

Glenview Park District 2019 Tree Inventory Update



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Introduction

On October 19, 2018, Certified Arborists from Graf Natural Resources Management & GIS began data collection for the annual update to Glenview Park District's comprehensive tree inventory in order to record changes in the tree inventory data which was originally collected in 2011. As in previous inventory updates, data regarding newly planted trees was added to the inventory and all Ash and American Elm trees received a complete reassessment. During the last two update cycles conducted in late 2016 and 2017, 25 of GPD's park properties were completely updated and all trees were remeasured for accurate DBH readings. During this update cycle, 2 of GPD's largest properties, Community Park West and Gallery Park, were completely updated with all trees being remeasured. Additionally, base data such as degrees of wounding, decay, and deadwood, condition of roots, as well as tree height and canopy spread, were recorded for each re inventoried tree in these 2 parks. Also, any trees which had been removed were noted as such and updates on tree condition and maintenance status were recorded. Additionally, all of the non-reinventoried parks were walked through, and any obvious updates to existing Non-Ash or Non-Elm trees were performed as necessary.

The goal over the next two years will be to reinventory the entire GPD tree population by updating the collection parameters described above and detailed below. At this time the properties that have not been completely updated are Flick Park, Glenview Park Golf Club, and Prairie Club. GPD should be commended for its commitment to keeping their tree data up to date, as the value of an inventory lies in the accuracy of its data. The results and analysis of this latest 2019 inventory update follow in this report. Graf Natural Resources Management & GIS has been pleased to partner with Glenview Park District and provide its tree inventory and GIS services to GPD over the past several years. We look forward to continuing to assist with the comprehensive inventory update, as well as any other GIS project or forestry management tasks that you may conduct in the future.

2018 Inventory Update Collection Parameters

Park

The name of the park for which the data was being collected

Species

All tree species are listed using common names, and were identified to the species level. Specific cultivars, hybrids, or varieties were not identified. This is mostly due to the fact that certain genera such as apples, cherries, and other ornamentals have such great variation that it is unnecessarily time consuming to identify down to this level.

DBH

DBH (Diameter at Breast Height) is a standard forestry measure of diameter, defined as the diameter of the tree, measured at 4.5 feet above the ground surface on the uphill side of the tree. Measurements were made using a foresters DBH tape. This device has diameter adjusted inches on it (each "inch" on the tape is actually 3.141 inches). This method of measurement provides the most accurate reading of tree diameter, which can be highly variable depending on the dimension in which it is linearly measured.

Condition

Condition ratings are based on a normal standard distribution. Much like in academic circles, we expect the greatest number of trees in the average category (3), fewer trees in the good and poor categories (2 and 4, respectively), and the fewest number of trees in the excellent and very poor categories (1 and 5, respectively). Condition is a continuous variable, meaning that anywhere along the curve we supplied, you should be able to estimate the number of trees that are (e.g.) a 2.5 condition, even though condition was only recorded as whole number integers. (see table below)

Condition 1	Excellent – Tree has no observable defects, wounds, diseases, and has textbook perfect form for the species. In addition, since young trees have a tendency to be trouble free and homogenous, a condition 1 tree must by definition be greater than 16” DBH. These are legacy trees, and as such are rare.
Condition 2	Good – Tree may have a small amount of deadwood, or a very limited number of minor defects. The overall form of the tree must be good, and consistent for the species in question. These trees should also be larger than 8” DBH for the reason listed above. Often the difference between condition 2 and 3 is form or growth habit.
Condition 3	Average – Tree has moderate but acceptable amounts of deadwood, wounds, or other defects, but is generally healthy. A wide variety of forms is acceptable for this group, which is meant to define the middle ground around which better or worse trees can be defined and identified.
Condition 4	Poor – Tree has defects, deadwood, wounds, disease, etc. that have the potential to cause a need for removal. Very poor form or architecture can put an otherwise healthy tree in this category as well, due to the potential for tree or root failure.
Condition 5	Very Poor – Tree must be removed. Physical or Health defects are too far gone for the tree to be reasonably saved. Like condition 1 trees, these are relatively rare, as generally trees that are getting to this level are removed before they can get there.

Crown Height/Crown Spread

Crown Height and Crown Spread are broadly estimated to approximately the nearest 10 foot interval by a combination of pacing from the drip line to the trunk, and utilizing a combination of clinometers, laser rangefinders, landmarks, and professional judgment. This data can be utilized for 3-Dimensional Mapping, as well as for better calculating rainfall interception rates, carbon sequestration, and other such factors.

Roots

Roots are evaluated as part of the Standard Defects Package “at a glance”

Normal	Roots appear normal
Exposed	Roots are exposed and can be damaged by mowers, etc.
Girdling	Observed girdling roots or severe trunk flattening
Compacted	Roots showing observable signs of underground root compaction
Wounded	Roots showing wounds
Multiple Issues	Roots showing a combination of above issues

Wounds

Wounds are part of our standard defects package, and include, but certainly aren’t limited to: Splits, cavities, callus tissue, holes, or any other mechanical damage. Categorically, “None” was still used if the damage was minor enough that it would not affect the tree.

None	Tree has no wounds
Moderate	Tree has moderately bad wounds
Severe	Tree has severe wounds

Rot

Rot was evaluated as part of the Standard Defects Package, and includes, but certainly isn’t limited to: mushrooms, dry rot, brown rot, bleeding, basal rot, cankers, or generally anything that appears to have been caused by an organism, and not mechanical damage. In this case, even small amounts of rot were noted as being “moderate”, due to the strong possibility that there is much more damage that cannot be seen with the naked eye.

None	No rot visible whatsoever
Moderate	Modest amounts of observable damage was present
Severe	Severe rot was observed

Deadwood

Deadwood was evaluated as part of the Standard Defects Package. Generally, trees with a small amount of deadwood fell into the “None” category. This is a scalable evaluation. In other words, 6 dead branches would be “Severe” on a 4” DBH tree, “Moderate” on a 10” DBH tree, and “None” on a 25” DBH tree.

None	Tree contained 0-10% deadwood, by ocular estimate
Moderate	Tree contained 11-30% deadwood, by ocular estimate
Severe	Tree contained more than 31% deadwood by ocular estimate

Maintenance Recommendation

Maintenance recommendations are provided to assist in managing the tree population. They are very general guidelines for pruning and care. See the table below.

Cyclical Prune	Tree is in good health, and will require standard pruning or maintenance on a 3-5 year cycle.
Monitor	Tree has an indiscernible defect, or shows signs of developing issues or general decline which must be observed. Also for healthy Ash trees in EAB infested areas and Ashes currently being treated.
Priority Prune	Tree has not been properly pruned during its developmental years, or suffered damage. Typically overgrown, and in need of pruning sooner than a 3-5 year standard cycle.
Priority Maintenance	Tree requires maintenance such as mulching, removal of a girdling object, or some form of Plant Health Care (i.e. foliar fungicide applications), etc.
Risk Assessment	Tree has deadwood or other defects which are at risk of threatening property, utilities, or human life. These trees need a more thorough inspection to determine if they require removal or other remedial action (see below)
Remove	Tree must be removed. This is only utilized if removal is truly the only reasonable option. For trees that are on the borderline, or may require a Risk Assessment, the phrase “consider removal” will appear in the comments field
Hazard Remove	Tree is hazardous and should be removed as soon as possible.
Hazard Prune	Tree requires pruning within a 1 year time frame in order to correct a potentially high risk situation from developing, or one has already occurred

EAB/DED Damage

This was an ocular estimate of the level of Dutch Elm Disease (DED) or Emerald Ash Borer (EAB) damage visible on each tree.

None	No DED/EAB damage at all was VISIBLE at the time of inspection
Moderate	Tree either exhibited direct evidence of DED/EAB infestation OR defects that could possibly be consistent with EAB at the time of inspection, even if there was a probability that the defects were not EAB-related
Severe	Tree exhibited severe DED/EAB symptoms at the time of inspection

Comments

Comments were included as a courtesy to denote any conditions worthy of note, such as weak trunk unions, interference with utilities or street lamps, limited growing space, poor form, or any other information Graf Tree Care Inc. felt was valuable. These comments are standardized as much as possible, though certain situations certainly exist where nonstandard comments were utilized.

Memorial Features

Any updates to memorial features that were observed during this update were noted in the inventory data.

TRAQ Fields

For the parks which received a complete update, data for the following 3 fields were collected for trees we identified as posing an elevated risk in order to get a basic risk rating based on the TRAQ (Tree Risk Assessment Qualification) system. This data is provided in order to determine which trees GPD will need to inspect more closely, and perhaps perform a more detailed assessment. These fields can also be used for Glenview Park District to track it’s internal risk assessments.

We cannot stress enough that these were Rapid Assessments, and not full TRAQ Assessments, and as such, are meant to indicate a need for further study, and do not represent a legal description of Risk. These assessments are not legally

binding, and are not intended to be utilized as evidence in a court of law. They serve primarily for internal record keeping, and a means of locating trees which require more detailed study before making a final decision as to management strategy. These assessments can be considered approximately a Level 1, or Limited Visual Assessment. Further discussion of the TRAQ data collected in GPD will be found later in this report.

FAILURE LIKELIHOOD

This is the likelihood that the tree or tree part will fail within a period of 1 year from the date of survey.

Improbable	Failure of tree/tree part is highly unlikely within a 1 year time frame
Possible	Failure of tree/tree part is possible, but not probable within a 1 year time frame
Probable	Failure of tree/tree part is likely within a 1 year time frame
Imminent	Tree/Tree Part has already begun to fail and failure is imminent

IMPACT LIKELIHOOD

This is the likelihood that the tree or tree part will impact a target when it fails.

