

Crediting Trees in Stormwater Management

Alpharetta, Georgia

What are we going to cover?

- The team
- Existing standards
- Research
- Finding partners
- Putting it together
- New credits
- What's next



Photo by Jill Bazinet

The Team



Encourage appropriate tree saves with construction and plant the right trees in the right location.

- Stormwater Engineer
- Arborist
- Urban Forester
- Environmental Education Coordinator
- Floodplain Administrator
- Transportation Engineer
- Zoning Administrator

- Act as good stewards of the natural resources of the city

Existing Standards



- Existing resources
 - Tree Preservation Ordinance
 - Comprehensive Arborist and Stormwater Programs
 - Georgia Stormwater Management Manual
 - Alpharetta Stormwater Policy Handbook
- Started with conversations and collaboration
- How do you get the outcome you want?

Research



Photo by Jill Bazinet

- Start small
- Research what other communities in the country have done
- Research how people have quantified reduction in runoff
- Look at available EPA guidance documents

Finding Partners



Photo by Jill Bazinet

- Green Infrastructure Center Grant in collaboration with the Georgia Forestry Commission
 - City wide approach
 - Calculator

Alpharetta, GA Urban Tree Canopy Stormwater Model version July 15, 2018

The Green Infrastructure Urban Tree Canopy Stormwater Model estimates stormwater runoff yields for current and potential land cover. The methodology is based upon the HEC2 TR-55 method for small urban watersheds. It is used to provide better estimates using the high-resolution land cover and modeling of potential canopy area.

Green Infrastructure Center

TOTALS		52%	21.2%	30.3	16.2	3.7	57%
Statistics by Drainage Basin (current settings)							
Area	Current Tree Cover %	Current Impervious Cover	Tree H2O Capture	Increased H2O w/10% tree loss	Added H2O Capture w/10% PPA	Tree Cover Goal	%
13. Cooper Shoals Creek	56.8%	25.7%	1.22	0.25	0.98	47%	30 gr / 24 hour
14. Crooked Creek-Oxarthochee River	71.4%	12.2%	0.21	0.00	0.21	75%	10 gr / 24 hour
15. Lower Big Creek	53.3%	30.8%	6.81	4.15	0.92	58%	10 gr / 24 hour
16. Middle Big Creek	56.7%	35.8%	11.20	6.54	1.58	55%	10 gr / 24 hour
17. Rocky Creek-Little River	21.6%	72.6%	0.21	0.00	0.21	23%	10 gr / 24 hour
18. Upper Big Creek	56.5%	28.7%	8.86	4.71	0.88	60%	10 gr / 24 hour

Additional Canopy Reductions

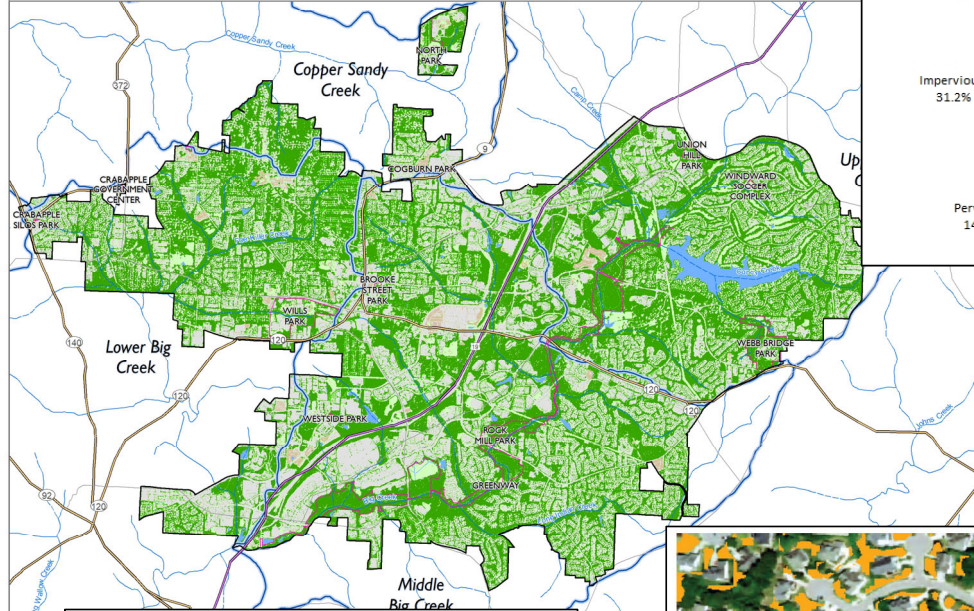
Area	N	P	Sec	N	P	Sec
13. Cooper Shoals Creek	885	5.8%	1.3%	2.5%	2.5%	0.6%
14. Crooked Creek-Oxarthochee River	0	0.0%	0.0%	4.1%	1.7%	0.4%
15. Lower Big Creek	3,875	5.7%	1.8%	2.6%	2.6%	0.5%
16. Middle Big Creek	7,068	4.6%	1.7%	1.8%	1.8%	0.5%
17. Rocky Creek-Little River	-1	0.0%	0.0%	0.0%	0.0%	0.0%
18. Upper Big Creek	4,833	5.4%	1.4%	1.7%	1.7%	0.4%

