to being heavily corroded, one of the teeth of the open end has been broken off (probably accounting for the tool being discarded). It would appear that the wrench had a 1½ inch opening. The degree of taper on the proximal end of the handle suggests that the tool may have had a dual function and could have been used as a pry bar on some railroad equipment.

3.3 Faunal Remains

Nine faunal artifacts, all butchering remains, were recovered (Table 3). The specimens were identified using some of the standard references: Gilbert (1973), Olsen (1960, 1964, 1971), and Schmid (1972). They were examined and identified as specifically as possible: body part, age of individual, and species. Any evidence of butchering techniques, such as cutting or sawing, was recorded as was the condition of the specimens, i.e., charred, broken, chewed, or gnawed.

All of the elements could be identified as cow (*Bos taurus*), with a total weight of 1048.4 gms. Two of the specimens—one of the mandibles and the femur—derive from juvenile animals. The mandible can be identified as juvenile as one of the permanent incisors is just beginning to erupt. The femur is represented by the distal epiphyseal end which had yet to fuse with the main shaft of the bone. In addition, the femur has been sawn and axed, probably to provide a roast.

ELEMENT	CAT.#	QTY	WT	COMMENTS
innominate	15	1	22.4	-
rib	16	1	71.3	spiral fracture
skull	17	3	49.0	-
mandible;tooth	20	2	494.4	both right side, 1 juvenile, 1 adult
metacarpal	18	1	115.9	spiral fracture
femur	19	1	295.4	sawn, axed, juvenile
TOTAL		9	1048.4	

Table 3: *Bos taurus* (cow) Remains

3.4 Containers

This category includes all artifacts, or portions of artifacts, which are used to contain products. It tends to cross-cut other functional divisions, with assignment to the category based upon form, as much as function. The category contains several sub-categories (Manitoba Museum of Man and Nature 1986), two of which are applicable to the recovered artifacts:

- a. Storage - the purpose of the container is to hold material, e.g., bottles, jars, tin cans; and
- b. Dinnerware - the artifact is used in the serving or eating of food.

3.4.1 Storage Containers

Storage containers include most of the commonly used artifacts in today's material culture. Products are sold, transported, carried, or stored in a container of some type—bag, box, jar, bottle. These come in a variety of material types—metal, plastic, paper, ceramic, and glass. Only ceramic and glass storage containers were recovered.

3.4.1.1 Ceramic Containers

Three ceramic containers were curated. Two specimens are from bottles, while the third is from a crock. Ceramic containers were prevalent during the 19th and early part of the 20th century. Many products were sold in stoneware bottles, jars, or jugs and stoneware crocks were used for storage, food processing, or home preserving.

3.4.1.1.1 Bottles

DILg-33:03A/6 is a small body sherd from a stoneware bottle. It is grey on the exterior surface and brown on the interior surface. A portion of a mark is printed on the exterior surface. The word "...ANITOBA", in black capital letters, occurs between two parallel lines in the form of a circle. The mark can be identified as part of the label of either Douglas & King Limited or King's Old Country Limited of Winnipeg (Chopping 1978:157-160). Douglas & King Limited brewed Stone Ginger Beer starting in 1923 at their premises at 47 Higgins Avenue. In 1931, the company name was changed to King's Old Country Limited which existed until 1945 (Stock 1978:44-45). The earlier containers were stoneware—beginning with large jugs and changing to smaller personal size bottles. The small fragment of the mark is insufficient to identify the bottle to one of Chopping's types.

DILg-33:03A/8 is a body, base sherd from a cylindrical stoneware bottle. The exterior is a mottled brown with the interior being tan. Unfortunately, there are no identifying marks on this sherd and the neck and lip are missing. However, based on similar recoveries and reference material, this specimen is tentatively identified as an ink bottle. With a diameter of 89.2 mm, this was obviously a retail size or commercial size of ink container.

3.4.1.1.2 Crocks

Crocks of various sizes, from one quart to twenty gallons, were a standard feature in most homes during the latter part of the 19th century. They were used for storing bulk staples like flour, preserving meats in salt brine or eggs in isinglass, or preparing other foods like sauerkraut. In the prairie region, several suppliers dominated the market, particularly those of the stoneware companies of Red Wing, Minnesota, and, after 1909, the various pottery firms from Medicine Hat, Alberta. Other firms in eastern Canada and the United States contributed to the steady market.

DILg-33:03A/7 is a body sherd from a crock. It is grey on both the interior and exterior surface. The exterior surface has a design consisting of portions of two blue birch leaves on it. This sherd came from a crock produced by one of the stoneware companies in Red Wing, Minnesota. The earliest company, Red Wing Stoneware Company, began in 1878. The second firm, Minnesota Stoneware Company, was

formed in 1883. In the 1890s, these two companies, plus the North Star Stoneware Company, formed a single selling consortium known as Union Stoneware Company with each company retaining its own corporate integrity. In 1896, the North Star Company ceased production and, in 1906, the two remaining firms were amalgamated to form the Red Wing Union Stoneware Company. In 1936, the name of the company was changed to Red Wing Potteries which ceased operation in 1967. However, the actual production of stoneware items had ceased in 1947 (DePasquale *et al.* 1990:4, 143). Birch leaf designs were dominant in a 1906 catalogue but were phased out some time before 1909 (DePasquale *et al.* 1990:52).

3.4.1.2 Glass Containers

Indications of the method of manufacture, which provide information about time period and technology, are often present on these types of artifacts. The six specimens have been identified to the type of container, either beverage bottles or unassigned bottles.

3.4.1.2.1 Beverage Bottles

Breweries bottled both soft drinks and beer and often used the same type of bottle for both products. It is usually impossible to ascribe a specific product to an archaeologically recovered bottle, without a paper label still adhering to the bottle.

The passage of the Manitoba Temperance Act in 1916 resulted in all Winnipeg brewers concentrating on the manufacture of soft drinks and beer for export. The local market for 'Temperance Beer' and medicinally prescribed spirits was further diminished by the 1918 Federal War Measures Act which was in force for one year and prevented importation of alcohol. Broad-based restrictions were eliminated by the introduction of the Liquor Control Act in 1923.

There was an active beverage industry in Winnipeg with several firms vying for the market. Recoveries from this project include bottles representing two of these companies that dominated the local market: Blackwoods and Drewry (Table 4). Blackwood Brothers, later Blackwoods Limited, is better known as a bottler of soft drinks while E.L. Drewry Limited appears to have concentrated on brewing beer.

Blackwoods has a long and involved history. In 1882, it began as the Manitoba Brewing Company and became Blackwoods Brothers shortly after. In 1901, the name was changed to Blackwoods Limited. Another name change occurred in 1921, this time to Blackwoods Beverages (Aerated Water Manufacturing Company Limited). In 1923, the Whistle Bottling Company was formed to take over Blackwoods' business and, in 1934, the name reverted to Blackwoods Beverages Limited (Stock 1978:19; Chopping 1978:99-109). The early incarnations of the Blackwoods business had various locations. Just after 1900, William and A.T.R. Blackwood bought a pre-existing building (built in the early 1880s) at 409-421 Mulvey Avenue East. In 1920, Blackwoods sold this property. Originally, the building on the Mulvey site had been a factory and then, over the years, it was the home of other brewing companies—E.L. Drewry, Pelissier Brewery, Labatts. Today, various manufacturing companies occupy it (Peterson and Sweeney 1998:27).

DILg-33:03A/11 is a body sherd from a pale green bottle with a portion of the standard ownership clause printed on the body with the addition of "...ACKWOOD'S LIM...". The standard Winnipeg ownership clause, "THIS BOTTLE IS OUR PROPERTY ANY CHARGE MADE THEREFOR SIMPLY COVERS ITS USE WHILE CONTAINING GOODS BOTTLED BY US AND MUST BE RETURNED WHEN EMPTY", is embossed vertically on the body of bottles and is only found on those used by Winnipeg bottlers. Thus, any portion of this clause can identify a bottle as being produced by Winnipeg firms.

