A PROPOSAL PREPARED FOR

Village of Cass City, Michigan

Tree Inventory and Related Services

Dec 16, 2024





Section One: Project Understanding INTRODUCTION

DRG provides a wide range of environmental consulting services to clients throughout the world. As the industry leader in urban forestry, we understand that trees have immense value to communities, and we know that trees sometimes fail and can cause damage. Our experience in collecting data on millions of trees and having done more inventories than any other company in the world provides you the reassurance that your investment will not go to waste and that we understand your goals. We aim to bring our experience to assist you with maximizing the value that trees provide and minimize the risks of damage, injury, or disruption trees may cause. Tools like a tree inventory and management plan help identify opportunities, focus attention, and secure resources to tackle community priorities.

We understand that your goal is to improve the urban forest's health and structure by understanding this vital tree resource better. You can't manage if you don't know what you have. DRG's tree inventory will be a ground-based arborist evaluation of the public trees, specifically in defined areas, including the street ROWs, mowed and manicured areas of public parks, and properties. It will include information about species diversity, age distribution, ecosystem benefits, and the overall condition of each tree. This project will provide a much-needed insight into the tree population and allows for a proactive approach to prioritizing tree work.

Applying our proprietary **Quality, Teamwork, and Communication (QTC)** methodology, we ensure the **quality** of our project by leveraging the latest GIS technology, the most recent arboriculture industry standards, and best practices to collect tree inventory data. We customize our field data collection application to your specifications, ensuring our qualified arborists collect all data attributes at each tree and effectively minimize data entry errors. To ensure accuracy, our arborists employ extensive quality control processes to identify errors and improve our approach, and before delivering data, our senior urban foresters run additional data checks and quality control processes.

This project will be led by our local regional **team**, with support from our headquarters in Kent, Ohio, allowing us to draw from resources across the United States, meet tight deadlines, share expertise, and scale as needed. Our professional staff includes many former city foresters, tree nonprofit program leaders, and tree workers who know how to assess trees and understand the difficulties in managing trees on the ground and in forestry operations.

During the inventory, DRG will **communicate** in real-time by providing access to the data from our web-based TreeKeeper[®] software. We will create custom reports for you that will provide important visualization and insights into the findings. This allows you to track progress and make immediate management decisions.

Upon completion of the inventory, if desired, DRG can use the inventory data to develop a Tree Inventory Analysis and Maintenance Strategy with a projected 5-year budget. This plan will describe the status of the current urban forest and provide an approach to tree maintenance that focuses on risk reduction over time. The plan will enable you to project realistic budgets and work plans.

Overall, this project will provide you with comprehensive data about the trees and illuminate a path forward to address the needs of the urban forest. DRG is excited about the opportunity to be part of your proactive tree management project.

Section Two: Scope of Work

The following key tasks constitute the proposed project:

- 1. **Inventory:** DRG will conduct a Geographic Information System (GIS)-based inventory of an estimated 2,000 trees and stumps in the street ROWs and maintained areas of parks. The project area will be defined using GIS data layers such as a parcel, street ROW, and parks boundary layers.
- 2. **Data Delivery:** DRG will provide TreeKeeper[®], our state-of-the-art leading tree inventory software management tool, while the inventory project is in process. At the conclusion of the project, you will receive all of your data in an ESRI[®] shapefiles and an Excel[™] spreadsheet and have the opportunity to continue TreeKeeper[®] access if desired.
- 3. (Add-On) Urban Tree Canopy Assessment: DRG will complete a 4-band land cover assessment of tree canopy coverage in the community. This assessment includes an analysis of ecosystem benefits, prioritization of possible locations across the Village, and reporting of land cover on both public and private lands.
- 4. (Add-On) Tree Inventory Analysis & Maintenance Strategy: After completing the inventory, DRG will utilize inventory data, along with industry standards and best management practices, to develop a tree Inventory analysis & maintenance strategy with a 5-year projected maintenance budget.

TASK ONE: TREE INVENTORY

Utilizing our proprietary method of QTC, we have developed the following approach to provide consistent high-quality tree inventory data. As a client-focused company, we prioritize clear and effective communication with our clients. We intend to keep you informed every step of the way so that you are confident in your data and our services. Our communication process aims to address any issues that may arise before they become problems, and we discuss issues as they occur and work towards developing solutions that work for everyone involved.

We maintain strict quality control measures throughout the project and monitor the site count, budget, and timeline while keeping you informed. Our proprietary approach to project implementation applies stringent quality control measures, engaged team members, and clear communication to deliver the final project with confidence in meeting the specifications.



PROJECT MANAGEMENT

Prior to starting fieldwork, it is imperative that we are clearly aligned on the complete project scope. The DRG team sets up meetings and updates schedules prior to starting fieldwork and continually evaluates communication throughout the project to ensure the scope of work is completed on time and within budget. These meetings and e-mail updates include a Virtual Kick-Off Meeting, On-Site Kick-Off Meeting, project update e-mails, and On-Site Close-Out Meeting.

DRG will request relevant GIS data and imagery or, if necessary, we can use imagery from other public sources. We will use this data to program the data collection software and will confirm the agreed-upon data specification. Once computers are programmed and fieldwork is scheduled, we will set up an on-site kick-off meeting. This meeting occurs on the first day of data collection and includes topics such as safety, data calibration, communication procedures, project expectations, and milestones. We can also provide you with a press release, which can be utilized to notify homeowners about the project, funding sources, and what to expect.



TREE INVENTORY DATA COLLECTION

DRG begins data collection after the on-site kick-off meeting. Our arborists and urban foresters locate trees, stumps, and planting sites (if desired) as per the agreed upon specification of work. They evaluate the trees and record the specified data for each site.

• Location Accuracy: DRG uses field computers and equipment that meet or exceed the project's location accuracy requirements. Our project teams use GIS software and ruggedized computers with GPS receivers capable of sub-meter location accuracy under favorable conditions.

- Individual Tree Inspection Process: Urban foresters inspect each tree from the ground during data collection. They identify the species, measure tree diameter, assess tree condition and risk, and suggest the needed recommended maintenance. Data collection is done systematically for consistency and is typically done Monday through Saturday during daylight hours.
- **Safety:** DRG provides Personal Protective Equipment (PPE), such as hard hats, high-visibility safety vests, safety glasses, and boots. Additionally, our vehicles are marked with company logos and equipped with first-aid kits, fire extinguishers, and safety cones.

