MMM Group Limited

Arborist Report

York Trunk Sewer and Paisley Clythe Watermain

City of Guelph

MMM GROUP

January 22, 2014

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Prepared For:

City of Guelph

Prepared by:

MMM GROUP
100 Commerce Valley Drive West, Thornhill, ON L3T 0A1
Tel: (905) 882-1100 Fax: (905) 882-0055

January 22, 2014

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Introduction

MMM Group Limited (MMM) conducted a site inventory and analysis of the proposed York Trunk Sewer and Paisley-Clythe Watermain alignment from the northeast corner of Waterloo Avenue and Wellington Street West, through Silvercreek Park to York Road Park. This report is a detailed inventory of the trees located along the limits of work for the proposed sewer and watermain work. The work limits for the York trunk sewer runs east-west from York Road/Highway No.7 to the Guelph Wasterwater treatment plant. The Paisley and Clythe feedermain runs from the F.M. Woods Reservoir and Pumping Station to the Paisley and Cylthe stations. The installation of both services will increase capacity and transmission service. The limits of construction commence at an existing manhole located at the northeast corner of Waterloo Avenue and Wellington Street West, through Silvercreek Park parallel to the Speed River to a municipal parking lot on the east side of Gordon Street, crossing the Speed River, terminating at in York Road Park. The anticipated limits of work and easements have been provided by the MMM design team working on this assignment. Recommendations have been provided for tree protection and tree removals based on the limits of grading and construction.

This report has been revised as per comments received from the City of Guelph's Planning & Building, Engineering and Environment Department dated: January 10, 2014

This report is to be read in conjunction with:

- Tree Inventory and Preservation Charts (Table 1, Table 2 and Table 3)
- Tree Inventory Plans and Landscape Restoration Plans (L1 to L18)

General Overview

The ±2.3km alignment travels through Silvercreek Park parallel to the Speed River, through Royal City Park, crossing of the Speed River just north of the wooden bridge to York Road Park. The terrain of Silvercreek Park slopes down from the road to the Speed River. Naturalized portions of the park are generally open canopy with clumps of vegetation located along slopes increasing in density and canopy along the river banks. Along the park roads from Edinburgh Road South, parking lots and adjacent to sports fields, vegetation sporadic, likely planted as part of a landscape plan when the roads, parking lots and fields were constructed or are remnants of vegetation protected during construction. A small wooded area consisting of young to medium aged exists west of McCrae Boulevard between the existing trail and Wellington Street. Vegetation within Royal City Park is dense adjacent to the trail, river and within proximity of the gazebo. Where the proposed services cross the Speed River vegetation located along the banks of the river is dense and closed canopy. Within York Road Park vegetation is sparse.

Vegetation within parks is a mixture of non-native and native deciduous and coniferous trees young to medium aged trees and a minimal amount of mature specimens ranging in size between 10-121cm DBH and 2-12m in height. Vegetation located along river banks is generally native, predominantly young to medium aged deciduous trees ranging in size between 10 to 50cm DBH.

Tree species along within the alignment consist of: Colorado Blue Spruce (*Picea pungens 'Glauca'*), Norway Maple (*Acer platanoides*), White Ash (*Fraxinus Americana*), Green Ash (*Fraxinus pennsylvanica*), Red Maple (*Acer rubrum*), Sugar Maple (*Acer saccharum*), Austrian Pine (*Pinus nigra*), Siberian Elm (*Ulmus pumila*), Cherry (*Prunus sp.*), Red Ash (*Fraxinus pennsylvanica*), White Spruce *(Picea glauca*), Black Walnut (*Juglans nigra*), Manitoba Maple (*Acer negundo*), Silver Maple (*Acer saccharinum*), White Birch (*Betula papyrifera*), London Plane

Tree (*Plantanus x acerifolia*), Red Oak (*Quercus rubra*), Eastern Cottonwood (*Populus deltoides*), Trembling Aspen (*Populus tremuloides*), Thornless Honeylocust (*Gleditsia triacanthos var.inermis*), Norway Spruce (*Picea abies*), Scots Pine (*Pinus sylvestris*), Basswood (*Tilia Americana*), Little Leaf Linden (*Tilia cordata*), Crabapple (*Malus sp*.), Golden Weeping Willow (*Salix alba var. Vitellina*), Willow (*Salix sp*.), Horsechesnut (*Aesculus hipposcastanum*), European Mountain-Ash (*Sorbus aucuparia*), Tamarak (*Larix laricina*), Butternut (*Juglans cinerea*), Beech (*Fagus sp*.), Baumann Horsechesnut (*Aesculus hippocastanum 'Baumanii*'), Common Lilac (*Syringa vulgaris*), Northern Catalpa (*Catalpa speciosa*), Honeylocust (*Gleditsia triacanthos*), White Cedar (*Thuja occidentalis*), Yew (*Taxus Canadensis*), Tulip Tree (Liriodenron tulipifera), Mulberry (Morus sp.), White Pine (Pinus strobus) and Bur Oak (*Quercus macrocarpa*),

Field Observations

The field observations were undertaken on December 19 and 20, 2012, January 21, 2013, and October 10, 2013, along the proposed sewer and watermain alignment. Vegetation was assessed at 10cm DBH and above, for species, health, structure and risk within the limits of work. Within the limit of work through Silvercreek Park and the crossing of the Speed River to York Road Park a total of 183 trees were individually inventoried and tagged using a steel numbered tag affixed to the tree using stainless steel nails (tree tag numbers: 001 to 183) and 17 trees were individually inventoried without tagging. A total 132 trees were assessed in 18 tree groupings.

A tree management plan and Arborist Report was prepared for the Royal Park City by Silv-Econ Limited dated: November 9, 2009. A total of 359 trees were individually inventoried, assessed and tagged as part of the tree inventory. The proposed sewer and watermain alignment runs through the park on the north side of the Speed River. The tree inventory conducted in December 2012 utilized tree inventory data from the north side of the Speed River only (tree tag numbers 212 to 347 and 1007, 1021 to 1024) which includes 141 trees. This data has been incorporated into this report.

Definitions

The following are the definitions of the assessment categories utilized in our tree assessment:

Tree Number — this number refers to the number on the reference plan.

Species — the botanical and common names are provided for each tree.

DBH — — this refers to diameter (in centimetres) at breast height and is measured at 1.3 m above the ground for each tree.

Trunk Integrity (T.I.) — this is an assessment of the trunk for any defects or weaknesses. It is measured on a scale of poor, fair, good.

Canopy Structure (C.S) — this is an assessment of the scaffold branches, unions and the canopy of the tree. This is measured on a scale of poor, fair, good.

Canopy Vigour (C.V.) — this is an assessment of the health of the tree and assesses the amount of deadwood and live growth in the crown as compared to a 100% healthy tree. The size, colour and amount of foliage are also

	considered in this category. This is measured on a scale of poor, fair, good.

Condition Assessments (G,F,P):

GOOD -	tree displays less than 10% deficiency/defect within the given tree assessment criteria (TI, CS, CV).
FAIR -	tree displays 10%-30% deficiency/defect within the given tree assessment criteria (TI, CS, CV).
POOR -	tree displays greater than 30% deficiency/defect within the given tree assessment criteria (TI, CS, CV).
Dripline radius	this refers to the measured diameter (in metres) of the trees crown.
Suppressed	Refers to trees that have their crowns completely overtopped by adjacent trees and received limited to very limited sunlight.
Co-dominant Stem	Stems equal in size and relative importance, usually associated with either the trunks and stems or scaffold limbs and branches in the crown.
Union	Junction point where two or more stems meet. A 'U' shaped junction indicates a well formed union. A 'V' shaped junction indicates a weakly formed union, whereas stems grow and increase in girth, weak bark called 'included bark' forms within the junction and stems start to push apart causing vertical cracks and loss of structure.
Tree form	Refers to branches and stems that have formed irregularly often resulting in contorted growth, weak attachments, weakly formed unions and co-dominant stems. The irregular growth of scaffold (lateral) branches typically leads to damage to other scaffold branches.
Tree Protection Zone	this refers to the preservation area of the tree to be protected with tree protection measures. No construction activities are to be undertaken within this zone.

City By-Laws:

Tree Protection By-Law

The City of Guelph has a By-Law that regulates the destruction or injuring of trees in the City of Guelph (By-Law No. (2010) - 19058). This By-Law applies to regulated trees on private property only.

'Regulated Trees' means a specimen of any species (deciduous or coniferous), supported by a single root system, that has reached a height of 4.5m from the ground, is located on a lot larger than 0.2ha (0.5) ac in size and has a DBH of at least 10cm.

CFIA Directive (D-03-08): Phytosanitary Requirements to Prevent the Introduction Into and Spread within Canada of the Emerald Ash Borer, Agrilus planipennis (Fairmaire)

The Canadian Food Inspection Agency issues a prohibition of movement where the emerald ash borer (EAB) has been confirmed. EAB has been found in Guelph and thus the City of Toronto has been identified as part of the EAB Regulated Area encompassing most of southern Ontario. The subject property is within identified areas prohibiting the movement of regulated materials (including but not limited to ash wood or bark and ash wood chips or bark chips) from a regulated area. EAB regulated articles moving out of a regulated area must be accompanied by a Movement Certificate issued by the CFIA. Refer to the EAB Regulated Areas of Canada found on the CFIA website.

Based on the above definitions the proposed work would be subject to this By-Law. The Emerald Ash Borer is present within Ash trees on this site. Ash materials must not leave the 'Regulated Area'. Contractor to consult with the CFIA Central Guelph office for specific requirements (259 Woodlawn Road, West, Suite A, Guelph, ON, 519-837-5817)

Discussion

The inventory was limited to the limits of work of the proposed sewer and watermain and has been broken into two sections: Silvercreek Park / Speed River Crossing; and Royal City Park. Tree tagging has been expressed in 3 tables. Table 1 includes trees within Silvercreek Park that have been tagged in sequence commencing at the northeast corner of Waterloo Avenue and Wellington Street West moving northeast to Royal City Park. Trees within Royal City Park are also included in this table and were previously tagged sequentially moving northeast starting at McCrae Boulevard and the existing trail. Table 2 includes additional fieldwork that was undertaken to assess vegetation due to the watermain and sewer alignment changes. Table 3 includes the tree inventory prepared by Aboud & Associates Inc., for the service improvements on Wellington Street at Gordon Street to 200m past McCrae Street. For methodology and recommendations refer to the Arborist Report prepared by Aboud & Associates dated: November 12, 2013. Determinations were made with respect to tree survival based on the limits of work required for the construction of the sewer and watermain.

