# FOREST PRESERVES of Cook County

lree

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Revision Date September 2020

# **Mitigation Plan**

Approved by the Forest Preserves' Board of Commissioners on March 21, 2007

# Introduction

The Forest Preserve District of Cook County (the "District") was created for the purpose of acquiring and holding land to preserve and protect the flora, fauna and scenic natural beauty of the county. Protecting trees and other vegetation is a core element of the District's fundamental mission and ongoing purpose.

Requests for use of District lands are many and varied. Each request will be considered based on its own merits and the resulting impact to District lands. Example projects that have been considered in the past have included water mains, storm and sanitary sewers and roadway improvements that are perceived as providing a benefit to the residents of the county. When projects have been determined to be tolerable, locations and design alternatives are considered to avoid trees and minimize the impacts to District property. The Forest Preserve District of Cook County's Tree Mitigation Plan is utilized as a tool to determine the value of trees that are impacted by such land use requests affecting District properties. The Tree Mitigation Plan may also be used to assess the value of trees that are unlawfully removed from the District through encroachment or other illegal activities. The intent of the following information and procedures detailed herein is to put a monetary value on the District's trees and to use this value as a means of reducing the impacts and mitigating the loss of this resource.

The District has taken one of the simpler valuation methods found in the *Guide for Plant Appraisal* by the International Society of Arboriculture, and modified and simplified it to make it very practical for us to use.

# Steps to Implement

### 1. Land Use Request

The District will review the request for use of District property, assess the impact to our holdings, and consider alternative project alignments that minimize impacts to trees and the surrounding landscape.

### 2. Tree Survey

Following a determination of the most appropriate location for the proposed project, the requesting entity will provide the District with a survey and plan for vegetation that will be directly and indirectly impacted by the project, documenting the following:

- a) All trees 4" and greater diameter at breast height ("DBH")
- b) Dead trees 4" and greater DBH
- c) Coarse woody debris 4" and greater DBH

The tree survey will conform with generally accepted standards of professional tree surveying and will comprehensively and accurately indicate the location, species and size of such trees, and whether the tree is dead or alive. The survey will also establish plots that are a maximum of 500 feet in length across the length of the project

corridor, and detail concentrations of coarse woody debris in each plot in accordance with the *Valuation of Coarse Woody Debris* section of this document. Surveys should include applicable maps and/or Geographic Information System (GIS) data indicating the coordinates and location of all live trees, dead trees, and plots of coarse woody debris impacted by the project.

The District, at its discretion, may also demand that the entity include trees that may be impacted outside of the construction corridor due to their proximity to the work area. The District's Tree Preservation and Protection Manual will be the guiding document as it relates to this matter.

A requesting entity's survey is subject to verification and acceptance by the District.

## 3. Supplemental Project Impacts

The District may request a more detailed ecological plant assessment if the project appears to impact any areas of higher quality native vegetation. The requesting entity may be required to conduct a wetland delineation or other work to comply with any required permits within the project limits. Impacts to this aspect of the District's holdings will result in additional compensation to the District, which is typically additional funding in excess of all other associated fees.

#### 4. **Tree Valuation Tables**

The requesting entity will determine the value of the trees to be removed and/or impacted according to the following tables (also referred to as Tree Mitigation Matrices, or singularly as a Tree Mitigation "Matrix"):

- Table A: Tree Valuation Matrix for Live Trees
- Table B: Tree Valuation Matrix for Dead Trees
- Table C: Tree Valuation Matrix for Coarse Woody Debris

The aforementioned matrices serve as an itemized inventory of each category of tree and calculate the individual value of each specimen. All figures are rounded up and calculated to the nearest two decimal places.

Diameter should be reported to the nearest inch. As such, anything <u>above</u> 0.5" inches should be rounded up, and anything <u>below</u> 0.5" inches should be rounded down. For example, a 10.60" DBH tree would be recorded as 11" DBH and a 20.25" DBH tree would be recorded as 20" DBH.

For multi-stem trees, the value will be based on the combined cross-sectional sum of all stems greater than 4" DBH. Invasive brush such as Common Buckthorn or nonnative Honeysuckle over 4" DBH should be surveyed, but will be valued at \$0, since it is an undesirable species that the District is actively removing from its holdings. See *Evaluation of Trees to be Removed*, p. 4.

The tables provided by the District must be completed and submitted in their original format, according to the latest template on the District's website (see *Links*). Entities are not permitted to edit, recreate, or otherwise alter the calculation tables in any way without the prior written consent of the District. The requesting entity's

calculations are subject to verification and acceptance by the District.

## 5. Restoration of Post-Construction Zone

The disturbed construction area will be restored to an acceptable condition at no cost to the District. Plans and specifications for restoring the disturbed area must be reviewed and approved by District staff. The requesting entity will request input from the District and the District may provide a seed list, and general locations for any seeding of the disturbed construction area.

