

Analysis of Proposed Rezoning and Development of Briarlake Road 21-Acre Tract

with respect to the DeKalb County Comprehensive Plan

by Laurie Marion, Ph.D.

The DeKalb County Comprehensive Plan 2005-2025 Community Agenda is a document that discusses Quality of Life in the County and outlines a Community Vision and an Implementation Program that is used to guide decisions of the DeKalb County Department of Planning and Development. The section on Community Vision includes a subsection on Concept Plans for various Character Areas within the County. The section on the Implementation Program contains subsections on Policies and Strategies Interim Guidelines to be used pending the new zoning code that is currently under consideration, and the Short Term Work Program that outlines specific steps the County intends to take over a five-year period from 2012 through 2016.

In the section on Implementation, on page 138, the Comprehensive Plan states that zoning decisions are made according to the following procedure:

The staff will evaluate each application based on the adopted Community Agenda, specific policies within each Future Development Plan designation, bulk standards of the existing zoning district (Chapter 17 of County Code), compatibility with surrounding land uses, and impacts on public facilities. A staff recommendation will be made to the Planning Commission. The Planning Commission will make a recommendation which will be combined with staff recommendation to the BOC. The BOC will make the final decision.”

Thus there is a combination of factors in addition to the Comprehensive Plan that the county planning staff uses to formulate their recommendations. First, there is the overall vision of the Community Agenda for the whole county; second, there are certain policies that may be different according to the part of the county under consideration; third, there are standards for the type of district it is and how it fits into the current zoning code; fourth, there is an evaluation of whether a proposal to rezone includes plans that are compatible with the land uses in the surrounding area; and fifth, there is an evaluation of the impact a development might have on public facilities such as storm water and roads.

1. Vision Statement

Beginning with the overall vision of the Community Agenda, there are three important future directions for the county articulated in the Vision Statement (page 51 of Community Agenda): (1) Neighborhoods are to be “protected and enhanced with compatible development” and residential neighborhoods are to be “maintained at the densities upon which they were originally developed.” (2) DeKalb County “will protect the environment, resulting in cleaner air and water.” (3) DeKalb County citizens will “fully participate in the planning and development process to improve the quality of life for all residents.”

The Briarlake Community Forest Alliance finds that the proposed development of the Cathey Property by Arrowhead Real Estate Partners does not fulfill the vision stated in the Community Agenda. The proposed development is not compatible with the surrounding neighborhoods because the lot sizes are little more than half the size of the lots in all the surrounding contiguous neighborhoods. Further, because of the location of the property at the top of a hill that drains into two nearby creeks that flow into three lakes at the bottom of the hill, the proposed development would cause harm to the

environment. According to the attached preliminary hydrology study by the U.S. Forest Service, it is estimated that stormwater runoff from the development as proposed would increase by over 300%. Finally, the proposal to develop the property was prepared without giving citizens adequate time to understand possible consequences of development, compromising the ability of citizens to fully participate in the planning and development process. If the model for participation is “informed consent,” citizens have not been adequately informed.

2. Quality of Life

The section on Quality of Life notes that 80% of DeKalb County is built out and 5% is undevelopable (page 32 of Community Agenda). This means that 15% of the land in DeKalb County is potentially available for development.

There are a number of topics in this discussion that have some bearing on the Briarlake Forest proposal. Under the topic “Natural and Historic Resources” (pages 36-38 of Community Agenda) there are some facts about Soapstone Ridge and Arabia Mountain, located in South DeKalb, namely that in total 8,250 acres have been preserved as greenspace. In Central DeKalb, where the Briarlake Forest is located, there are far fewer acres set aside as greenspace. Thus there is a question of equity regarding preservation of greenspace in this area of DeKalb County. Also, there is a requirement under Georgia state law that “an engineer of record must make a site visit before plans can be submitted to the county which will outline all natural resources on the property,” and that this “includes all state waters within 200 feet of the property” (ibid.). The citizens of the neighborhoods potentially affected by this development are unaware that any such site visit was conducted prior to the submittal of the plans; there is a creek adjacent to the Cathey property on the east side north of Silvapine Trail. Finally, under this topic there is notification that the Historic Preservation Commission “is currently taking applications for historic designation” (ibid.). Citizens have not had the opportunity to evaluate the structure on the Cathey property for historic significance; county property tax records indicate that the house was built in 1863.

Under the topic “Facilities and Services” (pages 38-40 of Community Agenda) there are topics that should be considered as well. With regard to Storm Water, the Agenda notes that citizens are facing “an increasingly acute and complex set of stormwater infrastructure challenges” (ibid.). DeKalb County is required by NPDES to have “an effective stormwater management and infrastructure system . . . to protect properties from flooding” (ibid.) . Citizens in the surrounding neighborhoods have experienced times when the current stormwater infrastructure has not been sufficient to prevent flooding on their properties, especially during the heavy storms of 2009. The predictions of the U.S. Forest Service hydrology study mentioned above (see paragraph two under “Vision Statement”) that there would be an increase in stormwater runoff of 300% raises a serious concern about whether DeKalb County would be in compliance with NPDES requirements should this development occur. Secondly, with regard to Parks and Recreation, the Agenda notes that after completing the DeKalb County Parks and Recreation Strategic Plan in 2000, “it was found that the supply of County park and recreational system does not meet the demand of the county residents” (ibid.). There was a \$28 million bond referendum allocation to acquire greenspace in 2005. The residents of this area are currently underserved with regard to greenspace. Again, to achieve equity in county services, there should be more greenspace in this area, and given the special nature of the old growth forest on Briarlake Road, this property is an excellent candidate for greenspace acquisition.