COMPANY	CAT. #	QTY	COLOUR	PORTION	CHOPPING NO.
Blackwoods	11	1	pale green	body	MWIN BA?
Drewry	12	1	aqua	body,base	MWIN BG?
	13	1	blue	neck,body,base	MWIN BG12
	14	1	clear	complete	MWIN BG11-2*
TOTAL		4			

Table 4: Identified Winnipeg Beverage Bottles

The other three beverage containers are all products of Drewrys Limited. The Drewry company began in 1877 when E.L. Drewry leased the Redwood Brewery and produced beverages labeled with his name. In 1904, the company name was changed to E.L. Drewry Limited and, in 1921, it became Drewrys Limited. As well as the Redwood location, Drewry purchased the premises of the Empire Brewing Company at Mulvey Avenue East in 1892. Those facilities were sold to Blackwood Brothers shortly after the turn of the century (Peterson and Sweeney 1998:27). Drewry produced several brands of beer as well as numerous soft drinks (Stock 1978:11-19).

DILg-33:03A/12 is a small body,base sherd with "...EWR Y" and "...EG" on the base. The embossed marks indicate the origin of the specimen as Drewry but do not provide sufficient information to identify the year or contents. DILg-33:03A/13 is a nearly complete bottle missing the upper neck and lip. In addition to the company name embossed on the shoulders and the base, the ownership clause is present on the body. The year of production is indicated by embossings on the base, i.e., "05 in a rectangle". This identifies the bottle as being produced in 1905 and permits identification as Chopping Type MWIN BG12 (Chopping 1978:119). DILg-33:03A/14 is a complete clear bottle with the company name, ownership clause, and year of manufacture (1904) embossed on it. The specimen can be identified as Chopping Type MWIN BG11-2 based on the configuration of the lettering on the base. Chopping notes that his type is embossed with "330E" on the body, near the base, whereas DILg-33:03A/14 is embossed with "330H". However, this minor difference is not seen as significant enough to define a new sub-type although bottle collectors may feel that it should become MWIN BG11-2a. The difference possibly signifies different production runs using the same mold during the year 1904.

3.4.1.2.2 *Unassigned Bottles*

Artifacts in this grouping have some identifying characteristics, such as shape or manufacturer's marks, however, the data is insufficient to ascertain the function of the container. Occasionally, the style of the neck and lip of the bottle may suggest the possible contents. Also, the type of closure and evidence of manufacturing technique can provide approximate dates. The length of the mold seam can indicate a general age, if the seam extends to the lip of the bottle it was produced after 1920.

Two artifacts were assigned to this sub-category. DILg-33:03A/9 is a blue neck sherd. DILg-33:03A/10 is a green body, base sherd from a cylindrical bottle which may have been made by turn molding (Jones and Sullivan 1985:30-31). There are no distinguishing marks on these specimens, although it is possible that DILg-33:03A/10 could have been a wine bottle produced between 1870 and 1920, albeit a split rather than the full size container.

3.4.2 *Dinnerware*

Dinnerware comes in a variety of material types—metal, glass, synthetic, or ceramic—but only ceramic artifacts were recovered. Ceramic dinnerware includes place settings—plates, small bowls, cups and saucers—and serving pieces—platters, large bowls, creamers, etc. Archaeological recoveries are often too fragmented to allow exact identification and this is reflected in the use of object types such as bowl?, plate?/saucer?, and bowl?/cup?. Because dinnerware is usually manufactured in sets of the same pattern, the decorative features of a set cross-cut the types of objects. Six ceramic dinnerware artifacts were catalogued with five of the specimens having coloured patterns on them. The remaining one is white.

3.4.2.1 *White Ceramics*

White sherds are only fragments of complete objects—there may have been patterns with other colours that fit onto these sherds. DILg-33:03A/1 is the body, base portion of a cup. The information “MANUFACTURED FOR GOWANS, KENT & CO. LTD. TORONTO” is printed, in green, on the base.

Gowans, Kent & Company first appeared in Winnipeg in 1882. This firm sold crockery and silverware items out of an establishment at Wesley East. From 1884 to 1889 there is no listing in the Henderson Directories; however, the name reappeared in 1890 at 430 Main Street. In 1897, the company moved to 358 Main and, in 1908, changed its name to Gowans Kent Western Limited. One final move occurred in 1912 when the company took over 164-168 Market East. In 1922, Gowans Kent Western Limited was succeeded by Cassidy's Limited, also a china and silverware wholesaler. Cassidy's had outlets in Montreal, Vancouver, Toronto, and Winnipeg (plate in collection of Quaternary Consultants Ltd.). The Winnipeg branch was closed in 1941.

3.4.2.2 *Blue-on-White Ceramics*

DILg-33:03A/2 is a lip, body sherd from a cup. It has a roughly painted blue band just below the lip and a thin blue line half way down the body on the exterior surface. The blue band measures 5.2 mm in width

with the top portion being a deeper blue fading into a lighter blue on the bottom portion. The thin line is also a lighter blue. Sherds with this pattern, or very similar, have been recovered at The Forks (Kroker 1989:109-115; Kroker and Goundry 1990:97-100, 1993a:93-94). In some cases, they have been associated with the Canadian Northern Railway, in that the company logo has also occurred on blue lined sherds (Kroker and Goundry 1993a:94). Without any trace of the logo on DILg-33:03A/2, it cannot be stated with certainty that this piece was used by that particular railroad. These dishes could also have been used in restaurants.

The Canadian Northern Railway began as the result of the union of two smaller Manitoba railway branch lines (Regehr 1985:277). The dates of the beginning and end of the Canadian Northern Railway vary somewhat according to references. Tucker (1985:276) states that the Canadian Northern Railway was founded by William MacKenzie and Donald Mann in 1895, while Regehr (1985:277) notes that incorporation of the Canadian Northern Railway took place in 1899. The dates of demise of the railway also vary. Tucker (1985:276) says the Canadian Northern Railway was absorbed (along with four other railways) into the Canadian National Railways system between 1917 and 1923. Regehr (1985:277) states that the Canadian Northern Railway ended as an independent company with nationalization in 1918, while Guinn (1980:1) points out that the Canadian Northern Railway was in existence prior to amalgamation of the railroads in 1921.

3.4.2.3 Green-on-White Ceramics

Two sherds have different green-on-white decoration. DILg-33:03A/3 is the lip, body portion of a cup. A dark green painted pattern occurs on the body, just below the lip on the interior surface. It consists of a continuous wavy line with diamond shapes at the junction between two successive waves. Crudely painted three-leaf clover shapes hang from the bottom of the diamonds. A green dot is painted between each clover pattern equidistant from the bases of the diamonds. A small slash of the identical green colour occurs on the exterior body.

DILg-33:03A/4 is a body sherd from either a cup or a bowl. A large green flower is transfer printed on the exterior surface.

3.4.2.4 Brown-on-White Ceramics

DILg-33:03A/5 consists of two lip, body sherds from the same plate, probably a bread and butter size dish. The pattern consists of a border of white chicken feet-like patterns on a brown background just below the lip. A pattern of large vines of ivy-like leaves and what appear to be fruit sprays occurs on the body and flows over onto the base. The junction of the body with the base has a brown line painted on it. The leaves are similar to those on the 'Open Ivy' pattern and the 'Ivy' pattern as illustrated in Sussman (1979:135, 153). However, it is unlikely that these pieces were produced by any of the Spode/Copeland companies but rather probably produced by another firm capitalizing on the Victorian taste for ornately decorated dinnerware. The specimens are moderately crazed which is the crackling of the glaze into an overlapping dendritic pattern. This is usually a result of age.

4.0 PRE-CONTACT ARTIFACTS

Most areas at The Forks contain buried soil horizons which represent former ground surfaces. People have continually visited the area for food gathering, fishing, small game hunting, and to meet and trade with other groups. The debris left behind when the people depart becomes incorporated into the soil or buried by sediments deposited by a flood. The material which preserves becomes the archaeological record of their occupation at the site.

During the monitoring of the construction activities (services installation excavations, pile auger drilling, pilecap excavations, crawlspace excavations, and weeping tile excavation), Pre-Contact cultural resources were recorded at several locations (Figure 3, Figure 4). Artifacts were recovered from twelve of the loci, while another seven locations had cultural evidence, such as charcoal or ash, but did not contain recoverable artifacts.

