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Batavia, IL 60510  
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December 1<sup>st</sup>, 2021

Village of Orland Park  
14700 Ravinia Avenue  
Orland Park, Illinois 60462

Attn: Mike Mazza, ASLA Operations Manager – Natural Resources and Facilities

Re: Contract for Tree Inventory & Urban Forestry Management Plan

Dear Mike,

We thank you for the opportunity to provide a proposal to perform the Village's street tree inventory. Having recently worked with you all to collect the parks trees in Orland Park, we are excited at the prospect of completing the full street tree inventory.

Having performed dozens of inventories for municipal entities and parks departments over many years, we are aware of how much time, energy, and capital are invested in the management of the Urban Forest. Your tree inventory will be a valuable tool in the management of your tree population in the coming years, and the management plan will be a guiding light for your Urban Forestry program going forward.

We have several available options for managing the tree inventory in GIS. We are an industry-leading resource when it comes to the management of the urban forest and other municipal natural resources, and we look forward to working with you as part of your Urban Forestry Team to achieve your management objectives.

Regards-

Phil Graf, Great Lakes Urban Forestry Management

ISA Certified Municipal Arborist # IL 1553-AM



## SCOPE OF WORK

### **PART ONE: BASE TREE INVENTORY**

This tree inventory is to include up to 40,000 street trees and 6,500 open planting spaces on Village owned Right of Ways. These numbers are based on analysis of aerial imagery that we perform to estimate tree and planting spaced counts.

#### **BASE MAP SETUP**

Using GIS base data provided by the City and/or County, a base map and layering system shall be set up in our ArcGIS Online account for field data collection. The base map will display the following information:

- Aerial Photography
- Corporate Limits
- Streets/Street names
- Parcel lines
- Right of way limits

#### **BASE INVENTORY DATA COLLECTION**

Data in the field will be collected using mobile devices which have been connected via Bluetooth to a submeter accuracy GPS antenna. Data collection will be performed in real time using the Collector for ArcGIS mobile application to access the feature services directly. Data to be collected will be consistent with exactly with what is required in the Urban & Community Forestry Grant Program Contractor RFP. These data fields are:

- GPS location (along with Illinois State-Plane XY coordinates and/or WGS 84 coordinates).
- Status: Active Tree, Removed Tree, Stump, Planting Space
- Street Address and Relative Location
- Land use (i.e., residential, business zone, natural area, park, etc.)
- Growing space (i.e., parkway, park, etc.)
- Species (Common and Latin name)

All tree species are recorded using common names and are identified to the species level. Specific cultivars, hybrids, or varieties will not be identified unless there is a programmatic need to do so. This is because certain genera such as Apple trees, Hybrid Elms, and other ornamentals have such great variation that it is unnecessarily time consuming to identify to this level. The deliverable database will have an open field for entering known cultivars.

- Size: DBH (Diameter at Breast Height, measured to the half inch and rounded to the full inch with a foresters diameter tape at 4.5' above ground level on the uphill side of the tree)
- Number of Stems
- Condition rating (1-5)
  - 1: Specimen Tree, no defects
  - 2: Above Average
  - 3: Average
  - 4: Below Average
  - 5: Dead or nearly so
- Risk assessment

Collected as None Observed, Elevated, Substantial, Critical

- **Arborist Recommendation**  
A variety of recommendations for pruning, inspection, removal, risk assessment, etc based on our experienced arborists recommendations
- **Recommendation Reasons (up to 2)**  
Up to 2 supporting reasons for our recommendation. These are things such as deadwood, presence of insects or disease, etc. Please note, for default recommendations such as “cycle prune”, these fields may be left empty.
- **General comments or notes**  
Comments are included as a courtesy to denote any conditions worthy of note, such as included bark, interference with utilities or street lamps, need for sidewalk or street clearance, limited growth space, poor form, or any other information that may be valuable. These comments are standardized as much as possible, though certain situations exist where nonstandard comments were utilized.

**PLEASE NOTE:** The above data fields are listed to be in keeping with the tree inventory data which was collected as part of the Urban and Community Forestry grants in 2021. If the Village wants any changes made, additional data fields added, etc for the street tree inventory, Great Lakes Urban Forestry can absolutely customize this. However, there may be slight additional fees for additional data fields, which can be covered under a separate contract.

