

**GREEN INFRASTRUCTURE / LOW IMPACT DEVELOPMENT
PROGRAM**

City of Austell, GA



October 2020

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Background and Purpose

The City of Austell, GA is a designated Phase I Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permittee. As such, the City is responsible for regulating and enforcing land disturbance permits, sedimentation, and erosion control inspections and enforcement, litter control, and street sweeping, and many other best management practices. In addition, the City is required to develop and implement an effective Green Infrastructure (GI) / Low Impact Development (LID) Program. This includes developing guidelines and procedures to encourage, track the use of, inspect, and maintain GI/LID best management practices (BMPs) within the City. Components of the GILID Program include:

1. Legal Authority
2. GI/LID Program
3. GI/LID Structure Inventory
4. GI/LID Inspection and Maintenance Program

This document describes how the City's GI/LID Program will meet these requirements by encourage the use, track the use of, inspect, and maintain GI/LID best management practices (BMPs) within the City. The specific objectives of this program are to:

- I. Evaluate the feasibility and site applicability of various GI/LID BMPs (practices and structures) that best support the overall stormwater management and land use planning objectives of the City of Austell.
- II. Develop an inventory of applicable GI/LID BMPs within the City limits and identify procedures to track the addition of future applicable GI/LID BMPs.
- III. Identify the most effective approach for integrating GI/LID into the City's current stormwater and development review programs, including developing/implementing an inspection and maintenance program.

The ultimate intent of establishing a City-specific GI/LID Program is to ensure these practices and structures are designed, implemented, and maintained by their respective owners for improved watershed protection. This document serves to identify opportunities to build on the existing use of GI/LID in the City of Austell and outlining the inspection and maintenance practices of structural BMPs.

Local Water Resources

The City of Austell is located approximately 15 miles northwest of the City of Atlanta, GA. Local streams lie within the Chattahoochee River Basin. The Georgia 2020 303(d) list of impaired waterbodies includes three (3) stream segments that flow through the City of Austell. Stream impairments are attributed to elevated fecal coliform bacteria, biological impacts to benthic macroinvertebrate communities due to excessive sediment loading. (See Appendix A, Figure 1).

According to the U.S. Census Bureau, Austell had an estimated population of 7,170 in 2019. The total land area of the City is estimated at 3,833.6 acres. The predominant land uses within the City is residential, commercial, and industrial (see Appendix A, Figure 2). The type and character of land use is changing with increased industrial and residential development taking place. Flooding has been and will continue to be a problem in many areas of the City. The long-term projected increase in development has the potential to degrade water quality and aquatic habitat if the effects and consequences of increased development are not managed appropriately.

Local Soil Types

Success of GI/LID techniques is highly dependent upon soil type given the importance of infiltration. Many areas within the City are prone to flooding given that four streams (Olley, Noses, Butternut and Powder Springs) flow to Sweetwater Creek (see Appendix A, Figure 3). The resulting soils in the City of Austell are very diverse and represented by over 50 soil types (see Appendix A, Figure 4). Approximately 32% of the soil consisted of sandy loam (Appling, Toccoa, Cecil), Hiawasse loam and Urban land-Madison Complex. The remaining soil types were made up of mixtures of gravel, sand, silt, and clay.

Legal Authority (Ordinance Review)

Permit Requirements

The MS4 Permit requires the City to have the legal authority to implement the GI/LID Program. The City of Austell's Community Development Department and Public Works Department are jointly responsible for continuing to review and revise, where necessary, building codes, ordinances, and other regulations to ensure they do not prohibit or impede the use of GI/LID practices, including infiltration, reuse, and evapotranspiration. At a minimum, the permittee shall assess those regulations governing residential and commercial development, road design, and parking requirements. During the regulatory review, the permittee should consider the inclusion of incentives for use of GI/LID practices into the ordinance.

Status of Ordinance Review

Over the years, the City has conducted several reviews of local ordinances and regulations to ensure the use of GI/LID techniques is not prohibited or impeded. The reviews included use of EPA's Scorecard as well as the Codes and Ordinance Worksheet (COW) developed by the Center for Watershed Protection. Both tools allow communities to evaluate their local development regulations to identify revisions that allow or require site developers to minimize impervious cover, conserve natural areas and use runoff reduction practices to manage stormwater. The tools can be completed by municipal staff or by non-governmental organizations who wish to improve the environmental footprint and character of development in their community. It can be used by communities who are experiencing or anticipating moderate to high pressure for new development (urban, suburban, or rural) or redevelopment.

The most recent analysis was last completed in February 2018. A number of recommendations were prepared for further assessment and implementation. These are listed below. No changes to current development regulations has yet occurred as a result of these recommendations.

1. Reduce setbacks to encourage cluster designs in residential areas and preserve greenspace for conservation and protection of environmental features.
2. Require buffers for wetlands and ensure current stream buffers are protected.
3. Reduce required dimensions of impervious areas such as parking spaces, roadways, cul-de-sac radii and residential driveways. Reduce the sidewalk width and require them on only one side of roadways.
4. Encourage more use of green infrastructure in new development and redevelopment. For example, use permeable pavement systems in parking areas. Build bioretention areas within street medians and islands to promote infiltration. Use grass-lined swales instead of curb and gutter systems. The swales can be located between the street and the sidewalk.
5. Preserve areas with soils characterized as having high infiltration rates.
6. Use erosion control at outfalls to stabilize the structures and prevent sediment runoff.
7. Utilize stormwater utility credits to encourage use and maintenance of green infrastructure and low-impact development.

GI/LID Program

Permit Requirements

Per Phase I MS4 permit requirements, the City of Austell must have a program describing the GI/LID techniques and practices to be implemented by the permittee. The program shall include procedures for evaluating the feasibility and site applicability of different GI/LID techniques and practices, and various structures and practices to be considered.

Definition of GI/LID

GI/LID refers to a broad range of stormwater practices and structures for a variety of purposes including water quality improvement and combined sewer overflow reduction. It includes a diverse set of site planning techniques (i.e. protection of conservation areas), site design techniques (i.e. reducing impervious surface), and LID structures (i.e. bio-retention areas, enhanced swales, pervious pavement).

The Georgia Environmental Protection Division (GAEPD) define GI/LID as including the following:

- Better Site Planning Techniques (i.e. protection of conservation areas)
- Better Site Design Techniques (i.e. reducing roadway lengths and widths, reducing parking lot footprints)
- Low Impact Development Structures (i.e. green roofs, permeable pavement, vegetated filter strips, rain gardens)

The most recent Georgia-based guidance on GI/LID BMPs can be found in the 2016 Georgia Stormwater Management Manual (GSMM). The revised GSMM was referenced in the selection of practices and structures that would be appropriate for implementation in the City of Austell.

GI/LID BMPs in the City of Austell

To promote the use of GI/LID where it is feasible, the City will allow the use of all GI/LID structures, better site planning techniques, and better site design techniques that are included in the GSMM. However, Austell will focus on implementing the structures outlined in Appendix B (Exhibit B.1) including:

- Bioretention Basins
- Enhanced Dry Swales
- Enhanced Wet Swales
- Grass Channels
- Infiltration Practices
- Permeable Paver Systems

Appendix B provides a summary of structures categorized as GI/LID (Exhibit B.1) and a summary of better site planning and design techniques (Exhibit B.2). The detailed descriptions in Volume 2 of the GSMM

provide information related to design criteria, advantages/disadvantages, maintenance needs, pollutant removal calculations, stormwater management suitability, implementation considerations, runoff reduction credits and other useful information.

The City understands that the feasibility and successful implementation of individual structures and techniques is site-dependent and therefore uses the information provided in Exhibits B.1 and B.2 to determine specific procedures that may be included on a development or re-development site. As part of the plan review process (outlined in subsequent sections of this document), Austell's Public Works Department works with applicants to determine appropriate features based on the characteristics of a site.

GI/LID Structure Inventory

Permit Requirements

To meet Phase I MS4 permit requirements, the City must develop an inventory of privately owned non-residential and publicly owned water quality-related GI/LID structures located within the urbanized area, and at a minimum, constructed after June 11, 2014, including the total number of each type of structure (e.g., bioswales, pervious pavement, rain gardens, cisterns, and green roofs). The inventory must include city-owned GI/LID structures, publicly-owned structures owned by other entities (e.g., local municipalities), The City must also track the addition of new water quality-related GI/LID structures through the plan review process and ensure the structures are added to the inventory.