Lithic artifacts and sherds from ceramic cooking pots are the components of the material culture which are least perishable. In some instances, bones from the food animals can be preserved. It is fortunate that the soils at The Forks are non-acidic and this component of the archaeological record is usually well-preserved. The following section (Section 4.1) details methods of analysis that can be applied to artifacts of various classes. Not all classes were recovered from every location during the construction monitoring of this project. The artifacts are analysed by location (Section 4.2 to Section 4.8). The final section (Section 4.9) provides data on the seven cultural loci which did not contain recoverable artifacts.

4.1 *Archaeological Material Culture Analysis*

Each class of artifact has its own parameters for analysis and the following is a general overview of the types of analysis that can be undertaken on those artifacts. Not all of the classes were recovered from the Pre-Contact horizons encountered during the construction activities. However, the analysis methods are detailed to provide a background for those that were recovered and for any potential recoveries if additional development is to occur adjacent to the current facility.

4.1.1 *Lithic Artifacts*

The lithic component of pre-European tool kits is the portion that tends to preserve the best. Bone and wooden tools, as well as clothing and other organic artifacts, decay or burn during prairie/forest fires. Due to the indestructibility of stone artifacts, they have become one of the standard diagnostic tools for assessing cultural affiliations. This assessment is predicated upon the assumption that there were standardized forms for each type of artifact within each cultural group at a specific time period. However, considerable variation can occur due to the degree of skill of the individual tool maker, the quality of the lithic material from which the tool is being made, and the borrowing of ideas from other cultural groups. The above discussion applies to tools such as projectile points and scrapers, rather than non-diagnostic lithic detritus.

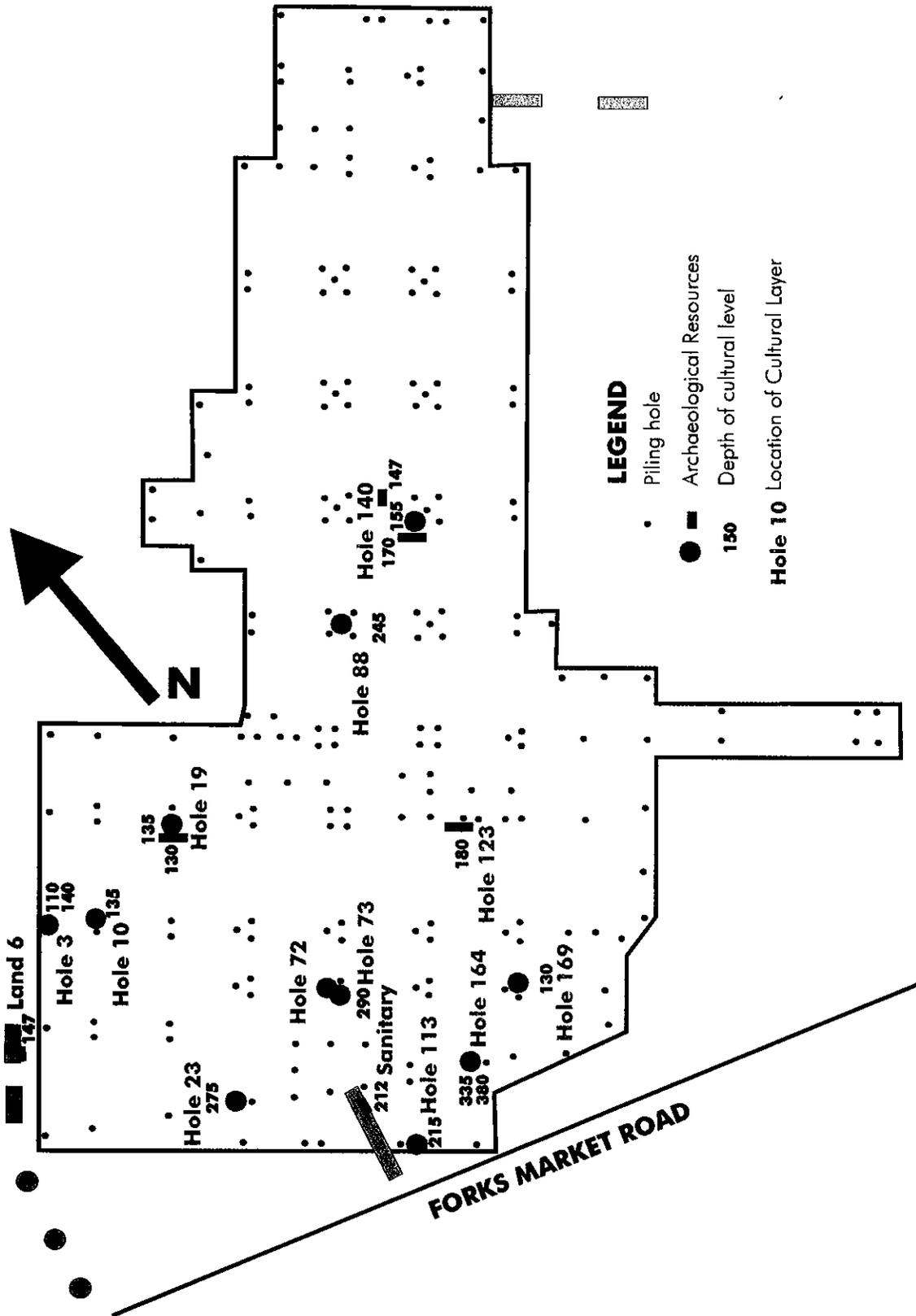


Figure 5: Map Showing Locations and Depths of Cultural Layers

Detritus is the category under which the byproducts and waste elements of the tool manufacturing process are catalogued. This category refers to lithic material and includes flakes and cores. It can also include fragments of copper and, in proto/post-Contact times, iron. This category also includes waste products from the manufacture of bone or wooden tools.

The manufacture of stone tools is a complex process. Cobbles and pebbles of the desired raw material are struck with a hammerstone to remove flakes. A source cobble with flakes removed is known as a core. The flakes which have been removed are further shaped, using a stone or antler billet to strike off smaller flakes to thin the original object and to produce the desired shape. At this time, a pointed implement called a flaker, usually made of antler, is used to press small flakes from the edge to produce a sharp, straight cutting edge. During this process, many flakes are produced—some are further modified as retouched flakes, others are used *as is* as expedient cutting tools, but most are discarded at the place of manufacture.

Lithic source areas for tool manufacture can be divided into six groups:

- Group I: Materials found throughout the western portion of Manitoba. This group includes Swan River Chert from the Swan River Valley region near the Saskatchewan border and St. Ambrose Chert from Lake Manitoba. Other materials, i.e., chalcedony and jasper, are found in deposits such as the Souris Gravel Pits.
- Group II: Materials found to the south. The primary example of this group is Knife River Flint which occurs at quarry locations in North Dakota.
- Group III: Materials associated with the Canadian Shield, found to the east and to the north of the Red River. This group consists of quartz and rhyolite.
- Group IV: Materials whose distribution is a result of glacial transportation and can be found throughout the province. This group is represented by quartzite, siltstone, silicified sediment, and the various types of undifferentiated chert.
- Group V: Materials from nearby quarry sources. This group is represented by Selkirk Chert and the limestone matrix in which the nodules occur.
- Group VI: Materials from the western Lake Superior area, especially around Thunder Bay. This group includes Gunflint Chert and Jasper Taconite.

Inasmuch as lithic materials are not available at the site, all material would have been transported to the location by the occupants. Some materials, such as Group IV, could have been obtained at creek mouths and riffle areas to the west along the Assiniboine River. The Selkirk Chert (Group V) would have been obtained from the limestone outcrops at the St. Andrews Rapids, slightly north along the Red River. Any Knife River Flint (Group II) probably was obtained by trade as the source areas are along the Knife River in North Dakota (Burns 1995:33-34). The most predominant groupings of lithic materials often represent source areas recently visited by the occupants.

The presence of locally obtainable material indicates a knowledge of regional lithic source areas and suggests the practise of gathering tool-quality material when the opportunity arises. As certain types of

material are favoured for specific tools, often that type of material is carried until needed. Thus, representations of previously visited areas or source areas accessed by traders can often occur as components of a lithic assemblage.

