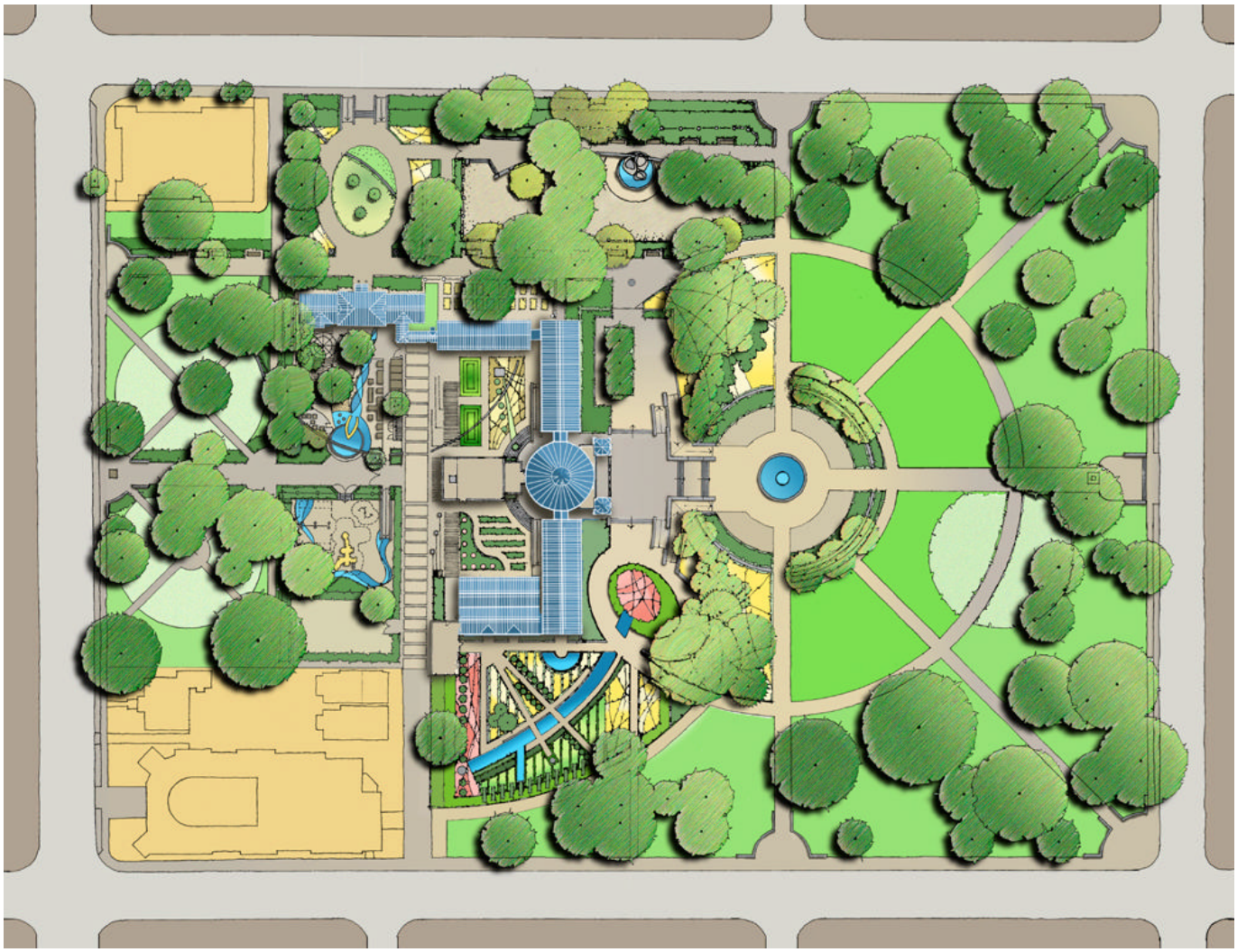
ALLAN GARDENS

LANDSCAPE REVITALIZATION STRATEGY & MANAGEMENT PLAN

CITY OF TORONTO



TECHNICAL APPENDICIES
OCTOBER 2006

STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT OF ALLAN GARDENS
PART OF THE ALLAN GARDENS LANDSCAPE REVITALIZATION
STRATEGY AND MANAGEMENT PLAN
CITY OF TORONTO

DRAFT

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DRAFT

1.0 INTRODUCTION

The firm of Archaeological Services Inc. (ASI) was retained by Mr. Rod MacDonald of The Landplan Collaborative Ltd., to conduct a Stage 1-2 Assessment of Allan Gardens, located in the City of Toronto (Figure 1). The study area is approximately 13 acres in size and is bounded by Carlton Street to the north, Sherbourne Street to the east, Gerrard Street East to the south and on the west by a line that extends north along Horticultural Avenue and then west to Jarvis Street.

Stage 2 fieldwork was conducted from the 21st to 23rd of November, 2005 under the project management of Dr. Ron Williamson, and the field direction of Ms. Eva MacDonald. Fieldwork was conducted in accordance with the Ontario Heritage Act (2005) under an archaeological license P128 issued to Dr. Katherine Hull. Permission to access the study area and perform the Stage 2 assessment was granted by The Landplan Collaborative Ltd.

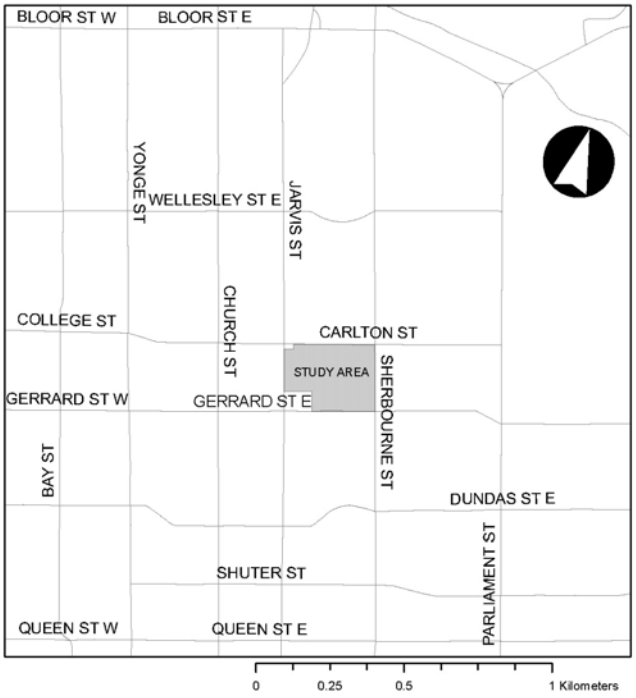

Figure 1: Location of study area in downtown Toronto.

2.0 STAGE 1 BACKGROUND RESEARCH

2.1 Previous Archaeological Research

In order to compile an inventory of archaeological resources for the study area, three sources of information were consulted: the site record forms for registered sites housed at the Ministry of Culture; published and unpublished documentary sources; and the files of Archaeological Services Inc., including the Toronto Archaeological Master Plan.

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD), a database maintained by the Ministry of Culture. This database contains information on archaeological sites registered within the Borden system. The Borden system was first proposed by Dr. Charles E. Borden, and is based on a block of 18.5 kilometres north-south and 13 kilometres east-west. Sites within each block are numbered sequentially as they are found. The study area under review is located in Borden Block AjGu.

Twelve sites have been documented within a two kilometre radius of the subject property. Details regarding these sites are summarized in Table 1 below; the majority are historic Euro-Canadian.

Table 1: Registered Site On or Within 2 Km of the Study Area

Borden #	Site Name	Cultural Affiliation	Site Type
AjGu-1	Taddle Creek	Pre-contact Aboriginal	Undetermined
AjGu-14	Magnetic Observatory	Historic Euro-Canadian	Public Building
AjGu-15	Front Street	Historic Euro-Canadian	Public Building
AjGu-16	Thornton Blackburn	Pre-contact Aboriginal	Campsite
		Historic Euro-Canadian	Homestead
		Historic Afro-American	Schoolyard
AjGu-17	St. James Cathedral	Historic Euro-Canadian	Cemetery
AjGu-18	Sir Adam Wilson	Historic Euro-Canadian	Residence
AjGu-19	Mackenzie House	Historic Euro-Canadian	Residence
AjGu-27	George Brown House	Historic Euro-Canadian	Residence
AjGu-28	Elgin-Winter Garden Theatre	Historic Euro-Canadian	Well
AkGu-1	Withrow	Pre-contact Aboriginal	Settlement and Burial
AkGu-2	The Sandhill	Undetermined	Burial
AkGu-5	Castle Frank	Undetermined	Burial

It should be noted that the dearth of archaeological sites in the immediate vicinity of the subject property is most likely related to the development of the metropolitan area prior to the instigation of systematic archaeological assessments under provincial legislation. Accordingly, the absence of registered archaeological sites should not be taken as an indicator of any lack of Aboriginal or early historic Euro-Canadian land use or occupation.

2.2 Summary of Historical Land Use

The following historical narrative is intended to complement the study of Allan Gardens authored by Commonwealth Historic Resource Management Limited and Ms. Pleasance Crawford (2002), which concentrates on the historical landscape of the east part of Allan Gardens located within former Park Lot 5 in the First Concession From the Bay, York Township. It is Park Lot 5 that contains the present Palm House erected in 1910, as well as most of the formally landscaped portions of the gardens. The narrative in this report largely details the construction and subsequent demolition of private and commercial buildings formerly located on Carleton and Jarvis streets. It therefore provides the historical context necessary for the interpretation of the digital map overlay prepared for this study that illustrates development zones with historical archaeological potential (Figure 2).

The landscape of Allan Gardens has changed considerably from the time when David William Smith (1764-1837), the Surveyor-General of Upper Canada, patented Park Lot 5 on March 6, 1798. Following Smith's return to England, the lot was sold to merchant Duncan Cameron (1765-1838) for £500 in March 1819 (deed 3362). Cameron immediately sold the lot to merchant William Allan (1770-1853) for the same price (deed 3378). Allan, who became one of Toronto's wealthiest inhabitants through his business enterprises and lucrative government connections, built an opulent mansion at the southern end of this Park Lot between 1826 and 1830 which he named "Moss Park."

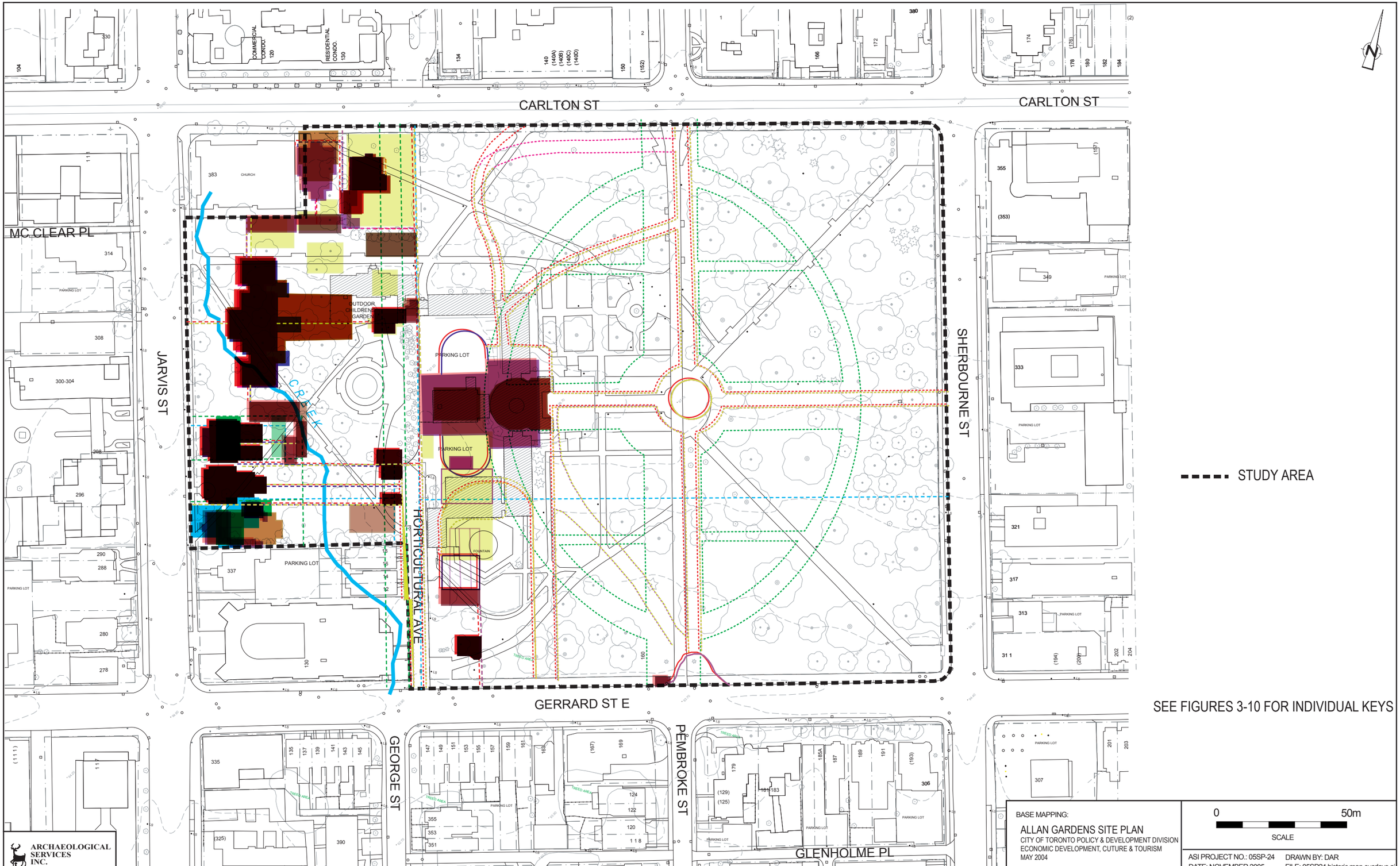

Figure 2: Composite Development Zones within Allan Gardens

Early maps show that much of the land north of the house remained in an uncultivated state. W.H. Pearson wrote a first hand account of this land as it existed during the 1850s:

> In the rear of the house, extending as far back as about half way between Shuter Street and Wilton Crescent, was a very large orchard, some of the apple trees of which are still standing in the yards and lawns of several of the houses on Pembroke Street, and which a few years ago were bearing fruit. Back of the orchard was what might be called the farm, in which I remember there was a field of wheat about 1843 or 1844. A large bush, known as Allan's Bush, extended all the way from Gerrard to Bloor Streets, many of the trees of which are still growing in the Allan Gardens…There was a deep pool somewhere near the corner of Sherbourne and Carlton Streets into which one of my companions threw me, and not being able to swim I was nearly drowned. I really do not know the source of this pool but I certainly have not forgotten the event (Pearson 1914:57).

The Moss Park estate passed from William Allan to his sole surviving son, George William Allan, who began the subdivision of the north end of the Park Lot in May 1855. The focal point of this development was the central plot of ground reserved for a botanical garden, which was donated by Allan to the Toronto Horticultural Society. Two pavilions were erected within the grounds; the first in 1860-1, and the second on the same site in 1878-9. A popular addition with park users was a tiered fountain with a 25 foot diameter stone base that was added in 1879 (CHRML 2002:2-10). An axial system of hard-surfaced paths leading to the fountain and pavilion was maintained by the city after they assumed ownership in 1888 (CHRML 2002:2-12). The second pavilion was destroyed by fire in June 1902, and was replaced by the present day palm house and greenhouses in 1910 (Dendy 1978:152-5). The fountain was removed in 1995 and replaced by a pergola (CHRML 2002:2-24).

Park Lot 6 was patented by William Jarvis (1756-1817), the Secretary of the Province of Upper Canada, on November 1, 1811. Although the patent was issued in 1811, land registry records show that Jarvis mortgaged this land for £100 before he had obtained clear title to it in favour of Elisha Beman (d. 1822), an early store- and tavern-keeper, in April 1804. This mortgage was fully discharged in April 1806. Jarvis subsequently sold this land to his son, Samuel Peters Jarvis (1792-1857), by a deed dated October 8, 1816 (Old York Memorial 2941).

It is not known whether Jarvis made use of this Park Lot for agricultural or any other purposes during the ensuing two decades. Records show that he mortgaged the lands on four occasions (in 1832, 1834 and 1837) in favour of James Gordon and a Niagara merchant by the name of Samuel Street, for slightly more than £1500.

Samuel Peters Jarvis appears to have prepared a formal plan of subdivision (the S.P. Jarvis plan), which covered at least a portion of Block 1, sometime prior to November 1845. Although this plan was never actually deposited on title against the Park Lot, references to deeds in the abstract index clearly demonstrate that Jarvis sold parcels of land to purchasers based upon an actual survey. For example, in November 1845, he sold "Lot 45" on the east side of Jarvis Street to James Callaghan for £156, followed by a sale of "Lots 41, 42, 43, 52 and 53" on the east side of Jarvis Street to William Botsford Jarvis in December 1845 for £742. The high sales price may indicate that Jarvis intended this block to form part of an exclusive enclave of residences.

Within the subject property, the most recent municipal addresses for the structures on the east side of Jarvis Street between Gerrard and Carlton ranged between 341 and 365. A few structures were numbered along the north side of Block 1 as 117 through 121 Carlton Street. The land use history for each municipal address and associated structure(s) will be dealt with below.

117 Carlton Street

This building stood immediately east of St. Andrew's Church on Carlton Street and formed half of a double house (Figure 2). It was originally numbered 109 Carlton Street, but was re-numbered as 117 Carlton sometime between 1886 and 1890. This lot, which measured approximately 157 feet along Carlton Street by 104 feet in depth, was acquired by Frederick W. Jarvis in two parcels. The first was a portion of the Vankoughnet property which he bought in March 1857 (deed 66487) and a second parcel bought from the widow Mary B. Jarvis in February 1858 (deed 71636). The land was undeveloped while in Jarvis' possession, as illustrated on the 1851 Dennis-Fleming plan (Figure 3) as well as on the 1858 Boulton Atlas map (Figure 4).

Jarvis became financially embarrassed and in November 1863 he assigned his property to Matthew C. Cameron "for the benefit of his creditors" (deed 6735 City). The part lot which contained this double house was sold to John Kemp, "mariner" in February 1870 for $882 (deed 1641A). Under the terms of Kemp's will, dated May 1880, his daughter Catherine was to inherit the east half of the lot and his other daughter Elizabeth was to inherit the west half of the lot (deed 14832GR). Elizabeth unfortunately died soon thereafter and her sister, acting as executrix, sold the entire lot to Alexander Reed in July 1890 (deeds 1784R and 1785R). Subsequent owners included John Leys (1891, deed 2456), George Gooderham (1901, deed 17391R), William Gooderham (1910, deed 23038T), David Levine (1912, deed 23137T), William Doidge (1912) and Thomas Doidge (1914, deed 13878O).

City *Directories* show that the building was inhabited by tenants as early as 1875 such as Mrs. E. Miller, widow of Captain J.P. Miller. One of the first detailed maps to illustrate it was the 1882 Goad's Atlas, which illustrated a frame building on the site (Figure 5). A number of small businesses were operated at this location. In 1895, J.N. Munshaw ran a small grocery store at this address, and in 1905 A.A. Simonski was listed here as a "commission merchant." The "Doidge Produce Company" (butchers and grocers) operated here from 1910 to about 1935. Mrs. Edna Doidge operated a boarding house at this address into the 1950s.

119 Carlton Street

The original address for this structure, which formed the other half of a double house, was 111 Carlton. It was re-numbered as 119 Carlton sometime between 1886 and 1890. The history of the land ownership is identical for this property as above.

City *Directories* show that this building was vacant in 1880 but occupied by tenants from 1885 onwards. Alex H. Reed resided here between 1895 and 1900. This building also contained some businesses such as Lyndon Brothers plumbing (1900), Miss E. Lambert, confectioner (1905-1910), Alfred G. Hows, stationery (1915-1920) and Annie Ford, florist (1925.) Chris Pashal operated the "Allan Gardens Tea Rooms" here between 1930 and 1935. From 1940 William and Edna Doidge ran a rooming house here, and the "New York Novelty" and "Spotless Cleaners" operated here between 1940 and 1950.

The *Goad's Atlas* showed that the two storey structure at 117-119 Carlton Street was in existence by 1882, but it was replaced for reasons unknown by a building with a much different footprint- located closer to the street- sometime between 1890 and 1893.

CARLTON ST

CARLTON ST

MC CLEAR PL

JARVIS ST

SHERBOURNE ST

HORTICULTURAL AVE

GERRARD ST E

GEORGE ST

PEMBROKE ST

GLENHOLME PL

CREEK

OUTDOOR CHILDRENS GARDEN

PARKING LOT

FOUNTAIN

CHURCH

COMMERCIAL CONDO. 120

RESIDENTIAL CONDO. 130

140 (140A) (140B) (140C) (140D)

STUDY AREA

Structure

Fence/Property Line

DENNIS & FLEMING 1851

ARCHAEOLOGICAL SERVICES INC.