Existing MS4 Inventory

Over the past ten years or more, Austell has collected and digitized municipal stormwater infrastructure and condition data. The geodatabase is updated at least once each year to reconcile the inventory with (1) incorporation of new record drawings into the database, (2) field verification and rectification carried out during field inspections and maintenance, and (3) regulatory updates. Austell uses this geodatabase to maintain an inventory of publicly owned or privately-owned non-residential GI/LID BMPs. An update to the inventory is provided to EPD in each MS4 Annual Report.

Plan Review Process

As a local permit issuing authority, the City of Austell is responsible for processing LDA applications, maintaining a list of active LDA permits, conducting inspections / maintenance reports, and enforcing local protective ordinances and the Georgia Erosion and Sedimentation Control Act (Official Code of Georgia Annotated [OCGA] 12-7-8 (a)). The City also conducts plan reviews for compliance with floodplain management/flood damage protection and post-development stormwater management ordinances. The review procedures are presented in the latest Stormwater Management Plan. The information includes a design approval flow chart and review checklists for preliminary and final plans and plats, as well as operation and maintenance plans. Approval from the City for these specific elements must be received in writing prior to issuing the LDA. The City uses the existing plan review process to track new GI/LID features.

As part of the plan review process, the City works with applicants to determine appropriate features based on the characteristics of each site. Austell will continue to refer to guidance from Table 1 and the GSMM (latest edition) with regards to site feasibility of GI/LID practices. The City will encourage consideration of one or more of the six GI/LID structures of interest, and provide a table of Site Feasibility of Focused GI/LID Structures (Exhibit B.2) to each permittee and will require the permittee to evaluate their projects to determine whether or not GI/LID structures may be incorporated into the project design. In determining the feasibility for new GI/LID structures, a site feasibility study will occur that will investigate the applicability of the six GI/LID structures of interest in the City of Austell (Exhibit 3). The setting of the BMP, construction cost, maintenance burden, size limitations, and soil percolation rates will be considered.

Table 1
Site Feasibility of Focused GI/LID Structures
Green Infrastructure / Low Impact Development Program

BMP Type	Appropriate Setting	Soil Feasibility	Construction Cost	Maintenance Burden	Runoff Reduction	WQv/TSS
Bioretention Basins	Upland	0.5 in/hr. minimum infiltration rate	Medium-High	Medium	50-100%	85%
Enhanced Dry Swale	Upland	Engineered Media	Medium	Low	50-100%	80%
Enhanced Wet Swale	Floodplain	No restrictions	Medium	Low	0%	80%
Grass Channel	Sitewide	0.25 in/hr. minimum infiltration rate	Low	Low	10-25%	50%
Infiltration Practices	Upland	0.5 in/hr. minimum infiltration rate	High	High	100%	100%
Permeable Pavers	Upland	No restrictions	High	High	50-100%	80%

In addition to the soil feasibility criteria listed in Table 1, Austell considers other factors when reviewing site plans for GI/LID structures:

- A separation distance of 2 feet is required between the bottom of structure and the elevation of the seasonally high-water table.
- Pretreatment measures should be used to prevent clogging of the basin bottom if runoff is expected to contain heavy sediment loads.
- A separation distance of 2 feet is required between the bottom of the structure and underlying confining layers such as bedrock and clay lenses.
- Minimum setback requirements for most GI/LID structures can include many of the following, depending on the structure type:
 - 10 feet from building foundations/property lines
 - 15 feet down-gradient from buildings
 - 50 feet from septic systems
 - 100 feet from private wells
 - 200 feet from public water supply reservoirs
 - 1,200 feet from public wells
 - 5 miles from airports

Considering the criteria described above, site characteristics can limit the application of GI/LID and require design modifications or alternative practices to maximize runoff reduction and water quality

benefits to reduce the effective impervious area. During the plan review process, the City will consider the following conditions when determining GI/LID practices are not feasible for a specific site:

- Minimum soil infiltration rate cannot be achieved.
- Minimum clearance of the seasonally high-water table cannot be achieved.
- Minimum land area requirements for the proposed structure cannot be achieved.
- Minimum setbacks to property lines, building foundations, wells, septic systems, or surface waters cannot be achieved.
- Minimum space requirements for necessary pretreatment measures cannot be achieved.
- Minimum separation between infiltration practice and confining layers cannot be achieved.
- Utility conflicts cannot be resolved.
- Contaminants that cannot be remediated are present.

When a permittee follows this process, the City will document the information provided by the permittee that was used to determine site applicability or non-applicability. This information may be documented in a memo in each permit file and provided to EPD in each annual report.

Current GI/LID Inventory

The current GILID Inventory contains two privately-owned structures. Both are permeable pavers systems (i.e., pervious pavements) constructed at two commercial businesses. These structures are presented in the table below.

Table 2
Current Inventory of GI/LID Structures as of 4/15/20
Green Infrastructure / Low Impact Development Program

Structure ID	Type	Location	Ownership	Year Built	Maintenance Agreement in Place
GI-1	Bioretention Area	5810 Maxham Road, Austell, GA	Creekside Overlook Community Association, 2675 Paces Ferry Rd SE Suite 125 Atlanta GA 30339	2019	Yes
GI-2	Bioretention Area	5810 Maxham Road, Austell, GA	Creekside Overlook Community Association, 2675 Paces Ferry Rd SE Suite 125 Atlanta GA 30339	2019	Yes

GI/LID Structure Inspection and Maintenance Program

Permit Requirements

Per Phase I MS4 permit requirements, permittees must:

- Beginning June 2019, conduct inspections and/or ensure that inspections are conducted on 100% of the total city-owned, publicly owned (other public entities, not city), and privately-owned non-residential GI/LID structures within a 5-year period. Provide the number and/or percentage of the total structures inspected during the reporting period in each annual report.
- Conduct maintenance on the city-owned GI/LID structures, as needed, beginning in June 2019. Provide the number and/or percentage of the total structures maintained during the reporting period in each annual report.
- Develop procedures for ensuring city-owned, publicly owned (other public entities, not city), and privately-owned non-residential GI/LID structures are maintained as needed. Upon EPD approval, implement the procedures and provide documentation in each subsequent annual report.

GI/LID Inspection and Maintenance Program

Table 3 summarizes the GI/LID inspection and maintenance responsibilities that are incorporated into Austell’s SWMP, by nature of approval of this document. Details are provided following the table.

Table 3
GI/LID Inspection and Maintenance Responsibilities
Green Infrastructure / Low Impact Development Program

Location	Inspection Responsibility	Maintenance Responsibility
City-owned government facilities	Austell	Austell
Private non-residential within the City	Austell	Property Owner (Austell ensures that maintenance has been completed by owner including HOA)
Private residential within the City	Property Owner	Property Owner
Public non-residential within the City limits (e.g., GDOT, Cobb County, etc.)	Austell	Property Owner (Austell ensures that maintenance has been completed by owner)

Note: The GI/LID inspection and maintenance program includes all GI/LID structures that are included the City of Austell’s inventory.

Inspection Program

As required by the MS4 Permit, 100 percent of the inventoried privately owned non-residential GI/LID structures and municipal-owned GI/LID BMPs are inspected by trained staff/contractor at least once within the 5-year permit term per the procedures described below. Sample inspection forms are presented in Appendix C of this report.

Privately Owned Non-Residential Structures and Public GI/LID Structures owned by Other Entities

The City of Austell will prioritize inspections of privately owned non-residential GI/LID structures and public GI/LID structures owned by other entities based on proximity to a documented complaint, geographic area and/or length of time since the last inspection. Inspections are completed by trained staff/contractor, and during each inspection, conditions are documented on an inspection form and photos. Forms provided in the GSMM for each GI/LID structure are used to complete inspections as well as in Appendix C of this report.

The inspections are designed to identify the following information (at a minimum):

- adequate access to GI/LID BMPs via drainage easements and berms;
- stormwater facilities that require sediment removal, grassing, outlet control structure repair, and erosion control;
- accumulation of sediment or debris at the discharge of outfall structures;
- stormwater collection and transfer structures that are not properly maintained or damaged.

Documentation of inspections will be provided to EPD in each annual report.

Publicly Owned Structures (Austell)

For publicly owned GI/LID structures, Austell prioritizes inspections similar to MS4 structure prioritization, which is based on proximity to a documented complaint, geographic area and/or length of time since the last inspection. Inspections are completed by trained staff/contractor, and during each inspection, conditions are documented on an inspection form and photos. Forms provided in the GSMM for each GI/LID structure are used to complete inspections as well as in this report.