Silvercreek Park / Speed River Crossing

There are 332 trees (183 trees that were individually inventoried and tagged, and 17 trees not tagged, and 132 trees in groupings) within the limits of work that goes through Silvercreek Park and crosses the Speed River.

Vegetation canopy and density ranges between open and closed with higher densities found along river banks and lower densities / clumps located along slopes, along trails and adjacent to parking lots. Vegetation composition within the park is a mixture of non-native and native deciduous and coniferous trees young to medium aged trees with a minimal amount of mature specimens ranging in size between 2 to 121cm DBH (deciduous) and 2 to 12m in height (coniferous). Vegetation composition along the river banks is generally native, predominantly young to medium aged deciduous trees ranging in size between 10 to 50cm DBH. Tree species consist of an abundance of: Sugar Maple; frequent amounts of Colorado Blue Spruce, Norway Maple, Green Ash, White Ash and Red Ash; the occasional Red Maple, Austrian Pine, Silver Maple, White Birch, Cherry, Black Walnut, Honeylocust (thorned and thornless), Willow, Golden Weeping Willow and Manitoba Maple and to a lesser extent; American Beech, Red Oak,

Basswood, Eastern Cottonwood, Horsechesnut, Little Leaf Linden, Mountain-Ash, Trembling aspen, Tamarak, White Pine and Butternut.

Tree health ranged from good to poor with a majority of the vegetation in good condition. Vegetation found to be in fair to poor condition showed signs and symptoms of weakly formed unions, poor form due to abnormal development of scaffold branches causing injury to other branches, canker, lean, sucker growth, trunk wounds, broken branches, trunk girdle from mowers, exposed cambium, exfoliating bark, exposed roots, root damage, lion tailing, co-dominant stems, girdling roots, included bark, contorted growth and deadwood ranging between 10-50%.

27 trees of significance were found within the park. These trees are mature (±50yrs old), generally over 60cm DBH, and 10-15m in height with a dripline of 6-10m. Trees consist of: nine Sugar Maples, 116, 104, 140, 62, 65, 90, 79, 73 and 91cm DBH, tree #'s33, 34, 40, 42, 46, 47 and 166-168 ranging from good to fair condition; one London Plane Tree, 74cm DBH, tree #64 in good condition; two Eastern Cottonwood, 78 and 60cm DBH, tree #s66 and 160 in good condition; one Golden Weeping Willow, 84cm DBH, tree #90, in fair condition; six Willow 131,74,121,84,88 and 69cm DBH, tree #'s94,97,100-102 and 140 ranging between good to fair condition; one Norway Maple, 65cm DBH, tree #106 in good condition; two Horsechesnut, 60 and 99cm DBH, tree #'s14 and 115 in fair condition; one 69cm DBH Ash, tree #121 in good condition; two Little Leaf Lindens, 69 and 60cm DBH, tree #'s 123 and 124 in good condition; one 63cm DBH Green Ash, tree #129 in good condition; and one 96cm DBH Trembling Aspen, tree #135 in fair condition.

Vegetation along the banks of the Speed River were found to be a mixture of native and non-native species. The west bank is generally closed canopy with a limited understory consisting of an abundance of Manitoba Maple and a frequent amount of Norway Maple. The east bank is open canopy with an abundance of Golden Rod within the understory and a mixture of Black Walnut, Manitoba Maple and Ash. Vegetation was found to range between good to poor condition.

Impacts

Impacts to existing vegetation have been minimized through site meetings and alignment changes; however there will be impacts to vegetation within the current alignment. Excavation, grading and construction will have an impact on ±46 trees over 10cm DBH and ±15 trees under 10cm DBH. These trees will require removal as they will not survive construction and grading related activities.

The alignment is proposed to cross the Speed River. The current alignment minimizes the impact to existing vegetation and is a result of site meetings and correspondence between the consultant, City staff and the GRCA. The grading, excavation and construction will impact 19 trees on either side of the river. These trees are recommended to be removed as they will not survive construction.

Royal City Park

The tree inventory conducted by Silv-Econ identified 359 trees within Royal City Park. The 141 trees located on the north side of the Speed River which were part of the original inventory have been included in this report.

Trees range between immature and mature; there is a wide variety of species that have been planted with mown turf grass beneath. Several mature trees are have likely been in existence since the park was opened in 1910. Vegetation canopy is generally open with a higher density of trees located on both sides of the existing trail and amongst the Gazebo. Vegetation composition within the park is a mixture of non-native and native deciduous and coniferous trees young to

medium aged trees with a minimal amount of mature specimens ranging in size between 1-133cm DBH (deciduous) and 2-12m in height (coniferous). Tree species consist of an abundance of: White Ash and Norway Maple; frequent amounts of Green Ash and White Spruce; the occasional Silver Maple, Scots Pine and Colorado Blue Spruce and to a lesser extent; American Beech, Red Oak, London Plane Tree, Tulip Tree Basswood, Bauman Horsechesnut, Horesechesnut, Northern Catalpa, common Lilac, Blue Beech, Mulberry, White Pine, American Elm, Butternut, Honeylocust, Sugar Maple, Austrian Pine, Yew and Little Leaf Linden.

Tree health ranged from good to poor with a majority of the vegetation in good condition. Vegetation found to be in fair to poor condition showed signs and symptoms of trunk wounds, scars, root girdle, salt damage, root plate lifting, compaction, decay, cavities, basel scars, pruning wounds, weakly formed unions, poor form due to abnormal development of scaffold branches causing injury to other branches, lean, broken branches, trunk girdle from mowers, exfoliating bark, cavities, exposed roots, root damage, co-dominant stems, rot, fungal growth and deadwood ranging between 10-50%.

There are 24 significant trees. These trees are mature (±50-90yrs old), generally over 60cm DBH, 10-15m in height with a dripline of 6-10m Some of these trees are likely remnants of trees planted when the park was opened in 1910. Tree species consist of: 5 White Ash, 74,74,61,72 and 62cm DBH, tree #'s 212, 217, 227, 229, 237 and 238 ranging between good and fair condition; one 78cm DBH Green Ash, tree #218 in fair condition; 10 Norway Maple, 70, 72, 73, 103, 84, 94, 78, 91, 76 and 85, tree #s 224, 226, 230, 169, 170, 273, 284, 286, 301, 344 in good to fair condition; 2 Sugar Maple, 99 and 99cm DBH, tree #'s 303 and 329 in good to fair condition; 3 Silver Maple 104,112 and 96cm DBH, tree #'s 1021, 1022 and 1024 in fair condition; and one Butternut, 100cm DBH in poor condition. Along the banks of the Speed River there are two significant Norway Maples 72 and 85cm DBH, tree #s 169 and 170 in good condition.

Impacts

Impacts to vegetation within Royal City Park have been minimized through site meetings and alignment change, in particular to avoid significant trees. The proposed alignment will impact 5 trees which will not survive grading and construction activities.

Endangered Species Recommendations

Butternut is listed as an endangered species under the Endangered Species Act, 2007 (ESA). The main threat to the Butternut species is a fungal disease, Sirococcus clavigignenti-juglandacearum, commonly known as 'butternut canker'. This fungal disease attacks the live tissue of the tree. Infested trees will have sunken black cankers that can spread through the trunk and branches and ultimately kill the tree.

It is an offence to damage, harm or kill 'retainable' butternut trees under the ESA. Retainable trees are classified as trees that show genetic resistance or trees that are growing vigorously even though they may be infected with the canker. All butternut trees that could be damaged, harmed or killed must be assessed by a registered Butternut Health Assessor (BHA) to determine the tree health. If a tree is assessed as 'retainable' than the tree must be preserved and protected with a 25.0 m buffer. Retainable trees may be removed provided that a permit is obtained from the Minister of Natural Resources. 'Non-retained' trees, as assessed by a registered BHA, are not protected under the ESA.

The standard protocol for assessing and reviewing the Butternut trees requires that a registered BHA assesses the trees on the site. A letter complete with the tree assessment is sent to the property owner and copied to the local Ministry of Natural Resources (MNR) species at risk biologist to review. The MNR has 3 weeks to review and request an audit of the assessment. If no audit is requested than the assessment stands and the butternuts are considered to be retainable or non-retainable based on this assessment. In cases where the MNR wishes to audit the assessment they have 3 weeks to complete their audit and provide comment on the trees. The MNR audit overrules any BHA assessment.

Three Butternuts were observed within the limits of work. Two of these trees were located within Silvercreek Park: 2cm DBH, Tree 145B; and 5cm DBH, tree 147B. The inspection was undertaken when the plants were dormant. An in leaf inspection, plus a Butternut Health Assessment was conducted on August 27, 2013 and health assessment prepared on September 30, 2013 by MMM Group Limited. The MNR reviewed and concurred with the conclusions of this assessment that Butternuts 145B and 147B were hybrids and are not protected under the Species at Risk Act. Refer to the email from the MNR in Appendix 'A'.

One Butternut was located in Royal City Park, Tree 255. A Butternut Health Assessment was conducted by the City of Guelph on July 6, 2011. It was concluded that the tree is 'Retainable' and the proposed alignment will avoid any impact to this tree.

Transplanting

The proposed alignment will have an impact on healthy native trees. Some of these trees have potential for transplanting based on good health, location (easy access for spade) and size (typically under 25cm DBH). The survival rate for transplanting trees over 25cm DBH lessens due to the larger amount of the root zone that will be lost during spading.

On the east side of the Speed River crossing 5 Maple and 1 White Pine have been identified to be transplanted (Tree tag's 175 to 177 and G-174). Within Royal City Park trees within grouping G-190 have been identified for transplanting. Refer to sheets L6 and L11 for transplanting locations, L14 for transplanting notes and guidelines and sheet L16 for details.