Under the topic “Health”, the Agenda notes that “widespread development often covers large portions of urban area watersheds with hard surfaces” (page 45 of Community Agenda) where storm water runoff carries toxins into streams. The Board of Health, according to the Agenda, “would like to work with appropriate county agencies to begin addressing the impact of stormwater runoff into the lakes, streams and rivers of DeKalb County” (ibid.). Building public roads and other impervious surfaces on the Cathey property might cause an increase in toxicity in the streams and lakes nearby that would be a hazard to public health.

Under the topic “Transportation,” the Agenda notes that “roadway improvements have not taken place in close correlation to new development,” with the result that new residential development “feeds onto small streets that were originally designed as rural roads” (page 48 of Community Agenda). This causes heavy traffic during morning and evening commutes. Briarlake Road is a two-lane road fitting this description, and was re-paved in the spring of 2014. Adding more housing without a corresponding increase in capacity on Briarlake Road would exacerbate a problem already noted in the Agenda. Further, the requirement to build sidewalks in all new development (page 49 of Community Agenda) adds impervious surfaces, exacerbating the stormwater runoff problems discussed above under “Facilities” and “Health.”

3. Community Vision Concept Plan and Future Development Plan

The DeKalb County Concept Plan map shows various types of “nodes” or “activity centers” throughout the county. The section on the Concept Plan states that the County’s goal is “to take advantage of all transportation and infrastructure facilities that currently exist and encourage additional densities within and around the nodes” (page 52 of Community Agenda). According to this map (page 54 of Community Agenda), the Cathey property is located well outside the areas of both the Northlake Regional Center and the Oak Grove Neighborhood Center. Because the property is not located within an activity center, there is not a sufficient reason to increase the density. There is certainly no requirement to increase the density.

This property is located in a Suburban Character Area within the Central West Planning Area (see map page 83 of Community Agenda). The existing land use patterns are suburban, single-family detached residential, zoned R-100, having curvilinear streets with cul de sacs in all the surrounding contiguous neighborhoods. The purpose of Character Area planning, according to the Agenda, is “to preserve existing areas such as traditional neighborhoods” and to “help other [areas] function better” (ibid.). The proposed development of the Cathey property creates R-60 lots and straight roads, so it does not preserve the character of the existing neighborhoods. It creates higher density in the developed area and roadways that do not follow the contours of the land. Further, it reduces the ability of the contiguous neighborhoods to function as the safe, stable havens they are known to be, evidenced by the presence of many longtime residents.

Georgia State law allows communities to “create additional character areas or modify the recommended ones to fit the specific community vision” (page 52 of Community Agenda). The neighborhoods served by the Briarlake Community Forest Alliance comprise a stable, established community capable of creating its own vision. The DeKalb County Office of Neighborhood Empowerment is working to establish processes whereby communities can take an active role in planning. Given the broad community support for preserving the Briarlake forest as permanent greenspace, the articulation of a specific community vision can be achieved expeditiously. The Briarlake Community Forest Alliance recommends that the County Commissioners consider allowing this community to create a special

character area, founded on the special nature of the old-growth forest and the nineteenth century structure on the property.

The special character area would aim to achieve the following Quality Community Objectives for Suburban Character Areas: Open Space Preservation, Environmental Protection, Heritage Preservation, Regional Identity and Sense of Place. The Implementation Measures adopted would include creating a Greenway/Trail Network and Conservation Easements, and designing the space according to Performance Standards for Off-site Impact.

4. Policies and Strategies Interim Guidelines

The Implementation Program for the Community Agenda outlines Policies and Strategies Interim Guidelines to be used by all involved in zoning decisions prior to the adoption of the revised Zoning Code. The revised Zoning Code is still under consideration by the Board of Commissioners and has not yet been adopted.

According to the Community Agenda, in this interim period “the basic premise is to focus more intense development at the Activity Centers/Nodes” (page 111 of Community Agenda), so that existing neighborhoods are protected from incompatible land uses. There are three guiding principles that should be applied in the case of the proposed rezoning of the Briarlake forest. The first principle is that development intensity should transition from more dense toward the center of an Activity Center to less dense at the periphery of the Activity Center (see Land Use Compatibility, *ibid.*). This principle suggests that the typical application of cluster homes is as a transition between the edge of an activity center and a single-family residential area. As noted above in the section on the Concept Plan, this property is not in or adjacent to an activity center. Thus the creation of cluster homes in the middle of several neighborhoods zoned R-100 would be atypical. It would not be a sensible application of the guiding principles of the Interim Guidelines.