BASE MAPPING:

ALLAN GARDENS SITE PLAN
CITY OF TORONTO POLICY & DEVELOPMENT DIVISION
ECONOMIC DEVELOPMENT, CUTURE & TOURISM
MAY 2004

0 50m

SCALE

ASI PROJECT NO.: 05SP-24 DRAWN BY: DAR
DATE: NOVEMBER 2005 FILE: 05SP24 historic map overlays.ai

Figure 3: The Allan Gardens Lands in 1851

CARLTON ST

CARLTON ST

MC CLEAR PL

JARVIS ST

SHERBOURNE ST

HORTICULTURAL AVE

GERRARD ST E

GEORGE ST

PEMBROKE ST

GLENHOLME PL

OUTDOOR CHILDRENS GARDEN

PARKING LOT

CHURCH

FOUNTAIN

TREED AREA

STUDY AREA

Brick/Stone Structure

Frame Structure

Path

Fence/Property Line/Lane

BOULTON 1858

ARCHAEOLOGICAL SERVICES INC.

BASE MAPPING:

ALLAN GARDENS SITE PLAN
CITY OF TORONTO POLICY & DEVELOPMENT DIVISION
ECONOMIC DEVELOPMENT, CUTURE & TOURISM
MAY 2004

0 50m

SCALE

ASI PROJECT NO.: 05SP-24 DRAWN BY: DAR
DATE: NOVEMBER 2005 FILE: 05SP24 historic map overlays.ai

Figure 4: The Allan Gardens Lands in 1858

CARLTON ST

CARLTON ST

MC CLEAR PL

JARVIS ST

SHERBOURNE ST

HORTICULTURAL AVE

GERRARD ST E

GEORGE ST

PEMBROKE ST

GLENHOLME PL

CHURCH

OUTDOOR CHILDREN'S GARDEN

PARKING LOT

FOUNTAIN

TREED AREA

STUDY AREA

Brick/Stone Structure

Frame Structure

Glass Structure

Path

Fence/Property Line

GOADS ATLAS 1882

ARCHAEOLOGICAL SERVICES INC.

BASE MAPPING:

ALLAN GARDENS SITE PLAN
CITY OF TORONTO POLICY & DEVELOPMENT DIVISION
ECONOMIC DEVELOPMENT, CUTURE & TOURISM
MAY 2004

0 50m

SCALE

ASI PROJECT NO.: 05SP-24 DRAWN BY: DAR
DATE: NOVEMBER 2005 FILE: 05SP24 historic map overlays.ai

Figure 5: The Allan Gardens Lands in 1882

121 Carlton Street

A large detached brick structure once stood within the study area on the south side of Carleton Street (Figure 2). It was originally numbered as 113 Carlton Street, but was re-numbered as 121 Carlton sometime between 1886 and 1890. The ownership of this property may be traced through the Jarvis family until December 1869, when the land was sold to Abraham Midgeley (deed 1533A). In November 1872, it was bought by William Chapman, commissioner for the Trust and Loan Company (deed 5878A). City Directories show that it was inhabited by Joseph E. McDougall between 1895 and 1900 and John Macdonald in 1905. Physician David A. Clark had his office here between 1910 and 1915.

The Goad's Atlas showed that a large structure existed on this site as early as 1882 (Figure 5). The rear (south end) of the building was modified in 1884, and an additional out-building was erected on the south-east side of the structure between 1890 and 1893. Around 1915-16, 121 Carlton Street was demolished to make way for the "Allan Gardens Apartments" building. The name of this business was changed to the "Carlton Park Hotel" during the early 1930s and by 1945, it was known as the "Carlton Park Manor." During the early 1970s, it was depicted on survey plans as the "Prince Carlton Hotel Limited." This structure became a "gay" bar and hotel, but it was demolished after being damaged in a fire in the 1980s. A period photograph from the City of Toronto Public Works collection shows what is believed to be the newly constructed apartment building (RG8, negative 9.2.3G #764).

341 Jarvis Street

The municipal address for this building has changed during the past 150 years. In 1861, it was numbered 285 Jarvis Street. By 1875, it had been changed to 297 Jarvis Street, and was numbered 341 Jarvis Street sometime between 1884 and 1890. The house which stood at this spot was constructed on Lot 44 of the S.P. Jarvis plan. The land was purchased from Jarvis by John Struthers for £50 in June 1845 (deed 25125), and then sold to the widow Ann Badenach for £500 in June 1849 (deed 34749). Struthers mortgaged the land in 1845 and again in November 1847, which strongly suggests that he constructed the house during the period 1845-47. In any case, the house and a rear structure, possibly a carriage house, were shown on the 1851 Dennis-Fleming plan (Figure 3) as well as on the 1858 Boulton Atlas map (Figure 4). The original house was a 1½-storey brick structure (Figure Figures 5-7), which was either demolished or enlarged and heavily altered after a building permit was issued in February 1899. A comparison of the Goad's Atlas of 1899 and 1903 (Figure 8) shows how different the footprint is for this structure, and the 1910 Atlas (Figure 9) showed that a large structure had been built at the rear (east) end of the lot along Horticultural Avenue. The house was modified structurally again between 1910 and 1923 (Figure 10).

Ann Badenach was probably the widow of Alexander Badenach who was born in Scotland around 1805. It is not known when this couple arrived in Toronto but Alexander was recorded as a member of the Toronto curling team of 1835-36 and sat on the Board of Trade in 1845 (Middleton 1923:504, 742). In 1837, Badenach kept a grocery store at 117 King Street and by 1846, he was listed as a grocer at 66 King Street (Walton 1837:3; Robertson 1898:184). Badenach died in Toronto on March 22, 1849 and was buried in the Potter's Field on March 26. In August of the same year, a son, David Badenach, died from a bowel ailment at the age of 18 months and was also buried at the Potter's Field (Hancocks 1983:4). Ann Badenach continued to reside in this house with her son William until her death, which occurred sometime after February 1865.

CARLTON ST

CARLTON ST

MC CLEAR PL

JARVIS ST

SHERBOURNE ST

HORTICULTURAL AVE

GERRARD ST E

GEORGE ST

PEMBROKE ST

GLENHOLME PL

OUTDOOR CHILDREN'S GARDEN

PARKING LOT

CHURCH

FOUNTAIN

TREED AREA

STUDY AREA

Brick/Stone Structure

Frame Structure

Glass Structure

Path

Fence/Property Line

GOADS ATLAS 1884

BASE MAPPING:

ALLAN GARDENS SITE PLAN
CITY OF TORONTO POLICY & DEVELOPMENT DIVISION
ECONOMIC DEVELOPMENT, CUTURE & TOURISM
MAY 2004

0 50m

SCALE

ARCHAEOLOGICAL SERVICES INC.

ASI PROJECT NO.: 05SP-24 DRAWN BY: DAR
DATE: NOVEMBER 2005 FILE: 05SP24 historic map overlays.ai

Figure 6: The Allan Gardens Lands in 1884

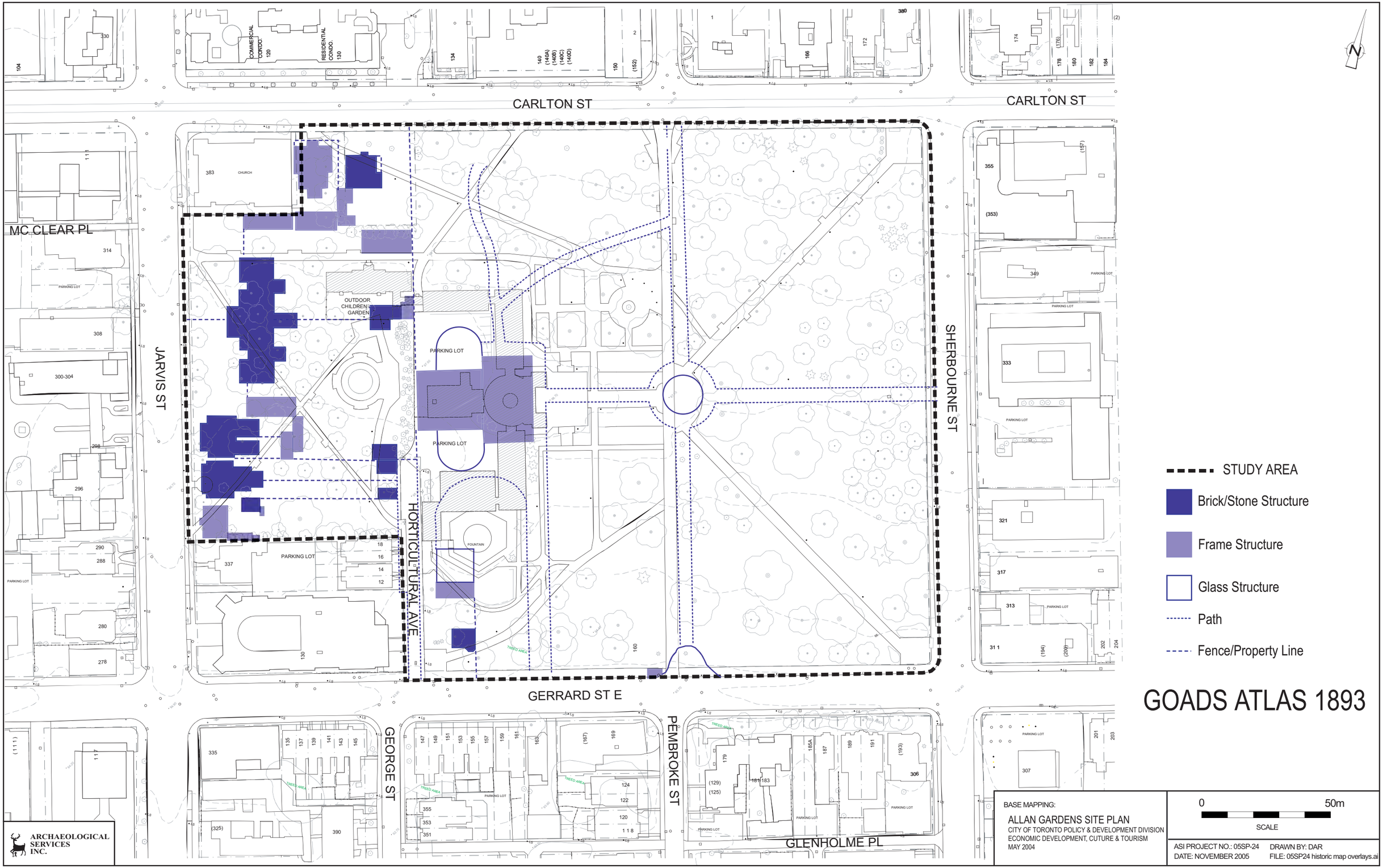

Figure 7: The Allan Gardens Lands in 1893

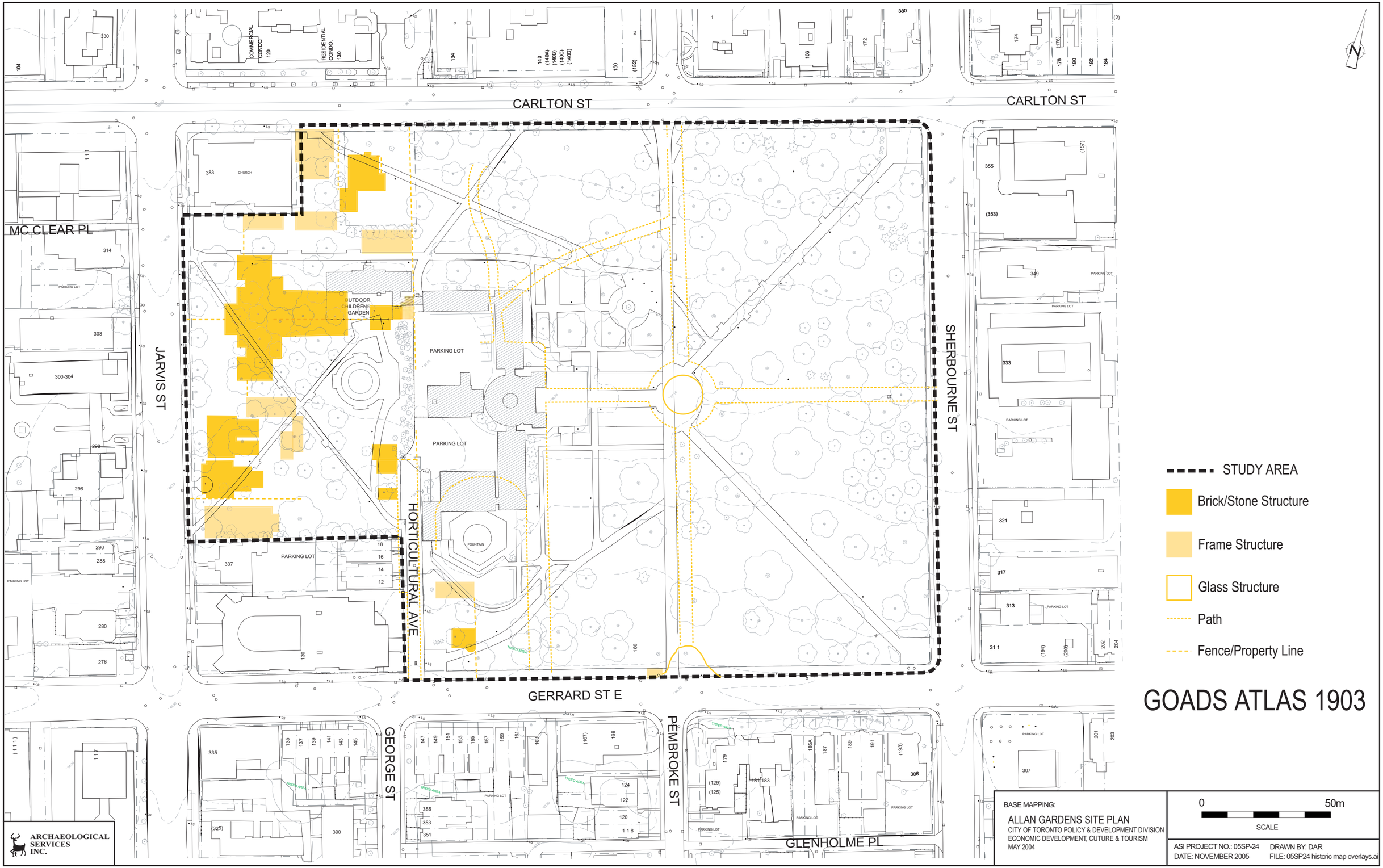

Figure 8: The Allan Gardens Lands in 1903

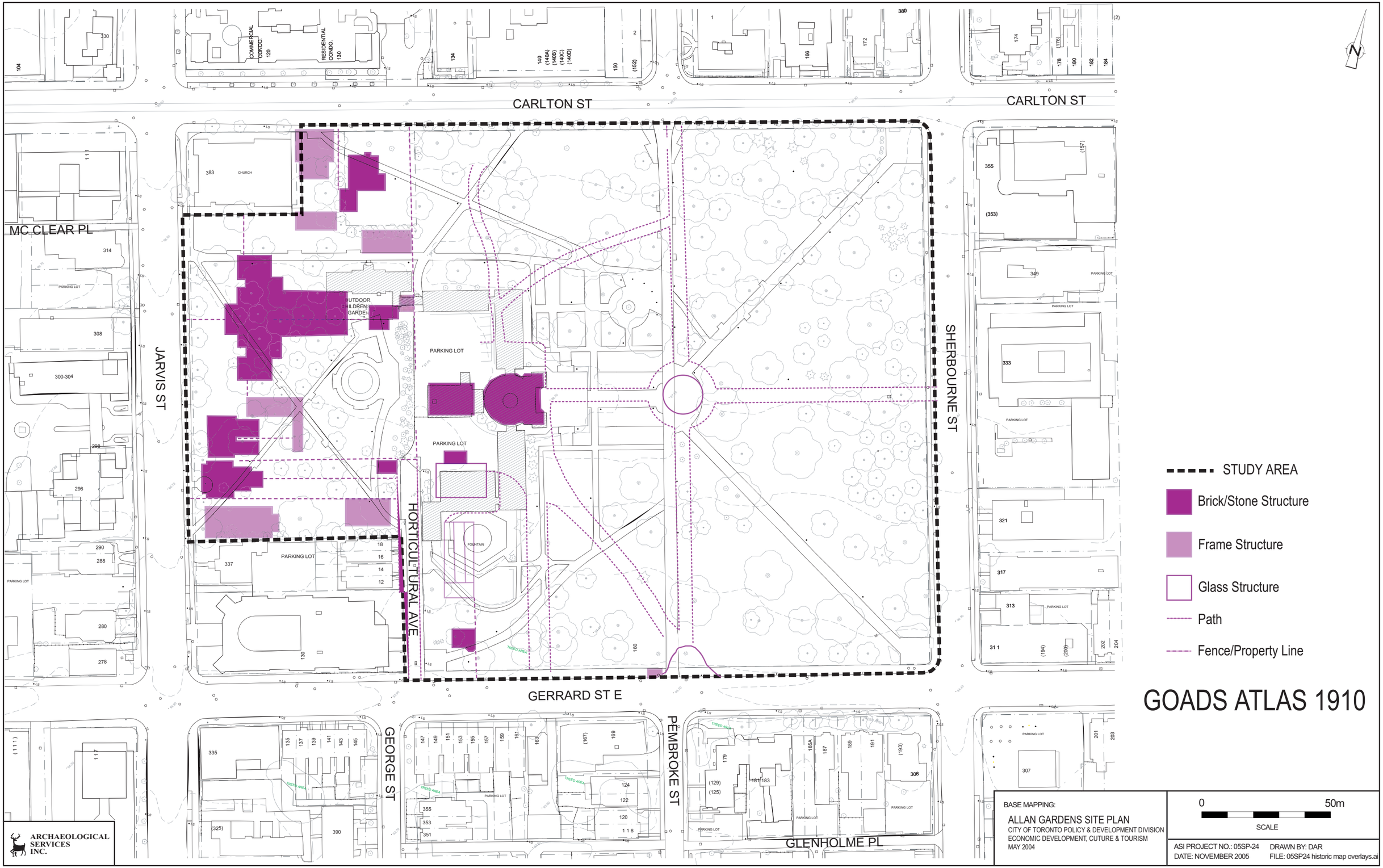

Figure 9: The Allan Gardens Lands in 1910

CARLTON ST

CARLTON ST

MC CLEAR PL

JARVIS ST

SHERBOURNE ST

HORTICULTURAL AVE

GERRARD ST E

GEORGE ST

PEMBROKE ST

GLENHOLME PL

OUTDOOR CHILDRENS GARDEN

PARKING LOT

CHURCH

FOUNTAIN

TREED AREA

STUDY AREA

Brick/Stone Structure

Frame Structure

Glass Structure

Path

Fence/Property Line

GOADS ATLAS 1923

ARCHAEOLOGICAL SERVICES INC.

BASE MAPPING:

ALLAN GARDENS SITE PLAN
CITY OF TORONTO POLICY & DEVELOPMENT DIVISION
ECONOMIC DEVELOPMENT, CUTURE & TOURISM
MAY 2004

0 50m

SCALE

ASI PROJECT NO.: 05SP-24 DRAWN BY: DAR
DATE: NOVEMBER 2005 FILE: 05SP24 historic map overlays.ai

Figure 10: The Allan Gardens Lands in 1923

By the terms of her will, which was registered on title to the land in August 1867, the house and lot passed to John McBride as estate trustee for the benefit of the children of her son Thomas (will 10672). Thomas Badenach was listed in the City Directory as an inhabitant of this house in 1866 (Directory p. 52). In 1868, the house was rented to William H. Miller, a bookkeeper, and in 1870, it was occupied by Thomas McCrosson, a hatter and furrier, and then by Thomas Carroll, a labourer (Directory 1868 p. 57; 1870 p. 194). In March 1872, the house was leased to William Badenach, a hardware merchant, for $80 per annum (lease 5286A) and William secured mortgages on this leasehold in the summer of 1872. In June 1872, Badenach assigned his lease to Thomas McCrossen for $380 per annum (lease 5289A), and the City Directories indicate that McCrossen inhabited the house until at least 1875. In April 1889, the land was sold to William Henry Corry Kerr, Esquire, for $8,000 (deed 3056N) and then in August 1891 to John H. Goulding (deed 2777S). The land was then sold to Francis Edward [Gothraith?] as trustee in April 1911 (deed 43026P). Circumstances concerning a one-fifth interest in this estate are confused between 1902 and 1906; in January 1903, Marion and Kenneth Miller mortgaged a one-fifth interest in the land in favour of John W. Hirst, although Hirst foreclosed upon the Millers as well as the owners of second mortgages in January 1906, and the one-fifth interest was granted to Emily Akers.

Searches of the City Directories show that between 1880 and 1913, the house was occupied by the following tenants: James H. Douglas, merchant (1880, p. 101), Lewis Davis and C. Martin, music teacher (1885, p. 107), Eldridge Stanton (1890, p. 177), Harry Goulding (1895), Frank D. Benjamin (1900), J. Humphrey Anger (1905), Robert W. Errett (1910-1912) and Miss Adelaide Errett (1913). Between 1914 and 1950, the house was the location for the Victor Home for Girls.

On October 1956, a City By-law was passed that authorized the acquisition of 341-347 Jarvis Street "for Public Purposes" (By-law 100934EP). A second By-law was passed in November 1957, which dedicated the lands on the east side of Jarvis Street between Gerrard and Carlton "for Park Purposes" (By-law 106279EP). Demolition permits were not secured by the City of Toronto, although it is probable that the house at 341 Jarvis was demolished in 1956-57.

