Jacksonville Tree Commission

Wednesday, October 21, 2020 – 9:30 AM

Via Zoom Platform

Commissioners:	Chris Flagg, Chair	**Advisors:**	Susan Grandin
	Curtis Hart, Vice Chair		Richard Leon
	Ron Salem		Kathleen McGovern
	John Pappas		Joel Provenza
	Mike Robinson		
	Rhodes Robinson	**Staff:**	Cindy Chism

AGENDA - Revised

Order of Agenda is Subject to Change

1. **Call to Order -** Chair
2. **Roll Call and Verification of Quorum** – Cindy Chism
3. **Submittal of Speaker's Cards** – Chair
   - **a)** A raised hand icon as well as waving at the screen will be acknowledged by Chair or Ms. Chism.
4. **Reports:**
   - **a)** Fund balance and encumbrance report for 15(F) (Ordinance Tree Fund), 15(N) (Charter Tree Fund) and BJP – Joel Provenza
   - **b)** Status of Pending Tree Projects – Kathleen McGovern
   - **c)** Fund Status of 630-CITY, Remove & Replace and Level 2 Programs– Richard Leon
5. **Action Items:**
   - **a)** Approval of Minutes from September 16, 2020 meeting – Chair
   - **b)** Proposed Level 2 Project(s) – None
6. **Old Business**
   - **a)** Commission member vacancy – Criteria: Urban Planner or Attorney, should reside in At-Large Council District 1, 2, 3, or 5 - Cindy Chism
7. **New Business**
   - **a)** Resiliency actions regarding GIC – Nancy Powell
   - **b)** Review Legislation for funding increase for 630-City Program – Susan Grandin

c) Review of Proposed Matrix on Commission Intent, Purpose and Duties - Chair/Susan Grandin

d) Discuss Level 3 Process as it relates to Non-Profit or Community Groups.

e) Tree Farm – Curtis Hart

8. **Public Comment -** General
9. **Adjournment** – the next meeting is Wednesday, November 18th and will NOT be a Zoom meeting.

Jacksonville Tree Commission
Wednesday October 21, 2020 – 9:30 AM
For Approval November 18, 2020
Via Zoom Platform

Commissioners Present:	Chris Flagg, Chair Curtis Hart, Vice Chair Ron Salem John Pappas Mike Robinson Rhodes Robinson	**Staff:**	Cindy Chism
Advisors:	Susan Grandin, OGC Joel Provenza, Finance Kathleen McGovern, City Arborist Richard Leon, Urban Forester Manager	**Public:**	Todd Little, COJ Joe Anderson, JEA Fred Pope, COJ Kealey West, COJ Anna Dooley, Greenscape John November, Public Trust Mike Zaffroni, Liberty Landscape Nichole Evans, COJ Nancy Powell, Scenic Jax Bruce Fouraker, Scenic Jax Dave McDaniel, COJ Gabriel Dempsey, Greenscape Laura Byers, Greenscape

1. **Call to Order -** Chair
2. **Roll Call and Verification of Quorum** – Cindy Chism
3. **Submittal of Speaker's Cards** – Chair
   a) A raised hand icon as well as waving at the screen will be acknowledged by Chair or Ms. Chism.
4. **Reports:**
   a) Fund balance and encumbrance report for 15(F) (Ordinance Tree Fund), 15(N) (Charter Tree Fund) and BJP (Attachment A) – Joel Provenza
   b) Status of Pending Tree Projects (Attachment B)– Kathleen McGovern
   c) Fund Status of 630-CITY, Remove & Replace and Level 2 Programs – Richard Leon
      i. The 630-CITY program currently has $114,000 remaining; however there is legislation for $2 million in progress. 3002 trees have been planted to date, approximately 40 trees per week.
      ii. The Remove & Replace program currently has $824,000 which will be split between the removal contractor and the planting contractor.
      iii. The Level 2 Program has just under $500,000 remaining but there are 2 projects awaiting MBRC approval and several projects in the work which encumbers the remaining balance. Replenishing this program should be considered; the previous legislation was for $2 million and took approximately a year to spend. Motion to request legislation for additional $2 million made by Mr. R. Robinson, seconded by Mr. Pappas, none opposed, motion passed.
5. **Action Items:**
   a) Approval of Minutes from September 16, 2020 meeting – Chair

i. Motion to approve minutes Mr. R. Robinson, second by Mr. M. Robinson, none opposed.

6. Old Business

i. Ethics training must be completed every 4 years, if it has been 4 years or more since the last class contact Ms. Chism for enrollment information.

7. New Business

a) Resiliency actions regarding GIC (Attachment C) –Nancy Powell

i. Recommendation number 1 to focus on the Northside, Eastside and downtown where there may not be many community organizations which may request Level 2 projects. There is a need for trees due to heat index, small right of ways, and stormwater. This would be an adaptation of the GIC recommendations numbers 6, 10, and 12. That's not to say trees are not needed in other parts of the City but looking at the projects completed and in progress it seems the rest of the City is represented.

ii. Recommendation number 2 is to strengthen the Ordinance Code to support a healthy and growing tree canopy. As there is subcommittee already underway this appears to be in progress.

iii. Recommendation number 3 is to plant trees around Stormwater Ponds. Though Tree Mitigation funds are only for public properties, there are FDOT ponds; perhaps a way to incentivize private property plantings could be found.

iv. Recommendation number 4 is education but wasn't part of the GIC recommendation other than educating single family residents about the importance of mature trees. There is potential Resiliency money which may become available.

v. The final recommendation is Tree Maintenance Operations and Funding. Taking care of the larger trees and coordination with FDOT and City for maintenance.

vi. Mr. Hart commented that the approach for tree planting in Jacksonville should be based on canopy coverage. An analysis of canopy coverage should be done before a site is cleared for development, if there was 40% canopy coverage; then a plan should be generated to quickly replace that 40% canopy coverage on the site. Mr. Hart continued number 4, "Discourage the practice of clear-cutting"; this is not what the development community ever wanted to do or does on purpose. 15 years ago only the roadways were cleared for the utilities and the road. Then individual builder would then try to save as many trees as possible for each lot. However, the City, through a series of ordinances, requires the developers to do a drainage plan on every single lot. To meet the City requirements for a drainage plan, the trees have to be removed. The other item in this report, "Remove the single-family dwelling exemption" though this is required, it is not enforced. Ms. Powell added discouraging the practice of clear cutting and single family dwelling exemptions are items which the Committee is recommending for the education of homeowners and developers.

vii. Mr. November added that what the Committee was hoping is the Commission would put together a subcommittee with Staff, a Commissioner and local stake holders to set some goals for the future to work towards. Mr. Pappas added that in addition to the programs we currently have, another funding opportunity on the resiliency side, is the Tree Fund. It plays a role in the management of the fund, what do individuals want for their homes, to what communities want. Mr. Flagg asked for an action plan. Mr. Pappas suggested asking the Resiliency Group where they believe these trees being planted improve or enhance the resiliency of Jacksonville and factor that into our future allocations. Mr. Flagg pointed out that communication must stay open between the 2 groups. Mr. R. Robinson suggested Ms. Powell contact water management district. There is a lot of open space around the stormwater ponds but there are requirements for maintenance, getting equipment in and out. There is opportunity but it needs coordination.

viii. CM Salem added focusing on 4-5 items instead of all of the recommendations is a good idea. Mr. Pappas has a good point in Resiliency being separate from the Tree Commission. There are advantages to showing the projects were very specific to Resiliency and Resiliency funding. Ms. Grandin added all tree planting projects are pointed towards Resiliency but a subcommittee is possible. Plan-IT GEO has an analysis of what areas of town have sparse canopies. Mr. Flagg agreed, a subcommittee is relevant, current and shows we are adhering to the issue at hand but we must stay coordinated with Ms. Powell's group. Further discussion will be conducted and a follow up meetings may be scheduled.

b) The next meeting, November 18th is scheduled to be an in person meeting. Mr. Flagg would like to know the comfort level of the Commission members. What will be the precautions that will be taken? Perhaps this Commission can have a hybrid meeting. Mr. Hart asked if there was a way to do a hybrid option. Because the Governor's mandate expires on November 1 allowing for ZOOM meetings. Ms. Grandin added that a quorum must be present in person, which is 4 members, the rest could meet virtually. The Mayor would have to extend the mandatory mask requirements in city buildings, which is set to expire on October 27th which is 1 way to feel safe but he cannot extend the virtual meetings. CM Salem pointed out the City Council has moved in the direction of in person or virtual meetings in a desire to meet the needs of the public. The public needed to have the option to come in person. The consensus is for a hybrid meeting if possible, if not, precautions.

c) As we have gone over time, the remaining items on the Agenda will be tabled until the next meeting. Review Legislation for Funding Increase for 630-City Program and a robust discussion about Level 3 Process as it relates to Non-Profit and Community Groups. Both will be discussed under new business next month.

8. Public Comment

i. John November – Sulzbacher Village Tree planting project has begun today. The irrigation is being done as we speak, then the tree planting and flower garden will be done next week. Mr. Pope has looked at the site and pointed out good placement for the trees. The Huguenot Park project should begin near Thanksgiving.

ii. Anna Dooley – the Equestrian Center Project which we have been working on for 3 years is missing from this agenda. Everything was submitted in what we thought was a timely fashion considering that we had gone through all of the comments that Mr. Leon and Staff has provided and made those adjustments. Again, I assumed everything was fine until the Agenda was published and our project was not listed. Mr. Leon has said they got behind because of staff illness. There is a lack of professional courtesy in not communicating. Mr. Leon responded the timestamp of the submission of the Application was Friday, October 2, 2020 at 5:25pm. According to the rules the Application must be submitted to the Commission 2 weeks before the next meeting. With the submission being on the Friday evening, the 2nd that left Monday and Tuesday to review all the new drawings, and new prices, an essentially brand new Application. It was not possible to turn around the Application in the amount of time allowed. Ms. Dooley added the revisions were requested by Staff in the past. Ms. Dooley doesn't believe reviewing the new submission was labor intensive. Mr. Flagg acknowledged the Application is in staff's hands and should be on the Agenda for next month.

iii. Ms. Grandin pointed out the instructions for Level 3 Programs say the Commission should have 2 weeks prior to the meeting to review the Application and Staff Report. There is nothing in the instructions which says how soon the Staff needs to receive the Application. Mr. Pappas agreed Staff does need more than 2 days to review Mr. Hart agreed as well that there needs to be time for Staff to review but the Commission doesn't need a hard 2 weeks. Instead if Mr. Leon receives an Application and completes the Staff Report he should send it to the Commissioners no matter how close to the next meeting. If the Commissioners don't have time to review it, they could then make the decision not to hear the Project. It would then be the Commission's decision. Mr. Flagg agreed as this project has come before the Commission previously, now there are a number of additions, so time to review is necessary but making it the Commission's decision to hear the project or not is to be preferred.

iv. Mr. Pope pointed out the Applicant may need time to prepare comments to the Commission in response to the Staff Report. If the Staff Report is issued shortly before the meeting, the Applicant will not have time to generate any responses to possible deficiencies or questions noted in the Staff Report. Mr. November agreed, as a prior Applicant, receiving the Staff Report at least a week before the meeting gives ample time to review and prepare comments or responses to questions from the Staff Report. Perhaps the deadline to turn in to Staff any Level 3 Application should be 21 days before the meeting the Applicant want's their project on the agenda of. That would give Staff 2 weeks to review and prepare the Staff Report which would then be distributed to the Commissioners and the Applicant 1 week before the meeting.

v. CM Salem agreed there should be a deadline and there is an obligation to make sure that the item is on the Agenda. If an Application is submitted within the timeframe proscribed, there is an obligation to hear that Application timely. Ms. McGovern added there was an internal meeting about the Equestrian Center project and it is ready to come before the next Tree Commission meeting. Mr. Flagg responded that 21 days was too much, 2 weeks should be enough and remain as flexible as possible. Mr. M. Robinson agreed 21 days is more than enough; there is a conceptual meeting with City Staff, then another meeting between the organization and City Staff to finalize plans and then the Application is submitted after that. City Staff has had 2 reviews prior to submission so 2 weeks is probably enough.

vi. Mr. Leon responded that City Staff will keep to whatever schedules the Commission assigns. However, this project was dropped off with 2 days to review and only 1 Staff member. Reviewing Tree Commission projects is not our sole job. Given the amount of revisions required it was not as simple as has been eluded too. Ms. Grandin will update the Level 3 Instructions so submissions must be 2 weeks before the next meeting and will list no time period for when the Commission needs to review it. Mr. Pappas committed to working with Mowing and Landscape Division to support the needs of the Commission.

vii. Anna Dooley – On November 14th at the Prime Osborn Center parking lot. Greenscape is celebrating Arbor Day by giving away over 2000 trees to citizens. This is a drive-thru event. A shredder is available for disposal of any documents, then the resident can chose the tree they would like from a menu of trees being offered then volunteers will load their selected tree into the Citizen's vehicle.

viii. Gabriel Dempsey – It is astonishing to me that it could take 3 years for the Equestrian Center, which direly needs trees, to take this much time. Ms. Dooley, our Executive Director, has spent untold hours over those 3 years working on this project, making the changes. So when everyone is talking about sending things in timely she's 1 person as well, she does not have a huge staff behind her, so whether she's sick or on vacation or where ever, she keeps going along. I am praying by next meeting the Equestrian Center gets done.

9. Adjournment – the next meeting is scheduled for Wednesday, December 16th.

Jacksonville

TREES TO OFFSET STORMWATER

Case Study 12: City of Jacksonville, Florida

Green Infrastructure Center

FLORIDA FOREST SERVICE

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

CITY OF JACKSONVILLE, FLORIDA

May 2019

Images and illustrations in the report are by the Green Infrastructure Center Inc. (GIC).

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Publication Date: May 2019

Jacksonville

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CONTENTS

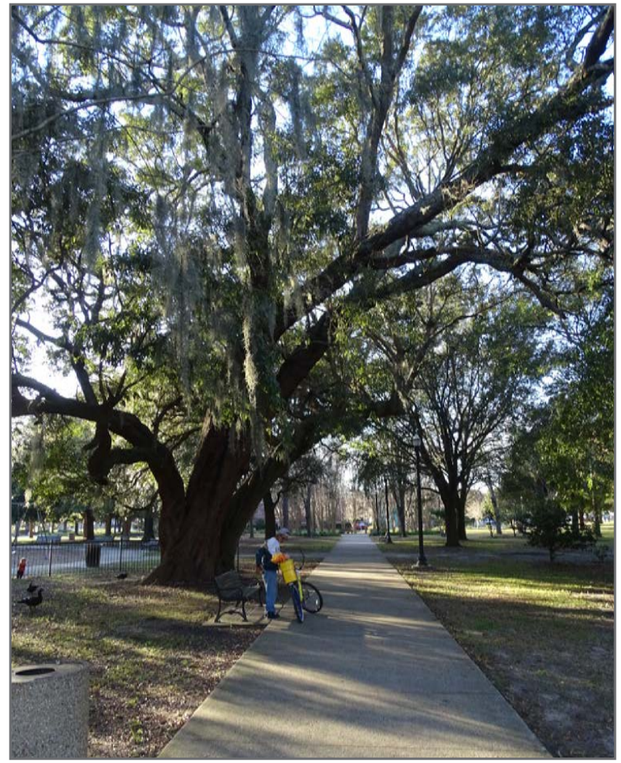
PROJECT OVERVIEW

The Trees to Offset Stormwater project is a study of the role of Jacksonville's tree canopy in taking up, storing and releasing water. This study was undertaken to assist Jacksonville in evaluating how to better integrate trees into their stormwater management programs. More specifically, the study covers the role that trees play in stormwater management and shows how the city can benefit from tree conservation and replanting. It also evaluates ways for the city to improve forest management as the city develops.

PROJECT FUNDERS AND PARTNERS

The project was developed by the nonprofit Green Infrastructure Center Inc. (GIC) in partnership with the states of Florida, Georgia, Alabama, South Carolina, North Carolina and Virginia. The GIC created the data and analysis for the project and published this report. This study is one of 12 pilot projects evaluating a new approach to estimate the role of trees in stormwater uptake. Florida received funding from the USDA Forest Service to determine how trees can be utilized to meet municipal goals for stormwater management. The Florida Forest Service administered the pilot studies in Florida and selected Jacksonville to be one of the three test cases. The other Florida municipalities selected were the City of Miami Beach and Orange County.

The project was spurred by the on-going decline in forest cover throughout the southern United States. Causes for this decline arise from multiple sources including land conversion for development, storm damages and inundation from sea level rise (SLR) and lack of tree replacement as older trees die. Many localities have not evaluated their current tree canopy, which makes it difficult to track trends, assess losses or set goals to retain or restore canopy. As a result of this project, Jacksonville now has baseline data against which to monitor canopy protection progress, measures of the stormwater and water quality benefits provided by its urban forest, and locations for prioritizing canopy replanting or retention.



Jacksonville's majestic trees frame the city's landscape

OUTCOMES

This report includes those findings and recommendations that are based on tree canopy cover mapping and analysis, the modeling of stormwater uptake by trees, a review of relevant city codes and ordinances, and input and recommendations for the future of Jacksonville. The city-wide canopy is 55.5 percent. However, as the city includes prior Duvall County lands, that figure also includes rural areas. Downtown canopy coverage is much lower, at just over 12 percent. To maintain a high quality of life and to reduce polluted stormwater runoff, the city will need to plant many more trees in the urban areas and reduce the conversion of rural forest land. This report discusses the benefits of the city's canopy and new tools the city can use to plan for a robust and extensive canopy for the future.

More specifically, the following deliverables were included in the pilot study:

- Analysis of the current extent of the urban forest through high resolution tree canopy mapping,
- Possible Planting Area analysis to determine where additional trees could be planted,
- A method to calculate stormwater uptake by the city's tree canopy,
- A review of existing codes, ordinances, guidance documents, programs and staff capabilities related to trees and stormwater management, and recommendations for improvement,
- Three community meetings to provide outreach and education,
- Presentation of the results of the project at regional, state and national conferences, and
- A case book detailing the study methods, lessons learned and best practices.

Watershed	*Current Tree Cover*
Black Creek-St. Johns River	**38.8%**
Doctors Lake-St. Johns River	**61.8%**
Lower Nassau River Frontal	**72.3%**
North Fork of Black Creek	**64.2%**
Ortega River-St. Johns River	**45.0%**
St. Johns River-Atlantic Ocean	**50.6%**
Thomas Creek	**75.4%**
Tolomato River	**51.6%**
Trout Creek-St. Johns River	**47.3%**
Upper St. Mary's River	**70.3%**
Citywide	**55.5%**

The project began in April 2018 and Jacksonville staff members have participated in project review, analysis and evaluation. The following city departments were involved in the project planning and review as the Technical Review Committee (TRC): Public Works Department - Mowing and Landscape Division, Parks Recreation and Community Services - Recreation and Community Programming Division, Planning and Development - Transportation Planning and Community Planning Divisions, Neighborhood Department - Environmental Quality Division, and the Finance and Administration Department. Several consultant, legal, and non-profit organizations also served on the TRC. These included England, Thims, and Miller, St. Johns Riverkeeper Inc., Greenscape of Jacksonville Inc., and the Public Trust - Environmental Legal Institute of Florida. Also representing the state of Florida on the TRC were the St. Johns River Water Management District and the Florida Forestry Commission's Urban and Community Forester and the forester assigned to Duval County.

COMMUNITY ENGAGEMENT

Three community meetings were held in the first quarter of 2019, one each in Riverside, San Marco and Springfield (workshops were open to all city residents from any area). Meeting topics included an overview of the project, top level recommendations for the city and community engagement. All individual comments from both meetings were provided to the city. Residents were also reminded that they can call 630City to request tree planting on public lands and rights of way areas in front of their homes. For the list of comments see Appendix C of this report.

Residents emphasized the importance of planting the next generation of trees because many of the city's trees are older, especially in the historic downtown neighborhoods. They also suggested that there are additional opportunities to convert vacant lands to city parks, as was done for Balis Park in San Marco. They also emphasized the importance of planting along creeks. Residents recognized the importance of partnerships and suggested the city coordinate with Greenscape's tree giveaway programs to plant in strategic locations.

Residents lamented the problem of lot clearing before development begins as it means that trees are not saved prior to designing a site plan. In terms of land cover, several residents pointed out the issue that the city's pavement regulations cover only rooftops but not patios or driveways so that lots could be very impervious with little to no vegetation to soak up stormwater. Parking standards were also noted as a cause of over-paving the landscape. Everyone noted the fear of storms as a driver for people to cut down or excessively prune their trees and suggested that more education is needed about the value of trees and how to minimize risk without unduly harming the urban forest.

Community members were presented with code/ ordinance or practice changes which GIC recommended to the City of Jacksonville. Meeting attendees were asked to choose the top changes they felt would most benefit the urban forest. Popular changes included:

- Work with developers to shrink the development footprint.
- Approve trees as stormwater management practices.
- Increase education about the benefits of trees for private citizens.
- Accommodate large trees in urban areas by providing adequate soil volume.
- Create an urban forest management plan.

Urban forester Richard Leon (right) listens to community ideas.

Residents review locations for tree plantings

GIC staff listen to community tree policy priorities.

Urban forester Richard Leon (right) explains that Jacksonville considers its trees as 'green infrastructure.'

Jacksonville can use this report and its associated products to:

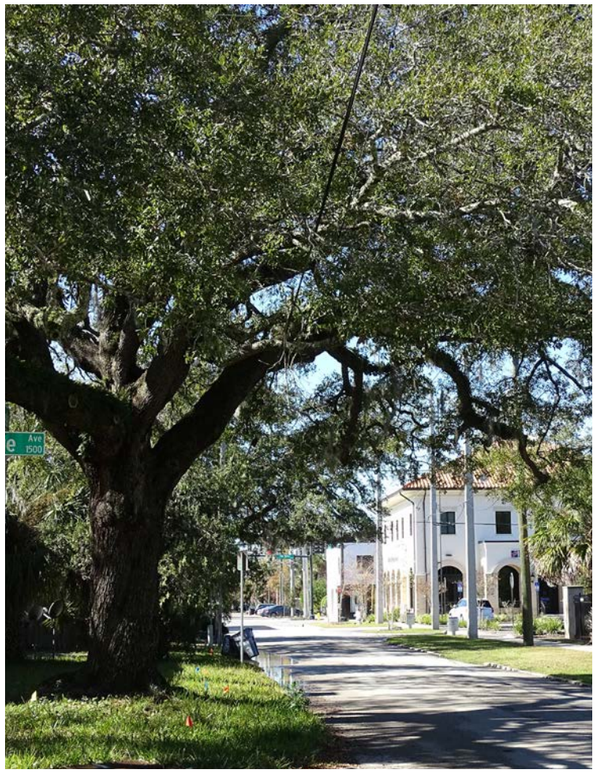
- *Set goals and develop a management plan for retaining or expanding its tree canopy by watershed or community planning areas.*
- *Improve management practices so trees will be well-planted and well-managed.*
- *Educate developers about the importance of tree retention and replacement.*
- *Motivate private landowners (residential, commercial, and institutional) to plant trees and protect them.*
- *Support grant applications for tree conservation projects.*

SUMMARY OF FINDINGS

The goal of this study was to identify ways in which water entering the city's municipal separate storm sewer system (MS4) could be reduced by using trees to intercept and soak up runoff. In order to determine the tree canopy in the city, satellite imagery was used to classify the types of land cover in Jacksonville. The resulting land cover maps show the city those areas where vegetative cover helps to uptake water and those areas where impervious land cover is more likely to result in stormwater runoff. High-resolution tree canopy mapping provides a baseline to assess current tree cover and to evaluate future progress in tree preservation and planting. An ArcGIS geodatabase with all GIS shape files from the study was provided to Jacksonville. For more on methods see page 16.

Tree canopy serves as 'green infrastructure' that can provide more capacity for the city's grey infrastructure (i.e. stormwater drainage systems) by absorbing or evaporating excess water before it runs off and enters storm drains. The model created shows how the city can reduce potential pollution of its surface waters, which can impact Total Maximum Daily Load (TMDL) outcomes and inform watershed plans.

The detailed land cover analysis created for the project was used to model how much water is taken up by the city's trees in various scenarios. This new approach allows for more detailed assessment of stormwater uptake based on the landscape conditions of the city's forests. It distinguishes whether the trees are growing in a more natural setting (e.g. a cluster of trees in an urban forest or forested wetland), a lawn setting, or over pavement, such as streets or sidewalks. The amount of open space and the condition of surface soils affect the infiltration of water.



One mature tree can absorb thousands of gallons of water per year.

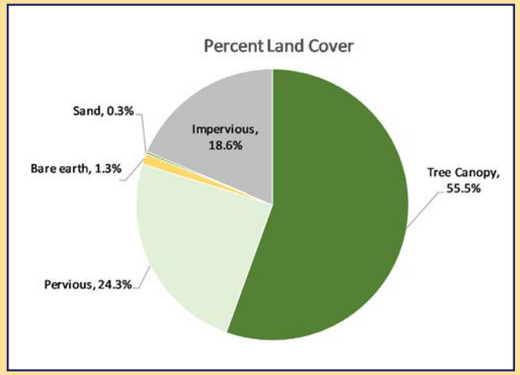
Citywide tree canopy is 55.5 percent. During an average volume rainfall event in Jacksonville (a 10-year storm), over 24 hours the city's trees take up an average of 1.377 billion gallons of water.

That's about 2,085 Olympic swimming pools of water!