## 6. Use of Tree Mitigation Funds

The value of the trees to be removed will be used to support ecological restoration activities on District property, generally at the direction of the Department of Resource Management. The District will attempt to do restoration management activities on a site immediately adjacent to or contiguous with the disturbed area. However, if site conditions near the project site prohibit any meaningful restoration management activities, those activities may be done at a nearby site or other site designated as high priority by the District.

# Evaluation of Trees to be Removed

The procedure, the Basic Formula Method from the *Guide for Plant Appraisal, 8<sup>th</sup> Edition,* by the International Society of Arboriculture established a basic valuation formula for trees based on a dollar value<sup>1</sup> per square inch cross section of trunk. The replacement value for this Plan was formerly set at the most current value published by the Illinois Arborist Association (Region A), but has since been revised to align with the District's contractual tree planting costs. This figure represents the highest value a tree can be assigned, and is shown on **Table A/B** under"Max Tree Value.

For example, a 10" tree would have a basic value of  $\pi(3.14)$  x radius squared (25) x current replacement value (115.07)=9,032.99. Three other factors are then used to further determine the tree's value:

- Species
- Location
- Condition

These factors are shown as percentages of the tree's basic value, and serve only to reduce the maximum value of the tree. The District's process assumes the condition of all trees are just above average. Additionally, because we are a forest preserve, the location factor of all trees is

<sup>1 \*</sup>The per square inch cross-sectional value as of January 1, 2020 is \$115.07, as adjusted to the CPI of November 2019. This value is referenced in this document, and is used for example purposes only. The actual value will vary depending on subsequent adjustments based on the CPI-U and industry market rates; the latest value shall be reflected on the District's website, referenced in the Links section. See *Revisions to the Cross-Sectional Formula Rate*, p. 11.

considered near perfect, with the exception of trees located in a dedicated Illinois Nature Preserve ("INP") or Illinois Land and Water Reserve ("ILWR"). The location factor for trees within an INP or ILWR is considered perfect. The corresponding multipliers for these values are listed below.

By making assumptions up front regarding the location rating and the condition rating, and by using the Swink and Wilhelm native index for the species rating, we have created a chart of values that can be applied to any tree by knowing two key things about each tree: 1) the diameter at breast height ("DBH"), and 2) the species. This information is required in the survey of trees.

The ratings we use are based on the following:

Species Factor (variable)	Percentage	<u>Multiplier</u>
Native Index* of 5 or better	100%	1.00
Native Index of 2-4	75%	0.75
Native Index of 1 or 0	50%	0.50
Non-Native Trees	20%	0.20
Location Factor (constant)		
Assumes near perfect as a land preserve Assumes perfect as an INP or ILWR	90% 100%	0.90 1.00
Condition Factor (constant)		
Assumes mid-range of fair condition	65%	0.65

\*Native Index based on coefficient of conservatism (C-value) established in Plants of the Chicago Region, 4<sup>th</sup> Edition by Swink & Wilhelm (1994)

#### Example of site restoration, tree valuation for a given site:

An approved project will impact ten trees, four (4) 7" Hackberry, three (3) 12" Green Ash and two (2) 18" Bur Oak. The approved project will also impact a 7" Buckthorn, and 1.5 acres of District property will be disturbed during construction. The project is not in a designated Illinois Nature Preserve or Illinois Land and Water Reserve.

#### Site Restoration

The requesting Agency must seed the disturbed area with a District-approved seed mixture.

#### Tree Valuation

The value of these trees is derived by the following:

7" Hackberry	
Basic value of 7" tree is $\pi$ (3.14) x radius squared	l (12.25) x <b>\$115.07</b> /sq. in.= <b>\$</b> 4,426.17
Native index 3 = .75	x (.75)
Location=90%	x (.90)

Condition=65%	<u>x (.65)</u>
TOTAL	\$1,941.98 x 4 trees = \$7,767.92
<u>12" Green Ash</u> Basic value of 12" tree is $\pi$ (3.14) x radius square Native index 0= .50 Location=90% Condition=65% TOTAL	ed (36) x \$ <b>115.07</b> /sq. in.= \$13,007.51 x (.50) x (.90) <u>x (.65)</u> <b>\$3,804.70 x 3 trees = \$11,414.09</b>
<u>18" Bur Oak</u> Basic value of 18" tree is $\pi$ (3.14) x radius square Native index 5= 1.00 Location=90% Condition=65% TOTAL	ed (81) x \$ <b>115.07</b> /sq. in = \$29,266.90 x (1.00) x (.90) <u>x (.65)</u> <b>\$17,121.14 x 2 trees = \$34,242.28</b>
<u>7" Buckthorn</u> (These buckthorn were determined to provide no TOTAL	valuable landscape elements) <b>\$0.00</b>
GRAND TOTAL	\$53,424.29
The value of impacted trees equals <b>\$53,424.29.</b>	Restoration work costing \$53,424.29 will
be done on District property.	