Very Low	Failure of tree/tree part is highly unlikely to impact a target
Low	Failure of tree/tree part is unlikely to impact a target
Medium	Failure of tree/tree part may impact a target, but is not expected to
High	Failure of tree/tree part will almost certainly impact a target

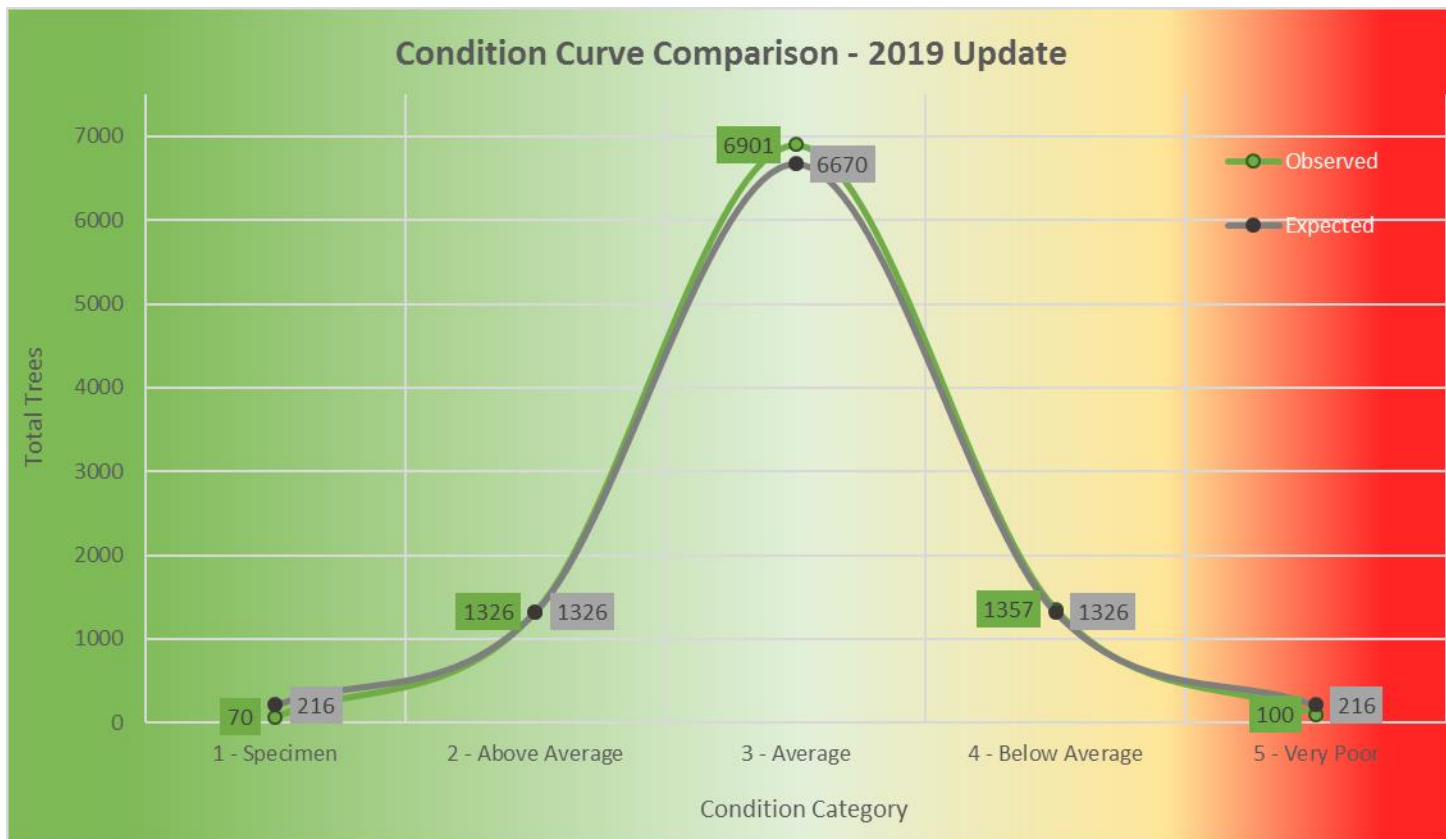
IMPACT CONSEQUENCE

This is the consequence that will be suffered if the tree fails and impacts a target

Negligible	Failure of tree/tree part will have no significant consequence
Minor	Failure of tree/tree part will cause minor damage to property
Significant	Failure of tree/tree part will cause significant damage to property or minor injury to life
Severe	Failure of tree/tree part will cause severe damage to property or life

2019 Inventory Update Statistics

Total Number of Trees 2019	9,754
Total Number of Species 2019	128
Total Number of Stumps 2019	83
Total Diameter Inches 2019	97,483"
Average Tree Diameter 2019	9.99"
Average Condition (unweighted, all trees) 2019	3.01 (Average)
Average Condition (weighted, 8" DBH or over) 2019	2.91 (Above Average)
Total Trees Removed During 2018	261
Ash/Elm Trees Removed During 2018	51
Total Non Ash/Elm Trees Removed During 2018	210
Total Trees Planted During 2018	223
Total Trees Added 2019	135
Total Ash/Elm Trees Updated 2019	194
Average Tree Height - Updated Trees Only (ft)	24.49
Average Canopy Spread - Updated Trees Only (ft)	14.89
Average Crowding - Updated Trees Only (Height to Spread Ratio)	1.64
Total Canopy Volume - Updated Trees Only	39,351,380 cu ft
Average Canopy Volume - Updated Trees Only	5,125 cu ft



This curve represents the distribution of trees in each of the categories enumerated above. As stated in the collection parameters section, deviations from the expected normal standard distribution can serve as a useful tool in analyzing the overall health of a tree population, and for this reason, we have included a theoretical curve representing a normal distribution so that comparisons can readily be made. The green line with green labels represents what we observed in the field, and the grey line with grey labels is the predicted normal distribution. The condition curve for 2019 GPD inventory update indicates a tree population that is in overall average to above average condition. In comparison to the 2018 inventory update condition curve, this graph illustrates the continued, slow but steady, shift of the overall GPD population to the left, or above average, side of the curve. As the removals due to EAB have wound down and almost all untreated Ash trees have been removed, GPD has focused its attention on removing some of its poor condition and undesirable trees, as we have observed in many of the parks. As this process continues into the future, GPD will continue to see its condition curve shift even more toward above average in future years. An analysis on each condition category follows below.

The Condition 1, or specimen trees, were lower than would be predicted by the standard distribution alone, but we always expect that the specimen trees (and the Condition 5 trees as well) will come in lower than their statistical norm because of their rarity. This is particularly true for GPD's population, which is generally a young to middle-aged tree population with over 80% of trees having a DBH less than 16". Trees are not eligible for specimen status until they are at least 16" DBH, and most specimen trees are generally much larger. As a high level of care is maintained into the future, GPD trees which are near the threshold for specimen status may move into this category. That being said, 70 specimen trees in a population of GPD's size is still an impressive number and shows a commitment to tree health and longevity.

The Condition 5, or very poor trees, came in considerably lower than the expected norm, which is expected in a park district setting since poor condition trees are often removed long before they move into this category. The 100 trees in this category include 7 Ash trees that have succumbed to EAB infestation, which skews this data slightly. This number is slightly elevated from the 2018 update due to the recommended removal of 18 Pine and Spruce trees as a result of the conifer evaluation conducted in July 2018. The remaining 75 are trees of various species and sizes found in several parks across GPD. Condition 5 trees should be prioritized and removed in a timely manner.

The condition 2, or above average trees, are exactly what would be expected by statistical analysis. The number of trees in this category has increased since the 2018 update due to the fact that a number of good condition trees that previously did not meet the 8" DBH threshold for condition 2 status have grown and now qualify for this condition rating. Looking toward the future, GPD will continue to have an opportunity to increase the number of trees in the condition 2 category. In general, if trees are properly mulched and maintained, newly installed trees are done so correctly and cared for well, and site selection for the trees is well matched to the species, trees will often mature with good form and without significant defects. These trees can eventually become condition 2 trees. Considering the relatively high number of trees planted across the park district in recent years, GPD is well on its way to significantly boosting the number of trees in the condition 2 category over the next 10-15 years.

The Condition 4 trees came in slightly higher than what would be statistically expected. These trees are primarily trees with deadwood, wounds, decay, poor form, or low quality species that have developed structural defects or poor architecture. As discussed in detail in the Pine/Spruce Evaluation report, the presence of rampant Diplodia Tip Blight in Austrian Pine trees and Rhizosphaera Needlecast in Blue Spruce trees has inflated this number. Some parks also have a number of Condition 4 Ash trees, which again is slightly skewing the data. Undesirable species, such as Boxelder, Cottonwood, Black Cherry, Siberian Elm, Mulberry, and Willow, make up a significant number of trees in the Condition 4 category as well. Going forward, GPD should continue to focus its attention on these other poor condition and undesirable tree species. As time and budget allow, GPD should use this inventory and report to prioritize the removal of many of the Condition 4 trees, especially those that are beyond the point of salvaging, so that a new group of diverse trees may be planted to replace them. Also, a goal should be set to eventually remove most, if not all, of the undesirable species, for safety, aesthetic, and ecological reasons, as well as to create opportunities for new tree planting. As these Condition 4 trees are pruned or removed, the overall tree population will continue to shift toward above average.

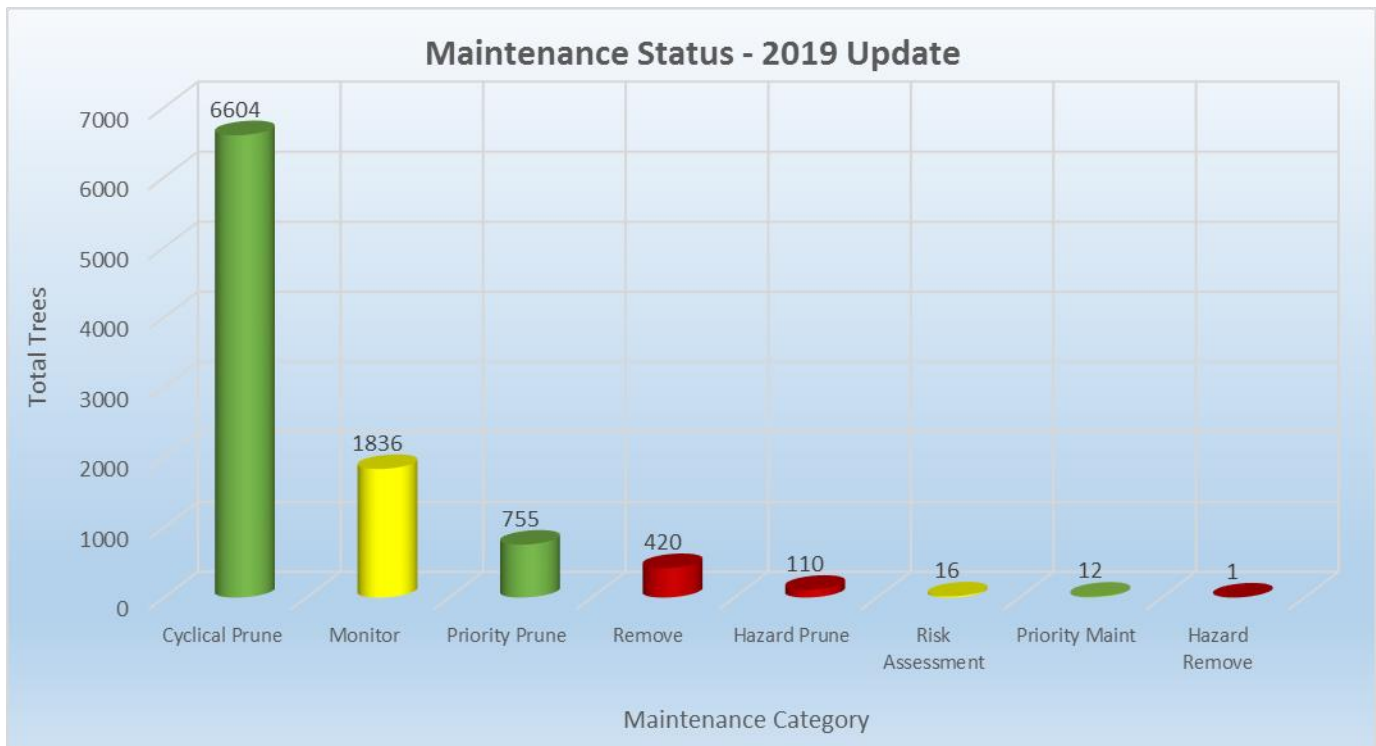
The trees in the condition 3, or average, category are slightly higher than the expected norm. The reason for this is simply because this is the "average" category, and should generally have the most trees in it, according to our ranking system. Trees less than 8" DBH, which are a significant percentage of GPD's tree population, are always assigned this category, unless they happen to be in worse condition, which has a tendency to exaggerate the count in this category.