The inspections are designed to identify the following information (at a minimum):

- adequate access to GI/LID BMPs via drainage easements and berms;
- stormwater facilities that require sediment removal, grassing, outlet control structure repair, and erosion control;
- accumulation of sediment or debris at the discharge of outfall structures;
- stormwater collection and transfer structures that are not properly maintained or damaged.

If an issue is found or a complaint filed, a work order is initiated in the City's work order system. Emergency situations are addressed immediately while routine inspections are prioritized based upon

the assessed conditions recorded in the inventory.

Maintenance Program

In addition to maintaining city-owned GI/LID structures, Austell is required by the MS4 permit to ensure inventoried privately-owned non-residential GI/LID structures and publicly owned structures owned by other entities are maintained as needed.

Privately Owned Non-Residential GI/LID Structures and Public GI/LID Structures owned by Other Entities

Privately owned non-residential GI/LID structures and public GI/LID structures owned by other entities are required to be maintained by individual property owners. Example publicly owned structures that are not owned by the City include GA Department of Transportation (GDOT) and Cobb County School System. Maintenance of these public GI/LID structures are the responsibility of each individual public entity. Private non-residential and non-municipal public property owners are required to complete a signed and notarized maintenance agreement with the City. If Austell identifies non-compliance with the maintenance agreement, the first step to bring the site into compliance is for a City representative to conduct a site visit and send a notification letter to the property owner that identifies items to be completed and a time-frame.

Property owners who fail to maintain their stormwater systems within the timeframe will be issued a Notice of Violation. If within thirty (30) days (or twenty-four (24) hours if there is an immediate danger to public safety), no actions are taken, the City may enter the property and correct the failure. The cost for the repair work may be a charge on the customer's water, sewer, and stormwater bill, or a lien on the property that may be placed on the tax bill.

Additionally, failure to maintain stormwater controls in accordance with maintenance agreements may be subject to the enforcement actions per local ordinances. If the City determines that a responsible person has failed to comply such provisions, it will issue a written notice of violation, and if the responsible parties do not address the violations, they may be subject to penalties such as stop work orders, revocation of permit, civil penalties or criminal penalties for intentional and flagrant violations. Non-residential structures are subject to future inspections by city representatives to verify maintenance activities were performed. The City documents all maintenance agreements, inspection forms, property owner communication, and if applicable, documentation of any enforcement actions, and provides this information to EPD with each annual report.

Austell-Owned GI/LID Structures

The City of Austell is responsible for maintenance associated with GI/LID structures at municipal facilities in their jurisdictions (e.g., administration buildings, fire stations, road maintenance facilities, etc.). Private property owners are responsible for maintenance of private GI/LID structures. The City ensures that proper maintenance is performed by the owner through a notarized maintenance agreement signed by both the private property owners and the City of Austell, and regular inspections.

Maintenance needs vary for each of the GI/LID BMPs and may include such actions as proper drainage, replacing mulch and plants, removing sediment, sweeping/vacuuming, dewatering, invasive species removal, planting, and removing trash/debris. Austell utilizes the GSMM to identify maintenance needs for structures included in the inventory.

Maintenance and/or repair activities identified in each GI/LID inspection are issued a work order. Once maintenance is conducted, information is documented regarding the efforts, final condition, and follow-up needs of the structure. Austell provides the number and/or percentage city-owned GI/LID structures maintained during the reporting period in each annual report.

GI/LID Program Implementation Schedule

The GI/LID program outlined above will be implemented according to the following schedule:

- Beginning June 2019, the City of Austell will conduct the following:
 - Evaluate new development and redevelopment projects to determine site applicability or non-applicability of GI/LID structures to help manage post-development stormwater runoff. Provide documentation of activities (e.g., GI/LID memo) in each development permit file and annual report.
 - Track six GI/LID features (Table 2) in Austell and submit revised inventories with each subsequent MS4 Annual Report. Provide updated inventory in each annual report.
 - Conduct inspections on inventoried city-owned, public (non-city-owned) and private non-residential GI/LID BMPs so that each structure is inspected at least once every 5 years. Provide required documentation in each annual report.
 - Conduct maintenance, as needed, on city-owned GI/LID BMPs. Provide required documentation in each annual report.
 - Coordinate with public, non-City owned and private non-residential property owners to ensure that needed maintenance is conducted on all inventoried GI/LID structures. Provide required documentation in each annual report.