Data Fields

Based on our years of experience, the data fields below will provide the information needed to accomplish the project goals. However, if you have specific requirements that are not covered by the mentioned data fields, we are happy to further customize the project's scope of work. Based on our industry-leading experience, the following data fields should be assessed:

- Address/Location: transfer values from parcel GIS layer including house address, on street, X & Y coordinates, and park name (if applicable).
- **Species:** using botanical and common names and cultivars when appropriate.
- **Tree Size:** measured by diameter at breast height (DBH) in 1-inch size classes.
- Multi-Stem Tree: noting if a tree has multiple stems.
- **Condition:** categorized as good, fair, poor, or dead based on signs of stress, poor structure, damage, soil and root problems, disease, and pests.
- **Primary Tree Maintenance:** assigned as remove, prune, train, discretionary, palm prune (if applicable), stump removal, or plant (if applicable).
- **Risk Rating:** Collected per the ISA BMP, moderate, low, high, and extreme.
- **Defects:** including dead and dying branches, broken or hanging branches, branch attachment, trunk condition, cracks, decay or cavity, tree architecture, and root problems.
- **Further Inspection**: categorizing trees that require additional inspections for various issues beyond the scope of a standard inventory.
- **Overhead Utilities:** recording if overhead utilities are present and conflicting, present but not conflicting, or not present.
- **Comments/Notes:** observations and other pertinent information are recorded.
- **Date of Inventory:** the date the urban forester collected the data.

TREE RISK ASSESSMENT

During the inventory, DRG's urban foresters can inspect each tree following the ANSI tree risk assessment (ANSI 2017) protocol. DRG will complete a 360-degree ground-based visual inspection of the crown, trunk, trunk flare, above-ground roots, and site conditions around the tree in relation to targets. The assessment only includes conditions detected from the ground and does not include aerial or subterranean inspection, testing, or analysis.

DRG evaluates risk and assigns a risk rating based on an assessment of the failure mode (i.e., branch, whole tree, codominant stem) with the most significant risk. The specified period for the risk assessment is one year. The risk part of this inventory and evaluation is to maintain compliance with the most recent standards and practices in the arboricultural industry. It is important to note that our inspections are "rapid assessments" and are meant to show a need for further study, and thus are not legally binding in any litigation. DRG used the following criteria based on the *International Society of Arboriculture Best Management Practices—Tree Risk Assessment*, Second Edition (E. Thomas Smiley, Nelda Matheny, and Sharon Lilly 2017) to arrive at a risk rating.

• Likelihood of Failure: Identifies the most probable failure and rates the likelihood that structural defect(s) will result in failure based on observed current conditions.

- Likelihood of Impacting a Target: The rate of occupancy of targets within the target zone and any factors that could affect the failed tree as it falls towards the target.
- **Consequences of Failure:** The consequences of tree failure are based on the level of target and potential harm that may occur. Consequences can vary depending on the size of the defect, a distance of fall for the tree or limb, and any other factors that may protect a target from harm. Target values are subjective, but DRG staff try to assess them from our client's perspective.

QUALITY CONTROL AND QUALITY ASSURANCE

Not only do we provide you with real-time data viewable from our TreeKeeper[®] software, but we also have a detailed quality control and quality assurance processes to guarantee a high level of accuracy. While minor errors are always possible in human-collected data, we are confident that our approach to quality control surpasses that of any other firm. We understand the importance of the data for your decision-making and stand by the accuracy.

To ensure the accuracy of the data, the team employs several quality control checks consisting of hot and cold data checks during fieldwork. Hot checks involve the urban foresters working together and collecting the same data to ensure consistency. In cold checks, the urban foresters review a sample of each other's data to identify any inconsistencies. Any necessary corrections are made to ensure that you receive consistent and accurate data communicated to you. After the data collection is complete and before final delivery, a series of queries and checks are run to verify the data's correctness. Any identified errors are addressed before delivering the data to you and your representatives. Below is an example of a snapshot from our QC/QA methodology:

INVENTORY STATISTICS					
Site Count to Date		Percent Complete	Estimated Total Site Count		
3,161		83%	3,800		
Overall Critical Error Score	Target Critical Score	Non-Critical Error Score	Target Non-Critical Score	Percent Audited	
100%	95%	98.7%	90%	1%	

TASK TWO: DATA DELIVERY

During the inventory project, Cass City will be provided access to DRG's TreeKeeper[®] software.

At the end of data collection and final QC checks, we provide the data in both shapefile and Microsoft Excel[™] format.

If desired, you can continue to maintain your web-based TreeKeeper[®] system for an additional fee. TreeKeeper[®] has the ability to export data in these formats at any time. Additionally, we have experience delivering data or creating API's into a wide variety of other software systems such as ESRI, Cartegraph, CityWorks, Salesforce, etc.

(add on) TreeKeeper® software

Davey's TreeKeeper[®] software is the world's leading tree inventory software and has been continually in operation for longer than our competitors have even been in business. TreeKeeper[®]'s stability and



large diverse user base gives you the confidence that your data are safe, secure, and usable. While many competitors have come and gone, we have never wavered from our commitment to providing our clients with the highest quality software.

TreeKeeper[®] is constantly being updated based on technology advancements, user feedback, and internal research and development. It is a subscription service offered as a Software as a Service (SaaS) and requires an acceptance of SaaS terms and conditions. TreeKeeper[®]'s scalability allows our clients to grow alongside the software and facilitates a paperless workflow operation without dictating exact procedures. The pricing for TreeKeeper[®] is transparent and upfront, with no hidden fees, additional costs, or a-la-carte modules. With a role-based user experience, users access data with specific user-created dashboards, reports, filters, and permission rights.