As has been stated previously during the partnership between Graf Natural Resources Management & GIS and Glenview Park District, GPD's commitment to removing poor condition trees and planting a diverse set of species to replace them is to be applauded. With many younger trees planted in recent years which will eventually enter a phase where they may become condition 2 trees as opposed to a condition 3, and some actions to lower the number of trees in the condition 4 and 5 categories, we anticipate that GPD will continue to make positive changes over the next few years that will result in an even more diverse and resilient tree population than they have currently. The goal of an average tree condition somewhere in the 2.5 range, with a sizable population of specimen trees, and a steep drop off in trees after condition 3, is certainly within GPD's reach in the future.



This chart, as in years past, continues to illustrate a typical trend in the overall age spread of a tree population seen in a park district setting, with many trees being younger and a relatively low number of trees in the older age categories. As shown above, 3,968 of GPD's total 9,754 trees (40.6%) have a DBH of 6" or less which we generally consider to be less than about 15 years old. It is assumed that most trees grow on average approximately ½" per year, although that figure varies significantly depending on the species in question. Almost 71% (6,923 of 9,754) of GPD's trees have a DBH 12" or less. The 7-18" DBH categories make up 47% (4,589 of 9,754) of the population and is considered to be about 20-30 years old. The 743 trees (approximately 8%) in the 19-24" DBH category are generally mature trees over 30-40 years old.

The 454 remaining trees in the 25"+ DBH categories are considered to be about 40-50+ years old. Many of these are still in good to fair condition, however some of these may be nearing the end of their natural life. It should be mentioned that the number of trees in the 30"+ categories are often lower due to the natural senescence and ensuing decline of trees in urban settings, though park district trees are frequently longer lived due to the fact they often have unrestricted growing space, both above and below ground. A fairly equal number of trees in each age classification is, within reason, desirable and indicative of a consistent focus on tree planting and tree maintenance in GPD over the years, and shows that the right trees are being planted in the correct locations. As the younger population matures and moves into the next higher category and new trees are planted replacing older, removed trees, Glenview Park District continues to have an opportunity, over time, to bring the tree age classes to a more balanced level.



In terms of maintenance status of this inventory of the GPD tree population, the statistics displayed above show a positive trend overall. The number of trees in the “cyclical prune” category is quite high which is a positive trait in a tree population. This is indicative of a fairly high level of maintenance. It is recommended to develop a 3-7 year pruning cycle, ensuring every tree in the park district is pruned every 3-7 years, which could raise many trees to the next condition level. Establishment pruning, or the pruning of young trees to establish proper branching habit and structure, is one of the least expensive yet most effective maintenance items that can be performed on a young tree, and it is also recommended that all new plantings, which make up a significant part of GPD’s population, receive an establishment pruning within 5 years of being planted. This is especially true of the many young Oak trees that have been recently transplanted from the GPD nursery.

The 420 trees in the “remove” set should be prioritized and removed in a timely manner. Many of these tree removals are being driven by poor condition Pine and Spruce trees, undesirable species in poor condition, and aging trees which have declined or developed structural defects. The number of trees in this category will steadily decline as GPD focuses on performing these removals, as evidenced by the decrease from 525 trees in this category during last year’s update. The 1 tree which received a “hazard remove” status should be promptly removed because tree or tree part failure, which can cause damage or injury, is likely. The 755 trees in the “priority prune” set are trees which are simply overgrown, or have parts which need to be removed in a timely fashion, and should have pruning prioritized over the trees in the cyclical prune set.

The 1,836 trees in the “monitor” category can be viewed as being in a transitional phase. For the most part, the tree has an indiscernible defect, or shows signs of developing issues or general decline which must be monitored. These trees should be reassessed periodically and their maintenance status updated. All Ash trees not recommended for removal received “monitor” as a maintenance status which inflates this number slightly. Also, the widespread presence of Diplodia Tip Blight and Rhizosphaera Needlecast across GPD has led many Pine and Spruce trees to be assigned this category.

The 110 trees in the “hazard prune” category should be pruned as soon as possible to mitigate a potential hazard risk. The 16 trees which received a “risk assessment” status were, as stated in collection parameters section above, trees that have excessive deadwood in the crown or other structural defects which could pose a hazard to park patrons or property. These are generally species of higher quality or ecological significance which could be worth the investment to salvage and preserve as opposed to removal. See below for a more detailed description of what a risk assessment entails.

Glenview is certainly continuing to head in the right direction and this is illustrated when comparing statistics from this year’s update to those of years past. The number of trees in the Cyclical Prune category has gradually increased, while the number of trees in almost all other maintenance categories has gradually decreased. Again, this is commendable and demonstrates GPD’s ongoing commitment to the overall health of its tree population.

TRAQ Fields and Tree Risk Assessment

Since determining response and mitigation measures ultimately relies on a combination of determining acceptable risk and available budgets, we believe that formally documenting the risk any trees pose and, in turn, using this information to compare with available budgets as being a proactive and responsible activity. In arboricultural circles, tree risk is typically assessed on a 1-year cycle (this can be varied), so that a tree is calculated to have a certain risk of failure within 1 year. This has several advantages if used in conjunction with budget considerations, since trees which are found to pose a more immediate risk can be budgeted for and removed this year, but the remaining trees can be categorized and budgeted for in years to come based on the Risk Assessments. Bear in mind that if a tree posed an immediate hazard in the field, we would schedule it for a Hazard Removal.

Below are both the ISA BMP – Likelihood Matrix and Risk Matrix. The TRAQ data collected in the field is used along with these matrices to calculate risk likelihood and consequences. TRAQ is a relatively new qualitative, and not quantitative, view of Risk, and one limitation is that it is quite rare and difficult to label a tree as being in the “High” or “Extreme” risk categories. In general, anything above "Low" should be considered for a Level 2 Risk Assessment or mitigating action.

We cannot stress enough that these were Rapid Assessments, and not full TRAQ Assessments, and as such, are meant to indicate a need for further study, and do not represent a legal description of these trees Risk levels. These assessments are not legally binding, and are not intended to be utilized as evidence in a court of law. They serve primarily for internal record keeping, and a means of locating trees which require more detailed study before making a final decision as to management strategy.

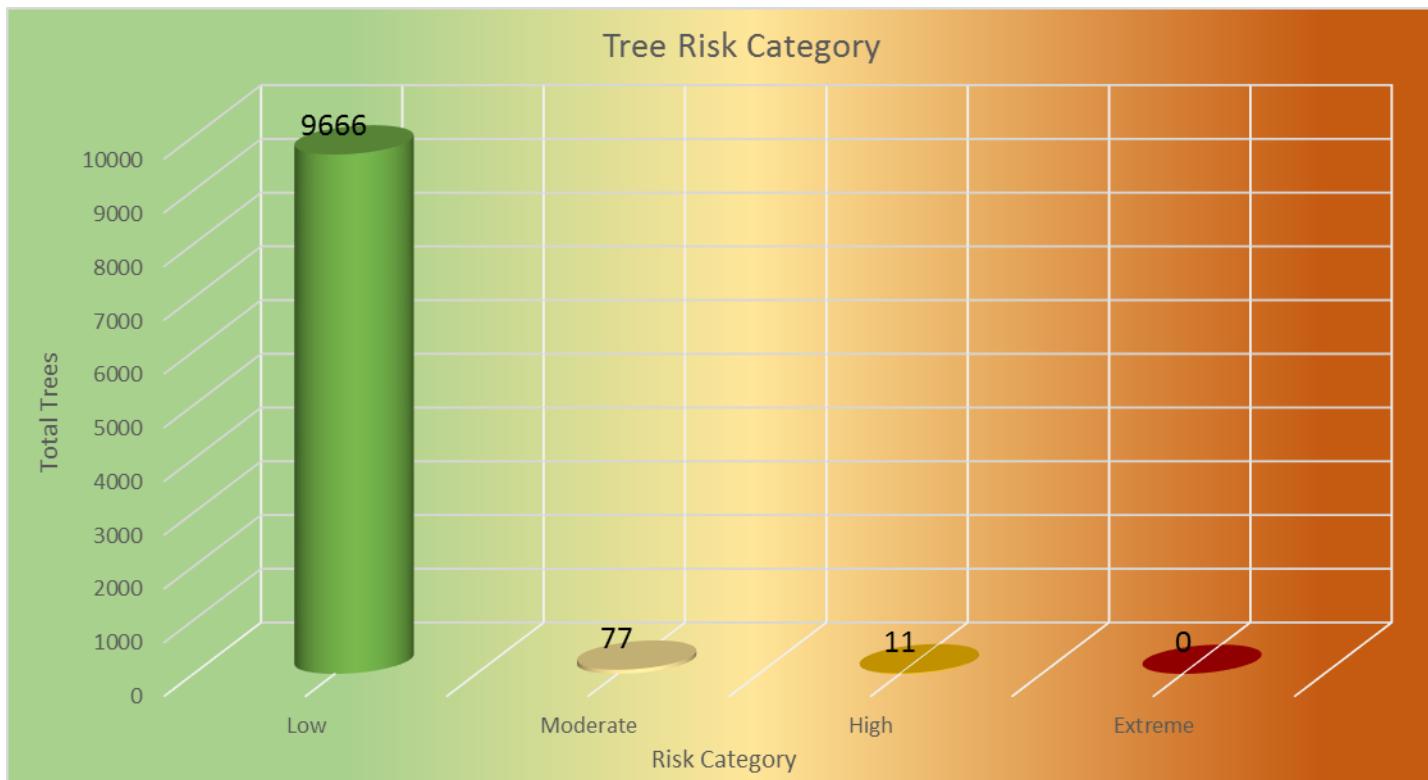
Since the TRAQ fields are part of the data collection parameters for the Glenview Park District inventory updates, it is recommended that GPD develop and implement a Tree Risk Assessment Policy so that consistency and accountability is successfully achieved.