Fire-cracked rocks are those specimens which have evidence of being subjected to intense heat. Depending upon the structure of the rock, extreme temperature variations cause different results. Fine-grained homogenous lithic cobbles, such as limestone, quartzite, and rhyolite, will spall and shatter into angular fragments, while coarse-grained granitic rocks will tend to decompose into smaller granular fragments of the different parent materials, i.e., granite, granodiorite, diorite, etc.

4.1.2 Ceramics

In every ceramic assemblage, the bulk of the sherds are from the body of the pot. Mathematically, this makes sense since the decorated upper portions of the vessel, which are defined as the rim, usually account for less (generally much less) than 20% of the total vessel surface. Body sherds have traditionally been considered less diagnostic than the rims, necks, and shoulders that comprise the decorated portion of the vessel. However, it is the experience of archaeologists who replicate pottery that decorations are normally easier to reproduce than surface impressions. Until a systematic method of analyzing and describing the visible variation in the body sherds is developed, the level of description tends to be relatively coarse.

Rim sherds are defined as the upper, usually decorated, portion of the vessel and consist minimally of the lip and parts of the neck. For some types of ceramic wares, the decorations extend to the shoulder junction and fragments of these also fall under the definition of rim sherd. The various styles of decoration can be temporally and geographically assigned, providing clues to the identity, the home region, and the time period of the people whose evidence occurs at a particular occupation horizon.

4.1.3 Faunal Remains

In many archaeological sites, the preponderance of recovered artifacts are the remains resulting from food procurement. The combinations of permeable types of soil, frequent floods causing relatively thick layers of riverine sedimentation, and the lack of forest fires result in a very high degree of preservation of faunal material within the general area of The Forks.

All recovered faunal material is identified using the standard references, among them: Casteel (1976), Clarke (1981), Gilbert (1973), Mundell (1975), Olsen (1960, 1964, 1971), and Schmid (1972). The faunal remains are examined and identified as specifically as possible: body part, age of individual, and species. Evidence of butchering techniques, such as cut marks, is recorded as is the condition of the specimen, i.e., charred, broken, chewed, or gnawed.

Some post-depositional trauma can occur during or immediately after the food preparation process when bone fragments are placed into the fire. The result is bone which is either charred or calcined (so thoroughly burned that only the inorganic white calcium carbonate remains).

Archaeologists have many techniques to analyse the protein component of Pre-Contact diets. The most common method is to determine the minimum number of individuals of each species represented at the site. This is done by selecting the most frequent element, e.g., left dentary of a catfish, right femur of a bison, etc., and using that number as the minimum number of animals that would have been harvested. A rigorous analysis uses these minimum numbers and an average body weight of the particular species to determine the amount of usable meat that is represented by the bones in the faunal assemblage. This can be further refined by using base line measurements of the specific element and calculating percentage size ratios of the recovered specimens and then applying that corrected value to the usable meat formula. As an example, a dentary from a 10 kilogram catfish measures a certain length and the archaeological specimens may range from 50% to 150% of that size. The usable meat would be a compilation of the combined ratios times 10 kilograms. A study of this type is applicable when large portions of an occupation site have been excavated. It is not valid for a project where a very limited portion of the cultural horizon has been excavated.

For many smaller sites, a simpler level of analysis is undertaken by determining the frequency of the butchering remains by both quantity and weight. Usually, the fish remains overwhelm the other taxa in terms of quantity. However, as fish bone is small and light in comparison to the larger and denser mammal bone, the proportions are reversed when weight is considered. In this rather simplistic type of analysis, the amount of available meat is deemed to be relatively proportional to the weight of the residue, although in the case of shellfish, the weight of the discarded shell is considerably greater than that of the available meat.

Samples are an expeditious mechanism for the cataloguing of myriads of minuscule recoveries. These consist of specimens recovered on a 2 or 1 millimetre screen and contain diverse artifacts, i.e., charcoal fragments, shell fragments, and small fragmented bone elements. Intensive detailed study of the material catalogued as samples may result in the identification of various plant or animal species, but most of the dominant taxa are already represented by larger recoveries. The additional information obtained through a comprehensive analysis of samples is usually that of degree and further confirmation of specific taxa rather than the identification of previously unrecorded species.

4.1.4 Floral Remains

In some situations, floral material is recovered. Usually this is charcoal which, under optimum conditions, may be identified to species. The charcoal usually derives from wood which was burned in campfires and often comes from locally available trees. Sometimes, specific trees are used for specific purposes. An example would be the use of hardwood trees such as oak to produce greater heat for the firing of ceramic vessels, whereas campfire wood would not be as specific and could consist of whatever was easily procurable.

4.2 Hole 3

The only recoveries from this location were obtained from the soil matrix excavated by the drilling auger during the excavation of holes for seating piles. Two discrete cultural horizons were recorded in the soil column.

4.2.1 Depth = 110 centimetres

The artifacts are solely faunal material resulting from butchering of animals for food. The specimens consist of four fragments of a bison (*Bison bison*) metatarsus (DILg-33:03A/27) and nine unidentifiable fragments of large mammal bone (DILg-33:03A/26). The combined weight of these 13 artifacts is 128.1 grams. Other than spiral fracture, indicating breakage while the bone is fresh, no other aspects of modification, such as cut marks or charring, are present.

4.2.2 Depth = 140 centimetres

The recoveries, again faunal material, derived from a layer which suggested flood smearing. Minute flecks of charcoal and tiny bone fragments were encapsulated within a thin (2 centimetre) layer of silty clay. The eleven unidentifiable bone fragments (DILg-33:03A/28) derive from a mammal and weigh 0.2 grams.

4.3 Hole 19

Artifacts were recovered from this location during the pile drilling and the pilecap excavations. The depth recorded during the drilling was 135 centimetres. When the location was excavated by backhoe for pile cut-off and pilecap pouring, the artifacts were recovered at a depth of 130 centimetres.

4.3.1 Depth = 135 centimetres

As is usually the case, food residue in the form of butchering remains is the highest percentage of recovery. A total of 11 artifacts, with a combined weight of 1.1 grams, was recovered. While samples could be construed as butchering remains, in that they are the result of cluster cataloguing of minute residue obtained during the wet screening process, they are not included in the quantities or weights of butchering remains. This is done so as not to skew the percentages inordinately in favour of undetermined or unidentifiable fragments. As such, the quantities that can be identified to specific taxa more closely reflect the actual food procurement practices of the peoples that camped here.

The butchering remains consist of ten artifacts. DILg-33:03A/30 is an unidentifiable mammal bone weighing 0.1 grams. Five fish scales (DILg-33:03A/31) and two unidentifiable fish bones (DILg-33:03A/32) have a total weight of 0.2 grams. Two fragments of a valve from a freshwater clam (Unionidae) were recovered. DILg-33:03A/29 weighs 0.1 grams. One sample (DILg-33:03A/33), weighing 0.7 grams, was catalogued.

4.3.2 Depth = 130 centimetres

A trace of the cultural horizon was encountered during the backhoe excavation adjacent to Hole 19. The thin (0.5 cm thick), intermittent cultural layer was encountered at the base of the pilecap excavations at 130 centimetres below surface. Only faunal remains were recovered: butchering remains, a sample, and naturally deposited fauna.

The butchering remains consist of six fragments of a bison femur (DILg-33:03A/69) weighing 397.3 grams and seven unidentifiable mammal bone fragments (DILg-33:03A/67) weighing 2.0 grams. DILg-33:03A/68, the sample, weighs 0.7 grams.

The naturally deposited fauna consists of a single, small, Planorbidae freshwater snail (DILg-33:03A/66). Freshwater snails are deposited as part of the sediment load during flood episodes and are part of the soil substrate below the cultural level. As the cultural material mixes with the upper portion of the original soil, these taxa are incorporated within the cultural matrix. DILg-33:03A/66 weighs 0.1 grams.

4.4 Hole 88

Artifacts were recovered during the pile drilling from a depth of 245 cm. The only artifacts from this location consist of three fragments of the posterior portion of the mid-shaft section of the left tibia of a bison (Monks 2003:pers.comm.). The weight of these specimens (DILg-33:03A/34) is 101.4 grams.

4.5 Hole 113

The recoveries were retrieved from the soil matrix on the drill auger from a depth of 215 cm. The specimens consist of ceramic fragments, butchering remains, a sample, and naturally deposited fauna.