A second principle is that “proposed developments shall not degrade the level of service on roadways, capacity of water/sewer, or cause drainage problems” (*ibid.*). Developers are required to provide evidence that their proposal follows this principle, and/or funding “to mitigate impact [of their proposed development] on public facilities and services” (*ibid.*). From the U.S. Forest Service hydrology study, it appears that there is a great likelihood that the level of service of public stormwater facilities would be degraded by development at this location.

The third principle is that “proposed development shall be allowed only in areas where it can be demonstrated that environmental damage will not occur” (*ibid.*). Again, the U.S. Forest Service hydrology study suggests that significant environmental damage could occur from the proposed development.

A fourth guiding principle is outlined in greater detail as a set of Policies and Strategies for each character area. According to the Community Agenda, these Policies and Strategies “will be used to make recommendations for zoning and land use decisions” (*ibid.*). The Policies and Strategies for Suburban Character Areas can be used to support various proposed development plans. The proposed development of the Cathey property by Arrowhead Real Estate Partners contains some elements that could be seen to implement some of the Policies and Strategies. The community is concerned, however, that this proposed development could alter established residential patterns and density in the surrounding area, which is contrary to the policy stated in SCAP1 (page 124 of Community Agenda). Additional undeveloped land in the area could be subject to similar cluster development which is incompatible with established neighborhoods should the rezoning of this property occur. SCAP3 states

that it is the policy of the county to “preserve and enhance the integrity and quality of existing residential neighborhoods” (ibid.). Cluster development on R-60 lots does not preserve or enhance the integrity or quality of the surrounding neighborhoods. The proposed development at this location would likely “degrade the overall quality of service delivery” (SCAP9) from county facilities, because of increased stormwater runoff (see attached U.S. Forest Service hydrology study). Finally, the proposed development fails to implement SCAS20: “Encourage compatible architectural styles that maintain regional and neighborhood character.” The architecture of the surrounding neighborhoods is mid-century modern sited in a landscape-sensitive way on R-100 lots; the proposed development is bungalow or cottage style sited uniformly on R-60 lots.

As a stable, established residential community, citizens in the twelve neighborhoods served by Briarlake Community Forest Alliance can formulate a plan for the land that implements the following strategies outlined in the Implementation Program: SCAS10 – promoting sense of place initiatives, SCAS13 – promoting healthy living, SCAS17 – creating neighborhood focal points as parks, SCAS18 - creating neighborhood focal points as community centers, SCAS21 – promoting historic and cultural assets in the community. We recommend that the County Commissioners authorize the citizens of this community to develop an alternative plan under the Georgia state law that allows communities to create special character areas, with the understanding that this community will work with the Office of Neighborhood Empowerment to develop the process for articulating the vision and plan of implementation.

Respectfully submitted,

Briarlake Community Forest Alliance, Inc.

November 6, 2014

Abstract

Using 2012 rainfall data from Hartsfield/Jackson International Airport, soil data from the National Resource Conservation Service web-based soil survey, and 2013 land cover data from Google Map imagery and i-Tree Canopy, we were able to estimate stormwater runoff on the approximately 21 acre tract of land on and around the parcel at 3330 Briarlake Road using the hydrology model i-Tree Hydro. Comparing the current land cover condition of the tract (96.5% tree canopy cover, 2.5% herbaceous cover, 1% impervious cover, and predominantly undisturbed, sandy loam soil) with a proposed post-development land cover condition (25% tree canopy cover, 50% herbaceous cover, 25% impervious cover, and predominantly compacted, clayey sub-soil base), it is estimated that total stormwater runoff volume will increase by over 300% from 12,322 cubic meters of water (3.26 million gallons) to 37,277 cubic meters (9.84 million gallons) annually. Because of reduced tree cover, base flow for the tract is estimated to increase by 28%, which is desirable. However, undesirable pervious and impervious runoff is also estimated to increase by 305% and 643%, respectively, thus increasing stormwater runoff pollution loading to receiving waters.

The i-Tree Hydro model estimates stormwater runoff pollutants such as total suspended solids (TSS), total phosphorus, soluble phosphorus, total Kjeldahl nitrogen, and nitrite/nitrate, among others, using national Estimated Mean Concentration (EMC) values. By reducing tree canopy cover by 70%, increasing impervious surface cover 25 fold, and removing the porous, sandy loam top soil of the site (leaving dense, clayey sub-soil), it is estimated that stormwater runoff pollution loading will increase by 476%.

Because i-Tree Hydro is a first-order stormwater runoff estimation model, it may be advantageous to seek the council of a professional hydrologist and to use a more detailed hydrology model if greater precision regarding stormwater runoff volume and pollution loading is desired.