Appendix A – Maps of the City of Austell, GA

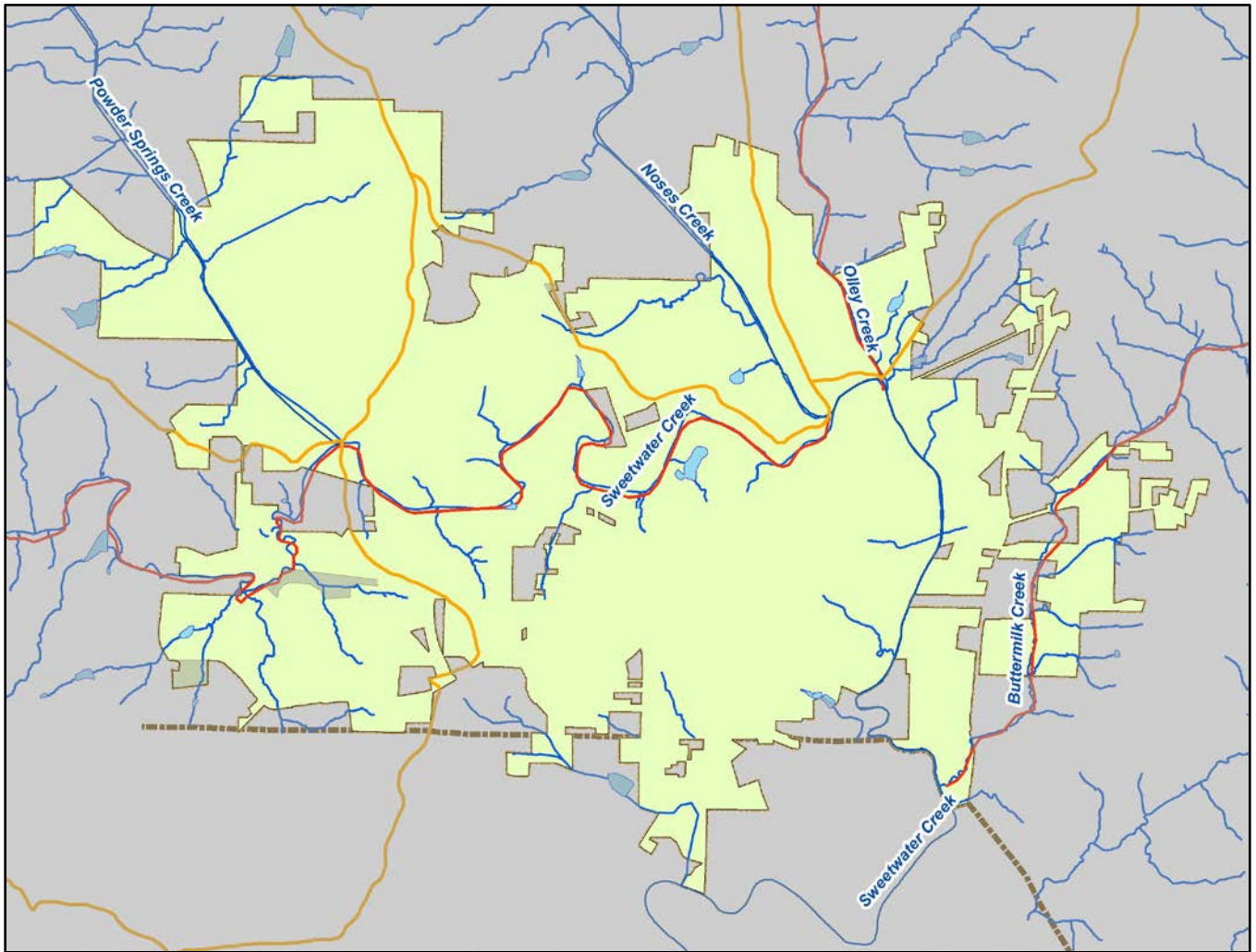


Figure 1. Austell Water Resources

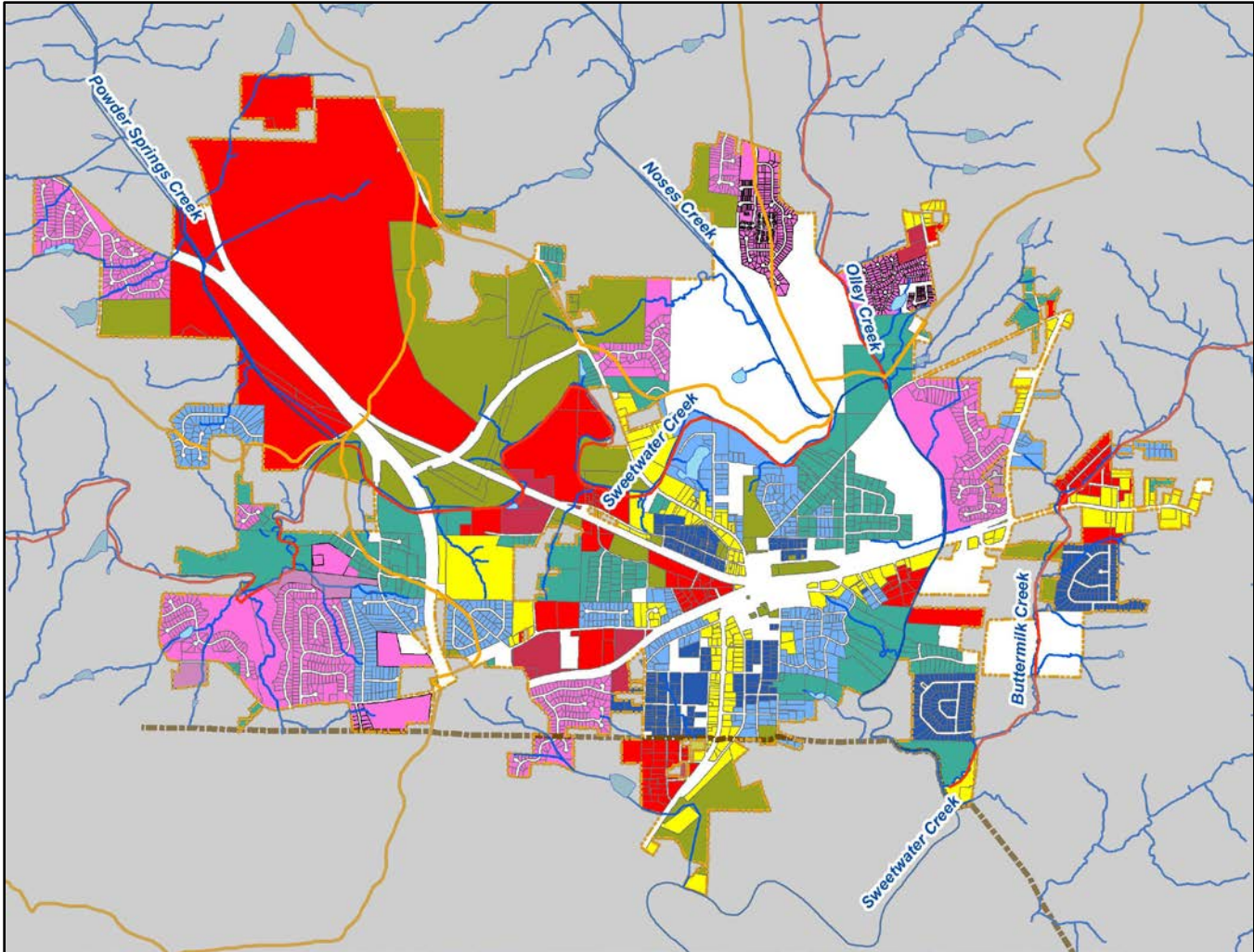


Figure 2. Current Land Use, Austell, GA

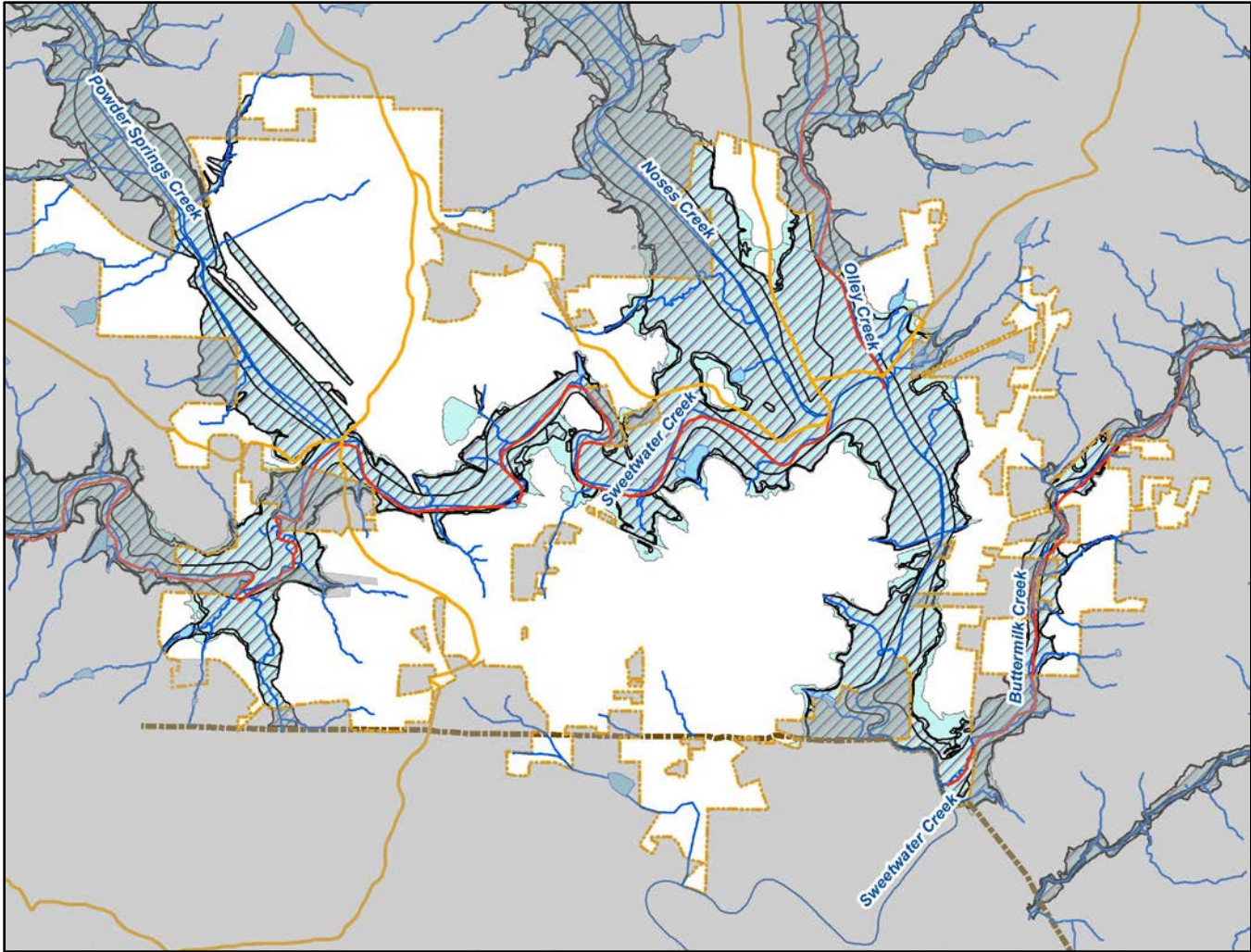









































Figure 3. Floodplains, Austell, GA

Soil Map—Cobb County, Georgia, and Douglas County, Georgia
(Austell, GA)

MAP LEGEND

- | | | |
|--|--|---|
| Area of Interest (AOI) |  Area of Interest (AOI) |  Spoil Area |
| Soils |  Soil Map Unit Polygons |  Stony Spot |
|  Soil Map Unit Lines |  Very Stony Spot |  Wet Spot |
|  Soil Map Unit Points |  Other |  Special Line Features |
| Special Point Features |  Streams and Canals | Water Features |
|  Blowout |  Rails |  Streams and Canals |
|  Borrow Pit |  Interstate Highways | Transportation |
|  Clay Spot |  US Routes |  Major Roads |
|  Closed Depression |  Local Roads |  Local Roads |
|  Gravel Pit | Background |  Aerial Photography |
|  Gravelly Spot |  Aerial Photography | |
|  Landfill | | |
|  Lava Flow | | |
|  Marsh or swamp | | |
|  Mine or Quarry | | |
|  Miscellaneous Water | | |
|  Perennial Water | | |
|  Rock Outcrop | | |
|  Saline Spot | | |
|  Sandy Spot | | |
|  Severely Eroded Spot | | |
|  Sinkhole | | |
|  Slide or Slip | | |
|  Sodic Spot | | |