## **Valuation of Dead Trees**

The District also values dead trees, as they play a critical role in the survival of many flora and fauna that call the forest preserves home. Dead trees provide many benefits within natural landscapes, serving as shelter and nesting habitat for cavity-dwelling birds and mammals, as well as food sources and granaries. Standing and leaning dead trees are valued at 50% of their live value.

In circumstances where the tree species is unable to be determined, the coefficient value for trees with a native index of 2-4 will be used. In the event there is a disagreement in the determination of any of these items, the entity and District will meet on site to try and address the discrepancy, with the District having the final right of determination.

In the event dead trees meeting the above criteria are impacted by a land use project, their corresponding live values (as calculated in the previous section) are further modified as follows:

Type (variable)	Percentage of Live Value	<u>Multiplier</u>
Dead trees (Standing or leaning)	50%	0.50

## **Valuation of Coarse Woody Debris**

Downed logs and other coarse woody debris retain intrinsic value as specialized habitat for flora and fauna which are dependent on decaying wood for their survival. Decaying wood is also a crucial component of soil regeneration and nutrient recycling, a process in which nutrients from the dead wood are broken down and returned to the ecosystem. Disturbance caused by the removal of trees and coarse woody debris disrupts this natural cycle and displaces and/or destroys much of the biodiversity within a project area and beyond. Many areas, even those with temporary direct impacts, fail to recover without significant passage of time or investment in restoration, if at all.

In response to these impacts and destruction of property, the District requires mitigation for coarse woody debris within the project corridor, with a varying per acre value charged depending on the concentration of debris present.

#### **Definition of Coarse Woody Debris**

Coarse Woody Debris ("CWD") is defined as a log or downed tree four (4) inches or greater in diameter and one (1) foot in length or greater, with at least two (2) points of ground contact or six (6) inches of ground contact anywhere along its length. Logs meeting the above criteria and lying at angles less than 45 degrees from the ground surface are classified as CWD, while logs lying at angles greater than a 45 degree angle are classified as a dead leaning tree. Stumps four (4) inches in diameter or greater and less than ten (10) feet in height are classified as CWD, while stumps four (4) inches in diameter or greater or greater and greater than ten (10) feet in height are classified as CWD, while stumps four (4) inches in diameter or greater or greater and greater than ten (10) feet in height are classified as a dead tree. Coarse woody debris generally consists of branches, limbs, stems, trunks and other features originating from vegetation such as trees or shrubs. Manufactured debris such as building materials, tires, automobiles, tarps or other detritus should not be included in the valuation.



Chart 1: Flow Chart for Distinguishing between a Dead Tree and Coarse Woody Debris

#### Site Plots

Entities shall be responsible for establishing one or more survey plots across the length of the project area. A fee will be calculated for each plot based on the concentration of CWD within that plot, and its size relative to an acre. Fees are established on a per acre basis. Each plot shall be measured in five hundred 500-foot increments (or less in instances where the total project footprint is less than 500 feet in length), by the width of the corridor and staging areas. If the length of the project corridor exceeds 500 feet, multiple plots should be assessed until the total length is reached.

For example, a project with a total length of 750 feet and a width of 50 feet would be measured in two plots:

- Plot 1A, measuring 500' Length x 50' Wide
- Plot 1B, measuring 250' Length x 50' Wide

Each plot must be uniquely identified, and its start and end points clearly depicted on any maps included with the land use submission. The identification number or code used to identify a plot may be formatted according to the submitting entity's preference.

#### **Determining Concentrations of Coarse Woody Debris**

A heavy concentration of CWD is defined as 50% ground cover or greater throughout the plot. A low to moderate concentration is defined as 10-49% ground cover throughout the plot. A concentration of less than 10% ground cover throughout the plot will not be calculated. See photo references for visual examples of each concentration group below. Additional reference photos are available online, see *Links*, p. 16.





Photo A



Photo B



Photo C

Photo D

#### **Examples of Coarse Woody Debris Concentrations**

Photo A: Example of Heavy Concentration of Coarse Woody Debris (i.e.,  $\geq$ 50% ground cover) Photo B: Example of Low/Moderate Concentration of Coarse Woody Debris (i.e., 10% - 49% ground cover) Photo C: Example of Low/Moderate Concentration of Coarse Woody Debris (i.e., 10% - 49% ground cover) Photo D: Example of N/A Concentration of Coarse Woody Debris (i.e., <10% ground cover)

A concentration shall be assigned in relation to the entirety of a given plot, not only a selected portion of it. In areas where there is overlapping coarse woody debris which came to be positioned as such through natural means (or through approved District activities), the overall silhouette of the ground area below and between each individual piece of debris shall be considered in the determination of percentage ground cover. Coarse woody debris present on a site must remain in its original position; it may not be disturbed or relocated prior to approval from the District for the project to proceed.