ISA BMP – Likelihood Matrix

Likelihood of Failure	Likelihood of Impacting the Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

ISA BMP – Risk Matrix

Likelihood of Failure & Impact	Consequences			
	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

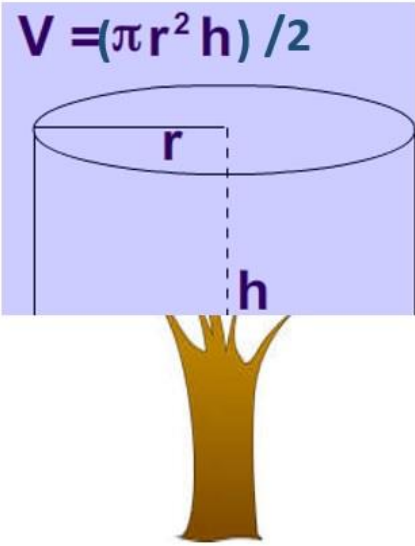
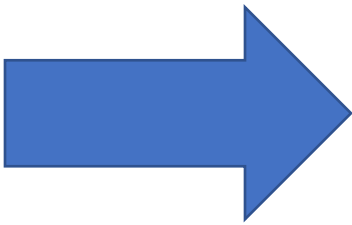
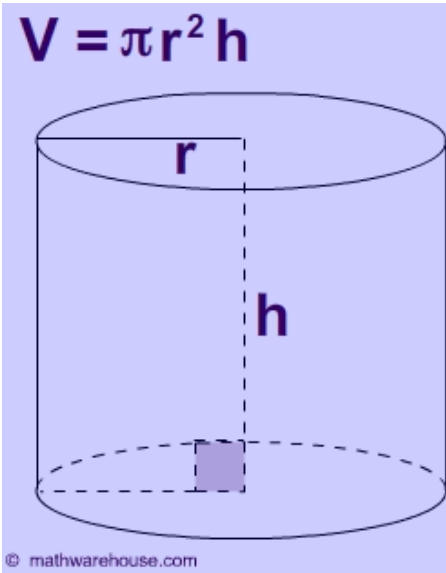


As illustrated in the chart above, the vast majority of GPD trees were found to be low risk based on the data collected and the TRAQ matrices above. Going forward, any tree that falls into the extreme risk category should receive immediate mitigating actions. Any trees that fall into the high risk category should receive a Level 2 Risk Assessment and/or mitigating action. Any tree found to pose a moderate risk should be monitored and/or inspected by GPD and a threshold of risk tolerance be established. Some of moderate risk trees may also be considered for a Level 2 Risk Assessment and/or mitigating action. Graf Natural Resources Management & GIS would be pleased to assist GPD in any aspect of developing or managing a Tree Risk Assessment Policy or performing Level 2 Basic Risk Assessments or Level 3 Advanced Risk Assessments.

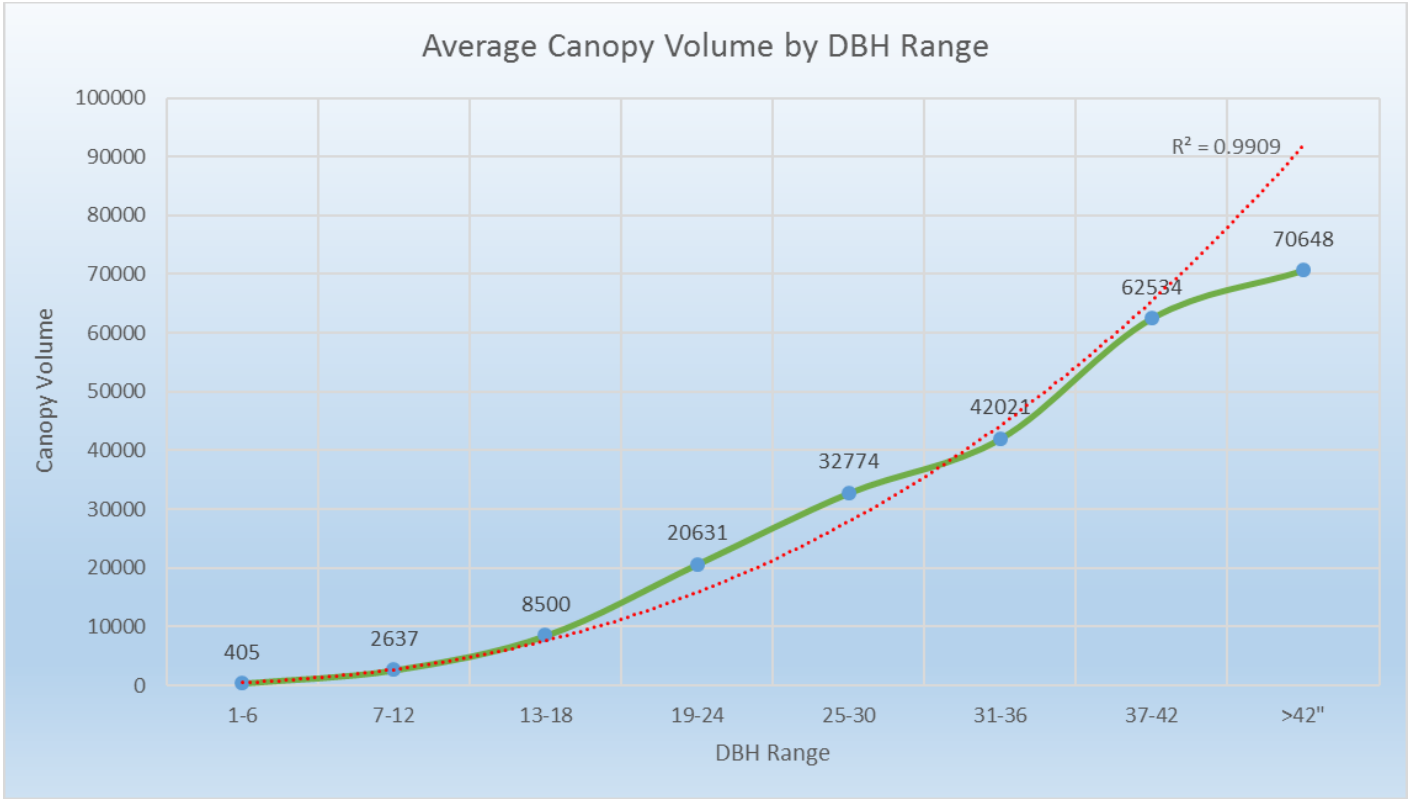
Canopy Volume Analysis

Many times, canopy area (2 dimensions) is assessed during tree inventories to determine the amount of tree coverage in a geographic area. However, when it comes to stormwater interception, Leaf Area Index (LAI), and other such metrics, we believe that canopy volume (3 dimensions) is a far better tool for determining tree benefits. It also reveals some fascinating things about tree longevity. Since we collected data on tree height and crown spread during these updates, we have included this analysis as well. Keep in mind, this analysis applies only to the tree population that has been updated over the last 3 years.

In order to calculate canopy volume, we utilized the calculation of the volume of a cylinder, based on the tree height and crown spread measurements, and divided the resulting number by half, to account for the fact that most tree's canopies begin at approximately halfway up their total length.

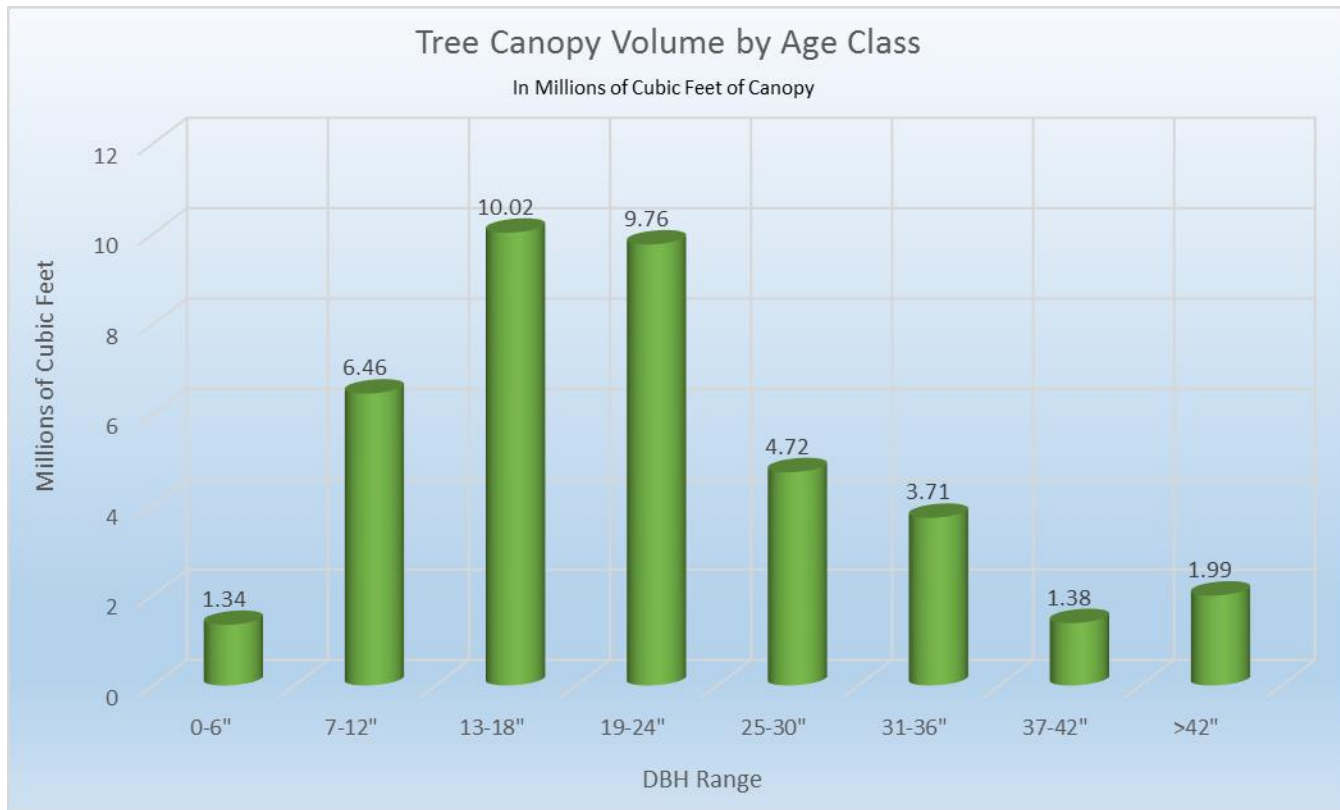


By using this fairly rudimentary analysis, we can generalize what the total volume of the updated tree canopy is in GPD. Though the calculations involved with quantifying stormwater benefits and other ecological services are beyond the scope of this report, it can generally be said that increased canopy volume certainly provides more shade, carbon uptake and energy savings, and water storage in the crown, leading to reduced runoff during storm events. Once all phases of the updates are complete, we will be able to perform these same calculations for the entire population which will provide GPD with some fascinating insight into their forest canopy.