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cobb County, Georgia
Survey Area Data: Version 11, Jun 9, 2020

Soil Survey Area: Douglas County, Georgia
Survey Area Data: Version 12, Jun 9, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 10, 2019—Jul 3, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AL	Altavista silt loam, occasionally flooded	40.1	1.0%
AIB	Altavista sandy loam, 0 to 4 percent slopes	288.3	7.5%
AmB	Appling sandy loam, 2 to 6 percent slopes	130.5	3.4%
AmC	Appling sandy loam, 6 to 10 percent slopes	212.2	5.5%
AmD	Appling sandy loam, 10 to 15 percent slopes	97.9	2.6%
AnB3	Appling sandy clay loam, 2 to 6 percent slopes, severely eroded	3.5	0.1%
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	9.5	0.2%
Cah	Cartecay fine sandy loam, 0 to 2 percent slopes, frequently flooded	97.5	2.5%
Csw	Chewacla soils, wet variants	57.5	1.5%
Cw	Cartecay silt loam, silty variant	77.7	2.0%
CYB2	Cecil sandy loam, 2 to 6 percent slopes, moderately eroded	283.2	7.4%
CYC2	Cecil sandy loam, 6 to 10 percent slopes, moderately eroded	115.3	3.0%
DiB	Durham sandy loam, 2 to 6 percent slopes	25.2	0.7%
GeB3	Gwinnett clay loam, 2 to 6 percent slopes, severely eroded	52.9	1.4%
GeC3	Gwinnett clay loam, 6 to 10 percent slopes, severely eroded	144.1	3.8%
GeD3	Gwinnett clay loam, 10 to 15 percent slopes, severely eroded	108.5	2.8%
GeE2	Gwinnett clay loam, 15 to 25 percent slopes, eroded	16.4	0.4%
GgB2	Gwinnett loam, 2 to 6 percent slopes, eroded	11.2	0.3%
GgC2	Gwinnett loam, 6 to 10 percent slopes, eroded	4.1	0.1%
GgD2	Gwinnett loam, 10 to 15 percent slopes, eroded	7.3	0.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HSB	Hiwassee loam, 2 to 6 percent slopes	235.7	6.1%
HTC2	Hiwassee clay loam, 6 to 10 percent slopes, eroded	148.6	3.9%
HTD2	Hiwassee clay loam, 10 to 15 percent slopes, eroded	8.9	0.2%
HYC	Helena sandy loam, 2 to 10 percent slopes	92.0	2.4%
LDF	Wateree-Rock outcrop-Louisburg complex, 15 to 45 percent slopes, bouldery	90.6	2.4%
LkE	Louisa gravelly sandy loam, 10 to 25 percent slopes	23.8	0.6%
LnE	Wateree-Rion complex, 10 to 25 percent slopes	38.7	1.0%
MDC3	Madison clay loam, 6 to 10 percent slopes, severely eroded	20.8	0.5%
MDE3	Madison clay loam, 15 to 25 percent slopes, severely eroded	28.1	0.7%
MgB2	Madison sandy loam, 2 to 6 percent slopes, moderately eroded	22.7	0.6%
MgC2	Madison sandy loam, 6 to 10 percent slopes, eroded	43.4	1.1%
MgD2	Madison sandy loam, 10 to 15 percent slopes, eroded	19.7	0.5%
MJF	Musella and Pacolet stony soils, 10 to 45 percent slopes	8.4	0.2%
MIE3	Musella gravelly soils, 15 to 25 percent slopes, severely eroded	6.3	0.2%
MsD3	Madison and Pacolet soils, 10 to 15 percent slopes, severely eroded	88.7	2.3%
MsE2	Madison and Pacolet soils, 15 to 25 percent slopes, eroded	41.6	1.1%
PfD	Pacolet sandy loam, 10 to 15 percent slopes	40.3	1.1%
PgC3	Pacolet sandy clay loam, 6 to 10 percent slopes, severely eroded	63.0	1.6%
Ron	Roanoke silt loam	163.1	4.3%
Toc	Toccoa sandy loam, 0 to 2 percent slopes, occasionally flooded	195.6	5.1%
Tod	Toccoa sandy loam, local alluvium	24.1	0.6%



Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ubp	Urban land and borrow pits	99.4	2.6%
UeC	Urban land-Applying complex, 2 to 10 percent slopes	125.0	3.3%
UgC	Urban land-Gwinnett complex, 2 to 10 percent slopes	197.8	5.2%
UhC	Urban land-Madison complex, 2 to 10 percent slopes	15.0	0.4%
W	Water	67.7	1.8%
WjF	Wilkes stony sandy loam, 10 to 40 percent slopes	2.6	0.1%
WvD	Wilkes sandy loam, clayey subsoil variant, 6 to 15 percent slopes	12.1	0.3%
Subtotals for Soil Survey Area		3,706.3	96.7%
Totals for Area of Interest		3,833.6	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AkB2	Altavista fine sandy loam, 2 to 6 percent slopes, eroded	24.3	0.6%
Alm	Toccoa and Chewacla soils, 0 to 2 percent slopes, occasionally flooded	7.0	0.2%
Alp	Chewacla, Cartecay, and Toccoa soils, 0 to 2 percent slopes, frequently flooded	24.6	0.6%
AmB2	Appling sandy loam, 2 to 6 percent slopes, moderately eroded	5.2	0.1%
AmC2	Appling sandy loam, 6 to 10 percent slopes, moderately eroded	36.1	0.9%
AmD2	Appling sandy loam, 10 to 15 percent slopes, eroded	2.5	0.1%
Bfs	Buncombe loamy sand, 0 to 6 percent slopes	1.3	0.0%
CiB	Colfax sandy loam, 2 to 6 percent slopes	0.0	0.0%
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded	5.2	0.1%
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded	2.6	0.1%
LjE	Louisa fine sandy loam, 15 to 25 percent slopes	0.0	0.0%
LIB2	Louisburg complex, 2 to 6 percent slopes, eroded	1.3	0.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LIC2	Louisburg complex, 6 to 10 percent slopes, eroded	3.8	0.1%
LID2	Louisburg complex, 10 to 15 percent slopes, eroded	0.5	0.0%
MhB2	Madison gravelly fine sandy loam, 2 to 6 percent slopes, eroded	0.5	0.0%
Rok	Rock outcrop	5.7	0.1%
W	Water	3.7	0.1%
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded	3.1	0.1%
Subtotals for Soil Survey Area		127.3	3.3%
Totals for Area of Interest		3,833.6	100.0%

Appendix B - GI/LID Structures and Better Site Planning and Design Techniques

EXHIBIT B.1 (continued on next two pages including key)
Summary of Potential GI/LID Structures in Austell, GA

BMP Structure	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description	Runoff Reduction	Stormwater Management and Treatment						
			RR	WQv / TSS	CPv	Qp25/Qf	Total Phosphorus	Total Nitrogen	Fecal Coliform	Metals
Bioretention Areas	Section 4.2 (page 398)	Bioretention areas are shallow stormwater basins or landscaped areas that utilize engineered soils and vegetation to capture and treat stormwater runoff. Bioretention areas may be designed with an underdrain that returns runoff to the conveyance system or designed without an underdrain to exfiltrate runoff into the soil.	Yes	85%	†	†	80%	60%	90%	95%
Enhanced Dry Swales	Section 4.8 (page 454)	Enhanced swales are vegetated open channels that are designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.	Yes	80%	†	X	50%	50%	X	40%
Enhanced Wet Swales	Section 4.8 (page 454)	Enhanced swales are vegetated open channels that are designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.	No	80%	†	X	25%	40%	X	20%
Grass Channels	Section 4.9 (page 466)	Grass channels are vegetated open channels that provide “biofiltering” of stormwater runoff as it flows across the grass surface.	Minimal	50%	†	X	25%	20%	X	30%
Infiltration Practices	Section 4.12 (page 490)	An infiltration practice is a shallow excavation, typically filled with stone or an engineered soil mix, which is designed to temporarily hold stormwater runoff until it infiltrates into the surrounding soils. Infiltration practices are able to reduce stormwater	Yes	100%	†	†	100%	100%	100%	100%
Permeable Paver Systems	Section 4.15 (page 508)	A permeable paver system is a pavement surface composed of structural units with void areas that are filled with pervious materials such as gravel, sand, or grass turf. The system is installed over a gravel base course that provides structural support and stores stormwater runoff that infiltrates through the system into underlying permeable soils.	Yes	80%	†	†	50%	50%	N/A**	60%