The ceramic sherds are two rim sherds (DILg-33:03A/50), weighing 2.0 grams, and 11 body sherdlets (DILg-33:03A/51), weighing 1.1 grams. The rim sherds are small fragments with the lip present. They have small circular punctates which penetrate through the sherds. This apparent perforation is the result of exfoliation where the sherds have split vertically so that only one surface is present. On an unaffected sherd, the punctates would be deep, probably raising a boss on the interior surface. The punctates are closely spaced, about 9.0 mm apart, and occur approximately 6.0 mm below the lip. Exfoliation of the exterior surface of the sherds precludes determination of the surface treatment of the vessel. The top of the flat lip is impressed with short, linear indentations in an irregular pattern which could represent a weave or a bundle of grass or other plant pressed into the plastic clay before hardening. Based upon the available evidence, the sherds are tentatively assigned to the Blackduck ceramic tradition which has a temporal range from A.D. 800 to A.D. 1400. The body sherds are all exfoliation flakes and, due to their small size, cannot be ascribed to a specific surface treatment.

The butchering remains consist of one unidentifiable fragment of calcined mammal bone (DILg-33:03A/53), weighing 0.1 grams. The fish remains consist of ribs (DILg-33:03A/55), vertebrae (DILg-

33:03A/54), scales (DILg-33:03A/56), and unidentifiable fragments (DILg-33:03A/57 and 58). In total, there are 96 fish elements, weighing 3.9 grams. The sample (DILg-33:03A/59) weighs 0.9 grams.

The naturally deposited fauna consists of four small fragments of the shell of a freshwater snail. DILg-33:03A/52 weighs 0.1 grams.

4.6 Hole 123

The material was recovered during the pilecap excavations at a depth of 180 centimetres below surface. The artifacts were at the southwestern edge of a block excavation for a complex of piles (Figure 4). No buried soil horizon was present and, until examination of the recovered artifacts, it had been assumed that the bone was the result of the natural deposition of a bison which had died, or been transported by a flood. Several of the vertebra were articulated but other elements are from different portions of the body, indicating cultural utilization of the meat. In some ways, the distribution pattern of this and two other loci at Hole 140 is reminiscent of the pattern of bison bone recoveries from the Avonlea/Laurel horizon at The Forks Parkade, especially in the area west of the major excavation block (Quaternary 2002b:Figure 3).

Three hundred and five artifacts were recovered. One is floral and the remainder are faunal artifacts. The butchering remains appear to derive from a single animal, an adult bison (Table 5). The undetermined and unidentifiable bone artifacts are likely fragments of ribs and vertebra.

TAXON	ELEMENT	CAT. #	QTY	WT
Mammal				
Large Mammal	Undetermined	101	6	63.7
	Unidentifiable	102	174	33.1
Deer/Cow Family (Artiodactyla)				
Cow/Bison Family (Bovidae)				
Bison (<i>Bison bison</i>)	Sternabra	103	1	54.1
	Rib	104	72	478.3
	Vertebra	105	40	2000.6
TOTAL MAMMAL			293	2629.8

Table 5: Mammal Recoveries from Hole 123

The single sample (DILg-33:03A/100) is predominately bone with minor amounts of charcoal and shell fragments. The shell fragments are likely from freshwater snails. The sample weighs 5.3 grams.

The naturally deposited fauna consists of eight Planorbiade fragments (DILg-33:03A/97), weighing 0.1 grams. Two specimens deriving from a very small rodent were recovered. DILg-33:03A/98 is an incisor and DILg-33:03A/99 is a portion of a maxilla with two cheek teeth present. Each weighs 0.1 grams.

A single specimen of charcoal was recovered. DILg-33:03A/96 is a small fragment weighing 0.1 grams. It derives from a locally available deciduous tree, either oak, maple, willow, poplar, or birch.

4.7 Hole 140

Three different clusters of artifacts were encountered during different operations at this location. Material was first observed at a depth of 155 cm during the drilling of pile seating holes on May 22 (Section 4.7.1). Artifacts were again encountered during the backhoe excavation for pilecaps on May 28. The cultural evidence was located at a depth of 170 cm on the northwest wall of the excavation (Section 4.7.2). The final cluster of artifacts was located during the excavation of the trench for the placement of weeping tile on June 13. The material was found at a depth of 147 cm, lying approximately three metres to the north of Hole 140 (Section 4.7.3).

4.7.1 Depth = 155 centimetres

All recoveries consisted of faunal elements. The preponderance was butchering remains and, within that grouping, all were derived from mammal except for two fish scales (Table 6). DILg-33:03A/63, consisting of two, small, charred unidentifiable mammal fragments, indicated cultural activity in that the bone fragments would have been discarded in or immediately adjacent to the campfire.

TAXON	ELEMENT	CAT. #	QTY	WT
Mammal				
Undifferentiated Mammal	Unidentifiable	62	249	14.4
	Unidentifiable	63	2	0.1
Large Mammal	Rib	61	99	161.1
Deer/Cow Family (Artiodactyla)				
Cow/Bison Family (Bovidae)				
Bison (<i>Bison bison</i>)	Costal Cartilage	60	2	7.4
TOTAL MAMMAL			352	183.0
Fish				
Undifferentiated Fish	Scale	64	2	0.1
TOTAL FISH			2	0.1
TOTAL			354	183.1

Table 6: Butchering Remains from Hole 140 at 155 cm

Five shell fragments from freshwater snails are catalogued as naturally deposited fauna. These specimens (DILg-33:03A/65) weigh 0.1 grams.

4.7.2 Depth = 170 centimetres

The majority of the recoveries consist of faunal elements. However, a single flake resulting from tool manufacture was curated. DILg-33:03A/77 is a small quartzite flake which would have resulted from retouching an already existing tool—probably to sharpen it or to straighten out a nick in the cutting edge. This minute artifact, triangular in cross-section and lamellar in planview, has a bulb of percussion at the proximal end and a hinge fracture at the distal end. The flake is 7.6 mm long, 2.7 mm wide, and 1.4 mm thick. It weighs 0.1 grams.

The preponderance of the fauna is butchering remains. All were derived from mammal except for two fish elements (Table 7). Most of the mammal bone could be identified as bison and the unidentifiable specimens are also probably from the same animal, although the fragments do not contain any landmarks which would allow positive identification. DILg-33:03A/83 consists of three small charred fragments, weighing 0.3 grams. DILg-33:03A/85 is a sample which consists mainly of small bone fragments, some of which are charred, along with some charcoal and shell fragments. It weighs 6.0 grams.

TAXON	ELEMENT	CAT. #	QTY	WT
Mammal				
Undifferentiated Mammal	Unidentifiable	84	237	26.2
	Unidentifiable	83	3	0.3
Deer/Cow Family (Artiodactyla)				
Cow/Bison Family (Bovidae)				
Bison (<i>Bison bison</i>)	Molar	86	1	5.1
	Mandible;tooth	87	2	62.2
	Phalanx	88	1	48.8
	Costal Cartilage	89	19	49.4
	Long Bone	90	15	72.8
	Rib	91	57	136.7
	Scapula	92	26	357.8
	Axis	93	1	194.0
	Atlas	94	1	155.2
	Vertebra	95	9	259.0
TOTAL MAMMAL			372	1367.5
Fish				
Undifferentiated Fish	Quadrate	81	1	0.1
	Unidentifiable	82	1	0.1
TOTAL FISH			2	0.2
TOTAL			374	1367.7

Table 7: Butchering Remains from Hole 140 at 170 cm

The naturally deposited fauna consist of two catalogue numbers, each representing a different taxon of freshwater snail. DILg-33:03A/79 is six shell fragments of Planorbidae and DILg-33:03A/80 is two fragments from Lymnaeidae. The combined weight of these eight specimens is 0.2 grams.

Several specimens of charcoal were recovered. DILg-33:03A/78 consists of 14 small fragments weighing 0.4 grams. They appear to derive from locally available deciduous species.

4.7.3 Depth = 147 centimetres

The 36 artifacts were recovered from a short section of the cultural horizon intercepted by the weeping tile trench. The cultural layer was only 20 centimetres wide at the point of impact. The artifacts consist of butchering remains, a sample, and charcoal. The butchering remains appear to derive from a single animal, an adult bison (Table 8). The unidentifiable bone artifacts are likely fragments of the larger, identified bones. The single sample (DILg-33:03A/71) is predominately bone with minor amounts of charcoal and shell fragments—likely from freshwater snails. The sample weighs 1.1 grams.