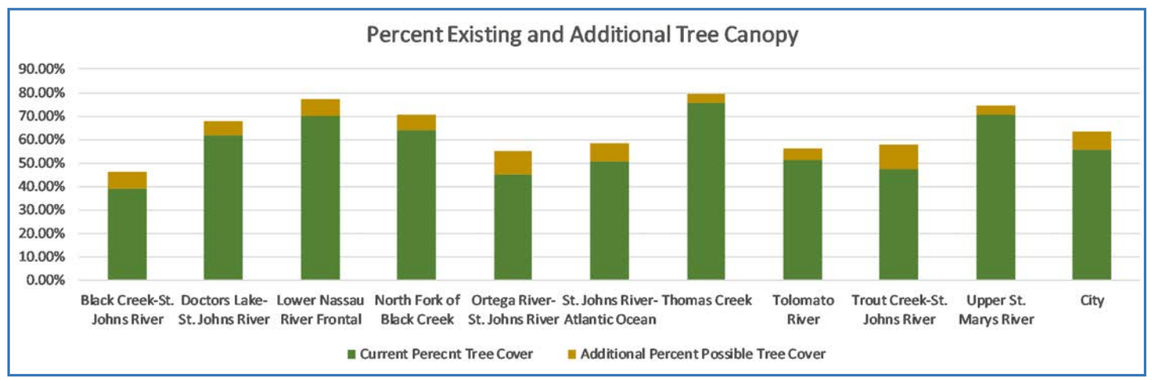
Jacksonville: Fast Facts & Key Stats

- Coastal community in northeastern Florida.
- County: Duval
- 2017 U.S. Census Population Estimate: ..... 892,062 people
- City Area— Jacksonville and Duvall County merged in 1968.
  - Total area: ..... 850 sq. mi.
  - Land: ..... 703 sq. mi.
  - Water: ..... 98 sq. mi.
  - Streams: ..... 705.7 miles*
  - Tree Canopy: ..... 250,337 acres (55%)

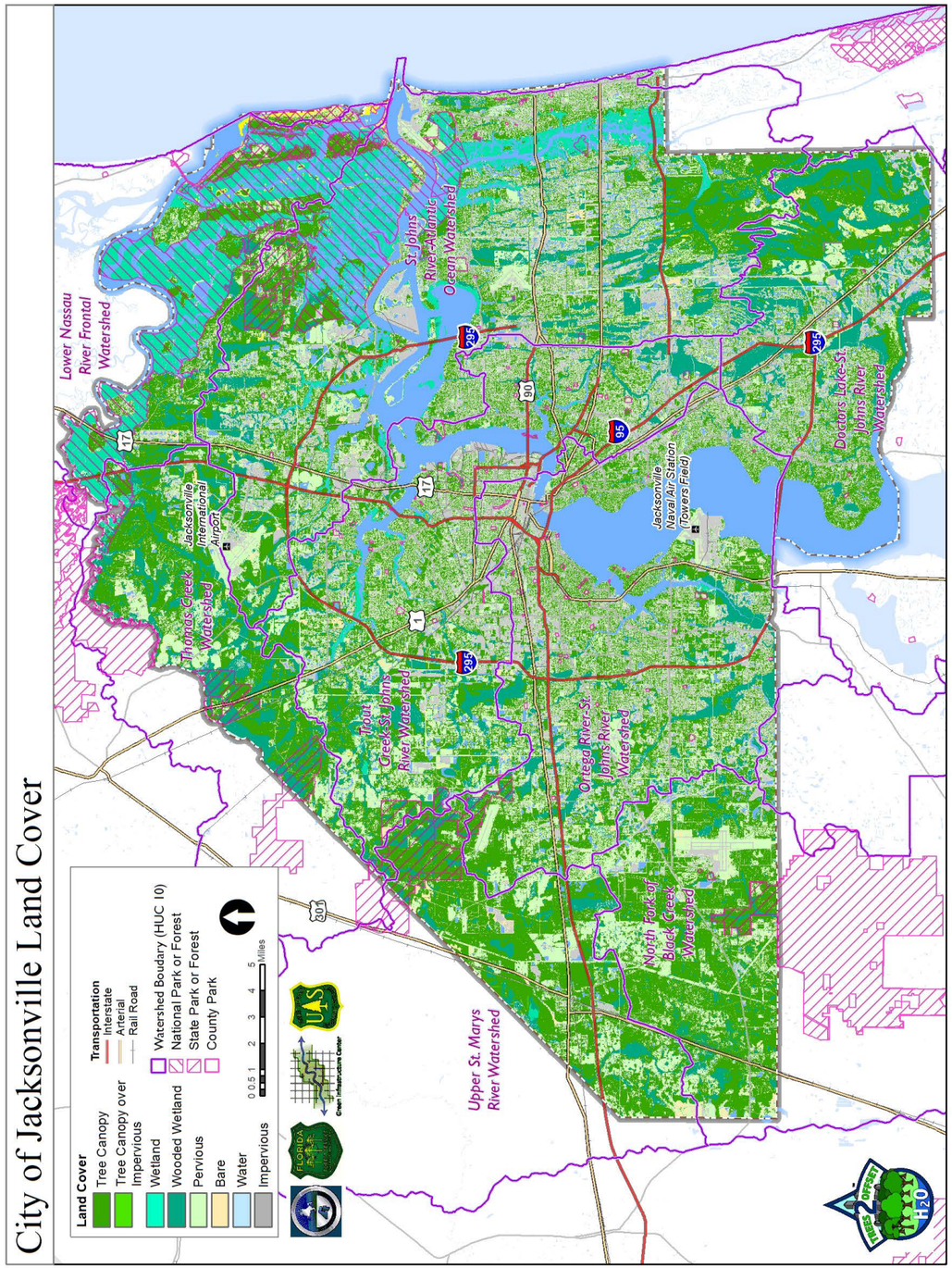
*Source: US Geological Survey



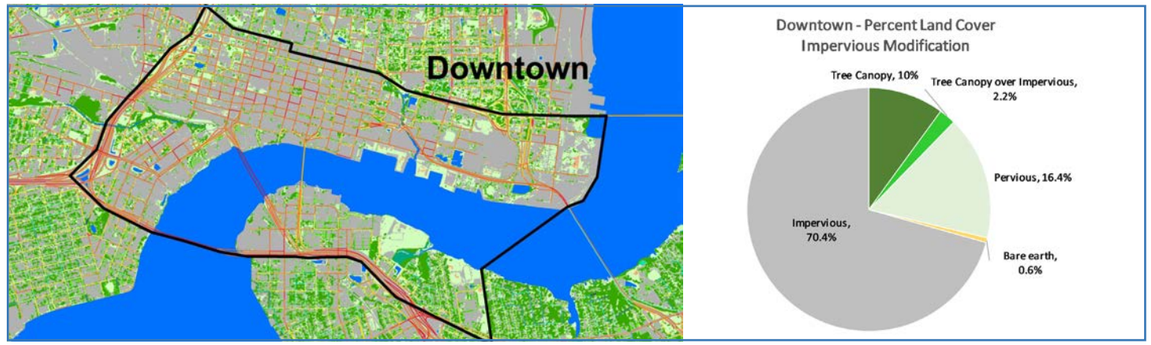
Citywide tree canopy is 55.5 percent.



Percent Tree Cover and Possible Planting Area by Watershed



This map shows the tree canopy of the city, which covers 55.5 percent of the area



Although tree canopy is 55.5 percent citywide, it is far less downtown as this clipped area of downtown shows canopy coverage of just 12.2 percent (not including water).

WHY PROTECT OUR URBAN FORESTS?

Today, municipalities are losing their trees at an alarming rate, estimated at four million trees annually nationwide (Nowak 2010). This is due, in large part, to population growth. This growth has brought pressures for land conversion to accommodate both commercial and residential development. Cities are also losing older, established trees from the cumulative impacts of land development, storms, diseases, old age and other factors (Nowak and Greenfield 2012). Although Jacksonville's canopy is 55.5 percent, it's important to understand that this coverage is not consistent across the city. For example, downtown canopy is only 12.2 percent. When considering the canopy coverage of 'the city' it is also important to realize that the City of Jacksonville includes rural areas that were once part of Duvall County, some of which are still rural. Large areas that are now used as plantation forests growing pine trees may convert to development in the future. As the city changes and grows, retaining tree canopy and intact forest land is critical to ensuring a healthful landscape for people and wildlife and for reducing risks from stormwater runoff and associated flooding.

Neighborhood trees.

Cities, such as Jacksonville, have lost natural forest cover and wetland areas as land has been converted or filled. The city may continue to see losses unless tree canopy retention on private lands becomes a key aim. And for older historic neighborhoods, canopy replanting is critical. As older trees die (or before they die), younger trees need to be planted to replace the older canopy. As noted above, canopy coverage downtown is about 12 percent. However, based on an analysis of existing open space, 3.6 percent more area downtown could possibly be planted, resulting in 15.6 percent canopy. For recommendations on how the city can better protect and manage its urban forests, see the Codes and Ordinances section of this report.

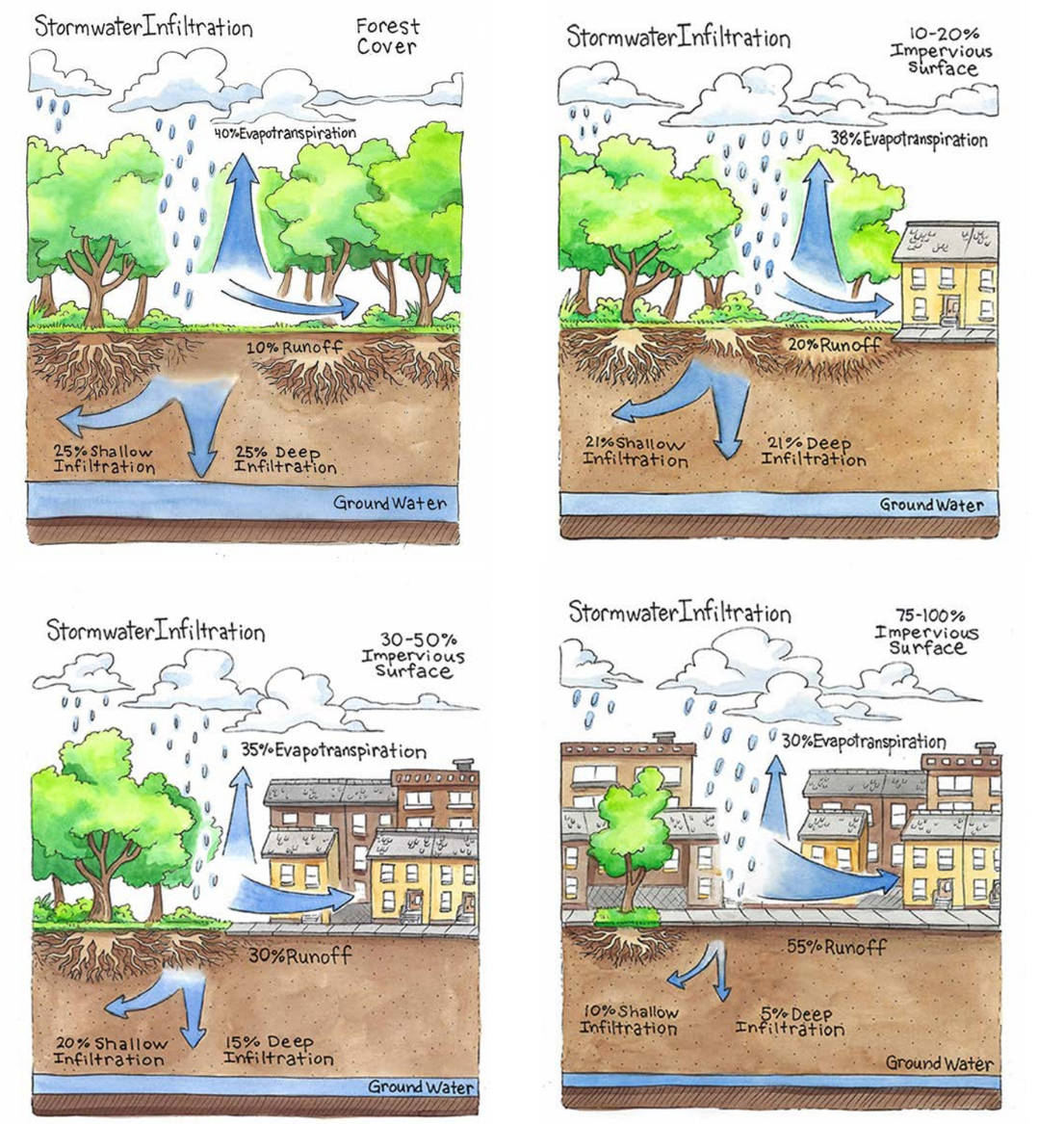
The purpose of this report is not to seek a limit on the city's development, but to help the city better utilize its tree canopy to manage its stormwater. Additional benefits of improved canopy include:

- fostering a healthful and vibrant community
- cleaner air
- aesthetic values
- reduced heating and cooling costs
- decreased urban heat island effects
- buffering structures from wind damage
- increased bird habitat
- fostering walkability and multimodal transportation
- increased revenue from tourism and retail sales

Assessment and inventory of trees is key to ensuring a healthy forest.

According to the U.S. Environmental Protection Agency (EPA), excessive stormwater runoff accounts for more than half of the pollution in the nation's surface waters and causes increased flooding and property damages, as well as public safety hazards from standing water. The EPA recommends a number of ways to use trees to manage stormwater in the book *Stormwater to Street Trees*.

In considering runoff, the amount of imperviousness is one consideration; the other is the degree and type of forested land cover, since vegetation helps absorb stormwater and reduces the harmful effects of runoff. As their urban forest canopies have declined across the south, municipalities have seen increased stormwater runoff. Unfortunately, many cities do not have a baseline analysis of their urban forests or strategies to replace lost trees.



Runoff increases as land is developed. Information source: U.S. EPA

In Jacksonville, with its tidal rivers and some impacts from sea level rise, the city has seen increasing flooding problems. The city has established action areas for particular focus to address coastal flooding along the shorelines of the St. Johns River and the Intracoastal Waterway, as well as the Trout, Broward, Ribault, Cedar, Ortega and Arlington rivers and Dunn, Pottsburg, Julington and Durbin creeks.

When forested land is converted to impervious surfaces, stormwater runoff increases. This increase in stormwater causes temperature spikes in receiving waters, increased potential for pollution of surface and ground waters and greater potential for flooding. When underground aquifers are not replenished, land subsides.

Another cause of canopy decline are the many recent powerful storms, such as Hurricanes Irma and Florence, that have affected the city with extensive flooding and tree canopy damage. As cities lose trees, they lose the ability to absorb and evaporate excess water. This study was funded to address canopy decline by helping municipalities monitor, manage and replant their urban forests and to encourage cities to enact better policies and practices to reduce stormwater runoff and improve water quality.

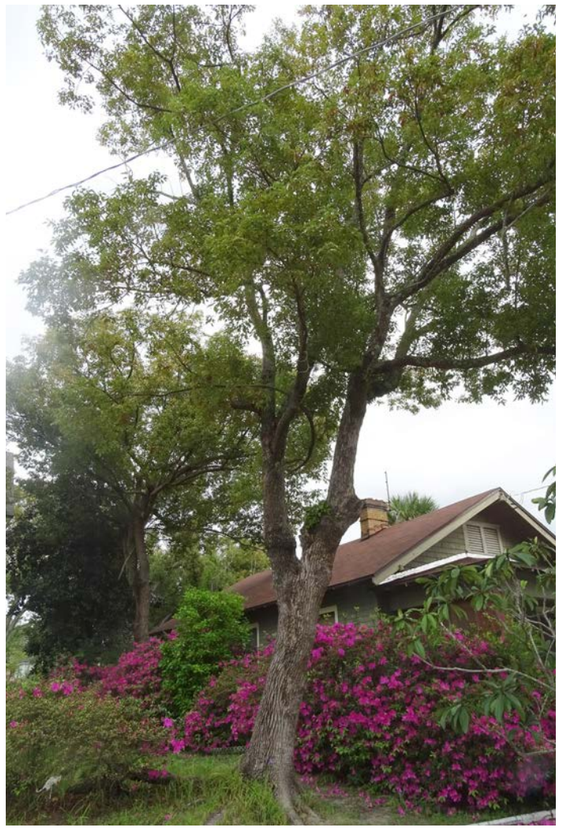
It is not just development and storms that contribute to tree loss. Millions of trees are also lost as they reach the end of their life cycle through natural causes. For every 100 street trees planted, only 50 will survive 13-20 years (Roman et al 2014). Even in older developed areas with a well-established tree canopy, redevelopment projects may remove trees. Choosing the wrong tree for a site or climate, planting it incorrectly, or caring for it poorly can all lead to tree canopy loss. It is also important to realize that an older, well-treed neighborhood of today may not have good coverage in the future unless young trees – the next generation – are planted.

Urbanizing counties and cities are beginning to recognize the importance of their urban trees because trees provide tremendous dividends. For example, urban canopy can reduce stormwater runoff anywhere from two to seven percent (Fazio 2010). According to Penn State Extension, during a one-inch rainfall

Planting the next generation of the city's canopy

Excess impervious areas cause hot temperatures and runoff. Some older paved areas predate regulations requiring stormwater management.

event, one acre of forest will release 750 gallons of runoff, while a parking lot will release 27,000 gallons! This could mean an impact of millions of gallons during a major precipitation event. While stormwater ponds and other management features are designed to attenuate these events, they cannot fully replicate the pre-development hydrologic regime. In addition, parts of Jacksonville are older and may lack stormwater management practices that are now required for new developments.



Trees in residential yards also help to soak up rainfall.

Trees filter stormwater and reduce overall flows. So planting and managing trees is a natural way to mitigate stormwater. Estimates from a Dayton, Ohio study found a seven percent reduction in stormwater runoff due to existing tree canopy coverage and a potential increase to 12 percent runoff reduction as a result of a modest increase in tree canopy coverage (Dwyer et al 1992). Conserving forested landscapes, urban forests, and individual trees allows localities to spend less money treating water through the municipal storm systems and reduces flooding. Each tree plays an important role in stormwater management. For example, based on the GIC's review of multiple studies of canopy rainfall interception, a typical street tree's crown can intercept between 760 gallons to 3000 gallons of water per tree per year, depending on the species and age. If a community were to plant an additional 5,000 such trees, the total reduced runoff per year could amount to millions of gallons or reduced runoff. This means less flooded neighborhoods and reduced stress on storm drainage pipes and decreased runoff into the city's rivers, marshes, bays, and the ocean.

Another compelling fiscal reason for planning to conserve trees and forests as a part of a green infrastructure strategy is minimizing the impacts and costs of natural disasters. Not only do trees reduce the likelihood of extensive flooding, they also serve to as a buffer against storm damages from wind.

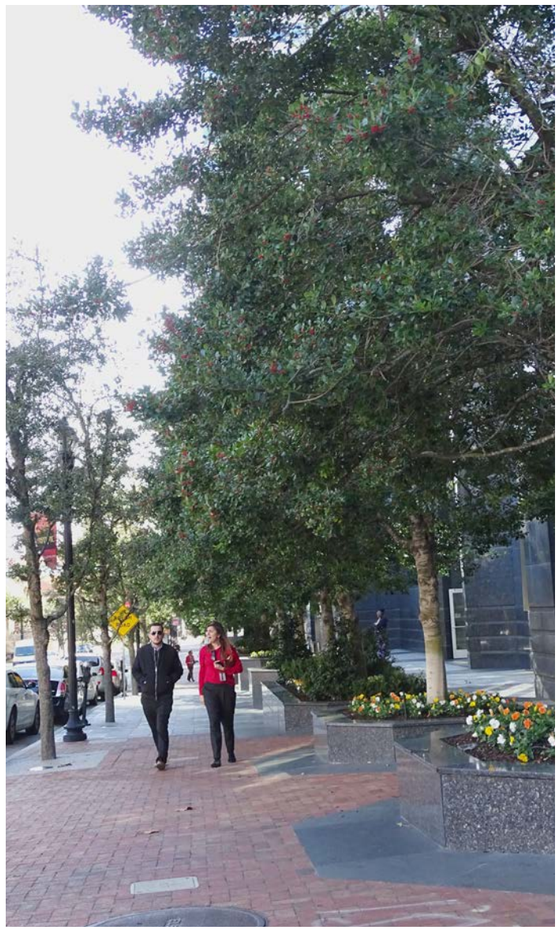
In urban areas, Geographic Information Systems (GIS) software is used to map the extent of the current canopy as well as to estimate how many new trees might be fitted into an urban landscape. A Possible Planting Area (PPA) map estimates areas that may be feasible to plant trees. A PPA map helps communities set realistic goals for what they could plant (this is discussed further on in the Methods Appendix).

There are many locations where trees can be added to soak up more water.

ADDITIONAL URBAN FOREST BENEFITS

Quality of Life Benefits

During Florida's hot summers, more shade is always appreciated. Tree cover shades streets, sidewalks, parking lots, and homes, making southern urban locations cooler, and more pleasant for walking or biking. An average summer daytime temperature reduction of 6.4 (degrees F) has been documented in association with a typical large tree in Florida (Souch and Souch 1996). In addition, trees absorb volatile organic compounds and particulate matter from the air, improving air quality, and thereby reducing asthma rates. Shaded pavement has a longer lifespan thereby reducing maintenance costs associated with repairing or replacing roadways and sidewalks (McPherson and Muchnick 2005).



Well treed areas encourage people to walk.

Children who suffer from Attention Deficit Hyperactivity Disorder (ADHD) benefit from living near forests and other natural areas. One study showed that children who moved closer to green areas have the highest level of improved cognitive function after the move, regardless of level of affluence (Wells 2000). Thus, communities with greener landscapes benefit children and reduce ADHD symptoms. Trees also cause people to walk more and walk farther. This is because when trees are not present, distances are perceived to be longer and destinations farther away, making people less inclined to walk than if streets and walkways are well treed (Tilt, Unfried and Roca 2007).

Communities with greener landscapes benefit children by reducing both asthma and ADHD symptoms.

Trees provide substantial shade and can make temperatures 12 degrees cooler for pedestrians and bicyclists.

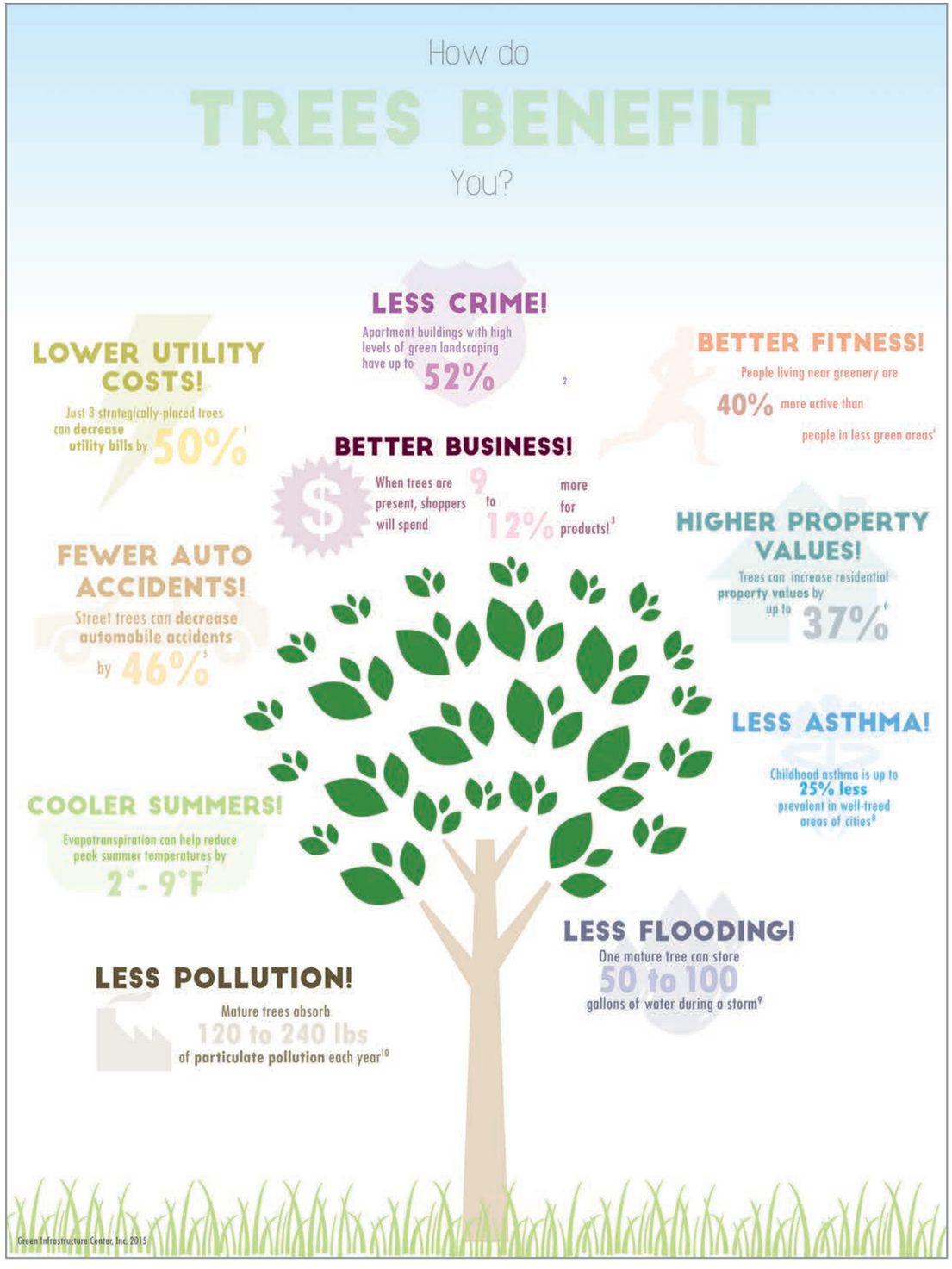
There are many places where trees can be added downtown for shade and beauty, especially along city creeks where trees can also filter runoff and reduce stream temperatures..

Economic Benefits

Developments that include green space or natural areas in their plans sell homes faster and for higher profits than those that take the more traditional approach of building over an entire area without providing for community green space (Benedict and McMahon 2006). This desire for green space is supported by a National Association of Realtors study which found that 57 percent of voters surveyed were more likely to purchase a home near green space and 50 percent were willing to pay 10 percent more for a home located near a park or other protected area. A similar study found that homes adjacent to a greenbelt were valued 32 percent higher than those 3,200 feet away (Correll et al. 1978).

Meeting Regulatory Requirements

Trees also help meet the requirements of the Clean Water Act. The Clean Water Act requires Florida to have standards for water quality. When waters are impaired they may require establishment of a Total Maximum Daily Load (TMDL) standard and a clean-up plan (i.e., Best Management Action Plan) to meet water quality standards. Since a forested landscape produces higher water quality by cleaning stormwater runoff (Booth et al 2002), increasing forest cover results in less pollutants reaching the city's surface and ground waters.



NATURAL ECOLOGY IN CHANGING LANDSCAPES

Natural history, even of an urbanized location, informs planting and other land-management decisions. Jacksonville is located in the Sea Island Flatwoods ecoregion with the southern area (lower Duval County) in the Eastern Florida Flatwoods region. For details see: https://www.plantmaps.com/interactive-florida-ecoregions-l4-map.php The Sea Island Flatwoods are characterized by flat plains on somewhat dissected marine terraces; swamps, and low gradient streams with sandy and silty substrates.

Flatwoods are an ecosystem maintained by wildfire or prescribed fire and are dominated by longleaf pine (*Pinus palustris*), and slash pine (*Pinus elliottii*) in the tree canopy and saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*) and other flammable evergreen shrubs in the understory, along with a high diversity of herb species. The land is comprised of wet and seasonably saturated mineral soils. The key factor maintaining this habitat type is recurring fire. When fires are suppressed, other woody plants invade the area.

Since much of Duval County is still rural, the landscape supports endemic (native) species found in the flatwoods ecosystem such as red-cockaded woodpeckers (Picoides borealis), and the Wood Stork (Mycteria Americana). Both the wood stork and red cockaded woodpeckers are listed as endangered species, as are the frosted flatwoods salamanders (Ambystoma cingulatum). Gopher tortoises (*Gopherus polyphemus*) and striped newts (Notophthalmus perstriatus) are also found in Duval County and are candidates for listing[1].

HISTORIC LAND COVER

The Timucuan Indians first settled along the St. John's River and may have reached a population of 150,000. However, the Timucuan declined rapidly following European settlement, followed by the French Huguenots in 1562, the Spanish, the English and others. Significant land changes occurred as English plantations sprang up along the St. John's River and cleared land for cotton, indigo, rice, and vegetables. Slave labor was used to do much of the difficult work on land clearing and farming. The British also harvested a great deal of lumber to supply their navies, as they did elsewhere along the Atlantic coast. The Spanish followed again, but did not hold the area. Eventually, Florida became a U.S. territory in 1822 and a state in 1845, by which time it was known for its cotton, lumber, vegetables and orange crops. The settlement was named for Andrew Jackson in 1822 in a petition to recognize the area as a port, and it eventually became a town in 1832.

The Treaty Oak (Quercus Virginiana) is an historic tree, approximately 250 years old, which is said to be the site of treaties signed between Native Americans and the Spanish.

Seceding from the U.S. during the Civil War, Jacksonville was occupied four times, and as a port city, played a large role in blockades during the war. Although the city suffered from consequences similar to many southern cities in the war's aftermath, tourism played a role in the city's growth as people sought the south's warmer climes, giving way to new hotels and eventually a land boom. Railroad development in the first half of the 20th century also spurred tremendous trade and expansion of the city. The addition of military bases also contributed to the city's growth and importance. In 1968 when Jacksonville and Duval County merged, it formed the largest city in the U.S. by land area. For a more detailed recounting of the city's history see http://www.coj.net/about-jacksonville/history.

Today, Jacksonville's downtown is booming with its restaurants, river fronts, the Museum of Contemporary art, the Cummer Museum and others, art and music festivals, and restaurants, as well as vibrant neighborhoods and the historic districts of Springfield, St John's Quarter and Riverside Avondale which showcase the city's cultural diversity. The city is also recognized for its many unique quality of life aspects and careers in rankings by US News (42nd/100 best places to live), and affordability and housing, (3rd best city to live in Florida, Movoto Real Estate Blog).

With its 337 city parks covering 80,000 acres, Jacksonville also offers abundant opportunities to enjoy the outdoors and support native species. City parks and trails, such as Betz-Tiger Point Preserve and the 120-acre Arboretum, are popular places to experience nature in the city and add to the city's livability scores.

[1] *Source: US Fish and Wildlife Service https://www.fws.gov/northflorida/CountyList/Duval.htm*

Jacksonville supports a vibrant and culturally-diverse landscape.