EXHIBIT B.1 (continued from previous page)
Summary of Potential GI/LID Structures in Austell, GA

BMP Structure	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description	Site Applicability						Cost Considerations	
			LID/GI	Drainage Area (ac)	Space Req'd (% of Imperv. Drainage Area)	Max Site Slope	Minimum Head (Elevation Difference)	Depth to Water Table	Construction Cost	Maintenance Burden
Bioretention Areas	Section 4.2 (page 398)	Bioretention areas are shallow stormwater basins or landscaped areas that utilize engineered soils and vegetation to capture and treat stormwater runoff. Bioretention areas may be designed with an underdrain that returns runoff to the conveyance system or designed without an underdrain to exfiltrate runoff into the soil.	Yes	5 max	3 - 6%	20%	3 ft.	2 ft.	Med - High	Med
Enhanced Dry Swales	Section 4.8 (page 454)	Enhanced swales are vegetated open channels that are designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.	Yes	5 max	10 - 20%	4%	3 - 5 ft.	2 ft.	Med	Low
Enhanced Wet Swales	Section 4.8 (page 454)	Enhanced swales are vegetated open channels that are designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.	Yes	5 max	10 - 20%	4%	1 ft.	Below	Med	Low
Grass Channels	Section 4.9 (page 466)	Grass channels are vegetated open channels that provide "biofiltering" of stormwater runoff as it flows across the grass surface.	Yes	5 max	10%	4%	< 1 ft.	2 ft.	Low	Low
Infiltration Practices	Section 4.12 (page 490)	An infiltration practice is a shallow excavation, typically filled with stone or an engineered soil mix, which is designed to temporarily hold stormwater runoff until it infiltrates into the surrounding soils. Infiltration practices are able to reduce stormwater	Yes	5 max	2 - 3%	6%	1 ft.	2 ft.	High	High
Permeable Paver Systems	Section 4.15 (page 508)	A permeable paver system is a pavement surface composed of structural units with void areas that are filled with pervious materials such as gravel, sand, or grass turf. The system is installed over a gravel base course that provides structural support and stores stormwater runoff that infiltrates through the system into underlying permeable soils.	Yes	N/A	No restrictions	6%	2 - 4 ft.	2 ft.	High	High

EXHIBIT B.1 (continued from previous page)

KEY

- √ BMP can meet the stormwater management or treatment requirement
- † BMP may meet the stormwater management or treatment requirement depending on size, configuration, and site constraints
- X BMP may contribute but is not likely to fully meet the stormwater management or treatment requirement

EXHIBIT B.2

Summary of Potential Better Site Planning and Design Techniques in Austell, GA

Better Site Planning Techniques	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description
Preserved Undisturbed Natural Areas	Section 2.3.2 (page 269)	Important natural features and areas such as undisturbed forested and vegetated areas, natural drainageways, stream corridors, wetlands and other important site features should be delineated and placed into conservation areas.
Preserve Riparian Buffers	Section 2.3.2 (page 270)	Naturally, vegetated buffers should be delineated and preserved along perennial streams, rivers, lakes, and wetlands.
Avoid Floodplains	Section 2.3.2 (page 271)	Floodplain areas should be avoided for homes and other structures to minimize risk to human life and property damage, and to allow the natural stream corridor to accommodate flood flows.
Avoid Steep Slopes	Section 2.3.2 (page 273)	Steep slopes should be avoided due to the potential for soil erosion and increased sediment loading. Excessive grading and flattening of hills and ridges should be minimized.
Minimize Siting on Porous or Erodible Soils	Section 2.3.2 (page 274)	Porous soils such as sand and gravels provide an opportunity for groundwater recharge of stormwater runoff and should be preserved as a potential stormwater management option. Unstable or easily erodible soils should be avoided due to their greater erosion potential.
Fit Design Practice to Terrain	Section 2.3.2.2 (page 276)	The layout of roadways and buildings on a site should generally conform to the landforms on a site. Natural drainageways and stream buffer areas should be preserved by designing road layouts around them. Buildings should be sited to utilize the natural grading and drainage system and avoid the unnecessary disturbance of vegetation and soils.
Locate Development in Less Sensitive Areas	Section 2.3.2.2 (page 278)	To minimize the hydrologic impacts on the existing site land cover, the area of development should be located in areas of the site that are less sensitive to disturbance or have a lower value in terms of hydrologic function.
Reduce Limits of Clearing and Grading	Section 2.3.2.2 (page 279)	Clearing and grading of the site should be limited to the minimum amount needed for the development and road access. Site foot printing should be used to disturb the smallest possible land area on a site.
Utilize Open Space Development	Section 2.3.2.2 (page 280)	Open space site designs incorporate smaller lot sizes to reduce overall impervious cover while providing more undisturbed open space and protection of water resources.
Consider Creative Development Design	Section 2.3.2.2 (page 282)	Planned Unit Developments (PUDs) allow a developer or site designer the flexibility to design a residential, commercial, industrial, or mixed-use development in a fashion that best promotes effective stormwater management and the protection of environmentally sensitive areas.
Reduce Roadway Lengths and Widths	Section 3.3.3.1 (page 89)	Strategies to reduce impervious cover by making streets narrower while still meeting transportation objectives.

Better Site Planning Techniques (continued)	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description
Reduce Building Footprints	Section 3.3.3.4 (page 106)	Reducing footprint size of commercial building and residences by using alternate or taller buildings while maintaining the same floor to area ratio (the ratio of building square footage to lot size)
Reduce the Parking Footprint/ Reducing Paved Parking and Walking Areas	Section 3.3.3.3 (page 101)	Reducing the footprint of paved parking lots, driveways, and sidewalks to reduce imperviousness
Reduce Setback and Frontages	Section 3.3.2.3 (page 78)	Reduce front yard building setback to 20 feet to reduce the required length of driveways and sidewalks. Reduce side yard setback to 25 feet or less and frontage length to 80 feet or less to allow for denser development and shorter road lengths.
Use Fewer or Alternative Cul-de-Sacs/ Alternative Roadway Components	3.3.3.2 (page 95)	Alternatives to large cul-de-sacs and curb-and gutter stormwater conveyance
Create Parking Lot Stormwater 'Islands"	2.3.1.2 (page 267)	Reduction of impervious cover
Use Buffers and Undisturbed Areas	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Natural Drainageways Instead of Storm Sewers	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Vegetated Swale Instead of Curb and Gutter	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Soil Restoration Practices to Improve Native Soils	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Drain Rooftop Runoff to Pervious Area	2.3.1.2 (page 267)	Utilization of natural features for stormwater management

EXHIBIT B.2

Summary of Potential Better Site Planning and Design Techniques in Austell, GA

Better Site Planning Techniques	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description
Use Fewer or Alternative Cul-de-Sacs/ Alternative Roadway Components	3.3.3.2 (page 95)	Alternatives to large cul-de-sacs and curb-and gutter stormwater conveyance
Create Parking Lot Stormwater "Islands"	2.3.1.2 (page 267)	Reduction of impervious cover
Use Buffers and Undisturbed Areas	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Natural Drainageways Instead of Storm Sewers	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Vegetated Swale Instead of Curb and Gutter	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Soil Restoration Practices to Improve Native Soils	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Drain Rooftop Runoff to Pervious Area	2.3.1.2 (page 267)	Utilization of natural features for stormwater management

Appendix C – BMP Inspection Forms

Bioretention Area					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet Structure					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Area around the inlet structure is mowed and grass clippings are removed.					
No evidence of gullies, rills, or excessive erosion around the inlet structure.					
Water is going through structure (i.e. no evidence of water going around the structure).					
Diversion structure (high flow bypass structure or other) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type.					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Weir – area is free of trash, debris, and sediment is less than 25% of the total depth of the weir.					
Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion.					
Rock Lined Plunge Pools – area is free of trash debris and sediment. Rock thickness in pool is adequate.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition.					