A value of CWD will be assigned for each plot based on its acreage, and the sum of all plots will be totaled to provide the full mitigation value of CWD due prior to beginning

construction. A summary of the valuation per acre relative to the concentration of coarse woody debris present in a plot is as follows:

Concentration of Coarse Woody Debris	Percentage of Ground Cover per Plot	Assigned Value per Acre
Неаvy	50% or greater	\$44,957.81
Low or moderate	10% - 49%	\$26,225.38
N/A	<10%	\$0.00

Classifications are subject to verification by the District. In the event there is a disagreement in the classification of any given plot, the entity and District will meet on site to try and address the discrepancy, with the District having the final right of determination.

#### Example of tree valuation involving dead trees and coarse woody debris:

An approved project will impact one live tree, a 14" Red Maple, and a 6" dead standing Chokecherry. The project corridor measures 650' feet in length by 25' feet in width (650'L x 25'W), and has a mixture of heavy and low/moderate concentrations of coarse woody debris. The project is not in a designated Illinois Nature Preserve or Illinois Land and Water Reserve.

#### Tree Valuation

The value of these trees is derived by the following:

#### LIVE TREES

14" Red Maple	
Basic value of 14" tree is $\pi$ (3.14) >	k radius squared (49) x <b>\$115.07</b> /sq. in.= <b>\$</b> 17,704.67
Native index 5 = 1.0	x (1.0)
Location=90%	x (.90)
Condition=65%	<u>x (.65)</u>
TOTAL	\$10,357.23 x 1 tree = \$10,357.23

#### DEAD TREES

<u>6" Chokecherry</u>	
Basic value of 6" tree is $\pi$ (3.14) x radius squ	ared (9) x \$115.07/sq. in.= \$3,251.88
Native index 3= .75	x (.75)
Location=90%	x (.90)
Condition=65%	<u>x (.65)</u>
Live Value Subtotal	\$1,426.76
Percentage of Live Value Reduction=50%	x (.50)
TOTAL	\$713.38

#### COARSE WOODY DEBRIS

A total of two (2) plots are required:

650' total project length – 500' maximum plot length (Plot 1) = 150' remaining (Plot 2)

Plot 1 was determined to have a low/moderate concentration of coarse woody debris between 10%-49%, and Plot 2 was determined to have a high concentration of coarse woody debris  $\geq$ 50%.

Plot 1	
Area of plot is length (500') x width (25')	= 12,500 sq. ft.
Acreage conversion	=0.28696 acres
Debris Concentration=Low/moderate	<u>x (\$26,225.38)</u>
Plot 1 Subtotal	\$7,525.64
Plot 2	
Area of plot is length (150') x width (25')	= 7,500 sq. ft.
Acreage conversion	=0.17218 acres
Debris Concentration=Heavy	<u>x (\$44,957.81)</u>
	\$3,870.42
Plot 2 Subtotal	
	\$11,396.06
TOTAL PLOT 1 + PLOT 2	
GRAND TOTAL	\$22,466.67
The value of impacted trees and associated	coarse woody debris is \$22,466.67.
Restoration work costing \$22,466.67 will be	done on District property.

## **Revisions to the Cross-Sectional Formula Rate**

The District will adjust the per square inch cross-sectional value annually on based on the rate, if positive, of the Consumer Price Index for All Urban Consumers (CPI-U) US CITY AVERAGE, ALL ITEMS, from November to November, effective January 1<sup>st</sup> of each year. The rate adjustment will be calculated based on CPI-U data from November of the previous year, and reflect the rate of change compared to the most recent November for which data is available. This new rate will be implemented January 1<sup>st</sup> of each given year. For example, the CPI-U rate as of January 1, 2020 was adjusted using the rate of change between November 2018 to November 2019.

Additionally, the District reserves the right, at its discretion, to re-evaluate and more drastically adjust the base per square inch cross-sectional value every three (3) years on January 1<sup>st</sup> based on other circumstantial factors, including but not limited to average local tree nursery costs.

Projects before the District will fall under the valuation and CPI-U rate in effect when the required tree survey has been vetted by District staff and agreed to by both parties. The District will process applications as expeditiously as reasonably possible given the District's current resources.

For the purposes of calculating mitigation fees, rates will be considered "locked in" at the time the survey and applicable mitigation Tables are reviewed and agreed to, in writing, by both parties. However, rates are subject to reassessment in the event that construction or removal schedules are delayed beyond their permitted timeframes, as described later in this document (see *Timing of Removals*, p. 12).