Data inputs for i-Tree Hydro

Delineated parcel boundary estimated using Google Map imagery through i-Tree Canopy (<http://www.itreetools.org/canopy/index.php>)

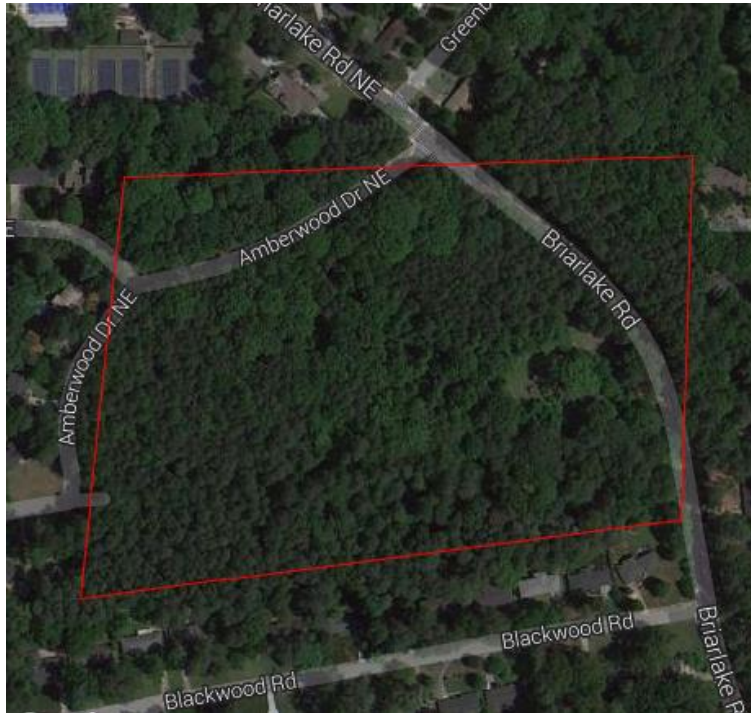


Figure 1 Parcel at 3330 Briarlake Rd, Decatur, GA and surrounding area. Area of interest within the red boundary is approximately 21 acres (0.09 km²)



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Land cover class estimates using i-Tree Canopy

Table 1 Land cover classes observed, description of the cover class type, cover class abbreviation, percent land cover and standard error for each identified cover class on the designated area of interest

| Cover Class | Description of Cover Class | Abbreviation | % Cover | SE |
|------------------------------|--|--------------|---------|-----|
| Canopy / Decid. / Pervious | Deciduous tree canopy over permeable surface cover | CDP | 47.5 | 3.5 |
| Canopy / Decid. / Impervious | Deciduous tree canopy over impervious surface cover | CDI | 1.5 | 0.9 |
| Canopy / Evrgrn / Pervious | Evergreen tree canopy over permeable surface cover | CEP | 46.0 | 3.5 |
| Canopy / Evrgrn / Impervious | Evergreen canopy cover over impervious surface cover | CEI | 1.5 | 0.9 |
| Herbaceous | Herbaceous ground cover | H | 2.0 | 1.0 |
| Impervious / Connected | Impervious surface cover that drains directly to receiving waters via storm drains | IC | 1.5 | 0.9 |

i-Tree Canopy v6.1 Cover Assessment and Tree Benefits Report Estimated using random sampling statistics on 9/16/14



Figure 2 Report generated by i-Tree Canopy showing the mean and standard error for each of the land cover classes observed.

Soil parameters using Natural Resources Conservation Service (NRCS) web-based soil survey (<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>)