The arboretum provides education about native trees and a quiet retreat for residents.

GROWTH AND DEVELOPMENT CHALLENGES

Demands for space to meet the needs for housing, commercial, business, and transportation uses put strains on both the city's grey and green infrastructure. As an older city, there are areas that pre-date the 1987 Clean Water Act Amendments which require the treatment of stormwater runoff. Adding stormwater treatment for older areas is achieved by either retrofitting stormwater best management practices into the landscape, or adding them as properties are re-developed. Adding more trees is a best management practice that provides other benefits beyond stormwater uptake, such as shade, air cleansing and aesthetic values. Recommendations for improvements to better utilize trees to manage stormwater and to reduce imperviousness are found in the Codes, Policies and Practices section of this report.

Although Jacksonville sits at a higher elevation than many other Florida coastal cities, sea level rise will affect the city in the future. The Regional Community Institute of Northeast Florida developed a Regional Action Plan to prepare for sea level rise. For more see: https://www.nefrc.org/WiP/PDFs/Resource-Library/Regional-Action-Plan.pdf Although, Jacksonville enjoys higher elevations than many coastal cities, it is still subject to storm surges. A useful tool to look at those areas at risk based on elevation is found at https://coast.noaa.gov/digitalcoast/tools/slr

Planting a tree here would help absorb this standing water.

Reducing imperviousness and increasing vegetation are one way to ease the frequency of flooding because this limits the amount of water that needs to be drained by an already challenged storm drain system. Vegetation reduces water entering the system by intercepting, capturing and transpiring that water.

The requirements set forth by the Clean Water Act of 1972 for the Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES) permitting program, and subsequent amendments in 1987 regulating nonpoint source pollution, form the foundation for the city's stormwater management program.

The city contracts with ETM Corporation to manage its stormwater program and reporting requirements, and the city's NPDES Annual Report, which is reviewed and approved by the Florida Department of Environmental Protection (FDEP). Jacksonville has a Stormwater Utility which helps fund stormwater management improvements and the work of local stormwater action teams. The utility generates the revenue for maintaining and improving the city's stormwater management system and for achieving requirements to protect waterways.

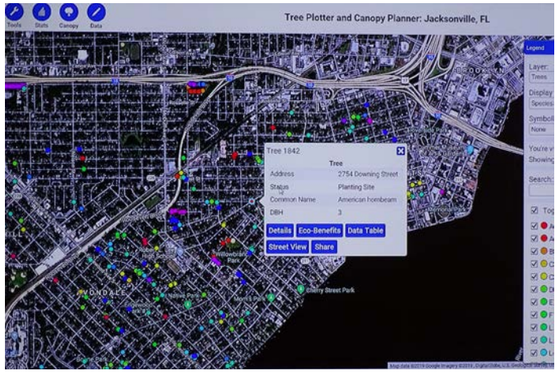
JACKSONVILLE'S RESILIENT FUTURE

Jacksonville is seeking to redevelop in ways that support a quality lifestyle for residents and visitors alike, while also meeting state and federal mandates for protecting air and water. For example, Jacksonville has embraced the Severe Repetitive Loss Program of the Federal Emergency Management Agency (FEMA). This program uses National Flood Insurance Program funds either to elevate flood-prone homes or to acquire these properties and convert them to open space to mitigate flooding impacts.

In February 2019, the city formed a Storm Resiliency and Infrastructure Development Review Committee to investigate additional ways for the city to become more resilient in the face of climate change, storms and stormwater challenges. That committee should review the recommendations in this report and utilize the stormwater calculator tool to plan for strategic forest conservation and replanting to address stormwater challenges.

Jacksonville has also developed better capacity to manage its urban forest and to share its tree planting work. In the past several years, the city has hired three new positions to manage its urban forest and its tree commission can identify ways to plant more trees. The city has a tree mapping tool for residents to track tree plantings and plans for new plantings: https://pg-cloud.com/JacksonvilleFL/ The city can use the data and maps from the Trees to Offset Water project to target where to plant trees to maximum stormwater mitigation.

Residents can make a difference in runoff by limiting pavement as this residence has done with a partially green driveway.



Jacksonville's canopy planner tool can be used to view and plan for public tree planting.

Planting more trees is key to reducing runoff.

ANALYSIS PERFORMED

This project evaluated options for how to best model stormwater runoff and uptake by the city's tree canopy. Its original intended use was for planning at the watershed scale for tree conservation. An example is provided on page XX. However, new tools created for the project allow the stormwater benefits of tree conservation or additions to be calculated at the site scale as well.

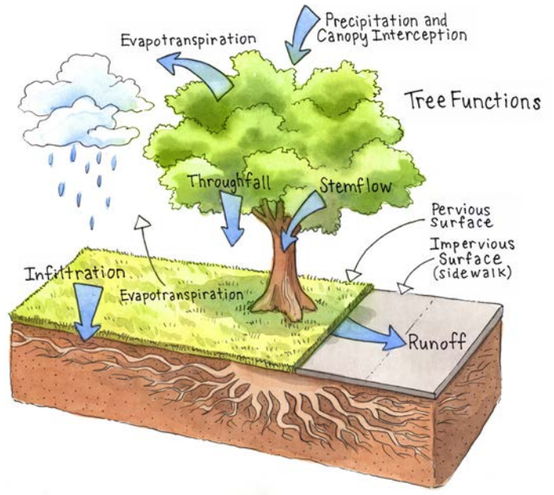
As noted, trees intercept, take up and slow the rate of stormwater runoff. Canopy interception varies from 100 percent at the beginning of a rainfall event to about three percent at the maximum rain intensity. Trees take up more water early on during storm events and less water as storm events proceed and the ground becomes saturated (Xiao et al. 2000). Many forestry scientists, as well as civil engineers, have recognized that trees have important stormwater benefits (Kuehler 2017, 2016). See diagram of tree water flow below.

METHOD TO DETERMINE WATER INTERCEPTION, UPTAKE AND INFILTRATION

This study used the Natural Resources Conservation Service (NRCS) TR-55 curve number method to calculate stormwater runoff. The TR-55 method calculates stormwater runoff and absorption for different land covers, e.g. pavement, lawn, forest. This approach is widely recognized and utilized by stormwater engineers to determine stormwater runoff volumes and most cities use the TR-55 curve numbers to generate expected runoff amounts for land cover changes. It also accounts for the infiltration rate for various soils.

Major factors determining CN are:

- The hydrologic soil group (defined by surface infiltration rates and transmission rates of water through the soil profile, when thoroughly wetted)
- Land cover types
- Hydrologic condition – density of vegetative cover, surface texture, seasonal variations
- Treatment – design or management practices that affect runoff



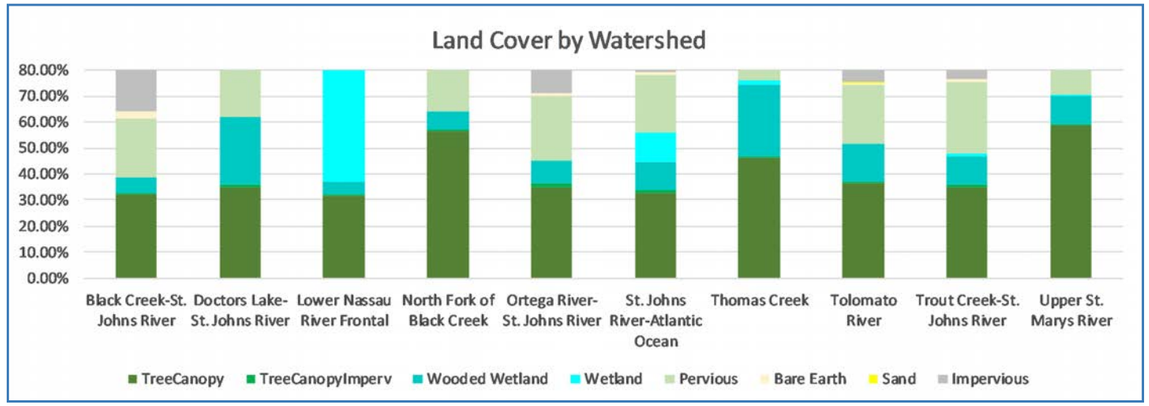
Trees and the Water Cycle

This study modified the TR-55 curve number equation to include a factor for canopy interception (see following equation). Trees capture some of the rainfall before it reaches the ground, while some of the rainfall goes through the branches (throughfall) and down the branches and trunk of the tree (trunk flow). Ordinarily, the runoff calculation is based on soils and ignores the role that trees play in rainwater interception and evaporation. Accounting for the role that trees play in capturing, absorbing and evaporating rainfall is critical in understanding how much water is running off the land and how much is retained.

A canopy interception factor is added to the runoff equation to account for the role trees play in interception of rainfall based on location and planting condition (e.g. trees over pavement versus trees over a lawn or in a forest). Tree canopy reduces the proportion of precipitation that becomes stream and surface flow, also known as water yield. Hynicka and Divers (2016) modified the water yield equation of the NRCS model by adding a canopy interception term (Ci) to account for the role that canopy plays in capturing stormwater, resulting in:

$$R = \frac{(P - C_i - I_a)^2}{(P - C_i - I_a) + S}$$

- Where R is runoff
- P is precipitation (inches)
- Ia is the initial abstraction for captured water, which is the fraction of the storm depth after which runoff begins
- S is the potential maximum retention after runoff begins for the subject land cover (S = 1000/CN – 10).
- Canopy interception (Ci) is subtracted from precipitation (P) to account for the water that trees take up.



In order to use the equation and model scenarios for future tree canopy and water uptake, the GIC first developed a highly detailed land cover analysis to account for the land conditions in which the trees are found (trees overhanging a parking lot versus trees over a lawn). This is important because rain falling though a tree (throughfall) onto a pervious surface, such as a lawn, can still be absorbed, while rain throughfall to a street will become runoff.

The stormwater runoff model provides estimates of the capture of precipitation by tree canopies and the resulting reductions in runoff yield. It takes into account the interaction of land cover and soil hydrologic conditions. The Trees and Stomwater Calculator Tool also be used to run 'what-if' scenarios, specifically losses of tree canopy from development and increases in tree canopy from tree planting programs.

The city can use the modified TR-55 CN from this study for its modeling and development design reviews, for watershed plans and for setting urban canopy goals. The Trees and Stomwater Calculator Tool makes it very easy for the city to change the curve numbers if they so choose. This project is also a tool for setting goals at the watershed scale for planting trees and for evaluating consequences of tree loss as it pertains to stormwater runoff.

The Trees and Stomwater Calculator Tool provided to Jacksonville allows the city to hypothetically add or reduce tree canopy to see what are the effects for stormwater capture or runoff. For example, during an average volume rainfall event in Jacksonville (a 10-year storm*), over 24 hours the city's trees take up an average of 1.377 billion gallons of water. That's about 2,085 Olympic swimming pools of water! As shown below, for a 10-year, 24-hour storm, a loss of 10 percent of the urban tree canopy would increase runoff by 253.5 million gallons, while increasing canopy coverage from the current 55.4 to 60 percent would decrease runoff by 465 million gallons and reduce loadings of Nitrogen, Phosphorus and Sediment by about 3 percent.

* A 10-year storm refers to the average recurrence interval, or a 10 percent chance of that level of rainfall occurring.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Jacksonville,FL				Urban Tree Canopy Stormwater Model										version April 22, 2019				
2																			
3																			
4																			
5																			
6																			
7																			
8						million gallons													
9		TOTALS	55.8%	15.4%	13,778.6	253.5	465.7	59.9%									2.9%	2.9%	2.9%
10			Statistics by Drainage Basin (current settings)						Variable							Variable	Statistics by Drainage		
11		Area	Current Tree Cover	Current Impervious Cover	Tree H20 Capture	Increased H2O w/xx% tree loss	Added H2O Capture w/xx% PPA	Tree Cover Goal	Pick an Event	Pick a loss scenario		Converted Land			Canopy Added	Enter % to be planted	Canopy Pollution Load % Reduction		
12			%		million gallons			%	Event	% UTC loss	% FOS Loss	% Imperv	PCA	PPA	% of Land	% of PPA	N	P	Sed
13	1	Black Creek-St. John	38.8%	35.7%	24.57	0.98	1.86	46%	10 yr / 24	10%	0%	40%	46.3%	7.5%	7.5%	100%	4.1%	4.1%	4.1%
14	2	Doctors Lake-St. Joh	61.8%	18.1%	1,779.38	7.44	60.05	67%	10 yr / 24	10%	0%	40%	68.2%	6.4%	4.8%	75%	2.9%	2.9%	2.9%
15	3	Lower Nassau River	72.3%	5.6%	465.25	1.48	12.86	76%	10 yr / 24	10%	0%	40%	80.0%	7.7%	3.9%	50%	1.1%	1.1%	1.1%
16	4	North Fork of Black (	64.2%	6.3%	2,137.17	66.18	49.95	67%	10 yr / 24	10%	0%	40%	70.5%	6.3%	3.1%	50%	1.9%	1.9%	1.9%
17	5	Ortega River-St. John	45.0%	28.9%	1,954.13	54.80	100.91	50%	10 yr / 24	10%	0%	40%	54.9%	9.8%	4.9%	50%	4.4%	4.4%	4.4%
18	6	St. Johns River-Atlan	50.6%	23.3%	2,399.51	18.65	91.58	55%	10 yr / 24	10%	0%	40%	58.8%	8.2%	4.1%	50%	2.9%	2.9%	2.9%
19	7	Thomas Creek	75.4%	3.5%	1,385.82	2.08	17.52	78%	10 yr / 24	10%	0%	40%	79.7%	4.2%	2.1%	50%	0.8%	0.8%	0.8%
20	8	Tolomato River	51.6%	24.7%	5.11	0.09	0.15	54%	10 yr / 24	10%	0%	40%	56.2%	4.6%	2.3%	50%	3.3%	3.3%	3.3%
21	9	Trout Creek-St. Johns	47.3%	24.0%	1,679.28	16.13	105.46	52%	10 yr / 24	10%	0%	40%	57.7%	10.4%	5.2%	50%	3.8%	3.8%	3.8%
22	10	Upper St. Marys Rive	70.3%	4.3%	1,948.42	85.67	25.32	73%	10 yr / 24	10%	0%	40%	74.7%	4.4%	2.2%	50%	1.4%	1.4%	1.4%

The calculator tool developed for this project allows the city to see the water uptake by existing canopy and model impacts from changes, whether positive (adding trees) or negative (removing trees).

The key finding from this work is that removal of mature trees generates the greatest impacts for stormwater runoff. As more land is developed in Jacksonville, the city should maximize tree conservation for maintenance of surface water quality and groundwater recharge. This will also benefit the city's quality of life by fostering clean air, walkability, and attractive residential and commercial districts.

This new approach allows for more detailed assessments of stormwater uptake based on the landscape conditions of the city's forests. It distinguishes whether the trees are within a tree cluster, a lawn setting, a forest, or over pavement, such as streets or sidewalks. Tree setting is considered because the condition in which the tree is living affects the amount of water the tree can intercept. The amount of open space and the condition of surface soils affect the infiltration of water. In order to determine these conditions, a detailed land cover assessment was performed as described following. The analysis can be used to create plans for where adding trees or better protecting them can reduce stormwater runoff impacts and improve water quality.

Community planting.

The key finding from this work is that removal of mature trees generates the greatest negative impact on stormwater runoff.

LAND COVER, POSSIBLE PLANTING AREA, POSSIBLE CANOPY AREA ANALYSIS

The land cover data were created using 2017 leaf-on imagery from the National Agriculture Imagery Program (NAIP) distributed by the USDA Farm Service Agency. Ancillary data for roads (from Jacksonville government), the Cooperative Land Cover (CLC) Map (Florida Natural Areas Inventory), and hydrology (National Wetlands Inventory and National Hydrography Dataset) were used to determine:

1) Tree cover over impervious surfaces, which otherwise could not be seen due to these features being covered by tree canopy; and
2) Wetlands not distinguishable using spectral/feature-based image classification tools.

In cities studied for this project, forested open space was identified as areas of compact, continuous tree canopy greater than one acre, not intersected by buildings or paved surfaces. The final classification of land cover consists of eight classes listed below. The Potential Planting Area (PPA) is created by selecting the land cover features that have space available for planting trees. (i.e., areas were the growth of a tree will not affect or be affected by existing infrastructure.) Of the eight land cover classes, only pervious (grass and scrub vegetation) is considered for PPA.

- Tree Canopy
- Tree Canopy over Impervious
- Wetland
- Wooded Wetlands
- Pervious
- Impervious
- Bare earth
- Sand
- Water

Next, these eligible planting areas are limited based on their proximity to features that might either interfere with a tree's natural growth (such as buildings) or places a tree might affect

Trees planted under power lines are often too large and require harmful trimming that can compromise tree stability and safety.

This shows what is currently treed (green) and areas where trees could be added (orange).

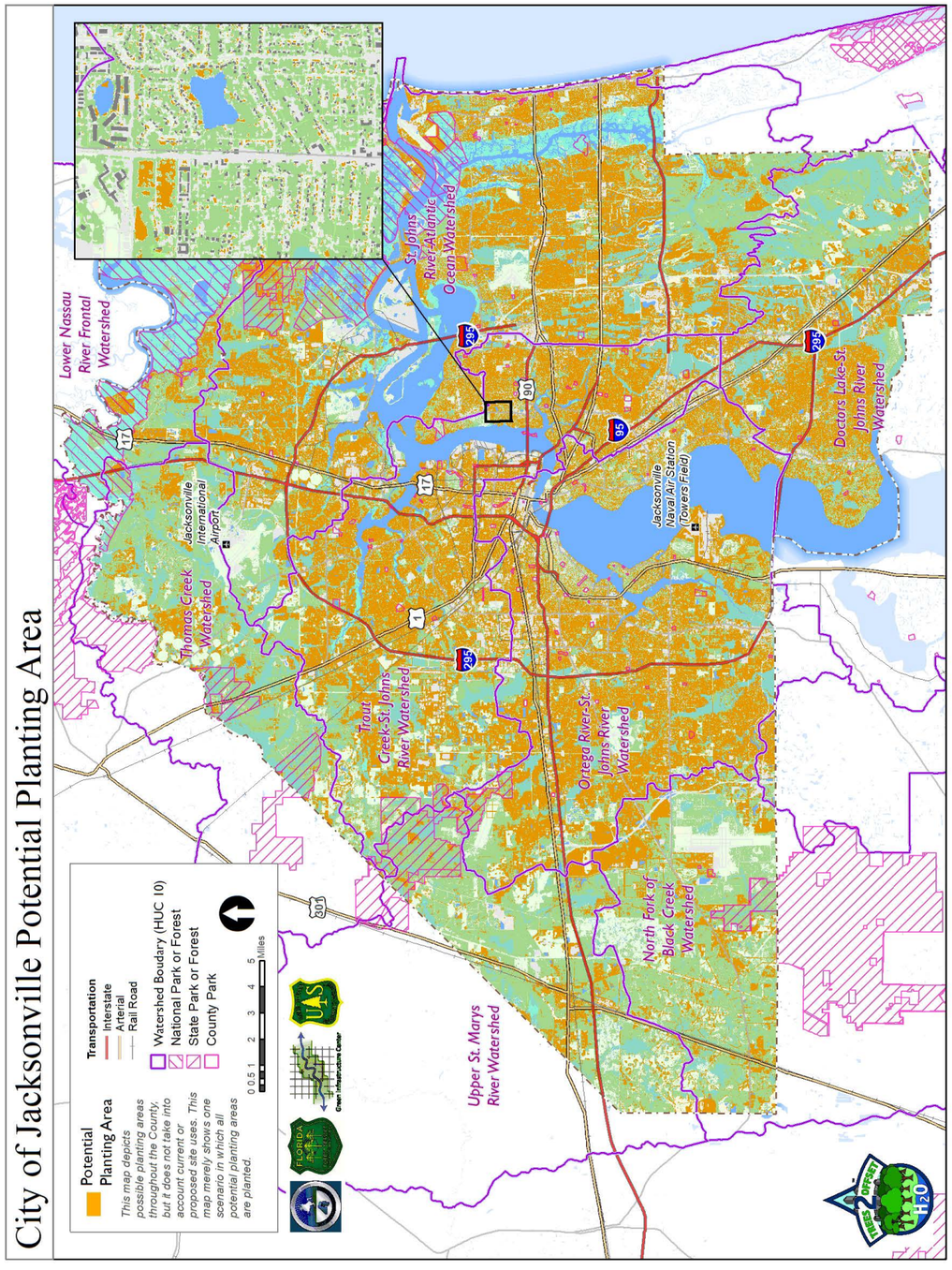
the feature itself, such as power lines, sidewalks or roads. Playing fields and other known land uses that would not be appropriate for tree cover are also avoided. However, there may be some existing land uses (e.g., golf courses) that are unlikely to be used for tree planting areas but that may not have been excluded from the PPA. In addition, the analysis did not take into account proposed future developments (e.g., planned developments) that would not likely be fully planted with trees. Therefore, the resulting PPAs represent the maximum potential places trees can be planted and grow to full size. A good rule is to assume about half the available space could be planted with trees.

Tree over street

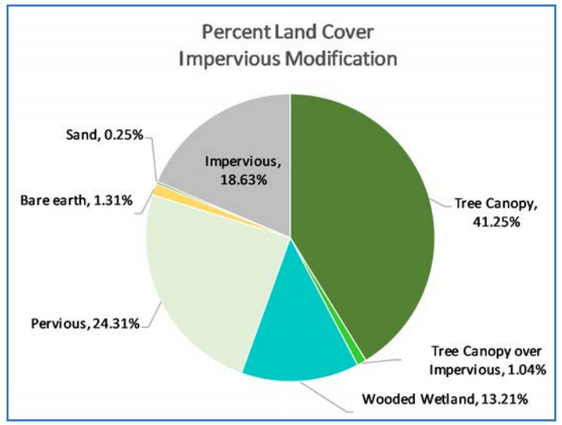
Trees over forest

Tree over lawn

Tree over parking lot



Potential Planting Area (PPA) shown in orange depicts areas where it may be possible to plant trees. All sites would need to be confirmed in the field and may be on private or public lands.



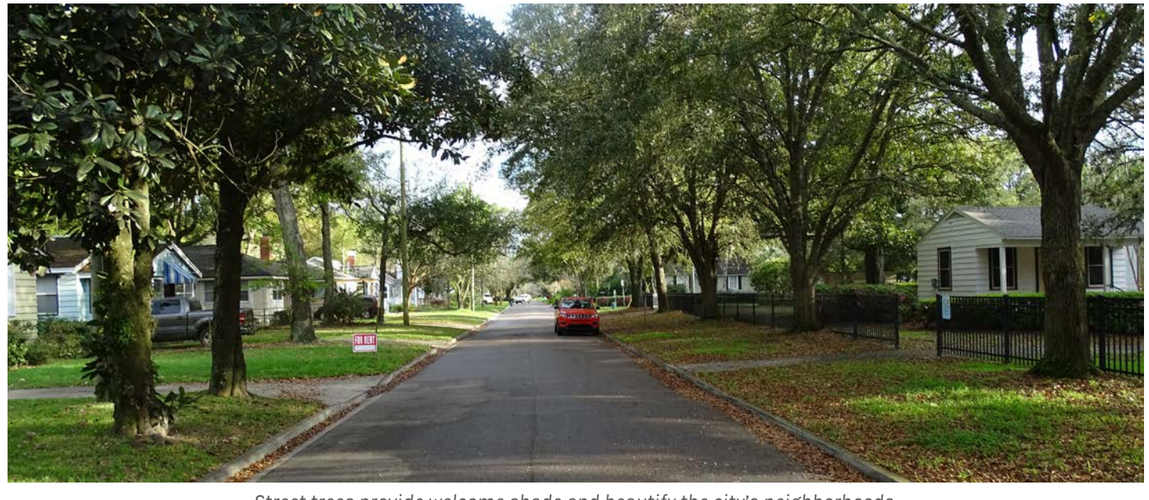
The Potential Planting Spots (PPS) are created from the PPA. The PPA is run through a GIS model that selects those spots where a tree can be planted depending on the size of trees desired. For this analysis, expected sizes of both 20 ft. and 40 ft. diameter of individual mature tree canopy were used with priority given to 40 ft. diameter trees (larger trees have more benefits). It is expected that 30 percent overlap will occur as these trees reach maturity. The result demonstrates a scenario where, if planted today, once the trees are mature, their full canopy will cover the potential planting area and overlap adjacent features, such as roads and sidewalks.

The Potential Canopy Area (PCA) is created from the PPS. Once the possible planting spots are selected, a buffer around each point that represents a tree's mature canopy is created. Similarly, the tree buffer radius is 20 ft. or 40 ft. diameter canopy for each tree. These individual tree canopies are then dissolved together to form the potential overall canopy area.

Potential Planting Spots (PPS)

Potential Canopy Area (PCA)

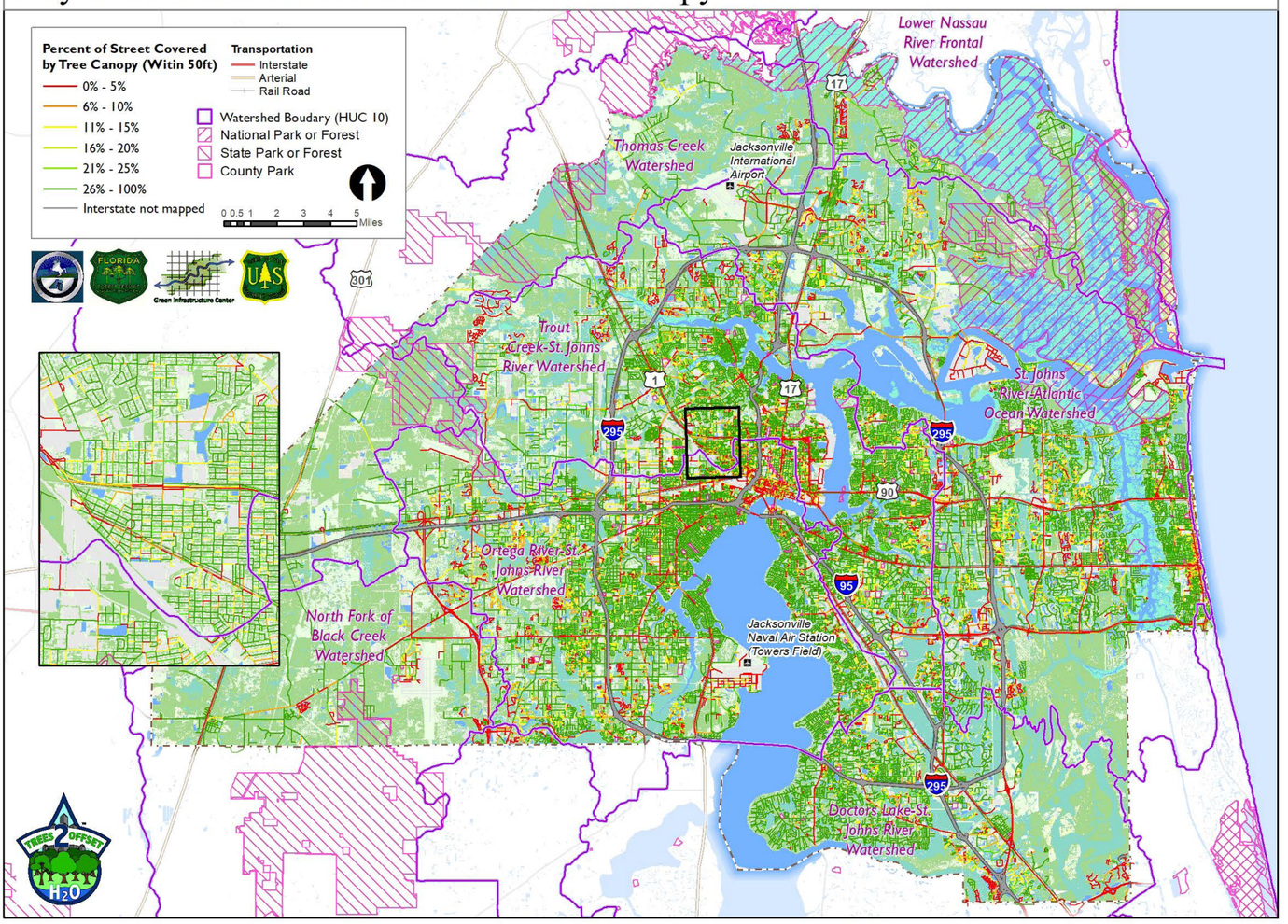
Percent Street Trees is calculated using the Land Cover Tree Canopy and road centerlines, which are buffered to 50 ft. from each road segment's centerline. The percent value represented is the percentage of tree cover within that 50 ft. buffer.



