This document summarizes a high-level GIS analysis to identify where there may be potential locations for new tree plantings throughout the city. The locations identified in this map book represent hypothetical planting locations that can serve as a strategic planning tool as Charlottesville continues to enhance its urban forest.

Prepared for the City of Charlottesville by the Green Infrastructure Center Inc.
January 2017
Additionally, for planning and analysis purposes, a number of metrics were collected for each identified point. These were:

- Utilities
- Points that fell within a buffer were not removed, only flagged as constrained. Trees can still be planted in these locations, they are simply not ideal for larger trees. These final two constraints were chosen because they are consistent with codes in Charlottesville to update this analysis in the future when it becomes outdated.

Additionally, points were given a 40-foot separation distance. A 15-foot buffer was used around the available dataset of overhead factors (places where trees cannot be planted) were applied to refine the PPA:

Favorable exclusion factors include impervious PPA, such as parking lots, even though it may be possible to plant trees in these areas. Additional exclusion factors (places where trees cannot be planted, like buildings and roads. This analysis only considers pervious PPA. This does not include impervious PPA, such as parking lots, even though it may be possible to plant trees in these areas. Additional exclusion factors (places where trees cannot be planted) were applied to refine the PPA:

- The Meadow Creek Restoration area (the area was replanted, but not captured in the land cover dataset)
- Railroad right-of-way
- A 10-foot buffer around existing trees
- A 10-foot buffer around existing buildings
- A 15-foot buffer around recent tree plantings
- A 10-foot buffer around underground utilities
- Sidewalks
- Private alleyways (alleyways that do not receive public maintenance, but must remain clear for vehicles)
- Un-addressable buildings – ranging from sheds to parking decks

Additionally, points were given a 40-foot separation distance. A 15-foot buffer was used around the available dataset of overhead utilities, but points that fell within this buffer were not removed, only flagged as constrained. Trees can still be planted in these locations, they are simply not ideal for larger trees. These final two constraints were chosen because they are consistent with codes and best practices for tree planting and maintenance in Charlottesville.

Additionally, for planning and analysis purposes, a number of metrics were collected for each identified point. These were:

- Census Data (by block group)
  - Population Density (Persons/Acre)
  - Median Household Income
- Proximity (up to 328 feet (100 meters)) to Major Roads (including ADT numbers)
- Proximity (up to 33 feet (10 meters)) to Trails (Existing and Proposed)
- Proximity (up to 49 feet (15 meters)) to Bike Lanes (Existing and Proposed)
- Proximity (up to 656 feet (200 meters)) to Streams
- Near Forest Cores (100 Feet)
- Sub-catchment Imperviousness Percentage
- Relative Temperature
- Type of Framework Street (50 Feet)
Zoning  
Steep Slopes  
Floodplain  
Underneath overhead power lines (Dominion Data)  
Entrance Corridor  
State Owned Property  
City/County Owned Property  
School Property  
UVa Property  
Walking Distance to Schools (1/4 Mile)

If a metric does not have a discrete value, such as population density, it was given a value of 0 if it does not meet the metric, and a 1 if it does. Metrics that include “Proximity” have distances included. For the metrics that include proximity, a distance of -1 indicates that the point falls outside of the maximum range to be considered for that metric.

Trees can provide many benefits, from stormwater mitigation to reducing urban heat island, and this supplemental information helps identify where these benefits can be realized. While all of the metrics are embedded in each point, these map books help visualize this information spatially. This map book can identify potential tree planting projects, but the exact location of trees should be adjusted based on the realities of the specific site.

**Right-of-Way Analysis:**

Right-of-way possible planting area points are calculated from their own analysis, not a selection from all potential tree planting locations. This is because the points were placed randomly to maximize the number of points. The random points did not take into account the right-of-way, leading to an under-estimation of points that could fit into the right-of-way. A second, identical calculation was done on just the PPA within the right-of-way so that the number of points were not under-represented. The total points and the points in the right-of-way should be treated as separate analysis.

This series of images demonstrates the difference between the possible planting points generated specifically inside the right-of-way. The image at left shows where possible planting points would be located by ArcGIS to maximize the number of points in a given possible planting area (green square) and a specified minimum spacing between points. The middle image demonstrates what would happen assuming the portion of the PPA shown in orange was in the ROW. Under this scenario, only one point would be found to be in the ROW. The image at right shows what would happen if the same analysis is run only considering the ROW. Under this scenario, three points can be located in the ROW, using the same assumptions.

Thus, if one is interested in only what can be done in the ROW, the ROW-specific analysis should be used, as it looks at how planting sites can be maximized in only the ROW.
Neighborhoods Overview

Parks

1: Market Street Park
2: Rives Park
3: Belmont Park
4: Jordan Park
5: Tonsler Park
6: Fifeville Park
7: Schenck’s Greenway
8: Greenleaf Park
9: Meadowcreek Gardens & Disc Golf
10: Maplewood Cemetery
11: Oakwood Cemetery
12: Downtown Pavilion
13: Burden Towne
14: Starr Hill
15: Rochwell
16: Downtown Mall
17: McIntire Park
18: McGuffey Park
19: Riverview Park
20: Court Square Park
21: Northeast Park
22: Pen Park
23: Washington Park
24: Meade Park
25: Meadow Creek Valley
26: Longwood Park
27: Quarry Park
28: Azalea Park
29: McIntire Park
30: Davis Field
31: Daughters of Zion Cemetery
32: Quarry Park
33: Forest Hills Park
34: Fry’s Springs
35: Meadow Creek Valley
36: Greenbrier Park
37: Hartman’s Mill
Census Block Group Boundaries (ACS 2014)
Martha Jefferson

Legend

Potential Tree Planting Locations (Right-of-Way)

Median Household Income by Census Block Group
- Greater than $63,700
- $48,800 - $63,700
- Less than $48,800

Streams

Framework Streets - Typology

Street Typology
- Downtown
- Industrial
- Mixed Use B
- Neighborhood A
- Neighborhood B

City Parcels
- UVa Parcels
- State-Owned Parcels
- Parks
- Tree Canopy
- 5 Minute School Walkzones
- Neighborhood Boundaries
Greenbrier

Legend

Potential Tree Planting Locations (Right-of-Way)
Median Household Income by Census Block Group

- Greater than $63,700
- $48,800 - $63,700
- Less than $48,800

Streams
Framework Streets - Typology
Street Typology

- Industrial
- Mixed Use A
- Mixed Use B
- Neighborhood A
- Neighborhood B

Parks
- 29: McIntire Park
- 35: Meadow Creek Valley
- 25: Meadow Creek Valley
- 36: Greenbrier Park