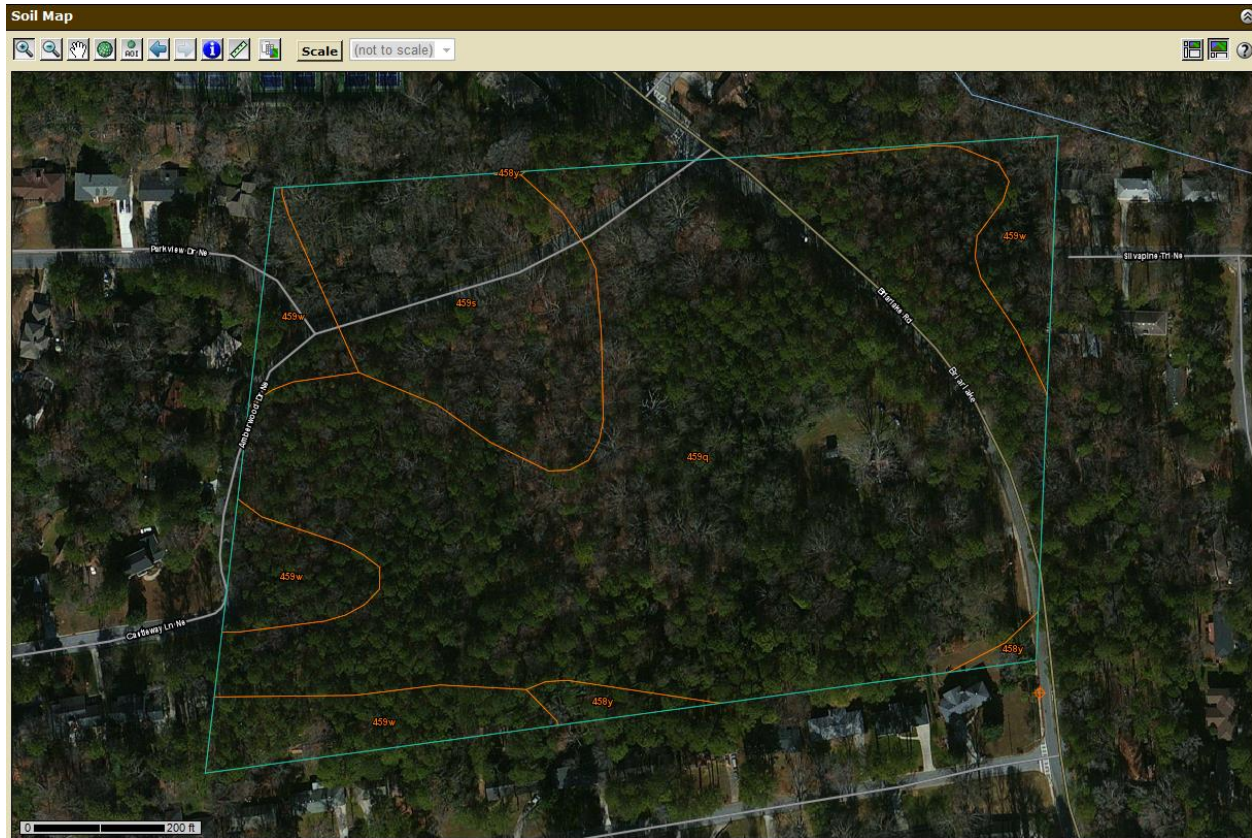


Figure 3 The web-based soil survey tool shows the approximate soil type within the area of interest

Table 2 Based on the NRCS web-based soil survey, the area of interest is approximately 86% sandy loam with a rooting depth of about six inches. A thick, dense clay sub-soil layer is typically found under the sandy loam top soil layer. In i-tree Hydro the sandy loam soil parameter was chosen and the depth of root zone was adjusted to 0.15 m (6 inches).

| DeKalb County, Georgia | | | |
|------------------------------------|---|--------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| 458y | Cecil-Urban land complex, 2 to 10 percent slopes | 0.3 | 1.4% |
| 459q | Pacolet sandy loam, 2 to 10 percent slopes | 16.7 | 70.9% |
| 459s | Pacolet sandy loam, 15 to 30 percent slopes | 3.5 | 14.7% |
| 459w | Pacolet-Urban land complex, 10 to 25 percent slopes | 3.1 | 13.0% |
| Totals for Area of Interest | | 23.6 | 100.0% |

Digital Elevation Model (DEM) used by i-Tree Hydro to estimate elevation change and simulate stormwater runoff flow.

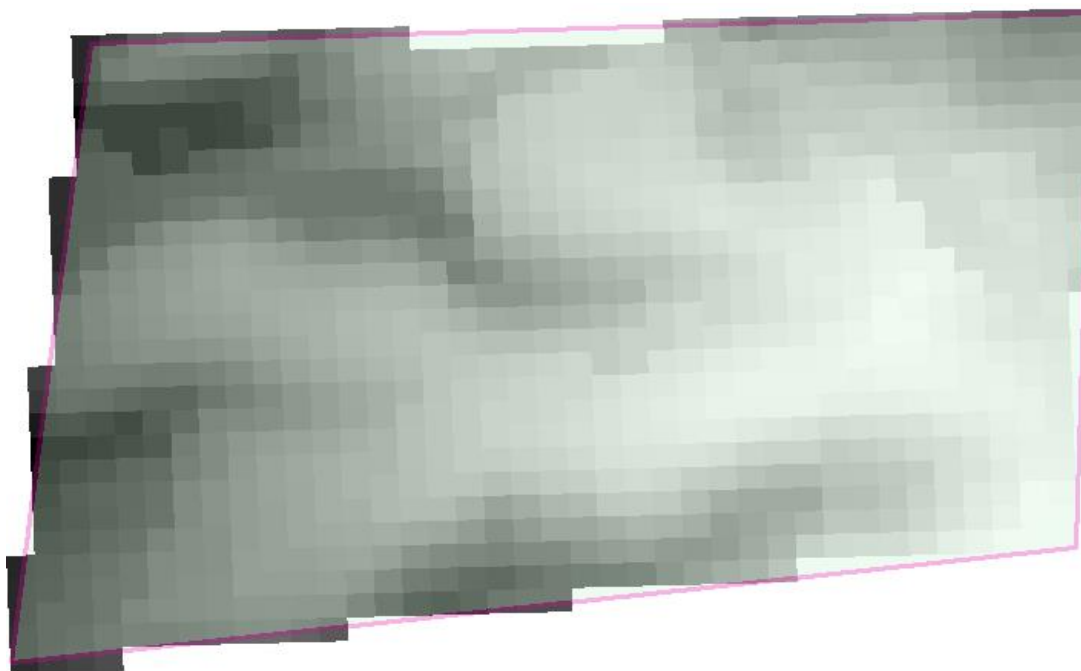


Figure 4 10 m DEM obtained from the United State Geological Survey website (<http://viewer.nationalmap.gov/viewer/>) and clipped to boundary of the area of interest using ESRI ArcGIS 10.1 software. Lighter pixels indicate higher elevation.