## **Deferred Removal**

Long-term projects in which there is a significant delay between the initial assessment of tree mitigation fees and the removal of trees within the project area are subject to assessment of additional fees. This is intended to account for trees that may have not met the size requirements for mitigation at the time of initial survey, and the interim period in which surveyed trees have grown larger and therefore more valuable. Specifically, projects in which removals are anticipated to be deferred by more than twenty-four (24) months from when the initial survey was reviewed and agreed to by both parties shall be adjusted as follows:

 The diameter of all trees included on the initial survey shall be subject to an increase in accordance with a species-specific growth factor (see *Growth Rate Chart*, p. 20). This growth factor necessarily assumes a consistent or linear relationship of diameter increment to years of growth. It represents the average growth rate of all trees, by species, and approximates the increased girth expected over the course of a year. For example, a 10" White Oak tree removed four years after it was initially surveyed would be mitigated for as a 11" tree, calculated as follows:

10 [Starting DBH] + (0.134 [Annual Growth Rate] x 4 [Years])= 11 [Adjusted DBH] (rounded up from 10.536")

Undersized trees that do not, at the time of initial survey, currently meet the size class threshold for mitigation but may when actual removal is anticipated to take place should be factored in the initial survey and mitigation calculation.

These calculations are integrated into Table A: Tree Valuation Matrix for Live Trees, for each individual tree. All mitigation fees, including those for deferred removals, are due upfront prior to the start of construction.

## **Timing of Removals**

To prolong the aesthetic and ecological services provided by trees on District properties, it is the District's prerogative that trees remain standing as long as possible. To that end, projects must commence as close to the time trees are removed as is practical. The following section details requirements for when trees may be removed, and procedures for the reassessment of rates should timelines be violated.

Upon final approval and execution of all required licenses or legal agreements, trees may be removed any time within two (2) calendar years. If the scheduled removals do not commence within the stated calendar year, entities must pay the difference in the CPI and growth rates between the stated year of removal and the actual year in which removals occurred.

Trees scheduled for deferred removal two (2) or more years after acceptance of the tree survey must be removed within two (2) calendar years of the date listed under "Year Scheduled for Removal" on Table A: Tree Valuation Matrix for Live Trees, but shall not under any circumstances be removed earlier than the scheduled calendar year without the prior written approval of the District. Fees assessed related to the projected growth rate escalator

for deferred removals will not be reimbursed in the event the construction schedule proceeds more quickly than anticipated.

If project start does not occur within twelve (12) months of any trees being removed, mitigation fees will be reassessed to match rates (cross-sectional formula rate, CPI) for the year in which the project commences. If the requesting entity anticipates exceeding the construction or tree removal timelines previously communicated, they should promptly contact the District to initiate the reassessment of fees.



#### Example Removal and Fee Assessment Timeline:

1/1/2023 - 12/31/2021 Timeframe for deferred removals, where 2023 was the scheduled year for removal stated on Table A: Tree Valuation Matrix for Live Trees

The District's General Superintendent or designee, at their discretion, may defer the deadline for the reassessment of fees due to unforeseen delays in construction. Entities must request such a deferral by written application a minimum of thirty (30) days in advance, and be able to demonstrate good faith efforts made to maintain the original project schedule.

# Instructions

#### General Instructions for using Tree Valuation Tables (A, B, and C):

- Complete the following columns for each category:
  - OBJECTID Identifying number/code for each tree or piece of qualifying woody debris
  - STARTING DIAMETER Diameter of a given tree at time of initial survey. Rounded to nearest inch.
  - MULTISTEM Enter "YES" to indicate the tree measured is multi-stemmed, or "NO".
  - SPECIES Selected from dropdown.
  - YEAR SCHEDULED TO BE REMOVED (Table A only)
  - YEARS UNTIL REMOVAL (Table A only)
  - LOCATION Selected from dropdown.
  - PLOT ID Identifying number/code for each plot assessed for density of coarse woody debris. (*Table C only*)
  - PLOT LENGTH Length of plot, in feet. Maximum 500 feet increments. (*Table C only*)
  - PLOT WIDTH Width of plot, in feet. (*Table C only*)
  - DEBRIS CONCENTRATION The percentage of groundcover present in a given plot. (*Table C only*)

#### Instructions for using Tree Valuation Table A: Tree Valuation Matrix for Live Trees

- Inventory every live tree over 4" diameter surveyed. Refer to the above for additional entry information.
- Note: For projects in which tree removal is being deferred by two (2) or more years, the starting diameter will automatically be adjusted based on the projected growth rate. Projects scheduled for completion in under two (2) years will be calculated based on the starting diameter.

#### Instructions for using Tree Valuation Table B: Tree Valuation Matrix for Dead Trees

- Step 1: Generate Live Value Inventory every standing or leaning dead tree over 4" diameter surveyed. Refer to the above for additional entry information.
- Step 2: Reduction Factor The live value generated previously will be reduced by the appropriate factor to give the total fee for dead trees.

#### Instructions for using Tree Valuation Table C: Tree Valuation Matrix for Coarse Woody Debris

• Step 1: Plot Area

Establish one or more survey plots across the length of the project area, measuring no more than 500 feet in length each, If the length of the project corridor exceeds 500 feet, multiple plots should be assessed until the total length is reached.

#### • Step 2: Generate Value

Complete a section of the table for each plot, assigning a debris concentration level for each individual plot according to the criteria described in this Tree Mitigation Plan. Refer to the above for additional entry information.