TAXON	ELEMENT	CAT. #	QTY	WT				
Mammal								
Large Mammal	Unidentifiable	72	9	1.8				
Deer/Cow Family (Artiodactyla)								
Cow/Bison Family (Bovidae)	Long Bone	73	9	9.5				
Bison (<i>Bison bison</i>)								
					Sternabra	74	1	38.5
					Tibia	75	1	125.9
	Femur	76	10	704.8				
TOTAL MAMMAL			30	880.5				

Table 8: Mammal Recoveries from Hole 140 at 147 cm

DILg-33:03A/70 consists of five small fragments of charcoal weighing 0.1 grams. Again, these appear to derive from locally available deciduous species.

4.8 Hole 164

Two different cultural levels were encountered during the drilling of the pile seating hole. Both horizons were noticeable due to the presence of charcoal in the soil matrix.

4.8.1 Depth = 335 centimetres

The recoveries consist solely of small fragments of butchering remains (Table 9) and one shell fragment from a freshwater Planorbidae snail (DILg-33:03A/41). The naturally deposited shell weighs 0.1 grams.

TAXON	ELEMENT	CAT. #	QTY	WT
Mammal				
Undifferentiated Mammal	Tooth	35	1	0.1
	Unidentifiable	36	4	0.1
	Unidentifiable	37	1	0.6
TOTAL MAMMAL			6	0.8
Fish				
Undifferentiated Fish	Rib	38	1	0.1
	Unidentifiable	39	11	0.3
	Scale	40	2	0.1
TOTAL FISH			14	0.5
TOTAL			20	1.3

Table 9: Butchering Remains from Hole 164 at 335 cm

The presence of the calcined artifacts, DILg-33:03A/35 and DILg-33:03A/36, indicate that food processing and preparation had taken place in the immediate vicinity.

4.8.2 Depth = 380 centimetres

The recoveries include small fragments of butchering remains (Table 10), a sample, fire-cracked rock, and charcoal. DILg-33:03A/42 is three pieces of diorite, weighing 15.1 grams. DILg-33:03A/43 is two small charcoal fragments, weighing 0.1 grams.

TAXON	ELEMENT	CAT. #	QTY	WT
Mammal				
Large Mammal	Unidentifiable	44	1	0.7
	Long Bone	45	1	1.3
TOTAL MAMMAL			2	2.0
Fish				
Undifferentiated Fish	Dentary	46	1	0.1
	Rib	47	4	0.1
	Scale	48	1	0.1
TOTAL FISH			6	0.3
TOTAL			8	2.3

Table 10: Butchering Remains from Hole 164 at 380 cm

The presence of the calcined artifact, DILg-33:03A/44, indicates that food processing and preparation had taken place in the immediate vicinity, probably at the campfire indicated by the fire-cracked rock. The sample, DILg-33:03A/49, consists of bone and charcoal fragments and weighs 0.4 grams.

4.9 Cultural Locations without Artifacts

Seven different locations were encountered which contained evidence of cultural activity but did not contain artifacts that could be curated. The locations are described below and depicted on Figure 4.

4.9.1 Land Drainage Hole 6 = 147 centimetres

A small trace of a cultural horizon was encountered in the southwest portion of the vertical trench which had been excavated to install the drainage catchbasin (Figure 4). The material consisted of charcoal, ash, and rotted fish vertebra. The horizon, approximately two centimetres thick, had no internal structure and appears to be the result of the deposition of flood-churned surface material. The cultural evidence is the result of secondary deposition from an adjacent occupation site.

4.9.2 Sanitary Sewer Trench North = 212 centimetres

A short, irregular section of an undulating cultural horizon was encountered on the east wall of the backhoe-excavated trench for the placement of the sanitary sewer on the south side of the building footprint (Figure 4). The interrupted horizon extended 2.8 metres with several gaps. The material consisted of charcoal and ash with decomposed fish and mammal bone—none of which was recoverable.

4.9.3 Hole 10 = 135 centimetres

A thin buried soil horizon, containing some charcoal and ash, was encountered during the drilling of the pile holes. This horizon appears to correlate with the levels recorded in Hole 3 and Hole 19.

4.9.4 Hole 23 = 275 centimetres

A layer containing numerous quantities of charcoal and ash was encountered during the auger drilling. No faunal material or direct cultural evidence was observed. This occurrence could be the result of a natural fire in the gallery forest which lined the rivers. While not positively identified as a cultural horizon, this depth and location should be recorded as a potential cultural locus, in that the auger may have penetrated through a hearth yielding the same evidence as through a tree trunk burn. Excavation adjacent to the pile hole would be required to definitely determine if the charcoal and ash are the result of a natural event or a cultural event.

4.9.5 Hole 72 = 290 centimetres

A layer of charcoal and ash was observed during the drilling of the pile hole. No direct cultural evidence was recovered from the auger bit and this location could be either natural or cultural.

4.9.6 Hole 73 = 290 centimetres

A layer of charcoal and ash was observed during the drilling of this hole which lies immediately north of Hole 72. No direct cultural evidence was recovered from the auger bit and this location could be either natural or cultural.

4.9.7 Hole 169 = 130 centimetres

A layer of charcoal and ash was encountered during the drilling of the pile hole. The thin layer could represent either a natural or cultural event and nothing was recorded in the immediate vicinity to suggest a correlation with the cultural horizons recorded at the northern portion (Holes 3, 10, and 19) of the structure (Figure 4).

4.10 Summary

Seven different locations had cultural resources, albeit with more than one level recorded at four locations. A total of 1301 Pre-Contact artifacts, only two of which were diagnostic, was recovered. Some degree of correlation can be ascribed although with increasing distance, the correlation becomes more tenuous.

It would appear that the two depths recorded at Hole 19 are a result of uneven original ground surfaces and the two depths (130 cm and 135 cm) are obviously the same cultural layer. It is highly probable that the ash and charcoal layer at Hole 10 is the same layer as is the lower level (140 cm) at Hole 3 and both are manifestations of the layer represented at Hole 19. The evidence of flood smearing at Hole 3 is also replicated at Land Drainage Hole 6 which is at a similar depth of 147 cm. No diagnostic artifacts, in fact no artifacts other than faunal remains, were recovered from any of these five loci. However, based upon the depth below surface, the relative sparsity of artifacts, and the proximity of the Avonlea/Laurel horizon identified at the eastern end of the parking structure (Quaternary 2002b:Figure 3), it is likely that these are outliers of that occupation.

Another obvious cluster of related occurrences is at Hole 140 where the depth varies between 147 cm and 170 cm below surface. Again, other than a single lithic flake, all recoveries were faunal remains. The predominate material appears to be bone deriving from bison and could represent the residue from the butchering of a single animal. Based upon the apparent similarities of age of the animal and the robustness of the bones, the bison remains recovered from the excavations at Hole 123, at a depth of 180 cm, may be part of the same cultural layer. This is a tenuous linkage due to the distance between the loci. However, during excavations of the parking structure, widely scattered butchering remains were encountered beyond the periphery of the campsite location (Quaternary 2002b:Figure 3).

The occurrences at Hole 113 at 215 cm and the Sanitary Sewer trench at 212 cm likely represent the same occupation. The ceramic rim sherds are very small and have unusual decorative elements. Without having larger fragments, it is difficult to determine the overall decorative pattern and thereby identify the type of ceramic ware that they represent. The presence of the punctates and the slightly out-flaring lip

have resulted in a tentative identification as Blackduck ceramic ware. During Stage I construction, cultural layers were recorded in the vicinity during services installations under what is now Forks Market Road at depths of 220 cm, 225 cm, 230 cm, and 240 cm (Kroker and Goundry 1990:36-40). Ceramic sherds were recovered from the layer at 230 cm. These resources approximately two metres below surface within the hotel footprint probably correlate with the two metre deep manifestations along Forks Market Road.