343 Jarvis Street

This address was not clearly shown on the Goad's Atlas maps until 1903 (Figure 8), at which time it was attached to number 341 Jarvis. Despite this fact, the address was enumerated in the City Directories as early as 1895. Possibly the structure at the rear of 341 Jarvis (i.e., the presumptive carriage house described above) was assigned a municipal address at that time, and was published in the City Directories prior to the 1899 construction activity, which altered the (then) existing structure at 341.

City Directories enumerated the following individuals at this address: Thomas Percival Galt (1895), Mrs. Catherine Ayre (1900), Mrs. Lucy Stuart (1905), Michael Lewis (1910-1915), vacant (1916), Victor Home for Girls (1917-1920), Traveller's Aid (1925), Annie J. Gawley (1930), United Church House (Annie J. Gawley) 1935, United Church House (Gertrude D. Aikenhead) 1940, and United Church House (1945-1950).

In October 1956, a City By-law was passed which authorized the acquisition of 341-347 Jarvis Street "for Public Purposes" (By-law 100934EP). A second By-law was passed in November 1957, which dedicated the lands on the east side of Jarvis Street between Gerrard and Carlton "for Park Purposes" (By-law 106279EP). Demolition permits were not secured by the City of Toronto, although it is probable that the house at 343 Jarvis was demolished in 1956-57.

345 Jarvis Street

The original municipal address for this property in 1861 was 291 Jarvis Street. It was re-numbered as 301 Jarvis sometime between 1870 and 1875, and was changed to 345 Jarvis between 1886 and 1890. City Directories indicate that this land was vacant in 1856, but a double house (numbers 291-293) was shown on the Boulton's Atlas map of 1858 (Figure 4). This early structure was built on what would have been Lot 45 on the S.P. Jarvis plan.

James Callaghan first purchased the land from Jarvis in November 1845 for £156 (deed 26016). Alice Callaghan made an additional purchase of land from the widow Mary Jarvis in April 1860 (deed 3341A). In February 1871, the land was equally divided between Charles Callaghan (north half) and James Callaghan (south half), the sons of James and Alice Callaghan (deed 3159A); they in turn deeded the parcel back to Alice Callaghan in October 1879 (deed 2955NE). In December 1888, a 14-foot strip of land from this parcel was sold to William Badenach (deed 2776S). In May 1901, the lot was sold to Martha A. Callaghan (deed 8704P) and in April 1909 to Ernest Callaghan (deed 14133S). In August 1909, the house passed from the Callaghan family to Albert S. Rogers for $5800, and it remained in his ownership until sometime after 1915.

The house was a two-storey structure with a small outbuilding at the rear lot line along Horticultural Avenue. The back wing of the house appears to have been remodelled at some point between 1858 and 1882, but the Goad's Atlas shows that no further changes were made to the footprint of the structure between 1882 and 1923.

The house appears to have been used as a rental property by the Callaghan family from the time it was constructed. City Directories show that one of the first tenants in the house was Abraham Shack, a cigar and tobacco merchant, who resided here between 1861 and 1868. In 1870, the house was occupied by Samuel Wood, barrister, and in 1875, by Kirkman F. Lockhart, bank cashier. Subsequent residents included Thomas Eldger, accountant (1880), Albert Fanson (1885), H.M. Wells (1890), Dr. John E. Reeve (1895) and Miss Barbara Paton (1900). James Callighan resided here between 1905 and 1920, and Alice Callighan lived in the house until 1927. In 1928, it was taken over by the Traveller's Aid, and from 1940 to 1950 it was part of the United Church House Annex.

In October 1956, a City By-law was passed which authorized the acquisition of 341-347 Jarvis Street "for Public Purposes" (By-law 100934EP.) A second By-law was passed in November 1957, which dedicated the lands on the east side of Jarvis Street between Gerrard and Carlton "for Park Purposes" (By-law 106279EP). Demolition permits were not secured by the City of Toronto, although it is probable that the house at 345 Jarvis was demolished in 1956-57.

347 Jarvis Street

The original address for this structure in 1861was 293 Jarvis Street. It was changed to 303 Jarvis sometime between 1870 and 1875, and re-numbered as 347 Jarvis between 1886 and 1890. City Directories indicate that this land was vacant in 1856, but a double house (numbers 291-293) was shown on the Boulton's Atlas map of 1858. This early structure was built on what would have been Lot 45 on the S.P. Jarvis plan.

S.P. Jarvis sold the land to John Ritchey for £150 in May 1852 (deed 45186). In July of the same year, Ritchey sold the lot to Michael, William, and Patrick Hynes, plasterers, for £208 (deed 45187). The lot was mortgaged for $3000 in September 1869. In March 1875, the lot was sold to merchant George W.

Warner for $6000 (deed 10447A) and in June 1880, Adelaide S. Bowes purchased it for $7500 (deed 3838NE). In January 1882, part of the lot was bought by Elijah Edward Knott for $3750, while the remainder was sold to Knott the following September for $3350 (deeds 6652NE, 7393NE). It appears that Knott was prepared to sell this property to Charles Lindsey, City Land Registrar and son-in-law of William Lyon Mackenzie, in September 1882, but the land was quit-claimed back to Knott in February 1884. In January 1885, the land was sold to John G. Maccarthy, a "Clerk in the Holy Orders" of Thorold, for $8500 (deed 12184NE). Subsequent owners included: John Latimer Kerr (1886, deed 16128NE), A.H. Gilbert (1888, deed 4728A), Frank Foster Telfer, manufacturer of Collingwood (1890, deed 2131P), Lillian Donley (1904, deed 27135P), Elizabeth Blackstock (1905, deed 4360R), and Mary Jane Algeo (1912, deed 10787M).

This house was used for rental purposes throughout its existence. The first known tenant here was Colonel Duncan MacDougall (?), "inspecting field officer" between 1861 and 1862. It was then occupied by the Rev. Horace (or Hoyes) Lloyd, editor of the Canadian Baptist magazine, from 1864 to 1870. City Directories indicate that this house was vacant in 1875. Between 1880 and 1885, it was home to Aaron Friendly, manufacturer. Subsequent residents in this house included William McConnell (1890), Myles and Miss A.A. Pennington, artists (1895), Mrs. Maggie Pettit (1900), Mrs. Ellen Lloyd (1905), Ernest E. Callighan (1910), J. Mackenzie Costigan (1915) and Henry Bolton (1920-1921.) From 1922 until at least 1930, the Traveller's Aid Annex used the house and from 1935 to 1950 it was part of the United Church House Annex.

The house was shown on the Boulton's Atlas map of 1858 (Figure 4). The structure was a two-storey brick house with an outbuilding at the rear lot line adjoining Horticultural Avenue, and appears to have been remodelled with the addition of a back wing sometime before 1882. Minor modifications were made to the back wing between 1910 and 1923 (Figures 9, 10).

In October 1956, a City By-law was passed which authorized the acquisition of 341-347 Jarvis Street "for Public Purposes" (By-law 100934EP). A second By-law was passed in November 1957, which dedicated the lands on the east side of Jarvis Street between Gerrard and Carlton "for Park Purposes" (By-law 106279EP). Demolition permits were not secured by the City of Toronto, although it is probable that the house at 347 Jarvis was demolished in 1956-57.

349 Jarvis Street

The original address for this structure in 1875 was 305 Jarvis, and it was re-numbered as 349 Jarvis sometime between 1886 and 1890. This structure was part of an attached house (numbers 349-351), which was constructed sometime between 1870 and 1875. The property deeds do not make reference to the S.P. Jarvis plan, although this structure was probably built on Lot 47 of that survey. It is not precisely clear when this house was built and who the builder was, since the land was included within the grounds of the Collegiate Institute. It is possible that this structure was built by Frederick Jarvis before the land was sold to the Collegiate Institute and subsequently used as rental housing, or perhaps it was built later and intended for use by Collegiate staff. Further research may shed light on this question.

City Directories show that in 1875, this address was home to Roger Lambe of the firm of R & H Lambe, who helped to organize the Argonaut Rowing Club in 1872 (Middleton 1923:754). In 1880, the house was vacated until 1885, at which time it was occupied by D.P. McLaurin. Subsequent residents here have been J.L. Kerr (1890), Alex Cowan (1895), Miss Frances E. Moody (1900-1905), John F. Birchard (1910), Victor Jefefries (1915), Sadie Wood (1920-1935) and John S. Wood (1940-1950). This building operated as a boarding house during Sadie Wood's tenure in the early 1930s.

The Goad's Atlas shows that an out-building located to the rear of 349 Jarvis Street was demolished sometime between 1903 and 1910 (Figures 9, 10).

351 Jarvis Street

The original address for this structure in 1875 was 307 Jarvis, and it re-numbered as 351 Jarvis sometime between 1886 and 1890. This structure was part of an attached house (numbers 349-351), which was constructed sometime between 1870 and 1875. The property deeds do not make reference to the S.P. Jarvis plan, although this structure was probably built on Lot 47 of that survey. It is not precisely clear when this house was built or who the builder was, since the land was included within the grounds of the Collegiate Institute. It is possible that this structure was built by Frederick Jarvis, before the land was sold to the Collegiate Institute and subsequently used as rental housing, or perhaps it was built later and intended for use by Collegiate staff. Further research may shed light on this question.

City Directories show that in 1875 this house was occupied by Thomas Carre, clerk. In 1880, it was home to George William Warner (of Coleman & Co) and in 1885, it was the residence of A.E. Turner. Subsequent residents included: A.H. Gilbert (1890), Charles L. Kilner (1895), Marshall G. Flick and Miss E. Craig, music teacher (1900), William Donley (1905), Mrs. Eliza Blackstock (1910) and Mary J. Algeo (1915-1940). Mrs. Lottie Lloyd was a resident here between 1945 and 1950. This building was operated as a boarding house by Miss Algeo during the early 1930s.

355-365 Jarvis Street

The original municipal address for this property was 315 Jarvis Street, which was the site of the Toronto High School. This later became known as the Toronto Collegiate Institute, which was re-numbered 355-365 Jarvis Street sometime between 1885 and 1890. In 1925, the building was numbered 361-363, and was named the "Advanced Auxiliary School for Boys and Girls" in Might's City Directory.

This land was part of a larger parcel originally sold by Samuel Peters Jarvis to Philip Vankoughnet in April 1853 for £1276, which originally extended north all the way to Carlton Street (deed 48735). The property deeds do not refer to the S.P. Jarvis plan, although the Collegiate grounds probably occupied Lots 47 to 51 on that survey. It is not clear whether Vankoughnet built any structures on this lot, and in March 1857, he sold the land to Frederick W. Jarvis for £5237 (deed 66487). This was followed by an additional purchase of lands by Jarvis in February 1858 from Mary B. Jarvis, widow of S.P. Jarvis (deed 71636). By November 1863, Jarvis was evidently in financial difficulties, since at that time he assigned his lands to Matthew C. Cameron "for the benefit of his creditors" (deed 6735 City). In January 1870, land was purchased by the Trustees of the Toronto County Grammar School for $8256 (deed 1604A). The school opened and flourished under the direction of the Rev. Archibald McMurchy (M.A.). The corner stone for the new Jarvis Street Collegiate Institute, built slightly to the north at Jarvis and Wellesley, was laid in 1922, and the present building, designed by C.E. Dyson, was completed in 1924. The City Directories show that Thomas Wedlock was the school caretaker during the late 1800s. His job was taken over by Jackson S. Rollock sometime prior to 1920.

Goad's Atlas maps (Figure 5) show that the original Collegiate Institute was a wide two-storey structure facing onto Jarvis Street and set back approximately 50 feet from the street line. The rear of the property, bordering the line between the school and Allan Gardens, contained a one-storey outbuilding. Additions were made to the rear of the school building between 1884 and 1890, and a large new rear wing was completed between 1899 and 1903 (Figures 6-8). Three additional outbuildings were constructed and

modifications made to the first outbuilding between 1910 and 1923 (Figures 9, 10). A long narrow out-building stood on the north side of the Collegiate property abutting the south side of St. Andrew's Church. This structure was in existence in 1882, but was demolished between 1903 and 1910. A new structure was put up in its place between 1910 and 1923. A period photograph from the City of Toronto Public Works collection clearly shows the rear of the structures built along Jarvis Street in December 1913, probably behind the Collegiate Institute. This illustrates vividly how built up the east side of Jarvis Street was, which contrasts dramatically with the open spaces we are accustomed to today (RG8, negative Parks 240). Another photograph of the Palm House, taken in February 1913, shows more of the structures near the Collegiate Institute as well as the school itself (RG8 negative Salmon #541).

The property was one of several acquired by the city between 1956 and 1966, and by 1969 the old Jarvis Collegiate Institute was demolished (CHRML 2002:2-24). The Parks Department developed the new area with plantings, walkways and a fountain (Plate 1).

Conclusions

William Jarvis, the Provincial Secretary of Upper Canada and an important member of Toronto's early governing elite, patented the lands on Park Lot 6 in 1811. Since the main Jarvis residence was located in the Old Town of York, Jarvis did little to improve his 100 acre Park Lot, which he sold to his son before his death in 1817. The onus for developing the lot fell to Samuel Peters Jarvis who, although he was a high ranking official in the Indian Department, was not financially stable. This was not merely due to the social position of his family, but also because of the costs involved in the construction and maintenance of his nearby family home, known as *Hazelburn*. As a result, Jarvis had a survey prepared sometime around 1845, which laid out several large building lots on the east side of Jarvis Street. These lots were sold at a premium to buyers between 1845 and 1853, which ensured that not only did Jarvis realize a profit from the sale, but also guaranteed that the block would be exclusive in character.

The houses built along Jarvis Street beginning in the 1850s were all large at two-storeys, and of brick construction. Some were owner-inhabited and others were rented, but all were occupied by professional men with some social standing in the community. Tucked in among the residences within this block was the Collegiate Institute, which was constructed some two decades later than the neighbouring residential structures. The north end of the block along Carlton Street east of St. Andrews Church was the last area to be developed *circa* 1875 onwards. Since these buildings did not front onto Jarvis Street, small businesses such as grocery stores were permitted there, as well as boarding and rooming houses.

After slightly more than one century of existence, the houses along the west side of the park were expropriated by the City of Toronto and demolished in 1956-57 in order to extend Allan Gardens all the way out to Jarvis Street. Only the hotel on Carlton survived as a downtown landmark until fairly recent times.

Although not illustrated on the Goad's Atlas maps, the rear portions of these building lots would have contained privies, wells, and/or cisterns in addition to exterior sheds. The contents of these rear yard features would be of the most interest archaeologically, as has been demonstrated on urban nineteenth-century historic sites in many cities throughout North America (*cf* Praetzellis and Praetzellis 2004). In particular, refuse deposits tend to accumulate in these types of features when their original function ceases (in the case of wells and cisterns), and when they are in use (privy). Thus, the potential exists to recover objects of every day use to elucidate many aspects of life in downtown Toronto during the last half of the nineteenth century.

3.0 STAGE 2 ARCHAEOLOGICAL ASSESSMENT

The goal of the three day assessment was to determine the presence of any intact archaeological deposits associated with the nineteenth-century houses and outbuildings, buried landscape features, as well as everyday artifacts that may have been in the possession of the people who have used the park as a pleasure ground from the 1850s onwards. It precedes a proposed redevelopment of Allan Gardens that will be restricted to construction within the upper 30 cm of soil on the property. As such, and to expedite the length of time spent on the assessment, given the size of the study area, the field methodology differed slightly from that of a standard Stage 2 shovel test pit assessment, as will be described below.

The archaeological assessment was conducted over a three day period (November 21-23, 2005) under the field direction of Ms. Eva MacDonald. The majority of open land that was not covered in pavement or did not contain a structure was systematically tested at a five metre interval (Figure 11) through the hand excavation of shovel test pits and the soil screened through 6 mm wire mesh to facilitate the recovery of artifacts (Plates 1-6). Test pits were numbered using a grid that referenced a sequential number along the X axis (parallel to Carlton) and a letter along the Y axis (parallel to Sherbourne). Test pits were excavated to a depth of 30 cm and no deeper. The assessment did not cover land rendered inaccessible by brick, asphalt and concrete paving or a built structure (Plate 7).

On the east side of the property, soil profiles were natural, with a sandy loam soil sitting on top of a bright orange sandy subsoil at a depth of 30 cm. Occasionally, a deposit of cinders and gravel was encountered, and the locations of these deposits have been mapped within the grid established for the survey (Figure 11). These deposits were left *in situ* as they may be part of the wider system of former paths in the park. For example, the axial path leading between the Robert Burns statue and the former fountain, as shown on Goad's Atlas maps from 1882 onwards (Figures 5-10), can clearly be traced in test pits (Figure 11). Most test pit profiles on the east side of the property showed subsoil within 30 cm of the surface, however, subsoil was not encountered in Test Pits #45-EE and #47-EE, which may be evidence of deeply dug garden beds. Artifacts such as coins, toys, and window glass (possibly from the greenhouses) were retained as examples of the activities that have taken place in the park (Table 2; Plate 8).

On the west side of the property, the potential for finding historic archaeological remains was high given the history of residential and commercial development from the 1850s onwards. It is not known to what degree deposits of interest are intact, however, after many of the buildings were demolished in the late 1950s and the area landscaped to fit into the park aesthetic. In areas where landscape and demolition fill obscures the natural ground surface, the hand-shovel excavation of test pits was undertaken at judgmental intervals in order to examine soil profiles. Consequently, intensive filling was confirmed by a combination of visual assessment and judgemental test pitting, and no archaeological remains were identified in the top 30 cm of soil on the western portion of the study area between Horticultural Avenue and Jarvis Street, and areas along the northern side and walkways leading up to the Palm House. Test pits placed judgmentally in the open spaces adjacent to Jarvis Street (Plates 1, 5), and north of the green houses along Carleton (Plate 4), revealed that fill has been used to landscape these areas subsequent to the demolition of structures (Figure 11). These test pits were excavated to a depth of 30 cm and did not reach subsoil or any *in situ* features.

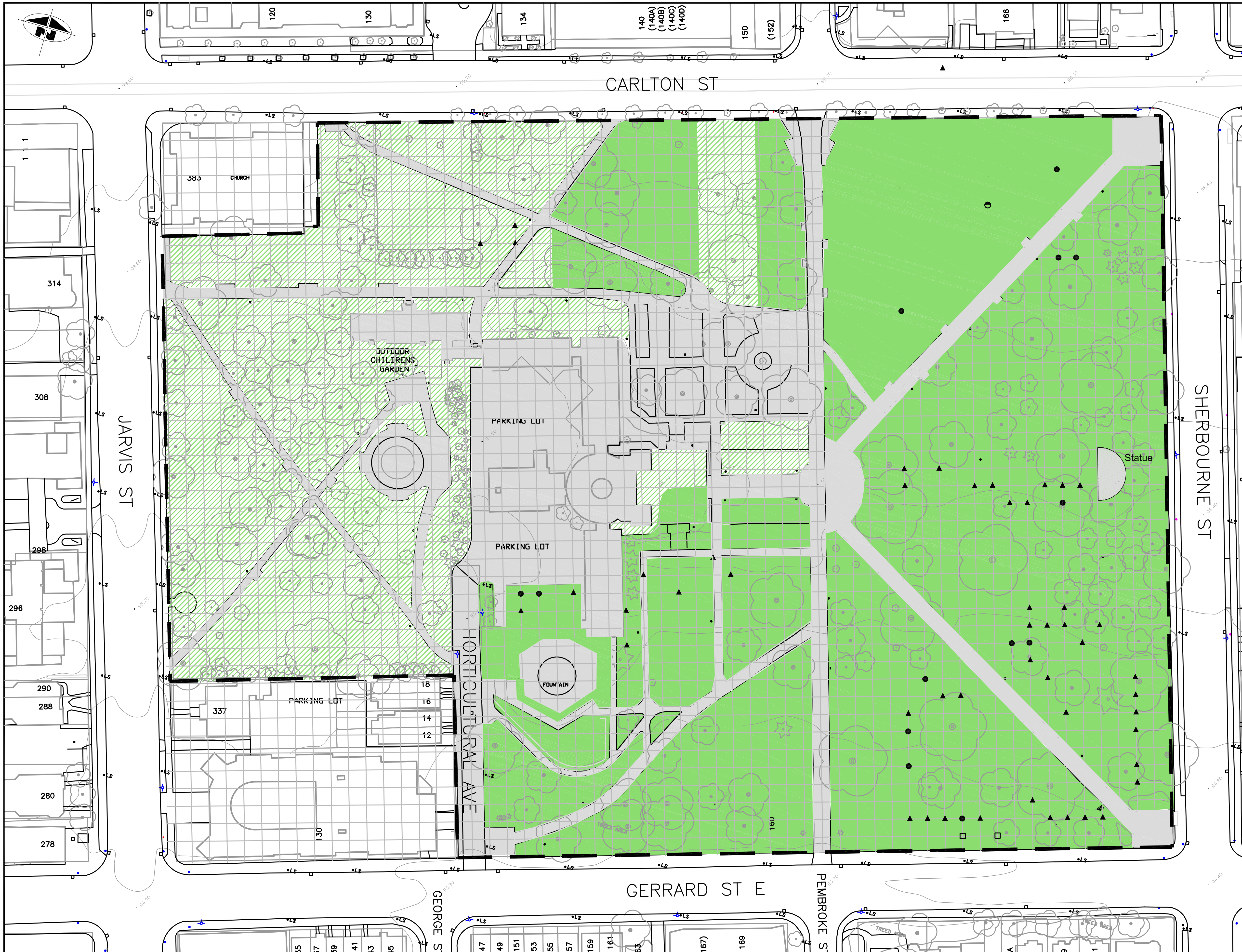

Figure 11
ALLAN GARDENS
SITE PLAN

RESULTS OF
ARCHAEOLOGICAL
ASSESSMENT

LEGEND

- POSITIVE TESTPIT
- HARDPACKED ASH & GRAVEL HORIZON BELOW TOPSOIL
- NO SUBSOIL WITHIN 30cm OF SURFACE
- DISTURBED PROFILE
- TESTPITTED @ 5m INTERVAL
- FILL - TESTPITTED JUDGEMENTALLY
- AREA NOT TESTED
- STUDY AREA BOUNDARY