#### Instructions for completing Tree Mitigation Review Form:

- Complete the information and Required Enclosures sections.
- The total number of trees and their value calculations will be automatically populated based on your entries in Table A, Table B, and Table C. Each numbered box on the Tree Mitigation Review Form has a corresponding label on each table, for your reference (i.e. Box 1b will match Box 1b on Table A).
- The total dollar values for each category (Live Trees, Dead Trees, and Coarse Woody Debris) will be summed in Box 16. This gives the Total Tree Mitigation Fee, and represents the total amount that must be paid to the District to expend at its discretion on restoration work on District property.

Links to download the most recent version of the Tree Valuation Tables are available in the Links section.

# Links

Forest Preserve District of Cook County Construction, Restoration & Research Permits Code of Ordinances	<u>LINK</u> LINK
Tree Preservation and Protection Manual	<u>LINK</u>
<b>Reference Photo Library</b> Examples of Coarse Woody Debris Concentrations	<u>LINK</u>
<b>Tree Mitigation Matrices</b> Tree Mitigation Review Form Table A: Tree Valuation Matrix for Live Trees Table B: Tree Valuation Matrix for Dead Trees Table C: Tree Valuation Matrix for Coarse Woody Debris	<u>LINK</u>
Sample Valuation Tables	<u>LINK</u>

# Sample Tree Mitigation Review Form



Forest Preserve District of Cook County Tree Mitigation Review Form

Applicant Name NAME			Internal Pr 000-000	roject Number ( )-000	if applic	able)			
Project Name SAMPLE PROJECT TIT	LE								
1.11.1 <u>1.11</u> .11.11.11	1a	Total number of trees w/ multiplier of 1 / C =>5	1a	2	b	Value	1b	s	19,287.70
Live Trees	2a	Total number of trees w/ multiplier of .75 / C=2-4	2a	1	b	Value	2b	s	11,273.18
Complete using Table A	3a	Total number of trees w/ multiplier of .50 / C=0-1	3a	0	b	Value	3b	s	-
	4a	Total number of trees w/ multiplier of .20 / NN	4a	3	b	Value	4b	s	14,853.58
3	5	Add lines 1b through 4b. This is your total fee for live tre	ees.		20		5	s	45,414.46
Dead	6a	Total number of trees w/ multiplier of 1 / C =>5	6a	2	b	Value	6b	s	19,399.26
Dead Trees	7a	Total number of trees w/ multiplier of .75 / C=2-4	7a	1	b	Value	7b	5	42,318.45
Complete using Table B	8a	Total number of trees w/ multiplier of .50 / C=0-1	8a	0	b	Value	8b	s	
	9a	Total number of trees w/ multiplier of .20 / NN	9a	1	b	Value	9b	s	1,521.88
	10	Add lines 6b through 9b.					10	5	63,239.59
	11	Multiply line 10 by 0.50. This is your total fee for dead to	ees.			1.	11	s	31,619.80
Coarse	12a	Total length of plots with low concentration / 10-49%	12a	500	b	Value	12b	s	7,525.64
Marsh.	13a	Total length of plots with high concentration / ≥50%	13a	150	b	Value	13b	s	3.870.42
woody	14a	Total length of plots with N/A concentration / <10%	14a	0	b	Value	14b	s	-
Debris Complete using Table C	15	Add lines 12b through 14b. This is your total fee for coa	arse wood	y debris.			15	\$	11,396.06
Total Tree Mitigation Fee	<mark>16</mark>	Add lines 5, 11, and 16. This is your total tree mitigatio	n fee.				16	s	88,430.32
Required Enclosures The following attachments are required as part of your	10 M	Tree Survey maps and GIS data Table A: Tree Valuation Matrix for Live Trees Table B: Tree Valuation Matrix for Dead Trees Table C: Tree Valuation Matrix for Coarse Woody Debris						1	