Results

i-Tree Hydro Executive Summary

Project Location: Decatur, GA

Project Time Period: 01/01/2012 – 01/31/2012

Watershed Area: 0.09 km²

Total Rainfall (for 2012): 838.7 mm

Predicted Total Runoff from current location: 12,321.8 m³


Table 3 Land cover percentages for the parcel are estimated for the current condition using 2012 Google Map imagery. Soil type and rooting depth for the current condition are taken from NRCS soil survey data. Soil type and rooting depth for the proposed, post-development condition are based on NRCS soil survey data for the parcel after existing top soil is removed during development.

| Land Cover | Current condition | Proposed post-development condition |
|------------------|-------------------|-------------------------------------|
| Tree cover | 96.5% | 25.0% |
| Herbaceous cover | 2.5% | 50.0% |
| Impervious cover | 1.0% | 25.0% |
| Soil type | Sandy loam | Clayey sub-soil |
| Rooting depth | 6" | 2" |

Table 4 Estimated annual stormwater runoff volume for current and proposed post-development conditions segregated by flow type. The percentage of annual runoff increase between conditions is also calculated.

| Site condition | Total flow (m ³) | Base flow (m ³) | Pervious flow (m ³) | Impervious flow (m ³) |
|------------------|------------------------------|-----------------------------|---------------------------------|-----------------------------------|
| Current | 12,322 | 5,063 | 4,700 | 2,559 |
| Post-development | 37,277 | 6,488 | 14,327 | 16,462 |
| Percent Increase | 303% | 28% | 305% | 643% |

Using 2012 rainfall data from Hartsfield/Jackson International Airport, soil data from the National Resource Conservation Service (NRCS) web-based soil survey, and 2013 land cover data from Google Map imagery and i-Tree Canopy, we were able to estimate stormwater runoff on the approximately 21 acre tract of land on and around the parcel at 3330 Briarlake Road using the hydrology model i-Tree Hydro. Comparing the current land cover condition of the tract (96.5% tree canopy cover, 2.5% herbaceous cover, 1% impervious cover, and predominantly

| | | |
|---|---|---|
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|---|---|---|

undisturbed, sandy loam soil) with a proposed, post-development land cover condition (25% tree canopy cover, 50% herbaceous cover, 25% impervious cover, and predominantly compacted, clayey sub-soil base), it is estimated that total stormwater runoff volume will increase by over 300% from 12,322 cubic meters of water (3.26 million gallons) to 37,277 cubic meters (9.84 million gallons) annually.

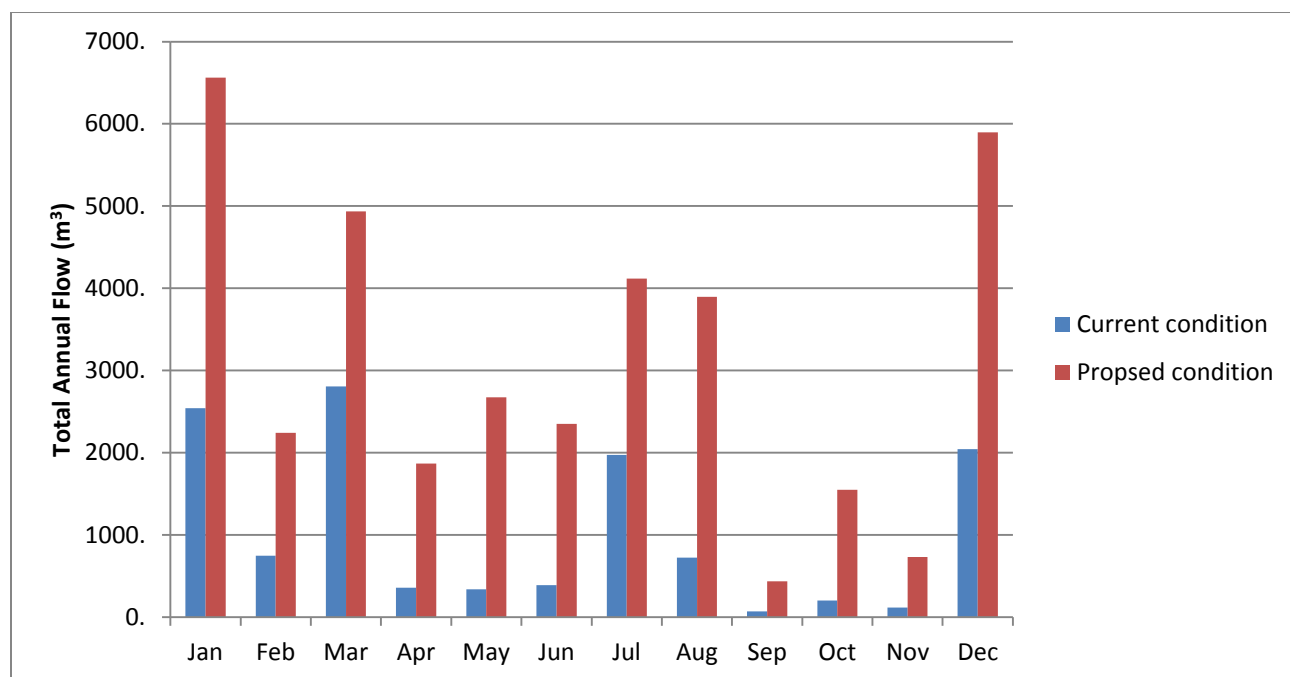


Figure 5 Comparison of the total monthly stormwater runoff volume in cubic meters between the current site condition and the proposed, post-development site condition.