Street trees provide welcome shade and beautify the city's neighborhoods.

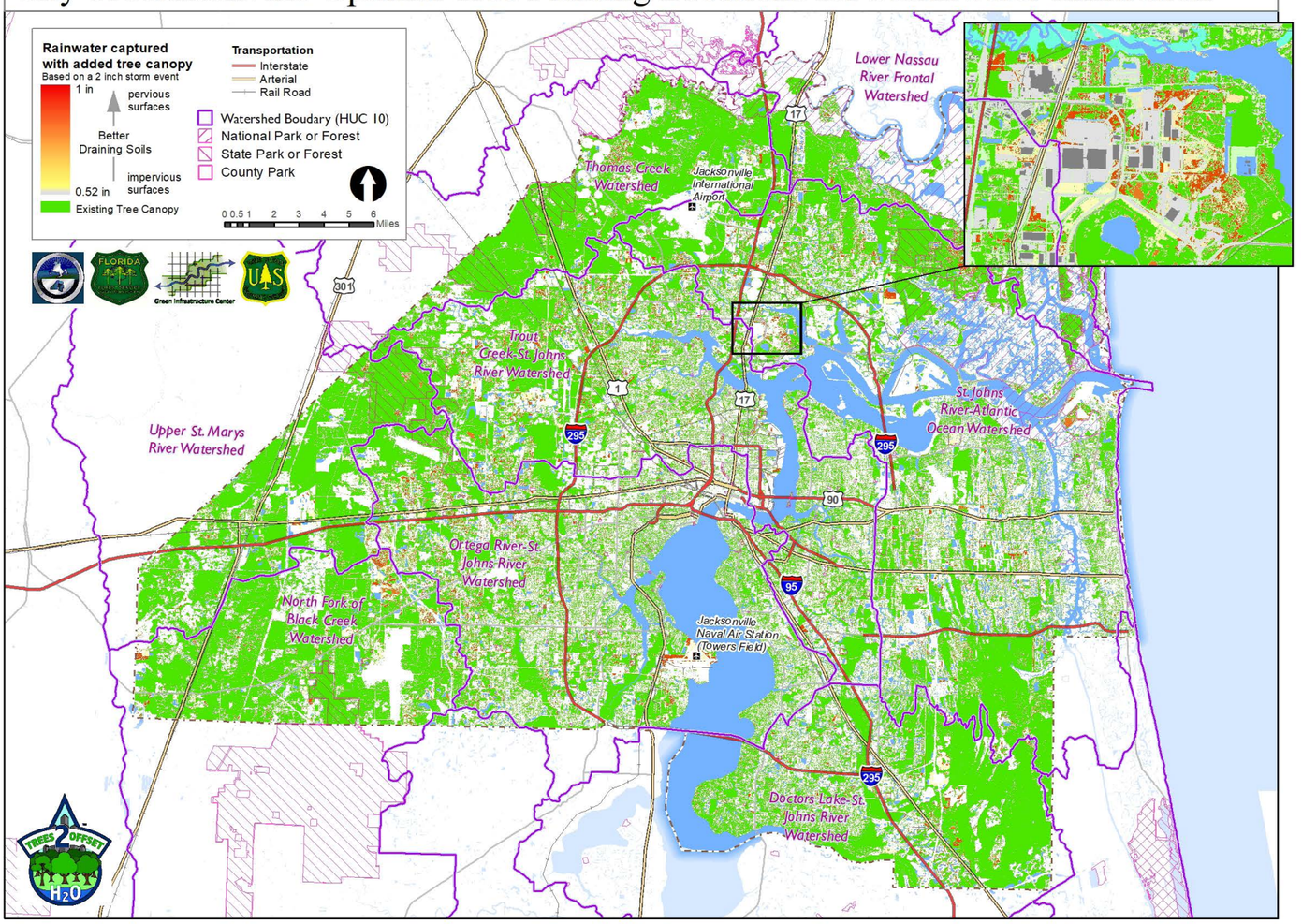
The street trees map shows which streets have the most canopy (dark green) and which have the least (red). Streets lacking good coverage can be targeted for planting to facilitate uses, such as safe routes to school or beautifying a shopping district.

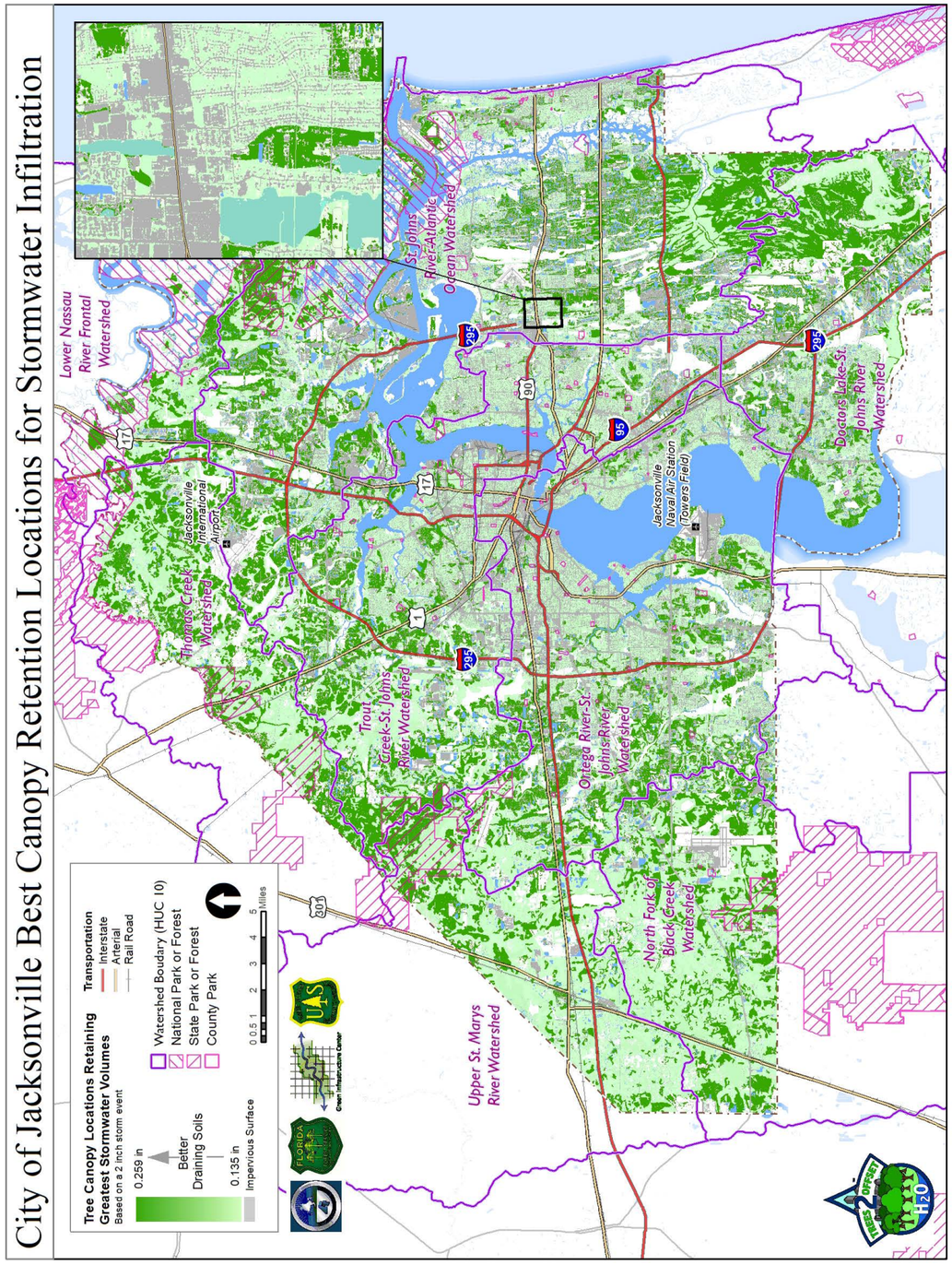
City of Jacksonville Percent Stree Tree Canopy



This map shows where tree planting will yield the greatest benefits for stormwater interception and filtration (darkest orange).

City of Jacksonville Optimal Tree Planting Locations for Stormwater Infiltration





This map shows where tree retention will yield the greatest benefits for stormwater interception and infiltration (darkest green).

See Methods Appendix for more details on mapping methodology.

CODES, ORDINANCES AND PRACTICES REVIEW

This review is designed to determine which practices make the city more impervious (e.g. too much parking required) and which make it more pervious (e.g. conserving trees or requiring open spaces). Documents reviewed during the codes, ordinances and practices analysis for the project include relevant sections of the city's current code that influence runoff or infiltration. Data were gathered through analysis of city codes and policies, as well as interviews with city staff, whose input was incorporated directly on the spreadsheet summary prepared by the GIC. The spreadsheet provided to the city lists all the codes reviewed, interviews held and relevant findings. A more detailed memo submitted to the city by GIC, also provides additional ideas for improvement.

Greenscape members are dedicated to community tree planting and education.

EVALUATION AND RECOMMENDATIONS

Points were assigned to indicate what percentage of urban forestry and planning best practices have been adopted to date by the city. The spreadsheet tool created for city codes can also serve as a tracking tool and to determine other practices or policies the city may want to adopt in the future to strengthen the urban forestry program or to reduce impervious land cover. A final report comparing all studied localities will be issued by GIC in 2019.

Jacksonville just celebrated its twenty-third year of being recognized as a 'Tree City USA' by the Arbor Day Foundation.

Jacksonville invests staff time and funds to manage its urban forest. The city has an Urban Forestry Program that is in charge of protecting the urban canopy through building permit reviews and inspections conducted across the city. The Public Works Department's Mowing and Landscape Division conducts maintenance on the trees in the public right-of-way.

The city just celebrated its twenty-third year of being recognized as a 'Tree City USA' by the Arbor Day Foundation, which means that it spends adequate funds per capita on tree care, it has a tree ordinance, and it practices tree management. Greenspace, a local nonprofit in Jacksonville and JEA, the electric authority, also hold tree giveaways to help residents plant and care for trees on private property.

The recommendations provided in this report are a way to increase the protections for, and size of, the forest in Jacksonville. As noted earlier, although the city's canopy is about 55.5 percent, it is not distributed equally citywide. Jacksonville is one of 12 localities in a six-state area of the Southeastern U.S. to be studied and the final city to be completed. A final report will compare Jacksonville to other cities and vice versa.

Trees donated for community planting are key to reforestation.

Top recommendations to improve forest care and coverage in Jacksonville listed in priority order include the following:

1. **Link the city's urban trees to stormwater infrastructure through city documents including the Comprehensive Plan, Land Development Procedures Manual, and Stormwater Design Manual.** These documents should discuss the role of urban forests in stormwater management. They should also credit trees as best management practices (BMPs) for stormwater management.

2. **Apply for aid when cleaning up and replanting trees post-storm.** The Federal Emergency Management Agency (FEMA) offers aid for not just storm clean up, but also for replanting, as long as the urban forest is clearly identified as a part of green stormwater infrastructure. The Florida Forest Service (FFS) Urban and Community Forestry staff is an excellent resource for more information on this topic. They are currently working with FEMA to develop the standards for how to account for tree loss.

3. **Use the GIC's stormwater uptake calculator to determine the benefits of maintaining or increasing tree canopy goals by watershed.** The calculator provided to Jacksonville allows the city to determine the stormwater benefits or detriments (changes in runoff) from adding or losing trees and calculates the pollution loading reductions for nitrogen, phosphorus and sediment.

4. **Discourage the practice of clear-cutting development sites in the City of Jacksonville.** Total loss of tree canopy on a site results in excess runoff and excess nutrient loading. In addition, housing developments that include green space and natural areas in their plans sell faster and for higher profits (Benedict and McMahon 2006). Higher profits result in increased tax revenue for a city. One way to avoid clear-cutting lots is by setting tree canopy coverage requirements or preventing clear cutting prior to submission of an approved site plan for a development. These requirements can be set as percentages by land use or by tree density requirements per land use/area.

5. **Remove the single-family dwelling exemption from tree removal permit ordinances.** The City of Jacksonville requires tree removal permits for most land uses but exempts single family dwellings. A significant portion of the city's land area is made up of single family dwellings. As such, a large portion of tree canopy can be lost. Having a permit requirement would allow the urban forester to educate the landowner and determine if there are alternatives to tree removal. This recommendation will require more staff for review, enforcement and education.

Total loss of tree canopy on a site that has been clear cut results in excess runoff and additional nutrient loading.

6. **Conduct a land cover assessment every four years to determine current canopy coverage and allow for comparison of tree canopy coverage change over time.** Keeping tree canopy coverages at levels that promote public health, walkability, and groundwater recharge is vital for livability and for meeting state water quality standards. Regular updates to land cover maps allow for this analysis and planning to take place. In addition, regular updates to an urban tree canopy accompanied by stormwater uptake calculations can be used to show FEMA that tree canopy is being used as green stormwater infrastructure.

7. **Require 600, 1,000 and 1,500 cubic feet soil volume planting requirements for small, medium, and large trees respectively for all tree plantings.** At a minimum, canopy trees require 1000 cubic feet of soil volume to thrive as recommended by the Environmental Protection Agency (Stormwater to Street Trees 2013). The City of Jacksonville currently does not require a minimum root zone volume. Instead, tree planting areas are specified. A lack of minimum root zone volume requirement can lead to inadequate soil volume for newly planted trees, contributing to suboptimal growth and health.

8. **Consult urban forestry staff at the beginning of development projects for city-owned and privately-owned land.** Urban forestry staff in most cities are consulted when tree survival has already been compromised. The city should involve urban forestry staff at the beginning of projects during preliminary design discussions so forestry staff can identify trees that should be preserved on-site along with tree preservation mechanisms.

9. **Inspect tree protection mechanisms prior to the beginning of construction.** In many cities, staff either do not inspect tree protection mechanisms or those who conduct inspections lack training in tree protection mechanisms, such as fencing, and arboriculture. City staff should be trained to inspect tree protection mechanisms and inspections should be required before construction can begin.

10. **Set clear measurable goals with actionable steps for the conserving the urban forest.** The city should create urban forestry goals by neighborhood, watershed, or community zone. Having a canopy goal allows cities to recognize when canopy is too low or and make a plan for how to bring the canopy up to desired levels or to prevent excessive tree loss. Having a goal also inspires community tree planting campaigns.

11. **Use the urban forestry budget calculator to determine funds needed to reach planting goals.** Planting and maintaining trees costs additional money, but is well worth the outcomes for ecosystem services that trees provide. The city should determine the goal for its tree canopy coverage level and allocate funds to achieve it over time. Most importantly, the city should encourage more planting on private property since most city land is in private ownership.

12. **Use the new infiltration maps to prioritize tree planting and tree retention areas.** GIC created infiltration maps to show where trees should be planted and retained for maximum stormwater benefit. Distribute these maps to community groups and use them within municipal government processes to guide tree planting efforts and encourage tree preservation.

13. **Plant trees around stormwater ponds.** Trees take up stormwater and do not threaten the structural integrity of stormwater ponds as long as they are not placed on the embankment. Trees also beautify a landscape and can allow a stormwater pond to function as an amenity and a stormwater management device. Tree roots also work to cleanse groundwater and can add shade to a stormwater pond to reduce algal growth.

14. **Incentivize LID and constructed green infrastructure (green roofs, bioswales, recessed planting beds etc.).** Most developers in Jacksonville are not utilizing LID (Low Impact Development) strategy BMPs, though the regulatory framework exists for them to do so. One way to encourage the use of LID BMPs is to green light – faster approval processes -- the development process when substantial LID methods are employed on-site.

15. **Develop a complete green streets policy.** Complete green streets allow for integration of stormwater management and aesthetic goals. By incorporating vegetation as an integral part of the design, green streets create and connect habitat, reduce urban heat island effect, help remove air pollutants, and promote walking and biking. The city should develop a green streets policy that includes the following elements: green infrastructure (trees and other vegetation), pedestrian space, bicycle lanes, and stormwater management.

16. **Develop an Urban Forest Management Plan (UFMP) for the city.** The city should include the current condition of the urban forest, the current maintenance costs, and options to achieve the urban tree canopy coverage goals in a citywide UMFP. A UFMP details a vision for urban tree canopy. It meshes local government and community interests to proactively manage the urban canopy and provide long term benefits. The city should develop an UFMP which describes the condition of the urban forest, the current maintenance costs, and the urban tree canopy coverage goals and methods to achieve them.

17. **Develop a Forestry Emergency Response Plan (FERP) for the city.** Forestry Emergency Response Plans (FERPs) are essential parts of any municipality's hazard mitigation and emergency management plans. Elements of FERPs should be given the same thought and attention paid to other aspects of emergency response management. FERPS should include the following sections: tree benefits, risk management and pre-disaster response, and post-disaster response and FEMA reimbursement processes for tree loss.

18. **Re-use urban waste wood.** Re-use of urban waste wood is an excellent way to engage the community, get them excited about urban forestry, and make a positive impact on the local economy. The USFS Southern Region funded the Southeast Urban Wood Exchange which connects urban wood producers and processors. Urban wood in Jacksonville can be posted to this site and used by locals. Access the website at: http://www.urbanwoodexchange.org/index.php.

BEST PRACTICES FOR CONSERVING TREES DURING DEVELOPMENT

Tree planting or preservation opportunities can be realized throughout the development process. A first step is to engage in constructive collaboration with developers. The city should hold predevelopment meetings for large sites that may disturb extensive acreage of urban forest. For example, mandate a pre-development conference for all sites that are three acres or more in size and require review by the urban forester. This allows conversations about options for tree preservation, arranging development so as to avoid large trees and tree clusters or shrinking impervious areas to avoid excessive land clearing.

It is necessary to actively promote the implementation of development designs that minimize the loss of urban forest canopy and habitat. The city should actively encourage site layouts that conserve trees. The GIC has found that economic arguments (real estate values for treed lots, access to open spaces, and rate of sales) are usually the most compelling way to motivate developers to take the extra effort and care to design sites and manage construction activities to manage tree conservation. This will facilitate site designs which save more trees and thereby require less constructed stormwater mitigation. Many developers are willing to cooperate in such ventures, as houses often sell for a premium in a well-treed development.

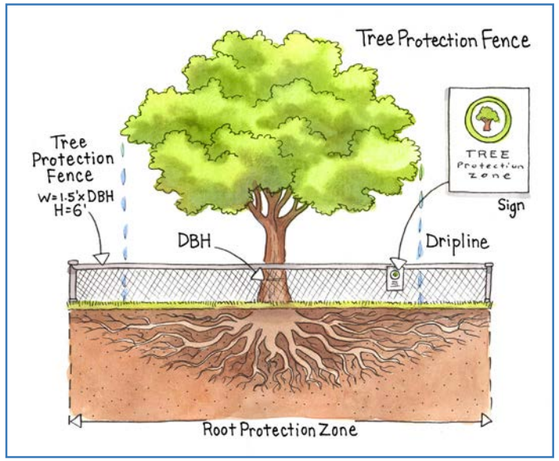
Tree Protection Fencing and Signage

The most common form of tree protection is tree protection fencing. It is a physical barrier that keeps people and machines out of tree's critical root zones during construction. However, some municipalities only require plastic orange fencing and wooden stakes. This type of fencing can be removed or trampled easily and makes tree protection efforts less effective. Trees slated for protection may suffer development impacts such as root compaction and trunk damage.

Small roots at the radial extents of the tree root area uptake water and absorb nutrients. Protection of these roots is critical for the optimal health of a tree. Jacksonville only requires fencing to protect the trunk and roots from 6' from the base of the tree and 50% of the land area under the dripline, which is inadequate for protecting tree roots. Instead, the city should require placement of tree protection fencing at a distance 1.5' times the tree's diameter at breast height (DBH) from the tree.

In high risk areas, such as trees near construction entrances, the city should require sturdy metal chain link fencing and use orange plastic fencing in lower risk areas such as along the tree line at the edge of a development property.

The city does not require tree protection signage. Tree protection signage provides information about what can and cannot occur in tree protection zones. Tree protection signage communicates how work crews should understand and follow tree protection



Tree Protection Fence and Signage

requirements. It also informs construction crews and citizens about the consequences of violating city code. Construction crew members may not understand that building materials may not be placed in tree protection zones and that moving the protective fencing around the tree is never permitted. The city should design a standard tree protection sign which summarizes the do's and don'ts of working near and around tree protection zones. Additional training may be helpful to ensure that developers comply with the city's tree ordinances and understand how to protect trees during construction.

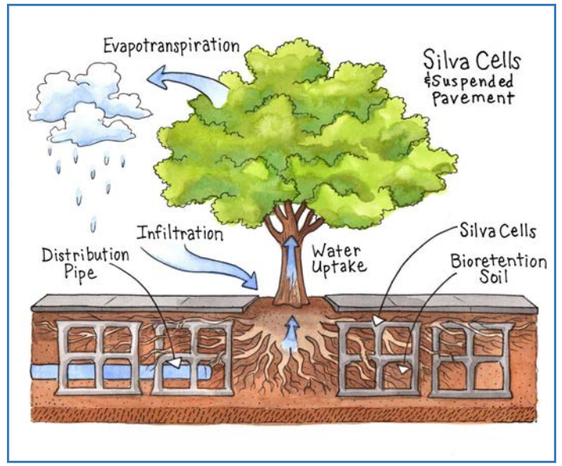
This downtown tree does not have enough room underground to support its roots and the tree is not healthy. The city can invest in better tree wells to ensure long term survival.

TREE PLANTING

In urban environments, many trees do not survive to their full potential life span. Factors such as lack of watering or insufficient soil volume and limited planting space put stresses on trees, stunt their growth and reduce their lifespans. For every 100 street trees planted, only 50 will survive 13-20 years (Roman et al 2014). This means that adequate tree well sizing standards are a critical factor in realizing the advantages of a healthy urban forest. At a minimum, large canopy trees require 1000 cubic feet of soil volume to thrive. In areas where space is tighter or where heavy uses occur above, 'Silva cells' can be used to stabilize and direct tree roots towards areas with less conflicts (e.g. away from pipes). Permeable pavers above ground also allow more water to reach tree roots and they also reduce runoff.

In addition, large trees should not be planted where they may interfere with overhead lines. These and other practices, implemented to provide long term care, protection and best planting practices for the urban forest, will help ensure that investments in city trees will pay dividends for reducing stormwater runoff, as well as cleaner air and water, lower energy bills, higher property values and natural beauty long into the future.

Too large a tree was planted under a powerline.



Silva Cells and Suspended Pavement

Photo: Cummer Museum

Cummer Museum's permeable parking spots.

Photo: Cummer Museum

Permeable pavers in the Cummer Museum's parking lot allow water to infiltrate to the soil and reduce runoff while watering tree roots.

The city's trees are our green infrastructure!

CONCLUSION

Adapting codes, ordinances and municipality practices to use trees and other native vegetation for greener stormwater management will allow Jacksonville to treat stormwater more effectively. Implementing these recommendations will significantly reduce the impact of stormwater sources (impervious cover) and benefit the local ecology by using native vegetation (trees and other shrubs) to uptake and clean stormwater. It will also lower costs of tree cleanup from storm damages, since proper pruning or removal of trees deemed to be 'at risk' can be done before storms occur.

Jacksonville should use the canopy map and updates to track change over time and to set goals for increasing canopy by neighborhood and by planning area. Jacksonville now has the data and tools to plant trees in the most strategic locations and to preserve those trees that are doing the best work for stormwater management. The city can also consider investing more of its tree fund for increasing the size of tree wells and providing better structural support for trees in difficult places. The city can use the canopy data, analysis and recommendations and stormwater calculator tool to continue to create a safer, cleaner, cost-effective and more attractive environment for all.

Jacksonville's 337 parks covering 80,000 acres offer abundant opportunities to enjoy the outdoors and support wildlife.

The Jacksonville Arboretum offers residents a peaceful setting to appreciate the city's trees.

APPENDIXES

APPENDIX A: TECHNICAL DOCUMENTATION

This section provides technical documentation for the methodology and results of the land cover classification used to produce both the land cover map and potential planting scenarios for Jacksonville.

Land cover classifications are an affordable method for using aerial or satellite images to obtain information about large geographic areas. Algorithms are trained to recognize various types of land cover based on color and shape. In this process, the pixels in the raw image are converted to one of several types of pre-selected land cover types. In this way, the raw data (i.e. the images) are turned into information about land cover types of interest, e.g. what is pavement, what is vegetation? This land cover information can be used to gain knowledge about certain issues; for example: What is the tree canopy percentage in a specific neighborhood?

Land Cover Classification

The National Agricultural Imagery Project (NAIP) creates new aerial imagery for Florida every few years. Urban areas for this project were mapped using the 2015 NAIP imagery (completed by Plan-It Geo). The NAIP 2017 Leaf-on imagery (4 band, 1-meter resolution) was used for the land cover classification of areas outside of city limits. In addition, the 2015 data were updated using a land cover classification from 2017 NAIP image to replace areas identified as significantly changed. For example, construction sites and large clearing that appear to be changing from plantation forest to something else were re-examined and reclassified. The full set of NAIP data were acquired through the Earth Resources Observation and Science (EROS) Center of the U.S. Geological Survey.

Pre-Processing

The NAIP image tiles were first re-projected into the coordinate system used by the city.

NAD_1983_2011_StatePlane_Florida_East_FIPS_0901_Ft_US
WKID: 6438 Authority: EPSG

Projection: Transverse_Mercator
False_Easting: 656166.6666666665
False_Northing: 0.0
Central_Meridian: -81.0
Scale_Factor: 0.9999411764705882
Latitude_Of_Origin: 24.33333333333333
Linear Unit: Foot_US (0.3048006096012192)

Geographic Coordinate System: GCS_NAD_1983_2011
Angular Unit: Degree (0.0174532925199433)
Prime Meridian: Greenwich (0.0)
Datum: D_NAD_1983_2011
Spheroid: GRS_1980
Semimajor Axis: 6378137.0
Semiminor Axis: 6356752.314140356
Inverse Flattening: 298.257222101

Supervised Classification

The imagery was classified using an object based supervised classification approach. The ArcGIS extension Feature Analyst was used to perform the primary classification with a "bull's eye" object recognition configuration to identify features based on their surrounding features. Feature Analyst software is an automated feature extraction extension that enables a GIS analyst to rapidly and accurately collect vector feature data from high-resolution satellite and aerial imagery. Feature Analyst uses a model-based approach for extracting features based on their shape and spectral signature.

For better distinction between classes, an NDVI image was created. The NDVI image along with the source NAIP bands (primarily 4, 1 and 2) were used to identify various features where they visually matched the imagery most accurately.

Post-Processing

The raw classifications from Feature Analyst then went through a series of post-processing operations. Planimetric data were also used at this point to improve the classification. Roads, sidewalks, and trails were "burned in" to the raw classification (converted vector data to raster data, which then replaced the values in the raw classification). The 'tree canopy' class was not affected by the burn-in process, however, because tree canopy can overhang streets. These data layers were also used to make logic-based assumptions to improve the accuracy of the classification. For example, if a pixel was classified as 'tree canopy,' but that pixel overlaps with the roads layer, then it was converted to 'Tree Cover over Impervious.'

The final step was a manual check of the classification. There was confusion in the industrial plantation/ agriculture areas; since many are in transition from agriculture to other land uses, data from various sources including the Florida Cooperative Land Cover Map (CLC) were used to verify and edit. National Land cover data were used for reference in defining swamp and water bodies. Wooded wetlands where identified using Lidar data (where vegetation above 12-ft feature height then the area was considered Wooded Wetland if over Wetland in the NHD dataset).