KEY SOFTWARE FEATURES

- Interactive Dynamic Work Environment. TreeKeeper[®] makes managing inventory data in the field or on a desktop easy with its interactive work environment. Users can view and work with the tree inventory data through an interactive map and table that is fully customizable and can be used independently or simultaneously. TreeKeeper[®] also enables multiple people in different locations to access the system at the same time, enabling real-time updates to the data.
- Unlimited Information with Multiple Data Layers. We do not limit or charge more for the amount of users, trees, or information stored in TreeKeeper[®]. You have the ability to have multiple editable layers, such as historical data, additional facilities, and additional assets, as well as multiple base layers.
- **Role-Based.** Each system has the following roles that can be assigned to an unlimited number of users; admin, edit, read, contractor, and public. Each role has specific functionality and can be assigned to each layer built into the system.
- **Public View.** All TreeKeeper^{*} systems come with an included landing page that is aimed at educating and informing the general public. Users dictate what information is viewable (not editable) and can include i-Tree benefits, species information, custom reports, planting requests, and more!
- **Mobile.** Each system has the ability to switch between mobile and desktop views. The desktop view is built on a dynamic web page optimized for whichever screen size is used. The mobile version is optimized for tablets and provides full functionality in a streamlined user experience to edit, manage work orders, add trees, take photos, etc.
- **i-Tree Eco Benefits.** Utilizing i-Tree's Eco API, TreeKeeper[®] automatically and dynamically calculates the environmental benefits of the trees on an annual basis and is projected out for 20 years. Information includes

air quality, carbon sequestration and storage, stormwater benefits, and energy (if possible), and is displayed for individual trees, groups of trees, or the entire population.

- Infinite Searchability. Users can search the live data with either the integrating mapping tools or the explore section. In the Map-Centric view, users can use the map to find information about specific sites or groups of sites. The explore section also allows users to query the data by searching for sites based on various data fields, such as address, species, condition, maintenance, size, etc. Whether searching from the map or exploring sections, the results are synchronized, so you will always have results in both spots.
- Editability & Archive. Within the tree view mode, users with Admin or Edit rights have the ability to make edits to all the data fields. Most data fields utilize dropdowns to minimize potential errors from spelling or inconsistent nomenclature. All edits are displayed within the Archive feature and are timestamped. This allows all users to see how the tree has changed over time.
- Work Orders & Calls. All systems come with a robust work order and caller log feature that can be utilized if desired. Work orders can be created for individual or groups of trees. They can then be requested, scheduled, or completed and assigned to work crews, contractors, or projects. The system keeps track of the edits made to a site through its work history feature. Users also have the ability to log information about specific callers for a specific site.
- **Photos & Electronic Documents.** All sites have the ability to have various electronic attachments associated with them, including photos, PDFs, and documents. The upload photo option automatically uses your phone's built-in camera when using the mobile version.
- **Tree Appraisals.** Using the Council of Tree and Landscape Appraisals (CTLA) 10th Edition trunk formula method, all trees have an estimated tree valuation by default. Users can further define attributes to get an actual tree valuation with the ability to record pricing estimates and local information.
- **Custom Dashboards, Reports, & Filters.** Dashboards are configurable for each user with pre-set and user-designed graphs, reports, work orders, and filters viewable upon logging in. TreeKeeper's robust reporting feature allows users to create custom reports related to attributes, work orders, project tracking, and more. All searches are savable as quick filters, enabling users to quickly and easily run and share search results. Reports and filters are dynamic and pull from the current inventory information.
- Administrative Hub. Within the administrative hub, admin users can use a variety of easy-to-use tools to further customize your TreeKeeper[®] experience. You can add additional users, assign roles, edit attributes, create projects, update work crews, assign cost information, and more!
- **Exporting & Importing Data.** You always own your data and have access to it. You can use the exporter & importer tool on all the data or a subset of data at any time.
- **Custom API Integration.** If desired, we can work with a variety of 3rd party software providers to configure a customized API into their system. This can be customized as a simple push of data or as a complete push and pull to fully keep all systems updated. We have successfully created API's for many systems, including, but not limited to, in-house ESRI configurations, Cartegraph, Cityworks, Salesforce, Lagin, 311, etc.

To learn more about TreeKeeper[®], please visit our <u>website</u>, where you can watch a video and request a demo if desired.

SOFTWARE TRAINING & SUPPORT

We are happy to provide a complementary orientation training during the inventory. Additionally, DRG offers custom software training for an additional fee that can be arranged at any time throughout your subscription. These trainings are approved for ISA continuing education units (CEUs).

SOFTWARE UPDATES

All TreeKeeper[®] clients receive free unlimited updates. We are committed to staying up-to-date with the latest technology trends to ensure that TreeKeeper[®] remains the most advanced software system for tree inventory management. We value client feedback and have made numerous upgrades to TreeKeeper[®] based on suggestions from clients over the past 20 years. These upgrades are developed in-house by DRG's professional software developers—not by off-shore labor or other subcontractors.

TASK THREE: (add on) URBAN TREE CANOPY ASSESSMENT

Many communities have found that Urban Tree Canopy Assessments (UTCs) have been crucial tools in the understanding and development of urban forestry programs and partnerships. A canopy study would be an extremely useful tool to best understand trends and changes in tree canopy across Cass City and help inform community goals and objectives, tree protection policies (e.g., ordinances), and planting initiatives.

An UTC would:

- Provide an up-to-date land cover assessment;
- Estimate of how much tree canopy can be gained on public property and reasonably gain on private property;
- Identify priority planting areas to best meet local goals; and
- Analyze ecosystem benefits (stormwater management, heat absorption, and air quality)

When DRG develops a canopy study, we leverage over 40 GIS team members located in Kent, Ohio. Additionally, this data becomes yours—all maps, charts, and other deliverables. In addition to being a critical part of your plan, Cass City can use this data in perpetuity to continue to tell the story of its urban forest from the canopy perspective.

Land Cover Assessment

DRG uses National Agriculture Imagery Program (NAIP) data to complete a UTC assessment identifying the current extent of the tree canopy, impervious surfaces, grass/open space, bare ground, and open water. DRG will provide the Village with ESRI[®] shapefiles, metadata, and an Excel[™] spreadsheet of the percent canopy cover containing data for up to three (3) distinct geographies, such as parcel zoning, land use, neighborhood, or watershed, etc. (GIS boundary layers are required).

Via this project or at a later time, the UTC data can be used to quantify:

- The extent of canopy coverage by municipality
- Tree canopy coverage by districts, wards, and sub-watersheds
- Tree canopy coverage by parcel
- Tree canopy cover by zoning or land use such as residential, commercial, multi-family, etc.