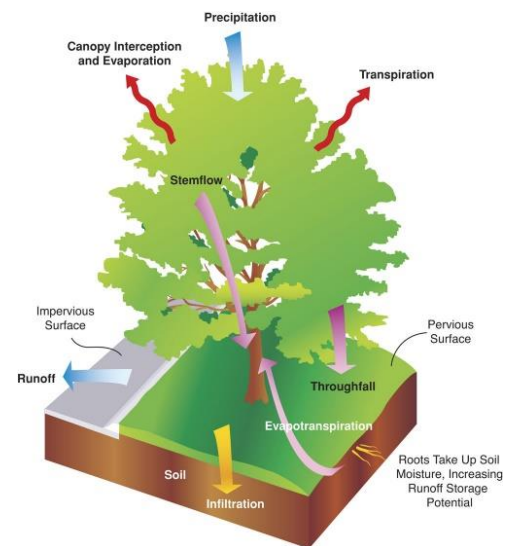
A tree's aboveground growth can be used as an overall indicator of its health and vigor. As can be seen from the above chart for GPD's updated inventory, there are several very interesting trends when it comes to tree size (age) and canopy volume. First, we see slow increases in canopy at the smaller diameter range, from 1-12" DBH. This makes sense, as the tree is still developing its root system during these formative years which will eventually lead to increased canopy growth.

From the 13” to approximately low-30” size range, we see rapid increases in canopy volume as the tree puts on above ground growth, which is a direct result of its increased photosynthetic capability. Greater leaf area produces more energy, and the tree is able to grow much more rapidly. Eventually, at approximately the 32” mark, tree growth begins to decline. This again makes sense as the urban environment with its pollutants and oftentimes poor soils which can prohibit continued vigor. These statistics will be far more meaningful once we can calculate them for the entire updated population.



Where the line graph of canopy volume shows the average canopy volume at each DBH range, this graph of gross canopy volume at each DBH range tell an even more compelling story. The line graph shows us that canopy volume generally increases with tree age and size, a fact which is easy to understand, but even more tangible when quantified. As canopy volume increases, CO₂ uptake increases, more stormwater is intercepted or evapotranspired away, more shade or windblocking is provided, increasing energy savings, and more pollutants are intercepted by leaf area. This analysis is based on the updated population only, though once the entire tree inventory update has been completed, the resulting canopy volume charts will be much more informative.

Where the above bar graph becomes important is in the number of trees in each category. Even though canopy volume increases on a per tree basis as DBH increases, we can see a slight reduction in overall canopy volume between the 13-18” age class and the 19-24” age class and a more significant drop in the 25-30” age class. If one were to reexamine the total number of trees at each of the age classes, it would be seen that the overall number of trees fluxuates in the same manner as canopy volume as illustrated in the bar graph above. The important fact here is that if GPD could get even 50% more trees to survive into the 19-24” age class, and then 50% more of those trees to survive into the 25-30” age class, and so on, overall crown volume could increase by a significant amount. This would result in substantial and quantifiable savings for the community.



A first step to encouraging this change to occur is to ensure that a high level of maintenance and a robust cyclical pruning program continues to be a priority for GPD trees. More importantly, the ability to move more trees into these larger DBH and volume ranges begins with planting the right tree in the right site. No additional maintenance beyond what GPD already performs is necessary. Targeted reforestation and ongoing planning for new tree plantings is the crucial element in the equation. For areas with limited below ground growing space, trees which are tolerant of lower soil volume should be planted. For areas with high exposure to salts and other pollutant, trees which are tolerant of these conditions should be planted. Areas with with predominantly wet or dry soils should have trees planted which are tolerant of these conditions. Planting the right tree in the right site is of paramount importance in allowing trees to live more productive lives in urban situations. Performing planting site analysis to determine available growing space, light levels, salt and nutrient loading, and basic soil characteristics before selecting trees will allow these trees to live longer and more vigorous lives.

2019 Inventory Update Diversity Analysis

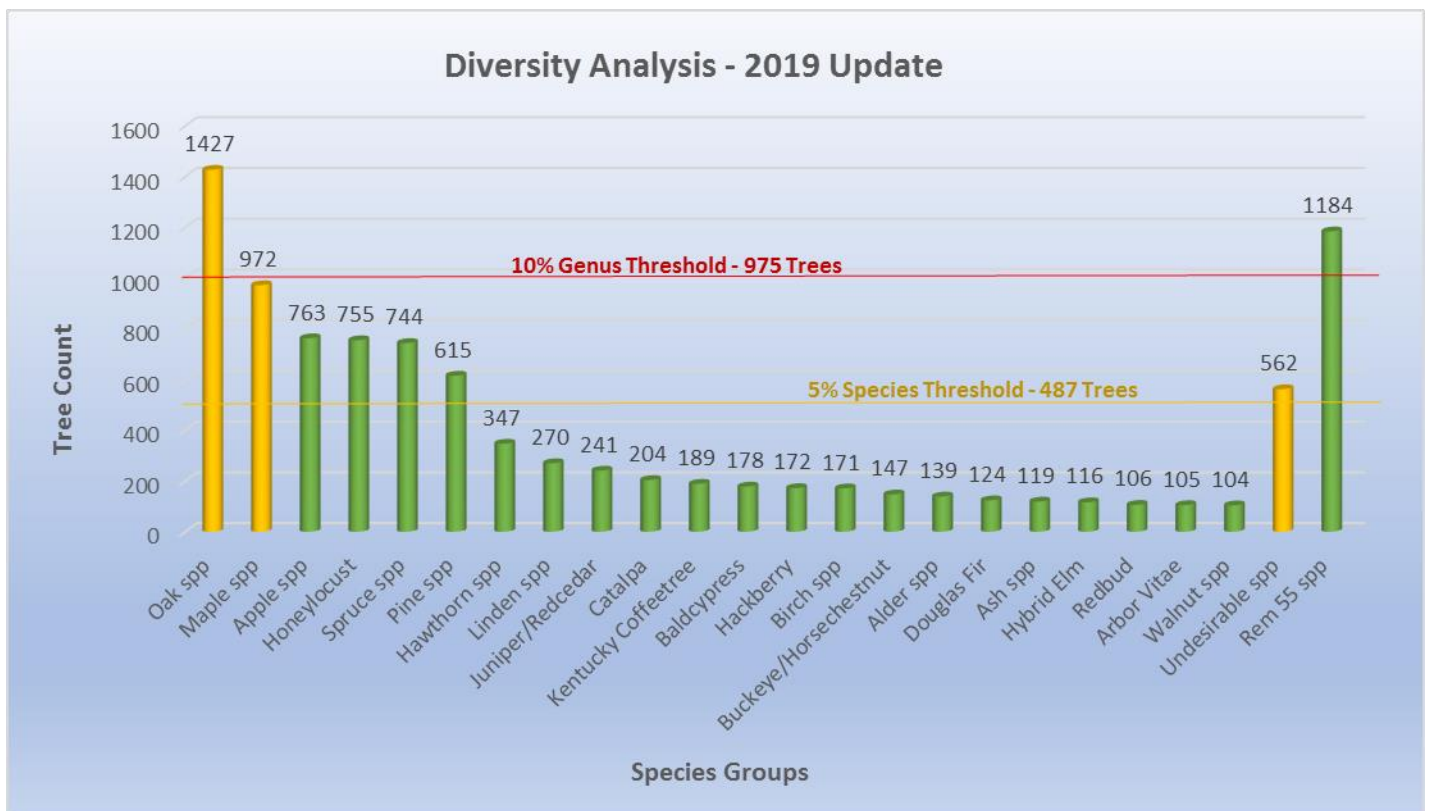
The table below is an itemized list of all tree species present in the Glenview Park District tree population, along with average DBH, average height & spread, and average condition rating for each species. The average condition ratings can be used as a guide as to what species are growing well in GPD parks.

<u>SPECIES</u>	<u>COUNT</u>	<u>% OF TOTAL</u>	<u>AVG DBH</u>	<u>AVG HEIGHT</u>	<u>AVG SPREAD</u>	<u>AVG COND</u>
HONEYLOCUST	755	7.74%	18.16	40.84	29.08	2.91
APPLE-CRAB SPP	693	7.10%	7.76	12.55	12.21	3.10
OAK-BURR	482	4.94%	5.08	16.71	9.02	2.91
OAK-SWAMP WHITE	449	4.60%	5.53	17.11	9.78	2.93
PINE-AUSTRIAN	394	4.04%	12.62	28.03	17.30	2.95
HAWTHORN-SPP	347	3.56%	8.61	13.82	12.57	3.12
SPRUCE-NORWAY	275	2.82%	10.96	36.87	17.49	2.77
COTTONWOOD	264	2.71%	20.59	47.90	22.63	3.42
OAK-RED	255	2.61%	8.33	26.08	15.77	2.96
MAPLE-NORWAY	251	2.57%	13.77	35.46	23.10	3.10
MAPLE-SILVER	246	2.52%	17.19	41.36	24.75	3.05
SPRUCE-BLUE	243	2.49%	8.64	25.23	11.19	3.18
LINDEN-LITTLELEAF	240	2.46%	11.53	26.49	17.58	2.90
EASTERN REDCEDAR	239	2.45%	7.55	28.88	11.24	3.03
SPRUCE-SPP	223	2.29%	6.02	19.57	10.00	3.10
CATALPA	204	2.09%	6.70	20.33	10.78	3.04
KENTUCKY COFFEETREE	189	1.94%	7.17	20.68	12.18	2.90
BALDCYPRESS	178	1.82%	10.75	23.89	12.41	2.66
HACKBERRY	172	1.76%	9.59	23.83	15.91	2.94
MAPLE-SUGAR	166	1.70%	9.10	22.37	15.09	2.80
ALDER-SPP	139	1.43%	8.32	22.19	10.57	3.09
BIRCH-RIVER	137	1.40%	11.22	24.35	15.24	2.87
DOUGLAS FIR	124	1.27%	4.79	15.83	7.04	3.10
BUCKEYE-OHIO	117	1.20%	10.50	28.37	18.31	2.88
ELM-HYBRID	116	1.19%	4.68	17.76	9.18	2.98
AMERICAN REDBUD	106	1.09%	5.10	13.11	9.22	3.09
PINE-SCOTCH	106	1.09%	12.84	27.74	17.22	2.87
ARBOR VITAE	105	1.08%	7.17	11.69	7.82	3.13
MAPLE-RED	105	1.08%	10.89	28.08	15.92	2.99