Compensation

The excavation, grading and construction related to the installation of the York Trunk Sewer and Paisley-Clythe Watermain will impact a majority of vegetation within the limits of work. There will be approximately ± 70 trees above 10cm DBH. The City of Guelph's Environmental Planning department has recommended a 3:1 replacement ratio for all trees removed over 10cm DBH. As part of the submission process restoration plans will be prepared that address the impacts to vegetation and soft landscaping within parkland, sports fields, along river banks, in naturalized areas and within the municipal rights of ways. These proposed plantings will help mitigate the overall loss of vegetation from construction. The revised 90% submission Tree Management / Landscape Plans have proposed the planting of 220 trees and 244 shrubs.

Tree species recommended to be planted include:

- Sugar Maple (*Acer saccharum*)
- Silver Maple (*Acer saccharinum*)
- Red Oak (*Quercus rubra*)
- White Oak (*Quercus alba*)
- Black Walnut (*Juglans nigra*)

- White Spruce (*Picea glauca*)
- Eastern White Pine (*Pinus strobus*)
- Black Willow (*Salix nigra*)
- Paper Birch (*Betula papyrifera*)
- Nannyberry (*Viburnum lentago*)
- Highbush Cranberry *(Viburnum trilobum*)
- Red Maple (*Acer rubrum*)
- Hackberry (*Celtis occidentalis*)
- American Elm (*Ulmus Americana*)
- Staghorn Sumac (*Rhus typhina*)
- Red Osier Dogwood (*Cornus sericea*)
- American Elder (*Sambucus Canadensis*)
- Pussy Willow (*Salix discolor*)

Note: No single species should exceed 30% of the total planting plan total.

Preservation and Protection Recommendations

The survival rates for trees, which are in proximity to construction, are dependent on the resultant changes to a variety of environmental and anthropogenic factors. These construction activities bring about changes to a variety of environmental features including the existing microclimate including winds, temperature, soil moisture, amount of available sunlight, soil quality, and the level of the water table. Increased human activities may also damage the structure and/or physiological activities of the trees. The full effects of the damage may not appear until several years after its occurrence. Thus, it is essential that both vegetative clearing and preservation methods follow the guidelines below and those generally accepted as keeping with good horticultural and construction practices. The guidelines are subject to adjustments deemed reasonable and appropriate considering the proximity and number of trees involved and the site-specific servicing requirements.

General Recommendations

The following is a list of practical considerations for the construction phase of the project that applies to all trees that may be impacted by the construction.

- Prior to the commencement of tree removals, all limits of the locations of the tree preservation fencing must be clearly staked in the field and approved by the MMM contract administrator. All trees within the tree preservation zone must be left standing. The tree removals must be coordinated to be completed outside of the nesting season, May 1 to August 8.

- All removals must be felled into the work area to ensure that damage does not occur to the trees within the tree preservation zone.

- Upon completion of the tree removals, all felled trees are to be removed from the site, and all brush chipped. All brush, roots and wood debris must be shredded into pieces that are smaller than 25 mm in size to ensure that any insect pests that could be present within the wood are destroyed. This work must be completed outside of the nesting season, May 1 to August 8.

- The City of Guelph is within the EAB Regulated area covering most of southern Ontario. The removal and disposal of Ash (*Fraxinus sp*.) is subject to the Canadian Food and Inspections Agencies (CFIA) regulations. As mandated by the Canadian Food Inspection Agency a ***prohibition of movement will be issued for properties where the emerald ash borer (EAB) has been confirmed***. This measure prohibits the movement of regulated materials from the specific property. Regulated materials include: ash trees (whole or parts), ash nursery stock, ash logs and branches, ash lumber, wood, packaging materials with an ash component, ash wood or bark, ash wood chips or bark chips, firewood from all tree species. EAB regulated articles moving out of a regulated area must be accompanied by a ***Movement Certificate issued by the CFIA***. All vehicles used to transport regulated articles must be cleaned of debris prior to loading at origin and prior to departure from the receiving facility. The required treatment will depend upon the regulated article transported, but may include sweeping or power washing. Should it be necessary to dispose of materials on site methods of disposal include incineration or deep burial. For more information about transporting regulated articles and disposal contact your local CFIA office

- Tree protection fencing must be constructed and installed as per the details on the approved Tree Inventory and Management Plan T1-T14. Upon installation of the fencing, the contractor will contact the MMM contract administrator to review and approve the fencing and its location prior to commencement of any grading work.

- Areas within the tree preservation zone are not to be used for any type of storage (e.g. storage of debris, construction material, surplus soils, and construction equipment). No trenching or tunneling for underground services shall be located within the tree protection zone or dripline of trees designated for preservation within or adjacent to the construction zone.

- No grade changes shall occur within tree preservation zone unless approved as part of this report. In the event that any grade changes may occur, either as a cut or fill situation, the MMM contract administrator must be notified prior to such work occurring to ensure that all precautions to preserve the tree can be made.

- Trees shall not have any rigging cables or hardware of any sort attached or wrapped around them, nor shall any contaminants be dumped within the protective areas. Further, no contaminants shall be dumped or flushed where they may come into contact with the feeder roots of the trees.

- In the event that it is necessary to remove additional limbs or portions of trees, after construction has commenced, to accommodate construction, the MMM contract administrator is to be informed and under their direction the removal is to be executed carefully and in full accordance with arboricultural techniques, by a certified arborist.

Pruning Practices:

- All limbs damaged or broken during the course of construction should be pruned cleanly, utilizing by-pass secateurs in accordance with approved horticultural practices. Should there be a potential risk of transfer of disease from infected to non-infected trees; tools must be disinfected after pruning each tree by dipping in methyl hydrate. This practice is particularly important during periods of tree stress and when pruning many members of

the same genera, within which a disease could be spread quickly (i.e., Verticillium Wilt on Maples or Fireblight on genera of the Rosacea family).

- During excavation operations in which the root area is affected, the contractor is to prune all exposed roots cleanly. Pruned root ends are to be neatly and squarely trimmed and the area is to be backfilled with clean native fill as soon as possible to prevent desiccation and promote root growth. The exposed roots should not be allowed to dry out, and the contractor shall discuss watering of the roots with the consulting arborist so that the roots shall maintain optimum soil moisture during construction and backfilling operations, yet so not to interfere with construction operations. Backfilling must be with clean uncontaminated topsoil from an approved source. Texture must be coarser than existing soils, and to come into clean contact with existing soils (remove air pockets, sod, etc.)

- All pruning cuts should be made to a growing point such as a bud, twig or branch, cut just outside the branch collar (the swollen area at the base of the branch that sometimes has a bark ridge), and perpendicular to the branch being pruned rather than as close to the trunk as possible. This minimizes the site of the wound. No stubs should be left. Poor cut location, poor cut angle and torn cuts are not acceptable.

- Tree roots should not be excavated within the critical structural rooting area. This is the minimum area of the root system necessary to maintain vitality or stability of the tree. Typically this area extends to the dripline of the tree. The severing of one root can cause approximately 5-20% loss of the root system. A reduction of this area by greater than 30% can pose stability concerns for the tree.

- Extensive pruning is best completed before plants break dormancy. Pruning should be limited to the removal of no more than one third (1/3) of the total bud and leaf bearing branches. Pruning should include the careful removal of:
    - deadwood,
    - branches that are weak, damaged, diseased and those which will interfere with construction activity,
    - secondary leaders of conifers,
    - trunk and root suckers,
    - trunk waterspouts, and
    - tight V-shaped or weak crotches (included unions).

- The Contractor must report immediately any damage to trees such as broken limbs, damage to roots, or wounds to the main trunk or stem systems so that the damage can be assessed immediately.

- The tree protection fencing will be maintained until all construction is completed, soils are stabilized and all of the equipment has been removed from the site.

Establishment of Tree Protection Zone (TPZ)

- Tree preservation measures, including the establishment of Tree Protection Zone (TPZ) shall apply to the individual trees denoted for preservation on the Tree Inventory and Management Plan (refer to plans T1-T14), as well as all vegetated areas noted for retention.

- Trees located within the project area that are to be preserved will have tree protection fencing installed at the dripline plus 1 metre to establish a tree protection zone. All trees located on adjacent properties shall be preserved unless otherwise stated in this report.

- No grade changes shall occur within tree protection zone. In the advent that grade changes occur either as a cut or fill situation, the MMM contract administrator must be notified so that precautions to preserve the tree can be determined prior to the placement of fill or excavation activities.

- Every precaution must be taken to prevent damage to trees and root systems from damage, compaction and contamination resulting from the construction to the satisfaction of the MMM contract administrator.

- Trees that require pruning to permit construction activities have been identified in the Arborist report. In the event that it is necessary to remove additional limbs or portions of trees, after construction has commenced, to accommodate construction, the MMM contract administrator is to be informed and under their direction the removal is to be executed carefully and in full accordance with arboricultural techniques, by a certified arborist.

- Any damage to trees such as broken limbs, damage to roots, or wounds to the main trunk or stem systems are to be reported to the consulting arborist so that the damage can be assessed immediately and mitigation can be promptly implemented.

Tree Protection Fencing

The Tree Protection Zone (TPZ) shall be established by the installation of tree protection fencing.

Temporary Tree Protection Measures:

- Protection of retained trees will be provided by the installation of temporary protective fencing as per the details provided on the Tree Inventory and Management Plan (refer to plan T1-T14); and

- All of the tree protection measures are to be installed and approved prior to commencement of site grading. Periodic inspection and maintenance of the tree protection measures will be required throughout construction.

Construction Implementation

Pre-Construction

- A site meeting will be held with Contractor and Contract Administrator to review the clearing limits and confirm the installation location for the temporary tree protection fence and;

- Tree removal along the tree retention limit must be carefully felled away from the tree retention limit and into the construction / development area. Stumps adjacent to trees identified for retention are to be flush cut and not chipped or grubbed in order to avoid impacts to retained trees; and

Construction

- Periodic inspections will be undertaken by the MMM contract administrator to ensure that the mitigation measures are being maintained during construction;

- The temporary protection fence is to be maintained throughout the entire construction period. No equipment storage, flushing of fuel, washing of construction equipment, and storage of spoil or construction debris is to occur behind the temporary protection fence;

- To avoid root zone impacts on trees to be retained, excavated material will not be stored against the tree protection barrier;

- Where the root system of trees to be preserved are exposed or damaged through construction activities, the cut ends are to be neatly and squarely trimmed back to the limits of disturbance and the area is to be backfilled with clean native fill as soon as possible to prevent desiccation and promote root growth. Proportional selective thinning of the canopy is not recommended as canopy pruning is only recommended in the event that the health of the tree declines.

