Special Protection Area Management Plan

for

Gills Creek Watershed

GC-07 Subwatershed

City of Columbia

Effective: March 2, 2018

Background

City of Columbia Code of Ordinances Section 21-46(c) states:

> To assist in the compliance with state and federal laws and regulations, the stormwater division may develop special protection areas which require additional control of stormwater quality and quantity than provided by minimum design standards. Such areas may consist of watersheds corresponding to adopted TMDLs, known flooding problems and pollution impairments, or other areas necessary to protect, maintain, and enhance water quality and the environment of the city and the public health, safety, and general welfare of the citizens of the city. These areas can be expected to change with time as development continues and federal and state law demands.

A significant portion of the City corporate limits lies within the Gills Creek Watershed (GCW). The Gills Creek Watershed Management Plan, dated May 2009, predates watershed management plans completed for other watersheds within the City. In addition, the Gills Creek Watershed Association has been active for years, working to promote proper management of the Gills Creek Watershed. Therefore, GCW has been selected as the watershed in which the City's first Stormwater Special Protection Area (SPA) will be established. This SPA will be established in a manner consistent with the GCW Management Plan.

Special Protection Area (SPA) Boundary

The GCW Management Plan identifies several subwatersheds, each with a unique identification code. The Plan then details an evaluation of each subwatershed and scores each subwatershed based on several watershed management criteria. The overall highest scoring (most critical) subwatersheds were GC-07 and JC-04.

JC-04 lies outside City limits, while much of GC-07 lies within the City. The portion of GC-07 that lies within the City is large enough to be effective, but small enough to be manageable, as a designated SPA. Therefore, areas of the City within the GC-07 subwatershed (including future annexations within GC-07) have been selected as the SPA boundary.

A map of the boundary is included in **Attachment A**. The GC-07 boundary as delineated on the map was imported to the City GIS system as a shapefile, and plotted over the existing City GIS data. If the location of a property or development in relation to the SPA boundary is in question, City Stormwater Management personnel can assist in making a determination.

It is possible that certain areas within the illustrated boundaries are not hydraulically/hydrologically connected to the GC-07 subwatershed. It is also possible that certain areas outside of the illustrated boundaries are hydraulically/hydrologically connected to the GC-07 subwatershed. If any property or development within the designated area can be demonstrated to be hydraulically/hydrologically disconnected from the area (e.g. site is near the boundary and discharges to a neighboring watershed), the requirements and incentives of the SPA may not apply. If a property or development outside of the designated area can be demonstrated to be hydraulically/hydrologically connected to the area, the property or development may be permitted to take advantage of the incentives (but must also meet the

additional requirements) of the SPA. Hydraulic/hydrologic connectivity must be demonstrated through appropriate documentation, certified by a South Carolina Registered Professional Engineer, and approved by the City Engineering Department.

The GC-06 subwatershed (see map in Attachment A) lies to the north of GC-07, and Gills Creek proper runs north-south through GC-06 and enters GC-07. The entirety of GC-06 will not be included in this SPA, but the subwatershed is considered a potential future SPA boundary. Participation by select properties in the GC-06 subwatershed in this SPA may further improve water quality, as well as provide information that will help in evaluation of GC-06 as a future SPA. Therefore, properties within the GC-06 subwatershed, which are within or adjacent to the 100-year floodplain (as defined by the latest FEMA maps), may opt to be included in this SPA.

Properties in GC-06 that wish to opt in will need to provide a written request, including all applicable supplementary information, to the City for review. For development and redevelopment projects, the request may be included as a part of the Land Disturbance Permit Application. Acceptance of the request, and subsequent inclusion of a property into the SPA, will be based primarily on the expected benefit to this SPA and potential future SPAs. Acceptance of a property within GC-06 into this SPA is at the sole discretion of the City. Once included in the SPA, the property will be eligible for all incentives, and must follow all requirements, of the SPA for the duration of the time this SPA Management Plan remains effective.

Special Protection Area Additional Requirements

The GCW Management Plan provides the following summary related to identified issues in the GC-07 subwatershed:

> Subwatershed GC-07 received the highest scores for flooding, sedimentation, and trash as well as relatively high scores for water quality and aquatic ecosystems and wildlife. Within this subwatershed, Gills Creek is on the 303(d) list for fecal coliform and dissolved oxygen impairments.

Total Suspended Solids (TSS) present in stormwater runoff is generally considered to be a stressor for most water quality impairments. The above summary also specifically identifies sedimentation as a high-scoring (critical) issue for GC-07. A focus on removal of TSS is a logical first step toward improving overall water quality in the GCW.

Several permanent stormwater quality controls are able to treat TSS in runoff with an accepted removal rate of at least 80%. The controls necessary to provide at least 80% TSS removal: are commonly used in development, redevelopment and retrofit projects; are varied in size and style, allowing for application to a broad range of sites; and can be designed and implemented at a cost similar to other controls.