Base Plan Prepared By:
TORONTO POLICY & DEVELOPMENT DIVISION Economic Development, Culture & Tourism

0 50m
SCALE

Archaeological Services Inc.
January 19, 2006
Drawn By: A.C.
File: AllanGdnsSitePlan_figure3

Table 2: Allan Gardens Catalogue

Cat. #	Test Pit #	Layer	Qty	Material	Artifact Type	Ware	Motif	Form	Comments
H1	Test Pit #: 20-AA	Layer: topsoil	1	Ceramic	Teaware	RWE	Unidentified	Saucer	body / footring fragment, interior mostly exfoliated
H2	Test Pit #: 20-AA	Layer: topsoil	1	White Ball Clay	Smoking Pipe				inmold manufactured bite, plain
H3	Test Pit #: 21-AA	Layer: topsoil	1	Stoneware	Container - Ink				glazed inkwell
H4	Test Pit #: 42-AA	Layer: topsoil	1	White Ball Clay	Smoking Pipe				plain
H5	Test Pit #: 42-AA	Layer: topsoil	1	Parian Ware	Marble				white marble
H6	Test Pit #: 42-Y	Layer: topsoil	1	Shell	Button				2 hole sew through, plain
H7	Test Pit #: 43-K	Layer: topsoil	1	Glass	Marble				blue glass with white swirls
H8	Test Pit #: 43-V	Layer: topsoil	1	Metal - Composite	Coin				'United States of America' - 5 cent coin
H9	Test Pit #: 45-DD	Layer: topsoil	1	Ceramic	Tableware	Ironstone	Undecorated	Holloware	
H10	Test Pit #: 45-DD	Layer: topsoil	2	Glass	Window Glass				
H11	Test Pit #: 48-T	Layer: topsoil	1	Metal - Composite	Button				coat button, 2 piece, insignia: 'Canada / honi-soit-qui-mal-y-pense' with crown and maple leaf
H12	Test Pit #: 49-T	Layer: topsoil	2	Ceramic	Tableware	RWE	Undecorated	Flatware	
H13	Test Pit #: 51-C	Layer: topsoil	1	Glass	Window Glass				
H14	Test Pit #: 51-H	Layer: topsoil	1	Ceramic	Tableware	Unidentifiable	Undecorated	Unidentifiable	
H15	Test Pit #: 51-H	Layer: topsoil	1	Glass	Window Glass				
H16	Test Pit #: 51-O	Layer: topsoil	1	Ceramic	Teaware	Semi-porcelain	Undecorated	Saucer	
H17	Test Pit #: 51-P	Layer: topsoil	1	White Ball Clay	Smoking Pipe				plain
H18	Test Pit #: 52-H	Layer: topsoil	1	Ceramic	Tableware	Semi-porcelain	Undecorated	Holloware	
H19	Test Pit #: 52-H	Layer: topsoil	1	Stone	Other				black gaming piece

4.0 SUMMARY AND CONCLUSIONS

The Stage 1 archaeological assessment of the Allan Gardens Landscape Revitalization Strategy and Management Plan, in the City of Toronto, Ontario, has determined that no previously registered archaeological sites are located within the limits of the subject property.

The land use history prepared for the assessment indicated that sometime around 1845, several large building lots were laid out on the east side of Jarvis Street. These lots were sold by Samuel Peters Jarvis at a premium to buyers between 1845 and 1853, which ensured that not only did Jarvis realize a profit from the sale, but also guaranteed that the block would be exclusive in character. The north end of the block along Carlton Street east of St. Andrews Church was the last area to be developed *circa* 1875 onwards. Since these buildings did not front onto Jarvis Street, small businesses such as grocery stores were permitted there, as well as boarding and rooming houses. The rear portions of these building lots would have contained privies, wells, and/or cisterns in addition to exterior sheds. The contents of these rear yard features would be of the most interest archaeologically, as refuse deposits tend to accumulate in these types of features when their original function ceases (in the case of wells and cisterns), and when they are in use (privy). Thus, the potential exists to recover objects of every day use to elucidate many aspects of life in downtown Toronto during the last half of the nineteenth century.

The Stage 2 assessment was confined to open space within the park, and hand shovel test pit depths did not exceed 30 cm as proposed redevelopment will be confined to this soil zone. It was determined that buried landscape features in the form of hard-packed cinder and gravel paths are extant in Allan Gardens within 30 cm of the surface of the present grade. Isolated find spots of window glass, coins, toys, and a complete stoneware ink bottle were also documented but not in sufficient quantities to indicate the presence of an archaeological site (i.e., midden feature).

Other buried features may exist over 30 cm below the surface of the present grade, especially where landscape fill was judgementally test-pitted on the west side of the property along Jarvis Street and the northwest portion adjacent to Carlton Street.

It is therefore recommended that:

1. Prior to any redevelopment of open space within the park where buried cinder and gravel path features have been documented (see Figure 11), a Stage 3 archaeological assessment should be conducted to define the nature and extent of the landscape feature.

2. Should future redevelopment plans include the removal of paving or the significant alteration of semi permanent landscape structures such as the garden pergola, these actions should be monitored by a licensed archaeologist. If former features are exposed, for example the stone fountain base, the archaeologist must be allowed time to investigate the feature, make a measured drawing, and photograph it for posterity. Such documentation may also allow for placement of a new fountain in a manner similar to that of the original.

3. Should future development plans include construction below 30 cm of the present grade within the historic development zone on the west part of Allan Gardens, it should be preceded by a Stage 3 archaeological assessment. This assessment should include backhoe trenching or a coring programme that addresses the deeply buried nature of potential archaeological deposits.

4. In the event that deeply buried archaeological remains are encountered on the property during construction activities, the Heritage Operations Unit of MCL should be notified immediately. A licensed archaeologist must be present should material such as cut stone, brick rubble, mortar, stone footings, wood and associated artifacts be encountered. In such cases, stoppage of the construction work will be required for as long as the archaeologist deems necessary in order to evaluate the significance of any such archaeological remains and to develop an appropriate mitigation strategy.

5. The above recommendations are subject to Ministry approval, and it is an offence to alter any archaeological site without Ministry of Culture (MCL) concurrence. No grading or other activities that may result in the destruction or disturbance of any of the archaeological sites documented by this assessment are permitted until notice of MCL approval has been received.

6. Furthermore, in the event that human remains are encountered during construction, the proponent should immediately contact both the MCL, and the Registrar or Deputy Registrar of Cemeteries at the Policy & Consumer Protection Services Division of the Ministry of Consumer and Business Services, (416) 326-8404.

The documentation related to the archaeological assessment of this project will be curated by Archaeological Services Inc. until such a time that arrangements for their ultimate transfer to Her Majesty the Queen in right of Ontario, or other public institution, can be made to the satisfaction of the project owner(s), the Ontario Ministry of Culture, and any other legitimate interest groups

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6.0 PHOTOGRAPHIC PLATES

Plate 1: Looking southeast towards the fountain complex.

Plate 2: Looking north from Gerrard Street**.**

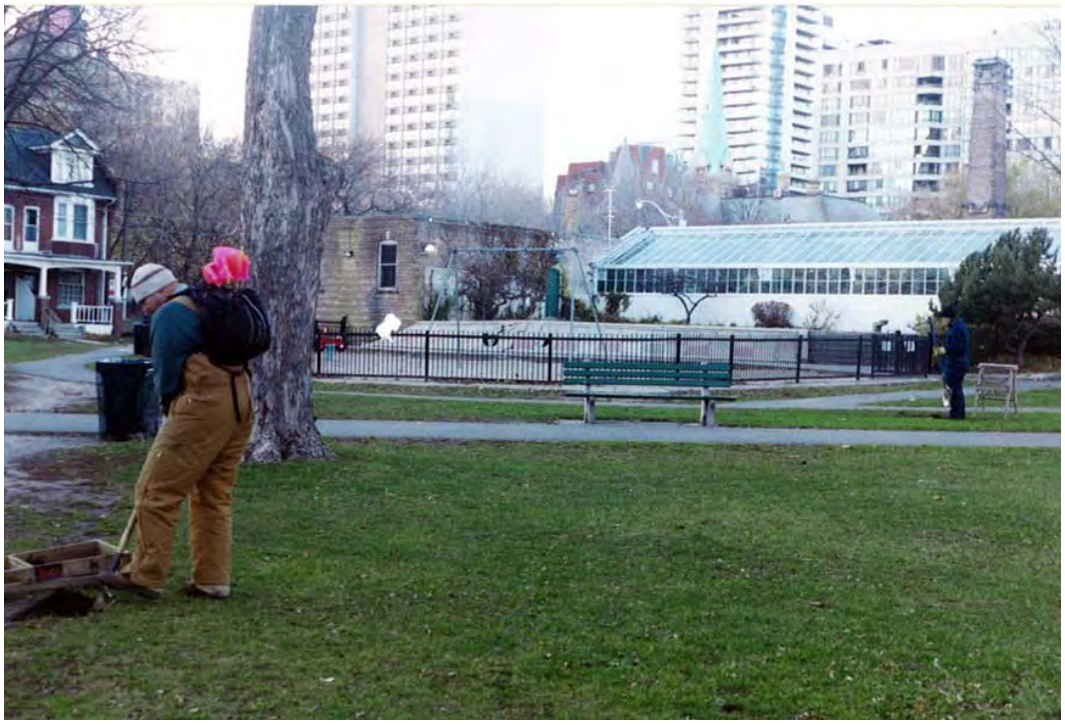

Plate 3: Children's Play Area - Looking northwest from Gerrard Street.

Plate 4: Flat Park Area - Looking north towards Carleton Street.

Plate 5: Looking northeast towards greenhouse complex.

Plate 6: Test pitting the east side of the park along Sherbourne Street.

Plate 7: Looking north along pathway from Gerrard Street to Carlton Street.

Plate 8: Select artifacts from Allan Gardens. A: Cat. #H3: Test Pit #: 21-AA, B: Cat. #H5: Test Pit #: 42-AA, C: Cat. #H7: Test Pit #: 43-K, D: Cat. #H8: Test Pit #: 43-V, E: Cat. # H11: Test Pit #: 48-T and F: Cat. #H19: Test Pit #: 52-H

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21 June 2006
File: **05105**

By E-mail Only (Total 5 Pages)

The Landplan Collaborative Ltd.
319 Woolwich Street
Guelph, Ontario
N1H 3W4

Attention: **Rod MacDonald**, OALA, FCSLA

Dear Sir:

Re: **Functional Servicing Report**
Allan Gardens Landscape Revitalization Strategy and Management Plan
City of Toronto

Valdor Engineering Inc. has been retained by the City of Toronto, in conjunction with the Landplan Collaborative, to review the existing and potential future site servicing for Allan Gardens. Allan Gardens is a municipal park, approximately 5.4 hectares in area, and is located at 160 Gerrard Street. The site is bounded by Carlton Street on the north, Sherbourne Street on the east, Jarvis Street on the west and Gerrard Street on the south. This brief letter report discusses the water, sanitary and storm servicing for the site. The existing services on and around the site have been illustrated schematically on Figure 1.

1.0 WATER SUPPLY

Existing Servicing

The Allan Gardens Conservatory building is presently serviced by an existing 150 mm diameter watermain on Horticultural Avenue. This single feed provides supply for the various uses within the Conservatory and the surrounding gardens including, washrooms, interior and exterior irrigation, fire sprinkler systems and general use.

Fire protection is presently provided by an automatic sprinkler system within each of the Conservatory buildings and fire hydrants located on Horticultural Avenue and the perimeter streets.

Proposed Servicing

The existing 150 mm diameter watermain should be sufficient to meet the supply demands of the new water features that may include:

? *Reinstatement of the central fountain*: To be serviced from existing water supply line in the utility tunnel under the Palm House. Previously, five fountains were serviced from this location.

- *Water feature south of Conservatory building*: To be serviced from existing water supply line to the children's wading pool.
- *Fountain and/or water play feature west of the Conservatory building*: To be serviced from existing water supply line to the water fountain or a new supply line can be extended from the boiler room.
- *Park Irrigation*: The existing park has a number of hose bibs that can be used for portable irrigation methods or new irrigation lines can be extended from the existing water supply lines located in the utility tunnels.

It should be noted that Section 3.2.5.7 of the Ontario Building Code (1997) requires that: *"Hydrants shall be located within 90 m horizontally of any portion of a building perimeter which is required to face a street in Subsection 3.2.2."* We have determined that the existing hydrants on Horticultural Avenue and one hydrant on Carlton Street are less than 90 m to a majority the Conservatory building face. There is however, approximately 40 m of building face at the front of the Palm House that is greater than 90 m from the nearest hydrant. It should be confirmed during the design stage whether an additional hydrant is required near the front of the Conservatory.

A 1200 mm diameter watermain crosses the property in front of the Palm House, under the existing pedestrian walkway that extends from Pembroke Street at Gerrard Street East to Homewood Avenue at Carlton Street. The location of this watermain may impact the location for the proposed reinstatement of the central fountain.

2.0 SANITARY SEWERS

Existing Servicing

The Allan Gardens Conservatory building is presently serviced by an existing 225 mm diameter combined sewer on Horticultural Avenue. This connection provides for sewage disposal for the various uses within the Conservatory including, washrooms, interior floor drains and various sump pumps.

Proposed Servicing

The existing 225 mm diameter combined sewer connection should be sufficient to meet the supply demands of the new features requiring a sanitary connection that may include:

- *Reinstatement of the central fountain*: The fountain drain should be connection to the existing sanitary drain pipe in the utility tunnel under the Palm House. The existing drain pipe may have to be replaced with a larger diameter within the easterly portion of the tunnel.
- *Water feature south of Conservatory building*: To be serviced from existing sanitary drain pipe from the children's wading pool.
- *Fountain and/or water play feature west of the Conservatory building*: To be serviced from existing sanitary drain pipe from the water fountain.

It is not expected that the building will be expanded; therefore, sanitary sewage generation is not expected to change significantly.

3.0 STORM DRAINAGE

Existing Servicing

The primary storm drainage mechanism on the site is overland sheet drainage. The site topography falls moderately from north to south. The vertical relief across the site is approximately six metres or 3%.

There are three separate storm drainage areas (refer to Figure 1) on the site.

1. The most westerly drainage area includes Horticultural Avenue, the Conservatory parking area, the maintenance yard and the park area west of the Conservatory. Stormwater runoff from these areas is captured by catchbasins located within Horticultural Avenue that appear to be connected to the 225 mm diameter combined sewer.
2. The northerly drainage area includes an area north of the Conservatory, plus the garden area immediately northeast of the Palm House. Stormwater runoff from these areas is captured by two catchbasins located northeast of the Palm House. One catchbasin is particularly close to the Conservatory and may result flood the building should it become blocked.
3. The primary drainage area includes areas east of the Conservatory, a majority of which sheet drains to Gerrard Street. There is a catchbasin in the central plaza east of the Palm House, which may be connected to two additional catchbasins located north of Gerrard Street east of the main north-south walkway.

Existing storm sewers have been difficult to locate due to the lack of on-site servicing drawings. The overall servicing drawings provided by the City of Toronto for the surrounding streets do not indicate storm sewer connections to the Allan Gardens site. At present, we have assumed that the catchbasins at northeast of the Palm House drain westerly to either the 900 mm diameter storm sewer or 900 x 1350 mm elliptical combined sewer on Jarvis Street. We have also assumed that the catchbasins east and south of the Palm House drain southerly to either the 1880 mm diameter storm sewer or the 375 mm combined sewer on Gerrard Street. It will be of concern if it is established that storm drainage is routed to the combined sewer network on the bordering streets.

Proposed Servicing

The proposed master plan concept does not propose any significant alterations to the site imperviousness or grading; therefore, preservation of the existing sheet drainage function is highly recommended. There is however an opportunity to properly locate and improve the reliability of the on-site storm sewer system. We recommend that the following activities and drainage concepts be employed:

1. Undertake a camera inspection of the on-site storm sewers to evaluate the structural integrity, confirm the sewer locations and sizes and identify the connection points to the municipal storm sewer on the adjacent streets.
2. Avoid additional catchbasins or an increase in drainage area to the existing combined sewer on Horticultural Avenue, where possible.
3. Employ a swale and catchbasin system along the northerly side of the Conservatory to properly capture and convey surface runoff away from the building. The existing storm sewer system that is assumed to outlet to Jarvis Street can be utilized, if it has sufficient capacity and is in good condition.

4. Establish sheet flow conditions east of the Palm House and around the proposed central fountain. Utilize catchbasins only where necessary.
5. The existing storm sewer connection to the 1880 mm diameter storm sewer on Gerrard Street should continued to be utilized unless it has insufficient capacity or is connected to the combined sewer.
6. In the event that the northerly storm sewer is in poor condition or of inadequate size, it may be desirable to consolidate the on-site storm sewer system from Areas 2 and 3 (refer to Figure 1) with a single connection to the existing 1880 mm diameter storm sewer on Gerrard Street.

3.0 SUMMARY

This functional servicing report outlines water supply, sanitary sewers and storm drainage for the Allan Gardens Conservatory site. Our review has determined that:

1. Adequate water supply is available for the site. In large, existing supply connections can be reused for the proposed water features. Fire protection for the outside of the building should be reviewed.
2. The existing sanitary sewer is adequate for the site. In large, existing sanitary connections can be reused for the proposed features. It is not anticipated that sewage generation will increase substantially.
3. The primary storm drainage mechanism is overland sheet flow to the adjacent streets. The existing storm sewer system along the north and east side of the Conservatory is not well documented. The storm sewers should be camera inspected. It is recommended that the storm sewer system be upgraded to adequately direct surface runoff away from the north face of the Conservatory. Existing storm sewers shall be used unless they are in poor condition or of insufficient capacity.

Respectfully submitted,

VALDOR ENGINEERING INC.

Glen W. Thoman, M.A.Sc., P.Eng.

Enclosures

s:\projects\2004\04113\correspondence\may 2004\landplan.doc

CARLTON ST

GERRARD ST E

JARVIS ST

SHERBOURNE ST

HORTICULTURAL AVE

383 CHURCH

355

(353)

333

321

317

313

314

308

290

288

280

278

337 PARKING LOT

OUTDOOR CHILDRENS GARDEN

EX.FOUNTAIN

MAINTENANCE YARD

EX. PARKING LOT

PROPOSED CENTRAL FOUNTAIN

EX. WADING POOL

600mm R.C.P. Stm. Sewer

600mm x 900mm E.S.Br. Comb. Sewer

300mm Water Main

450mm R.C.P. Stm. Sewer

500mm A.C.P. Stm. Sewer

375mm V.P. Comb. Sewer Aband'd

600mm R.C.P. Comb. Sewer in 1500mm Tunnel Liner

1200mm Water Main

750mm R.C.P. Stm. Sewer

825mm R.C.P. Stm. Sewer

525mm V.P. Comb. Sewer

T.W.W. Meter Chamber

150mm Water Service

900mm R.C.P. Stm. Sewer

150mm Water Main

900mm x 1350mm E.S.Br. Comb. Sewer

TO JARVIS ST. ?

STM

CB

Diversion Structure

1880mm Conc. Stm. Sewer

300mm V.P. Comb. Sewer

225mm V.P. Comb. Sewer

Private Drain

375mm V.P. Comb. Sewer

900mm Water Main

TO GERRARD ST. ?

1880mm R.C.P. Stm. Sewer

450mm V.P. Comb. Sewer

2030mm Conc. Stm. Sewer

300mm Water Main

HYD.

99.00

98.00

97.00

96.00

95.00

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
661 CHRISLEA ROAD, SUITE 11, WOODBRIDGE, ONTARIO, L4L 8A3
TEL (905)264-0054, FAX (905)264-0069
E-MAIL: info@valdor-engineering.com
www.valdor-engineering.com

ALLAN GARDENS
LANDSCAPE REVITALIZATION STRATEGY AND MANAGEMENT PLAN

EXISTING SERVICES PLAN
(SANIATRY, STORM AND WATERMAIN ONLY)

DRAWN BY:	CHECKED BY:	DATE:
L.S.	G.W.T.	JUNE,2006
SCALE: 1:1000	PROJECT: 05105	DWG. FIGURE-1

MJS CONSULTANTS INC

200-7305 WOODBINE AVENUE
MARKHAM, ONTARIO
L3R 3V7
416-402-1525
Fax: 416-705-5847

August 31, 2006

The Landplan Collaborative Ltd.
Landscape Architects
319 Woolwich Street
Guelph, Ontario
N1H 3W4

Att: Mr. Rod MacDonald

Re: Allan Gardens Park - TORONTO
Electrical Supply and Distribution Summary

EXISTING POWER SERVICING & DISTRIBUTION

The existing electrical power distribution is supplied to the Allan Gardens site by Toronto Hydro Distribution Inc., overhead from their distribution grid located on the south side of Gerrard Street East. There are two overhead secondary circuits routed north from Gerrard on the east side of Horticultural Avenue on concrete combination street light/distribution poles. There is a 600 volt 4-wire quad cable and a 120/240 volt 3-wire triplex cable. The 120/240 volt single phase circuit provides power overhead to the residences at #12, #14, #16 and #18 Horticultural Avenue, the administration building and the boiler room.