Because of reduced tree cover for the proposed, post-development condition, base flow for the tract is estimated to increase by 28%, which is desirable. However, undesirable pervious and impervious runoff is also estimated to increase by 305% and 643%, respectively, thus increasing stormwater runoff pollution loading to receiving waters.

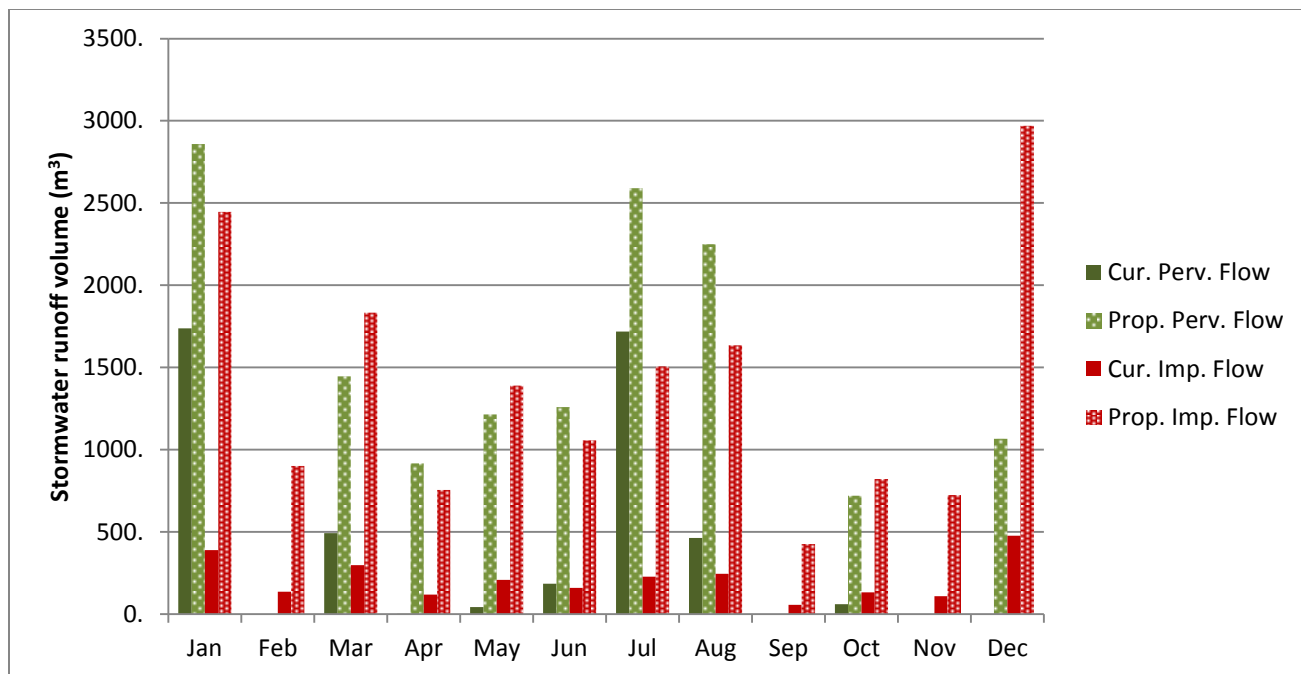


Figure 6 Comparison of the monthly stormwater runoff volume in cubic meters for pervious (green bars) and impervious (red bars) flow for the current site condition (solid bars) and the proposed, post-development condition (hatched bars).

The i-Tree Hydro model estimated stormwater runoff pollutants such as total suspended solids (TSS), total phosphorus, soluble phosphorus, total Kjeldahl nitrogen, and nitrite/nitrate, among others, using national Estimated Mean Concentration (EMC) values. By reducing tree canopy cover by 70% and increasing impervious surface cover 25 fold on this parcel, it is estimated that stormwater runoff pollution loading to receiving waters will increase by approximately 425%.

Table 5 Estimated annual stormwater pollution runoff in kilograms for current and proposed, post-development conditions by pollutant type.

| Pollutant Constituent | Current condition pollutant loading (kg) | Proposed, post-development pollutant loading (kg) |
|--------------------------------------|--|---|
| Total suspended solids (TSS) | 569 | 2414 |
| Biochemical oxygen demand (BOD) | 102 | 434 |
| Chemical oxygen demand (COD) | 383 | 1626 |
| Total phosphorus (TP) | 2.3 | 9.7 |
| Soluble phosphorus (SolP) | 0.9 | 4.0 |
| Total Kjeldahl nitrogen (TKN) | 12.6 | 53.3 |
| Nitrite/Nitrate (NO _{2_3}) | 4.8 | 20.3 |