Post-Construction

- The temporary protection fence will be removed last after all of the construction has ended, soils are stabilized and all of the equipment has been removed.

Conclusions

The overall impact to vegetation on the site will be moderately significant as the alignment of the proposed services was based on the least impact to trees specifically within Royal City Park. The implementation of tree management and protection measures outlined within this report will promote the continued health of remaining trees. Enhancement of the parkland through restoration will help mitigate the overall loss of vegetation. Any trees slated for removal should be done so with care, avoiding and mitigating any negative impacts to adjacent trees to be retained, and in accordance with good arboricultural practices. Care should be taken to protect trees with tree protection fencing as illustrated on the attached plans. Tree protection fencing shall be erected prior to the start of construction and demolition.

Limitations of Assessment

It is our policy to attach the following clause regarding limitations. We do this to ensure that the client is aware of what is technically and professionally realistic in retaining trees.

The assessment of the trees presented in this report has been made using accepted arboricultural techniques. These include a visual examination of all the above ground parts of the tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of attack by insects, discoloured foliage, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the trees and the surrounding site, and the proximity of property and people. Except where specifically noted, the trees were not cored, probed or climbed and there was no detailed inspection of the root crowns involving excavations.

Notwithstanding the recommendations and conclusions made in this report, it must be recognized that trees are living organisms, and their health and vigour constantly change over time. They are not immune to changes in site conditions or seasonal variations in the weather conditions.

While reasonable efforts have been made to ensure that the subject trees are healthy, no guarantees are offered, or implied, that these trees or any of their parts will remain standing. It is both professionally and practically impossible to predict with absolute certainty the behaviour of any single tree or its component parts under all circumstances. Inevitably, a standing tree will always pose some level of risk. Most trees have the potential for failure under adverse weather conditions, and the risk can only be eliminated if the tree is removed.

Although every effort has been made to ensure that this assessment is reasonably accurate, the trees should be re-assessed periodically. The assessment presented in this report is valid at the time of inspection.

MMM GROUP LIMITED

Peter McNamara, BA
Landscape Designer | ISA Certified Arborist ON-1140A

Table 1: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108 | **Field Work Completed By:** Ben Tymchyshyn

Date of Field Work: 12/19/2012 | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
001	Picea glauca	Colorado Spruce	1	37	12	F	F	F		retain	canker
002	Picea glauca	Colorado Spruce	1	34	12	F	F	F		retain	canker
003	Picea glauca	Colorado Spruce	1	29	12	P	P	P		retain	canker
004	Acer platanoides	Norway Maple	1	22	7	G	G	G		retain	
005	Acer platanoides	Norway Maple	1	36	12	G	G	G		retain	
006	Fraxinus sp.	Ash	1	50	14	F	F	F		retain	
007	Fraxinus sp.	Ash	1	40	14	F	F	F		retain	Suckers, 30% deadwood, trunk wounds
008	Fraxinus sp.	Ash	1	42	15	F	F	F		retain	30% deadwood, lean, trunk wounds
009	Acer platanoides	Norway Maple	1	41	10	g	F	F		retain	
G-010	Grouping--Picea glauca	Colorado Spruce	3	32	10	P	P	P		retain	3 trees all with canker
011	Picea glauca	Colorado Spruce	1	40	12	P	P	P		retain	canker
012	Fraxinus sp.	Ash	1	52	12	G	F	F		retain	
013	Fraxinus sp.	Ash	1	48	14	F	F	P		retain	trunk wound, poor form, broken branches, 30-40% deadwood
014	Fraxinus sp.	Ash	1	48	14	F	F	P		retain	trunk wound, poor form, broken branches, 30-40% deadwood
015	Fraxinus sp.	Ash	1	48	14	F	F	F		retain	poor form, outside of construction limit
016	Picea glauca	Colorado Spruce	1	28	12	D	D	D		retain	dead, outside of constrcution limit
017	Picea glauca	Colorado Spruce	1	32	12	F	P	P		retain	50% deadwood
018	Picea glauca	Colorado Spruce	1	32	12	P	P	P		retain	30% deadwood
019	Acer rubrum	Red Maple	1	14	7	F	F	F		retain	trunk giirdle (due to power trimmers)
020	Acer rubrum	Red Maple	1	37	12	G	G	G		retain	

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						Trunk	Canopy	Vigour			
021	Acer saccharum	Sugar Maple	1	12,15		P	F	F		retain	multi-stem
G-022	Grouping--Picea glauca	Colorado Spruce	3	31,35	10	G	G	G		retain	group of 3. Note: One is leaning
023	Acer rubrum	Red Maple	1	15		P	F	F		retain	Major trunk wound, exposed cambium, 20% deadwood
024	Acer saccharum	Sugar Maple	1	30		G	G	G		retain	
G-025	Grouping--Acer platanoides	Norway Maple	7	15-35		G-F	G-F	G-F		retain	Exposed roots, damage from mowers, 10-15% deadwood, poor form, weak unions
026	Acer saccharum	Sugar Maple	1	18		G	G	G		retain	
027	Acer platanoides	Norway Maple	1	32		G	G	G		retain	
028	Pinus nigra	Austrian Pine	1	25	12	G	G	G		retain	
029	Ulmus pumila	Siberian Elm	1	26-38		G	G	G		retain	multi-stem
029(A)	Prunus sp.	Cherry	1	30		F	F	F		retain	
029(B)	Acer sp.	Maple	1	40		F	F	F		retain	
G-030	Grouping--Fraxinus pennsylvanica	Green Ash	6							retain	1 young hawthorn, 5 young ash
G-031	Grouping--Picea glauca	White Spruce	5	saplings	2					retain/remove	5 in grouping, inside of grading limit
032	Acer saccharum	Sugar Maple	1	55		G	G	G		retain	
033	Acer saccharum	Sugar Maple	1	62		G	G	G		retain	
034	Acer saccharum	Sugar Maple	1	65		F	G	G		retain	multi-stem at breast height, weakly formed union
G-035	Grouping--Fraxinus pennsylvanica	Red Ash	10	10-18						retain	10 tree grouping
G-036	Grouping	Ash, White Spruce	12	10-14	2	G	G	G		retain	5 young ash, 7 white spruce saplings
037	Acer saccharum	Sugar Maple	1	15		G	G	G		remove	inside of grading limit
038	Acer saccharum	Sugar Maple	1	10		G	G	G		remove	inside of grading limit
039	Acer saccharum	Sugar Maple	1	8		G	G	G		remove	inside of grading limit
040	Acer saccharum	Sugar Maple	1	90		G	G	G		retain	

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						Trunk	Canopy	Vigour			
G-041	Grouping	Austrian Pine, Sugar Maple, White Spruce	20		5					retain/remove	8 White Spruce saplings, 12 Ash/Sugar Maples max 2 m height. Retain trees outside limit of work, remove trees that will be impacted
042	Acer saccharum	Sugar Maple	1	79		G	G	G		retain	
G-043	Grouping	Sugar Maple, White Spruce, Austrian Pine	16	15		G-F	G	G		retain	8 Sugar Maples, 6 White Spruce max. 2 m height, 2 Austrian Pines 5 m height. Retain trees outside limit of work, remove trees that will be impacted
044	Acer saccharum	Sugar Maple	1	55		G	G	G		retain	
045	Acer saccharum	Sugar Maple	1	46,40		G	G	G		retain	multi-stem
046	Acer saccharum	Sugar Maple	1	73		G	G	G		retain	
047	Acer saccharum	Sugar Maple	1	91		F	F	G		retain	lean, poor form
G-048	Grouping	4 Sugar Maples, 8 Ash	10	15						retain/remove	1 White Spruce, 6 m height, 9 Cedar White saplings
049	Acer platanoides	Norway Maple	1	45		G	G	G		retain	
049A	Fraxinus pennsylvanica	Green Ash	1	14		G	G	G		remove	
049B	Fraxinus pennsylvanica	Green Ash	1	10		G	G	G		remove	
050	Juglans nigra	Black Walnut	1	19		G	G	G		retain	
051	Fraxinus sp.	Ash	1	19		G	G	G		retain	
052	Acer sp.	Maple	1	22		G	G	G		retain	
053	Acer saccharinum	Silver Maple	1	29		G	G	G		retain	
054	Acer negundo	Manitoba Maple	1	18		F	F	F		retain	
055	Fraxinus americana	White Ash	1	24		G	G	G		retain	
G-056	Grouping	Birch, Maple	9	10-30		G-F	G-F	G-F		retain	1 Birch, 4 Norway Maples, 4 Manitoba Maple 20-28 cm dia. Weakly formed unions, poor form
057	Betula papyrifera	White Birch	1	12		G	G	G		retain	
058	Betula papyrifera	White Birch	1	14		G	G	G		retain	
059	Fraxinus sp.	Ash	1	18		G	G	G		retain	suckers, lion tailing on suckers
060	Fraxinus sp.	Ash	1	20		G	G	G		retain	