Accuracy Standards

DRG manually edits and conducts thorough quality assurance and quality control (QA/QC) checks on all

UTC and land cover layers. A QA/QC process will be completed using ArcGIS to identify, clean, and correct



any misclassification or topology errors in the final land cover dataset. DRG edits the initial land cover extractions in urban and rural areas at a 1:2,000 quality control scale and woodland/forested areas at a 1:5,000 scale. The project will attain a minimum of 95% user accuracy for UTC and impervious classes and an overall accuracy of greater than or equal to 94%.

Priority Planting Opportunity Index

Per protocols set by the USDA Forest Service, a standard UTC assessment provides mapping and information on "all possible planting areas." This summation of possible planting areas is equal to the total of all areas that are open ground and includes areas such as golf courses, active agricultural fields, and sports fields. While it is theoretically possible that these types of pervious surfaces and land uses could represent future tree planting areas, it is often, and understandably so, not practical for a community to consider them for tree planting initiatives.

Therefore, to determine more likely and reasonable areas to plant trees. DRG can locate "preferred planting



areas." The identification of preferred planting areas considers land use and other factors, such as approved community master planning that limits where trees may be planted. The preferred planting area analysis can be completed for the entire project area prioritized based on maximizing canopy benefits related to up to eight (8) of the following focal issues (parameters):

- Socio-demographics and population density
- Proximity to surface waters and impaired waterways
- Topography, floodplains, and soil types
- Public/private ownership
- Linkages to greenways and other forest resources
- Stormwater problem areas
- Mitigating the urban heat island effect

DRG uses a combination of parameters obtained from discussions with the community to determine planting objectives. Ultimately, each suitable planting area is divided into five priority categories ranging from Very Low to Very High based on the client's parameters.

i-Tree Benefits

<u>Air Quality</u>

i-Tree Canopy can be used to analyze the amount of pollution removed by tree canopy. Innovations with the latest version of i-Tree Canopy allows the software model to generate the overall ecosystem values for air quality. The results of this analysis will be presented in the report developed by DRG and can quantify the monetary and unit values of pollution reduction for carbon monoxide, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide for public and private trees.

<u>Carbon</u>

i-Tree Canopy can again be used to evaluate the carbon sequestration and storage services provided by the communities' tree canopy. The results of this analysis can be reported on and show how the amount of tree canopy influences carbon increases or reductions for public and private trees.

<u>Stormwater</u>

i-Tree Hydro can be used to capture stormwater interception. Per tree values can be used to extrapolate information from the public tree data, including private trees for an estimate of benefits across the entire urban forest.

Pollution Assessment

Using i-Tree Hydro, DRG can assess how changes in trees and impervious cover affect water quantity and quality within the community. Data spanning a period will be analyzed to attain the average pollutant runoff within the town limits. The assessment results will be presented in a report that can be used to support decision-making aimed at reducing stormwater runoff and improving urban forests, environmental quality, and human health.

Tree Canopy Report

Findings from the UTC will be incorporated into a report, which documents the process, outputs, and recommendations, or incorporated into a combined tree inventory analysis & maintenance strategy. Either approach provides an informative narrative that can help your community spread awareness of the benefits of trees, understand trends in the distribution of tree canopy, and make decisions to advance forestry across the Village.

TASK FOUR: (add on) TREE INVENTORY ANALYSIS & MAINTENANCE STRATEGY

The goal of DRG's Tree Inventory Analysis & Maintenance Strategy is to recognize priority and proactive tree management tasks, know the value of the inventoried trees, and project a realistic multi-year budget. To develop this plan, our experienced urban foresters analyze the tree inventory data, assessing the data to determine the tree population's composition, structure, and function. Then, DRG uses the findings from the data analysis, along with industry standards, risk management goals, and best management practices, to report on the status of the urban forest and prioritize tree maintenance needs. DRG develops a multi-year maintenance schedule and cost spreadsheet, provided as an editable Excel[™] spreadsheet, based on prioritized maintenance needs.

PLAN SECTIONS

- **Executive Summary:** Provides an inventory, recommended maintenance, and benefits summary overview of the project and its findings in a format that facilitates printing and sharing with elected officials, citizens, and others.
- **Structure & Composition:** Using charts, tables, and insight from DRG's experienced urban foresters, this section describes the composition, function, and structure of the inventoried urban forest. Detailed observations and recommendations are analyzed on the following:
 - Species & General Diversity
 - Pest Susceptibility
 - Condition
 - Relative Age Distribution

- Defect Observations
- Infrastructure & Growing Space
- Canopy Cover & Stocking Level
- **Functions & Benefits:** Using i-Tree, an analysis highlighting the environmental, ecological, and economic benefits trees provide with the following analysis:
 - Overall ResultsAnnual Benefits

- Sequestering & Storing Carbon
- Controlling Stormwater

• Improving Air Quality

- Replacement Value
- **Recommended Maintenance:** Focuses on the tree maintenance tasks that will help mitigate risk, complete proactive maintenance cycles, and plant trees (if collected). Based on the inventory data, the following analyses are discussed:
 - Priority Maintenance & Further Inspections
 - Routine Maintenance
 - Routine Pruning Cycle
 - Young Tree Training Cycle

- Routine Inspections & Inventory Updates
- Tree Planting & Stump Removal (if collected)
- Maintenance Strategy & Example 5-Year Budget: Using the tree inventory data, an example 5-year annual maintenance schedule and budget are provided with details that recommend tasks to complete each year in an editable Excel[™] table format.
- **Conclusion:** Summarizes the report, drawing inferences from the entire process about what has been found and decided, and the impact of those findings and decisions.
- **Appendices:** Relevant appendices are provided, including References, Summary of Recommendations, Study Area and Data Collection Procedures, and Risk Assessment if applicable.

Section Three: Qualifications and Experience

Davey Resource Group, Inc. is the leader in urban forestry consulting in the United States and has provided tree inventory assessment services and assisted with managing urban forests since its founding in 1992. We regularly assess over two million trees annually and develop a wide range of plans for communities. These plans include data-driven operationally-focused work plans and strategic master plans guided by community and stakeholder input. Our TreeKeeper[®] software is used by over 500 clients nationwide and has more than 10 million trees hosted.

In addition to our on-the-ground arborist assessment and urban forest planning services, we provide GIS-based mapping and canopy assessments. Since 2010, DRG has completed over 225 urban tree canopy (UTC) assessments, providing accurate estimates of tree canopy cover and impervious surfaces. Our team consists of arborists, urban foresters, planners, landscape architects, ecologists, GIS, and Information Technology (IT) professionals. Together, we offer proven solutions for urban forest management and unique strategies for today's challenges, such as the urban heat island effect and the lack of tree canopy in underserved neighborhoods.