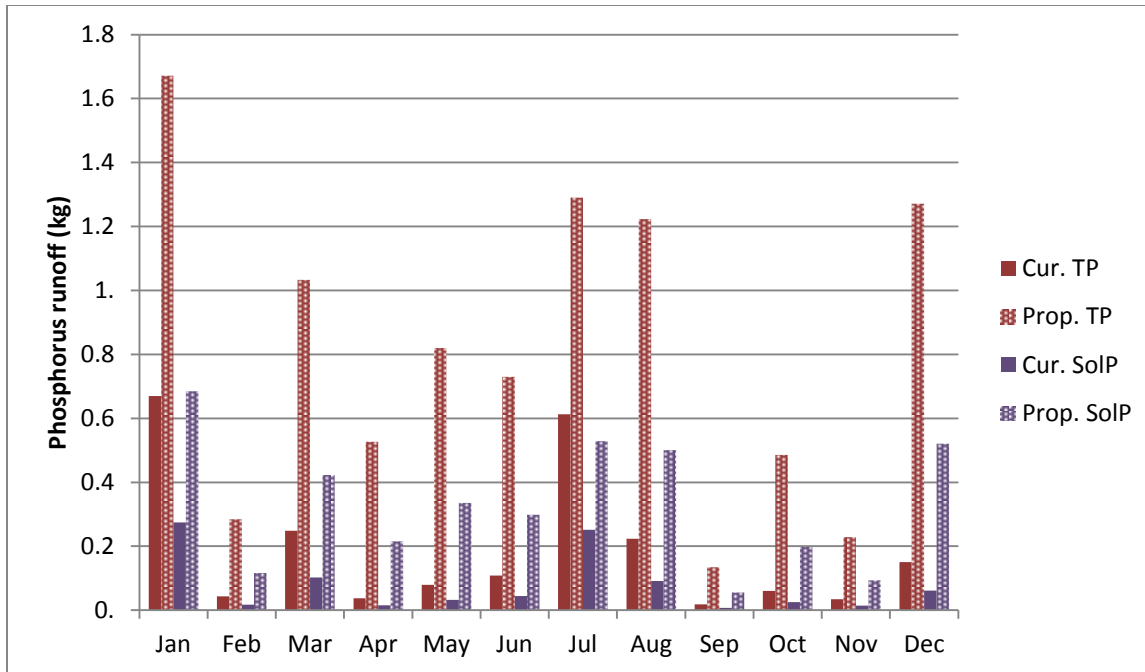


Figure 7 Comparison of the estimated monthly total (TP; pink) and soluble (SolP: purple) phosphorus runoff in kilograms for the current site condition (solid bars) and the proposed, post-development condition (hatched bars).

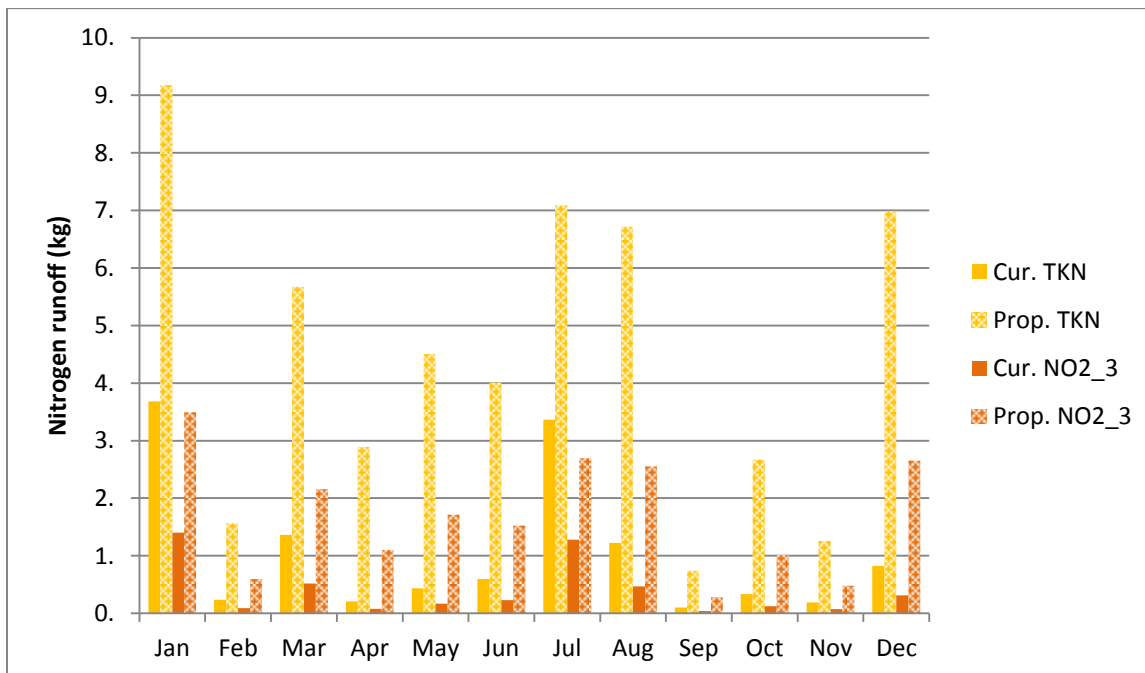


Figure 8 Comparison of the estimated monthly total Kjeldahl nitrogen (TKN; yellow) and nitrite/nitrate (NO2_3; orange) runoff in kilograms for the current site condition (solid bars) and the proposed, post-development condition (hatched bars).

Because i-Tree Hydro is a first-order stormwater runoff estimation model, it may be advantageous to seek the council of a professional hydrologist and to use a more detailed hydrology model if greater precision regarding stormwater runoff volume and pollution loading is desired.