## **DATA QUALITY ASSURANCE / QUALITY CONTROL**

All field-collected data from the inventory will be checked for geographic and tabular accuracy at the end of each week. All data fields in the tabular data will be queried in GIS for any null fields or inaccuracies and will have individual records verified or corrected where discrepancies are noted. All spatial point locations will be verified using a combination of aerial photography and spatial query. If there are point locations which were subject to multipath errors (i.e. points which did not show up on the map where they were supposed to be) their locations will be corrected using aerial orthoimagery and the tabular data we collected for those points. Quality assurance is performed at the end of every week of data collection by our staff in order to correct any issues promptly.

## **BASE TREE INVENTORY DELIVERABLES**

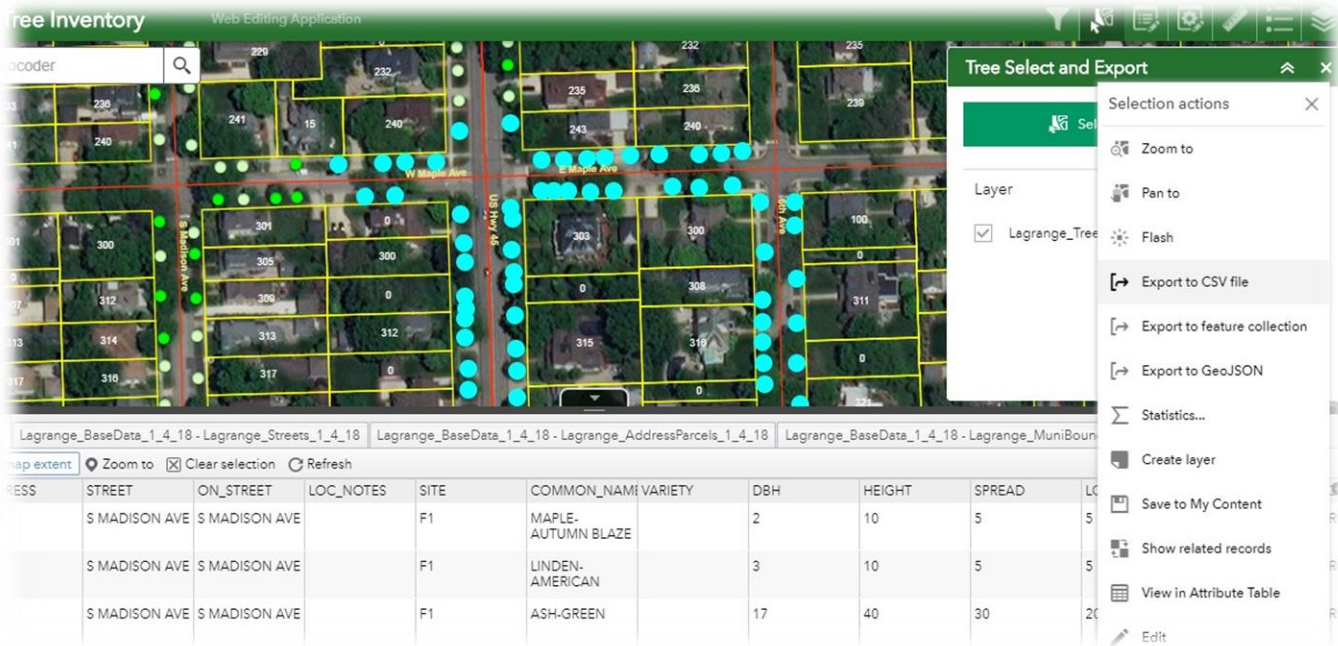
Base inventory deliverables shall include the following:

- Executive summary report detailing results of tree inventory and statistical analysis
- GIS Data as ESRI Geodatabase or Shapefile
- Excel File of all trees with XY coordinates
- Implementation of data on Village’s GIS System
- Creation of web applications and dashboards for inventory maintenance
- Training on use of inventory
- USB Drive containing backup copies of all of the above

## **GIS DELIVERABLES**

Data will be collected in a GIS database, customized to the exact needs of the Village of Orland Park. Upon completion of the inventory and completion of Quality Assurance and Quality Control, the data will be made available to the City through the City’s existing GIS infrastructure. We make use of ESRI’s ArcGIS suite of products, specifically Web Maps, Web Applications, and the Collector for ArcGIS mobile application for data management.