- Identified broad goals
 - Natural Resource Commission
 - Environmental Education

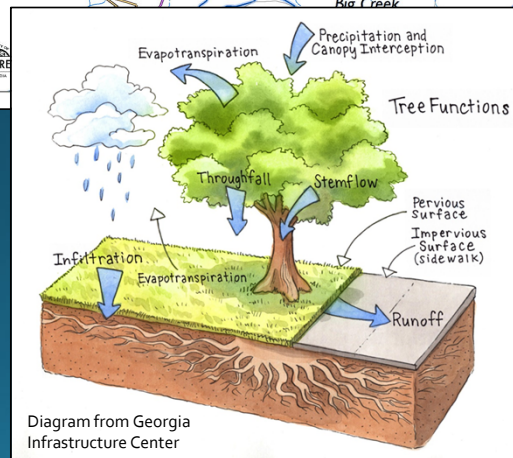
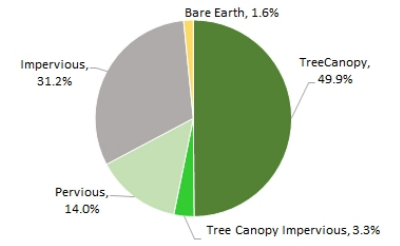
Putting It Together



Alpharetta Land Cover



% Land Cover - City Limits



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

Putting It Together

Making Urban Trees Count: A Project to Demonstrate the Role of Urban Trees in Achieving Regulatory Compliance for Clean Water

Center for Watershed Protection
December 2017

CENTER FOR WATERSHED PROTECTION

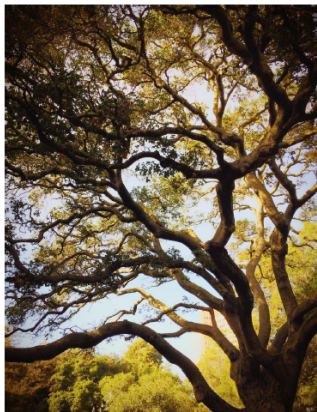


Photo by Victor Zambrano

CREDITING FRAMEWORK PRODUCT #1:
Literature Review

Table 11. Examples of Municipal Stormwater Credit Programs that Include Individual Trees (Source: Stone Environmental, 2014)

Municipality	Year Enacted	Type of Credit	Distance from Impervious Surface	Credit Details*
Pine Lake, GA	2003	Volume reduction	Applies to all existing or newly planted trees	Provides credit for saving existing trees, regardless of tree position relative to impervious surfaces. Credit helps to meet site runoff requirements and is based on the size of the tree: <ul style="list-style-type: none"> Trees < 12" DBH = 10 gallons/inch Trees > 12" DBH = 20 gallons/inch This credit was developed with input from Dr. Greg McPherson, US Forest Service, based on an estimate of water use by a typical tree
Portland, OR	2004	Impervious surface reduction	Within 25 feet	A portion of impervious cover underneath tree canopy may be subtracted from the site impervious cover as follows: <ul style="list-style-type: none"> New deciduous trees = 100 ft² New evergreen trees = 200 ft² Existing trees = 1/2 the existing canopy
Sacramento, San Jose and Santa Clara, CA	2007	Impervious surface reduction	Within 25 feet	A portion of impervious cover underneath tree canopy may be subtracted from the site impervious cover as follows: <ul style="list-style-type: none"> New deciduous trees = 100 ft² New evergreen trees = 200 ft² Existing trees = 1/2 the existing canopy
Indianapolis, IN	2009	Impervious surface reduction	Within 10 feet	An impervious cover reduction credit of 100 ft ² is given for each new tree. Existing trees are eligible but no reduction is specified.
Seattle, WA	2009	Impervious surface reduction	Within 20 feet	Impervious surface reduction credits are as follows: <ul style="list-style-type: none"> 50 ft² for tree for evergreens 20 ft² for deciduous trees This credit was modified from a recommendation by Herrera Environmental Associates (2008)