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						Trunk	Canopy	Vigour			
061	Acer sp.	Maple	1	14		G	G	G		retain	
062	Betula papyrifera	White Birch	1	28		G	G	G		retain	
063	Betula papyrifera	White Birch	1	16		G	G	G		retain	
064	Platanus x acerifolia	London Plane Tree	1	74		G	G	G		retain	root system may be imapcted and root pruning may be required
065	Quercus rubra	Red Oak	1	50		G	G	G		retain	
066	Populus deltoides	Eastern Cottonwood	1	78		G	G	G		retain	
066 (A)	Acer sp.	Maple	1	<10		F	F	F		retain	
066 (B)	Acer sp.	Maple	1	<10		F	F	F		retain	
066 (C)	Acer sp.	Maple	1	<10		F	F	F		retain	
066 (D)	Platanus x acerifolia	London Plane Tree	1	<10		F	F	F		retain	
067	Acer platanoides	Norway Maple	1	42		G	G	G		remove	will need to be removed due to the construction limitss
068	Gleditsia triacanthos var. inermis	Thornless Honey Locust	1	35		G	G	G		retain	
069	Picea abies	Norway Spruce	1	50		G	G	G		retain	
070	Pinus sylvestris	Scots Pine	1	19,20,22		G	F	F		retain	co-dominant stems, poor form, 10-20% deadwood
071	Pinus sylvestris	Scots Pine	1	20,23		G	F	F		retain	co-dominant stems, poor form, 10-20% deadwood
072	Gleditsia triacanthos var. inermis	Thornless Honey Locust	1	35		G	F	G		retain	poor form
073	Gleditsia triacanthos var. inermis	Thornless Honey Locust	1	36		G	G	G		retain	epicormic growth
074	Gleditsia triacanthos var. inermis	Thornless Honey Locust	1	43		G	G	G		retain	10-20% deadwood
075	Gleditsia triacanthos var. inermis	Thornless Honey Locust	1	64		G	G	G		retain	10-20% deadwood
076	Prunus sp.	Cherry	1	26,23,15		F	F	G		remove	suckers, poor form, multi-stem, epicormic growth, 10-15% deadwood
077	Prunus sp.	Cherry	1	24,21,20		F	F	G		remove	suckers, poor form, multi-stem, epicormic growth, 10-15% deadwood, will need to be removed due to the construction limits
078	Prunus sp.	Cherry	1	21,21,20		F	F	G		remove	suckers, poor form, multi-stem, epicormic growth, 10-15% deadwood, will need to be removed due to the construction limits
079	Prunus sp.	Cherry	1	21,18,24,14		F	F	G		retain	suckers, poor form, multi-stem, epicormic growth, 10-15% deadwood
080	Quercus rubra	Red Oak	1	15		G	G	G		retain	

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						Trunk	Canopy	Vigour			
081	Acer platanoides	Norway Maple	1	46		G	G	G		retain	girdling roots
082	Acer platanoides	Norway Maple	1	42		G	G	G		retain	
083	Acer platanoides	Norway Maple	1	44		G	G	G		retain	girdling roots
084	Acer platanoides	Norway Maple	1	28		G	G	G		retain	
085	Acer platanoides	Norway Maple	1	38		G	G	G		retain	
086	Acer platanoides	Norway Maple	1	56		G	G	G		retain	
087	Tilia americana	Basswood	1	50		D	D	D		retain	dead, outside of construction limit
088	Prunus sp.	Cherry	1	19,22,24		P	P	P		retain	multi-stem
089	Malus sp.	Crabapple	1	27,22		G	G	G		retain	multi-stem
090	Salix alba 'Tristis'	Golden Weeping Willow	1	84,84		P	F	G		retain	multi-stem, large wound, weakly formed union, broken branches, poor form
091	stuck to #092									retain	
092	Fraxinus pennsylvanica	Red Ash	1	13		G	G	G		retain	
093	Acer platanoides	Norway Maple	1	38		P	F	G		retain	large wound, contorted growth
094	Salix sp.	Willow	1	74		G	G	G		retain	
095	Fraxinus sp.	Ash	1	12		G	G	G		retain	
096	Fraxinus sp.	Ash	1	12		G	G	G		retain	
097	Salix sp.	Willow	1	121		P	G	G		retain	large wound, broken branch exposed
098	Acer platanoides	Norway Maple	1	39		G	G	G		retain	
099	Fraxinus sp.	Ash	1	11		F	G	G		retain	Trunk wound
100	Salix sp.	Willow	1	84		F	G	G		retain	evidence of torsion on trunk

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						Trunk	Canopy	Vigour			
101	Salix sp.	Willow	1	88		G	G	G		retain	
102	Salix sp.	Willow	1	69		G	G	G		retain	
103	Fraxinus sp.	Ash	1	10		G	G	G		retain	
104	Acer platanoides	Norway Maple	1	38		G	G	G		retain	
105	Fraxinus sp.	Ash	1	15		G	G	G		retain	
106	Acer platanoides	Norway Maple	1	65		G	G	G		retain	
107	Picea glauca	White Spruce	1	14		G	G	G		retain	
108	Betula papyrifera	White Birch	1	40		F	G	G		retain	
109	Betula papyrifera	White Birch	1	48		F	G	G		retain	
110	Prunus sp.	Cherry	1	32		F	F	F		retain	weakly formed union, poor form, exposed cambium
111	Acer platanoides	Norway Maple	1	38		G	F	G		retain	weakly formed union
112	Acer platanoides	Norway Maple	1	26		P	F	P		retain	stem wounds, 20-30% deadwood, trunk wound
113	Acer platanoides	Norway Maple	1	49		G	F	G		retain	weakly formed union
114	Aesculus hippocastanum	Horsechestnut	1	60		F	F	G		retain	trunk torsion, poor form, trunk wound
115	Aesculus hippocastanum	Horsechestnut	1	99		P	F	F		retain	poor form , wealky formed unions, included bark crack, decay, 10-15% deadwood
116	Acer platanoides	Norway Maple	1	45		G	G	G		retain	
117	Acer platanoides	Norway Maple	1	51		F	F	G		remove	poor form, broken branches, 10-% deadwood, trunk deformity
118	Acer platanoides	Norway Maple	1	35		F	F	F		remove	lean, dead branches, 15% deadwood, exposed cambium on upper stems
119	Acer platanoides	Norway Maple	1	42		F	F	F		remove	cracked tree, dead branches
120	Acer platanoides	Norway Maple	1	48		G	F	F		remove	poor pruning practices, 10-15% deadwood, poor form, may need to be removed due to the construction limits

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						Trunk	Canopy	Vigour			
121	Fraxinus sp.	Ash	1	69		G	G	F		retain	10% deadwood
122	Fraxinus sp.	Ash	1	41		F	G	G		retain	10-15% deadwood, lean
123	Tilia cordata	Little-leaf Linden	1	69		F	G	G		retain	lean
124	Tilia cordata	Little-leaf Linden	1	60		F	F	G		retain	weakly formed union, included bark
125	Gleditsia triacanthos	Honeylocust	1	50		F	G	G		retain	10-15% deadwood
126	Gleditsia triacanthos	Honeylocust	1	44		G	G	G		retain	10-15% deadwood
127	Sorbus aucuparia	European Mountain Ash	1	23		G	F	G		retain	weakly formed union
128	Sorbus aucuparia	European Mountain Ash	1	23		G	G	G		retain	slight lean, 10% deadwood
129	Fraxinus pennsylvanica	Green Ash	1	63		P	G	G		retain	Manitoba Maple beside acer negundo. Wound, cavity
130	Juglans nigra	Black Walnut	1	12		G	G	G		retain	
G-131	Juglans nigra	Black Walnut	2	22,11		G	G	G		retain	2 trees
132	Pinus nigra	Austrian Pine	1	24	6	P	P	P		retain	Note: a lot of sumac underbrush around pines, Tilia 0.5m from Pine
133	Pinus nigra	Austrian Pine	1	29	7	G	G	G		retain	Multi-stem Tilia growing w/n 0.5m of Pine
134	Pinus nigra	Austrian Pine	1	27	7	P	P	P		retain	
135	Populus tremuloides	Trembling Aspen	1	96		P	F	F		retain	a lot of trunk damage
G-136	Grouping--Fraxinus sp.	Ash	7	12		G	G	G		retain/remove	1 small Ash, 6 small Maples in surrounding area - under 10 mm, inside of grading limit
137	Acer saccharinum	Silver Maple	1	12		G	G	G		retain	2 other small Maples in surrounding area under 10 mm
138	Acer saccharinum	Silver Maple	1	37		G	G	G		retain	
G-139	Grouping--Juglans nigra	Black Walnut	1	10		G	G	G		retain/remove	6 small caliper trees
140	Salix sp.	Willow	1	131		P	F	P		retain	large broken branches
G-140A	Grouping--Acer saccharinum	Silver Maple	5	10-25		G-F	G-F	G		retain	multi-stem, poor form, unions.Opposite side of trail from 140, orange paint

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						Trunk	Canopy	Vigour			
141	Larix sp.	Tamarack	1	28	7	G	G	G		retain	Tilia growning beside Tamarak
142	Acer negundo	Manitoba Maple	1	20		F	F	F		retain	
143	Acer negundo	Manitoba Maple	1	16		F	F	F		retain	multi-stem
G-144	Grouping--Fraxinus sp.	Ash	6	10		G	G	G		retain/remove	6 Ash total - small caliper
G-145	Grouping--Acer saccharinum	Silver Maple	3	10		G	G	G		retain/remove	3 Maples total - small caliper, inside of grading limit
145B	Juglans cinerea	Butternut	1	2		G	G	G		retain	near #145
G-146	Grouping--Acer negundo	Manitoba Maple	3	17-18		G	G	G		retain	3 Maples total
147	Fraxinus sp.	Ash	1	12		G	G	G		retain	Small caliper trees in surrounding area - Maple (4), Ash (4), Tamarack, Spruce (3)
147B	Juglans cinerea	Butternut	1	5		G	G	G		retain	near #147
148	Acer saccharinum	Silver Maple	1	8,12		F	G	G		retain	multi-stem, unions, poor form
149	Fraxinus sp.	Ash	1	8,12		F	G	G		retain	multi-stem, unions, poor form
150	Acer saccharinum	Silver Maple	1	8,12		F	G	G		retain	multi-stem, unions, poor form
151	Acer saccharinum	Silver Maple	1	7,12		F	G	G		retain	multi-stem, unions, poor form
152	Acer saccharinum	Silver Maple	1	10		G	G	G		retain	multi-stem, small caliper Tamarack (1), Maple (4), Ash (4), White Pine (1)
153	Acer negundo	Manitoba Maple	1	10		F	F	G		retain	multi-stem, unions, poor form
154	NOT USED									retain	
155	Fraxinus americana	White Ash	1	12		G	G	G		retain	small caliper trees surrounding - Tamarack (1), Maple (4), Ash (5)
156	Acer saccharinum	Silver Maple	1	16		G	G	G		retain	small caliper trees surrounding Ash (4), Maple (3) under 10 mm
157	Pinus nigra	Austrian Pine	1	23	4	F	F	F		remove	will need to be removed due to the construction limits
158	Pinus nigra	Austrian Pine	1	12	5	F	F	F		remove	multi-stem, inside of grading limit
G-159	Pinus nigra	Austrian Pine	3	22	5	F	F	F		remove	3 small caliper trees - Ash and White Pine, will need to be removed due to the construction limits
160	Populus deltoides	Cottonwood	1	60		P	G	G		retain	