Potential Planting Area Dataset

The Potential Planting Area dataset has three components. These three data layers are created using the land cover layer and relevant data in order to exclude unsuitable tree planting locations or where it would interfere with existing infrastructure.

1. **Potential Planting Area (PPA)**
2. **Potential Planting Spots (PPS)**
3. **Potential Canopy Area (PCA)**

The Potential Planting Area (PPA) is created by selecting the land cover features that have space available for planting trees, then eliminating areas that would interfere with existing infrastructure.

- **Initial Inclusion** selected from GIC created land cover
  - Pervious surfaces
  - Bare earth
- **Excluded Land Cover Features**
  - Existing tree cover
  - Water
  - Wetlands
  - Impervious surfaces
  - Ball fields (i.e.: baseball, soccer, football) where visually identifiable from NAIP imagery. Digitized by GIC.
- **Exclusion Features:** (buffer distance)
  - Roads areas (10 ft.)
  - Driveways (10ft)
  - Railroads (10ft)
  - Structures (10ft)
  - Storm pipes (10ft)
  - Waterlines (10ft)
  - Sewer lines (10ft)
  - Power lines and other identifiable utilities (10ft)

Potential Planting Spots

The Potential Planting Spots (PPS) are created from the PPA. The potential planting areas (PPA) is run through a GIS model that selects spots a tree can be planted depending on the size tree's that are desired. Tree planting scenario was based on a 20 ft. and 40 ft. mature tree canopy with a 30 percent overlap.

Potential Canopy Area

The Potential Canopy Area (PCA) is created from the PPS. Once the possible planting spots are given a buffer around each point, this represents a tree's mature canopy. For this analysis, they are given a buffer radius of 10 or 20 ft. that results in 20 and 40 ft. tree canopy.

NAIP Image 2016

Potential Planting Area (PPA)

Potential Planting Spots (PPS)

Potential Canopy Area (PCA)

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TREE PLANTING

Planting the next generation of trees is very important – put a big emphasis on this!

Show the percent of public versus private land. {Note: this is too difficult to show on a map of this scale but the city has this information}

The Right of Way on Main Street has a faulty irrigation system and the trees are suffering. The tree planting boxes are 4' x 4' and are too small. [City staff noted that it is difficult to keep a poorly designed project functioning when the tree wells are inadequately sized.] Another resident stated this was also a problem at State and Union streets.

Look at the option to convert more empty lots into parks or pocket parks (especially treed lots). For example, Balis Park in San Marcos was donated.

Compensate the city for the loss of removed trees.

Planted buffer legislation is coming. Different widths of buffers require planting standards (e.g. 20')

Greenscape has a tree giveaway option. Coordinate with them to plant in key areas.

Focus on planting trees along creeks.

Get away from using stormwater ponds as they take up a lot of land! (Use other infiltration methods = trees)

REDUCE IMPERVIOUSNESS

The Bartrum area is losing trees rapidly

Look at the problem of 'total lot clearing' (removing all land on a site prior to development)

In Springfield, new driveways have to be ribbon drives (two strips of concrete rather than paving the entire thing) but that is only for the historic district.

Impervious lot coverage in the city is restricted but the regulations cover only the house or other built structures but not patios or driveways.

Eliminate downtown minimum parking statutes (requires too much impervious area).

The Cummer Museum has a permeable parking lot – highlight this!

EDUCATION

There is a fear of falling trees from storms. Teach residents how to care for trees to minimize risk.

Share information on the values of trees with the average homeowner.

There are other values of native plants such as for pollinators.

Why were non-native plants installed under the Acosta Bridge?

The city should hold bi-annual sessions to discuss tree management with the community and focus on 'How are we doing? What could we do better?'


TREES 2 OFFSET
H2O


FOREST SERVICE
U S
DEPARTMENT OF AGRICULTURE

What is this tool?

This tool is a codes, ordinances, and practices audit to assess how extensively a municipality's urban forest is able

How was the creation of this tool funded?

(USFS). Six state forestry agencies partnered with the service provider, the Green Infrastructure Center (GIC) and USFS to fund and administer the grant. The six state forestry agency partners were The Virginia Department of Forestry (VDOF), The North Carolina Forestry Service (NCFS), the South Carolina Forestry Commission (SCFC), the

How do I use this tool?

forestry and stormwater management. To begin, the user should gather codes, ordinances, and information pertaining to urban forestry and stormwater management. Some examples of pertinent documents include the municipality's Tree Ordinance, Zoning Code, Stormwater Management Manual, Comprehensive Plan, Area Plans,

The user should begin answering questions within the audit. The audit is divided into topic areas. Each topic area is denoted by a separate tab. Some examples of topic areas are 'Tree Care and Protection' and Emergency Response'. Questions should be answered by topic as one document will answer more than one question within a topic. For example, the municipality's Tree Ordinance will contain the answer to several questions within the

Determining Question Scores

The score of each question is determined the presence of absence of the code, ordinance, or policy in question and the contents of the code, ordinance, or policy in question. Use the drop down list in the 'Score' column on each sheet to choose the applicable score for each question. Partial scores are not permitted in the audit. For

Understanding Question Rankings

Each question has been given a ranking. Rankings are as follows: 'Essential Urban Forestry Elements', 'Desired Urban Forestry Elements', and 'Urban Forestry Extras'. Essential Urban Forestry Elements are more healvily weighted. Each question pertianing to an 'Essential Urban Forestry Element' is valued at three points whereas each question pertaining to an 'Urban Forestry Extra' is valued at one point. 'Desired Urban Forestry Elements'

Finding the answer to urban forestry/stormwater practices qustions

Many questions within the audit will only be answered by talking with staff outside one's own deparment. For example, the answer to the question 'During civil plan reviews, are utilities moved or building arrangements altered to reduce tree loss?' may not be known by all staff and may not be written in a municipality document.

Once all audit questions have been answered and scored, click to the last tab of the spreadsheet. See more

How do I know the municipality's audit score?

After all audit questions have been answered, click to the 'Summary Statistics' tab to view audit results in tabular and graphic formats. The statistics show the percentage of 'Essential Urban Forestry Elements' obtained, the 'Desired Urban Forestry Elements' points obtained, and the 'Urban Forestry Extras' points obtained. The statistics

What do I do with audit information when I have answered all questions and look

and by topic. Municipalities should aim to incorporate all 'Essential Urban Forestry Elements' within their municipal urban forestry and stormwater programs. Sort each topic area by ranking to see which 'Essential Urban Forestry Elements' the municipality did not currently score points for. Work with other municipal officials

If most or all of the points were gained in the 'Essential Urban Forestry Elements' ranking, look next to the 'Desired Urban Forestry Elements'. Sort each topic area by ranking to see which 'Desired Urban Forestry

Finally, if most or all of the points were gained in both the 'Essential Urban Forestry Elements' and 'Desired Urban Forestry Element' ranking, look to the 'Urban Forest Extras'. Sort each topic area by ranking to see which

The statistics and graphics in the final tab of the audit should be used as support for code, ordinance, and policy modificiations in presentations to municipal decision making groups and in Urban Forest Management Plans.

For more information on the codes, ordinances, and practices audit tool, please contact Karen Firehock at the Gre

to contribute to stormwater management.

en Infrastructure Center at firehock@gicinc.org.

Trees and Stormwater Code Audit

TREE CARE AND PROTECTION

Understanding the codes and ordinances that impact individual trees paints a picture for impa
Emphasis is placed on tree protection requirements during construction as many trees slated

Tree Protection

	Are tree inventories required when greater than 10,000 square feet of land is being disturbed? What DBH trees must be inventoried?
	Are tree protection fencing (TPF) or other tree protection mechanisms (e.g. root protection, aeration, vertical mulching) required on public property during construction? Are TPF or other tree protection mechanisms required on private property during construction? Is this enforced?
	Are standard details available for TPF and other kinds of tree protection mechanisms? Are these details required on development plans?
	Are minimum canopy coverage requirements set by zoning area or land use? Is there a fine or planting requirement when canopy coverage is lowered beyond set levels?
	Are there penalties for removing trees that were marked to be saved? Is bonding used to discourage tree removals?
	Are developers permitted to clear lot line to lot line? Are there incentives to not do this?

	Is a minimum root protection zone specified? Is it the Critical Root Zone?
	If staying out of the critical root zone of a tree is truly unavoidable, is root compaction minimized by mulching/matting requirements?
	Is directional boring encouraged in order to lessen tree removals due to utility installation/work?
Tree Care	
	Is a gov't agency responsible for public tree care?
	Is there a program to plant trees in the ROW?
	Is there a program to maintain trees in the ROW?
	Are ANSI tree care standards used?
	Is there a Tree Care Ordinance which requires pruning and preventative maintenance including an annual schedule for city owned trees?
	Is an urban forest canopy calculation performed once every four years?
	Is the city a Tree City USA?
Tree Planting	

	Is a minimum required root zone volume specified?
	Are there standards for tree placement, soil treatment and/or drainage?
	Are diverse plantings encouraged? Are lists of appropriate species provided to allow for a thriving and diverse urban forest?
	Do planting specifications include present and future non-interference with utilities?
	When new developments are built, are tree plantings required in Rights-of-ways?

	Can homeowners/occupiers plant trees in the Right-of-Ways adjacent to their home? Can they request for trees to be planted there by the forestry department?
	Is a list of prohibited tree species specified?
	Is there a minimum caliper size required for replacement/new trees?
Special Trees	
	Are Heritage Trees/Champion Trees/Witness Trees recognized and protected?

ıcts on the urban tree canopy as a whole. This includes information about tree
to be preserved during development process are frequently lost due to inadequ

Present?	Municipality Comments	Reviewer Comments	Source
Yes		Tree inventories are required on public and private properties. However, single family homes are exempted from these requriements.	Sec. 656.1203
Yes		Tree protection fencing is required on public and private property. However, this is not enforced.	Sec. 656.1207 Zoning Code
No			
No			
Yes		There is a system of stop work orders and fines in place.	Sec. 656.1208.
Yes		Developers do clear lot line to lot line.	Sec. 656.1205 Zoning Code

		The barrier must be at least 6' from the base of the tree and include at least half of the dripline.	Sec. 656.1207 Zoning Code
No		Mulching/matting is not in place when encroaching on the critical root zone.	
Yes		An example of this is on Mandarin Road.	
Yes		Public Works, Parks, Recreation, and Community Service, Planning and Development, Public Works	
Yes		City staff are tasked with planting trees in ROWs.	
Yes		City staff are tasked with maintaining trees in ROWs.	
Yes			Sec. 656.1206, Zoning Code
No			
No		However, city staff are interested in doing so.	
Yes			

No		A minimum area is required (150 square feet for shade trees) with no less than 8' for any side dimension.	Section 656.1211 Florida Friendly Landscape and Irrigation Desgin Standards
No		There are standards for tree placement only.	
Yes		A diversity of tree species are encouraged. At times, non-native and invasive palm trees are encourgaed by staff outside of urban forestry and this practice should not occur.	
Yes		"Trees shall not be placed where they interfere with site drainage or where they shall require frequent pruning in order to avoid interference with overhead power lines."	Section 656.1211 Florida Friendly Landscape and Irrigation Desgin Standards, Part b
Yes			

Yes	There are three levels of tree plantings. This system was started recently. In the Third Level, any community group can be an administrator and they can use Tree Fund funds.		
Yes			
Yes		Single-trunk trees shall be a minimum of two inch caliper and a minimum of ten feet overall height. Multi-trunk trees shall be a minimum of three trunks eight feet high.	
No			

: protection requirements during construction, tree care practices and tree planting requirements.
ıate protection.

What to Look For	Score	Potential Score
Include hardwoods 18" and over, softwoods 24" and over, and understory species 8" and over in tree inventories of proposed development properties. Require inventories of the entire property including 100' offsite from all property boundaries. Require correct species identification, DBH size, and, general condition description. Score three points if all of the requirements above are present and enforced in the municipality.	0	3
Require tree protection fencing on public and private property. Inspect the site for adequate tree protection mechanism installation before any further work is permitted on-site. Score three points if all of the requirements above are present and enforced in the muncipality.	0	3
Create root pruning, mulch matting, and aeration matting details. Require the inclusion of these details on development plans. Score two points if the tree protection details are present and inclusion on development plans is enforced in a municipality.	0	2
Set minimum canopy levels by zoning area. Incite a fine or planting requirement when tree removals exceed set levels. Score two points if minimum canopy levels are set by zoning areas and fees/tree plantings are requied canopy levels fall below required levels.	0	2
Apply fee based or planting based penalties for removing trees marked to be saved. Use discretion and judgement to determine whether such penalties actually prohibit the removal of trees marked to be saved. Municipalities employing effective penalties for removal of trees marked to be saved on development sites score three points.	3	3
Do not allow lot line to lot line clearing during development. Retain trees onsite especially when the trees are part of a forest buffer or habitat corridor. Municipalities prohibiting lot line to lot line develoment score tree points.	0	3

Place tree protection fencing at a distance of 1.5 feet times the DBH (in inches). For example, if a tree measures 30" DBH, the tree protection fence should be placed 45' away from the trunk. Municipalities requiring tree protection fence placement at 1.5 times the DBH (in inches) or more, score three points.	0	3
Minimize compaction risk using mulch matting when encroaching on the tree protection zone. Municipalities using mulch matting when working in tree protection zones score one point.	0	1
Allow staff to specify directional boring in order to save trees. Municipalities where staff are permitted to encourage the use of directional boring, score one point.	1	1

Task a municipal agency with tree care. Municipalities where an internal agency is tasked with tree care score one point.	1	1
Where practicable and feasible, plant trees in ROW areas. Trees shade streets, sidewalks, and minimize urban heat island effect. Use a street by street analysis to target planting areas. Municipalities planting ROW trees using a visual or spatial street by street analysis to determine where more trees are needed, score two points.	2	2
Task a government agency with maintaining street tree plantings. Municipalities planting and maintaining street trees score two points.	2	2
Municipalities using ANSI or other comprehensive tree care standards score one point.	1	1
Adopt a Tree Care Ordinance and an annual schedule for city owned trees. Municipalities with both documents score three points.	0	3
Perform an urban forest canopy calculation and change comparison every four years. Determine funding (or devote staff time) to the study. Codify performance of the canopy calculation in the Tree Care Ordinance. Municipalities with as a funding mechanism and a requirement of an urban forest canopy study on a four year cycle score three points.	0	3
Municipalities designated as Tree City USAs score one point.	1	1

Nuisance root exploration and surface root growth are often the result of inadequate planting space. Roots are forced to 'search' for water and other nutrients as soil tends to be compact and lacking nutrients. The Environmental Protection Agency recommends 600, 1,000 and 1,500 cubic feet of soil for small, medium, and large trees, respectively (Stormwater to Street Trees 2013). Provide 1,500 cubic feet of soil for canopy trees. 1,500 cubic feet provides mechanical stability and adequate pore space to hold water and discourage nuisance root exploration. Municipalities requiring at least 1,000 cubic feet and up to 1,500 cubic feet of root zone volume for new plantings score two points.	0	2
Impose standards to address tree placement, soil treatment/amendment, and soil drainage. Municipalities who impose these standards score one point.	0	1
Diverse plantings promote a healthy urban forest through disease/pest resistance and support of wildlife diversity. To encourage species diversity, require tree planting to consist of no more than 30% of a single family, no more than 20% of a single genus, and no more than 10% of a single species. Municipalities with ordinances requiring species diversity in new tree plantings score one point.	1	1
State non-interference with power lines in tree planting specifications. Specify understory species less than 20' in height if trees are proposed under power lines. Municipalities stating a requirement of non-interference with power lines in tree planting specifications score one point. Municipalities omitting a statement of non-interference with power lines in tree planting specifications score zero points.	2	2
Require tree plantings along streets in development, re-development, or landscape requirements. Municipalities requiring tree plantings along streets score two points.	2	2

Permit homeowners/occupiers to plant trees in ROWs adjacent to one's home. Municipalities may require potential plantings to be approved through a permit system. Municipalities allowing homeowners/occupiers to plant or request for trees to be planted in the ROW score one point.	1	1	
Some tree species are known to be disease prone and have low survival rates. In urban areas, hardy trees should be planted that can withstand harsh urban conditions. Develop a prohibited tree species list to preven the planting of disease prone or invasive species. Municipalities specifying a planting list of prohibited species score one point.	1	1	
Require a minimum caliper size of no more than 2.5" for tree plantings. Trees experience shock when transplanted. Trees transplanted at smaller DBHs grow faster larger. Municipalities requiring a minimum caliper size of no more than 2.5" for tree plantings score one point.	1	1	
Recognize and protect Heritage, Champion, and Witness Trees. Develop a system to identify and enforce protection of these trees. Municipalities with recognition and protection of Heritage, Champion and Witness Trees score one point.	0	1	
Sheet Score Breakdown			
Essential Urban Forestry Elements (3 points each)	3	21	14%
Desired Urban Forestry Elements (2 points each)	8	14	57%
Urban Forestry Extras (1 point each)	8	11	73%
Total Score	19	46	41%

0 3

0 2

0 1

Percent
Percent
Percent
Percent

PLANS AND GOALS

Because the urban forest is such a valuable resource, goals must be made to expand and/or prote

Note: Many municipalities do not yet have Urban Forest Management Plans (UFMPs). To score a

	Urban Forest Management Plan	Present?
	Does this plan include a discussion of community values of trees (urban heat island effect mitigation, stormwater benefits, quality of life etc.)?	Yes
	Does the municipality outline clear measurable goals along with concrete strategies?	No
	If an Urban Tree Canopy Assessment was performed, are the results displayed and discussed in the UFMP?	No
	Is urban forest analysis broken into smaller units (e.g.. neighborhoods) and also by watersheds?	Yes
	Does the UFMP show how it also meets goals in existing plans such as Open Space Plan, Park and Recreation Master Plan, Transportation Plan, Comprehensive Plan etc.?	No
	Is a summary of Staff Strengths, Weaknesses, Opportunities and Threats (SWOT) included?	
	Is a list of potential project partners which can be utilized to accomplish planting projects etc. included?	Yes

	Does the UFMP feature an annual calendar that defines typical activity by season? Is it used to determine funding?	No
	Does the UFMP include a public tree inventory?	No
Green Infrastructure		
	Does the municipality have a green infrastructure plan? Does it feature cores and corridors?	No

ct it. Plans must be put in place to achieve those goals.

ı municipality that does not have an UFMP, note whether the components of an UF

Municipality Comments	Reviewer Comments	Source
	Discusssed in the Zoning Code.	Sec. 656.1202.
2010 Action Plan may include some urban forestry goals.	We cannot find this Action Plan on the web and despite asking, have not reccieved it from city staff.	
	One was performed as a part of this project and one with Plan-it-Geo but there is no UFMP for the city currently.	
	This was completed during the Trees and Stormwater Grant.	
	No SWOT was completed.	
	The City of Jacksonville does an excellent job of partnering with local groups to accomplish urban forestry projects.	

	A random sample public tree inventory is currently being completed.	

[3]MP described below are in other municipality documents.

What to Look For	Score	Potential Score
List tree benefits in municipality documents. Doing so provides municipality endorsed urban forestry support for policy and budget decisions. Municipalities with documents (or UFMPs) citing 5 or more community benefits of urban forests, score two points.	2	2
Set clear measurable goals for urban forests. Accompany goals with actionable steps. Municipalities with a canopy goal and accompanying actionable steps score three points.	0	3
Display Urban Tree Canopy Assessment results in a document (or UFMP). Municipalities with the results displayed and discussed score one point.	0	1
Break urban forest analysis into smaller units such as watersheds or neighborhoods. Municipalities completing this analysis and discussing it in a document (or UFMP), score two points.	2	2
Combine the goals of urban forestry with those goals set out in other municipality planning documents. For example, are transportation goals of creating bike paths tied to urban forestry goals shading locations where people are walking and biking? Municipalities linking three or more urban forestry goals with existing plan goals in an UFMP or other document, score one point.	0	1
Perform SWOT assessments and confidentially summarize the results in an UFMP or other document. Municipalities performing SWOT assessments and summarizing results in an UFMP or other document score one point.	0	1
Municipality staff should compile a list of potential project partners. These partners should be contacted and potential for collaboration should be discussed. Municipalities with established project partners for urban forestry/stormwater collaboration score two points.	2	2

Develop an annual calendar which outlines maintenance activities by season. Estimate time, staffing, and funding required to complete maintenance and planting tasks. Municipalities providing an annual calendar which outlines maintenance tasks and includes time, staffing and funding required for adequate completion of tasks, score one point.	0	1
A street tree inventory is not required for adequate urban forest management. It can however, provide more information about the urban forest regarding species distribution, specimen health, and potential tree hazards. It can also help secure funding for re-planting post-storm as lost trees can easily be tracked. Municipalities where a street tree inventory has been completed and is present in an UFMP or similar document, score one point.	0	1
Identify and rank green infrastructure cores and corridors. Municipalities with mapped and ranked green infrastructure cores and corridors, score two points.	2	2

Sheet Score Breakdown			
Essential Urban Forestry Elements (3 points each)	0	3	0%
Desired Urban Forestry Elements (2 points each)	8	6	133%
Urban Forestry Extras (1 point each)	0	5	0%
Total Score	8	14	57%

0 3
0 2

0 1

Percent
Percent
Percent
Percent

IMPLEMENTATION CAPACITY

community/advisory groups.

		Present?
Advisory Boards/Groups		
	Is there a Tree Commission/Urban Forestry Commission/Tree Board?	Yes
	Do the members of the Tree Commission/Urban Forestry Commission/Tree Board include representative from various occupations and areas of the municipality?	Yes
Staff		
	Is a certified arborist on staff?	Yes
	Is at least half of one staff member's job duties devoted to managing grants?	No
	Is there a full time regular staff member that has authority over day-to-day urban forestry activities?	Yes

	Is an allied professional (such as a LA) on staff?	Yes
	Is at least one staff member or consultant trained in tree risk assessment?	Yes
	Are staff allowed to/encouraged to attend continuing education events? How often does this occur? Do staff members and managers discuss current performance and staff goals at regular intervals (e.g. once per year)?	Yes
	Is one staff member devoted to enforcement and another staff member devoted to community outreach? Do those roles intersect at all?	Yes
Funding		
	Is there a tree planting donation fund?	Yes
	Do the responsibilities of the Tree Commission include effort toward securing grants?	Yes

	Urban Forestry Line Item: Is there a budget specific to urban forest management? Does the Urban Forest Manager have authority over the budget?	No
	Is there a contingency budget process? Is there a protocol in place to prioritize urban forestry management activities during budget shortfalls. For example, during times of limited funding, are risk management, young tree care and mulching funded?	No
	Is the funding calculated by capita, per tree, or by performance (per tree weighted by size class or age)?	No
	Does the budget take ecosystem services performed by trees into account?	No

Municipality Comments	Reviewer Comments	Source
	There is a Jacksonville Tree Commission. They serve as a steering committee for the urban forestry program.	http://www.coj.net/departments/public-works/tree-commission
		http://www.coj.net/departments/public-works/tree-commission
	There are several. One of them is Richard Leon - Urban Forest Manager.	
The Urban Forest Manager position was intendede to spend half of staff time managning grants. Hower, due to other staff position requirements, the Urban Forest Manager only spends 1% of staff time managing grants.		
	Richard Leon, Urban Forest Manager	

	Several LA s are on staff.	
	Several staff are tained in tree risk assessments.	
	2-3 continuing education events per year depending on how expensive the events are	
	Enforcement and outreach are two very separate branches of the urban forestry program.	
	There is a well-funded Tree Fund.	
	Included in Tree Commission duties: Formulate a recommended priority project list, including an estimated implementation cost for each item, for tree planting and canopy maintenance, and to thereafter annually review the priority project list and report recommendations to the Mayor's Office;	

		In the Codes-Ord Library - http://www.coj.net/departments/finance/docs/budget/fy-2018-2019-annual-budget-(1).aspx
	However, a random sampling inventory of the city's trees is to be completed which will given an estimate of the city's trees economic value and ecosystem services.	

What to Look For	Score	Potential Score
Tree Commissions can organize and guide tree planting and conservation efforts. Members typically have more time devoted to specific tree initiatives than the average municipality staff member can. Members also typically have different perspectives, resources, and scopes of influence than the average municipality staff member. Having a Tree Commission can expand the reach of urban forestry. Municipalities with an active Tree Commission/Urban Forestry Commission/Tree Board, score three points.	3	3
Ensure demographic and geographic representation of municipalities by the Tree Commission. Tree Commissions representing geographic and demographic variations in the municipality score one point.	1	1
A certified arborist on staff aids municipalities in making informed decisions regarding tree health and tree placement. Municipalities with at least one certified arborist on staff score three points.	3	3
Grants are a viable and creative way to achieve targeted missions in a municipality. However, grant management and the paperwork that accompanies most grants is time consuming. Municipalities with at least half of one staff member's job duties devoted to managing grants score one point.	0	1
Urban forest management is a full time job even in a relatively small municipality. Municipalities employing at least one full time staff member with authority over day-to-day urban forestry activities score three points.	3	3

Allied professionals knowledgeable about trees, design, soil, and/or wetlands are able to provide urban forest management expertise. Municipalities with at least one allied professional score one point.	1	1
Conducting tree risk assessments is a vital part of managing the urban forest. Municipalities with at least one staff member or consultant trained in tree risk assessment score two points.	2	2
Managers and department heads collaborate with staff to assess current performance and develop professional goals. Allow staff to attend at least two trainings per year. Municipalities where staff are encouraged/allowed to attend continuing education events at least two times per year and current performance and goals are discussed jointly between staff members and managers, score two points.	2	2
Devote one staff member to tree-related enforcement and one staff member to tree related community outreach. Municipalities structured in this way score one point.	1	1
Tree planting donation funds augment urban forestry funds beyond what is allocated in yearly budgets. These additional funds may make the difference between managing and growing the urban forest. Municipalities with a tree planting fund score one point.	1	1
Members of a Tree Commission may have access to and be knowledgeable about available tree-related grants. Tasking the Tree Commission with seeking out and applying for tree-related grants alleviates municipality staff time from this task and may will likely enable to municipality to engage in more grants per year. In municipalities where the responsibilities of the Tree Commission include securing grants score one point.	1	1

Devote a specific budget for urban forest management. Include a line item specific to urban forestry in yearly budgets. Authorize urban forest managers to request budget increases as management or planting needs require. Municipalities with a line item specific to urban forestry and an urban forest manager who has authority over the budget score two points.	0	2	
During economic slowdowns, prioritization of urban forest management activities is essential. Doing so facilitates establishment of baseline funding for urban forestry. Municipalities with an established contingency budget for urban forestry, score two points.	0	2	
An urban forestry budget funded per capita or per tree (as opposed to funding based on a previous year's budget) more accurately reflects the cost of urban forest management and thereby supports adequate urban forest management. Municipalities with a budget funded per capita, per tree, or by performance score one point.	0	1	
Recognizing that the net expenditures of a municipality can be reduced if green infrastructure is cared for is a motivator for managing the urban forest. Municipality budgets that take ecosystem services (such as stormwater uptake or removing pollutants from the air) into account score one point.	0	1	
Sheet Score Breakdown			
Essential Urban Forestry Elements (3 points each)	9	9	100%
Desired Urban Forestry Elements (2 points each)	4	8	50%
Urban Forestry Extras (1 point each)	5	8	63%
Total Score	18	25	72%

0	3
0	2
0	1

Percent
Percent
Percent
Percent

MONITORING PROGRESS

Knowing the urban canopy coverage is the first step in determining whether the canopy is providi status of the urban tree canopy.