The City Stormwater Best Management Practices (BMP) Manual currently requires permanent water quality measures for most development and redevelopment projects. However, the BMP Manual allows for water quality controls that are generally considered to have TSS removal efficiencies of less than 80%. The most common example of this is the use of dry detention ponds, which are considered to

have a typical removal efficiency of approximately 60%. A BMP Pollutant Removal Matrix, covering common permanent water quality controls and including the accepted TSS removal rates, is provided in **Attachment B**.

As of the approval date of this Special Protection Area Management Plan, the following additional requirement will be effective, in accordance with the above-referenced ordinance:

- **All Land Disturbance Projects within the Special Protection Area boundary, which require installation of permanent water quality controls, must utilize permanent water quality controls that can be reasonably expected to achieve 80% TSS removal. These controls may be stand-alone or part of a treatment train. Developers and engineers may reference Attachment B (BMP Pollutant Removal Matrix), and/or provide other documentation as appropriate, to demonstrate the selected controls can be reasonably expected to achieve 80% TSS removal.**

Special Protection Area Additional Incentives

In 2003, the City established a Stormwater Utility, which charges fees to most properties within the City. With the exception of single-family residential properties, fees are based on the impervious area present on the property. As active participation by property owners is beneficial in the areas of stormwater quality control, quantity control and public education, a credit program has been established to encourage such participation. The Stormwater Utility Credit Manual (and associated credit calculation spreadsheet), dated April 2016, outlines options available which can earn a property up to 30% credit (reduction) on the property's stormwater utility fee.

The Credit Manual also states the following:

> In Special Protection Areas, where severe or specific water quality impairments have been documented, the City of Columbia may provide additional utility fee credits beyond 30% for the implementation of certain water quality BMPs. The City will develop watershed-specific Special Protection Area Management Plans to identify areas that could benefit from higher levels of water quality treatment. Details regarding additional utility fee credits for Special Protection Areas can be found in the Special Protection Area Management Plan.

Implementation of permanent controls with high TSS removal rates is most cost-effective when done as part of a broader development/redevelopment project. Implementing the same controls as a retrofit is generally less cost-effective, and recouping investment costs at the credited rate may take a significant amount of time. While implementation of additional controls during development will improve future water quality, retrofitting existing properties may provide a larger impact in a shorter timeframe.

The City finds that increasing available credits for both development/redevelopment and retrofit projects will provide an incentive for properties to actively participate in improving water quality. Given

that retrofits provide a great benefit, but are more expensive to implement, the City will provide a higher level of incentive for retrofits.

As of the approval date of this Special Protection Area Management Plan, the following additional incentives will be effective, in accordance with the above-referenced provision in the Credit Manual:

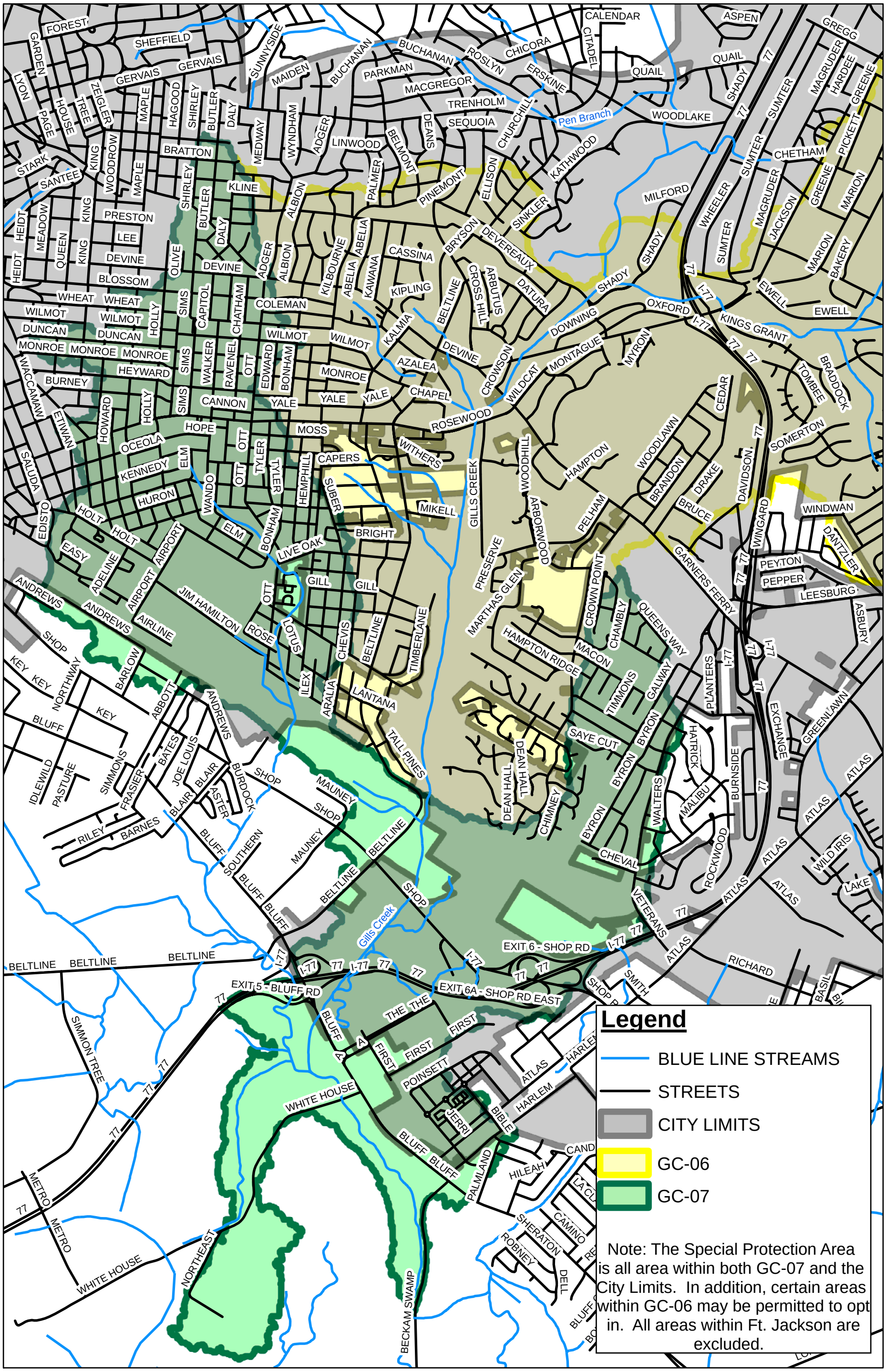
- **All development and redevelopment projects located within the Special Protection Area boundary will be entitled to a 50% increase (multiply by a factor of 1.5) in any calculated water quality-related stormwater utility fee credit, with a maximum 45% reduction from the pre-credit fee.**

- **All retrofit projects located within the Special Protection Area boundary will be entitled to a 100% increase (multiply by a factor of 2) in any calculated water quality-related stormwater utility fee credit, with a maximum 60% reduction from the pre-credit fee. Retrofit projects are defined as those that are solely conducted to address permanent water quality runoff treatment, and are not implemented as a part of a broader development/redevelopment project.**

Attachment A

Special Protection Area Boundary Map

Special Protection Area Boundary Map



Attachment B

BMP Pollutant Removal Matrix

BMP	Variation	Pollutant Removal Efficiencies (%)				Drainage Area (ac)	Implementation Considerations	
		TSS	Total P[1]	Total N[2]	Metals		Relative Unit Cost	Relative Maintenance Burden
BMPs with TSS Removal ≥ 80%								
Stormwater Ponds (excluding dry ponds)	Wet Pond	80	55	30	50	>25	Low	Low
	Wet ED Pond					>25	Low	Low
	Micro Pool ED Pond					>10	Low	Low
	Multiple Pond Systems					>25	Moderate	Low
Stormwater Wetlands	Shallow Wetland	80	45	30	50	>25	Moderate	Moderate to High
	ED Wetland					>25	Moderate	Moderate to High
	Pond / Wetland System					>25	Moderate	Moderate to High
	Pocket Wetland					>5	Moderate	Moderate to High
Bioretention Areas		85	60	50	80	≤5	Moderate	Low
Infiltration Trench / Basin		90	60	60	90	≤5	Moderate to High	Moderate
Enhanced Swale	Dry Swale	80	50	50	40	≤5	Moderate	Low
	Wet Swale / Wetland	80	25	40	20	≤5	Moderate	Low
BMPs with TSS Removal < 80%								
Stormwater Pond	Dry Extended Detention	60	35	25	25	<75	Low	Low
Filter Strip		50	20	20	40	<5	Moderate	Low
Gravity Oil-Grit Separator		40	5	5	--	<1	Moderate	Moderate
Porous Surfaces	Porous Concrete	**	**	**	**	N/A	Moderate to High	Low
	Modular Pavers							
Proprietary Systems		***	***	***	***	***	Moderate to High	Moderate to High

[1] Total Phosphorous

[2] Total Nitrogen

*Utility fee credits are not available for these BMPs when used alone. However, when used in combination with other BMPs as part of a treatment train achieving 80% or more TSS removal, utility fee credits are available.

** These practices are source controls and are not designed as pollutant removal devices; considered as pervious surfaces

*** The performance of specific proprietary commercial devices and systems must be provided by the manufacturer and should be verified by independent third party sources and data

-- Insufficient data to provide removal efficiency