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						Trunk	Canopy	Vigour			
161	Acer negundo	Manitoba Maple	1	90		P	P	P		retain	small caliper trees, Maple (7), Ash (7)
162	Acer saccharinum	Silver Maple	1	22		G	G	G		retain	
163	Fraxinus sp.	Ash	1	25		P	P	P		remove	large Juniper growing under trees, will need to be removed due to the construction limits
164	Fraxinus sp.	Ash	1	16		P	P	P		remove	will need to be removed due to the construction limits
G-165	Grouping--Picea sp.	Spruce	5	28	10	G	G	G		retain/remove	grouping of 5 trees all same size
166	Acer saccharinum	Silver Maple	1	116		F	F	F		retain	
167	Acer saccharinum	Silver Maple	1	104		F	F	F		retain	
168	Acer saccharinum	Silver Maple	1	140		F	F	F		retain	
169	Acer platanoides	Maple	1	72		G	G	G		retain	
170	Acer platanoides	Maple	1	85		G	G	G		retain	
G-171	Acer platanoides	Maple	4	45		P	P	P		retain	A- 8 mm Mpale, B - 8 mm Maple, C - 8 mm Maple two large trunk scars, 3 small caliper trees beside
172	Salix sp.	Willow	1	140		P	P	P		retain	
G-173	Grouping		30	22 avg.						retain	large massing - Manitoba Maples and Ash (30 trees)
G-174	Acer sp.	Maple	3	19		G	G	G		retain/transplant	A- 8 mm Mpale, B - 8 mm Maple, C - 8 mm Maple two large trunk scars, 3 small caliper trees beside
175	Acer sp.	Maple	1	10		G	G	G		transplant	may need to be transplanted due to the construction limits
176	Acer platanoides	Norway Maple	1	10		G	G	G		transplant	will need to be transplanted due to the construction limits
177	Pinus strobus	White Pine	1	20		G	G	G		transplant	
178	Pinus strobus	White Pine	1	23		G	G	G		retain	
179	Pinus strobus	White Pine	1	23		G	G	G		retain	
G-180	Grouping--Thuja sp.	Cedar	3	14 avg.		P	P	P		retain	grouping of 3 Cedars

Table 1: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108 | **Field Work Completed By:** Ben Tymchyshyn

Date of Field Work: 12/19/2012 | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
G-181	Juglans nigra	Black Walknut	12	21 avg.		G	G	G		retain	grouping of 12
G-182	Grouping--Acer negundo	Manitoba Maple	2	20 avg.		G	G	G		retain	grouping of 2, multi-stem
183	Acer negundo	Manitoba Maple	1	10,15		G	G	G		retain	multi-stem
G-190	Refer to Mark-Up of Royal City Park Plan for the location of the following trees									transplant	small trees to be transplanted due to the construction limits. Additional survey will be required to pick up the trees within 190 grouping. Need to be transplanted due to the construction limits
A	Fagus sp.	Beech	1	6		G	G	G			pyramid
B	Fagus sp.	Beech	1	6		G	G	G			pyramid
C	Fagus sp.	Beech	1	7		G	G	G			pyramid
D	Fagus sp.	Beech	1	6		G	G	G			pyramid
E	Ulmus sp.	Elm	1	5		G	G	G			
F	Aesculus hippocastanum 'baumanii'	Baumann Horsechestnut	1	7		G	G	G			
G	Quercus rubrum	Red Oak	1	6		G	G	G			
H	Acer sp.	Maple	1	4		G	G	G			
I	Quercus rubrum	Red Oak	1	4		G	G	G			
246A	Refer to Mark-Up of Royal City Park Plan for the location of the following trees (associated with tag #246)									retain	
A	Platanus x acerifolia	London Plane Tree	1	9		G	G	G		retain	
B	Tilia americana	Basswood	1	9		G	G	G		retain	
C	Liriodendron tulipifera	Tulip Tree	1	8		G	G	G		retain	
D	Quercus rubrum	Red Oak	1	4		G	G	G		retain	

Table 1: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108 | **Field Work Completed By:** Silv-Econ Ltd. (Updated 12/19/2012 by Ben Tymchyshyn - MMM Group Ltd.)

Date of Field Work: June 18 2008 (Updated 12/19/2012) | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
212	Fraxinus americana	White Ash	1	74		G	F	F	10	retain	mature
213	Acer platanoides	Norway Maple	1	57		G	F	F	8	retain	mature
214	Acer platanoides	Norway Maple	1	59		P	F	P	8	retain	mature
215	Fraxinus pennsylvanica	Green Ash	1	78		F	F	F	7	retain	mature
216	Acer platanoides	Norway Maple	1	54		G	G	G	7	retain	mature
217	Fraxinus americana	White Ash	1	62		G	F	F	8	retain	mature
218	Fraxinus americana	White Ash	1	74		G	F	F	8	retain	mature
219	Syringa vulgaris	Common Lilac	1	17		F	F	F	3	retain	semi-mature
220	Fraxinus americana	White Ash	1	65		G	F	F	6	retain	mature
222	Catalpa speciosa	Catalpa	1	58		F	F	F	4	retain	mature
223	Fraxinus pennsylvanica	Green Ash	1	7		G	P	P	1	retain	young
224	Acer platanoides	Norway Maple	1	84		F	G	F	10	retain	mature
225	Fraxinus pennsylvanica	Green Ash	1	20		G	F	F	2	retain	young
226	Acer platanoides	Norway Maple	1	70		P	G	F	10	retain	mature
227	Fraxinus americana	White Ash	1	61		G	F	F	8	retain	mature
228	Picea glauca	White Spruce	1	20		G	G	G	2	retain	semi-mature
229	Fraxinus americana	White Ash	1	72		P	G	P	9	retain	mature
230	Acer platanoides	Norway Maple	1	103		F	F	F	6	retain	mature
231	Acer platanoides	Norway Maple	1	50		F	F	F	4	retain	mature

Table 1: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108 | **Field Work Completed By:** Silv-Econ Ltd. (Updated 12/19/2012 by Ben Tymchyshyn - MMM Group Ltd.)

Date of Field Work: June 18 2008 (Updated 12/19/2012) | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
232	Acer platanoides	Norway Maple	1	39		F	P	P	4	retain	semi-mature
233	Acer platanoides	Norway Maple	1	43		P	P	P	4	retain	semi-mature
234	Acer platanoides	Norway Maple	1	41		F	P	P	4	retain	semi-mature
235	Acer platanoides	Norway Maple	1	48		G	F	F	4	retain	semi-mature
236	Acer platanoides	Norway Maple	1	65		P	F	P	4	retain	mature
237	Fraxinus americana	White Ash	1	71		F	P	F	9	retain	mature
238	Fraxinus americana	White Ash	1	70		G	F	F	10	retain	mature
239	Fraxinus pennsylvanica	Green Ash	1	10		F	G	F	1	retain	young
240	Fraxinus pennsylvanica	Green Ash	1	62		G	G	F	6	retain	mature
242	Picea glauca	W ite Spruce	1	27		G	G	G	3	retain	semi-mature
243	Fraxinus americana	White Ash	1	56		G	F	F	6	retain	mature
244	Fraxinus americana	White Ash	1	75		G	G	G	10	retain	mature
245	Fraxinus pennsylvanica	Green Ash	1	17		G	G	G	1	retain	young
246	Picea glauca	White Spruce	1	46		G	G	G	4	retain	semi-mature
247	Fraxinus americana	White Ash	1	74		G	F	F	10	retain	mature
248	Fraxinus americana	White Ash	1	57		G	F	F	6	retain	mature
249	Picea glauca	White Spruce	1	25		G	F	F	3	retain	semi-mature
251	Fraxinus americana	White Ash	1	55		F	F	F	7	retain	mature

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Date of Field Work: June 18 2008 (Updated 12/19/2012) | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
252	Picea glauca	White Spruce	1	34		G	G	G	3	retain	semi-mature
252 (A)	Carpinus caroliniana	Blue Beech	1	6		G	G	G		retain	young
252 (B)	Tilia americana	Basswood	1	5		G	G	G		retain	young
253	Acer saccharinum	Silver Maple	1	133		G	F	F	10	retain	mature
254	Acer platanoides	Norway Maple	1	29		G	G	G	4	retain	semi-mature
255	Juglans cinerea	Butternut	1	100		P	F	P	8	retain	mature
256	Fraxinus americana	White Ash	1	59		F	F	F	8	retain	mature
257	Picea glauca	White Spruce	1	25		G	G	G	3	retain	semi-mature
258	Acer saccharinum	Silver Maple	1	165		F	F	F	10	retain	mature, *Hazard Tree*
259	Pinus sylvestris	Scots pine	1	20		P	F	F	2	retain	young
260	Acer saccharinum	Silver Maple	1	118		G	G	G	10	retain	mature
261	Ulmus americana	American Elm	1	14		G	G	G	2	retain	semi-mature
262	Acer saccharinum	Silver Maple	1	109		F	G	F	10	retain	mature
263	Acer platanoides	Norway Maple	1	22		G	G	G	3	retain	semi-mature
264	Acer platanoides	Norway Maple	1	14		G	G	G	3	retain	semi-mature
265	Acer platanoides	Norway Maple	1	15		G	G	G	3	retain	semi-mature
266	Acer platanoides	Norway Maple	1	14		G	G	G	3	retain	semi-mature
267	Acer saccharinum	Silver Maple	1	109		F	F	F		retain	mature
268	Morus rubra	Mulberry	1	7		G	G	G	1	retain	young
269	Pinus strobus	White Pine	1	25		F	F	F	5	retain	semi-mature