	Feature
State of the Trees	
	Is data gathered about current health of publicly owned trees?
	How often is data collected about overall urban forest canopy? What are the methods used to collect the data?
	Are permits required to remove trees on public property? Private property?
	Are city-owned trees monitored for signs of pest infestations/outbreaks? If so, are steps taken to minimize risk of pest infestation (e.g. not planting ash trees is Emerald Ash Borer is present in an area)?
Recordkeeping	

	Is a process in place to maintain records of tree maintenance requests, inspections, evaluations, pruning history, mitigation of risk, and removal records. In addition are records of communications among the managers related to those risk assessments recorded? Is it being consistently updated/used?

ng the maximum possible ecosystem services. Keeping track of that urban can

Present?	Municipality Comments	Reviewer Comments	Source
Yes	Requests for tree removals are logged in the CARE system and new tree planting records are logged in the PlanitGeo system.		
Inventory	Public tree inventory data was collected in 2015. It is now (2019) being re-collected by Arbor Pro. This data will be uploaded into the PlanitGeo data collection system.		
Yes		There is an exclusion for single family homes on private property.	
Yes		This is a task completed by the Urban Forestry Division.	

Yes	Yes, new tree plantings are in the PlanitGeo system and citizen tree care requests are logged in the city's CARE system.		

ıopy over time is imperative for tracking urban tree canopy goals and seeing trends in the

What to Look For	Score	Potential Score
Data gathering and analysis inform decision making. For example, if field surveys show a predominance of aging trees, decisions are made to replace aging trees with new plantings. Doing so minimizes risk from falling limbs and allows new canopy trees to replace older, larger canopy trees before they are lost to age or disease. Guided by data and planning, many urban forest emergencies can be avoided. Municipalities gathering data (such as tree age, tree health, tree location, maintenance performed on trees etc.) about urban trees score two points.	2	2
Use methods (such as municipality-wide urban tree mapping, detailed statistical sampling, and complete tree inventories) to facilitate urban forestry related decision making. Update urban forestry data every four years to see and track changes. Municipalities performing urban tree canopy analyses and using data to inform decision making score two points.	2	2
Require a permits to remove significant trees (typically 18" DBH and greater) in all districts and on private property. Municipalities where permits are required to remove significant trees in all districts and on private property score two points.	0	2
Monitor city-owned trees for pest infestations. When a pest or characteristic traits of a pest infestation of identified in a municipality, take steps to reduce the damage caused by pests. For example, some pests are mitigated by applying appropriate treatments or pruning trees. Municipalities should also avoid planting trees species know to be negatively affected by invasive pests. Municipalities monitoring and taking action to reduce tree risk from pests score one point.	1	1

Collect project information, dates, tree record identification code, site data, location data, and tree data when recording urban tree data . Long-term urban forestry data management in facilitated using forestry software. Proprietary (subscription or paid-version) is not necessary as free and open-source software options are available (Boyer et al. 2016). Municipalities collecting minimum data requirements for all tree-related actions and storing data in a forestry software score three points.	3	3		
Sheet Score Breakdown				
Essential Urban Forestry Elements (3 points each)	3	3	100%	**Percent**
Desired Urban Forestry Elements (2 points each)	4	6	67%	**Percent**
Urban Forestry Extras (1 point each)	1	1	100%	**Percent**
Total Score	8	10	80%	**Percent**

0	3
0	2
0	1

EMERGENCY RESPONSE

Healthy trees are an incredible asset to a community. When a tree is diseased or structurally unso identifying tree risk to be a part of regular municipal operations. In addition, when trees are lost l trees.

	Feature	Present?
Risk Management		
	Are tree risk assessment procedures ISA BMP or equivalent? Does the ordinance refer to ANSI A300 Part 9 Tree Risk Assessment to mitigate tree risks?	No
	Are all trees in high occupancy areas on public property assessed anually for risk?	No
Forestry Emergency Response		
	Is there a forestry emergency response plan? Does it include a clear protocol for requesting disaster resources through the county or state with access to mutual aid and EMAC?	No

und, however, it becomes a risk to people and property. By evalua
because of storms, all of the benefits that these trees once provide

Municipality Comments	Reviewer Comments	Source
Proactive urban forestry tree risk assessments are not currently completed.		
	Recommend linking urban trees to stormwater infrastructure and applying for FEMA aid when replanting public trees after a weather emergency which removes a large number of public trees.	

ting tree conditions regularly, some of this risk can be mitigated. It is very important for
l are voided. It is imperative for communities to have strategies in place to replace lost

What to Look For	Score	Potential Score
Follow a standard procedure for tree risk assessment. Municipalities using ISA TRAQ or another standard procedure score two points.	0	2
Perform tree risks assessments at a minimum of once per year in high occupancy areas. Municipalities performing tree risk assessments once per year in the most populated/inhabited regions of a municipality score one point.	0	1
Forestry emergency response plans detail mitigation procedures when storms devastate tree canopy. Municipalities where a forestry emergency response plan is in place and is being implemented score three points.	0	3

Sheet Score Breakdown				
Essential Urban Forestry Elements (3 points each)	0	3	0%	Percent
Desired Urban Forestry Elements (2 points each)	0	2	0%	Percent
Urban Forestry Extras (1 point each)	0	1	0%	Percent
Total Score	0	6	0%	Percent

0 3

0 2

0 1

INTEGRATION

Integration of urban forestry principles in other local government codes and ordinances, practices
urban forest canopy. Integration can include tree requirements in stormwater codes, developers us

	Feature	Present?
Stormwater Management		
	Is the municipality subject to the MS4 permit program?	Yes
	Do goals of the stormwater program include planting trees to soak up more stormwater?	No
	Does the municipality have a Stormwater Management (SWM) utility fee? If so, are trees provided as credits to minimize the fee?	Yes
	Doe sthe municipality provide design criteria for stormwater BMPs which include tree plantings, green roofs (that may or may not be able to support trees), bioswales, rain gardens, forested swales, Filterra boxes, constructed wetlands, permeable pavers, permeable asphalt etc. Do the BMPs encourage plant material?	Yes

	Do the local ordinance or design standards require extended detention of the 1 year, 24-hour storm?	No
	Does a floodplain ordinance that restricts or prohibits development within the 100-year floodplain exist?	Yes
	Can stormwater be directly discharged into a jurisdictional wetland?	Yes
	Does the local ordinance, design standards, or procedures manual provide for long term maintenance of stormwater practices, such as a recorded maintenance agreement, inspection, and right-of-access easements or agreements?	Yes
Inter-governmental Integration		
	Is the tree canopy data and analysis utilized by various departments within the municipality such as planning, public works, parks etc.?	Yes
	Is information about the city's trees included in the GIS system?	Yes
	Are conversations held between various departments (such as public works and parks and recreation) regarding tree care management, potential pests/diseases, desired tree planting locations, and inter-departmental cooperation?	Yes

	Does the utility ordinance allow for and encourage boring v. trenching for installation and maintenance?	Yes
	During civil plan reviews, are utilities moved or building arrangements altered to reduce tree loss?	No
Community Engagement		
	Does the municipality have effective methods for community engagement and with steps that can be taken to ensure that the engagement session will be most effective?	No
	Are tree care workshops and trainings provided for the community which engage, schools, homeowners and developers? Do they include topics such as basic tree care and benefits of trees?	Yes
	Does the Tree Commission/Advisory Panel meet at least quarterly? If they have not actually met in the past six months, score a zero for this question.	Yes
	Is there a tree stewards/community forestry program? If so, does it coordinate with the Tree Commission?	Yes
Re-Purposing of Wood Products		
	Does the municipality re-purpose waste wood?	No

and community awareness is essential for success in urban forestry initiatives. These initiatives include planting, sing Silva cells to encourage tree root growth and community involvement in pruning street trees.

Municipality Comments	Reviewer Comments	Source	What to Look For
			Not a scoring item
			Trees naturally take up stormwater from the landscape and can help reduce the amount of flooding in a municipality. When trees are included in a stormwater management program, the trees are treated as infrastructure. Treating trees as stormwater infrastrucutre may make a muncipality eligible for FEMA aid for tree replanting. Municipalities treating trees as infrastructure score three points.
	Trees are not specifically provided as a way to reduce the fee. Some constructed BMPs that can reduce the fee are porous pavement, constructed wetlands, and stormwater ponds. Add trees to the list of 'Other BMPs'	http://www.coj.net/departments/cityfees/docs/ac-manual-2011-final.aspx	Develop a SWM utility fee which funds the cost of stormwater maintenance and tree plantings (see above). Allow for a reduction of the fee by reducing impervious surfaces (and decreasing stormwater runoff) onsite. Advertise the program and provide technical assistance. Municipalities with an effective SWM utility fee and fee reduction program which includes trees score three points.
	The city follows the manual from the local Water Management District. In addition, an LID manual was written by the City of Jacksonville.		Develop design criteria for as many known Best Management Practices as possible. Smaller municipalities may depend on state or county stormwater management manuals which often do not include a complete range of BMPs. If this is the case, develop an addendum to the state/county manual which covers the entire spectrum of BMPs. Municipalities with a stormwater management manual including 20 or more BMPs score two points.

	Maintenance of existing peak discharges at the side for the 5, 25, and 100-year 24 hour storms are required.		Design for storage and treatment of rainfall from the one year, 24 hour storm. Municipalities storing and treating the rainfall from the one year, 24 hour storm score one point.
	A separate floodplain development permit is required in order to develop in the floodplain.		Limit development and encourage natural land cover in floodplains using a floodplain ordinance. Municipalities where the floodplain ordinance limits development and encourages natural land cover score three points.
			Stormwater carries pollutants including nitrogen, phosphorus, sediment, and pesticides. Discharging polluted water into wetlands impairs water quality, making wetland habitats inhospitable for vertebrates, invertebrates, and many plant species. Municipalities which do not allow untreated stormwater discharge into jurisdictional wetlands score two points.
	Long term maintenance agreements are required.		Structural BMPs require yearly monitoring and maintenance. Write maintenance agreements review agreements, and hold property owners, accountable (through inspections or other mechanisms) of the maintenance activities. Municipalities where maintenance agreements are in place and property owners are held accountable for maintenance score two points.
	Multiple departments are using the tree information available to them. Making more information available will benefit the city.		Use tree-related data during residential site plan review, transportation project review, restoration efforts, master planning, and neighborhood revitalization efforts. Municipalities where tree data is used during the abovementioned plan reviews and efforts score three points.
	Plan-it-Geo has created a web map for tree information.		Map forest and tree information in a spatially based system (GIS). Make links in the GIS system to past maintenance requests, removals, tree health and species information. Municipalities where tree data is spatially mapped in GIS, score two points.
	These conversations are ocurring but they tend to occur once there is a problem with trees onsite.		Gather these different agencies to discuss urban tree care management. Municipalities where the collaborative tree group is present and meets at least quarterly score two points.

	Boring is used on many projects over traditional trenching techniques.		Use boring wherever practicable and feasible to prevent unnecessary cutting of tree roots. Municipalities where boring is used where appropriate and its usage is enforced score one point.
	If there is a sensitive area on public land, urban forestry staff can be brought in and utilities/buildings may be recommended to be moved, but otherwise this is not common.		Enforce implementation of development designs which minimize urban forest canopy and habitat loss. Municipalities where staff have conversations with developers to alter site layouts in order to conserve resources score three points.
	The City does a great job of community engagement but traditional SOPs are not written.		Document avenues to effectively communicate ongoing tree-related efforts to community members. Enumerate environmental groups and HOAs who are typically interested in tree-related causes or whom decisions would affect. Municipalities who have documented effective ways of ensuring robust community engagement, score two points.
	Many tree care workshops and trainings are provided. The city also works with JaxDigsTrees to host/sponsor events.		Organize at least two tree-related events per year. One may be geared toward the development community and another may be geared toward home owners/occupiers and those interested in community planting projects. Score one point if at least two tree-related community engagement events are planned per year.
	Meetings are held monthly.		Meet at least quarterly to discuss tree-related goals and concerns. Municipality Tree Commissions/Advisory Panels meeting at least quarterly, score two points.
	Jax Digs Trees		Municipalities with Tree Stewards programs score one point.
	The city has tried giving away wood chips, but there was not much interest.		Municipalities re-purposing urban 'waste-wood' score one point.

	Sheet Score Breakdown
	Essential Urban Forestry Elements (3 points each)
	Desired Urban Forestry Elements (2 points each)
	Urban Forestry Extras (1 point each)
	Total Score

0
0

sustaining and managing an

0

Score	Potential Score
N/A	N/A
0	3
0	3
2	2

0	1
3	3
0	2
2	2

3	3
2	2
2	2

1	1
3	3
2	2
1	1
2	2
2	2
1	1

9	15	60%	**Percent**
12	16	75%	**Percent**
3	4	75%	**Percent**
24	35	69%	**Percent**

3
2

1

ENGINEERING EXTRAS - REDUCING IMPERVIOUS SURFACES

Development standards impact amounts of impervious surfaces. Excess impervious s
all!

	Feature	Present?
Overlywide Streets, Overlylarge Parking Standards		
	Are smaller pavement widths allowed for streets in low density residential developments (e.g. those that have less than 500 daily trips)?	Yes
	At higher densities are parking lanes also allowed to serve as traffic lanes (i.e. queuing streets)?	Yes
	What is the minimum radius allowed for cul de sacs? Is it less than 35 feet? Less than 45 feet?	
	Can recessed landscaped islands for stormwater treatment be created within cul-de sacs?	Yes
	Are landscaping islands designed for on-site drainage treatment?	Yes
	Are alternative turnarounds such as "hammerheads" allowed on short streets with low density residential developments?	
	Are curb and gutters required for most residential street sections?	No
	Are there established design criteria for vegetated swales that can provide stormwater quality treatment?	Yes
	What is the minimum parking ratio for a professional office building ?	See right

	What is the minimum parking ratio for motel/hotel rooms (per room)?	See right
	What is the minimum required parking ratio for shopping centers?	See right
	What is the minimum required parking ratio for single family homes (per home)?	See right
	Are your parking requirements set as maximum or median (rather than minimum)?	Both
	Is the use of shared parking arrangements allowed?	Yes
	Are parking ratios reduced if shared parking arrangements are in place?	Yes
	Is variable space sizing used to reduce the percent imperviousness of parking lots?	Yes
	Can pervious material be used for spillover parking areas? Is it common practice?	Yes
	Is a minimum percentage of a parking lot required to be landscaped?	Yes

	Is there a requirement for the minimum amount of pervious surface in parking lots?	No
	Are there incentives for developers to create structured parking instead of typical horizontal parking?	No
	Are stormwater BMPs such as vegetated swales permitted within ROWs? Are stormwater BMPs such as vegetated swales permitted within landscaped arease?	Yes
	Are landscaping strips required to buffer conflicting uses (such as a street and residential use)?	Yes
	Are there reduced parking ratios for areas served by mass transit?	No
Excessive Housing Development Standards		
	Are open space or cluster development designs allowed in the community?	Yes
	Can there be unimproved open space?	No
	Are there any standards for impervious cover reduction?	No
	Is open space or cluster design a by-right form of development?	Yes
	What is the minimum sidewalk width allowed in the community? Is it 4' or less?	Yes
	Are sidewalks always required on both sides of residential streets?	No
	Are driveways required?	No
	What is the minimum requirement for front setbacks for a one half (1/2) acre residential lot? Is it less than 20'	No

	What is the minimum requirement for side setbacks for a one half (1/2) acre residential lot? Is it 8' or less?	Yes

ENCOURAGING PERVIOUS SURFACES

New/Redevelopment

	Are suspended pavement and structural cells allowed and encouraged in key areas of the municipality?	No
	Is permeable pavement allowed and encouraged in new/re-development?	Yes
	Are forested bioswales allowed and encouraged in new/re-development?	Yes/No
	Are green roofs/green walls allowed and encouraged in new/re-development?	Yes
	Are complete green streets allowed and encouraged in new/re-development?	Yes
	Are turf pavers allowed and encouraged in new re/development?	Yes

Open Space Creation for Natural Resource Protection

	Is there a stream buffer ordinance in the community?	No

	What is the minimum buffer width?	N/A
	Is expansion of the buffer to include freshwater wetlands, steep slopes or the 100 year floodplain required?	
	Does the stream buffer ordinance specify that at least part of the stream buffer be maintained with native vegetation	N?A

surface requirements leave less room for trees! For example, excessive si

Municipality Comments	Reviewer Comments	Source
		p. 27 Land Development Procedures Manual.
An example of this can be found on Bay Street.		
	Reviewers were not able to obtain this information even after asking city staff several times for it.	
	There is no ordinance which denies this.	
	Some parking lots are designed in this way.	
	There is no ordinance or policy which denies this.	
	Streets with lower traffic volumes can be constructed without curb and gutter.	
	There are established design critera through the St. John's Water Management District BMP manual.	
	3 spaces per 1,000 sq ft of gross floor area, max of 6 spaces for each 1,000 sq ft of gross floor area	Sec 656.504 Code of Ordinances

	1 space per room, plus spaces for accessory uses e.g. restaraunts	Sec 656.504 Code of Ordinances
	1 space per 5,000 sf floor area (2 spaces min)	Sec 656.504 Code of Ordinances
	2	Sec 656.504 Code of Ordinances
	Standards are set as minimums, however maximums are set as the minimum plus 20% for parking lots with less than 100 spaces and the minimum plus 10% for parking lots with more than 100 spaces.	Sec 656.504 Code of Ordinances
	Agreement must be recorded as a deed restriction. Cannot be modified w/out consent of Director.	
	Total parking requirements are 90% the sum of the amount required for each separate principal use.	
	30% of the total parking spaces may be striped for compact-sized vehicles.	
	It can be used but is not being used currently. Incentivization should occur to make using this technology more attractive to developers.	
	Landscaping Standards	

	The St. John's Water Management District does allow this.	
	This is covered in the Landscaping Standards.	
	Open space and cluster designes are encouraged.	Comp Plan 3.3.8
	Open space standards require for open space to be set aside for active recreation.	Sec 656.420 Zoning Code
	4' is the standard.	Land Development Procedures Manual
	Sidewalks can be provided only on one side of the street if the sidewalk serves the majority of residents.	Land Developr
	Required on a case by case basis - not necessarily in urban areas.	
	20'	Zoning District Summary RMD-A

	3'	Zoning District Summary RMD-A
There is no policy for this and it is not practiced in the city.		
Some parks use pervious surfaces in parking lots. However, it is not used in private development.		
These are allowed but not encouraged and not used.		
There are some through the city but they are not encouraged. The Lee Boys and Girls Club new building plans to have a green roof and the Old Library non-profit center has a green roof.		
	Street trees are heavily emphasized in Section 3.12 of the Context Sensitive Streets design guidelines. Stormwater treatment in medians is also emphasized.	Context Sensitive Streets Publication
They are used but not promoted. Credit is allowed for pervious pavers through the St. John's Water Management District.		

	There are floodplain protections only.	

dewalk requirements may not allow for adequately sized tree pits or tree pits at

What to Look For	Score	Potential Score
Municipalities with smaller pavement widths for streets in low density residential developments score two points.	2	2
Municipalities where parking lanes are also allowed to serve as traffic lanes score one point.	1	1
Municipalities where the minimum radius allowed for cul de sacs is 35' or less score two points.	0	2
Municipalities which allow recessed landscaped islands for treatment of stormwater within cul de sacs score one point.	1	1
Municipalities where landscaping islands are designed for on site treatment score one point.	1	1
Municipalities where alternative turnarounds such as 'hammerheads' are allowed on short streets with low density residential developments score one point.	1	1
Municipalities where curb and gutters are not required for most residential street sections score two points.	2	2
Municipalities where stormwater standards include vegetated swales score two points.	2	2
Municipalities requiring less than or equal to one parking space for 200 square feet of gross floor area score one point.	1	1

Municipalities requiring less than or equal to one parking space per one and a half hotel rooms score one point.	1	1
Municipalities requiring less than or equal to one parking space for 250 square feet of gross floor area score one point.	1	1
Municipalities requiring two or less parking spaces per single family home score one point.	1	1
Municipalities where parking standards are assigned as minimums and maximums score two points.	2	2
Municipalities where shared parking arrangements are allowed score one point.	1	1
Municipalities where parking ratios are reduced if shared parking arrangements are in place score one point.	1	1
Municipalities where percent imperviousness of parking lots is reduced through variable space sizing score two points.	2	2
Municipalities where pervious material can be used for spillover parking areas score one point.	1	1
Municipalities which require a minimum landscaped percentage of parking lots score two points.	2	2

Municipalities requiring a minimum amount of pervious surfaces in parking lots score one point.	0	1
Municipalities where developers are incentivized to create structured parking in areas of high density score one point.	0	1
Municipalities where bioretention islands and other stormwater practices can be used within landscaped areas or setbacks score one point.	1	1
Municipalities where parking lots adjacent to a street, open space, or residential use are required to plant a landscaping strip adjoining the lot line score one point.	1	1
Municipalities where parking ratios are reduced in areas served by mass transit score one point.	1	1
Municipalities where open space/cluster development designs require a minimum of 25% open space score two points.	2	2
Municipalities where unimproved open space is allowed score two points.	0	2
Municipalities where standards for impervious cover reduction are present score one point.	0	1
Municipalities where open space/cluster designs are a by-right form of development score two points.	2	2
Municipalities where sidewalk widths as narrow at 4' are allowed in specific locations score one point.	1	1
Municipalities where sidewalks are sometimes permitted to be on only one side of the street score one point.	1	1
Municipalities where driveways are not always required score one point.	1	1
Municipalities where front setbacks for 1/2 acre residential lots are equal to or less than 20' score one point. .	1	1

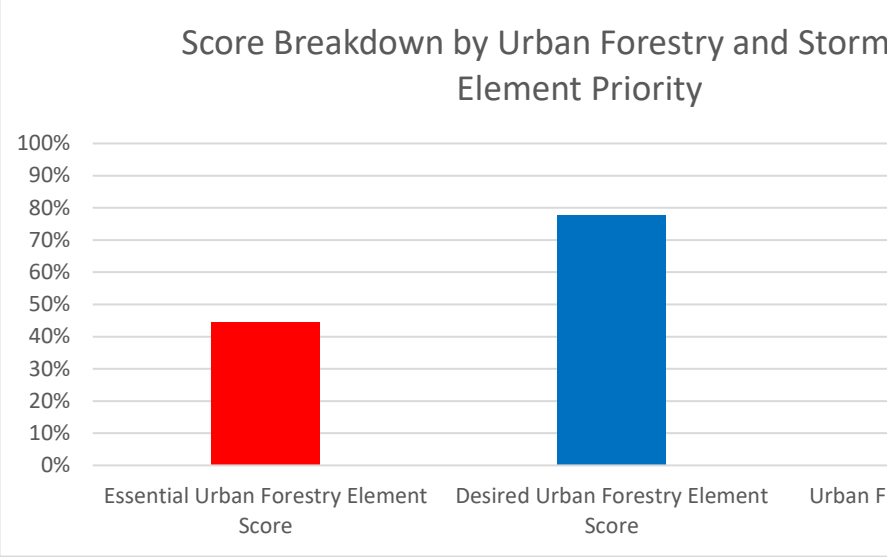
Municipalities where side setbacks for 1/2 acre residential lots are less 8' or less score one point.	1	1
Suspended pavement and structural cells are expensive options. However, they can provide trees with the soil volumes needed for maximum growth potential. Identify areas of the municipality (typically urbanizing areas) where the ecosystem benefits of large healthy trees outweigh the cost of tree technologies such as suspended pavement and structural cells. Municipalities who identify areas for structural cell and suspended pavement usage, score one point.	0	1
Approve permeable pavement as a stormwater BMP. Municipalities which approve permeable pavement as a stormwater BMP score one point.	1	1
Approve forested bioswales as a stormwater BMP. Municipalities which approve forested bioswales as a stormwater BMP score one point.	1	1
Approve green roofs as a stormwater BMP. Municipalities which approve green roofs as a stormwater BMP score one point.	1	1
Develop a complete green streets policy to require complete green streets during development/re-development. Municipalities with complete green street policies score two points.	2	2
Approve turf pavers as a stormwater BMP. Municipalities which approve turf pavers as a stormwater BMP score one point.	1	1
Municipalities whose codes/ordinances feature a stream buffer clause score two points.	0	2

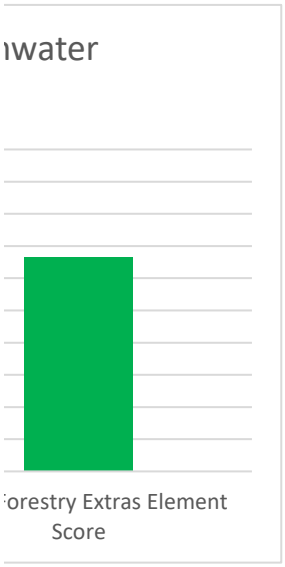
Municipalities whose codes/ordinances feature 100' buffer widths or more on perennial streams and 50' buffer widths or more on intermittent and ephemeral streams score one point.	0	1		
Municipalities whose stream buffers expand to include freshwater wetlands, steep slopes, and the 100 year floodplain score one point.	0	1		
Municipalities whose stream buffer ordinances specify that at least a part of the stream buffer must be maintained with native vegetation score one point.	0	1		
Sheet Score Breakdown				
Desired Urban Forestry Elements (2 points each)	18	24	75%	**Percent**
Urban Forestry Extras (1 point each)	23	30	77%	**Percent**
Total Score	41	54	76%	**Percent**

0 3
0 2
0 1

Breakdown by Urban Forest Priority

Essential Urban Forestry Element Score	**44%**
Desired Urban Forestry Element Score	**78%**
Urban Forestry Extras Element Score	**67%**





Total Audit Breakdown

Tree Care and Protection	Scored
Essential Elements (3 pts)	3
Desired Elements (2 pts)	8
Extras (1 pt)	8
Total Score	19

Plans and Goals	
Essential Elements (3 pts)	0
Desired Elements (2 pts)	8
Extras (1 pt)	0
Total Score	8

Implementation Capacity	
Essential Elements (3 pts)	9
Desired Elements (2 pts)	4
Extras (1 pt)	5
Total Score	18

Monitoring Progress	
Essential Elements (3 pts)	3
Desired Elements (2 pts)	4
Extras (1 pt)	1
Total Score	8

Emergency Response	
Essential Elements (3 pts)	0
Desired Elements (2 pts)	0
Extras (1 pt)	0
Total Score	0

Integration	
Essential Elements (3 pts)	9
Desired Elements (2 pts)	12
Extras (1 pt)	3
Total Score	24

Reducing Impervious Surfaces	
Desired Elements (2 pts)	18
Extras (1 pt)	23
Total Score	41

Total Points		
21	14%	Percent
14	57%	Percent
11	73%	Percent
46	41%	Percent

3	0%	Percent
6	133%	Percent
5	0%	Percent
14	57%	Percent

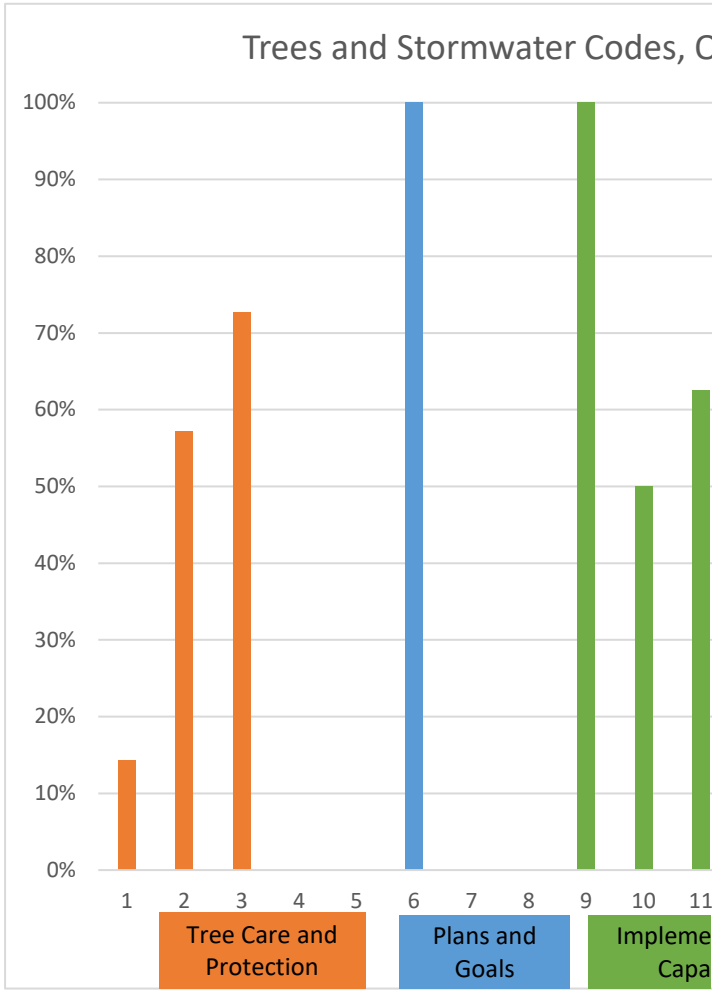
9	100%	Percent
8	50%	Percent
8	63%	Percent
25	72%	Percent