# Sample Table A

	Add New Roy	A-005	A-004	A-003	A-002	A-001	STA. DIAU OBJECTID* (DBB	PR
	N	10	t	30	16	5	RTING STEP METER (yes H) no)	BEST ESERVES
		Acer negundo	<b>Crataegus flabellata</b>	Robinia hispida fertilis	Acer saccharum	Salix petiolaris	17- 17- OF SPECIES (patent from dropdown)	Forest Preserve District of Cook Table A: Tree Valuat Instructio
		2022	2020	2022	2022	2023	YEAR SCHEDULED TO BE REMOVED	County ion Matrix function is: Complete ead click the "Add
		0.131	0.052	0.052	0.138	0.131	ANTICIPATED UN	or Live Tree
		4	w	2		6	ARS TIL T	es live tree su at the bott
		11	13	8	16	14	OTAL DIAMETER RAD	rveyed/inventor om of the table }
		5.50	6.50	15.00	8.00	7.00	R	ied. Indicat for addition
		30.25	42.25	225.00	64.00	49.00	ADIUS SQ. PI	e species and <i>l</i> al lines.
		3.14	3.14	3.14	3.14	3.14		ocation fra
		115.07	115.07	115.07	115.07	115.07	SIC LUE PER CH CROSS MA	m the dropdov
		10929.92 Ger	15265.76 Ger	81296.96 INP	23124.47 INP	17704.67 Gen	X TREE LOC	vn menus, where
		neral	neral	9/ILWR	/ILWR	neral	ect from 0	e indicated.
		0.585	0.585	0.65	0.65	0.585	OCATION/C AU ONDITION BU	
Ch		6394.00	8930.47	52843.02	15030.91	10357.23	SUUSTED N ASE TREE V	
ox 1a							ative Index alue of 5 or reater	
Box 1b		s	1 \$ 8,93	\$ 0	\$ 0	1 \$ 10,35	Total S for to w/ multiplie	
Box 20		•	0.47			7.23	rof Native Inc of 2 to 4	
Box		5 0	\$ 0	s 0	0.75 \$	\$ 0	Fot lex value w/ 1	
26			2		11,273.18		al S for trees multiplier of	
Box 3a							Native Index value of 1 or 0	
Box 3b		5 S	0 S	0 S	\$ 0	0 S	Total S W/ mul	
Box		3,197.00		,	,		for trees tiplier of No	
40							-native tre	
Box 4b		- 50	- 50	0.2 \$ 10,568.60	- \$ 0	- 5 0	Total \$ for trees w/ multiplier of es .20	

TOTAL LIVE TREES: 5

TOTAL MITIGATION (LIVE TREES): \$44,326.48 Box 5

# Sample Table C



Table C: Tree Valuation Matrix for Coarse Woody Debris

Forest Preserve District of Cook County

TOTAL VALUE OF COARSE WOODY DEBRIS:

650 Feet TOTAL COMBINED LENGTH OF ALL PLOTS:

Box 15 \$11,396.06

	0	S 3870 42	150	S 7 525 64	500
	concentration	concentration	concentration		
concentration	debris	debris	debris	concentration	lebris concentration
with N/A debris	plots with N/A	with heavy	plots with heavy	low/moderate debris	vith low/moderate
Total \$ for plots	Total length of	Total \$ for plots	Total length of	Total \$ for plots with	otal length of plots
Box 14b	Box 14a	Box 13b	Box 13a	Box 12b	lox 12a

# **Growth Rate Chart**

TREE SPECIES	GROWTH RATE	TREE SPECIES	GROWTH RATE
Acer ginnala	0.131	Cornus florida	0.131
Acer negundo	0.131	Cornus obliqua	0.131
Acer nigrum	0.138	Cornus racemosa	0.131
Acer platanoides	0.131	Cornus rugosa	0.131
Acer pseudoplatanus	0.131	Cornus stolonifer	0.131
Acer rubrum	0.205	Corylus americana	0.131
Acer saccharinum	0.200	Corylus cornuta	0.131
Acer saccharum	0.138	Crataegus calpodendron	0.052
Aesculus glabra	0.131	Crataegus chrysocarpa	0.052
Aesculus hippocastanum	0.131	Crataegus coccinea	0.052
Ailanthus altissima	0.052	Crataegus crus-galli	0.052
Alnus glutinosa	0.131	Crataegus flabellata	0.052
Alnus rugosa	0.131	Crataegus intricata	0.052
Alnus serrulata	0.131	Crataegus mollis	0.052
Amelanchier arborea	0.052	Crataegus monogyna	0.052
Amelanchier canadensis	0.052	Crataegus phaenopyrum	0.052
Amalanchier humilis	0.052	Crataegus pruinosa	0.052
Amalanchier interior	0.052	Crataegus punctata	0.052
Amalanchier laevis	0.052	Crataegus succulenta	0.052
Amalanchier sanguinea	0.052	Elaeagnus angustifolia	0.131
Betula alleghaniensis	0.131	Elaeagnus unbellata	0.131
Betula nigra	0.131	Fagus grandifolia	0.150
Betula papyrifera	0.131	Fraxinus americana	0.152
Betula pendula	0.131	Fraxinus americana biltmoreana	0.152
Betula populifolia	0.131	Fraxinus nigra	0.131
Betula pumila	0.131	Fraxinus pennsylvanica Fraxinus pennsylvanica	0.131
Carpinus caroliniana virginian	a 0.131	subintergirrima	0.131
Carya cordiformis	0.126	Fraxinus quadrangulata	0.131
Carya glabra	0.116	Fraxinus tomentosa	0.131
Carya lacinosa	0.109	Gleditsia triacanthos	0.131
Carya ovalis	0.109	Gymnocladus dioica	0.131
Carya ovata	0.112	Hamamelis virginiana	0.131
Carya tomentosa	0.109	Juglans cinera	0.131
Catalpa speciosa	0.131	Juglans nigra	0.132
Celtis occidentalis	0.131	Juniperus communis	0.142
Celtis tenuifolia	0.131	Juniperus horizontalis	0.142
Cercis canadensis	0.052	Juniperus virginiana creba	0.142
Cornus alternifolia	0.131	Liquidambar styraciflua	0.125
Cornus canadensis	0.131	Liriodendron tulipifera	0.208
Cornus drummondii	0.131	Malus baccata	0.131