The main interface, as shown below, will be a web-based application where trees can be added, removed, edited, and work order history can be maintained. Our simple system uses a map-based approach to work orders, and related tables can show what work has been completed in the past when each tree point on the map is accessed.



Trees can be sorted and filtered for attributes, and individual trees, groups of trees, or groups of maintenance records can be easily selected and exported to a spreadsheet for use by outside contractors. Multiple trees can be selected and edited at the same time as well, so that updates can be performed quickly and expediently. All of this is easily customizable to the specific needs of Orland Park forestry or GIS staff.

For an overview of the population, as well as real-time charts and statistics, an operations dashboard shall be created such as the one shown below. This can also be customized to show whatever information Orland Park staff wish to see quickly, without the need to query through the data.



Finally, data can be accessed by field crews for instant editing and updating using the Collector for ArcGIS Application, shown the right. New maintenance records can be added, old maintenance records can be viewed, and the main tree records can be added, removed, or updated as necessary.

These features come at no additional cost to the Village of Orland Park, as it already maintains GIS software for its various other departments. There are no additional software or licensing fees to be paid annually, and as time goes on, the software itself will constantly be upgraded by the manufacturer. Great Lakes GIS staff will assist in creating these maps, apps, and dashboards as part of the bulk inventory pricing, and will always be available to assist the City in maintaining or updating its applications.



**CONTINUING SUPPORT**

Because Orland Park already has a maintenance agreement with ESRI (the GIS software manufacturer), we have no specific support or maintenance items which aren't covered under the ESRI license agreement. However, we do find that from time to time improvements may be made to the functionality of the software that may benefit our clients' forestry programs. We stay abreast of these developments and are happy to update City staff as these innovations are discovered. Finally, ESRI's ArcGIS suite of products is very flexible compared to tree inventory specific software, and data fields can be added, removed, or updated as necessary. We pride ourselves in supporting our client's forestry programs far beyond the boundaries of the initial inventory work as needed.

**ADDITIONAL SERVICES RETAINER**

In discussion with staff at Orland Park, it was decided that including a retainer for unforeseen additional services would be advisable. With 40,000 trees, it is likely that risk assessments or other consulting services above and beyond the inventory data might be required. Or since Orland Park doesn't know how many trees are actually on it's parkways, this budget could be used to cover any potential cost overruns.

In addition, GIS implementation will likely require a fair amount of customization and consultation with the Village's IT and GIS departments to create a sustainable long-term solution that works well for all parties. For this reason, we have included an additional \$10,000 budget which shall only be used at the request of the Village of Orland Park for services above and beyond the tree inventory work and basic GIS setup included with that price. All hours not billed against the \$10,000 shall not be invoiced.

**Fee Schedule**

<b>Comprehensive Inventory of 40,000 Trees and 6,000 Planting Sites</b>	<b>\$112,000</b>
<b>Additional Consulting Budget*</b>	<b>\$10,000*</b>
<b>TOTAL PROJECT COST</b>	<b>\$122,000*</b>

\* - Will not be billed against unless requested by the Village of Orland Park

## EXECUTION OF CONTRACT

GRAF TREE CARE, INC, DBA GREAT LAKES URBAN FORESTRY MANAGEMENT will consider your signing and returning one (1) original of this Agreement and an agreed upon as our authorization to proceed. This offer to provide services will remain valid for a period of 30 days from the date of preparation by Great Lakes Urban Forestry Management (as indicated below), after which time if it has not been accepted it will be subject to change. Thank you again for the opportunity to submit our proposal.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement as of the day and year below written.

**CLIENT:**

VILLAGE OF ORLAND PARK

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**CONSULTANT:**

GRAF TREE CARE, INC.

BY: 

TITLE: President

DATE: December 1<sup>st</sup>, 2021