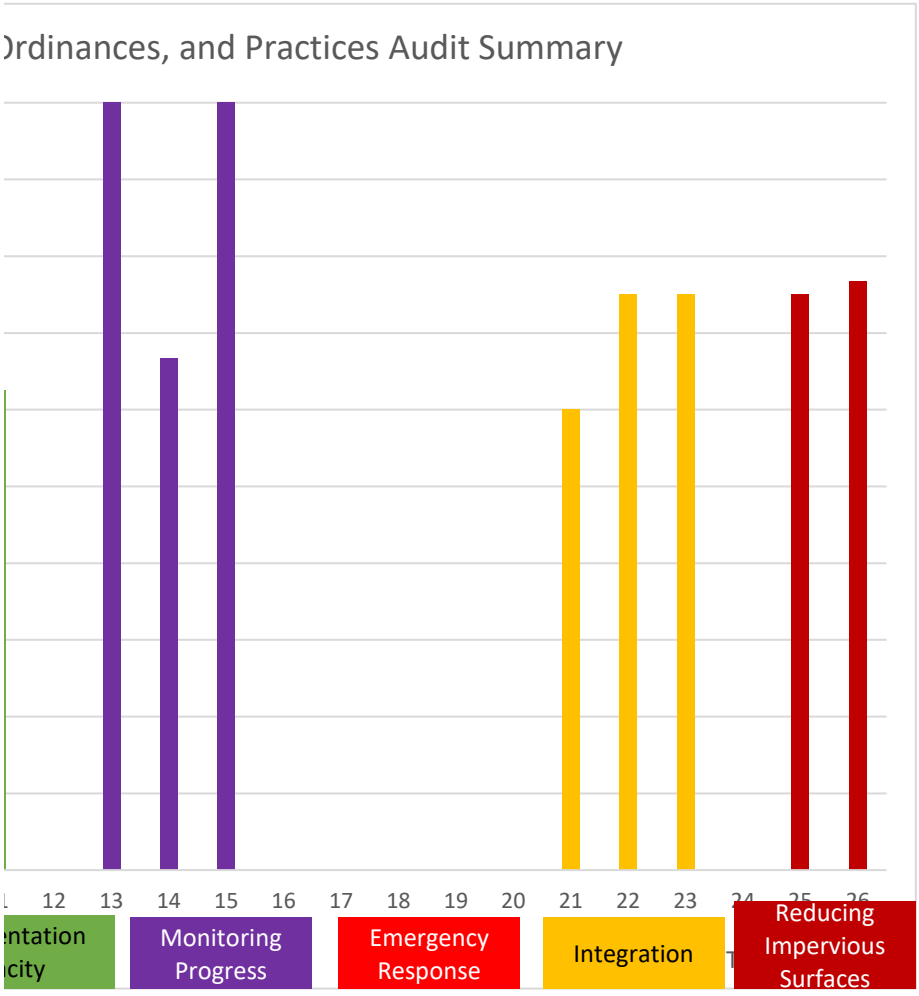
3	100%	Percent
6	67%	Percent
1	100%	Percent
10	80%	Percent

3	0%	Percent
2	0%	Percent
1	0%	Percent
6	0%	Percent

15	60%	Percent
16	75%	Percent
4	75%	Percent
35	69%	Percent

24	75%	Percent
30	77%	Percent
54	76%	Percent




Ordinances, and Practices Audit Summary
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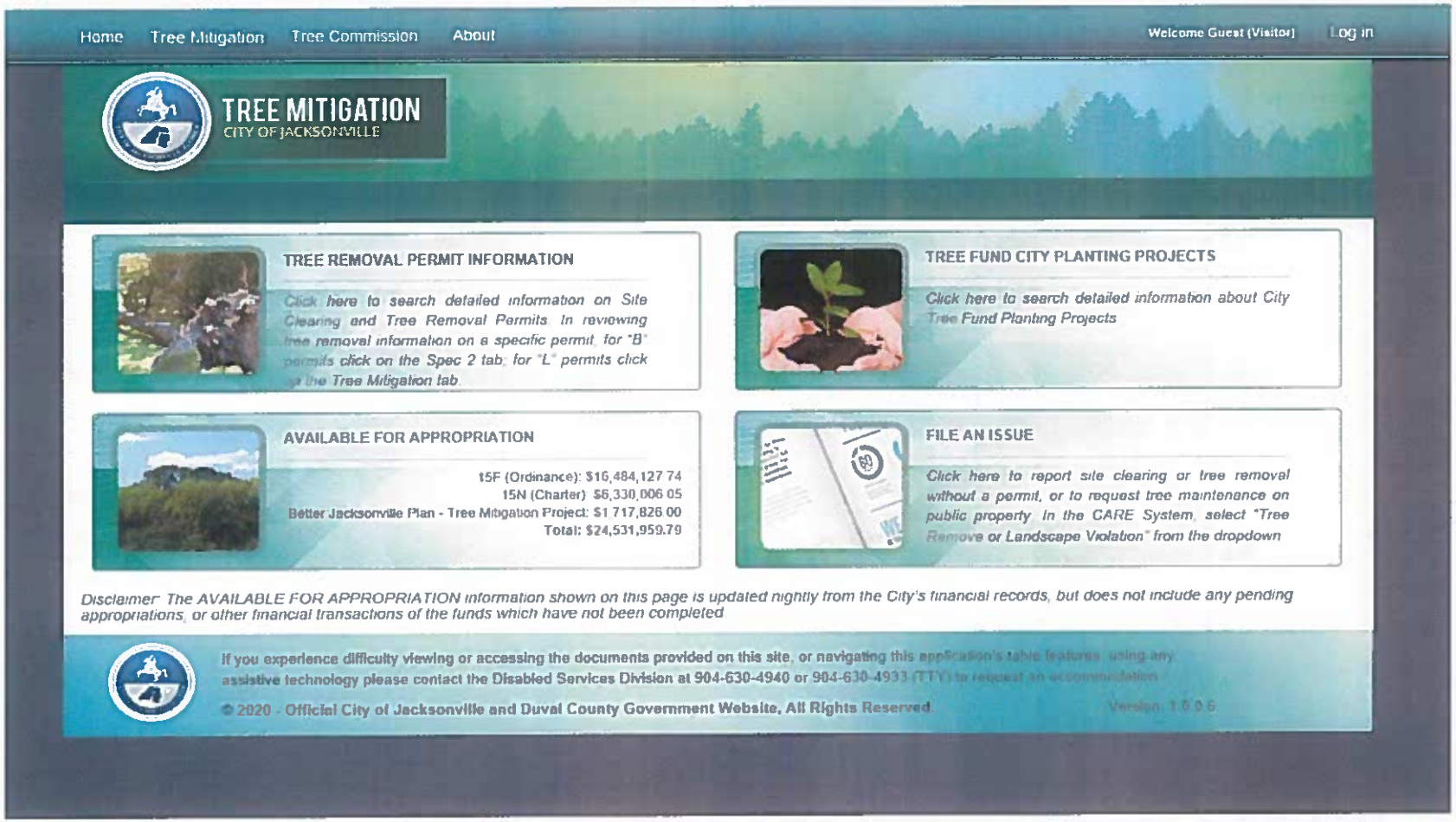
ntation
city
Monitoring Progress
Emergency Response
Integration
Reducing Impervious Surfaces

Attachment A

9/29/2020



Activity	Budget	Expenditures	Purchase Orders	Balance
00000189-5Th & Cleveland Ash Site Tree Planting	28,760	11,083	17,677	-
00000237-Avondale Tree Planting Plan	6,247	6,247	-	-
00000275-Brown's Dump Ash Site Tree Planting	5,181	2,149	3,033	-
00000378-County-Wide Tree Prog-Right Of Way	2,085,827	839,289	422,118	824,421
00000429-Duval County School Board Property	92,244	-	-	92,244
00000541-Hammond Blvd Project	175,761	-	165,478	10,283
00000604-Intersec,Bridge,Misc 09-10 Landscaping	18,468	-	-	18,468
00000651-King St Planting College To Park	16,106	7,381	8,725	-
00000659-Lenox Ave Planting Verna To Cassat	5,287	5,287	-	-
00000744-North Main Street Landscaping	10,446	1,290	-	9,156
00000755-Old St Aug At Bartram Park	1,836	1,836	-	-
00000982-Tree Protection & Related Expenses	1,451,069	14,120	-	1,436,949
00001035-Mandarin Road Tree Planting	82,667	-	8,066	74,601
00001036-Springfield Preservation Tree Planting	220,408	-	23,459	196,949
00001315-Level 2 Tree Planting Program	2,966,490	1,095,661	871,499	999,330
00001316-Moncrief Rd Beautification Project	409,341	-	267,078	142,264
00001317-Riverside Avondale Pres - Releaf	415,432	-	415,432	-
00001345-District 8 Tree Planting	263,837	211,070	52,767	-
00001606-Sulzbacher Village Level 3 Tree Planting	72,298	-	72,298	-
00001607-Hugenot Park Level 3 Tree Planting	105,587	-	105,587	-
00001623-Level 3 Tree Planting Program	1,000,000	-	-	1,000,000
All Activity Values	**9,433,292.33**	**2,195,412.79**	**2,433,216.05**	**4,804,663.49**
				-
All Activity Values	5,995	-	5,995	-
				-
All Activity Values	532,545	-	-	532,545
				-
All Activity Values	514,854	-	-	514,854
				-
All Activity Values	383,747	419,158	-	(35,412)
				-
All Activity Values	3,620,573	2,687,439	933134.24	-
				-
All Activity Values	18,857	9,428	9,428	-
				-
All Activity Values	1,031,432	-	-	1,031,432
				-
All Activity Values	2,266,376	-	-	2,266,376
				-
	17,807,670	**5,311,438**	**3,381,773**	**9,114,459**
00000544-Harts Road Tree Planting	3,127	3,127	-	-
00001035-Mandarin Road Tree Planting	48,919	-	3,321	45,598
	52,046	**3,127**	**3,321**	**45,598**

Available Balance, Revenues, and Expenditures by month

	Sep-20	Aug-20	July 2020	June 2020	May 2020	April 2020	March 2020	February 2020	January 2020	December 2019	November 2019	October 2019
15304-Tree Protection & Related Expenditures												
Cash	25,309,064	25,881,689	25,655,851	25,931,828	25,569,242	25,869,617	25,749,206	25,297,382	25,216,691	25,890,478	26,208,877	26,150,840
Liabilities	(25,870)	(325,172)	-	(4,783)	-	(4,830)	-	-	(36,014)	-	(109,903)	-
Net Budgeted Expenditures	(8,795,202)	(9,504,929)	(10,223,880)	(11,012,591)	(10,242,913)	(10,779,682)	(10,806,376)	(10,811,983)	(9,194,389)	(8,036,326)	(8,430,409)	(6,601,008)
Available Balance Total	**16,487,992**	**16,051,588**	**15,431,971**	**14,914,454**	**15,326,329**	**15,085,105**	**14,942,830**	**14,485,399**	**15,986,289**	**17,854,152**	**17,668,566**	**19,549,833**
Revenues	436,404	619,617	517,518	588,125	241,224	320,160	457,431	499,110	132,137	185,586	224,584	319,316
Expenditures	709,727	718,950	788,712	230,322	536,769	204,579	5,607	382,406	841,937	394,083	170,599	327,748
15305-Tree Mitigation & Related Expense												
Cash	6,380,752	5,713,900	5,627,999	5,529,537	5,472,360	5,438,277	5,408,352	5,198,881	5,079,685	5,061,305	5,039,376	4,998,722
Liabilities	-	-	-	(3,127)	-	-	-	-	-	-	-	-
Net Budgeted Expenditures	(48,919)	(48,919)	(48,919)	(48,919)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)
Available Balance Total	**6,331,833**	**5,664,981**	**5,579,080**	**5,477,492**	**5,420,315**	**5,386,232**	**5,356,307**	**5,146,835**	**5,027,639**	**5,009,260**	**4,987,330**	**4,946,676**
Revenues	666,852	85,901	39,255	119,510	34,083	29,925	209,471	119,196	18,379	21,930	40,654	72,927
Expenditures	-	-	-	3,127	-	-	-	-	-	-	-	-

PO Balance by Fund - 10/19/2020

Purchase Order Number	Fund	Supplier Name	Center	Account	Concatenated Segments	Remaining PO Balance
15304-Tree Protection & Related Expenditures (15F)						
0801758-5	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$0.50
9A08081-12	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$289.10
9A08644-27	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$300.00
606172-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$1,457.20
9A08081-7	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$2,041.45
605292-20	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$2,389.72
301974-4	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000275.00000.0000000	$3,032.77
8A01798-27	15304	Lewis Tree Service, Inc.	154006	549006	15304.154006.549006.000000.00000000.00000.0000000	$5,264.76
609074-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$5,312.00
0801758-4	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$5,774.40
301974-1	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$5,801.07
301974-3	15304	The Davey Tree Expert Company	151016	549006	15304.151016.549006.000000.00000000.00000.0000000	$5,994.50
0801758-2	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$6,773.63
602976-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$7,662.40
9A05520-0	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001035.00000.0000000	$8,066.35
7A02942-19	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000651.00000.0000000	$8,724.53
7A02942-26	15304	The Davey Tree Expert Company	154008	549006	15304.154008.549006.000000.00000000.00000.0000000	$9,428.34
9A08644-6	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$10,897.20
9A08081-10	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$12,421.31
9A08644-25	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$15,118.80
609076-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$16,348.80
301974-5	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000189.00000.0000000	$17,676.72
9A08081-14	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$21,463.30
609045-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$23,166.00
9A06015-0	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001036.00000.0000000	$23,459.24
9A08081-13	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$23,496.78
602977-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$24,074.23
9A08081-6	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$24,774.95
609044-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$28,026.00
609042-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$28,593.00
0801758-3	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$36,049.20
606674-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$37,107.36
602951-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$47,811.84
9A08081-11	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001345.00000.0000000	$52,767.40
607592-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$54,301.20
609046-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$55,490.00
9A08081-15	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$56,980.01
605100-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$61,471.44
609041-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$63,423.00
603668-20	15304	The Public Trust Environmental Legal	151004	549006	15304.151004.549006.000000.00001606.00000.0000000	$72,298.00
609043-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$93,742.00
603769-20	15304	The Public Trust Environmental Legal	151004	549006	15304.151004.549006.000000.00001607.00000.0000000	$105,587.00
603831-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000541.00000.0000000	$165,478.00
609039-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$191,322.00
609040-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$214,822.00
8A01798-33	15304	Lewis Tree Service, Inc.	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$261,016.30
607568-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001316.00000.0000000	$267,077.80
9A08081-1	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001317.00000.0000000	$415,431.59
609384-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$708,928.00
15305-Tree Mitigation & Related Expense (15N)						
9A05520-0	15305	Fernandina Mulch & Stone, LLC	151004	549006	15305.151004.549006.000000.00001035.00000.0000000	3,321.49

Attachment B

CITY OF JACKSONVILLE TREE PLANTING PROJECTS - ACTIVE

Visit https://pg-cloud.com/JacksonvilleFL/ for City of Jacksonville Tree Project Maps

Visit jaxtreemitigation.coj.net - Tree Fund City Projects for links to legislation and planting details

CD	Project Title	Project Scope	Project or Ordinance Number	Division/Project Manager	Estimated Cost	Actual Cost	Anticipated Start Date	Actual Start Date	Anticipated Completion Date	Actual Completion Date	Status
7	Main Street	Tree removal and Planting on N. Main St. between 1st. St. and 7th St.	2017-0111-E	Public Works - Mowing and Landscape Richard Leon/Fred Pope	$22,057.00	$20,176.85	8/20/2018	8/20/2018	9/17/2018	10/18/2018	Complete - Davey 1/yr
7	Harts Rd & Dunn Ave. Medians and Streetscape in Downtown Jacksonville	5 Date Palms to be planted on two medians on Harts Rd. at the cross street of Dunn Ave. (Phase 1) 8 Date Palms to be planted as replacements in Downtown Jax (4 on Riverside Ave., 2 on Adam St. W, 1 on Forsyth St W, 1 on Monroe St) (Phase 2) 13 Date Palms total. Includes removal of existing Date Palm stumps in city street planting boxes. Introduced by CM Gaffney. Appropriation from Tree Fund 15F.	2018-0007-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$62,540.03	$62,540.03	Phase 1 4/10/2018 Phase 2 4/25/18	Phase 1 3/23/2018 Phase 2 4/30/18	Phase 1 6/11/18 Phase 2 6/11/18	6/11/2018	Complete - Davey 1/yr
6	Old St. Augustine Rd Medians	Two median tree plantings on Old St. Augustine Rd. from Bartram Park Blvd to entrance of Palmetto Leaves Park South. (No removals) Introduced by CM Schellenberg. Appropriation from Tree Fund	2018-0043-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$18,364.21	$18,364.21	4/20/2018	6/1/2018	8/8/201	10/18/2018	Complete - Davey 1/yr
14	King Street	King St. from College St to Park St., replacement planting on nine medians and sidewalk cut-outs. Introduced by CM Love. Appropriation requested from 15F.	2018-0159-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$85,366.23	$73,813.92	5/11/2018	5/11/2018	8/20/2018	10/18/2018	Complete - Davey 1/yr
4	Patton Rd/Beach Blvd. -Southside	Right of Way Plantings on two adjacent sites at the intersection of Patton Rd. and Beach Blvd.,(no removals) and residential right of way plantings. Introduced by CM Scott Wilson and through citizen request. Appropriation requested from 15F ($32,202.87) and 15N ($62,080.49)	2018-0190-E	Public Works - Mowing and Landscape Dave McDaniel/Kathleen McGovern	$94,283.36	$94,283.36	11/15/2018	2/20/2019	3/14/2019	3/14/2019	Complete - Davey 2/yr
14	Avondale Neighborhood - Tree Planting Plan	Tree Planting in City ROW on residential streets in Avondale replace dead/storm damaged trees. Introduced by CM Love. Appropriation requested from 15F.	2018-0273-E	Public Works - Mowing and Landscape Richard Leon/Kathleen McGovern	$31,232.60	$31,232.60	7/19/2018	7/19/2018	8/20/2018	12/20/2018	Complete - Davey 1/yr
4	Lenox Ave. Tree Planting	Tree Planting in City ROW tree planting (no removals) on Lenox Ave. from Shen Ave to Cassat Ave. Introduced by CM Dennis, Approriation requested from 15F	2018-0307-E	Public Works - Mowing and Landscape Dave McDaniel/Kathleen McGovern	$26,435.84	$26,435.84	10/12/2018	10/15/2018	10/26/2018	12/20/2018	Complete - Davey 1/yr
7	Harts Rd. II Medians and Right of Way	Tree Planting in City ROW and medians; Introduced by CM Gaffney	2018-0369-E	Public Works - Mowing and Landscape Dave McDaniel/Kathleen McGovern	$31,265.81	$31,265.81	9/12/2018	9/12/2018	10/2/2018	12/20/2018	Complete - Davey 1/yr
6	Mandarin Rd. Tree Planting	Tree Planting in City ROW tree planting along new trail/walk and supplementing existing medians. (65 trees and MOT) Introduced by CM Schellenberg, Appropriation requested from 15N and 15F	2018-0791-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$166,045.00	$45,846.43	3/25/2019	3/25/2019	4/14/2019	4/14/2019	Complete - Liberty 2/yr
7	Springfield Neighborhood Tree Planting - SPAR collaboration	Tree Planting in City ROW on residential streets and businesses in Springfield for tree planting requests and to replace dead/storm damaged trees. (146 trees) Introduced by CM Gaffney. Appropriation requested from 15F.	2018-0792-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$278,872.00	$81,922.79	3/25/2019	4/14/2019	6/25/2019	6/25/2019	Complete - Liberty 2/yr
8	Moncrief Rd. Tree Planting	Tree Planting of 142 trees in City ROW along Moncrief Rd. as park of Moncrief Rd. Beautification Project from 33rd. St. to 45th. St.; Introduced by CM Newby	2019-0178-E	Planning and Development Jeff Lucovsky	$409,341.42	Inspection pending	9/1/2020	9/1/2020			Complete - Liberty 2/yr
14	RAP ReLeaf Neighborhood Tree Planting - RAP collaboration	Tree Planting in City ROW on residential streets and businesses in District 14 for tree planting requests and replacement dead/storm damaged trees. (364 trees) Introduced by CM Love. Appropriation requested from 15F.	2019-0044-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$781,748.00	$781,748.00	4/20/2019	5/1/2019	5/1/2019	10/1/2020	Complete - Davey 1/yr
8	District 8 Tree Planting	Tree Planting in Yancey Park, Pritchard Rd. Median, and Moncrief - Dinsmore Rd. right of way. Introduced by CM Pittman. Appropriation requested from 15F.	2019-0521-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$256,921.95	$256,921.95	3/25/2020	3/25/2020	6/1/2020	6/1/2020	Complete - Davey 1/yr
12	Hammond Blvd.	80 trees along Hammond Blvd and Devoe St. right of ways and Medians. Additional trees at Thomas Jefferson Park.	2017-0767-E	Public Works - Mowing and Landscape Fred Pope/ Kathleen McGovern	$164,478.00	$164,478.00	7/1/2020	7/1/2020	10/1/2020	10/1/2020	Complete - Liberty 2/yr

CITY OF JACKSONVILLE LEVEL 2 TREE PLANTING PROJECTS

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	Requesting Entity	Project Scope	Status	Appropriation Amount	Obligated	Contract/Warranty
	Kensington Association HOA Director	**54** trees requested within Kensington Lakes city right of ways along Kensington Gardens Blvd. and Kensington Lakes Dr to replace trees lost due to storm damage/disease; may include removals. Planting Plan pending.	Complete	$124,202.62		Davey -1/yr
	Cathedral District Tree Planting	**50+** trees requested as Cathedral District (CD7) tree planting, may include removal of damaged/diseased trees. City right of way tree plantings within general proximity but not limited to State St to Catherine St. to Main St. to Adams St.; site evaluation scheduled	Complete	$120,371.14		Liberty 2/yr
	Executive Director, Tree Hill Nature Center	**22** trees requested in Tree Hill amphitheater parking area; site plan complete; no removals required; ready for review pending cost estimate per new countywide tree planting contract.	Complete	$21,472.80	$21,472.80	Liberty 3/mos
	San Marco Preservation Society and Greenscape, San Marco Tree Planting	**102** Trees requested in city right of ways within District 5, includes removal of damaged/diseased trees; site evaluation scheduled	Punchlist/Complete	$247,749.52		Davey -1/yr
	Sheffield Elementary School PTA President	**10** Trees requested to provide shade for existing play area/field at Sheffield Elementary School; site visit complete - pending design and review.	Complete	$20,414.48		Davey -1/yr
	S-Line Biodiversity Corridor Tree Planting	Installation of **25** trees throughout the S-Line Trail Biodiversity Corridor. This will offer additional tree canopy and shade to the trail.	Complete	$30,949.40	$30,949.40	Liberty 3/mos
	Canopy Place Tree Planting/resident request	Installation of **40** trees in city right of ways and medians to provide additional tree canopy, sound buffer and screening.	Complete	$117,483.97		Davey -1/yr
	Sunrise Ridge/resident request	Installation of **40** tree in city right of ways to increase tree canopy as well screening and buffer from adjacent highway.	Complete	$107,316.52		Davey -1/yr
	Jacksonville Beach Golf Park/Jax Beach	Installation of **156** trees in city golf course park to increase tree canopy, create screening, and attract wildlife.	Complete	$147,562.80	$147,562.80	Liberty 3/mos
	Yates Building - Cultural Council of Greater Jacksonville	**8** Trees to be installed around renovated fountain at building entrance	Complete	$38,312.00		Liberty 2/yr
	City Cemetery - citizen request	**18** Trees in right of ways on Ionia St. and Jessie St.	Complete	$41,350.50		Liberty 2/yr
	Baymeadows East Association Tree Planting	**119** Trees in right of ways and medians on Baymeadows East and Fort Family Regional Park	Complete	$284,900.07		Davey -1/yr

	Requesting Entity	Project Scope	Status	Appropriation Amount	Obligated	Contract/Warranty
	Cobblestone Homeowners Association/residential requests/HOA	Installation of 105 trees in city right of ways and medians to provide additional tree canopy, sound buffer and screening.	In Progress	$191,322.00		Liberty 2/yr
	Love Grove/Willowbranch	51 Trees in right of ways around and within Willowbranch Park	Scheduling	$93,742.00		Liberty 2/yr
	Ed Austin Park Tree Planting/Resident request	115 Trees in right of ways around and within Willowbranch Park	In Progress	$214,822.00		Liberty 2/yr
	Nathan Krestul Park - Friends of Krestul Park	Trees within Park - 34 trees	Scheduling	$95,580.00		Liberty 2/yr
	John Gorrie Dog Park/Friends of John Gorrie Dog Park	Trees along Park Right of Way - Buffer - 11 Trees	Scheduling	$23,166.00		Liberty 2/yr
	Atlantic Blvd./Atlantic Blvd. Business Assoc.	Trees along Park Right of Way and within medians	In Development			Liberty 2/yr
	Southside Estates Park/Residents adjacent to park	Trees within Park	In Development			Liberty 2/yr
	Alexandria Oaks Park/SMPS and Bolles School request	Trees within Park - 15 trees	Scheduling	$28,593.00		Liberty 2/yr
	Huntington Forest Park/Resident request to CM	Trees along Park Right of Way - Buffer - 15 trees	Scheduling	$28,026.00		Liberty 2/yr
	Neptune Beach/Residential requests - City of Neptune	Trees within residential Right of Ways - 47 trees	Scheduling	$55,490.00		Liberty 3/mos
	Greenland Park/residents adjacent to park	Trees within Park - 53 trees	Scheduling	$95,580.00		Liberty 2/yr
	Harlow Blvd./Resident request	Trees within median on Harlow Blvd. - 47 trees	MBRC	$102,804.00		Liberty 2/yr
	Atlantic Beach/City of Atlantic Beach	Trees within Atlantic Beach residential Right of Ways and Parks - 96 trees	MBRC	$194,532.00		Liberty 2/yr

Attachment C

GIC: Jacksonville Trees to Offset Stormwater (May 2019)
Draft Priorities for Review by Tree Commission
Potential Recommendation to Resiliency Subcommittee on Environmental Planning
Draft 10.20.20

Working group
Nancy Powell, John November, Lad Hawkins, Tom Larson, Bill Hoff, Jr., Bruce Fouraker

1) Set ambitious goals and implement a major plan for tree planting to effect stormwater, heat index and beautification. Place significant focus on the Northside, Eastside and Downtown.
Adapted from GIC Recommendation #10 and #12 with measurement #6

- Identify area on the Northside/former redline areas where the data shows a lack of tree canopy
- Add Downtown as a priority due to the low canopy coverage and revitalization efforts
- Set a specific goal to increase the number of trees by XXXX, which would increase the canopy by Y and lower the heat index by Z by YEAR.
- Level 2 funding and resources be set against that goal - over next 1, 3 and 5 years.
- Measure results
- Community wide education effort on the project and benefit to the residents and businesses.

2) Strengthen Ordinance Codes to support a healthy and growing tree canopy.
Expands on GIC Recommendation #7 and #15:

- Review and revise the streetscape, tree, landscape, parking lot codes to ensure that more canopy trees are required and able to grow and thrive. (We understand that a subcommittee including Susan Grandin, Fred Pope and others are working on this – would like ability to give input.)

3. Plant trees around stormwater ponds.
GIC Recommendation #13.
Set a specific goal for this using the data from the mapping tools and the stormwater calculators. Prioritize areas of town that have higher flood risks.