Bioretention Area					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
No evidence of long-term ponding or standing water in the ponding area of the practice (examples include stains, odors, mosquito larvae, etc.).					
Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure.					
Vegetation within and around practice is maintained per landscaping plan. Grass clippings are removed.					
Mulching depth of 3-4 inches is maintained. Comment on mulch depth.					
Native plants were used in the practice according to the planting plan.					
No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, tips of leaves turning brown or yellow, blackened roots, etc.).					
Plants seem to be healthy and in good condition. Comment on condition of plants.					
Emergency Overflow					
Emergency overflow is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Outlet Structure					
Outlet structure is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Results					
Overall condition of Bioretention Area:					
Additional Comments					
Notes: * If a specific maintenance item was not checked, please check N/A, and explain why in the appropriate comment box.					



Dry Enhanced Swale/Wet Enhanced Swale					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet Structure					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Area around the inlet structure is mowed and grass clippings are removed (for dry enhanced swale).					
No evidence of gullies, rills, or excessive erosion around the inlet structure.					
Water is going through structure (i.e. no evidence of water going around the structure).					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Weir – area is free of trash, debris, and sediment is less than 25% of the total depth of the weir.					
Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion.					
Rock Lined Plunge Pools – area is free of trash debris and sediment. Rock thickness in pool is adequate.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition.					
For dry enhanced swale, no evidence of long-term ponding or standing water in the ponding area of the practice (examples include stains, odors, mosquito larvae, etc.).					
Plants were used in the practice according to the planting plan.					



Dry Enhanced Swale/Wet Enhanced Swale					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
Vegetation within and around practice is maintained per landscaping plan. Grass clippings are removed.					
Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure.					
No evidence of undesirable vegetation.					
No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, tips of leaves turning brown or yellow, blackened roots, etc.).					
Plants seem to be healthy and in good condition. Comment on condition of plants.					
No evidence of erosion around the sides of the check dam.					
Cleanout caps are in place and in good condition (for dry enhanced swale).					
The underdrain appears to be unclogged evidenced by water exiting the practice freely (for dry enhanced swale).					
Pea gravel diaphragm or other flow spreader is clean and working properly.					
Emergency Overflow					
Emergency overflow is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Outlet Structure					
Outlet structure is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Results					
Overall condition of Enhanced Swale:					
Additional Comments					
Notes: * If a specific maintenance item was not checked, please explain why in the appropriate comment box.					



Grass Channel					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Area around the inlet is mowed and grass clippings are removed.					
No evidence of gullies, rills, or excessive erosion around the inlet.					
No signs of clogging or damage around the inlet.					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
No evidence of erosion in the practice.					
No evidence of long-term ponding or standing water in the ponding area of the practice (examples include stains, odors, mosquito larvae, etc.).					
No undesirable vegetation located within the practice.					
No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, blackened roots, etc.).					
Grass within and around practice is maintained at the proper height (3-4 inches). Grass clippings are removed.					
Grass cover seems healthy with no bare spots or dying grass.					



Grass Channel					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
No accumulating sediment within the grass channel.					
Outlet					
Outlet is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding.					
Results					
Overall condition of Grass Channel:					
Additional Comments					
Notes: * If a specific maintenance item was not checked, please check N/A, and explain why in the appropriate comment box.					



Infiltration Practice					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc. Drainage ways are in good condition.					
Area around the inlet structure is mowed and grass clippings are removed.					
No evidence of gullies, rills, or excessive erosion around the inlet structure.					
Water is going through structure (i.e. no evidence of water going around the structure).					
Diversion structure (high flow bypass structure or underdrain) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type.					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Forebay – No undesirable vegetation.					
Forebay – No signs of erosion, rills, or gullies. Erosion protection is present on site.					
Forebay – No signs of standing water.					
Filter Strip– area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion or sediment accumulation.					
Filter Strip – No signs of unhealthy grass, bare or dying grass. Grass height is maintained to a height of 6 – 15 inches.					
Filter Strip– No signs of erosion, rills, or gullies. Erosion protection is present on site.					
Filter Strip – No undesirable vegetation.					
Filter Strip – No signs of standing water (examples include stains, odors, mosquito larvae, etc.).					



Infiltration Practice					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition.					
Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure.					
No signs of ponding water more than 48 hours after a rainstorm event (examples include: stains, odors, mosquito larvae, etc.).					
No undesirable vegetation growing within the practice.					
Native plants were used in the practice according to the landscaping plan.					
Observation well is capped and locked when not in use					
Flow testing has been performed on infiltration practice to determine if underdrain is clogged.					
Emergency Overflow and Outlet Structure					
Area is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
No signs of sediment accumulation.					
Grass height of 6 – 15 inches is maintained.					
Results					
Overall condition of Infiltration Practice:					
Additional Comments					
Notes: * If a specific maintenance item was not checked, please check N/A, and explain why in the appropriate comment box.					



Permeable Bricks/Blocks					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, leaves, etc. removed).					
Area around the practice is mowed and grass clippings are removed. No signs of bare or dead grass.					
No evidence of gullies, rills, or erosion around the practice.					
Water is permeating the bricks/blocks (i.e. no evidence of water going around the practice).					
Bricks/blocks are structurally sound. No signs of cracks or splitting.					
Aggregate between the bricks/blocks is reasonable.					
No evidence of long-term ponding or standing water in the practice.					
Grass in the concrete grid is healthy, no dead grass or bare spots.					
Grass in the concrete grid is mowed and grass clippings are removed.					
Structure seems to be working properly. No signs of the bricks/blocks settling. Comment on overall condition of bricks/blocks.					
Vegetation within and around practice is maintained. Grass clippings are removed.					
No exposed soil near the bricks/blocks that could cause sediment accumulation within the practice.					
Cleanout caps are present and not missing (if applicable).					
The underdrain system has been flushed properly and there is no sign of clogging (if applicable).					
Results					
Overall condition of Permeable Bricks/Blocks:					



Permeable Bricks/Blocks					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
Additional Comments					
Notes: * If a specific maintenance item was not checked, please check N/A, and explain why in the appropriate comment box.					

Appendix D – Maintenance Agreement



MAINTENANCE AGREEMENT CITY OF AUSTELL, GEORGIA

WHEREAS, the Property Owner _____ recognizes that the structural and non-structural stormwater management facility or facilities (hereinafter referred to as "the facility" or "facilities") must be maintained for the development called, _____, located in Land Lot(s) _____, District(s) _____, Section _____, of the City of Austell, Georgia, a political subdivision of the State of Georgia (hereinafter called the "City"), and,

WHEREAS, the Property Owner is the owner of real property more particularly described on the attached Exhibit A (hereinafter referred to as "the Property"), and,

WHEREAS, The City of Austell, Georgia, and the Property Owner, or its administrators, executors, successors, heirs, or assigns, agree that on January 5, 2015, the Mayor and Council, of the City of Austell, Georgia, adopted the Ordinance for Post-development Stormwater Management for New Development and Redevelopment to protect public health and safety, protection of public and private property and infrastructure, and environmental protection from post-development stormwater runoff quality and quantity impacts resulting from the permanent alteration of the character and hydrology of the land surface as well as the nonpoint source pollution from land use activities, and,

WHEREAS, the Development Regulations of the City of Austell, Georgia, require that the facility, or facilities as shown on the development plans and specifications submitted after December 5, 2006 be constructed and maintained per the technical criteria and standards of the Georgia Stormwater Management Manual and the City of Austell, Georgia, and maintained by the Property Owner, its administrators, executors, successors, heirs, or assigns.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

SECTION 1

The facility or facilities shall be constructed by the Property Owner in accordance with the approved plans and specifications for the development.

SECTION 2

The Property Owner, its administrators, executors, successors, heirs or assigns shall maintain the facility or facilities in good working condition, determined through site inspection by a representative of the City of Austell, Georgia, or its authorized agents, and employees.

SECTION 3

The Property Owner, its administrators, executors, successors, heirs or assigns hereby grants permission to the City of Austell, Georgia, its authorized agents and employees, to enter upon the property and to inspect the facilities whenever the City deems necessary. The Property Owner shall execute an access easement in favor of the City of Austell, Georgia, to allow the City, or its agents, and employees, to inspect, observe, maintain, and repair the facility as deemed necessary. A fully executed original easement is attached to this Agreement and by reference made a part hereof.