In addition to DRG's renowned urban forestry services, we also offer a diverse range of other environmental consulting services. This includes wetlands and stream studies, environmental design and ecosystem restoration, stormwater management and compliance, and invasive species management. DRG's staff is well versed in complex ecosystems, resource challenges, and regulatory concerns that can impact project success. With 24 local regional offices and a national presence, DRG is well equipped to handle urban forestry and environmental projects in your area.

Internally, **we believe in the QTC method - Quality, Teamwork, and Communication**. How does this benefit you and your project? We continually look for ways to reinvent, innovate, and adapt our processes to achieve the highest quality results at the best value for our clients. This includes hiring and training team members who are accountable for good work, working safely, and providing accurate results. We encourage and engage in active communication with you and within our teams to provide quality service throughout the project and beyond. This philosophy has led to our history of satisfied repeat clients.

As a trusted partner, Davey collaborates with the United States Department of Agriculture (USDA) Forest Service, The Nature Conservancy, American Forests, and the Arbor Day Foundation on a variety of industry-leading initiatives. Our commitment extends to the International Society of Arboriculture (ISA) and its local chapters, with staff serving on boards and committees. We support the Urban and Community Forestry Society with regular presentations, sponsorships, and volunteering.

Davey has actively contributed to developing and revising arboriculture standards and best management practices, including tree risk assessment, through the American National Standards Institute (ANSI) and ISA. We also work directly with the USFS on the continued development and support of i-Tree to quantify the value ecosystem services trees provide.

Why Choose the Davey Team?

DRG'S UNIQUE QUALIFICATIONS

The following assets and qualities of DRG distinguish us within the arboriculture and urban forestry fields and demonstrate our ability to provide high-quality services.

- Large professional arborist and GIS/IT staff. DRG has over 100 professional arborists dedicated to tree inventories and urban forestry consulting, 20 GIS/IT specialists, and access to additional trained employees as the needs arise. As a large national firm, DRG can expand a project team quickly to meet the needs of any project. Our size and internal resources allow it to complete large, long-term inventory projects.
- Large equipment inventory. DRG owns multiple handheld computers and pen tablets for tree data collection and precise GPS units. We have national purchase and rental agreements with computer hardware manufacturers and technical equipment to quickly obtain specialty, additional, or replacement equipment.
- **Tree inventory and software project experience.** DRG has over 30 years of experience conducting municipal tree inventories, creating long-term management plans, and creating customized software systems. We have successfully completed more tree inventories than any other company and regularly assess more than 2 million trees annually. Our inventory arborists are highly trained in tree identification, tree maintenance determinations, and tree risk assessments.
- Local offices and staff with national support. DRG maintains several offices throughout the region, and our staff can respond directly to any questions or inquiries you might have, ensuring quick and constant communication. Our parent company, The Davey Tree Expert Company, also has residential and commercial tree care and landscaping, horticultural technical support, and urban forestry consulting offices throughout the region. These local offices have our nationwide company's collective support and resources and can assist as necessary.
- A 135-year history of providing clients with quality work and proven results. The Davey Tree Expert Company has been in business for over 135 years. It is an employee-owned company that has stood the test of time. While other urban forestry companies and their inventory software programs have gone out of business, The Davey Tree Expert Company's history speaks to longevity and security, such that it will remain successful and be able to serve the needs of your community well into the future.

THE PROJECT TEAM

DRG's staff members are the most qualified and credentialed in the industry and possess extensive industry knowledge and experience. This knowledge and experience includes industry standards, best management practices (BMPs), and the municipal work environment. All of our DRG team members are either ISA-certified arborists or on a path to becoming certified. Many have additional credentials and maintain the ISA Tree Risk Assessment Qualification (TRAQ) and/or are Board Certified Master Arborists (BCMA). Our team also includes IT and GIS analysts, plan writers, software technicians, data analysis, and administrative support. DRG has the largest staff of urban forestry consultants in the country, allowing us to scale and substitute staff as needed. The staff listed below have been identified as an ideal solution for your project, but due to timing or other assignments, we may elect to substitute staff or equal expertise if needed.

Gerritt Moeke CCF, an associate consultant and Michigan team leader at Davey Resource Group, Inc. (DRG), is a seasoned professional in urban and traditional forestry. Gerritt manages diverse responsibilities in his role, including sales, business development, team leadership, scheduling, project management, and fieldwork with various equipment (Skid Steer, Tractors, UTV, Muddox, CMV). His extensive experience involves collaborative work on large-scale projects with the Michigan Department of Transportation (MDOT) and Macomb County. Within the MDOT and Macomb County projects, Gerritt played a crucial role in fieldwork, maintenance, and planting thousands of trees and shrubs along I-75 and Mound Road. Managing site operations for

Segment 2 of the MDOT project, he oversaw planting of over 4,000 trees and shrubs in 2021 and 2022. Similarly, with the Macomb County Mound Road project, Gerritt led field operations, installing more than 14,000 trees and shrubs along the revitalized median of Mound Road. Supervising Davey Residential/Commercial Services and Davey Commercial Land Services, he ensured proper vegetation maintenance and handled traffic duties throughout Segment 2 Project and Mound Road.

Additionally, Gerritt serves as project manager and contract forester for Ferndale and Birmingham in Michigan. His responsibilities include monthly tree and construction site inspections, conducting training sessions for the cities' tree crews, and covering topics like pruning, planting, winter tree identification, mulching procedures, and tree risk assessment. Gerritt plays a strategic role in overseeing and planning city tree-planting initiatives. Before joining DRG, he gained valuable experience with a forestry and logging company in Northern Michigan, handling tasks such as timber cruising, grading, client interaction, sales, long-term forestry management, and heavy equipment operation.

Gerritt has a Bachelor of Science degree in forestry with a minor in economics from Michigan State University. He is an ISA Certified Arborist and has obtained the Tree Risk Assessment Qualification (TRAQ). Gerritt is a Certified Michigan Pesticide Applicator and has received OSHA 10-HR Training. Gerritt is affiliated with the Society of American Foresters and is a Certified Forester candidate.