Table 11. Examples of Municipal Stormwater Credit Programs that Include Individual Trees (Source: Stone Environmental, 2014)

Municipality	Year Enacted	Type of Credit	Distance from Impervious Surface	Credit Details*
Philadelphia, PA	2011	Impervious surface reduction	Within 10 feet (new) or 20 feet (existing)	New trees (min. 2-inch caliper deciduous or 6 ft. tall evergreen): <ul style="list-style-type: none"> 100 ft² DCIA reduction per new tree. Existing trees (at least 4-inch caliper): <ul style="list-style-type: none"> Existing trees = 1/2 the existing canopy Can only be applied to adjacent DCIA
Washington, DC	2013	Volume reduction	Applies to all existing or newly planted trees	Volume credits are: <ul style="list-style-type: none"> Preserved trees: 20 ft³ each Planted trees: 10 ft³ each This credit was based on the 100ft ² impervious area reduction provided by many municipal credit systems, and converted to a volume reduction based on capture of the 1" rainfall.

* Many of these credits are based on the projected canopy coverage of the tree, while others do not provide any details on how the credits were derived.

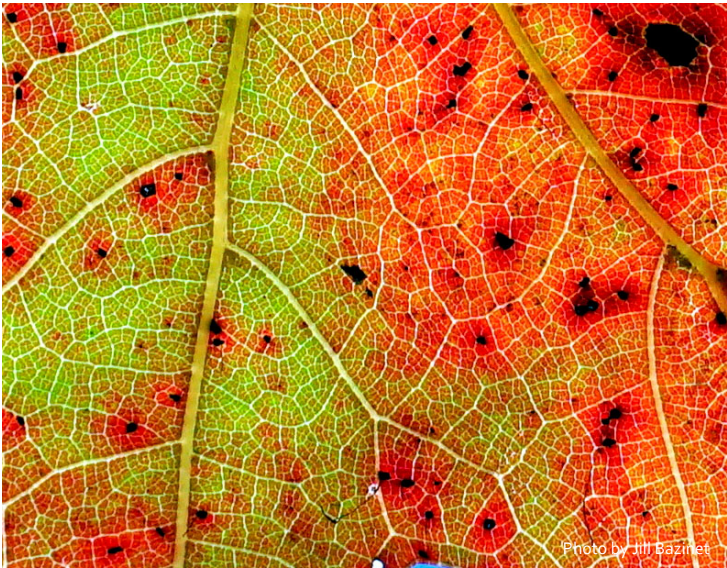
Current Credits



- Distinguish between evergreen and deciduous
- Require proximity to impervious area
- Require BMP maintenance contract (recorded)
- Accounts for tree longevity

- Alpharetta Stormwater Policy Handbook
 - New trees within 10' of impervious surface
 - Existing trees within 20' of impervious surface
 - 2" caliper deciduous or 8-10' tall evergreens
 - Crown class medium or large (guidance document)
 - If declines or dies within 15 years – straight replacement
 - If declines or dies after 15 years – replace with 2- 3" or 2 – 10'-12' trees
 - Credits given for either impervious area reduction or volume reduction
 - Impervious area reduction
 - Preserved tree – 50% canopy
 - Planted tree – 100 sf (deciduous), 200 sf (evergreen)
 - Volume reduction
 - Preserved tree – 20 cf each
 - Planted tree – 10 cf each

What's next?



- Redevelopment driving additional focus on tree saves
- Expansion to non-residential
- Expansion to larger projects
- Providing trees to residents in low lying or flood prone areas
- Calculate / restudy impacts
- Education

Questions

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Photo by Jill Bazinet