Table 1: Tree Inventory and Preservation Charts

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Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
270	Picea glauca	White Spruce	1	40		G	G	G	6	retain	semi-mature
271	Acer platanoides	Norway Maple	1	57		G	G	G	8	retain	mature
272	Acer platanoides	Norway Maple	1	43		G	G	G	6	retain	mature
273	Acer saccharinum	Silver Maple	1	98		P	F	F	10	retain	mature
274	Acer platanoides	Norway Maple	1	73		F	F	F	8	retain	mature
275	Acer saccharum	Sugar Maple	1	6		F	G	G	1	retain	young
276	Acer platanoides	Norway Maple	1	56		F	G	G	10	retain	mature
277	Acer platanoides	Norway Maple	1	68		P	F	F	10	retain	mature
278	Acer saccharinum	Silver Maple	1	125		F	G	F	10	remove	mature, tree was part of inventory, but has since been removed due to 2013 winter ice storm damage
279	Gleditsia triacanthos	Honey Locust	1	41		G	G	G	8	remove	semi-mature, tree was part of inventory, but has since been removed due to 2013 winter ice storm damage
280	Quercus rubra	Red Oak	1	22		F	G	G	4	retain	semi-mature
281	Acer saccharum	Sugar Maple	1	15		F	G	G	1	retain	young
284	Acer platanoides	Norway Maple	1	94		F	F	F	10	retain	mature
285	Acer platanoides	Norway Maple	1	26		G	G	G	4	retain	semi-mature
286	Acer platanoides	Norway Maple	1	78		G	G	G	10	retain	mature
287	Acer platanoides	Norway Maple	1	56		G	G	G	6	retain	mature
288	Acer platanoides	Norway Maple	1	46		G	G	G	5	retain	semi-mature
289	Acer platanoides	Norway Maple	1	15		G	G	G	3	retain	young

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Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
290	Acer platanoides	Norway Maple	1	17		G	G	G	2	retain	young
291	Acer saccharinum	Silver Maple	1	107		G	G	G	10	remove	mature, tree was part of inventory, but has since been removed due to 2013 winter ice storm damage
G-292	Acer platanoides	Norway Maple (clump of 3)	3	19		G	G	G	3	retain	young, 2 Maple, 1 Ash
293	Quercus rubra	Red Oak	1	10		F	G	F	2	retain	young
294	Acer platanoides	Norway Maple	1	18		G	G	G	2	retain	semi-mature
295	Acer saccharum	Sugar Maple	1	36		G	G	G	6	retain	semi-mature
296	Thuja occidentalis	White Cedar	1	19		G	G	G	2	retain	semi-mature
297	Thuja occidentalis	White Cedar	1	26		G	G	G	3	retain	semi-mature
298	Picea pungens	Blue spruce	1	38		G	G	G	3	retain	semi-mature
299	Thuja occidentalis	White Cedar	1	18		G	G	G	3	retain	semi-mature
300	Thuja occidentalis	White Cedar	1	24		G	G	G	2	retain	semi-mature
301	Acer platanoides	Norway Maple	1	91		G	G	G	10	retain	mature
303	Acer saccharinum	Silver Maple	1	99		P	G	P	10	retain	mature
304	Picea glauca	White Spruce	1	32		G	G	G	2	retain	semi-mature
305	Picea glauca	White Spruce	1	37		G	G	G	2	retain	semi-mature
306	Pinus nigra	Austrian Pine	1	32		G	G	G	3	retain	semi-mature
307	Picea pungens	Blue spruce	1	21		G	G	G	2	retain	semi-mature
308	Picea pungens	Blue spruce	1	32		G	G	G	3	retain	semi-mature
309	Picea pungens	Blue spruce	1	42		G	G	G	3	retain	semi-mature
310	Taxus canadensis	Yew	1	24		G	G	G	5	retain	semi-mature

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Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
311	Picea pungens	Blue spruce	1	24		G	F	G	3	retain	semi-mature
312	Tilia cordata	Little leaf Linden	1	35		G	G	G	6	retain	semi-mature
313	Picea glauca	White Spruce	1	26		G	G	G	3	retain	semi-mature
314	Picea glauca	White Spruce	1	21		G	G	G	3	retain	semi-mature
316	Fraxinus pennsylvanica	Green Ash	1	32		G	G	G	4	retain	semi-mature
317	Acer platanoides	Norway Maple	1	17		G	G	G	3	retain	semi-mature
G-317 (A)	Acer platanoides	Norway Maple (clump of 5)	5	10, 14, 22, 32, 46		G	G	G		retain	semi-mature
319	Acer saccharinum	Silver Maple	1	41		G	G	G	5	retain	semi-mature
320	Acer saccharinum	Silver Maple	1	24		G	G	G	5	retain	semi-mature
321	Acer saccharinum	Silver Maple	1	24		G	G	G	2	retain	semi-mature
322	Acer platanoides	Norway Maple	1	58		G	P	F	9	retain	mature
323	Acer saccharinum	Silver Maple	1	32		G	G	G	4	retain	semi-mature
326	Acer platanoides	Norway Maple	1	18		G	G	G	3	retain	semi-mature
327	Acer platanoides	Norway Maple	1	22		G	G	G	4	retain	semi-mature
328	Acer saccharum	Sugar Maple	1	12		P	G	F	1	retain	young
329	Acer saccharinum	Silver Maple	1	99		P	G	F	10	retain	mature
331	Syringa vulgaris	Common Lilac	1	22		G	G	G	4	retain	semi-mature
332	Syringa vulgaris	Common Lilac	1	24		G	G	G	4	retain	semi-mature
333	Taxus canadensis	Yew	1	27		G	G	G	4	retain	semi-mature

Table 1: Tree Inventory and Preservation Charts

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Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
334	Picea glauca	White Spruce	1	32		G	G	G		retain	mature
335	Tilia cordata	Little--leaf Linden	1	32		G	G	G	5	retain	semi-mature
336	Picea abies	Norway Spruce	1	27		G	G	G	5	retain	semi-mature
337	Acer saccharum	Sugar Maple	1	11		F	G	G	1	retain	young
338	Acer saccharum	Sugar Maple	1	9		F	G	G	1	retain	young
341	Acer platanoides	Norway Maple	1	71		F	F	F	8	retain	mature
342	Acer platanoides	Norway Maple	1	52		G	G	F	6	retain	mature
343	Acer platanoides	Norway Maple	1	50		F	G	G	6	retain	mature
344	Acer platanoides	Norway Maple	1	76		G	G	G	8	retain	mature
347	Acer platanoides	Norway Maple	1	54		F	F	F	10	retain	mature
1007	Quercus rubra	Red Oak	1	2		F	G	F	1	retain	young
1008	Quercus rubra	Red Oak	1	6		F	G	F	1	retain	young
1008(A)	Aesculus hippocastanum	Horsechestnut	1	6		F	G	F		retain	young
1009	Acer saccharinum	Silver Maple	1	13		P	G	F	1	retain	young
1009(A)	Catalpa speciosa	Catalpa	1	9		G	G	F		retain	young
1010	Quercus rubra	Red Oak	1	3		D	D	D	1	remove	young, tree was part of inventory, but has since been removed due to 2013 winter ice storm damage
1011	Quercus rubra	Red Oak	1	4		G	G	G	1	retain	young
1012	Quercus rubra	Red Oak	1	4		G	G	G	1	retain	young
1013	Acer saccharinum	Silver Maple	1	4		G	G	G	1	retain	young
1020	Quercus macrocarpa	Bur Oak	1	1		F	G	G	1	retain	young
1021	Acer saccharinum	Silver Maple	1	104		F	F	F	10	remove	mature, tree was part of inventory, but has since been removed due to 2013 winter ice storm damage
1022	Acer saccharinum	Silver Maple	1	112		P	G	F	10	retain	mature
1023	Acer saccharinum	Silver Maple	1	2		F	F	F	1	retain	young
1024	Acer saccharinum	Silver Maple	1	98		G	F	G	10	retain	mature

Notes:

1 All the trees on sloped areas that maybe impacted by watermian construction should be removed and replaced with new trees following watermian installation.

2 Trees located within the York Road Park area are memorial trees, which cannot be removed, trees need to be transplanted may require.

Table 2: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108

Field Work Completed By: Silv-Econ Ltd. (Updated 10/10/2013 by Ben Tymchyshyn - MMM Group Ltd.)

Date of Field Work: June 18 2008 (Updated 10/10/2013)

Weather:

Conditions: G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
201	Juglans nigra	Black Walnut	1	9		G	G	P	3	retain	90% dead
202	Juglans nigra	Black Walnut	1	8		G	G	F	3	retain	20-30% dead
203	Juglans nigra	Black Walnut	1	32		G	G	G	5	retain	10-15% dead
204	Acer negundo	Manitoba Maple	1	49		G	G	G	5	retain	suckering @ base, tip die back
205	Acer negundo	Manitoba Maple	1	33,52		F	F	P	4.5	retain	30-40% deadwood, multi-stem
206	Juglans nigra	Black Walnut	1	22		G	G	P	4	remove	80% deadwood
207	Juglans nigra	Black Walnut	1	25		G	G	P	4	remove	80% deadwood
208	Juglans nigra	Black Walnut	1	19		G	G	P	4	remove	60% deadwood, vine in crown
209	Acer negundo	Manitoba Maple	1	10,14		F	F	G	4	remove	lean, poor form, vine in crown, multi-stem
210	Juniperus virginiana	Eastern Red Cedar	1	13	8	G	G	G	2.5	remove	10% die back in lower canopy, tree 212,213,214,215 associated with tree tag #210
211	Juglans nigra	Black Walnut	1	26		G	G	G	6	remove	10-20% deadwood
212	Juglans nigra	Black Walnut	1	14		G	G	P	2.5	retain	80% deadwood, outside of construction limit
213	Juglans nigra	Black Walnut	1	19		G	G	F	3	retain	10-25% deadwood
214	Juglans nigra	Black Walnut	1	13		G	G	P	2.5	retain	90% deadwood, outside of construction limit
215	Juglans nigra	Black Walnut	1	16.5		G	G	P	2.5	retain	90% deadwood, multi-stem, outside of construction limit
216	Juglans nigra	Black Walnut	1	20		D	D	D	2.5	retain	dead, outside of construction limit
217	Juglans nigra	Black Walnut	1	24		G	G	P	4	retain	90% deadwood, outside of construction limit
218	Acer negundo	Manitoba Maple	1	11,13		F	F	G	4	retain	poor form, lean, multi-stem
219	Acer negundo	Manitoba Maple	1	31,42		F	F	G	5	retain	vine in crown, 10-20% dead, lean, conducted growth, poor form, multi-stem

Table 2: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108

Field Work Completed By: Silv-Econ Ltd. (Updated 10/10/2013 by Ben Tymchyshyn - MMM Group Ltd.)