During Stage I, ceramic artifacts were recovered from a level at 150 cm (Kroker and Goundry 1990:39). An Avonlea occupation layer was identified under the Travel Manitoba Idea Centre at a depth of 150 cm (Quaternary 1994b:5-8; Speidel 1996:72-81). The cultural layer at 130 cm in Hole 169 may correlate with the Stage I 150 cm level and possibly with the Avonlea horizon at the Travel Centre and/or a horizon containing elk bones at 170 cm recovered during Stage I (Kroker and Goundry 1990:40).

The remaining cultural levels are not correlatable with previously identified horizons. During Stage I, a deeper horizon at 335 cm was identified (Kroker and Goundry 1990:38) but its location would be considerably east of the southeast corner of the hotel footprint. Thus, correlation with the level at Hole 169 is dubious. However, it would be of the same temporal period as the Archaic cultural horizon identified on the north bank of the Assiniboine River. This horizon was widespread, occurring within the Archaeological Preserve south of the Johnston Terminal (Kroker 1989; Kroker and Goundry 1993b, 1994), at the west edge of the Johnston Terminal (Quaternary 1993), within the Assiniboine Riverfront Quay (Kroker and Goundry 1993a), and under the Forks Market Plaza (Kroker and Goundry 1990).

The other cultural levels identified during this project have even less connection between previously identified occurrences or those located within the hotel footprint.

5.0 DISCUSSION

Most reports concerning archaeological mitigation of construction projects detail the recoveries that had been impacted by excavations associated with the development. This report is different in that it will discuss the cultural resources that have been avoided and thereby protected from impact.

It is obvious that the Avonlea/Laurel occupation site located during the construction of the parking structure extends eastward into the area occupied by the building footprint. Traces of this cultural horizon which appears to have concentrated areas with sparse artifact scatters between the concentrations were encountered in the northeastern portion of the footprint. Evidence was found at Hole 19, Hole 3, Hole 10, and Land Drainage Hole 6 (Figure 4). The presence of Avonlea ceramics at the Travel Manitoba Idea Centre suggests that this could have been a wide-spread campsite with individual families occupying localized areas. If this is the case, the evidence at 130 cm at Hole 169 would be part of the same occupation. Alternatively, the Avonlea groups could have revisited the area several times, camping at slightly different locations on each visit. If future researchers wish to further investigate this occupation site, the area between the parking structure, the Manitoba Theatre for Young People, and the Inn at The Forks would be an optimum location. In addition, the area under the hotel will be preserved for the foreseeable future and, when a different development occurs in place of the hotel, academic research could access that location.

The cultural layer located in the centre of the building footprint around Hole 140 (Figure 4) occurs at or below the level of pile cut-off. The majority of it was not impacted by any of the excavation and thus lies, largely intact, under the structure. Given the presence of the crawlspace and the style of construction (grade beam on pilecap), archaeological excavation of this horizon could occur while the hotel is in operation. Logistically, it would not be too difficult to undertake moderate excavations as long as the integrity of the weeping tile system is not compromised. This cultural manifestation may be associated with the Avonlea/Laurel and could represent butchering activity areas associated with the campsites. Alternatively this location could represent a discrete occupation. Without diagnostic artifacts, either interpretation is feasible.

To summarize, the decisions of the proponent to effectively raise the ground level of the Inn at The Forks and construct a crawlspace rather than a full basement have safeguarded the cultural resources within the building footprint. The limited impact resulting from services installations, pile auger drilling, pilecap excavations, and the crawlspace excavation have provided an opportunity to assess the presence and density of cultural horizons at the location. This provides knowledge for future development adjacent to, and in the more distant future, within the area to be occupied by the Inn at The Forks.

6.0 BIBLIOGRAPHY

Ashdown Hardware Company

1909 *Ashdown Catalogue*. Ashdown Hardware Co., Winnipeg.

Borden, C.E.

1954 A Uniform Site Designation Scheme for Canada. *Anthropology in British Columbia* 4:44-48.

Bumsted, J.M.

1997 *Floods of the Centuries*. Great Plains Publications, Winnipeg.

Burns, Tammy Elizabeth

1995 Monomineralic Lithic Resources of the Precontact Period in Manitoba, with Special Reference to Monomineralic Quartz. *Manitoba Archaeological Journal*, Vol. 5, No. 1.

Casteel, Richard W.

1976 *Fish Remains in Archaeology and Paleo-environmental Studies*. Academic Press, London.

Chopping, George C.

1978 *Bottles of the Canadian Prairies*. Self-published: George C. Chopping, Spy Hill, Saskatchewan.

Clarke, Arthur H.

1981 *The Freshwater Molluscs of Canada*. National Museum of Natural Sciences, National Museums of Canada, Ottawa.

DePasquale, Dan, Gail DePasquale and Larry Peterson

1990 *Red Wing Stoneware*. Collector Books, Paducah, Kentucky.

Gilbert, B. Miles

1973 *Mammalian Osteo-Archaeology: North America*. Missouri Archaeological Society, Columbia, Missouri.

Guinn, Rodger

1980 The Red-Assiniboine Junction: A Land Use and Structural History. *Manuscript Report Series*, No. 355, Parks Canada. Ottawa.

Henderson Directories

n.d. The City of Winnipeg Henderson Directories (1880 - 2000).

Jones, Olive R. and Catherine Sullivan, *et al.*

1985 *The Parks Canada Glass Glossary*. Environment Canada, Parks Canada, National Historic Parks and Sites Branch.

Kroker, Sid

- 1989 *North Assiniboine Node Archaeological Impact Assessment*. The Forks Renewal Corporation, Winnipeg.
- 1997 Archaeology and Flood Deposits at The Forks, Winnipeg, Manitoba, Canada. In *Proceedings of the North Dakota Academy of Science*. 89th Annual Meeting, September, Vol. 51, Supplement 1. Grand Forks.
- 1999 *Flood Sediments and Archaeological Strata*. www.ijc.org/boards/rrbtf.html.

Kroker, Sid and Pamela Goundry

- 1990 *Archaeological Monitoring of the Stage I Construction Program*. The Forks Renewal Corporation, Winnipeg.
- 1993a *Archaeological Monitoring and Mitigation of the Assiniboine Riverfront Quay*. The Forks Renewal Corporation, Winnipeg.
- 1993b *A 3000 Year Old Native Campsite and Trade Centre at The Forks*. The Forks Public Archaeological Association, Inc., Winnipeg.
- 1994 *Archaic Occupations at The Forks*. The Forks Public Archaeological Association, Inc., Winnipeg.

Manitoba Museum of Man and Nature

- 1986 *Guides and Manuals for Processing Archaeological Materials*. E.L. Syms (Ed.). Winnipeg.

Mundell, Raymond L.

- 1975 *An Illustrated Osteology of the Channel Catfish*. National Parks Service, Midwest Archaeological Center, Lincoln.

Olsen, Stanley J.

- 1960 Post-Cranial Skeletal Characters of *Bison* and *Bos*. Harvard University, Peabody Museum, *Papers of the Peabody Museum of Archaeology and Ethnology*, Volume XXXV, No. 4.
- 1964 Mammal Remains from Archaeological Sites: Part I, Southeastern and Southwestern United States. Harvard University, Peabody Museum, *Papers of the Peabody Museum of Archaeology and Ethnology*, Volume LVI, No. 1.
- 1971 *Zooarchaeology: Animal Bones in Archaeology and their Interpretation*. Addison-Wesley Publishing Co. Inc., Philippines.

Peterson, Murray and Robert J. Sweeney

- 1998 *Winnipeg Landmarks*. Vol. II. Watson & Dwyer Publishing Ltd., Winnipeg.

Quaternary Consultants Ltd.

- 1993 *Archaeological Mitigation of the Johnston Terminal Refurbishment Project*. On file with Marwest Management Canada Ltd. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 1994a *Archaeological Monitoring of Services Installations for the Manitoba Children's Museum at The Forks*. On file with The Forks Renewal Corporation, Manitoba Children's Museum, Winnipeg Hydro, and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 1994b *Archaeological Mitigation at the Travel Manitoba Idea Centre at The Forks*. On file with Manitoba Industry, Trade and Tourism, Travel Manitoba and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 1995 *Archaeological Monitoring of Geo-technical Investigations for the Proposed Manitoba Theatre for Young People at The Forks*. On file with Manitoba Theatre for Young People, DS-Lea Consultants Ltd., and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 1996 *Archaeological Monitoring of the Extension of the Parking Lot Drainage System at The Forks*. On file with The Forks North Portage Partnership and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 1999 *Archaeological Monitoring of the Construction of the Manitoba Theatre for Young People at The Forks*. On file with Manitoba Theatre for Young People and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 2002a *Monitoring of Geo-technical Drilling for the Proposed Hotel at The Forks*. On file with Inn at The Forks, Inc. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.
- 2002b *Archaeological Monitoring and Mitigation of the Parking Structure at The Forks*. On file with The Forks North Portage Partnership and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

Rannie, W.F.