The City of Toronto presently has four separate power supplies to the Allan Garden facility. Three of the services are each metered separately and there is one flat-rate park walkway lighting circuit.

The 600 volt overhead quad supplies power to a 100 Amp 600/347 volt 3-phase, 4-wire main service located in the basement level of the boiler room. This service is metered with Toronto Hydro kW/hr-demand meter #TH9063397. There is a 100 Amp 120/240 volt 3-wire main service located in the same electrical service area of the boiler room basement and is metered with Toronto Hydro kW meter #TH77298.

There is a 100 Amp 120/240 volt 3-wire main service metered with Toronto Hydro kW meter #TH9027543 located in the basement of the administration building on the east side of Horticultural Avenue.

The 120 volt 2-wire flat-rate park walkway lighting circuit is supplied overhead to the park lighting from a service pole immediately northwest of the administration building. This circuit provides power to the walkway lighting on the west side of the park only. The balance of the park walkway lighting is supplied from the 100 Amp 120/240 volt service located in the boiler room. The existing and the proposed park exterior lighting systems represent an insignificant portion of the overall energy load requirements for the facility.

It should be noted that with four separate power supply services on the Allan Gardens site, all electrical maintenance personnel must exercise extreme caution when servicing the electrical systems to avoid the risk of a serious injury. It would be natural for an electrical service person to expect that by isolating (disconnecting) the power at the main switch that the circuits would be safe to work on. The particular circuit that they were required to repair could originate from one of the other *still energized* (live) services. This could create the potential for a serious or even fatal accident.

PROPOSED POWER SERVICING & DISTRIBUTION

It is recommended that Phase I of this project would include a new power service distribution system for the complete site, that would upgrade the service size to accommodate the new power supply requirements, consolidate the four power services into one main service with one meter and to eliminate the unsightly overhead distribution cables. The phasing of the architectural portion of the project master plan will predetermine the best possible electrical infrastructure concept. The new 400 Amp 600/347 volt main service would originate from the south on Gerrard Street. The new 400 Amp 600/347 volt main service upgrade is required to provide power for the increased loads to accommodate the proposed mechanical equipment for the water features and fountains, the additional park exterior lighting, the special event power as well as the existing service loads. In both scenarios, a new 120/240 volt underground power distribution system would have to be constructed by Toronto Hydro to supply power to the four residences on the west side of Horticultural Avenue as part of the service upgrade project. The new power distribution system to re-feed the four residences could cost forty-five thousand dollars plus GST depending on the Toronto Hydro charges. This work would not be required if the four residences are removed prior to the implementation of Phase I of the master plan for the facility.

Scenario #1

This scenario would be the recommended option from a financial and an electrical servicing supply standpoint but it would be contingent upon the construction of the mechanical room south of the conservatory as part of Phase I work. The construction size of the south mechanical room could be designed to accommodate the new main electrical room as a joint-use room. The main service equipment with the one (only) Toronto Hydro meter would be located inside this proposed mechanical/electrical room. This would provide a direct, soft landscaping route to Gerrard Street for the installation of the new underground service supply conduits and cables. The 600 volt secondary conduit/cables would then be surface mounted through the existing tunnel system to back feed the existing electrical service equipment in the boiler room. The new power service could be constructed and energized with the existing services remaining energized so that there would be a minimal amount of power service change-over and shut-down time. Possibly only one day would be required to isolate and disconnect the two original, then redundant electrical services in the boiler room and to re-connect the power services to the new electrical service supply feed.

If the east mechanical room is to be constructed as part of Phase I, an additional sub-service conduit/cable feed would be installed either underground through the soft landscaping to the east and north or through the existing tunnel system. This sub-service would provide sufficient power for the fountain equipment east of the Conservatory, the existing park walkway lighting system and for the special event power required for the portico area. The existing flat-rate walkway lighting circuit would be isolated and removed and the existing walkway lighting on the west side of the park site would be back-fed from the new electrical sub-service.

The existing administration building electrical service could be supplied and re-fed through the soft landscaping from the main (south) electrical room or the building could be re-wired and serviced directly from the main electrical room depending on the future architectural and operational plans for the administration building.

We have prepared a budget cost estimate in the amount of one hundred and eighty thousand dollars including an allowance of forty thousand dollars for Toronto Hydro servicing charges for the implementation of the work described within Scenario #1. This budget estimate does not include the cost of the proposed new power distribution system for the four residences on Horticultural Avenue. This will provide for power service, distribution, and connection of all proposed water feature, lighting equipment and for the special event power requirements at the east portico.

Scenario #2

This alternate option would be required if the south mechanical room was to be part of future work and was not to be included in the Phase I scope of work. The new main 600 volt service would be located in the boiler room. The physical space would have to be created in the electrical room area of the boiler room to mount the new service equipment so that the new power service could be installed and energized prior to re-feeding the existing services. The new main service conduits and cables would have to be installed north from Gerrard Street to the boiler room. This would require open cut, excavation and restoration of the pavement immediately west of the administration building and through the parking lot to access the boiler room. If the east mechanical room is to be constructed as part of Phase I, a sub-service conduit/cable feed would be installed through the existing tunnel system.

A sub-service supply conduit/cable would be installed into the main north/south trench to back-feed the administration building underground. The park lighting could be isolated and re-connected as described in scenario #1.

We have prepared a budget cost estimate in the amount of one hundred and ninety thousand dollars including an allowance of forty thousand dollars for Toronto Hydro servicing charges for the implementation of the work described within Phase I of Scenario #2. This budget estimate does not include the cost of the proposed power distribution system for the four residences on Horticultural Avenue. This will provide for power service, distribution, and connection of all proposed water feature, lighting equipment and for the special event power requirements at the east portico.

If the south mechanical room is then to be constructed as part of Phase II, a new sub-service feeder can then be installed through the tunnel system as described above. We have prepared a budget cost estimate in the amount of thirty-five thousand dollars for the implementation of Phase II of Scenario #2. There would be no additional Toronto Hydro servicing charges required for the Phase II work.

Should you require any further clarification of this report, please contact the undersigned.

Yours truly,
MJS CONSULTANTS INC.

W.J. (Jim) Snelgrove, MIES
President

Hi Rod,
The following summarized the initial findings, provides a suggested work plan to investigate the soils, a list of tasks, a schedule and budget estimate to complete a draft report, and a list of background information I think would be helpful. I talked with StevenAboud this morning and he indicated that he would like to be on site when the soil pits were excavated. It would be appreciated if you could arrange for the City to have a backhoe available to excavate the soil pits. I suggest that the backhoe should be made available for one entire day.

Initial Findings

The initial findings are based on the June 27, 2006 site meeting.

? The soils on the west side of property have been disturbed by recent and historic construction activity.

? Topsoil used to cover fill has been mixed with un-weathered overburden (parent material) which can reduce the soil fertility.

? The soil in some areas appears to be compacted due to heavy pedestrian and vehicular traffic. The worst areas are the heavily shaded areas which are likely to remain wet longer. Wet soil conditions are more susceptible to compaction.

? The soils are derived from well sorted sands deposited in a shallow water glacio-lacustrine environment. The sand size fraction (fine sand) indicates that this outwash material was deposited in a still water environment, possibly along the outer margins of a deltaic system. The landform now consists of a gently inclined outwash plain sloping northwards towards Lake Ontario.

? These sandy soils are moderately to highly permeable however, the distinct to prominent mottling in the soil profile (in the undisturbed areas) indicates that a high water table existed for moderate to long periods of the growing season.

? It is likely that the Halton clay till underlies the sandy outwash material. A perched water table often forms above the slowly permeable, clay till material and it is possible that this is the cause of the mottling in the soil profile.

? No evidence of a high water table was observed at this time. The soils were in some cases dry throughout the soil profile.

? These sandy soils have a low water holding capacity and if droughty conditions persist or the soil moisture regime has been altered for some reason the trees may be experiencing stress related to drought.

? It is possible that the water table that existed during the development of the trees has been altered as a result of on-site and/or offsite developments. Once trees have matured they lose the ability to quickly react to a drop in the water table and may become stressed and eventually succumb during drought conditions.

? I suggest we confirm this potential explanation with Steven Aboud (Arborist)

Suggested Work plan

Soil Survey

? A soil survey will be conducted to identify areas of “natural” and “modified” (fill areas) soils.

? Soil horizons will be described along four transects (2 N-S, 2 E-W)

? Additional locations (off-transect) will also be described in areas not well represented by transects and in areas.

? Prepare a soil map delineating natural soils (those soils least impacted by human activity) and modified soils (fill areas).

? Identify locations for detailed sampling and submit to Study Team for consideration/comments

Soil Sampling

Important soil horizons will be sampled.

? The number of test pit locations will be determined by soil survey results.

? Soil samples will be collected for: soil nutrient analysis (N, P, K, Mg, pH); Calcium Carbonate Equivalent to determine potential cause of nutrient deficiency and identify disturbed areas; Electrical

Conductivity to measure levels of salts in soil; soil texture (particle size distribution); bulk density to determine degree of compaction; moisture release and saturated hydraulic conductivity. The parameters listed are suggestions and costs for laboratory analysis still to be determined.

? I suggest that Mr. Steven Aboud be on-site during the soil sampling phase to observe soil horizons, soil properties, investigate tree root depths, etc.

Tasks & Schedule

Tasks

? Soil survey
? Soil Sampling (assumes use of backhoe and dependent results of soil survey)
? Review of information provided
? Discussions with study team members
? Analysis, recommendations and report preparation

Schedule

Study can begin immediately. Submission of draft report estimated for September 2006.

Budget Estimate

The estimated budget is approximately $5,750.00 plus GST. It does not include cost for laboratory analysis. Lab costs will be dependent on the number of soil pits and horizons sampled.

Information Requested

? Base mapping (in electronic format) for the site which shows existing and historic building locations
? Arborists Report (Aboud draft)
? Geotechnical information
? Hydrogeological information
? Land use changes adjacent to property which may have had an impact on property

It was good to finally meet you this past Tuesday. Give me a call if you have any questions.

Sincerely,
Sean

Sean Colville
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L2P 2Y2
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sean@colvilleconsultinginc.com

Prepared for:

City of Toronto

Tree Inventory and Management Strategy

Allan Gardens

City of Toronto

September 2006

Aboud & Associates Inc.

Consulting Arborists ✍Ecologists ✍Landscape Designers

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TABLE OF CONTENTS

Front Cover: Allan Gardens facing west towards the Conservatory, April 2005.

1.0 INTRODUCTION

1.1 Background and Context

Allan Gardens (Gardens) is a five-hectare park within the City of Toronto's park system and was first established in the 1860's (Commonwealth Historic Resource Management Limited, 2002). Throughout its history, native and exotic species of trees have been planted, managed and removed, and these are a significant and prominent feature of the Gardens. Many of its trees are large: some well over 20metres tall, and mature: many having diameters at breast height of 80 centimeters. As well there is a wide range of species diversity, such as sycamore maple, white oak, maidenhair tree, yellow-wood and dawn redwood. The last inventory of Garden's trees was prepared in 1976 by Crawford andMacHattie. A revitalization of Allan Gardens is currently underway and includes the existing trees.

1.2 Study Tasks

This study updates the inventory and condition assessment of the Gardens' trees and provides a management strategy for their revitalization by providing the following information.

1. Inventory the trees within the Gardens and along the adjacent roadsides; (*Note: Shrubs, perennial, annuals and turf grass were not part of this investigation*)
2. Assess the condition of the trees by rating their individual biological health and structural condition, document observed defects (e.g. split trunk), and provide recommended treatments as needed and appropriate;
3. Estimate the age classes of each tree into one of four, 50-year intervals, from less than 50 years to greater than 150 year;
4. Assign recommendations of preservation and removal to trees based on their current condition (i.e. biological health and structural condition) and the impact from the proposed revitalization plan (e.g. new trails) prepared by TheLandplan Collaborative;
5. Update the survey plan of the park confirming the approximate locations of trees and their crown reserves (i.e. canopy diameters);
6. Provide a set of tree management guidelines that will enhance the long-term health of Park trees;
7. Prepare a cost estimate to implement tree management guidelines;
8. Prepare a strategy to replace older declining trees and trees with poor quality/function, and to provide adequate spacing for mature development of preferred trees;
9. Provide a list of suggested species of trees for the large-tree area of the Gardens;
10. Provide general guidelines of tree care and treatments, before, during and following construction;
11. Comment on re-locating trees with the Gardens with sizes up to 300mm;

12. Provide recommendations of soil treatments following a detailed soil analysis prepared by others;
13. Comment on the ground layer vegetation (i.e. lawn grass) and alternative.

1.3 Study Area

The study area was made up of all of the park land and adjacent roadsides delimited by Jarvis Street on the west, Gerrard Street East on the south, Sherbourne Street on the east, and Carlton Street on the north. The grounds of Jarvis Street Baptist Church at the southwest corner of the city block were not part of the study area. A study area key plan is shown on Figure 1.

Trees and park users in Allan Gardens. Northwest view from Gerrard Street East and Sherbourne Street (September 2004).

2.0 METHODOLOGY

Field reconnaissance to inventory and assess the condition of the trees was conducted on March 29, April 4 and 10, 2005 by Steven Aboud, Certified Arborist International Society of Arboriculture.

Each tree was assigned a unique number (e.g., T198) and the following data were collected.

- botanical tree name
- diameter at breast height - DBH (cm)
- age class (50 year intervals)
- crown height (est., metres)
- crown reserve (est., metres)
- biological health
- structural condition
- observations / comments / defects

Age classes of trees were estimated in the field and broken out into four, 50-year increments using the following scheme: 1 (<50 years), 2 (50 to 99 years), 3(100 to 150 years), and 4(>150 years). This information will be used to estimate the quantities of trees in these age classes and potentially the estimated timing of future tree loss due to mortality. Three tree characteristics were used to determine the trees' estimated age classes.

1. Trunk size (i.e. diameter) and tree species;
2. Bark texture and colour (typically with age bark becomes more coarse with larger plates and flaking, and bark colour changes);
3. The inter-nodal growth rate of twigs and branches provides a relative rating of the growth rate of trees within recent years, which generally correlates to a tree's age (i.e. growth rates are less of older, mature trees).

Trees were lumped into a tree group that are the same species or cultivated variety, and shared the same location and other characteristics. This occurred once in this study, for Tree Number 194; a group of five trees of AlaskaCedar located along the east side of the greenhouse.

A preservation priority rating was assigned to each tree based on its current biological health and structural condition under existing conditions. Typically trees having a high or moderate preservation priority rating are recommended for preservation, and those with a low rating are recommended for removal. In other words those trees that are structurally sound and likely to survive at least three years were recommended for preservation. Conversely, structurally unsound trees (e.g. having severe leans), and/or those either not likely to survive at least three years (e.g. moderate to severe trunk decay / crown dieback), and/or are expected to experience continued

deterioration of health and structure which likely cannot be improved using arboricultural treatments, were recommended for removal. A recommendation of preservation or removal was assigned to each tree based on the types and extents of their recorded condition. Appendix 1 is a detailed description of the tree inventory and assessment methodology.

A second recommendation of preservation and removal was assigned to each tree based on the impact of the proposed plan of Allan Gardens. Only those trees located directly within areas of disturbance (e.g. walkways) were identified for removal. Some trees located immediately adjacent these areas will experience impacts and a more thorough assessment of these impacts and subsequent mitigation recommendations, which may include additional tree removals, would be made as part of the detailed design process.

Assignments of individual tree preservation recommendations (i.e. preservation or removal) based on the current biological health and structural condition of trees and the impacts from the proposed design are listed in Appendix 2. These data are graphically displayed on Figure 1 - Tree Inventory Plan. The extent of each tree's crown reserve or canopy diameter is also shown to display the area of the park covered by trees.

A site meeting was conducted with City staff on April 19, 2005 to review past and present management of the Garden's trees and tree-related issues. A summary of the information from the meeting is provided in Section 3.2 - City's Tree Management Program.

Trees were not individually tagged in the current investigation.

The original survey base plan of the Gardens including the locations of the trees was prepared by D. Ostapiak, City Surveyor,O.L.S. This was updated in the late 1990's by the office of BDuguid.

3.0 FINDINGS & DISCUSSION

3.1 Tree Inventory and Condition Assessment

A total of 288 trees were recorded in Allan Gardens, comprised of 47 different species/cultivated varieties. The great majority of trees are hardwood, which represent 85 percent of tree species and 94 percent of the total individual trees. Table 1 provides a summary of tree data.

A mature tree of Norway Maple (T147) with high/moderate ratings of biological health and structural condition (April 2005).

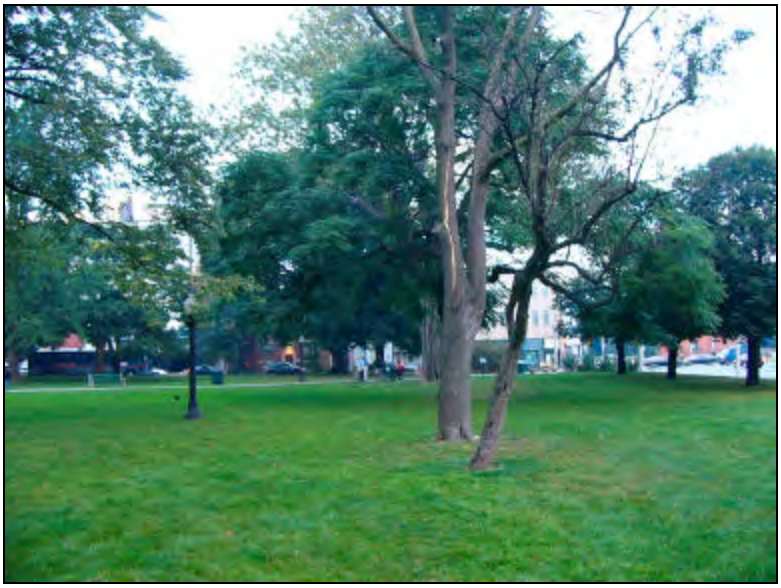
Well over half of the trees (i.e. 65 percent) are less than 50 years old and almost 97 percent are less than 100 years old. Only one tree (Tree Number 100) a mature White Oak is likely over 150 years old and its condition was rated as moderate to low, and as such will likely be removed with the next few years. In contrast a white oak tree of similar size, near the Gardens (190 Carlton Street) demonstrated high biological health and high/moderate structural condition.

The oldest tree in Allan Gardens is this White Oak (T100). It is estimated to be between 150 and 200 years old. Past pruning and water sprouts are seen throughout the canopy (April 2005).

A white oak of similar size was recorded at 190 Carlton Street, within a block of Allan Gardens. Its condition is much better than T100 (April 2005).

The overall condition of the trees throughout the Gardens is moderate. Their biological health displayed minor diseases/disease symptoms with moderate vigour. Ratings of high to high/moderate biological health were assigned to approximately 28 percent of the trees and ratings of moderate/low to low were assigned to 21 percent.

Norway Spruce (T176) with low rating of biological health based on its severely thin crown (April 2005)



The Crab Apple (T153) in the foreground and Norway Maple (T154) both exhibit low ratings of biological health (September 2004)

Siberian Elm (T35) in the background overhanging the walkway and north of the greenhouse has a low rating of structural condition due to a severe lean and unbalanced crown (March 2005).

Exposed roots of this Norway Maple are girdling the tree's trunk (March 2005).

Widespread occurrences of water sprouts on branches and stems were recorded on trees throughout the Gardens (April 2005).

The structural condition (e.g. unbalanced crowns, leans, split trunks) of trees rated slightly lower than the ratings of their biological health: 15 percent of the trees had ratings of high to high/moderate structural condition and ratings of moderate/low to low were assigned to 30 percent. Ratings of biological health and structural condition, and recorded details/specific recommendations of each individual tree are provided in Appendix 2.

Trees with low ratings of biological health and/or structural condition have serious health problems and/or structural defects, respectively and are typically recommended for removal.

Table 1. Summary of Tree Data

Description	Subtotal (if applicable)	Subtotal (if applicable)	Total
Total Trees Inventoried	-	-	288
Tree Types	**Species**	**Individual Trees**	-
Hardwoods (i.e. Angiosperms)	41	270	-
Softwoods (i.e. Conifers, includes Ginkgo)	6	18	-
All Trees	47	288	-
Age Classes	-	-	-
Class 1 (< 50 Years)	-	-	188
Class 2 (50 to 99 Years)	-	-	91
Class 3 (100 to 150 Years)	-	-	8
Class 4 (>150 Years)	-	-	1
	-	-	288
Preservation Recommendations	**Preserve**	**Remove**	
Existing Health and Structure	239	49	288
Impact from Proposed Plan	259	29	288
Existing Health/Structure AND Impact from Proposed Plan	218	70	288

Evidence of past pruning within the past five to seven years was recorded on many trees throughout the Gardens. From our observations and discussions with City staff, extensive pruning has occurred to raise and open crowns, remove deadwood, to allow for more sunlight to reach the ground for the growth of grass, which is performing poorly, and to maintain visibility throughout the park for public safety. Pruning has occurred near lamp standards to prevent unlit areas of the park at night.