WALNUT-BLACK	98	1.00%	12.37	40.26	23.09	2.78
PINE-WHITE	95	0.97%	12.13	37.84	19.89	2.75
IRONWOOD	92	0.94%	5.68	20.57	9.43	3.13
AMERICAN HORNBEAM	86	0.88%	4.77	12.28	9.11	3.03
ASH-WHITE	75	0.77%	12.81	30.93	21.07	3.11
ELM-AMERICAN	75	0.77%	17.73	44.13	28.00	3.28
LONDON PLANETREE	75	0.77%	5.13	19.53	10.00	2.97
MAPLE-AUTUMN BLAZE	74	0.76%	7.70	26.71	13.29	2.82
WILLOW-SPP	74	0.76%	25.51	32.60	26.83	3.36
APPLE-EDIBLE	70	0.72%	9.30	15.61	12.88	3.40
PEAR-CALLERY	65	0.67%	8.92	23.84	14.02	2.88
MAPLE-AMUR	64	0.66%	11.23	15.22	14.22	3.22
OAK-SHINGLE	63	0.65%	4.46	9.84	5.94	3.05
ELM-SIBERIAN	59	0.60%	20.90	42.41	27.41	3.68
DOGWOOD-CORNELIAN	58	0.59%	4.29	8.91	6.41	3.00
GINKGO	58	0.59%	4.88	16.04	8.13	2.90
SERVICEBERRY-SPP	58	0.59%	5.31	11.12	8.88	2.97
BOXELDER	53	0.54%	16.42	39.20	24.10	3.85
OAK-CHINKQUAPIN	45	0.46%	3.18	11.04	6.25	3.18
AMUR CORKTREE	44	0.45%	10.50	24.59	13.51	3.09
YELLOWWOOD	44	0.45%	5.23	15.95	10.95	3.09
OAK-ENGLISH	43	0.44%	7.98	20.00	13.17	2.84
MULBERRY-SPP	42	0.43%	18.60	38.17	26.95	3.69
MAGNOLIA-SHRUB	41	0.42%	4.41	9.35	7.39	3.07
POPLAR-SPP	39	0.40%	5.79	22.86	10.54	3.08
OAK-PIN	38	0.39%	20.16	51.60	33.80	2.55
OAK-WHITE	36	0.37%	16.94	45.21	29.38	2.75
BIRCH-WHITE	33	0.34%	5.18	17.86	11.79	3.00
MAPLE-MIYABEI	32	0.33%	3.00	12.40	5.80	3.00
CHERRY-SPP	28	0.29%	7.75	14.40	11.20	3.46
HORSECHESTNUT	27	0.28%	5.48	18.44	9.38	2.96
LINDEN-AMERICAN	27	0.28%	14.44	38.70	23.52	2.63
ASH-BLUE	26	0.27%	10.85	24.23	18.08	2.54
YEW	26	0.27%	8.81	10.00	13.57	2.96
DAWN REDWOOD	25	0.26%	6.20	10.00	5.00	2.76
HICKORY-SHAGBARK	24	0.25%	12.71	39.17	21.04	2.42
PLUM-SPP	24	0.25%	5.21	11.67	11.25	3.21
TULIPTREE	24	0.25%	5.17	20.00	9.06	2.88
MAPLE-HEDGE	23	0.24%	5.61	15.56	8.89	2.83
FIR-SPP	22	0.23%	4.32	13.44	7.50	2.95
CHERRY-BLACK	21	0.22%	9.90	30.48	13.81	3.62
DOGWOOD-SPP	21	0.22%	4.95	7.86	6.67	3.00
BEECH-EUROPEAN	20	0.21%	8.20	10.00	6.11	2.65
CHESTNUT-CHINESE	20	0.21%	9.75	21.88	12.50	2.60

LILAC-SPP	19	0.19%	7.63	11.88	9.38	2.95
SWEETGUM	19	0.19%	5.89	13.57	6.43	3.00
HEMLOCK-EASTERN	18	0.18%	3.67	12.35	6.47	2.94
SYCAMORE	16	0.16%	14.75	23.33	20.00	3.00
ASH-GREEN	14	0.14%	7.36	25.36	12.50	4.07
BLACKGUM	14	0.14%	3.57	10.00	5.56	3.14
LILAC-TREE	14	0.14%	2.00	10.00	5.00	3.00
SUMAC	14	0.14%	6.79	11.43	12.86	3.21
FIR-CONCOLOR	13	0.13%	9.23	27.27	10.00	2.92
ZELKOVA	13	0.13%	4.85	17.86	10.71	3.00
BEECH-AMERICAN	12	0.12%	4.42	15.00	9.17	2.83
LARCH	11	0.11%	2.91	11.82	5.91	3.27
PINE-SWISS STONE	11	0.11%	9.91	28.18	14.09	3.09
PERSIMMON	10	0.10%	1.30	7.14	5.00	3.30
KATSURA	8	0.08%	9.25	11.67	5.00	2.75
MAGNOLIA-TREE	8	0.08%	9.25	18.75	15.63	3.13
MAPLE-JAPANESE	8	0.08%	1.13	5.63	5.00	3.00
OAK-HILLS	8	0.08%	1.00	5.00	5.00	3.00
PINE-LIMBER	8	0.08%	3.88	13.75	6.88	3.13
HAZELNUT-TREE	7	0.07%	10.00	20.00	10.00	2.43
PERSIAN IRONWOOD	7	0.07%	2.43	10.71	5.00	3.00
FRINGETREE	6	0.06%	2.83	7.00	6.00	3.00
LILAC-IVORY SILK	6	0.06%	2.00	10.00	5.00	3.00
OAK-SAWTOOTH	6	0.06%	3.00	12.50	5.00	3.50
PAWPAW	6	0.06%	1.00	5.00	5.00	3.33
WALNUT-WHITE	6	0.06%	9.50	27.50	22.50	3.50
BLACK LOCUST	5	0.05%	13.40	21.67	15.00	3.40
BUCKTHORN	5	0.05%	10.40	16.00	13.00	4.00
ASH-BLACK	4	0.04%	13.00	35.00	22.50	3.25
HICKORY-PECAN	4	0.04%	2.00	10.00	5.00	3.00
MAGNOLIA-CUCUMBER	4	0.04%	6.75	10.00	5.00	3.25
BUCKEYE-YELLOW	3	0.03%	2.00	10.00	5.00	3.00
HARDY RUBBERTREE	3	0.03%	2.00	10.00	5.00	3.00
LINDEN-SPP	3	0.03%	4.00	13.33	6.67	3.00
SPRUCE-SERBIAN	3	0.03%	8.33	30.00	13.33	3.00
WILLOW-CORKSCREW	3	0.03%	15.00	26.67	18.33	2.67
AMUR MAACKIA	2	0.02%	2.00	10.00	5.00	3.00
HICKORY-BITTERNUT	2	0.02%	7.50	30.00	12.50	2.50
JUNIPER	2	0.02%	2.00	10.00	5.00	3.00
MAPLE-PAPERBARK	2	0.02%	5.00	10.00	5.00	3.00
OAK-SPP	2	0.02%	1.50	10.00	5.00	3.00
PAGODATREE	2	0.02%	11.50	25.00	20.00	2.00
PEACH	2	0.02%	4.00	12.50	10.00	3.00
VIBURNUM-SPP	2	0.02%	5.50	10.00	12.50	3.00

WITCH HAZEL	2	0.02%	4.00	15.00	7.50	3.00
BIRCH-SPP	1	0.01%	2.00	10.00	5.00	3.00
CEDAR OF LEBANON	1	0.01%	9.00	0.00	0.00	3.00
DOGWOOD-PAGODA	1	0.01%	3.00	10.00	10.00	3.00
GOLDEN RAINTREE	1	0.01%	2.00	10.00	5.00	3.00
MAGNOLIA-SAUCCER	1	0.01%	12.00	20.00	15.00	3.00
MAPLE-TRIFLORUM	1	0.01%	2.00	10.00	5.00	3.00
PINE-BRISTLECONE	1	0.01%	2.00	10.00	5.00	3.00
POPLAR-WHITE	1	0.01%	16.00	30.00	20.00	3.00
SIBERIAN PEASHRUB	1	0.01%	4.00	10.00	10.00	3.00
WILLOW-WEeping	1	0.01%	31.00	50.00	30.00	4.00



Much of the discussion below will be reiterated from years past, however the main point to take away from this diversity analysis is that Glenview Park District continues to set a very high precedent in showing its commitment to an extremely high level of diversity in its parks. We continue to commend GPD for this lofty achievement and we encourage this continued commitment going forward.

The “20-10-5” rule has been adopted as a Best Management Practice in Urban Forestry. This rule simply states that a tree population should ideally have no more than 20% of any single Family, no more than 10% of any single Genus, and no more than 5% or any single species. As we have learned from the EAB infestation and Dutch Elm Disease, when a pest or pathogen that attacks specific tree genera is introduced into a region where those specific genera are overrepresented, tree populations can take a devastating hit. That being said, we will now discuss the details of diversity in GPD’s 2018 tree population.

As illustrated in the above bar graph and discussed in years past, the Oak genus has exceeded the recommended 10% threshold. It is always refreshing to see native Oaks well represented in a tree population and we find this percentage as

no reason for alarm, however we recommended that GPD continue to monitor any future plantings of Oak species in order to control the potential for mass tree loss. If a pest or pathogen that only attacked the Oak genus were to establish in our region, GPD could potentially lose over 14% of its tree population. We observed that, in a small number of the parks, some small Oaks appear to have been transplanted from GPD's nursery. This is a commendable endeavor and it is a unique way to lower tree procurement costs as well as lowering the monetary losses that could result if the trees fail to establish.

The graph above also shows that the Maple genus is hovering at the 10% threshold, however the number of Maple trees are slightly lower than last year's update and we applaud GPD for its proactive attention to this matter. We often see Maple species well represented in tree populations because they are often a hardy and commonly available shade tree. In years past, we have suggested that GPD scale back the planting of new Maple trees and it is apparent the GPD has heeded that recommendation. The relatively small number of Maple trees planted over the past several years has included species that are less represented in the population such as Miyabi, Hedge, Triflorum, Paperbark, and Shantung. We commend GPD for its commitment to keeping the Maple genus at an acceptable level and we encourage this careful species selection to continue in the future.

This graph illustrates that the Pine and Spruce genera, particularly Austrian Pines and Blue Spruce, are fairly well represented in the tree population. It is common that these adaptable evergreen trees are well represented in park district populations however, as we have recommended in the past, we discouraged the additional planting of Austrian Pine and Blue Spruce. As has been the case in recent years, GPD should continue to plant evergreen species that are underrepresented in the current population. Some examples include Douglas Fir, Silver Fir, Serbian Spruce, Black Hills Spruce, Bristlecone Pine, Limber Pine, Bosnian Pine, and Hemlock for true evergreens. Some deciduous conifer species options include Larch, Tamarack, Baldcypress, and Dawn Redwood. As has been addressed in detail in the Pine and Spruce Evaluation report from this fall, Diplodia Tip Blight and Rhizosphaera Needlecast have been rampant in our region and a significant number of Austrian Pine trees and Blue Spruce trees have been declining quite rapidly. This is a perfect example of how pest and pathogens can decimate certain genera and why diversity is so important.

Apple species, including Crabapple trees, are over represented in the population and it is recommended that in the future GPD choose to plant other ornamental species in place of Crabapples. Other suitable species could include Eastern Redbud, Smoketree, Red Buckeye, Witch Hazel, Persian Ironwood, Amur Maackia, Magnolia, or Dogwood.