SECTION 4

In the event the Property Owner, its administrators, executors, successors, heirs, or assigns fails to maintain and/or repair the facility or facilities as shown on the approved plans and specifications in good working order, determined through site inspection, by the City of Austell, Georgia, its authorized agents, and employees, in accordance with the Georgia Stormwater Management Manual (latest edition), the City, with due notice, may enter the property and take whatever steps it deems necessary to return the facility or facilities to good working order. This provision shall not be construed to allow the City to erect any structure of a permanent nature on the property. It is expressly understood and agreed that the City is under no obligation to maintain or repair the facility or facilities and in no event shall this Agreement be construed to impose any such obligation on the City.

SECTION 5

In the event the City of Austell, Georgia, pursuant to this Agreement, performs work of any nature, or expends any funds in the performance of said work for labor, use of equipment, supplies, materials, and the like, the Property Owner shall reimburse the City, or shall forfeit any required bond upon demand within thirty (30) days of receipt thereof for all the costs incurred by the City hereunder. If not paid within the prescribed time period, the City shall secure a lien against the real property in the amount of such costs. The actions described in this section are in addition to and not in lieu of any and all legal remedies available to the City as a result of the Property Owner's failure to maintain the facility or facilities.

SECTION 6

It is the intent of this agreement to insure the proper maintenance of the facility or facilities by the Property Owner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or caused by stormwater runoff.

SECTION 7

Sediment accumulation resulting from the normal operation of the facility or facilities will be managed properly to ensure the design volume of the facility is maintained. The Property Owner will make accommodation for the removal and disposal of all accumulated sediments on its own initiative or when requested by the City of Austell, Georgia. Disposal will be provided onsite in a reserved area(s) or will be removed from the site. Reserved area(s) shall be sufficient to accommodate for a minimum of two dredging cycles.

SECTION 8

At the City's request, the Property Owner shall provide the City of Austell, Georgia, with a bond, or a letter of credit providing for the maintenance of the facility or facilities pursuant to the Post Development Stormwater Development Ordinance and/or other ordinances/regulations as adopted by the Mayor and Council, of the City of Austell, Georgia, concerning Maintenance Agreements.

SECTION 9

The Property Owner shall use the standard Best Management Practice (BMP) Operation and Maintenance Inspection Reports in the Georgia Stormwater Management Manual, or similar reports approved by the City of Austell, Georgia, for the purpose of a minimal annual inspection of the facility or facilities, by a qualified inspector.

SECTION 10

The Property Owner, its administrators, executors, successors, heirs and assigns hereby indemnifies and holds harmless the City of Austell, Georgia, and its authorized agents and employees for any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the City from the construction, presence, existence or maintenance of the facility or facilities by the Property Owner, or the City. In the event a claim is asserted against the City, its authorized agents or employees, the City shall promptly notify the Property Owner and the Property Owner shall defend at its own expense any suit based on such claim. If any judgment, or claims against the City, its authorized agents, or employees shall be allowed, the Property Owner shall pay for all costs and expenses in connection herewith.

SECTION 11

This Agreement shall be recorded among the deed records of the Clerk of Superior Court, of Cobb County, Georgia, and shall constitute a covenant running with the land and shall be binding on the Property Owner, its administrators, executors, heirs, assigns, and any other successors in interest.

SECTION 12

This Agreement may be enforced by proceedings at law, or in equity by or against the parties hereto and their respective successors in interest.

SECTION 13

Invalidation of any one of the provisions of this Agreement shall in no way effect any other provisions and all other provisions shall remain in full force and effect.

STORMWATER FACILITY MAINTENANCE AGREEMENT

SO AGREED this _____ day of _____, 20_____.

Name of Property Owner: _____

Address of Property Owner: _____

By: _____
Signature

Attest: _____
Signature of Witness

Typed or Printed Name

Typed or Printed Name

Title: _____

Title: _____
(President or Vice President)
(Corporate Secretary or Notary)

(CORPORATE OR NOTARY SEAL)

THE CITY OF AUSTELL, GEORGIA

Attest: _____
City Clerk

By: _____
Director

(CITY SEAL)

Attachments:

- Exhibit A. Plat and Legal Description
- Exhibit B. Inspection and Maintenance/Repair Schedule
- Exhibit C. Permanent Water Quality BMP and Access Easement Agreement
- Exhibit D. Inspections, Operation and Maintenance Requirements of Approved Stormwater Control Structure

Exhibit A. PLAT AND LEGAL DESCRIPTION

Remove this sheet and insert 2 sheets with the following information on them:

Sheet # 1: **EXHIBIT “A1”**

(Insert Project Name)

Plat will be a drawn plat (8.5 x 11 *or* 8.5 x 14 size-no larger) of the description(s) given in Exhibit “A2” showing the stormwater facilities and easements in relation to the lots on the final plat.

Sheet # 2: **EXHIBIT “A2”**

(Insert Project Name)

All that tract or parcel of land lying and being in Land Lot(s)_____of the___District of Cobb County, Georgia and being more particularly described as follows:

(Insert legal description of each stormwater facility in relation to the lot(s) where they are located.)

Exhibit B. INSPECTION AND MAINTENANCE/REPAIR SCHEDULE

Remove the table below and insert a description of the inspection and maintenance requirements of the project's stormwater management system per the Georgia Stormwater Management Manual (latest edition) and/or proprietary device approved by the City.

STORMWATER FACILITY	CITY INSPECTION FREQUENCY	OWNER MAINTENANCE FREQUENCY
Wet Pond	Once per Year	Once per Quarter, Year and after a Major Rain Event (>3")
Dry Pond	Once per Year	Once per Quarter, Year and after a Major Rain Event (>3")
Constructed Wetlands	Once per Year	Once per Quarter, Year and after a Major Rain Event (>3")
Green Infrastructure/Low-Impact Development Facility	Once per Year	Once per Quarter, Year and after a Major Rain Event (>3")
Enhanced Swales, Grass Channels and Filter Strips	Once per Year	Once per Quarter, Year and after a Major Rain Event (>3")
Other Stormwater Infrastructure (culverts, pipes, drop inlets, outfalls, etc.)	20% per Year	Maintain if > 25% full of debris; Repairs should be done asap and no more than 30 days unless approval by City is obtained

**Exhibit C. PERMANENT WATER QUALITY BMP AND ACCESS
EASEMENT AGREEMENT
THE CITY OF AUSTELL, GEORGIA**

THIS EASEMENT granted this _____ day of _____, 20_____

between the property owner _____ as party of the first part, hereinafter referred to as Grantor, and the City of Austell, Georgia, a political subdivision of the State of Georgia, as party of the second part, hereinafter referred to as Grantee.

WITNESSETH THAT: Grantor, for and in consideration of the sum of ONE DOLLAR (\$1.00) in hand paid at and before the sealing and delivery of this easement and in consideration of the agreements and covenants contained in this document and the Maintenance Agreement between Grantor and Grantee, hereby grants unto the Grantee an easement in and to that portion of the property shown on Exhibit "A" to the Maintenance Agreement, as shown and identified on the plat attached hereto as Exhibit "1".

The purpose of this easement is to allow Grantee, or its agents, access for maintenance activities to the Water Quality Best Management Practice (BMP) facility, and to prevent development of the property within the easement following issuance of the Certificate of Occupancy, issued by the Department of Community Development, City of Austell, Georgia, or in the case of a residential subdivision, the approval of the Final Plat, without written permission from Department of Community Development, the City of Austell, Georgia. This easement is required by the provisions of the Maintenance Agreement executed by and between the Grantor and Grantee.

**PERMANENT WATER QUALITY BMP AND ACCESS EASEMENT
AGREEMENT**

SO AGREED this _____ day of _____, 20_____.

Name of Property Owner: _____

Address of Property Owner: _____

By: _____
Signature

Attest: _____
Signature of Witness

Typed or Printed Name

Typed or Printed Name

Title: _____
(President or Vice President)

Title: _____
(Corporate Secretary or Notary)

(CORPORATE OR NOTARY SEAL)

THE CITY OF AUSTELL, GEORGIA

Attest: _____
City Clerk

By: _____
Director

(CITY SEAL)

Attachments:

See next page.

**Exhibit D. INSPECTION, OPERATION AND MAINTENANCE
REQUIREMENTS OF APPROVED STORMWATER CONTROL
STRUCTURE**

*(To be provided by the Design Engineer based on the GA Stormwater Management Design Manual
(latest edition) or Designers of City-approved Proprietary Device)*