Past pruning of crowns was observed throughout the Gardens as shown on the Norway Maple (T61, top) and Scotch Elm (T231, bottom), both trees surrounded at the base by a bench.

Over pruning may have contributed to stress of the trees and the widespread occurrence of water sprouts. Further information about the causes and potential mitigation of stress in trees is discussed in Section 3.2.7 Over Pruning Mature Trees.

3.2 City's Tree Management Program

City staff commented on their management program of the Gardens' trees at the site meeting of April 19, 2005. Key components from this discussion are provided.

1. Arboricultural work on trees is performed on an as-needed basis. Work is requested by the Grounds Supervisor and carried out by staff of Urban Forestry. Pruning is performed to eliminate identified hazards and to ensure visibility throughout the Gardens for public safety purposes. Pruning is typically not done to provide long-term improvements to the structural condition of trees.
2. Regular maintenance for trees is not provided. This includes no regular watering for the establishment of newly-planted trees and no irrigation during periods of drought.
3. Vandalism such as breaking of branches and stems occurs to small tree stock.
4. Compacted soils, from regular use by users and periodic use by vehicles are suspected. Aeration of soil for the purpose of enhancing turfgrass occurs infrequently and only when soils are moist. A soil compaction test, which measures the bulk density of soil has not been conducted.
5. Heavy and regular applications of salt (NaCl) are applied to maintain walkways in winter. Grass along walkways shows signs of being "burned" from salt.
6. Organic matter in the soil is expected to be very low. Organic litter such as leaves is removed. Insufficient amounts of organic matter will contribute to poor soil structure, reduced perviousness and infiltration of water, nutrients and air, and reduced habitat for soil macro-fauna (e.g., worms, beetles, ants).

This small tree with a dedication plaque at the base had its crown broken off at the stem (March 2005).

3.3 Tree Management Guidelines

The quality of the environment that the trees grow directly affects their biological health and vitality, and their value as long-term assets to Allan Gardens. Through this examination of the condition assessment of trees and their growing conditions several management guidelines are provided. The subsections below discuss a range of topics related to the management of trees of Allan Gardens.

3.3.1 Soil

A critical component of tree growth and development is the soil that roots grow. At this time a soil analysis has not been prepared. Soil testing for the following characteristics is recommended as part of the revitalization of the Gardens' trees.

- Texture (i.e. composition of sand, silt, clay);
- Presence of, and depth to pans/lens (e.g. clay pan, sand lens);
- Depth to mottles and gleying;
- Amount of organic matter;
- Bulk density (i.e. level of compaction);
- Calcium carbonate ($CaCO_3$) Equivalent;
- pH;
- Macronutrients (i.e. N, P, K, Mg, Ca);
- Contaminants (e.g. sodium and total salts).

Foliage of trees with chlorotic, thin or abnormal foliage should be analyzed as well as the soil to provide additional information about fertilizer requirements. Expertise on the assessment of the site's soils should be brought in to determine the condition of the soil for the growth of mature trees in this heavily used urban park, and based on the soils report, a soil improvement plan should be developed and implemented in consultation with a qualified soil consultant.

3.3.2 Priority Trees

A preservation priority rating of high, moderate or low was assigned to each recorded tree. It is a relative rating system of the quality of urban trees and their projected longevity. The rating system is based on the biological health and structural condition of trees under existing conditions and

does not take into consideration potential impacts from proposed changes or site plans. Ratings of each tree are provided in Appendix 2.

There are 50 trees that were assigned a high rating of preservation priority. These trees have high to moderate biological health, well-developed crowns, are well suited as shade or screen trees, and are expected to survive under existing conditions indefinitely (i.e. > 20 years). Trees in this category have the highest priority. More than half of the trees in this category are specimens of Sugar Maple.

A low rating of preservation priority was assigned to 48 trees. These trees exhibited low biological health, low structural condition (i.e. severe structural defects), or both. In their current condition these trees are unsuitable for urban uses and should be removed over the next few years. Provision of arboricultural treatments would generally not improve the condition of these trees. Trees in this category have the lowest priority. Most of the trees in this category are specimens of Norway maple, red ash, and Siberian elm.

The majority of trees (i.e. 190) were assigned a moderate rating of preservation priority. They exhibited one or more moderate to severe defects in biological health and/or structural condition, are marginally suited as shade or screen trees, and can survive at least three to five years under existing conditions. These trees are generally recommended for preservation and would benefit from individual arboricultural treatments (*See Appendix 2*) as well as from park-wide improvements to the growing conditions of trees such as aeration, irrigation and fertilization. There are 51 specimens of Norway maple and related cultivars in this category.

Trees planted within the past two years that typically have not become established were assigned a moderate preservation priority rating. The health and condition of newly-planted trees should be inspected semi-annually for at least three years following planting to verify their condition, during and following the establishment period.

Trees with a low rating of preservation priority should be given little to no care. They should however be kept in a safe and hazard-free condition until they are removed.

3.3.3 Guidelines for Priority Tree Care

Recommendations of treatments to individual trees are provided in Appendix 2. In general, care of high and moderate priority trees should use the guidelines provided in this report and the revitalization recommendations of the proposed Gardens' plan, with on-the-ground arboricultural expertise. In other words, using the assignments of preservation priority ratings and the proposed plan, qualified tree experts (e.g. City foresters) would be best equipped to assign specific care and treatments to individual trees.

Types of care and maintenance to provide to priority trees are as follows.

- Provide adequate space for growth and development of canopy by reducing/eliminating low priority trees that influence the crown development of high priority trees;
- Install new trees with sufficient space from existing trees and planting locations of future trees to develop a balanced crown. Adequate spacing for large tree species is a minimum of 10 to 12 metres.
- Planting of new trees should consider the expected available spaces from the removal of low priority trees and any future thinning of less desirable tree species (e.g. Norway maple, Siberian elm).
- Remove girdling roots, and install cables and braces to stems and branches.
- Monitor trees annually for changes in their conditions in general and to evaluate treatments of specific trees.

In addition to the above treatments, improvements to the soil following the results of a soil analysis (*See Section 3.3.1*) are recommended as a general treatment throughout the Gardens. It is strongly suspected that the soil conditions such as moisture, pH, bulk density and contaminants are contributing towards the reduced health of the trees.

Determination of which trees should receive care and maintenance should be generally made based on each tree's rating of preservation priority rating according to the following list.

- All/most trees with a high preservation priority rating;
- Most/some trees with a moderate preservation priority rating;
- Some/no trees with a low preservation priority rating.

Individual preservation priority ratings of each tree are provided in Appendix 2.

3.3.4 Transplanting Large Trees

Trees were evaluated for their potential for transplanting. The criteria used to determine those trees eligible for transplanting are provided in Table 2.

Table 2. Criteria for Tree Transplant Eligibility

Item	Description
1	High to moderate biological health
2	High to moderate structural condition
3	Trunk size is 300mm in diameter or less
4	Transplanting method (i.e. tree spade) will not cause damage to nearby existing trees at the donor location
5	Tree will be destroyed from construction activities (e.g. pathways) of the proposed plan

Using the evaluation criteria, five trees (Tree Numbers 41, 164, 236, 244 and 258) qualified for potential transplanting. Steps should be put in place to ensure that existing trees along the route taken by heavy tree-moving equipment to the recipient site are not damaged. This will require protection of existing root systems from soil compaction and tree crowns along the route used for tree transport. Considerations about the opportunities and constraints of relocating large trees should be made as part of the tree planting strategy.

3.3.5 Structural Pruning Young Trees

Structural pruning of young trees is recommended to develop structurally sound and defect-free specimens. Pruning to correct or improve the structure of young trees should be provided only after they are well-established. The establishment period is typically at least two years and may extend to five years following planting. There are many benefits of a proactive program to structurally train young trees.

1. Eliminates current and future structural defects, such as co-dominant stems, included bark, branch failure.
2. A young tree is better able to develop woundwood and compartmentalize a small wound caused by pruning than a large, older tree with a large pruning wound.
3. Maintenance costs are greatly reduced. Structural training of young trees is relatively very inexpensive: often this work can be done from the ground or using small ladders to access the tree. Hand tools (e.g. pruning shears, pruning saw) can be employed with minimal need for power saws.
4. Incidences of diseases are reduced where small wounds are created from pruning smaller trees. Wounds made to large, older trees from pruning of larger tree components (e.g.,

branches and stems greater than 200mm diameter) expose much greater areas of living tissue and for longer periods of time, which create more opportunities for infections and disease.

Structurally sound trees with well-balanced crowns, well-spaced scaffold branches and well-developed trunk taper are better able to withstand forces from high winds and loading from buildup of snow and ice than trees that are not structurally sound. Generally well pruned trees develop fewer hazards than trees with little or poor training.

3.3.6 Shading and Norway Maple

Norway maple is an alien (i.e. not native) and invasive tree species to natural vegetation communities (e.g. ravines). Its establishment and growth success is most likely the result of its strong competitive abilities, notably its high shade tolerance and abundant seed crops (Martin, P. H., 1999). Norway maple casts an extremely dense shade and has a shallow root system, and is notorious for suppressing lawn grasses underneath it. These same properties also apply to its ability to suppress diversity and total amount of vegetation undergrowth in natural settings (Shakespeare, G. 2003). In Allan Gardens, a total of 62 trees or approximately 22 percent of the 288 trees are Norway maple or one of its cultivated varieties. This represents the largest number of trees of any species in the Gardens. It is likely that its dense growth habit and the high number of Norway maple specimens in the Gardens influences the low quality of lawn grass. Photographs are provided showing the effects shading of Norway maple trees have on park lawn grass in a section of Exhibition Park, City of Guelph.

Exhibition Park in the City of Guelph. All deciduous trees are Norway maple. Muddy areas under the trees' canopies have very thin lawn grass even though park use is light (February 2006).

Exhibition Park at full leaf-out of Norway maple trees. Lawn grass is thin beneath tree crowns (May 2005).

3.3.7 Ground Cover Vegetation

The ground cover vegetation under trees throughout the Gardens is lawn grass. Its quality and coverage varies and in many locations is poor. Several factors are likely contributing to the condition of the grass: shading from tree canopies and particularly that of Norway maple, walkway salt damage, and heavy use of the park by people and their pets. Improvements to the condition of the grass should consider the following suggestions.

- Install alternative types of ground layer vegetation. These could include shade tolerant lawn grass mixes, and graminoids such as sedges (*Carex sp.*) and forbs of forests and woodlands;
- Fallowing sections of the Gardens from active use;
- Providing more light to reach the ground by thinning low and some moderate priority trees;
- Mulching areas with composted leaf and bark mulches.

For practical purposes use of these methods could be employed in selected areas of the Gardens to evaluate their effectiveness.

3.3.8 Over Pruning Mature Trees

Many mature trees in Allan Gardens have been heavily pruned. A common response of trees from over pruning is excessive sprouting from dormant buds under the bark (*see photograph in Section 3.1*). Over pruning causes serious injury to trees (Shigo, 1989) and mature and old trees are particularly sensitive to over pruning. It reduces a tree's ability to produce food for branches, stems and roots. This leaves trees biologically weakened, more susceptible to diseases and pests, more prone to structural defects, and less attractive. As trees grow older, the amount of healthy living tissue removed from pruning should be decreased (Shigo, 1989). It is our opinion that over pruning is a contributing factor of the reduced biological health and structural condition of the Gardens' trees. Although measures to mitigate the impacts from over pruning are limited, there are treatments that will provide a measure of improvement. These include fertilization of trees following the results of soils analyses, mulching over the root systems with well decomposed leaf and bark mulch, and irrigation during periods of drought. The pruning program of the Gardens trees should be reviewed with the concerns of the aforementioned discussion and elimination of the practice of over pruning.

3.3.9 Recommended Tree Species

A list of recommended species of trees for the large-tree area of the park (i.e. Feature Number 4 of the Revitalization Plan) is provided in Appendix 4. This is a preliminary list made up of 24 tree species, which are either new to the Gardens or poorly represented (i.e. one or two specimens). Information from the soils analysis will be very useful in determining the appropriateness of these species and considerations for others.

3.3.10 Care Before, During and Following Construction

Guidelines are provide in Appendix 5 to assess the conditions of trees at the time of tree works and construction, and to provide care and maintenance before, during and following construction.

3.3.11 Damage from Animals

Damage to trees from wildlife has occurred throughout the Gardens. During the field investigation squirrels were observed gnawing branches and accessing cavities of several mature trees, which act as their over-wintering dens. Yellow-bellied sapsucker damage was observed as orderly series of holes in stems and large branches. The lower 400mm of trunks of many trees, particularly those nearest the walkways were whitish grey. This is caused from repeated urination from dogs. There are no effective and practical control measures of any of these types of animal damage.

A mature Linden damaged from feeding of Yellow-bellied Sapsuckers shown as prolific series of small holes on the trunk. Water sprouts on the lateral branch are present. A gray squirrel has a den in a tree cavity (April 2005)

4.0 IMPLEMENTATION COST ESTIMATE

Table 3. Cost Estimate of Tree Management Recommendations

Item	Description	Quantity	Unit Cost	Subtotal
1	Soil Improvement (Provisional)			
	Pending outcome of soil investigation	n/a	n/a	n/a
2	Tree Removal - Removals as per tree recommendation totals in Appendix 2			
	Low Priority Trees	49	$1,000.00	$49,000.00
3	Tree Cabling / Bracing	20	$400.00	$8,000.00
4	Tree Pruning (Deadwooding, hazard limb removal, structural pruning)			
	High Priority Trees	30	$200.00	$6,000.00
	Moderate Priority Trees	60	$200.00	$12,000.00
5	Transplanting Large Trees			
	Tree Spade, includes before and after care	5	$2,500.00	$12,500.00
			Total	$87,500.00

5.0 CONCLUSION

This study has updated the inventory and condition assessment of the Gardens' trees and has provided a management strategy for their revitalization. A total of 288 trees were recorded, made up of 47 different species and cultivated varieties.

The overall condition of the Gardens' trees is moderate to moderate-low. Approximately half of the trees have a moderate condition, i.e. having the presence of minor diseases/disease symptoms and/or moderate vigour, and the presence of minor structural defects. A high condition rating was assigned to 15 to 20 percent of the trees and a low rating was assigned to 25 to 30 percent. This synopsis of the trees' condition suggests that the trees are stressed and in a state of declining health as evidenced by the widespread occurrence of thin/abnormal/chlorotic foliage and water sprouts. The widespread occurrence of these symptoms raises concerns about the future of the health, structure and overall quality of the trees and their function, and their suitability and contribution to the Gardens.

Inadequate soil conditions such as moisture, pH, bulk density and contaminants are suspected of contributing towards the reduced health of the trees. The properties of the soil should be investigated and a soil improvement plan should be developed and implemented in consultation with a qualified soil consultant. The soil study is strongly recommended and should be an integral part of a plan to improve the growing conditions for trees in the Gardens.

All efforts to maintain and enhance trees should be focused on high and priority trees only. Low priority trees should be kept in a safe condition until they are removed.

Over pruning of mature trees has contributed to the formation of water sprouts, and is likely a factor contributing to the decline in the trees' health. This practice should be stopped and other methods and practices should be considered to satisfy the need for opening up tree crowns.

Reductions in the quantities of individuals of specific species such as Norway maple are recommended. Norway maples in particular are dominant in the park and are known to cast extremely dense shade, which will influence the success of ground layer vegetation. Reductions in Norway maple trees and other species should be considered to open up more of the ground layer to light and also play a role in changing the nature of the Gardens appearance.

Trials of alternative methods to establish and maintain perennial ground layer “lawn” vegetation should be employed. These would include shade tolerant mixes of grasses and graminoids, as found in natural shaded environments (e.g. forests and woodlands), fallowing sections of the Gardens, thinning trees that are in excess of the Gardens’ needs, and alternative surface treatments such as mulches.

Other species and cultivated varieties of trees should be considered that would provide greater benefits to the Gardens and its functions. A list of potential recommended tree species has been provided and should be used as a guide to augment the current tree inventory and to replace trees as they are removed. Selection and installation of new plantings of trees should be done following the investigation and implementation of a soil improvement program.

A program that monitors the biological health and structural condition of the trees is recommended to determine the changes in the trees’ condition, and identify and rectify problems of trees in a timely manner. The monitoring program should be on an annual or biannual frequency and measure specific tree structures such asinternodal twig growth, leaf size/colour, foliage analysis.

6.0 REFERENCES AND PERSONAL COMMUNICATIONS

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APPENDICES

Appendix 1 Tree Inventory and Assessment Methodology

Appendix 2 Tree Data: Allan Gardens

Appendix 3 Botanical and Common Names of Recorded Trees

Appendix 4 Recommended Tree Species

Appendix 5 Tree Management Guidelines and Construction

FIGURES

- Natural Heritage Planning
- Landscape Master Planning and Design
- Landscape Mitigation Design
- Urban Forestry
- Environmental Assessment
- Habitat Restoration and Monitoring
- Schoolyard Master Planning and Design
- Expert Testimony
- Construction Supervision

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APPENDIX 2. DETAILED TREE DATA: ALLAN GARDENS, CITY OF TORONTO - PRELIMINARY 16 MAY-2005

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
1	Tilia x euchlora	49	2	10	7.5	M	M	2	P	- crown in overhead wires
2	Ulmus glabra	104	2	16	20	M	M(L)	2	P	- Unbalanced crown Severe to the South - Forks 3 @ 2m - Minor past pruning - Sprouts in crown (moderate) - Burels at nodes throughout crown (moderate)
3	Tilia X euchlora	45	1	10	10	H	M	1	P	- Bent Trunk (Minor) - Exposed Roots (Minor)
4	Acer platanoides	36	1	12	15	M(L)	M	2	P	- Thin Crown (Moderate) - CU (Moderate to the Southwest) - Past Pruning (Moderate) - Exposed Roots (Minor)
5	Tilia cordata	45	1	12	10	M	L	3	R	- Unbalanced Crown (Moderate to the West) - Sapsucker Damage (Moderate)
6	Acer platanoides	50	2	14	15	M	M	2	P	- Exposed Roots (Moderate) - Unbalanced Crown (Moderate to the West) - Past Pruning (Minor)
7	Tilia cordata	32	1	10	10	M(L)	M(L)	3	R	- Branch Bark Removed (Moderate) - Lean (Severe to the West) - Squirrels
8	Acer platanoides	33	1	8	7.5	M(L)	M	3	R	-Twig Growth < 5cm - Unbalanced Crown (Moderate to the Northeast) - Exposed Roots (Minor)
9	Fraxinus pennsylvanica var. lanceolata	19	1	6	5	M(L)	L	3	R	- Borer Damage (Minor) - In Concrete Sidewalk - Leader Damage (Severe) - Broken Crown (Minor) - Forks 2@ 2.5m - Crown in wires
10	Fraxinus pennsylvanica var. lanceolata	17	1	6	5	M	M(L)	2	P	- Crown in Wires - No Main Leader (Severe) - In Concrete Sidewalk
11	Fraxinus pennsylvanica var. lanceolata	22	1	6	5	M	M(L)	3	R	- No main leader (severe) - Broken crown (moderate) - Crown in wires - In Concrete Sidewalk

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
12	Fraxinus pennsylvanica var. lanceolata	18	1	5	5	M	M(L)	3	R	- No main leader (severe) - Broken crown (moderate) - Crown in wires - In Concrete Sidewalk
13	Fraxinus pennsylvanica var. lanceolata	22	1	5	5	M	M(L)	2	P	- No main leader (severe) - Broken crown (moderate) - Crown in wires - In Concrete Sidewalk
14	Ulmus pumila	41	1	16	7.5	H	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
15	Ulmus pumila	33	1	14	7.5	M	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
16	Ulmus pumila	25	1	12	5	M	M(L)	3	R	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
17	Ulmus pumila	32	1	14	7.5	H	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
18	Ulmus pumila	30	1	16	7.5	H	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
19	Ulmus pumila	28	1	14	5	L	L	3	R	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
20	Ulmus pumila	32	1	16	7.5	M	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
21	Ulmus pumila	21	1	12	5	M	L	3	R	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
22	Ulmus pumila	35	1	16	7.5	H	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
23	Ulmus pumila	41	1	16	7.5	H	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
24	Ulmus pumila	41	1	16	7.5	H	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
25	Ulmus pumila	19	1	10	5	M	M	2	P	- Row of 12 Siberian Elm @ 1.5 -2.0m On Centre
26	Ulmus pumila	25	1	14	5	M(L)	M	3	R	- Sprouts in Crown (Severe)
27	Ulmus pumila	40	1	16	7.5	M	M	2	P	
28	Ulmus pumila	51	1	14	7.5	M	L	3	R	- Fork 2 @ 1m - Sprouts in Crown (Severe)
29	Ulmus pumila	23	1	10	3	M(L)	L	3	R	
30	Ulmus pumila	42	1	16	7.5	M	M	2	P	
31	Ulmus pumila	31	1	14	5	M(L)	L	3	R	
32	Ulmus pumila	51	1	18	10	M	M	2	P	
33	Ulmus pumila	32	1	14	5	M(L)	L	3	R	
34	Ulmus pumila	40	1	16	5	M(L)	L	3	R	- Sprouts in Crown (Severe)
35	Ulmus pumila	64	1	14	15	M	L	3	R	- Sprouts in Crown (Severe) - Lean (Severe to the Southeast