Thomas Flynn is an inventory arborist technician with Davey Resource Group, Inc. (DRG) with over three years of experience with municipal inventory data collection, utility forestry, and management. He also has specialized knowledge in utility vegetation management and tree risk assessment.

In his current role, he is responsible for patrolling municipal rights-of-way, identifying trees, and recording biometrics using Rover GIS. In addition, he assesses the likelihood of tree site failure and determines the necessary measures to establish and maintain the urban forest.

Thomas' recent and relevant accomplishments include his contributions to completing an inventory update in Livonia, MI. Additionally, he has assisted with invasive removals at Great Lake Crossing and native plantings for the Saginaw Chippewa Indian Tribe. In November 2023, he successfully passed the Pesticide Applicator exams.

Thomas has a Bachelor of Science degree in earth and environmental sciences from the University of Michigan. He is an ISA Certified Arborist and has obtained the ISA Tree Risk Assessment Qualification (TRAQ). Thomas is a Certified Michigan Pesticide Applicator.

Lee Spangler serves as an inventory arborist and environmental specialist for Davey Resource Group, Inc. (DRG). Lee brings over a decade of diverse industry experience in horticulture, arboriculture, and urban and community forestry and dedicates his skills to the forestry, horticulture, and arboriculture sectors.

In his current role, Lee is entrusted with the crucial task of inventorying and evaluating municipal and private trees. His work is pivotal in guiding the development and maintenance of urban forest canopies. With a wealth of experience, Lee has successfully contributed to multiple municipal tree inventory updates within Metro Detroit, Michigan, encompassing Birmingham, Livonia, Ferndale, and Detroit.

Lee's expertise extends beyond Michigan, where he has been involved in inventory creation and updates for various cities, including Buchannon, Wolverine Lake, Traverse City, and Linden. His commitment to the field is evident in his contribution to inventory data collection efforts in Columbus, Ohio and Wheeling, West Virginia. Lee's expansive experience underscores his proficiency in shaping and managing urban landscapes, making him a valuable asset in horticulture, arboriculture, and forestry.

Lee has a Bachelor of Science degree in forestry with a minor in urban forestry from Michigan State University. He is an ISA Certified Arborist and has obtained the ISA Tree Risk Assessment Qualification (TRAQ). Lee is a Certified Michigan and Ohio Pesticide Applicator. He has received OSHA 10-HR Training and has received sUAS Remote Pilot Certification.

William D. Ayersman, GISP, M.S., is the geospatial services manager with Davey Resource Group, Inc. (DRG). He has extensive experience applying spatial analysis and predictive modeling to natural resources, including identifying right-of-way clearance concerns, assessing tree health and identifying species, and understanding climatic, social, and environmental concerns. His daily responsibilities involve the management of GIS and remote sensing projects that include imagery and LiDAR analysis, generating custom maps and reports, and creating and designing predictive and suitability models. Since 2011, he has been the project lead on all urban and utility forestry projects.

Will is essential in developing innovative GIS tools and solutions, focusing on the urban canopy effects of stormwater, watersheds, and ecosystem cost/benefits analysis. He has experience and knowledge in forestry resource management, cartography, landscape metrics, and spatial statistics. He also oversees the collection of our drone LiDAR program and routinely calculates LiDAR-derivatives such as surface models, terrain models, and vegetation height models. In addition, Will has experience during his tenure at West Virginia University updating wetland layers for environmental projects.

Examples of his work directly related to this project include over 220 GIS assessments of vegetation, over 30 LiDAR-based projects, numerous cost estimates, and comparison quotes.

Will has a Master of Science degree in forestry and a Bachelor of Science degree in forest resource management from West Virginia University. He is a Certified Geographic Information Systems Professional (GISP), and is affiliated with the American Society of Photogrammetry and Remote Sensing (ASPRS), Association of American Geographers (AAG), and Ohio Urban Regional System Association (URISA), Ohio Chapter.

RELATED PROJECTS

We understand the importance of this project and how you only have one chance to get it right. With our vast experience providing urban forestry consulting, you can rest assured we will get it right the first time, and your investment will not be wasted. Below is a limited selection of projects demonstrating our expertise in delivering similar scopes of work on time and within budget. We are happy to provide additional project examples or references if desired.

CITY OF ANN ARBOR, MI TREE INVENTORY UPDATE

Location: Ann Arbor, MI Contact: Tiffany Giacobazzi Phone/E-mail: 734.794.6356 | tgiacobazzi@a2gov.org

Davey Resource Group (DRG) initially conducted a street and park tree inventory in the City of Ann Arbor, Michigan, in 2009. In 2020, the City contracted with DRG to return to update the City's entire tree inventory database - both park and street trees.

Throughout the summer and fall, a team of qualified inventory arborists walked the City's streets and parks, updating each tree data point. In total, 60,713 sites were re-assessed and updated, including 51,010 trees, 1,242 stumps, and 6,955 planting sites. The final data were delivered to the City for integration with their existing asset management system.

City of Bay City, Michigan Contact: Adam Webster | 989.894.8309

The City of Bay City manages both the public trees and the electric utility. As a result, the City was interested in establishing inventory control of trees as part of both public utility and tree maintenance programs. Bay City contracted DRG to complete an inventory along the public right-of-way, which included over 19,000 trees. For each tree, DRG's urban forester recorded the tree location, species, size, maintenance need, damage to sidewalk, conflicts with utilities, and several other data attributes. Data were delivered as an ESRI shapefile and electronic spreadsheet. The City is using these data to aid in the maintenance of City trees across the community.

City of Big Rapids, Michigan Contact: Heather Bowman | 231.592.4018

Big Rapids has been a Tree City USA community for a number of years. As such, the City has worked to plant replacement trees where those were removed and care for trees along City streets and within public parks. Due to a number of staff changes, the City's inventory data were completely out of date. The City received a Michigan Department of Natural Resources grant in 2020 to re-establish inventory control of City streets and the City selected DRG through a competitive bid process. DRG navigated City streets and parks and ultimately assessed 3,797 trees and stumps across the community. Data included tree location, species, diameter, condition, and maintenance needs. Data were delivered to the City in DRG's TreeKeeper® 8 inventory management software and incorporated into the City's GIS platform. Ultimately, the City is using these data to prioritize tree maintenance activities and allocate resources effectively to improve City tree management.