GPD's 119 Ash trees make up only about 1.5% of the overall population declining from 164 trees last year. A number of these Ash trees are part of GPD's Ash treatment program and are in good to fair condition. The remaining untreated Ash trees should be monitored and removed if and when necessary. Since these Ash removals have significantly ebbed, GPD should continue to turn its attention to its poor condition and undesirable species as was evidenced by the number of removals noted during this update. The 562 trees in the "undesirables" category are species such as Mulberry, Boxelder, Cottonwood, Willow spp, Black Cherry, Buckthorn, Siberian Elm, Poplar spp, and Black Locust. These trees are notorious for being fast growing, but weak-wooded trees that often develop a variety of structural defects as they mature. For safety, aesthetic, and ecological reasons, it is recommended that GPD continue to work toward the goal of gradually reducing the number of undesirable trees in its parks, and replanting them with a diverse set of tree species, to even further increase overall diversity and tree population stability.

Also, as shown in the bar graph above, 24 species groups make about 88% of the tree population while the remaining 55 species make up the remaining 12%. This statistic provides GPD with the ongoing opportunity to even further improve its diversity as it chooses species to plant in the future. The tables above itemize the species represented in the overall population and we encourage GPD to continue to use these tables when conducting its species selections for future planting cycles.

As previously mentioned, it is evident that GPD has been striving to continue to improve its overall diversity by planting species that are less common and under-represented in its population. Some of these species installed during some of the more recent planting cycles include Amur Maackia, Pecan Hickory, Shagbark Hickory, Catalpa, Hardy Rubber Tree, American Beech, European Beech, Dawn Redwood, Sweetgum, Turkish Filbert, Persian Ironwood, Golden Raintree, London Planetree, Ironwood, Gingko, American Hornbeam, Larch, Hybrid Elm, Dogwood spp, River Birch, Whitespire Birch, Quaking Aspen, Yellowwood, Zelkova, Chinquapin Oak, Shingle Oak, Sawtooth Oak, Douglas Fir, and varieties of

Horsechestnut and Buckeye. GPD is again commended for its strong commitment to seeking out these underrepresented species and improving the park district's diversity for future generations. It should be reiterated that many of these species are quite particular about what conditions they will grow under, and for this reason, we recommend that GPD continue to carefully assess planting sites and choose appropriate species for each site wisely in order to protect the investment in each new tree.

2019 Inventory Update Park Narratives

For most of Glenview Park District properties, there have not been many significant changes since the 2018 inventory update which was conducted in late 2016. In the narratives that follow, we will discuss the current conditions and issues and significant changes at each park, as well as any relevant recommendations.

Central Tot Lot

The small tree population at Central Tot Lot is in good condition overall and includes two specimen trees, a Hackberry and a Honeylocust. The diversity has been enriched by the young Sweetgum and Horsechestnut trees. The mature Honeylocusts are all in good to very good condition. Both large Cottonwood trees have decay and have sustained storm damage, and one is multi-stemmed with weak trunk unions. These mature trees should be monitored for developing hazard risks. We were pleased to see that the poor condition Apple tree in the southeast corner has been removed. Going forward, we recommend monitoring the Boxelder that is leaning over the playground due to its extremely poor architecture.

Cole

Cole Park is home to three specimen trees, a Honeylocust, a Kentucky Coffeetree, and a spectacular Burr Oak. Diplodia Tip Blight has been rampant in our region in recent years and Cole Park has been hit especially hard as evidenced by the many removals of Austrian Pine trees at Cole, particularly near the tennis club building, and only a relatively small number remain. Along the northern walking path, the stocking density is extremely high. We would still recommend either transplanting or selectively removing some of these trees, while possibly planting low growing evergreens to provide a screen from the road. Many of the mature Honeylocust trees in the central part of the park should be pruned of deadwood. There is some open planting space near the playground due to the removal of several Spruce trees and Ash stumps.

Community Park West

Community Park West was completely updated this year and all trees were remeasured for DBH. New data was also collected for canopy height and spread, as well as degree of wounding, decay, and deadwood. Changes in condition or maintenance status were also updated. The young tree population at Community Park West remains in overall good condition with few significant changes since last year. A small number of new observations made this year are as follows. In the raised planting beds near the southern ball fields, a few Mulberry volunteers (see right) have sprouted and considering the high traffic nature of this area during the warmer months, we encourage the removal of these sprouts before they become larger. Also, a number of the Alder trees along the south side of these ball fields are suffering basal damage from straps that appear to have been present since the trees were planted (see left). If possible, GPD should consider removing these girdling objects. As previously mentioned during last year's update, Ash and Cottonwood volunteers have sprouted around the perimeter of the southern playground. Cottonwood trees are known for being fast growing, but weak wooded trees and their proximity to the playground could lead to the potential for risk in the future. On that same note, the Ash sprouts are developing with poor form and their potential for continued EAB infestation could create future issues as well. GPD might consider the preemptive removal of these volunteers before their size and cost of removal increases. Some of the younger trees at CPW are quite small and have a low branching habit. These trees should receive proper establishment pruning so that good architecture develops as they grow. The treated Ash trees at CPW are in good to fair condition and continued treatment is recommended. The remaining untreated Ash trees have varying levels of EAB damage and should



be monitored for decline and removed if and when necessary. The middle-aged Baldcypress trees on the north side of the park continue to thrive, growing along the edges of the low-lying areas and one of them has been moved to the condition 1 category this year since it has met the 16" DBH threshold and has excellent architecture. As mentioned in past reports, there is an opportunity for woodland restoration in the area on the northeast side of the dog park. There is certainly open planting space in the dog park where dogs and their owners would benefit from some shade in the summer months. Any tree species chosen for planting in the dog park should be tolerant of the extra nutrient loading that likely exists in the soil.

Countryside Lane

It was observed at Countryside Lane that the early snow storm we experienced in November has caused some significant limb loss of the Honeylocust trees on the north side of the park. We recommended that these trees be pruned to mitigate storm damage and to remove remaining deadwood. The 2 large Cottonwoods on the north side of the park should be monitored for developing hazard risks. On the east side of the park, there are still several Boxelder and Mulberry trees along the path that have poor architecture and are developing structural defects. Though a small number of removals have been performed, it is recommended that GPD continue to reduce the numbers of these low-quality trees.

Crowley

Crowley Park is home to 2 specimen Pin Oak trees. On the west and south sides of the park, there are a number of Siberian Elms, Willows, and Cottonwoods which should be monitored and pruned and/or removed as necessary. These low quality trees are known for having weak wood and developing structural defects and their proximity to the path puts them in a higher risk category. The area near the northern playground is a high traffic path to the adjacent school. The 2 mature Willow trees should be promptly pruned and closely monitored for developing defects. Removal of these poor condition Willow trees should be considered. There are many Hawthorn trees at Crowley, particularly around the perimeter of the tennis courts, which have developed a considerable amount of thorns. GPD might consider periodic pruning of these thorns to reduce the potential for injury.

Cunliff

Overall diversity here is quite high, and the park contains 4 specimen trees. American Elm #9592 is recommended for removal due to its weak union, poor form, and risk potential. American Elm #9591 is flagging and will likely decline quickly due to DED. The remaining American Elms should be considered for removal from this site, particularly along the southern border, because limited growing space has resulted in poor tree architecture. The remaining Ash tree has moderate EAB damage and should be monitored. Stocking density is quite high at Cunliff, although more screening along the eastern edge of the park could be considered.

Diederich

There are 2 specimen trees standing at Diederich Park, an Alder and a Honeylocust. Two mature American Beech trees on the southern side of the park are in good condition. As has been stated in years past, a number of the Norway Maple trees on the south side of the park have structural defects and some have sustained varying degrees of storm damage. These trees should be monitored and pruned or removed as necessary. There are also a number of Honeylocusts in the park which have developed low thorns of which pruning is recommended. All remaining Blue Ash trees appear to be in good to fair condition with very little to no visible EAB damage.

Flick

Flick Park is home to an impressive 14 specimen trees including 7 mature Baldcypress trees. We were pleased to see that the poor condition Green Ash and Mulberry trees have been removed. A number of new plantings have been made at Flick and at the time of the update, they seem to be establishing well. As has been the case throughout our region and discussed in detail in the Pine and Spruce Evaluation Report, a significant number of Austrian Pine trees are suffering from varying degrees of needle tip dieback associated with Diplodia Tip Blight. Continued treatment of the 4 White Ash trees in the pool area is recommended. As has been stated in narratives of years past, some of the mature Honeylocust trees on the north and northeast side of the park have developed low growing thorns which could pose a hazard to park patrons and pruning is recommended. Some of the newly planted trees at Flick are quite small and have a low branching habit. These trees will require proper establishment pruning so that good architecture develops as they grow.

Gallery

Gallery Park was completely updated this year and all trees were remeasured for DBH. New data was also collected for canopy height and spread, as well as degree of wounding, decay, and deadwood. Changes in condition or maintenance status were also updated. We are happy to report that some of the trees at Gallery have moved into the condition 2 category this year due their good condition and their surpassing of the 8” DBH threshold. Most of the younger trees planted at Gallery in recent years have established well and continue to thrive and we expect that many of these will move into the condition 2 category as well (see right). The treated Ash trees continue to be in good to fair condition, however the remaining untreated



White Ash trees in the managed areas of the park have sustained EAB damage and may require removal. We were also pleased to see that the many Ash resprouts have been removed. The newly planted trees throughout the park are a great example of GPD’s commitment to improving diversity. We look forward to seeing the young Shagbark and Pecan Hickory trees establish well and grow with vigor. Lastly, we observed a significant number of Callery Pear tree volunteer sprouts at Gallery (see left). In our region, and throughout the state, Callery Pear trees are being recognized for their invasive qualities since they spread rapidly and have been taking over open spaces. We encourage GPD to take early action before these Callery Pear sprouts become a significant issue at Gallery Park.

Glenview Ice Center

The new trees that were planted on the parking lot medians at Glenview Ice Center should continue to be monitored due to the adverse growing conditions such as limited soil volume and excessive salt. At least 1 London Planetree will require removal. The trees removals on the west side of the building have left open planting space.

Glenview Prairie Club

The young tree population at Glenview Prairie Club is in overall fair condition with no remarkable changes since last year’s update. The small number of remaining Ash trees at Glenview Prairie Club have severe EAB damage, however their buds appear viable and we will continue to monitor them during our annual updates. Lastly, the removal of the small number of Ash sprouts in the northwest corner of the course should be considered before their size and cost of removal increases.

Glenview Park Golf Club

Glenview Park Golf Club is home to 16 specimen trees and the tree population is in overall good condition. The nine remaining White Ash trees at GPGC are in good to fair condition with varying degrees of moderate EAB damage and it is recommended that they continue to be monitored. As discussed in detail in the Pine and Spruce Evaluation Report, many of the Austrian Pine trees are suffering from varying degrees of needle tip dieback associated with Diplodia Tip Blight. GPGC might opt to treat its best condition and highest location value Austrian Pine trees with a fungicide to help control this pathogen. American Elm #9753 has significant wounding and decay and removal is recommended and the remaining American Elms should be monitored closely due to decline associated with DED. The stands of Honeylocust trees should be pruned of deadwood and hanging limbs, particularly after the significant limb loss they have experienced due to the November snow storm. Most of the recently planted trees installed after the renovation seem to be establishing well.