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
36	Ulmus pumila	55,71	2	16	15	L	M(L)	3	R	- Fork 2@ 1m - Sprouts in Crown (Severe) - Past Pruning (Moderate) - Twig Growth <5cm - Enlarged Root Stock (Moderate)
37	Quercus robur 'Fastigiata'	20	1	10	3	M	M	2	P	- Under Crown of Ulmus pumila
38	Quercus robur 'Fastigiata'	22	1	8	3	M	M	2	P	- Under Crown of Ulmus pumila
39	Quercus robur 'Fastigiata'	22	1	10	3	M	M	2	P	- Under Crown of Ulmus pumila
40	Fraxinus pennsylvanica	8	1	5	3	M	H	2	P	
41	Quercus macrocarpa	6	1	4	3	M	H	2	P	
42	Quercus alba (group)	6	1	3	2	M(L)	M(L)	3	R	- Trunk Damage (Severe) - Lean (Moderate to the East)
43	Ailanthus altissima	26	1	8	7.5	M	M(L)	2	P	- Basal Trunk Decay (Minor) - Unbalanced Crown (Moderate to the Northeast)
44	Acer platanoides 'Fastigiata'	15	1	6	5	M	M	2	P	
45	Acer platanoides 'Fastigiata'	14	1	6	3	M(L)	M	3	R	- Stem Canker (Moderate)
46	Juglans nigra	79	2	16	15	M	M	2	P	- Lean (Minor to the Southeast)
47	Acer saccharum	44	2	14	10	M	H	2	P	- Twig Growth < 10cm
48	Acer platanoides	95	2	18	15	M	M(L)	3	R	- Trunk Decay (Minor) - Trunk Split (Minor @ 3m) - Past Pruning (Moderate) - Fork 3 @ 2m - 1 Stem Removed < 5cm - Unbalanced Crown (Moderate to the North)
49	Acer platanoides	44	1	14	10	M	M	2	P	- Unbalanced Crown (Moderate to the North) - Twig Growth < 5cm - Sprouts in Crown (Minor) - 30cm Stem Removed - Exposed Roots (Moderate)
50	Acer platanoides	66	2	14	15	M(L)	M(L)	3	R	
51	Tilia cordata	88	2	16	15	M(L)	H	2	P	- Trunk/Stem Girdling < 7cm - Sprouts in Crown (Severe) - Sapsucker Damage (Moderate)

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
52	Acer platanoides	62	2	14	15	M	M	2	P	- Fork 2 @ 3m - Sprouts in Crown (Minor) - Trunk/Stem Girdling <7cm
53	Quercus rubra	6	1	1.4	n/a	L	L	3	R	- Top of Tree Cut Off @ 1.4m - Dedication Tree
54	Acer platanoides	65	2	16	15	M	M	2	P	- Exposed Roots (Moderate) - Sprouts in Crown (Minor)
55	Acer saccharinum	82	2	18	15	M(L)	M	3	R	- Sprouts in Crown (Moderate) - Past Pruning (Moderate) - Crown Dieback (Minor)
56	Acer platanoides	44	1	14	15	M(L)	M	2	P	- Exposed Roots (Moderate) - Girdling Root (Moderate) - Requires Pruning and/or Thinning (Moderate) - Trunk/Stem Girdling < 5cm
57	Acer platanoides	44	1	14	15	M(L)	M	2	P	- Thin Crown (Moderate) - Trunk/Stem Girdling < 5cm - Exposed Roots (Minor) - Girdling Root (Moderate) - Requires Pruning and/or Thinning (Moderate)
58	Aesculus hippocastanum	70	2	16	20	M	M	2	P	- Trunk Decay (Minor) - Past Pruning (Moderate)
59	Acer platanoides	71	2	16	15	M(L)	M	2	P	- Thin Crown (Minor) - Crown Dieback (Minor) - Dead Wood (Minor) - Sprouts in Crown (Minor)
60	Ulmus glabra	71	2	16	15	M(L)	M	2	P	- Sprouts in Crown (Moderate) - Past Pruning (Minor) - Trunk Decay (Minor)
61	Acer platanoides	44	1	14	10	M(L)	M(L)	3	R	- Sprouts in Crown (Minor) - Past Pruning (Severe) - Wound Compartmentalized (Moderate) - Thin Crown (Moderate)
62	Juglans nigra	68	2	18	20	M	M	2	P	- Bench Around Trunk

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
63	Acer platanoides	79	3	18	20	M(L)	M(L)	2	P	- Exposed Roots (Minor) - Girdling Root (Minor) - Fork 3 @ 3m - Thin Crown (Moderate) - Past Pruning (Moderate)
64	Sophora japonica	33	1	10	10	M	M	2	P	- Sprouts in Crown (Minor) - Basal Trunk Wound (Severe) - Basal Trunk Decay (Moderate)
65	Acer saccharinum	118	2	16	15	M(L)	M	2	P	- Burils on Trunk (Moderate) - Fork 2 @ 3m - Broken Crown (Moderate) - Past Pruning (Severe) - Sprouts in Crown (Moderate)
66	Acer platanoides	70	2	14	15	M	M	2	P	- Exposed Roots (Minor) - Girdling Root (Minor) - Thin Crown (Minor) - Fork 2 @ 3m - Trunk/Stem Girdling < 7cm - Sprouts in Crown (Minor) - Past Pruning (Moderate)
67	Acer platanoides	41	1	14	10	M	M	2	P	- Exposed Roots (Minor) - Thin Crown (Minor) - Past Pruning - Fork 2@ 3m - Trunk/Stem Girdling < 7cm
68	Acer platanoides	33	1	10	7.5	M	M	2	P	- 3m Bark Split on Trunk - Exposed Roots (Minor) - Trunk/Stem Girdling < 7cm - Dense Twigs @ Perimeter of Crown (Moderate)
69	Fraxinus americana	80	2	18	25	M(L)	M(L)	2	P	- Sprouts in Crown (Severe) - Damaged Trunk -Cavities For Squirrels (Minor)
70	Acer platanoides	37	1	10	10	M	M(L)	2	P	- Exposed Roots (Minor) - Girdling Root (Severe) - Sprouts in Crown (Minor) - Trunk/Stem Girdling <7cm - Past Pruning (Minor)

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
71	Acer platanoides	68	2	16	15	H	M	1	P	- Exposed Roots (Moderate) - Dead Wood (Minor) - Past Pruning (Minor) - Trunk Split (Minor) - Cable (Moderate)
72	Acer pseudoplatanus	50	2	14	7.5	H	M(L)	2	P	- Trunk Damage (Minor) - Fused Stems @ 3m - Bent Trunk (Moderate) - Requires Pruning and/or Thinning (Moderate)
73	Acer saccharum	45	2	12	15	M	M	2	P	- Fork 3 @ 3m - Dead Wood (Minor) - Requires Pruning and/or Thinning (Minor) - Past Pruning (Minor)
74	Gleditsia triacanthos var. inermis	30	1	10	10	M	M	2	P	- Sprouts in Crown (Minor) - Past Pruning (Minor)
75	Acer saccharum	44	2	14	15	M	H	2	P	- Fork 2 @ 3m - Sprouts in Crown (Minor)
76	Pinus nigra	32	1	8	7.5	M(L)	M(L)	3	R	- Trunk/Stem Girdling < 10cm - Deformed Leader - Unbalanced Crown (Moderate to the West) - Sap Sucker Damage (Moderate) - 70% Live Crown
77	Pinus nigra	42	1	10	7.5	M	M	2	P	- Fork 2 @ 1.5m - Sap Sucker Damage (Minor) - Bent Trunk (Moderate) - 70% Live Crown - Unbalanced Crown (Minor to the Northeast)
78	Acer platanoides	84	2	18	20	M(L)	M	2	P	- Thin Crown (Moderate) - Heavy Lateral 45cm @ 2m - Sprouts in Crown (Moderate) - Cable (Minor) - Exposed Roots (Minor)
79	Tilia cordata	79	2	16	20	M(L)	M	3	R	- Sprouts in Crown (Severe) - Dead Wood (Minor)
80	Pinus nigra	24	1	8	7.5	M	L	2	P	- Bent Trunk (Severe) - Sap Sucker Damage (Minor) - 60% Live Crown
81	Pinus nigra	18	1	6	5	M	M	2	P	- Sap Sucker Damage (Moderate) - 50% Live Crown

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
82	Acer platanoides	39	1	10	15	M	H(M)	2	P	- Exposed Roots (Minor) - Past Pruning (Minor) - Trunk/Stem Girdling <7cm
83	Juglans nigra	58	2	14	20	M	M	2	P	- Requires Pruning and/or Thinning (Minor)
84	Acer platanoides	14	1	6	5	M	M	2	P	- Bent Trunk (Minor)
85	Acer platanoides	59	2	14	15	M	M	2	P	- Basal Trunk Wound (Moderate) - Girdling Root (Moderate) - Exposed Roots (Minor) - Crown in Wires (Minor) - Past Pruning (Minor)
86	Ulmus glabra	54	2	14	15	M(L)	M	2	P	- Sprouts in Crown (Severe) - Trunk/Stem Girdling < 10cm
87	Acer platanoides	72	2	14	15	M(L)	M	2	P	- Exposed Roots (Moderate) - Fork 2 @ 2m - Girdling Root (Minor) - Past Pruning (Moderate) - Dead Wood (Minor)
88	Acer platanoides	42	1	14	10	M	M	2	P	- Sprouts in Crown (Minor) - Thin Crown (Minor)
89	Syringa reticulata	14,16,8	1	5	5	H	M	2	P	- In Bed With Shrubs
90	Tilia cordata	49	2	16	15	H	M	2	P	- Enlarged Root Stock (Moderate) - Fork 3 @ 2.5m
91	Acer platanoides	50	2	14	158	M	M	2	P	- Exposed Roots (Moderate) - Girdling Root (Moderate)
92	Taxus cuspidata	5-20	1	2-4	5(3-7.5)	M(L)	M	2	P	- No Defined Leader - 6 Trees (2 Very Small, 4 Small) - Crown Dieback (Minor)
93	Acer saccharum	23	1	10	7.5	M	H	2	P	- Trunk/Stem Girdling <5cm
94	Acer saccharum	34	1	12	10	H	H(M)	1	P	
95	Fraxinus excelsior	61	2	12	15	M(L)	M	2	P	- Leader Cut Out - Past Pruning (Moderate) - Sprouts in Crown (Moderate) - Heavily Fruited
96	Acer platanoides	37	1	12	10	M	H	1	P	- Exposed Roots (Minor) - Girdling Root (Minor) - Fork 2 @ 2m
97	Acer platanoides	28	1	8	10	M	M	2	P	- Trunk Wound (Moderate) - Wound Compartmentalized

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(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
98	Ulmus glabra	82	2	12	15	M(L)	M	2	P	- Sap Sucker Damage (Severe) - Sprouts in Crown (Moderate)
99	Ulmus pumila	80	2	18	15	M(L)	M	2	P	- Sprouts in Crown (Severe) - Exposed Roots (Minor)
100	Quercus alba	96	3	20	25	M(L)	M	2	P	- Past Pruning (Severe) - Sprouts in Crown (Moderate) - Crown Dieback (Minor)
101	Acer saccharum	18	1	8	7.5	H(M)	H	1	P	
102	Acer platanoides	75	2	20	20	M	M	2	P	- Fork 3 @ 2m - Past Pruning (2) - Girdling Root (Minor)
103	Acer saccharum	18	1	8	5	M	H	1	P	
104	Acer saccharum	20	1	10	5	H	H	1	P	
105	Acer saccharum	18	1	10	7.5	H	H	1	P	
106	Tilia cordata	35	1	14	7.5	H	M	1	P	- Enlarged Rootstock (Minor)
107	Tilia cordata	34	1	14	7.5	H	H	1	P	- Enlarged Rootstock (Minor)
108	Tilia cordata	33	1	14	7.5	H	M	1	P	- Enlarged Rootstock (Minor)
109	Gleditsia triacanthos var. inermis	36	1	12	10	M	M	2	P	
110	Acer platanoides	53	2	14	15	M	M	2	P	- Fork 2 @ 2.5m - Trunk Wound (Moderate) - Wound Compartmentalized - Exposed Roots (Minor)
111	Tilia X euchlora	69	2	16	15	M	H(M)	2	P	- Fork 2 @ 4m - Basal Sprouts (Minor) - Sprouts in Crown (Severe) - Squirrel Damage
112	Acer saccharum	28	1	12	7.5	H(M)	H	1	P	-Trunk/Stem Girdling < 10cm
113	Acer saccharum	26	1	12	7.5	H(M)	M	1	P	- Fork 2 @ 3m - Trunk/Stem Girdling < 10cm
114	Ulmus americana	61	2	20	15	M	M	2	P	- Sprouts in Crown (Moderate) - Past Pruning (Minor)
115	Ulmus americana	67	2	18	20	M	M(L)	2	P	- Sprouts in Crown (Moderate) - Past Pruning (Moderate) - Bent Laterals (Severe) - Slime Flux Ooze (Minor)

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(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
116	Juglans nigra	87	2	18	25	M(L)	M	2	P	- Sprouts in Crown (Minor) - Trunk/Stem Girdling < 10cm - Thin Crown (Moderate) - Basal Trunk Decay (Minor)
117	Picea abies	10	1	5	3	M(L)	M(L)	3	R	- 40% Live Crown - Thin Crown (Moderate)
118	Picea abies	12,14	1	8	5	M	M	2	P	- 60% Live Crown - Fork 2 @ 1m
119	Juglans nigra	77	2	20	25	M	M	2	P	- Thin Crown (Minor)
120	Juglans nigra	102	3	20	30	M(L)	M(L)	2	P	- Sprouts in Crown (Moderate) - Heavy Laterals to 40cm Dia. - Thin Crown (Moderate)
121	Acer platanoides	64	2	116	15	M(L)	M	2	P	- Sprouts in Crown (Moderate) - Fork 2 @ 2m - Exposed Roots (Moderate) - Dead Wood (Minor)
122	Gleditsia triacanthos var. inermis	35	1	12	10	H(M)	M	1	P	
123	Acer saccharinum	107	2	20	30	H(M)	M	2	P	- Large Lateral 50cm - Past Pruning (Moderate)
124	Acer saccharum	26	1	14	7.5	H	H	1	P	
125	Acer saccharum	32	1	16	10	H	H(M)	1	P	
126	Acer saccharum	34	1	18	10	H	H	1	P	- Girdling Root (Minor)
127	Acer saccharum	26	1	14	7.5	H	H	1	P	
128	Quercus rubra	6	1	4	2	M	M	2	P	- Christine Baird Memorial Tree
129	Acer saccharum	28	1	14	7.5	H	H	1	P	
130	Acer saccharinum	52	1	16	15	H(M)	M(L)	2	P	- Bent Trunk (Moderate) - Sprouts in Crown (Minor)
131	Acer saccharum	31	1	14	10	H	M	1	P	
132	Acer saccharum	37	1	16	10	H	H(M)	1	P	
133	Acer saccharum	41	1	18	15	H	M	1	P	-Trunk Split (Minor) - Fork 2 @ 3m - Cable (Minor)
134	Acer saccharum	34	1	16	7.5	H	M(L)	2	P	- Acute (<15°) Angle of All Stems
135	Fraxinus excelsior	64	2	16	15	M	M	2	P	- Wound Wood Knobs Developed on Past Pruning Stubs
136	Acer saccharum	42	2	18	10	H	H	1	P	
137	Acer saccharum	36	1	16	10	H	M	1	P	

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(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
138	Acer saccharum	27	1	14	7.5	H	M	1	P	- Include Crotch @ 3m
139	Acer platanoides	41	1	14	10	H	M	2	P	- Include Crotch @ 3m
140	Acer platanoides	32	1	14	10	H	M	2	P	- Fork 2 @ 2m
141	Acer saccharum	5	1	4	2	H	M	2	P	- Dedication Tree 'Yevstak Chij'
142	Acer saccharum	5	1	4	2	H	M	2	P	- Dedication Tree 'Maria Vynnyk'
143	Ginko biloba	76	2	20	20	H	M	2	P	- Included Crotch @ 4m - Sprouts in Crown (Minor) - Fused Stems (Minor)
144	Pinus nigra	57	1	7	15	H	L	2	P	- Fork 2 @ 2m - Sap Sucker Damage (Minor) - Unbalanced Crown (Severe to the Southwest) - No Leader
145	?	83	2	14	25	M(L)	M	2	P	- Sprouts in Crown (Minor) - Trunk/Stem Girdling < 7cm - Lean (Minor to the West) - Past Pruning (Moderate) - Leaves opposite, odd pinnately compound; bark deeply furrowed; Catalpa-like fruit/seeds beneath tree
146	Tilia cordata	74	2	20	15	H	H	1	P	- Sap Sucker Damage (Moderate) - Sprouts in Crown (Minor)
147	Acer platanoides	112	2	20	25	M	M	2	P	- Exposed Roots (Minor) - Root Crown growing into Curb and Sidewalk - Dead Wood (Minor) - Decay @ Fork of stems (Minor) - Included Bark @ Fork (Moderate) - Aerial Inspection Required
148	Tilia X euchlora	52	2	10	12	M	M(L)	2	P	- Sprouts in Crown (Severe) - Multi-Branched Node on Trunk @ 3m - Past Pruning (Minor)
149	Tilia X euchlora	52	2	10	12	M	M(L)	2	P	- Sprouts in Crown (Severe) - Multi-Branched Node on Trunk @ 2.5m - Past Pruning (Moderate)
150	Tilia X euchlora	52	2	12	12	M	L	2	R	- Trunk Split (Moderate) - Bark Split (Moderate) - Sprouts in Crown (Severe) - Past Pruning (Minor) - Multi-Branched Node on Trunk @ 2.5m
151	Platanus x acerifolia	19	1	8	10	H	H	1	P	

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152	Acer saccharinum	126	2	20	25	M	M	2	P	- Fork 2 @ 3m - Dead Wood (Moderate) - Sprouts in Crown (Moderate) - Past Pruning (Moderate) - Crown Dieback (Minor) - Squirrel Damage (Minor)
153	Crataegus sp.	22	1	5	5	L	L	3	R	- Crown Dieback (Severe0 - Dead Wood (Moderate) - Trunk Decay (Moderate) - Lean (Minor to the South)
154	Acer platanoides	57	2	16	10	L	M	3	R	- Trunk Decay at Base With Shelf Fungus (Moderate) - Crown Dieback (Moderate) - Thin Crown (Severe) - Bark Necrosis (Severe)
155	Gymnocladus dioicus	51	2	14	15	M	M(L)	2	P	- Lean (Moderate to the WestSouthWest) - Unbalanced Crown (Severe to the WestSouthWest) - Sprouts in Crown (Moderate) - 4cm Rise of Soil on East Side of Trunk
156	Acer rubrum / saccharinum ?	116	3	22	25	H(M)	H(M)	2	P	- Basal Trunk Buril (Severe0 - Past Pruning (Moderate) - Squirrel Damage (Minor) - Fork 2 @ 8m
157	Acer saccharinum	117	3	22	30	H(M)	H(M)	2	P	- Past Pruning (Moderate) - Fork 2 @ 4m - Squirrel Damage (Minor)
158	Acer saccharum	4	1	4	2	M	M	2	P	- Planted in the Last Two Years
159	Acer rubrum / saccharinum ?	104	3	20	25	H(M)	M	2	P	- Sprouts in Crown (Moderate) - Broken Crown (Severe) - Trunk Decay (Severe @ 8m) - Aerial Inspect Snag (Minor) - Remove Snag
160	Acer saccharum	23	1	10	7.5	H(M)	M	2	P	- Restricted Trunk Flare (Minor to the East)
161	Acer saccharum	35	1	12	10	H	H	1	P	
162	Metasequoia glyptostroboides	58	1	8	5	H	H	1	P	
163	Metasequoia glyptostroboides	21	1	8	5	H	H	1	P	
164	Metasequoia glyptostroboides	22	1	8	5	H	H	1	P	- Lower Crown Sun Damage (Minor)
165	Acer ginnala	6-14	1	6	3	M	M	2	P	- Trunk/Stem Girdling < 6cm - In Mounded Planting Bed