Client: City of Coldwater, Michigan Contact: Dean Walrack | 517.279.6926

The City of Coldwater received a Michigan Department of Natural Resources grant to support a tree inventory. Through a competitive bid process, the City selected DRG to complete its tree inventory. In 2019, DRG's ISA-Certified Arborists navigated

City streets and collected information on 5,503 trees and stumps located in the right-of-way and on public properties. Inventory data included tree location, species, diameter, and an assessment of tree risk and maintenance needs. Tree inventory data were delivered to the City in Davey's TreeKeeper[®] 8 software. The City has incorporated inventory data into the City's existing GIS platform and uses inventory data to prioritize tree maintenance activities. DRG has subsequently worked with Coldwater, in partnership with ReLeaf Michigan, to provide urban tree canopy assessment data, prioritized planting analyses, and an estimation of tree benefits. Coldwater is using these data to identify planting locations, engage the public, and host volunteer tree planting events.

Client: City of East Grand Rapids, Michigan Contact: Doug La Fave | 616.940.4817

DRG conducted a street tree inventory in the City of East Grand Rapids. The GIS-based inventory included an assessment of 7,113 trees and stumps. All trees were evaluated for condition, structural soundness, and assigned a risk level to enable the city to prioritize its maintenance needs. DRG's experienced GIS/IT team ensured the city was able to successfully import all inventory data into the city's existing asset management system. The city immediately used their tree inventory to address all priority maintenance issues identified by DRG. DRG's experienced consulting team also presented inventory findings to the City Council, further establishing the value and importance of monitoring community trees.

Subsequently, the city has engaged DRG in ongoing contract forestry services. DRG's team of professional arborists have provided tree inspections and risk assessments to guide city decisions in the maintenance of specific trees. DRG was also asked to put together a cyclical pruning program and specifications for future tree maintenance contracts. More recently, DRG used inventory data to identify specific tree management concerns, set up a body of work, advertised a contract, managed the bid process, and administered the contract for Fiscal Years 2018 through 2021 pruning and removal operations. DRG continues to support the city's forestry efforts through tree assessments, contract management, tree pest and disease concerns, and public outreach.

Client: City of Frankenmuth, Michigan Contact: Dan Hopp, Manager of Greenspace Programs | 989.652.3443

Located in the Saginaw Bay Region, Frankenmuth is a close-knit community known as Michigan's "Little Bavaria." In recent years, Frankenmuth has developed a strong greenspace program, which has included planting nearly every available empty tree site across the community. To support tree maintenance efforts, Frankenmuth received a Michigan Urban and Community Forestry Grant to fund a tree inventory. Subsequently, DRG completed an inventory of 4,603 trees, 10 stumps, and 25 planting sites. Inventory data included tree location, condition, maintenance, need, and risk among other variables. Inventory data were delivered in DRG's TreeKeeper® tree inventory management software, which the city uses to record tree work and maintain tree inventory data. The city uses tree inventory data to plan and budget for tree maintenance needs as part of the city's comprehensive community forestry and greenspace programs.

Client: Michigan Department of Natural Resources Contact: Kevin Sayers, Urban and Community Forestry Program Coordinator 517.230.7905 Project: Saginaw Bay Community-Based Green Infrastructure Project

In partnership with the Michigan Department of Natural Resources and ReLeaf Michigan, Davey Resource Group secured a Great Lakes Restoration Initiative grant through the United States Forest Service. This project sought to develop a pilot program that developed community forestry capacity in rural Michigan communities. Specifically, the grant project included the development of urban tree canopy assessments, on-site training, and volunteer-led tree planting in the City's of Au Gres and Standish, Michigan.

Davey Resource Group's expert GIS staff performed an Urban Tree Canopy Assessment (UTC) for both Au Gres and Standish. As part of this analysis, Davey Resource Group reviewed the distribution of community tree canopy, estimated ecosystem benefits, and developed a prioritized planting plan. Davey Resource Group's consulting team worked with the Michigan DNR and ReLeaf Michigan to distribute the UTC findings, train local community leadership on using UTC data, and hosted a series of public meetings. Subsequently, ReLeaf Michigan employed the prioritized planting plan for volunteer tree plantings with each community to demonstrate and provide instruction on its use. The partners will be using the UTC and planting plan for future local planting efforts.

Client: Village of Milford Contact: Christian Wuerth | 248.684.1515

The Village of Milford is a small, tight-knit community in southwestern Oakland County. With a public works department pulled in multiple directions, Milford was interested in gaining further insight on its tree population and using data to improve operations. DRG helped the community secure a State of Michigan Urban and Community Forestry Grant and conducted a complete inventory of 3,066 trees along public streets and within the village's Central Park. The GIS-based tree inventory included an assessment of tree size, species, condition, risk level, and maintenance need. The village received the tree inventory data in Davey's Treekeeper® 7 Tree Management Software. Village staff have been using Treekeeper® 7 to prioritize maintenance activities based on tree risk. To support staff efforts, DRG presented to the village council and detailed the inventory process, key findings, and management recommendations. DRG has also provided on-call consulting to address specific tree issues or questions that may arise within the village as well as revisions to the village ordinances. The partnership has allowed the village to utilize forestry expertise to augment staff capacity and expertise.

Client: City of Petoskey, Michigan Contact: Kendall Klingelsmith | 231.347.2500

The City of Petoskey is a northern Michigan community known for its quaint downtown and access to many sights and recreational attractions in Northern Michigan. In 2020, the City received a grant from the Michigan Department of Natural Resources to complete a tree inventory. Through a public bid process, the City selected to work with DRG to inventory more than 3,771 trees, stumps, and planting sites. DRG's assessment included tree species, size, condition, risk, primary maintenance need, and related data fields. Once completed, DRG analyzed the inventory data and incorporated the findings into a comprehensive 5-year urban forest management plan. The plan provides recommendations to support the City's urban forestry program, prioritize work, and engage the public. The plan includes budgetary projections to accomplish its recommendations.

INVESTMENT

This proposal is based on an estimated number of trees/sites to be inventoried. Davey Resource Group, Inc. reserves the right to renegotiate the price based on the timing of the award, scheduling of fieldwork, the final methodology chosen by the client, and availability, completeness, and quality of maps and GIS information.