Hawthorne Glen

Most of the treated White Ash trees near the playground are in good to fair condition and have varying levels of EAB damage and should continue to be monitored, however at least two appear to have sustained significant damage and have developed deadwood. We recommend inspecting these Ash trees after leaf out in spring. The northeast corner of the park has a number of poor condition Honeylocust trees with large dead limbs, storm damage, and low thorns. They are not in an extremely high traffic area, but they are adjacent to unfenced backyards. They should be pruned or removed as required. Most remaining Crab Apple and Apple trees on this site should be removed and replaced with alternate species, as many of these trees are in very poor condition. There are mature Linden and Siberian Elm trees surrounding the playground which should be monitored and pruned as recommended.

Indian Ridge

Most of the young trees planted to replace the removed Ash trees near the park entrance seem to be establishing well. We were glad to see that the Willow that stood near the pond has been removed. As discussed in detail in the Pine and Spruce Evaluation Report, the many Spruce trees at Indian Ridge should be monitored or removed due to symptoms associated with Rhizosphaera Needlecast and Cytospora Canker and the many aging Crabapple trees should be monitored for decline and removed as necessary. Indian Ridge has a high stocking density and can be considered at capacity after the recent plantings along the walking path.

Indian Trail

The native Oak/Hickory woodland found at Indian Trail is a remnant of a precious ecosystem and every effort should be taken to preserve and restore this land. There are 9 specimen trees in the park including mature Shagbark Hickory and Oak trees. There was some large limb loss of the Siberian Elm trees north of the path near the east entrance during the November snow storm. These trees are growing near overhead utility lines and removal should be considered. A number of the poor condition Hawthorn trees have been removed from Indian Trail which has opened a limited amount of planting space.

Jackman

The young trees planted at Jackman after the Ash removal and park renovation continue to appear to be establishing well. As discussed in the Pine and Spruce Evaluation Report, a small number of the remaining Austrian Pine at Jackman might be considered for treatment. Overall, the tree population is in good condition with adequate diversity and stocking density.

Jennings

The remaining treated White Ash and 1 of the Blue Ash trees at Jennings are in good condition with moderate to no visible EAB damage, however the 2 other Blue Ash have developed some deadwood. As has been discussed in the Pine and Spruce Evaluation Report, the Austrian Pine trees at Jennings should be monitored for decline associated with Diplodia Tip Blight. The River Birches growing along the ditch continue to thrive. This is an excellent example of matching a tree's tolerances and requirements with its growing environment. As has been mentioned in years past, it is recommended that the grove of Cottonwood trees on the north side of the park continue to be thinned or possibly removed completely. This area could be enhanced for a moderate cost. The planting of a number of floodwater tolerant trees and native plants in this low-lying area would be a significant ecological improvement.

Johns

Johns Park is home to 4 specimen trees including a spectacular Baldcypress near the playground. The American Elm on the west side of the park is flagging and will likely decline quickly due to DED. Many of the mature Honeylocust trees still require pruning to remove dead limbs and/or thorns, particularly those that have sustained secondary limb failure due to the November snow storm. In the wet area south of the tennis courts, there is open planting space where species tolerant of hydric soils would grow well. As described in the Pine and Spruce Evaluation Report, some decline of Austrian Pines trees due to Diplodia Tip Blight was observed at Johns and a number of Pines have been removed. Overall, the stocking density at Johns is quite high and many of the Honeylocust trees are faced with limited growing space. The selective removal of some of the poorer condition trees could open up growing space for the better condition trees.

Judy Beck

The treated White Ash tree at Judy Beck is still in good condition and should continue to be monitored. The recently planted Chinquapin Oaks look to be struggling to establish. We will monitor these new plantings during next year's update. Though there have been some recent Cottonwood removals, the remaining poor quality Boxelder and Cottonwood trees at Judy Beck should be monitored for any developing hazards and pruned or removed as necessary.

Ladendorf

The Dawn Redwoods, Swamp White Oaks, and London Planetrees continue to thrive in the hydric soil in the southeast part of the park. The recent removals at Ladendorf have left some open planting space.

Manor

The 4 treated Ash trees at Manor Park are in fair condition and should continue to be monitored. The Hackberry and Mulberry trees that are growing under utility wires have been severely pruned and it is recommended that removal of these trees be considered. Most of the remaining trees around the park perimeter are in fair condition, although many have limited growing space which has led to poor tree architecture. Some of the poorer condition trees could be removed to open growing space for the better condition trees. Though a number of Spruce trees have been removed at Manor, a few other poor condition Spruce trees will also likely require removal.

Park & Facility Services East

We enjoy visiting this property to observe the establishment and growth of the younger, diverse trees on this site which appear to be doing well. There is 1 small Ash tree growing near the power lines on the southwest side of the property of which removal is recommended. The other trees growing near the power lines in this part of the park should be monitored and pruned or removed as necessary. The mature American Elm tree along Glenview Road appears to have undersized buds and should be monitored after leaf out in the spring.

Peninsula Playground

The 7 small trees are in good health.

Roosevelt

Roosevelt Park is home to 6 specimen trees including 3 spectacular Norway Spruce trees, 2 Hackberry trees, and an Ohio Buckeye tree. As was discussed in the Pine and Spruce Evaluation Report, there are a significant number of Pine and Spruce trees at Roosevelt and they should be monitored for decline associated with foliar fungal diseases. A few recent removals of Pine and Spruce trees were recorded. The mature Elm trees at Roosevelt have developed decay and are nearing the end of their useful life. They should be monitored and pruned or removed as necessary. Due to the number of amenities at this park, planting space is limited. It is recommended, however, that thought be given to selective removal of some of the remaining Eastern Redcedars, Spruces, and Pines at the southeast corner of the park, in order to make way for higher quality trees.

Rugen

Some recent removals have left some open planting space at Rugen. As has been mentioned in years past, removal might be considered for some of the poor condition, undesirable species growing around the park perimeter. The three remaining White Ash trees are in good to fair condition with moderate EAB damage.

Sleepy Hollow

Sleepy Hollow is home to one spectacular Norway Maple tree. We encourage the continued monitoring of the unmanaged area, particularly along the nature path. The Cottonwoods adjacent to the playground should continue to be monitored as well and be pruned or removed as necessary. Some limb failure due to the November snow storm was observed at Sleepy Hollow

Swenson

There are 3 specimen trees at Swenson Park including a Baldcypress, a Black Walnut, and a Honeylocust. Most of the more recently planted trees at Swenson seem to be establishing well and continue to add to the park's diversity, particularly the new Amur Maackia trees. There are still a small number of remaining undesirable species along the northern perimeter of which removal is recommended. The mature Pin Oak on the south side of the park has experienced a large limb failure due to the November snow storm and pruning is recommended. The remaining 4 treated Ash trees at Swenson are in good to fair condition.

Tall Trees

The recent removals at Tall Trees have been recorded and have left a limited amount of open planting space. The treated Blue Ash is in good condition.

Wagner Farm

As has been recommended in years past, the unmanaged line of trees along Wagner Road on the east side of the property should be monitored and have removal considered before they become larger and/or more hazardous. A possible

enhancement might be to consider replacing these trees with native wetland vegetation to stabilize the drainage ditch soil. The 3 Boxelder trees in the busy open area between the barn and the main building are recommended for removal.

West Fork

A significant number of new trees have been planted at West Fork over the past year, included a number of Oak trees transplanted from the nursery. The majority of these trees should receive an establishment pruning over the next several years in order to ensure that good architecture develops. As discussed in the Pine and Spruce Evaluation Report, a number of the Blue Spruce trees on the southern and eastern side of the park are showing symptoms associated with Rhizosphaera Needlecast and many of the Austrian Pine trees have needle tip dieback associated with Diplodia Tip Blight and these areas should be treated and monitored. The 2 Blue Ash trees in the parking area which are being treated are in good condition and should continue to be monitored.

Willow

Some of the Siberian Elm trees along the northern border of the park have sustained limb failure due to the November snow storm and pruning or possible removal of these trees is recommended. On that same note, the northern border of the park, which consists primarily of Box Elder, Eastern Redcedar, Siberian Elm, and other less desirable species, should be monitored for any developing hazards and these trees should be pruned or removed as needed. Most of the treated Blue Ash trees at Willow are in good to fair condition and should continue to be monitored, however the Black Ash and one of the Blue Ash near the playground have developed excessive deadwood. The other remaining Ash trees should also be monitored and removed if necessary. As was highlighted in the Pine and Spruce Evaluation Report, there are a significant number of declining Spruce trees throughout the park that should be monitored and pruned or removed as recommended in order to improve the overall condition of the tree population. One significant removal that has already taken place is of the mature Blue Spruce in the turn-around island. A number of the Austrian Pine trees are in good condition and are candidates for fungicide treatment. As has been recommended in the past, the dense stand of trees on the eastern border has significant potential as part of a restoration project. There are some poor condition Crabapple and Edible Apple trees in this area of which removal should be considered, but there are also many young Oaks, Alders, and Catalpas in fair to good condition, but with severely limited growing space. These trees might be considered for transplanting elsewhere in the park district, as the front hedgerow continues to look overgrown. However, if some of these trees were selectively thinned or transplanted, and the remaining trees supplemented with additional landscaping, this area has the potential to be a highlight of Willow Park.

Conclusion

Glenview Park District continues to set an exceptional precedent in the planning and management of its tree population and we would encourage any park district or similar entity to follow the examples in which GPD has found success. GPD's commitments to improving diversity through careful species selection and to preserving a significant number of their Ash trees through an EAB treatment program are commendable.

The development of an Urban Forestry Management Plan would create long-term strategies and budgets for tree planting, maintenance, and management in GPD. This plan should include a schedule for regular tree maintenance, such as an annual mulching regimen and the proper irrigation of young trees particularly in times of drought. The plan should also implement a timetable for cyclical pruning which would ensure that all trees are pruned at least once every 3-7 years. An additional facet to an Urban Forestry Management Plan would include a Tree Risk Assessment Policy so that consistency and accountability is successfully achieved when assessing and determining mitigation actions for higher risk trees. As has been stated previously, establishment pruning, or the pruning of young trees to establish proper branching habit and structure, is one of the least expensive yet most effective maintenance items that can be performed on a young tree. With the high number of recently planted trees in the GPD population, an establishment pruning schedule is highly recommended and would ensure that young trees are pruned within 5 years of planting.

Graf Natural Resources Management & GIS has been pleased to provide the 2019 inventory update and to deliver this report with its accompanying statistics and analysis. We continue to be a proud partner of Glenview Park District as we strive to provide the highest level of service in all things GIS and Urban Forestry related.