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(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
166	Acer platanoides	49	2	12	15	M(L)	M(L)	2	P	- Thin Crown (Moderate) - Past Pruning (Moderate) - Bark Split (Moderate) Throughout Crown
167	Acer saccharinum	80	2	20	15	M(L)	M(L)	2	P	- Large Cankers on Trunk (Moderate) - Broken Crown (Moderate) - Requires Pruning and/or Thinning (Moderate) - Unbalanced Crown (Moderate to the South)
168	Acer saccharinum	73	2	20	15	M(L)	M(L)	2	P	- Fork 2 @ 3m - Unbalanced Crown (Severe to the North)
169	Acer saccharinum	71	2	20	20	M	M(L)	2	P	- Unbalanced Crown (Severe to the SouthEast) - Past Pruning (Moderate) - Squirrel Damage (Minor)
170	Acer saccharinum	90	2	20	20	M	M	2	P	- Past Pruning (Moderate) - Squirrel Damage (Minor) - Metal Plate Over Cavity
171	Aesculus hippocastanum	76	2	16	15	M(L)	M(L)	2	P	- Leader Decay (Moderate) - Broken Crown Decay (Minor) - Bark Necrosis (Moderate) To 3m - Decay @ Root Ground (Minor)
172	Acer platanoides	34	1	10	10	M(L)	M(L)	2	P	- Exposed Roots (Minor) - Girdling Root (Moderate) - Thin Crown (Severe) - Bark Necrosis (Minor)
173	Acer saccharum	34	1	16	10	H	M	2	P	- Included Crotch @ 3m
174	Acer platanoides	51	2	147	15	M	M	2	P	- Exposed Roots (Minor) - Thin Crown (Minor) - Unbalanced Crown (Moderate to the South)
175	Acer platanoides	73	2	18	15	L	M(L)	3	R	- Past Pruning (Moderate) - Bark Necrosis (Severe to 4m) - Base of Trunk Hollow By Sound - Unbalanced Crown (Moderate to the NorthEast
176	Picea abies	32	1	10	7.5	L	M(L)	3	R	- 70% Live Crown - Thin Crown (Severe) - Lean (Minor to the SouthEast)
177	Acer platanoides	68	2	16	15	M	M(L)	3	R	- Trunk Decay (Moderate) - Trunk Cavity (Severe @ 4m) - Excessive Root Crown Growth (Severe) - Trunk Decay (Severe)

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(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
178	Acer platanoides	58	2	12	15	M(L)	L	3	R	- Sprouts on Trunk (Moderate) - Unbalanced Crown (Severe to the Northwest) - 1° Stem Removed (Severe) - Trunk Decay (Severe)
179	Platanus x acerifolia	96	2(3)	24	25	M	H	2	P	- Fruit in Clusters of 1-2 - Sprouts in Crown (Severe) - Check for Anthracnose
180	Ulmus americana	155	3	22	30	M(L)	M(L)	3	R	_Bark Necrosis (Moderate) - Fork 3 @ 1-2m - Dead Wood (Moderate) - Sprouts in Crown (Moderate) - Squirrels in Cavities (Moderate) - Trunk Decay (Moderate) - Cable (Minor)
181	Gymnocladus dioicus	60	2	16	15	H	M	1	P	- Female - Electronic Installations In Trunk @ 5m
182	Acer platanoides	97	2	18	20	M(L)	M(L)	2	P	- Sprouts in Crown (Moderate) - Thin Crown (Severe) - Past Pruning (Moderate)
183	Acer platanoides	72	2	18	10	M(L)	M(L)	2	P	- Exposed Roots (Minor) - Girdling Root (Minor) - Past Pruning (Severe) - Thin Crown (Moderate)
184	Syringa reticulata	26	1	6	7.5	M	M	2	P	- Sprouts in Crown (Moderate)
185	Malus cv.	18	1	4	5	M	L	3	R	- 1° Stem Removed - Lean (Severe to the South)
186	Malus cv.	26	1	5	7.5	M	M(L)	2	P	- Lean (Moderate to the West) - Trunk Cankers (Moderate) - Sprouts in Crown (Minor)
187	Quercus rubra	19	1	7	5	H	H	1	P	- Broken Crown (Minor)
188	Cladrastis lutea	4-8	1	4-5	5	M	M	2	P	- 5 Trees in 60cm Raised Concrete Planter
189	Sorbus aucuparia	12	1	6	3	M	M	2	P	- Leader Damage, Train Leader
190	Ailanthus altissima	62	2	12	15	M	M	2	P	- Sprouts in Crown (Minor) - Fruit Laden (Severe) - Past Pruning (Minor)
191	Pinus nigra	34	1	8	10	M	M(L)	2	P	- Sap Sucker Damage (Moderate) - Poor Leader Development

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
192	Pinus nigra	269	1	8	7.5	M	M(L)	2	P	- Sap Sucker Damage (Moderate) - Poor Leader Development
193	Pinus nigra	35	1	8	10	M	M(L)	2	P	- Sap Sucker Damage (Moderate) - Poor Leader Development - Lean (Moderate to the Southwest)
194	Chamaecyparis nootkatensis	16-22	1	8-12	5	H	H	1	P	- 5 Trees - Crown Dieback Over Greenhouse (Minor) - Sprouts in Crown (Moderate)
195	Acer platanoides	79	2	16	15	M	M	2	P	- Unbalanced Crown (Severe to the Northwest)
196	Pinus nigra	66	2	8	10	M	M(L)	2	P	- Fork 3 @ 2m - Sap Sucker Damage (Moderate) - Laterals Over Greenhouse
197	Acer saccharum	35	1	12	10	H	M	3	P	- Included Crotch @ 3m
198	Tilia X euchlora	45	1	14	10	H(M)	H(M)	1	P	
199	Tilia X euchlora	44	1	12	10	H(M)	M	2	P	- Exposed Roots (Minor) - Included Crotch @ 5m
200	Ailanthus altissima	86	2	14	15	M	M	2	P	- Fork 2 @ 3m - Reduce WT on East Stem (Moderate)
201	Amelanchier laevis	8	1	4	3	M(L)	M	3	R	- Bark Necrosis (Moderate)
202	Fagus sylvatica	8,8	1	4	5	M	M	2	P	- Basal Sprouts (Minor)
203	Gleditsia triacanthos var. inermis	39	1	12	10	M	M	2	P	- Sprouts in Crown (Moderate) - Unbalanced Crown (Minor to the West)
204	Acer platanoides 'Columnaris'	31	1	12	7.5	M	M	2	P	- Fork 2 @ 2m
205	Acer platanoides 'Columnaris'	25	1	12	5	M	M	2	P	- Unbalanced Crown (Minor to the North)
206	Acer platanoides 'Columnaris'	24	1	12	5	M	M	2	P	- Unbalanced Crown (Minor to the North)
207	Acer platanoides 'Columnaris'	18	1	12	5	M	M	2	P	- Unbalanced Crown (Minor to the North)
208	Acer platanoides 'Columnaris'	16	1	12	5	M	M	2	P	- Unbalanced Crown (Minor to the North)
209	Acer platanoides 'Columnaris'	16	1	12	5	M	M	2	P	- Unbalanced Crown (Minor to the North)
210	Ulmus glabra.	65	2	16	20	M	M	2	P	- Sap Sucker Damage (Moderate) - Lean (Moderate to the North) - Past Pruning (Moderate)
211	Ulmus glabra.	72	2	16	20	M	M	2	P	- Fork 2 @ 2m - Sprouts in Crown (Moderate) - Past Pruning (Moderate)
212	Acer platanoides 'c'	16	1	7	5	M	M(L)	2	P	- Unbalanced Crown (Moderate to the South) - Bark Damage to 2m (Moderate)
213	Acer platanoides 'c'	20	1	12	5	M	M	2	P	

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Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
214	Tilia cordata	28	1	14	10	M	M	2	P	- Unbalanced Crown (Moderate to the West) - Bent Trunk (Moderate)
215	Ulmus glabra	109	2(3)	18	25	M	M	2	P	- SSD (Moderate) - Past Pruning (Moderate) - Sprouts in Crown (Moderate) - Squirrels (Moderate)
216	Acer platanoides 'c'	28	1	12	5	M	M	2	P	
217	Acer platanoides 'c'	22	1	14	5	M	M	2	P	
218	Acer platanoides 'c'	34	1	16	7.5	M	H	1	P	
219	Populus trumla 'Fastigiata'	35	1	18	5	M	L	3	R	- Trunk Canker @ 2m (Severe)
220	Acer platanoides 'c'	28	1	12	5	M	H	2	P	
221	Acer platanoides 'c'	20	1	12	3	H	M	2	P	
222	Malus cv.	18	1	6	5	L	L	3	R	- Dead Wood (Severe)
223	Fagus sylvatica	93	2(3)	20	20	M	M	2	P	- Remove Lower Lateral on West Side - Bark Necrosis (Moderate)
224	Acer rubrum	8	1	5	3	H	M	2	P	- Basal Trunk Damage (Moderate)
225	Tilia X euchlora	29	1	12	7.5	H	H	1	P	- Bent Trunk (Minor) - Lean (Minor to the West)
226	Acer saccharum	30	1	12	10	H	M	2	P	- Included Crotch @ 2m
227	Acer saccharum	28	1	10	10	H	M	2	P	
228	Acer saccharinum	50	1	14	15	M	M	2	P	- Past Pruning (Minor)
229	Tilia cordata	56	2	14	10	M	L	1	R	- Lean (Severe to the Southeast) - Girdling Root (Moderate)
230	Acer saccharum	34	1	14	15	M	M	2	P	- Thin Crown (Moderate) - Bent Trunk (Moderate) - Past Pruning (Moderate)
231	Ulmus glabra.	44,38	2	16	20	M	M	2	P	- Fork 2 @ 6m - Sprouts in Crown (Moderate) - Past Pruning (Severe) - Twisted Trunk (Moderate)
232	Acer platanoides	28	1	8	7.5	M	M(L)	2	P	- Trunk Damage to 2m (Severe)
233	Acer saccharum	38	1	14	10	M(L)	M	2	P	- Thin Crown (Severe) - Undersize Basal Trunk Flare (Moderate)
234	Acer saccharum	38	1	14	10	M	M	2	P	
235	Acer saccharum	29	1	12	7.5	M	M	2	P	- Bent Trunk (Minor)
236	Acer saccharum	20	1	10	5	H	H	1	P	
237	Catalpa speciosa 'Nana'	22	1	4	5	M	M(L)	2	P	- Grafted on Standard

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

(Recorded March 29, April 4 and 10, 2005)

Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
238	Ailanthus altissima	71	2	14	15	H(M)	M	2	P	- Dead Wood (Moderate) - Requires Pruning and/or Thinning (Moderate)
239	Tilia X euchlora	56	2	16	10	H	H	1	P	
240	Acer saccharum	52	2	16	15	H	M	1	P	- Several Included Crotches
241	Ulmus glabra.	76	2	18	20	M	H	2	P	- Sprouts in Crown (Moderate)
242	Acer saccharum	29	1	14	10	M	M	2	P	- Thin Crown (Moderate)
243	Acer saccharum	36	1	16	10	H	M	1	P	- Included Crotch @ 3m
244	Acer rubrum	24	1	12	5	H	M	1	P	
245	Acer saccharum	26	1	12	7.5	M	M	2	P	
246	Tilia X euchlora	52	2	16	15	H	H(M)	1	P	- Sprouts in Crown (Moderate)
247	Tilia X euchlora	62	2	14	10	H	M	1	P	- Sprouts in Crown (Moderate)
248	Tilia X euchlora	50	2	14	10	H	M	2	P	
249	Tilia X euchlora	41	1	14	7.5	M	M(L)	2	P	- Unbalanced Crown (Moderate to the West)
250	Acer saccharum	28	1	12	7.5	M	M	2	P	- Thin Crown (Moderate)
251	Acer saccharum	28	1	12	10	M	M	2	P	- Thin Crown (Moderate)
252	Acer saccharum	22	1	10	7.5	M	M	2	P	- Thin Crown (Moderate)
253	Sorbus sp.	47	2	10	10	M	M(L)	2	P	- Unbalanced Crown (Moderate to the West) - Trunk Canker @ 2m (Moderate)
254	Prunus avium	39	1	12	10	H	M	2	P	- Fork 3 @ 3m
255	Acer saccharum	22	1	10	7.5	M	M	2	P	- Thin Crown (Minor)
256	Acer saccharinum	54	2	14	7.5	H	M	2	P	- Sprouts in Crown (Minor) - Root Exposed in Area of Tree
257	Acer saccharum	30	1	12	7.5	H	M	1	P	- Sprouts in Crown (Minor)
258	Acer saccharum	28	1	12	7.5	H	M	1	P	
259	Acer saccharum	34	1	14	7.5	H	M	1	P	- Included Crotch @ 3m
260	Acer saccharinum	67	2	16	15	M	M	2	P	- Exposed Roots (Minor) - Past Pruning (Moderate)
261	Acer saccharum	28	1	12	7.5	H	M	1	P	- Exposed Roots (Minor)
262	Acer platanoides	40	1	14	10	M	M(L)	2	P	- Bent Trunk (Moderate) - Thin Crown (Moderate)
263	Acer saccharum	26	1	12	7.5	M	M	2	P	- Thin Crown (Minor) - Included Crotch @ 2m
264	Acer saccharum	24	1	14	7.5	H	M	2	P	- Thin Crown (Minor)

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Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments
265	Acer platanoides	73	2	16	15	M	M	2	P	- Exposed Roots (Minor) - Girdling Root (Minor) - Thin Crown (Moderate) - Past Pruning (Minor)
266	Tilia X euchlora	51	2	18	15	H	M	1	P	- Included Crotch @ 4m
267	Acer saccharinum	71	2	20	20	H(M)	M	2	P	- Sprouts in Crown (Moderate) - Past Pruning (Moderate)
268	Tilia X euchlora	47	2	16	15	H	M	2	P	- Bent Trunk (Moderate)
269	Acer platanoides	36	1	12	10	M	M	2	P	- Exposed Roots (Minor) - Girdling Root (Minor) - Thin Crown (Minor) - Lean (Minor to the South)
270	Fraxinus pennsylvanica	12	1	5	5	M	L	2	P	- Basal Trunk Damage (Moderate) - In Wires
271	Fraxinus pennsylvanica	14	1	6	7.5	M	L	2	P	- In Wires
272	Fraxinus pennsylvanica	14	1	6	5	M	L	2	P	- In Wires
273	Fraxinus pennsylvanica	14	1	6	5	M	L	2	P	- In Wires
274	Fraxinus pennsylvanica	14	1	6	5	M	L	2	P	- In Wires
275	Fraxinus pennsylvanica	18	1	6	5	M	L	2	P	- In Wires
276	Fraxinus pennsylvanica	18	1	6	7.5	M	L	2	P	- In Wires
277	Fraxinus pennsylvanica	10	1	5	3	L	L	3	R	- In Wires
278	Fraxinus pennsylvanica	24	1	6	7.5	M	L	2	P	- In Wires
279	Fraxinus pennsylvanica	24	1	7	7.5	M	L	2	P	- In Wires
280	Fraxinus pennsylvanica	24	1	7	7.5	M	L	2	P	- In Wires
281	Fraxinus pennsylvanica	14	1	5	3	L	L	3	R	- In Wires
282	Acer x freemanii	4	1	3	1	H	M	2	P	
283	Fraxinus pennsylvanica	10	1	4	3	M(L)	L	3	R	- In Wires - Trunk Damage (Moderate)
284	Fraxinus pennsylvanica	12	1	5	5	M(L)	L	3	R	- In Wires
285	Fraxinus pennsylvanica	14	1	6	7.5	M	L	3	R	- In Wires - Basal Damage
286	Gleditsia triacanthos var. inermis	5	1	5	3	M	M	2	P	
287	Fraxinus pennsylvanica	14	1	5	5	M	L	3	R	- Lean (Moderate to the Northeast) - In Wires
288	Fraxinus pennsylvanica	12	1	5	5	M	L	3	R	- Lean (Moderate to the Northwest) - In Wires

* Age Class (years): 1 (<50), 2 (50-99), 3 (100-150), 4 (>150)

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Tree No.	Tree Species	DBH (cm)	Age Class* (1, 2, 3, 4)	Height: Top/Bottom of Crown (m)	Crown Reserve (+/- 1,3,5,10,15m)	Biological Health	Structural Condition	Preserv. Priority	Rec. Action Based on Health & Condition	Observations / Comments

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GUELPH
TURFGRASS
INSTITUTE
& Environmental Research Centre

Consulting Report

The Landplan Collaborative

Allan Gardens Restoration

July 4, 2006

Rob Witherspoon, Director and Consulting Agronomist Dr. Jack Eggens of GTI Consulting Services visited Allan Gardens on Tuesday, June 27, 2006 in the company of Rod MacDonald and Mark Steele of The Landplan Collaborative and Sean Colville of Colville Consulting Inc. The purpose of the site visit was to review current turf conditions and provide recommendations for improving the condition of the turfgrass within the park.

Overall, the condition of the grassed areas of the park is poor. There are very limited areas of reasonable turf cover. The remaining areas are a combination of some turfgrasses intermingled with a variety of weeds. Turfgrass species present including limited Kentucky bluegrass (*Poa pratensis*), perennial ryegrass (*Lolium perenne*), annual bluegrass (*Poa annua*) and rough bluegrass (*Poa trivialis*). The most predominant weed species present were white clover (*Trifolium repens*), prostrate knotweed (*Polygonum aviculare*) , pineapple weed (*Matricaria matricariodes*) and broad-leaved plantain (*Plantago major*). The species of weeds present are indicative of compacted, poorly drained soils with a low level of fertility. In specific areas of heavy foot or vehicle traffic, most notably around the northwest corner of the conservatory complex, there is limited vegetative cover on any kind. This area is subject to heavy pedestrian traffic as well as apparent vehicle traffic from service vehicle accessing the service depot on the west side of the conservatory.

Turfgrass management practices appear to be restricted to regular mowing. The condition of the existing turfgrasses and the presence of weeds, specifically white clover and prostrate knotweed, are indicative of poor soil fertility and compaction. It would appear that there has been little or no fertilizer use in the park in recent years. The park appears to be mown at a height of cut that is too low for reasonable growth of the turfgrasses under the existing environmental conditions. The low height of cut contributes to the general poor condition of the turf and predominance of non-turf broadleaved weed species.

Recommendations:

1. Traffic Management

Excessive pedestrian traffic and service vehicle traffic in specific areas of the park is creating worn areas of bare soil. These areas are unsightly and also create a safety problem as the they can be a pedestrian hazard when wet. Pedestrian traffic patterns on the site should be analyzed and landscape features added (paths or barriers) to direct regular traffic away from grassed areas and on to hard surfaces. Staff should be directed not to drive vehicles across grassed areas and/or the addition of barriers to prevent unnecessary vehicular traffic should be installed.

2. Turfgrass Restoration

A continuous perennial ryegrass overseeding program is recommended to improve turfgrass density and to create more functional, attractive and sustainable grassed surfaces within the park. Perennial ryegrass is a wear tolerant turfgrass with reasonable shade tolerance and is one of the few grasses that can be established without extensive turf and soil renovation. Perennial ryegrass is also a very strong and aggressive turfgrass that will crowd out undesirable weeds and mitigate the necessity of a chemical weed management program. A number of patches of dense and healthy perennial ryegrass were observed within the existing grassed areas of the park indicating that this grass has the potential to thrive on this site. A blend of three medium quality perennial ryegrass cultivars will provide an adequate quality of turf at a reasonable cost. The amount of soil disturbance required for the establishment of completely new grassed areas by seeding or sodding would have an impact on the already deteriorated condition of many of the trees in the park. The recommended overseeding program will have minimal impact on the existing trees.

The specific turf restoration program would include:

Seed: Blend of three medium quality perennial ryegrass cultivars from a reputable seed company.

Application Rate: 5 kg of seed per 100 m^2 area (50 kg per hectare or 10 lbs per 1,000 ft^2)

Application Method: Ideally a slit-disc overseeder should be used to apply the seed. The seeder should be set at a half rate (2.5 kg per 100m^2) setting and two passes made over the area with the second pass at a 90^o angle to the first. In areas where surface tree roots are present, seed may be broadcast using a centrifugal spreader.

Timing: For the first 2-3 years as determined by annual analysis of the area, overseeding three times per year is recommended – spring (April 15 to May 15), late summer (August 1 to September 15) and late fall dormant (after November 15). Broadcast seeding over surface tree roots should be done in very early spring (March) to allow spring rains and frost heaving to work the seeds into the soil as well as to minimize bird and animal feeding on the seeds. The seed should be lightly raking into the soil after application. While it would be desirable

to apply the broadcasted seed with a wood fiber mulch, many of the areas may be too small or restricted by trees for easy application.

When an acceptable turf cover has been achieved, a yearly (August) overseeding will maintain turf density.

3. Improved Turfgrass Management Program

A modest effort to improve turf management practices and particularly soil fertility, will have a significant impact on the quality of grassed surfaces in the park.

Mowing: Turf areas should be mown regularly at a minimum height of 5 cm (2 inches). Note that the recommended mowing height is the actual height of cut above ground level and not the "bench setting" of the mower blades.

Fertility: 125 kg N/ha (3 lbs N per 1,000 ft^2) applied in two applications - late May and November using a fertilizer with an approximately 4-1-2 N-P-K ratio (i.e. – 20-5-10) with at least 60% of the nitrogen in a slow release form.

Soil Compaction: The level of soil compaction should be monitored, particularly in heavily trafficked areas. In areas of heavy compaction, a late fall core aeration should be undertaken to relieve compaction. Care should be taken during this activity to avoid damage to the surface roots of trees.

4. Staff Training and External Oversight

It is recommended that adequate staff training and project supervision be conducted to insure that the turf restoration component of the Allan Gardens revitalization project is undertaken properly and within the scope of these recommendations. This would involve meeting with supervisory and front-line staff to insure that they fully understand the restoration process, practices and subsequent maintenance needs. External monitoring will insure that the turfgrass restoration component is carried out properly and achieves the goal of improving the grassed surfaces in Allan Gardens for the benefit of park users and the overall long term health and sustainability of the park environment.

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