DESCRIPTION OF SERVICE	PRICE			
TASK 1: TREE INVENTORY				
Computerized inventory data collection of up to 2,000 existing trees, planting sites, and stumps.	\$11,500			
Additional inventory data collection above 2,000 trees/sites.	\$5.52 / site			
TASK 2: Data Delivery				
Delivery as ESRI shapefile and Excel database	\$included			
(add-on) Annual TreeKeeper [®] subscription	+\$3,600			
(add-on) Web-based 4-hour TreeKeeper® training	+\$750			
(add-on) TASK 3: Urban Tree Canopy Assessment				
Urban Tree Canopy Assessment and Report	+\$18,375			
TASK 4: TREE INVENTORY AND MAINTENANCE STRATEGY				
Tree inventory and maintenance strategy with 5-year budget and benefits analysis	\$5,500			
TOTAL (not including add-ons)	\$17,000			

CLIENT RESPONSIBILITIES

- Provide DRG with imagery, maps, and data files. Our request may include the following: digital orthophotographs, available GIS data layers, other electronic or paper copies of maps for roads, pavement widths, right-of-way widths, boundaries and utilities, and an electronic file or printed list of street names and endpoints.
- Provide daily contact information and directions during the inventory project.
- Provide a copy of any existing tree inventory databases.
- Coordinate and host an on-site kick-off meeting before the start of fieldwork.
- By accepting this proposal, you accept DRG's Terms and Conditions and Limited Warranty and agree that, upon award, this proposal and its attachments will be made a part of the Agreement.

TERMS AND CONDITIONS

- All pricing is valid for 30 days from the date of this proposal, after which time we reserve the right to amend fees as needed.
- Time and materials (T&M) estimates will be billed using the labor rates in DRG's current commercial price list. Fixed Fee Contract Prices will be billed in monthly increments for the percentage of work completed in the billing period. Firm-Fixed Unit Prices will be billed in monthly increments for the number of completed units in the billing period.
- Payment terms are net 30 days.
- If prevailing wage requirements are discovered after the date of this proposal, we reserve the right to negotiate our fees.
- The client is responsible for any permit fees, taxes, and other related expenses unless noted as being included in our proposal.
- The client shall provide 48 hours notice of any meetings where the consultant's attendance is required.
- Unless otherwise stated, one round of revisions to deliverables is included in our base fee. Additional edits or revisions will be billed on a time and material (T&M) basis.
- All reports are provided only to the client unless otherwise directed.
- DRG represents that it and its agents, and consultants employed by it, are protected by Workers' Compensation insurance and that DRG has coverage under liability insurance policies which DRG deems reasonable and adequate. DRG shall furnish certificates of insurance upon request. DRG agrees to maintain general liability insurance in commercially reasonable amounts. Client is responsible for requesting specific inclusions or limits of coverage that are not present in DRG insurance, and the cost of such inclusion or coverage increases if available, will be at Client's sole cost and expense. If the Client requires an Additional Insured endorsement, DRG shall provide one in the certificate of insurance, listing only the entities requested in the "Additional Insured Requirements" section above.

LIMITED WARRANTY

Davey Resource Group, Inc. ("DRG") provides this limited warranty ("Limited Warranty") in connection with the provision of services by DRG (collectively the "Services") under the agreement between the parties, including any bids, orders, contracts, or understandings between the parties (collectively the "Agreement").

Notwithstanding anything to the contrary in the Agreement, this Limited Warranty will apply to all Services rendered by DRG and supersedes all other warranties in the Agreement and all other terms and conditions in the Agreement that conflict with the provisions of this Limited Warranty. Any terms or conditions contained in any other agreement, instrument, or document between the parties, or any document or communication from you, that in any way modifies the provisions in this Limited Warranty, will not modify this Limited Warranty nor be binding on the parties unless such terms and conditions are approved in a writing signed by both parties that specifically references this Limited Warranty.

Subject to the terms and conditions set forth in this Limited Warranty, for a period of ninety (90) days from the date Services are performed (the "Warranty Period"), DRG warrants to Customer that the Services will be performed in a timely, professional and workmanlike manner by qualified personnel.

To the extent the Services involve the evaluation or documentation ("Observational Data") of trees, tree inventories, natural areas, wetlands and other water features, animal or plant species, or other subjects (collectively, "Subjects"), the Observational Data will pertain only to the specific point in time it is collected (the "Time of Collection"). DRG will not be responsible nor in any way liable for (a) any conditions not discoverable using the agreed upon means and methods used to perform the Services, (b) updating any Observational Data, (c) any changes in the Subjects after the Time of Collection (including, but not limited to, decay or damage by the elements, persons or implements; insect infestation; deterioration; or acts of God or nature [collectively, "Changes"]), (d) performing services that are in addition to or different from the originally agreed upon Services in response to Changes, or (e) any actions or inactions of you or any third party in connection with or in response to the Observational Data. If a visual inspection is utilized, visual inspection does not include aerial or subterranean inspection, testing, or analysis unless stated in the scope of work. When performing tree inventories or assessments, DRG will not be liable for the discovery or identification of non-visually observable, latent, dormant, or hidden conditions or hazards, and does not guarantee that Subjects will be healthy or safe under all circumstances or for a specified period of time, or that remedial treatments will remedy a defect or condition.

To the extent you request DRG's guidance on your permitting and license requirements, DRG's guidance represents its recommendations based on its understanding of and experience in the industry and does not guarantee your compliance with any particular federal, state or local law, code or regulation.

DRG may review information provided by or on behalf of you, including, without limitation, paper and digital GIS databases, maps, and other information publicly available or other third-party records or conducted interviews (collectively, "Source Information"). DRG assumes the genuineness of all Source Information. DRG disclaims any liability for errors, omissions, or inaccuracies resulting from or contained in any Source Information.

If it is determined that DRG has breached this Limited Warranty, DRG will, in its reasonable discretion, either: (i) re-perform the defective part of the Services or (ii) credit or refund the fees paid for the defective part of the Services. This remedy will be your sole and exclusive remedy and DRG's entire liability for any breach of this Limited Warranty. You will be deemed to have accepted all of the Services if written notice of an alleged breach of this Limited Warranty is not delivered to DRG prior to the expiration of the Warranty Period.

To the greatest extent permitted by law, except for this Limited Warranty, DRG makes no warranty whatsoever, including, without limitation, any warranty of merchantability or fitness for a particular purpose, whether express or implied, by law, course of dealing, course of performance, usage of trade or otherwise.