Malus coronaria	0.131	Quercus alba	0.134
Malus ioensis	0.131	Quercus x bebbiana	0.134
Malus prunifolia	0.131	Quercus bicolor	0.134
Malus pumila	0.131	Quercus coccinea	0.192
Malus sieboldii	0.131	Quercus ellipsoidalis	0.166
Morus alba	0.131	Quercus x hawkinsiae	0.166
Morus rubra	0.131	Quercus inbricaria	0.166
Nyssa sylvatica	0.131	Quercus macrocarpa	0.130
Picea mariana	0.142	Quercus muhlenbergii	0.134
Pinus banksiana	0.142	Quercus x palaeolithicola	0.166
Pinus nigra	0.142	Quercus palustris	0.166
Pinus pugens	0.142	Quercus rubra	0.202
Pinus resinosa	0.142	Quercus velutina	0.161
Pinus rigida	0.142	Rhamnus alnifolia	0.052
Pinus strobus	0.142	Rhamnus arguat velutina	0.052
Pinus sylvestris	0.142	Rhamnus cathartica	0.052
Pinus virginiana	0.142	Rhamnus davurica	0.052
Platanus occidentalis	0.191	Rhamnus frangula	0.052
Populus alba	0.131	Rhamnus japonica	0.052
Populus balsamifera	0.131	Rhamnus lanceolata	0.052
Populus canescens	0.131	Rhamnus utilis	0.052
Populus deltoides	0.240	Rhododendron periclymenoides	0.052
Populus grandidentata	0.131	Rhus aromatica	0.052
Populus heterophylla	0.240	Rhus aromatica arenaria	0.052
Populus nigra italica	0.131	Rhus x borealis	0.052
Populus x smithii	0.131	Rhus copallina latifolia	0.052
Populus tremuloides	0.131	Rhus glabra	0.052
Prunus americana	0.131	Rhus radicans	0.052
Prunus angustafolia	0.131	Rhus typhina	0.052
Prunus avium	0.131	Rhus vernix	0.052
Prunus cerasus	0.131	Robinia hispida	0.052
Prunus domestica	0.131	Robinia hispida fertilis	0.052
Prunus hortulana	0.131	Robinia luxurians	0.131
Prunus mahaleb	0.131	Robinia pseudoacacia	0.131
Prunus nigra	0.131	Robinia viscosa	0.131
Prunus padus	0.131	Rubus allegheniensis	0.052
Prunus pennsylvanica	0.131	Rubus enslenii	0.052
Prunus persica	0.131	Rubus flagellaris	0.052
Prunus pumila	0.131	Rubus hispidus	0.052
Prunus serotina	0.127	Rubus idaeus	0.052
Prunus tomentosa	0.131	Rubus idaeus stigosus	0.052
Prunus virginiana	0.131	Rubus laciniatus	0.052
Pyrus calleryana	0.052	Rubus ocidentalis	0.052
Pyrus communis	0.052	Rubus odoratus	0.052

Rubus pensilvanicus	0.052	Salix pedicellaris hypoglauca	0.131
Rubus phoenicolasius	0.052	Salix pentandra	0.131
Rubus pubescens	0.052	Salix petiolaris	0.131
Rubus setosus	0.052	Salix purpurea	0.131
Salix alba	0.131	Salix x rubens	0.131
Salix amygdaloides	0.131	Salix sericea	0.131
Salix babylonica	0.131	Salix serisima	0.131
Salix bebbiana	0.131	Salix syrticola	0.131
Salix candida	0.131	Sorbus aucuparia	0.131
Salix caprea	0.131	Sorbus décor	0.131
Salix cinera	0.131	Taxus canadensis	0.052
Salix discolor	0.131	Thuja occidentalis	0.142
Salix eriocephala	0.131	Tilia americana	0.192
Salix fragilis	0.131	Tsuga canadensis	0.142
Salix x glatfelteri	0.131	Ulmus americana	0.143
Salix glaucophylloides	0.131	Ulmus x notha	0.157
Salix humilis	0.131	Ulmus pumila	0.157
Salix interior	0.131	Ulmus rubra	0.170
Salix lucida	0.131	Ulmus thomasii	0.157
Salix nigra	0.131		

#### NOTES

<sup>1</sup>Adapted from "Diameter Growth, Survival, and Volume Estimates for Trees in Indiana and Illinois", Research Paper NC-257. W. Brad Smith and Stephen R. Shirley. U.S. Department of Agriculture, Forest Service, 1984.

<sup>2</sup>Growth is an average across all size classes