- 1998 *A Survey of Hydroclimate, Flooding, and Runoff in the Red River Basin Prior to 1870*. Geological Survey of Canada, Open File 3705.

Regehr, T. D.

- 1985 Canadian Northern Railways. In: *The Canadian Encyclopedia*. Volume I. James H. Marsh (Ed.). Hurtig Publishers, Edmonton.

Schmid, Elisabeth

- 1972 *Atlas of Animal Bones: For Prehistorians, Archaeologists, and Quaternary Geologists*. Elsevier Publishing Company, Amsterdam.

Speidel, Paul

- 1996 A Parallel-Grooved Avonlea Vessel from The Forks, Winnipeg (DILg-33). *Manitoba Archaeological Journal*. Vol. 6, No. 2.

Stock, R.E.

- 1978 *A History of Carbonated Beverages in Winnipeg*. Rion Enterprises, Winnipeg.

Sussman, Lynne

- 1979 *Spode/Copeland Transfer-Printed Patterns*. Indian and Northern Affairs Canada, Parks Canada, National Historic Parks and Sites Branch, *Canadian Historic Sites: Occasional Papers in Archaeology and History* No. 22.

Tucker, Albert

- 1985 Canadian National Railways. In: *The Canadian Encyclopedia*. Volume I. James H. Marsh (Ed.). Hurtig Publishers, Edmonton.

APPENDIX A
CULTURAL RESOURCE MANAGEMENT PROGRAM
FOR THE PROPOSED INN AT THE FORKS

CULTURAL RESOURCE MANAGEMENT PROGRAM FOR THE PROPOSED INN AT THE FORKS

Submitted by Quaternary Consultants Ltd.
March 2003

The structure will be built in the southeast corner of the paved parking lot, immediately east of the Manitoba Theatre for Young People. It is proposed that cultural resource management can be adequately undertaken during the construction through archaeological monitoring of the various stages of the project, with information from each stage permitting development of appropriate strategies for the subsequent phase.

There is evidence of cultural horizons along Forks Market Road at depths of 150-170 cm, 220-245 cm, and 335 cm below surface with a deeper horizon at 405 cm (Kroker and Goundry 1990:36-40). It is unknown if these extend into the footprint of the structure. The geo-technical drilling program recorded a cultural horizon at 230 cm in the southeast corner of the project area (Quaternary 2002a). Additional evidence of cultural material was obtained during the construction of the Travel Manitoba Idea Centre at a depth of 145 cm (Quaternary 1994). During construction of the Manitoba Theatre for Young People (Quaternary 1999), a sloping level containing flood-disturbed charcoal and decomposed fish bone was observed at 180 to 210 cm. The most recent cultural evidence derives from archaeological monitoring and mitigation of the Parking Structure northwest of this project (Quaternary 2002b). Avonlea/Laurel occupation horizons were recorded at depths between 120 and 145 cm. To the north of the paved parking lot, no cultural evidence has been recorded below the railroad levels within the south section of Festival Park (Quaternary 2000).

The Inn at The Forks is projected to have a moderate crawl space below grade, but the primary structure will be constructed slab-on-pile above the existing grade level. Underlying the slab floor, there will be sequentially grade beams resting on pile caps situated on the piles which will be pre-drilled prior to driving. The pre-boring for piles will be to depths approximating 3 metres with pilecap excavation generally 110-120 cm below existing grade. Thus, grade beam excavation will generally be 30-40 cm below grade. The exception to this will be pilecap excavation below elevator pits which will be slightly greater than 2 metres and excavation for sewer and water installation which will generally be 2.75 metres below grade.

The archaeological monitoring would begin with the first phase of the construction when the holes are drilled for pile seating. Observation of the soil column on the auger bit (12", 14", and 16") will provide evidence of the presence (or absence) of cultural material for the depth of the drilling which is projected to be 10 feet (300 cm). In the event that a cultural horizon occurs at a location and depth which requires mitigation, contingency plans for thawing frozen ground for hand-removal of the cultural horizon by an archaeological team are available.

The archaeological methods would be:

- a. **pile hole drilling:**
 - monitor the excavation soil column.
 - record soil stratigraphy and cultural horizons (if present).
 - recover cultural material from auger bit.

- b. **pilecap excavations:**
 - monitor excavation where defined soils horizons and/or cultural horizons had been recorded during drilling.
 - recover cultural material excavated by backhoe through hand retrieval from excavated soil.

- c. **grade beam excavations:**
 - monitor excavation where defined soils horizons and/or cultural horizons had been recorded during drilling.
 - recover cultural material excavated by backhoe through hand retrieval from excavated soil.

- d. **crawl space and elevator shaft excavations:**
 - if impact of a cultural horizon requires mitigation, either by archaeologically monitored excavation with a small backhoe or by hand excavation by an archaeological team, it will occur while construction proceeds in other portions of the project.

- e. **services installations:**
 - monitor excavation of vertical shafts for water and sewer services.
 - recover cultural material excavated by backhoe through hand retrieval from excavated soil.

With the staged aspect of the construction, it is anticipated that any impact on archaeological resources can be adequately mitigated through a monitoring program. Evidence from the geo-technical drilling (Quaternary 2002a) and previous projects suggests that any cultural horizons will not be so extensive as to encompass the entire footprint. Thus, mitigation within the crawl space excavation area, if required, can be undertaken while other components of the construction are carried out, thereby recovering the cultural data while minimizing down-time.

BIBLIOGRAPHY

Kroker, Sid and Pamela Goundry

1990 *Archaeological Monitoring of the Stage I Construction Program*. The Forks Renewal Corporation, Winnipeg.

Quaternary Consultants Ltd.

1994 *Archaeological Mitigation at the Travel Manitoba Idea Centre at The Forks*. On file with Travel Manitoba, Manitoba Industry, Trade and Tourism and Historic Resources Branch, Winnipeg.

1999 *Archaeological Monitoring of the Construction of the Manitoba Theatre for Young People at The Forks*. On file with Manitoba Theatre for Young People and Historic Resources Branch, Winnipeg.

2000 *Archaeological Monitoring of the Construction Components of Festival Park at The Forks*. On file with The Forks North Portage Partnership and Historic Resources Branch, Winnipeg.

2002a *Monitoring of Geo-technical Investigations for the Proposed Hotel at The Forks*. On file with The Inn at The Forks, Inc. and Historic Resources Branch, Winnipeg.

2002b *Archaeological Monitoring and Mitigation of the Parking Structure at The Forks*. On file with The Forks North Portage Partnership and Historic Resources Branch, Winnipeg.

APPENDIX B
HERITAGE PERMIT



Heritage Permit No. A01-03

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:

conduct an appropriate heritage resource management strategy, as described in the *Cultural Resource Management Program for the Proposed Inn at The Forks* submitted with the Heritage Permit application, which includes the monitoring and mitigating, as necessary, of pile hole drilling, pilecap excavations, grade beam excavations, crawl space and elevator shaft excavations, and installation of subsurface services, in order to record the presence/absence of cultural resources and the soil stratigraphy, and to recover archaeological materials;

during the period:

April 1 – July 31, 2003.

This permit is issued subject to the following conditions:

- (1) That the information provided in the application for this permit dated the 26th day of March 2003, 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:
September 30, 2003;
- (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 heritage objects are to be deposited with the Manitoba Museum by September 30, 2003, for permanent curation and storage, unless appropriate loan requirements are arranged with the Curator of Archaeology prior to that date;
- b. 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;
- c. Neither the Government of Manitoba nor the party issuing this permit shall 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.

Dated at the City of Winnipeg, in Manitoba, this 4th day of April 2003

Donna Durl
Minister of Culture, Heritage and Tourism