4. Plan and implement major education effort to private property owners on benefits of caring for trees, retaining mature trees, and planting new trees.
In lieu of GIC Recommendation #5, adapted from GIC #4.

5. Tree Maintenance Operations and Funding

- Consideration of larger match for mature tree maintenance (currently 25%)
- Coordination between DOT and City for state road maintenance.

Resiliency Working Group Draft Priorities 10-20-20

Top recommendations to improve forest care and coverage in Jacksonville listed in priority order include the following:

1. **Link the city's urban trees to stormwater infrastructure through city documents including the Comprehensive Plan, Land Development Procedures Manual, and Stormwater Design Manual.** These documents should discuss the role of urban forests in stormwater management. They should also credit trees as best management practices (BMPs) for stormwater management.

2. **Apply for aid when cleaning up and replanting trees post-storm.** The Federal Emergency Management Agency (FEMA) offers aid for not just storm clean up, but also for replanting, as long as the urban forest is clearly identified as a part of green stormwater infrastructure. The Florida Forest Service (FFS) Urban and Community Forestry staff is an excellent resource for more information on this topic. They are currently working with FEMA to develop the standards for how to account for tree loss.

3. **Use the GIC's stormwater uptake calculator to determine the benefits of maintaining or increasing tree canopy goals by watershed.** The calculator provided to Jacksonville allows the city to determine the stormwater benefits or detriments (changes in runoff) from adding or losing trees and calculates the pollution loading reductions for nitrogen, phosphorus and sediment.

4. **Discourage the practice of clear-cutting development sites in the City of Jacksonville.** Total loss of tree canopy on a site results in excess runoff and excess nutrient loading. In addition, housing developments that include green space and natural areas in their plans sell faster and for higher profits (Benedict and McMahon 2006). Higher profits result in increased tax revenue for a city. One way to avoid clear-cutting lots is by setting tree canopy coverage requirements or preventing clear cutting prior to submission of an approved site plan for a development. These requirements can be set as percentages by land use or by tree density requirements per land use/area.

5. **Remove the single-family dwelling exemption from tree removal permit ordinances.** The City of Jacksonville requires tree removal permits for most land uses but exempts single family dwellings. A significant portion of the city's land area is made up of single family dwellings. As such, a large portion of tree canopy can be lost. Having a permit requirement would allow the urban forester to educate the landowner and determine if there are alternatives to tree removal. This recommendation will require more staff for review, enforcement and education.

(4) In lieu of this ↑

Total loss of tree canopy on a site that has been clear cut results in excess runoff and additional nutrient loading.

6. **Conduct a land cover assessment every four years to determine current canopy coverage and allow for comparison of tree canopy coverage change over time.** Keeping tree canopy coverages at levels that promote public health, walkability, and groundwater recharge is vital for livability and for meeting state water quality standards. Regular updates to land cover maps allow for this analysis and planning to take place. In addition, regular updates to an urban tree canopy accompanied by stormwater uptake calculations can be used to show FEMA that tree canopy is being used as green stormwater infrastructure.

(1)

7. **Require 600, 1,000 and 1,500 cubic feet soil volume planting requirements for small, medium, and large trees respectively for all tree plantings.** At a minimum, canopy trees require 1000 cubic feet of soil volume to thrive as recommended by the Environmental Protection Agency (Stormwater to Street Trees 2013). The City of Jacksonville currently does not require a minimum root zone volume. Instead, tree planting areas are specified. A lack of minimum root zone volume requirement can lead to inadequate soil volume for newly planted trees, contributing to suboptimal growth and health.

(2)

8. **Consult urban forestry staff at the beginning of development projects for city-owned and privately-owned land.** Urban forestry staff in most cities are consulted when tree survival has already been compromised. The city should involve urban forestry staff at the beginning of projects during preliminary design discussions so forestry staff can identify trees that should be preserved on-site along with tree preservation mechanisms.

2

Source: GIC Trees to Offset Stormwater, May 2019

9. **Inspect tree protection mechanisms prior to the beginning of construction.** In many cities, staff either do not inspect tree protection mechanisms or those who conduct inspections lack training in tree protection mechanisms, such as fencing, and arboriculture. City staff should be trained to inspect tree protection mechanisms and inspections should be required before construction can begin.

10. **Set clear measurable goals with actionable steps for the conserving the urban forest.** The city should create urban forestry goals by neighborhood, watershed, or community zone. Having a canopy goal allows cities to recognize when canopy is too low or and make a plan for how to bring the canopy up to desired levels or to prevent excessive tree loss. Having a goal also inspires community tree planting campaigns.

11. **Use the urban forestry budget calculator to determine funds needed to reach planting goals.** Planting and maintaining trees costs additional money, but is well worth the outcomes for ecosystem services that trees provide. The city should determine the goal for its tree canopy coverage level and allocate funds to achieve it over time. Most importantly, the city should encourage more planting on private property since most city land is in private ownership.

12. **Use the new infiltration maps to prioritize tree planting and tree retention areas.** GIC created infiltration maps to show where trees should be planted and retained for maximum stormwater benefit. Distribute these maps to community groups and use them within municipal government processes to guide tree planting efforts and encourage tree preservation.

13. **Plant trees around stormwater ponds.** Trees take up stormwater and do not threaten the structural integrity of stormwater ponds as long as they are not placed on the embankment. Trees also beautify a landscape and can allow a stormwater pond to function as an amenity and a stormwater management device. Tree roots also work to cleanse groundwater and can add shade to a stormwater pond to reduce algal growth.

14. **Incentivize LID and constructed green infrastructure (green roofs, bioswales, recessed planting beds etc.).** Most developers in Jacksonville are not utilizing LID (Low Impact Development) strategy BMPs, though the regulatory framework exists for them to do so. One way to encourage the use of LID BMPs is to green light - faster approval processes -- the development process when substantial LID methods are employed on-site.

15. **Develop a complete green streets policy.** Complete green streets allow for integration of stormwater management and aesthetic goals. By incorporating vegetation as an integral part of the design, green streets create and connect habitat, reduce urban heat island effect, help remove air pollutants, and promote walking and biking. The city should develop a green streets policy that includes the following elements: green infrastructure (trees and other vegetation), pedestrian space, bicycle lanes, and stormwater management.

16. **Develop an Urban Forest Management Plan (UFMP) for the city.** The city should include the current condition of the urban forest, the current maintenance costs, and options to achieve the urban tree canopy coverage goals in a citywide UMFP. A UFMP details a vision for urban tree canopy. It meshes local government and community interests to proactively manage the urban canopy and provide long term benefits. The city should develop an UFMP which describes the condition of the urban forest, the current maintenance costs, and the urban tree canopy coverage goals and methods to achieve them.

17. **Develop a Forestry Emergency Response Plan (FERP) for the city.** Forestry Emergency Response Plans (FERPs) are essential parts of any municipality's hazard mitigation and emergency management plans. Elements of FERPs should be given the same thought and attention paid to other aspects of emergency response management. FERPS should include the following sections: tree benefits, risk management and pre-disaster response, and post-disaster response and FEMA reimbursement processes for tree loss.

18. **Re-use urban waste wood.** Re-use of urban waste wood is an excellent way to engage the community, get them excited about urban forestry, and make a positive impact on the local economy. The USFS Southern Region funded the Southeast Urban Wood Exchange which connects urban wood producers and processors. Urban wood in Jacksonville can be posted to this site and used by locals. Access the website at: http://www.urbanwoodexchange.org/index.php.

9/29/2020

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TREE MITIGATION
CITY OF JACKSONVILLE

TREE REMOVAL PERMIT INFORMATION

Click here to search detailed information on Site Cleaning and Tree Removal Permits. In reviewing tree removal information on a specific permit, for "B" permits click on the Spec 2 tab, for "L" permits click on the Tree Mitigation tab.

TREE FUND CITY PLANTING PROJECTS

Click here to search detailed information about City Tree Fund Planting Projects

AVAILABLE FOR APPROPRIATION

15F (Ordinance): $16,484,127.74
15N (Charter): $6,330,006.05
Better Jacksonville Plan - Tree Mitigation Project: $1,717,826.00
Total: $24,531,959.79

FILE AN ISSUE

Click here to report site cleanng or tree removal without a permit, or to request tree maintenance on public property. In the CARE System, select "Tree Remove or Landscape Violation" from the dropdown.

Disclaimer: The AVAILABLE FOR APPROPRIATION information shown on this page is updated nightly from the City's financial records, but does not include any pending appropriations, or other financial transactions of the funds which have not been completed.

If you experience difficulty viewing or accessing the documents provided on this site, or navigating this application's table features using any assistive technology please contact the Disabled Services Division at 904-630-4940 or 904-630-4933 (TTY) to request an accommodation.

Version 1.0.0.6

Activity	Budget	Expenditures	Purchase Orders	Balance
00000189-5Th & Cleveland Ash Site Tree Planting	28,760	11,083	17,677	-
00000237-Avondale Tree Planting Plan	6,247	6,247	-	-
00000275-Brown's Dump Ash Site Tree Planting	5,181	2,149	3,033	-
00000378-County-Wide Tree Prog-Right Of Way	2,085,827	839,289	422,118	824,421
00000429-Duval County School Board Property	92,244	-	-	92,244
00000541-Hammond Blvd Project	175,761	-	165,478	10,283
00000604-Intersec,Bridge,Misc 09-10 Landscaping	18,468	-	-	18,468
00000651-King St Planting College To Park	16,106	7,381	8,725	-
00000659-Lenox Ave Planting Verna To Cassat	5,287	5,287	-	-
00000744-North Main Street Landscaping	10,446	1,290	-	9,156
00000755-Old St Aug At Bartram Park	1,836	1,836	-	-
00000982-Tree Protection & Related Expenses	1,451,069	14,120	-	1,436,949
00001035-Mandarin Road Tree Planting	82,667	-	8,066	74,601
00001036-Springfield Preservation Tree Planting	220,408	-	23,459	196,949
00001315-Level 2 Tree Planting Program	2,966,490	1,095,661	871,499	999,330
00001316-Moncrief Rd Beautification Project	409,341	-	267,078	142,264
00001317-Riverside Avondale Pres - Releaf	415,432	-	415,432	-
00001345-District 8 Tree Planting	263,837	211,070	52,767	-
00001606-Sulzbacher Village Level 3 Tree Planting	72,298	-	72,298	-
00001607-Hugenot Park Level 3 Tree Planting	105,587	-	105,587	-
00001623-Level 3 Tree Planting Program	1,000,000	-	-	1,000,000
All Activity Values	**9,433,292.33**	**2,195,412.79**	**2,433,216.05**	**4,804,663.49**
				-
All Activity Values	5,995	-	5,995	-
				-
All Activity Values	532,545	-	-	532,545
				-
All Activity Values	514,854	-	-	514,854
				-
All Activity Values	383,747	419,158	-	(35,412)
				-
All Activity Values	3,620,573	2,687,439	933134.24	-
				-
All Activity Values	18,857	9,428	9,428	-
				-
All Activity Values	1,031,432	-	-	1,031,432
				-
All Activity Values	2,266,376	-	-	2,266,376
				-
	17,807,670	**5,311,438**	**3,381,773**	**9,114,459**
00000544-Harts Road Tree Planting	3,127	3,127	-	-
00001035-Mandarin Road Tree Planting	48,919	-	3,321	45,598
	52,046	**3,127**	**3,321**	**45,598**

Available Balance, Revenues, and Expenditures by month

	Sep-20	Aug-20	July 2020	June 2020	May 2020	April 2020	March 2020	February 2020	January 2020	December 2019	November 2019	October 2019
15304-Tree Protection & Related Expenditures												
Cash	25,309,064	25,881,689	25,655,851	25,931,828	25,569,242	25,869,617	25,749,206	25,297,382	25,216,691	25,890,478	26,208,877	26,150,840
Liabilities	(25,870)	(325,172)	-	(4,783)	-	(4,830)	-	-	(36,014)	-	(109,903)	-
Net Budgeted Expenditures	(8,795,202)	(9,504,929)	(10,223,880)	(11,012,591)	(10,242,913)	(10,779,682)	(10,806,376)	(10,811,983)	(9,194,389)	(8,036,326)	(8,430,409)	(6,601,008)
Available Balance Total	**16,487,992**	**16,051,588**	**15,431,971**	**14,914,454**	**15,326,329**	**15,085,105**	**14,942,830**	**14,485,399**	**15,986,289**	**17,854,152**	**17,668,566**	**19,549,833**
Revenues	436,404	619,617	517,518	588,125	241,224	320,160	457,431	499,110	132,137	185,586	224,584	319,316
Expenditures	709,727	718,950	788,712	230,322	536,769	204,579	5,607	382,406	841,937	394,083	170,599	327,748
15305-Tree Mitigation & Related Expense												
Cash	6,380,752	5,713,900	5,627,999	5,529,537	5,472,360	5,438,277	5,408,352	5,198,881	5,079,685	5,061,305	5,039,376	4,998,722
Liabilities	-	-	-	(3,127)	-	-	-	-	-	-	-	-
Net Budgeted Expenditures	(48,919)	(48,919)	(48,919)	(48,919)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)	(52,046)
Available Balance Total	**6,331,833**	**5,664,981**	**5,579,080**	**5,477,492**	**5,420,315**	**5,386,232**	**5,356,307**	**5,146,835**	**5,027,639**	**5,009,260**	**4,987,330**	**4,946,676**
Revenues	666,852	85,901	39,255	119,510	34,083	29,925	209,471	119,196	18,379	21,930	40,654	72,927
Expenditures	-	-	-	3,127	-	-	-	-	-	-	-	-

PO Balance by Fund - 10/19/2020

Purchase Order Number	Fund	Supplier Name	Center	Account	Concatenated Segments	Remaining PO Balance
15304-Tree Protection & Related Expenditures (15F)						
0B01758-5	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$0.50
9A08081-12	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$289.10
9A08644-27	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$300.00
606172-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$1,457.20
9A08081-7	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$2,041.45
605292-20	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$2,389.72
301974-4	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000275.00000.0000000	$3,032.77
8A01798-27	15304	Lewis Tree Service, Inc.	154006	549006	15304.154006.549006.000000.00000000.00000.0000000	$5,264.76
609074-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$5,312.00
0B01758-4	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$5,774.40
301974-1	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$5,801.07
301974-3	15304	The Davey Tree Expert Company	151016	549006	15304.151016.549006.000000.00000000.00000.0000000	$5,994.50
0B01758-2	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$6,773.63
602976-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$7,662.40
9A05520-0	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001035.00000.0000000	$8,066.35
7A02942-19	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000651.00000.0000000	$8,724.53
7A02942-26	15304	The Davey Tree Expert Company	154008	549006	15304.154008.549006.000000.00000000.00000.0000000	$9,428.34
9A08644-6	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$10,897.20
9A08081-10	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$12,421.31
9A08644-25	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$15,118.80
609076-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$16,348.80
301974-5	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00000189.00000.0000000	$17,676.72
9A08081-14	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$21,463.30
609045-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$23,166.00
9A06015-0	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001036.00000.0000000	$23,459.24
9A08081-13	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$23,496.78
602977-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$24,074.23
9A08081-6	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$24,774.95
609044-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$28,026.00
609042-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$28,593.00
0B01758-3	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$36,049.20
606674-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$37,107.36
602951-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$47,811.84
9A08081-11	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001345.00000.0000000	$52,767.40
607592-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$54,301.20
609046-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$55,490.00
9A08081-15	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$56,980.01
605100-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$61,471.44
609041-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$63,423.00
603668-20	15304	The Public Trust Environmental Legal	151004	549006	15304.151004.549006.000000.00001606.00000.0000000	$72,298.00
609043-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$93,742.00
603769-20	15304	The Public Trust Environmental Legal	151004	549006	15304.151004.549006.000000.00001607.00000.0000000	$105,587.00
603831-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00000541.00000.0000000	$165,478.00
609039-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$191,322.00
609040-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001315.00000.0000000	$214,822.00
8A01798-33	15304	Lewis Tree Service, Inc.	151004	549006	15304.151004.549006.000000.00000378.00000.0000000	$261,016.30
607568-20	15304	Fernandina Mulch & Stone, LLC	151004	549006	15304.151004.549006.000000.00001316.00000.0000000	$267,077.80
9A08081-1	15304	The Davey Tree Expert Company	151004	549006	15304.151004.549006.000000.00001317.00000.0000000	$415,431.59
609384-20	15304	Fernandina Mulch & Stone, LLC	154007	549006	15304.154007.549006.000000.00000000.00000.0000000	$708,928.00
15305-Tree Mitigation & Related Expense (15N)						
9A05520-0	15305	Fernandina Mulch & Stone, LLC	151004	549006	15305.151004.549006.000000.00001035.00000.0000000	3,321.49

CITY OF JACKSONVILLE TREE PLANTING PROJECTS - ACTIVE

Visit https://pg-cloud.com/JacksonvilleFL/ for City of Jacksonville Tree Project Maps

Visit jaxtreemitigation.coj.net - Tree Fund City Projects for links to legislation and planting details

CD	Project Title	Project Scope	Project or Ordinance Number	Division/Project Manager	Estimated Cost	Actual Cost	Anticipated Start Date	Actual Start Date	Anticipated Completion Date	Actual Completion Date	Status
7	Main Street	Tree removal and Planting on N. Main St. between 1st. St. and 7th St.	2017-0111-E	Public Works - Mowing and Landscape Richard Leon/Fred Pope	$22,057.00	$20,176.85	8/20/2018	8/20/2018	9/17/2018	10/18/2018	Complete - Davey 1/yr
7	Harts Rd & Dunn Ave. Medians and Streetscape in Downtown Jacksonville	5 Date Palms to be planted on two medians on Harts Rd. at the cross street of Dunn Ave. (Phase 1) 8 Date Palms to be planted as replacements in Downtown Jax (4 on Riverside Ave., 2 on Adam St. W, 1 on Forsyth St W, 1 on Monroe St) (Phase 2) 13 Date Palms total. Includes removal of existing Date Palm stumps in city street planting boxes. Introduced by CM Gaffney. Appropriation from Tree Fund 15F.	2018-0007-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$62,540.03	$62,540.03	Phase 1 4/10/2018 Phase 2 4/25/18	Phase 1 3/23/2018 Phase 2 4/30/18	Phase 1 6/11/18 Phase 2 6/11/18	6/11/2018	Complete - Davey 1/yr
6	Old St. Augustine Rd Medians	Two median tree plantings on Old St. Augustine Rd. from Bartram Park Blvd to entrance of Palmetto Leaves Park South. (No removals) Introduced by CM Schellenberg. Appropriation from Tree Fund	2018-0043-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$18,364.21	$18,364.21	4/20/2018	6/1/2018	8/8/201	10/18/2018	Complete - Davey 1/yr
14	King Street	King St. from College St to Park St., replacement planting on nine medians and sidewalk cut-outs. Introduced by CM Love. Appropriation requested from 15F.	2018-0159-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$85,366.23	$73,813.92	5/11/2018	5/11/2018	8/20/2018	10/18/2018	Complete - Davey 1/yr
4	Patton Rd/Beach Blvd. -Southside	Right of Way Plantings on two adjacent sites at the intersection of Patton Rd. and Beach Blvd.,(no removals) and residential right of way plantings. Introduced by CM Scott Wilson and through citizen request. Appropriation requested from 15F ($32,202.87) and 15N ($62,080.49)	2018-0190-E	Public Works - Mowing and Landscape Dave McDaniel/Kathleen McGovern	$94,283.36	$94,283.36	11/15/2018	2/20/2019	3/14/2019	3/14/2019	Complete - Davey 2/yr
14	Avondale Neighborhood - Tree Planting Plan	Tree Planting in City ROW on residential streets in Avondale replace dead/storm damaged trees. Introduced by CM Love. Appropriation requested from 15F	2018-0273-E	Public Works - Mowing and Landscape Richard Leon/Kathleen McGovern	$31,232 60	$31,232.60	7/19/2018	7/19/2018	8/20/2018	12/20/2018	Complete - Davey 1/yr
4	Lenox Ave. Tree Planting	Tree Planting in City ROW tree planting (no removals) on Lenox Ave. from Shen Ave to Cassat Ave. Introduced by CM Dennis, Appropriation requested from 15F	2018-0307-E	Public Works - Mowing and Landscape Dave McDaniel/Kathleen McGovern	$26,435.84	$26,435.84	10/12/2018	10/15/2018	10/26/2018	12/20/2018	Complete - Davey 1/yr
7	Harts Rd. II Medians and Right of Way	Tree Planting in City ROW and medians; Introduced by CM Gaffney	2018-0369-E	Public Works - Mowing and Landscape Dave McDaniel/Kathleen McGovern	$31,265.81	$31,265.81	9/12/2018	9/12/2018	10/2/2018	12/20/2018	Complete - Davey 1/yr
6	Mandarin Rd. Tree Planting	Tree Planting in City ROW tree planting along new trail/walk and supplementing existing medians. (65 trees and MOT) Introduced by CM Schellenberg. Appropriation requested from 15N and 15F	2018-0791-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$166,045.00	$45,846.43	3/25/2019	3/25/2019	4/14/2019	4/14/2019	Complete - Liberty 2/yr
7	Springfield Neighborhood Tree Planting - SPAR collaboration	Tree Planting in City ROW on residential streets and businesses in Springfield for tree planting requests and to replace dead/storm damaged trees. (146 trees) Introduced by CM Gaffney. Appropriation requested from 15F	2018-0792-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$278,872.00	$81,922.79	3/25/2019	4/14/2019	6/25/2019	6/25/2019	Complete - Liberty 2/yr
8	Moncrief Rd. Tree Planting	Tree Planting of 142 trees in City ROW along Moncrief Rd. as park of Moncrief Rd. Beautification Project from 33rd. St. to 45th. St., Introduced by CM Newby	2019-0178-E	Planning and Development Jeff Lucovsky	$409,341.42	Inspection pending	9/1/2020	9/1/2020			Complete - Liberty 2/yr
14	RAP ReLeaf Neighborhood Tree Planting - RAP collaboration	Tree Planting in City ROW on residential streets and businesses in District 14 for tree planting requests and replacement dead/storm damaged trees. (364 trees) Introduced by CM Love. Appropriation requested from 15F	2019-0044-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$781,748.00	$781,748.00	4/20/2019	5/1/2019	5/1/2019	10/1/2020	Complete - Davey 1/yr
8	District 8 Tree Planting	Tree Planting in Yancey Park, Pritchard Rd. Median, and Moncrief - Dinsmore Rd. right of way. Introduced by CM Pittman. Appropriation requested from 15F.	2019-0521-E	Public Works - Mowing and Landscape Richard Leon/ Kathleen McGovern	$256,921.95	$256,921.95	3/25/2020	3/25/2020	6/1/2020	6/1/2020	Complete - Davey 1/yr
12	Hammond Blvd.	80 trees along Hammond Blvd and Devoe St. right of ways and Medians. Additional trees at Thomas Jefferson Park.	2017-0767-E	Public Works - Mowing and Landscape Fred Pope/ Kathleen McGovern	$164,478.00	$164,478.00	7/1/2020	7/1/2020	10/1/2020	10/1/2020	Complete - Liberty 2/yr

CITY OF JACKSONVILLE LEVEL 2 TREE PLANTING PROJECTS

Visit https://pg-cloud.com/JacksonvilleFL/ for City of Jacksonville Tree Project Maps

Visit jaxtreemitigation.coj.net - Tree Fund City Projects for links to legislation and planting details

	Requesting Entity	Project Scope	Status	Appropriation Amount	Obligated	Contract/Warranty
	Kensington Association HOA Director	54 trees requested within Kensington Lakes city right of ways along Kensington Gardens Blvd. and Kensington Lakes Dr to replace trees lost due to storm damage/disease; may include removals. Planting Plan pending.	Complete	$124,202.62		Davey -1/yr
	Cathedral District Tree Planting	50+ trees requested as Cathedral District (CD7) tree planting, may include removal of damaged/diseased trees. City right of way tree plantings within general proximity but not limited to State St to Catherine St. to Main St. to Adams St.; site evaluation scheduled	Complete	$120,371.14		Liberty 2/yr
	Executive Director, Tree Hill Nature Center	22 trees requested in Tree Hill amphitheater parking area; site plan complete; no removals required; ready for review pending cost estimate per new countywide tree planting contract.	Complete	$21,472.80	$21,472.80	Liberty 3/mos
	San Marco Preservation Society and Greenscape, San Marco Tree Planting	102 Trees requested in city right of ways within District 5, includes removal of damaged/diseased trees; site evaluation scheduled	Punchlist/Complete	$247,749.52		Davey -1/yr
	Sheffield Elementary School PTA President	10 Trees requested to provide shade for existing play area/field at Sheffield Elementary School; site visit complete - pending design and review.	Complete	$20,414.48		Davey -1/yr
	S-Line Biodiversity Corridor Tree Planting	Installation of 25 trees throughout the S-Line Trail Biodiversity Corridor. This will offer additional tree canopy and shade to the trail.	Complete	$30,949.40	$30,949.40	Liberty 3/mos
	Canopy Place Tree Planting/resident request	Installation of 40 trees in city right of ways and medians to provide additional tree canopy, sound buffer and screening.	Complete	$117,483.97		Davey -1/yr
	Sunrise Ridge/resident request	Installation of 40 tree in city right of ways to increase tree canopy as well screening and buffer from adjacent highway.	Complete	$107,316.52		Davey -1/yr
	Jacksonville Beach Golf Park/Jax Beach	Installation of 156 trees in city golf course park to increase tree canopy, create screening, and attract wildlife.	Complete	$147,562.80	$147,562.80	Liberty 3/mos
	Yates Building - Cultural Council of Greater Jacksonville	8 Trees to be installed around renovated fountain at building entrance	Complete	$38,312.00		Liberty 2/yr
	City Cemetery - citizen request	18 Trees in right of ways on Ionia St. and Jessie St.	Complete	$41,350.50		Liberty 2/yr
	Baymeadows East Association Tree Planting	119 Trees in right of ways and medians on Baymeadows East and Fort Family Regional Park	Complete	$284,900.07		Davey -1/yr

	Requesting Entity	Project Scope	Status	Appropriation Amount	Obligated	Contract/Warranty
	Cobblestone Homeowners Association/residential requests/HOA	Installation of 105 trees in city right of ways and medians to provide additional tree canopy, sound buffer and screening.	In Progress	$191,322.00		Liberty 2/yr
	Love Grove/Willowbranch	51 Trees in right of ways around and within Willowbranch Park	Scheduling	$93,742.00		Liberty 2/yr
	Ed Austin Park Tree Planting/Resident request	115 Trees in right of ways around and within Willowbranch Park	In Progress	$214,822.00		Liberty 2/yr
	Nathan Krestul Park - Friends of Krestul Park	Trees within Park - 34 trees	Scheduling	$95,580.00		Liberty 2/yr
	John Gorrie Dog Park/Friends of John Gorrie Dog Park	Trees along Park Right of Way - Buffer - 11 Trees	Scheduling	$23,166.00		Liberty 2/yr
	Atlantic Blvd./Atlantic Blvd. Business Assoc.	Trees along Park Right of Way and within medians	In Development			Liberty 2/yr
	Southside Estates Park/Residents adjacent to park	Trees within Park	In Development			Liberty 2/yr
	Alexandria Oaks Park/SMPS and Bolles School request	Trees within Park - 15 trees	Scheduling	$28,593.00		Liberty 2/yr
	Huntington Forest Park/Resident request to CM	Trees along Park Right of Way - Buffer - 15 trees	Scheduling	$28,026.00		Liberty 2/yr
	Neptune Beach/Residential requests - City of Neptune	Trees within residential Right of Ways - 47 trees	Scheduling	$55,490.00		Liberty 3/mos
	Greenland Park/residents adjacent to park	Trees within Park - 53 trees	Scheduling	$95,580.00		Liberty 2/yr
	Harlow Blvd./Resident request	Trees within median on Harlow Blvd. - 47 trees	MBRC	$102,804.00		Liberty 2/yr
	Atlantic Beach/City of Atlantic Beach	Trees within Atlantic Beach residential Right of Ways and Parks - 96 trees	MBRC	$194,532.00		Liberty 2/yr