Date of Field Work: June 18 2008 (Updated 10/10/2013)

Weather:

Conditions: G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
220	Ulmus sp.	Elm	1	51		G	G	G	7	retain	
221	Acer negundo	Manitoba Maple	1	22,16,21		F	F	G	4	retain	multi-stem, lean, poor form
222	Acer negundo	Manitoba Maple	1	25		P	F	F		retain	80% lean, poor form
223	Acer negundo	Manitoba Maple	1	36		F	F	F	4	retain	lean, poor form, vine in crown, 20-25% dead wood
224	Acer negundo	Manitoba Maple	1	27		F	F	G	5	retain	lean, poor form, vine in crown
225	Acer negundo	Manitoba Maple	1	24,38		F	F	G	8	retain	multi-stem, lean, poor form, vine in crown
226	Acer platanoides	Norway Maple	1	20		G	G	F	4.5	retain	leaf scorch, suppressed from adjacent willow
227	Acer negundo	Manitoba Maple	1	13,9,6		F	F	F	3.5	retain	multi-stem
228	Acer negundo	Manitoba Maple	1	14		F	F	G	7	retain	70% lean
229	Juglans nigra	Black Walnut	1	27		F	F	G	3.5	retain	conducted growth, closed willow branch leaning on tree
230	Acer negundo	Manitoba Maple	1	12		F	F	G	3.5	retain	dead willow branch leaning on tree, outside of construction limit
231	Acer platanoides	Norway Maple	1	27		G	G	G	5	retain	tar spot
232	Acer negundo	Manitoba Maple	1	11		G	G	G	3	retain	suppressed
233	Acer platanoides	Norway Maple	1	12		F	G	G	3	retain	lean, suppressed
234	Acer negundo	Manitoba Maple	1	16		F	F	G	3	remove	80% lean, poor form
235	Acer negundo	Manitoba Maple	1	19,13		F	F	G	3	remove	multi-stem, 80% lean, poor form
236	Acer negundo	Manitoba Maple	1	18,20		F	F	F	1	remove	multi-stem, 90% lean, poor form
237	Acer platanoides	Norway Maple	1	19		G	G	G	3	remove	dead willow branch leanning on tree
238	Acer negundo	Manitoba Maple	1	15		G	G	P	4	retain	80% deadwood, outside of construction limit

Table 2: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108

Field Work Completed By: Silv-Econ Ltd. (Updated 10/10/2013 by Ben Tymchyshyn - MMM Group Ltd.)

Date of Field Work: June 18 2008 (Updated 10/10/2013)

Weather:

Conditions: G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
239	Acer negundo	Manitoba Maple	1	15		F	F	G	3	retain	70% lean
240	Acer negundo	Manitoba Maple	1	16,8,6		F	P	G	4	retain	multi-stem
241	Acer platanoides	Norway Maple	1	19		G	G	G	3.5	retain	
242	Acer platanoides	Norway Maple	1	16		G	G	G	3.5	retain	
243	Acer negundo	Manitoba Maple	1	11		F	F	P	1	retain	lean, poor form, 60% deadwood
244	Acer platanoides	Norway Maple	1	11		G	G	G	3	retain	tar spot
245	Acer negundo	Manitoba Maple	1	16		F	F	F	4	retain	growing into tree 236
246	Acer platanoides	Norway Maple	1	20		G	G	G	4	retain	lack of vigour, tar spot
247	Acer platanoides	Norway Maple	1	26		G	G	G	4	retain	lack of vigour, tar spot
248	Acer platanoides	Norway Maple	1	18		G	G	G	4	remove	
249	Acer platanoides	Norway Maple	1	23		G	G	F	4	remove	20-30% deadwood, tar spot, lack of vigour
250	Acer negundo	Manitoba Maple	1	22,24		F	G	P	4	retain	multi-stem, 30-40% deadwood
251	Acer negundo	Manitoba Maple	1	26		F	F	P	4	retain	lean, poor form, 60% deadwood
G-252	Acer platanoides	Norway Maple	5	21,10,10,11, 21		G	G	G	2-4	remove	tar spot, 1) 21, 2) 10, 3) 10, 4) 11, 5) 21
253	Acer platanoides	Norway Maple	1	19		G	G	G	3	remove	
254	Acer platanoides	Norway Maple	1	15		G	G	G	3	retain	
255	Acer platanoides	Norway Maple	1	20		G	G	G	3.5	remove	
256	Acer platanoides	Norway Maple	1	18,20,22		F	G	G	3	retain	co-dominant stems
257	Acer platanoides	Norway Maple	1	10		F	G	G	2.5	retain	dead willow leaning on tree

Table 2: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108 | **Field Work Completed By: Silv-Econ Ltd. (Updated 10/10/2013 by Ben Tymchyshyn - MMM Group Ltd.)**

Date of Field Work: June 18 2008 (Updated 10/10/2013) | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
258	Acer platanoides	Norway Maple	1	11		G	G	G	2.5	retain	tar spot
259	Acer platanoides	Norway Maple	1	10.5		G	G	G	2.5	retain	tar sport
260	Acer platanoides	Norway Maple	1	24		F	G	F	3	retain	one stem dead
261	Acer negundo	Manitoba Maple	1	28,18,14		P	F	G	1	retain	multi-stem, 80% lean, trunk damage
262	Acer platanoides	Norway Maple	1	38		G	G	G	6	retain	
263	Acer negundo	Manitoba Maple	1	18,21,26		F	F	G	6	retain	multi-stem

Notes:

1 All the trees on sloped areas that maybe impacted by watermian construction should be removed and replaced with new trees following watermian installation.

Table 3: Tree Inventory and Preservation Charts

Project: Guelph Trunk Sewer 10-12-108 | **Field Work Completed By: Abound & Associates Inc.**

Date of Field Work: | **Weather:** | **Conditions:** G - Good, F - Fair, P - Poor, D - Dead

Tree ID #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Condition			Dripline Radius	Recommendation	Remarks
						Trunk	Canopy	Vigour			
10	Quercus rubra	Red Oak	1	25						retain	leaf necrosis
11	Acer platanoides	Norway Maple	1	18						retain	memorial tree
12	Acer platanoides	Norway Maple	1	36						retain	poorly formed buttress
13	Juglans nigra	Black Walnut	1	8						retain	
14	Pyrus communis	Pear	1	8,7						retain	
15	Pyrus communis	Pear	1	5,3						retain	
16	Acer negundo	Manitoba Maple	1	18,9						retain	many large laterals low on trunk
17	Acer negundo	Manitoba Maple	1	19						retain	3 large basal sprouts
18	Populus deltoides ssp. Deltoides	Eastern Cotton Wood	1	78						retain	
19	Juglans nigra	Black Walnut	1	14						retain	open grown form
20	Acer negundo	Manitoba Maple	1	18,17,14,15, 17						retain	

Notes:

1 All the trees on sloped areas that maybe impacted by watermian construction should be removed and replaced with new trees following watermian installation.

2 The field work of tree species listed under the Tree Inventory Table 3 was completed by Aboud & Associates Inc. Refer to the Aboud & Associates Inc.'s Road and Service Improvements Wellington Street Arborist Report, November 12, 2013 for details.

APPENDIX 'A'

Peter McNamara

Subject: RE: York Trunk Sewer & Paisley-Clythe Watermain - Butternut Assessment

From: Buck, Graham (MNR) [mailto:Graham.Buck@ontario.ca]
Sent: October 29, 2013 2:05 PM
To: Adele Labbe
Subject: RE: York Trunk Sewer & Paisley-Clythe Watermain - Butternut Assessment

Hi Adele,

In my opinion the methods used by the consultant to determine whether the trees are pure Butternut or not are in keeping with what MNR would expect. Therefore I do not have any reason to believe the conclusions reached, that all trees are hybrids or Japanese Walnut is incorrect.

Graham

Graham Buck
Species at Risk Biologist
Ministry of Natural Resources
1 Stone Road West
Guelph ON
N1G 4Y2
519 826 4505
graham.buck@ontario.ca

From: Adele.Labbe@guelph.ca [mailto:Adele.Labbe@guelph.ca]
Sent: October-07-13 3:29 PM
To: Buck, Graham (MNR)
Subject: FW: York Trunk Sewer & Paisley-Clythe Watermain - Butternut Assessment

FYI

From: Heather Drost [mailto:HDrost@ecoplans.com]
Sent: October 4, 2013 10:31 AM
To: Adele Labbe; Buck, Graham (MNR) (Graham.Buck@ontario.ca)
Cc: Geoffrey Gartshore; Mani Ruprai; Alex Green; Ben Tymchyshyn; Bill Draper
Subject: York Trunk Sewer & Paisley-Clythe Watermain - Butternut Assessment

Adele and Graham,

Please find attached a summary of our review of the *suspected* Butternut trees along the project limits of the York Trunk Sewer project. Our review has found all 5 'stems' to be hybrids or Japanese Walnuts, not subject to Ontario Regulation 242/08, as amended by Ontario Regulation 178/13, made under the ESA 2007.

Please call or email if you have further questions.

Regards,
Heather.

Heather Drost, B.Sc.
Biologist / Botanist

Ecology Department

Ecoplans | A member of **MMM Group**
72 Victoria Street South, Suite 100
Kitchener, ON Canada N2G 4Y9
t: 519.741.8850 x2240 | f: 519.741.8884
hdrost@ecoplans.com | www.ecoplans.com

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