City of Johns Creek
Primary and Secondary Variance Application Packet – Letter of Appeal
Johns Creek Creekside Project

PROJECT DESCRIPTION

The project proposes the construction of a new multi-use trail, elevated boardwalks, viewing and overlook areas, amphitheater, dredging of the stormwater pond for maintenance purposes, and water quality improvements including the conversion of the existing open water ponds to wetlands and installation of permanent bioretention BMP's. A project site plan and Buffer impact exhibit illustrating the locations of the proposed impacts to State buffers for the infrastructure improvements, dredging activity, and aquatic restoration activities including the location of the emergent wetland shelf can be found in Attachment C: Figures 11 and 12.

A Georgia EPD Stream Buffer Variance (BV-060-23-20), and a United States Army Corps of Engineers Nationwide Permit (SAS-2023-00402) are currently under review for this project.

Infrastructure Improvements

The proposed infrastructure portion of the project is a new multi-use trail that will connect the City of Johns Creek Town Center with a newly developed outdoor amenity green space. The proposed multi-use trail will connect the project to adjacent existing commercial buildings, existing pedestrian walkways along Medlock Bridge Road, East Johns Crossing Road, Johns Creek Parkway, future Town Center re-developments, and proposes a new connection to the Johns Creek Greenway. The proposed trail will consist of both new concrete paths and elevated boardwalk surrounding onsite aquatic features.

The proposed multi-use trial will replace existing concrete walking paths and viewing areas surrounding OW 1. The project proposes new walking paths connecting OW 1 and OW 2, that will surround OW 1 and construct new elevated boardwalks crossing OW 2. The project also proposes three (3) new viewing areas and one (1) new amphitheater to be constructed around OW 1. The proposed viewing decks, boardwalks, and amphitheater will be constructed on stilts and helical piers overtop of OW 1 and OW 2.

The construction of the new multi-use trail surrounding OW 1 will require grading activities for structural stabilization which will inherently result in the disturbance of the State 25-ft buffers. While the project will require new fill material to be placed for the structural stabilization of the walkway, the project will avoid and minimize impacts through the re-use of dredge materials to construct the emergent wetland shelf. The emergent wetland shelf will include dredge material where possible and will also include new clean suitable fill material.

Additionally, permanent BMP's including bioretention swales will be placed along the newly proposed multi-use trail that will improve water quality and lower TSS rates by 51%.

Aquatic Improvements

Open Water 1 (Upper Pond)

The existing detention volume of OW 1 has been significantly reduced by years of sediment deposition from development within watershed. As re-development surrounding the project and within the watershed takes place, the need to maintain the original intent of OW 1 as a stormwater detention pond must be maintained. In order to return the stormwater management function of OW 1 to original design standards, the project proposes to dredge and remove sediment build up within 200-feet of serviceable structures including outlet controls and stormwater culvert outfalls. Dredging will occur in the OW 1 to restore original design capacities while improving its aquatic function.

Additionally, the project proposes enhancements of OW 1 by retrofitting the existing stormwater pond with an approximately 0.32-acre emergent wetland shelf that will serve as a pollutant reduction green infrastructure feature designed to reduce inputs of sediments, nutrients, and other pollutants.

Open Water 2 (Lower Pond)

The proposed work in OW 2 will enhance an existing stormwater detention pond into a stormwater facility with a mix of open water and wetland components. These newly develop wetlands will serve as a pollutant reduction green infrastructure feature designed to reduce inputs of sediments, nutrients, and other pollutants. The work around OW 2 will involve the dredging and removal of material from the existing ponds to create an upper shelf wetland and lower shelf wetland. There is no new placement of fill proposed into OW 2. The project will ultimately result in a permanent pool elevation that is approximately 2-feet lower than what exists today but will allow for the water level to reach existing pool levels during storm events.

The drainage between the upper and lower wetland cells will be separated by an approximately 100-LF section of a single stem drainage feature separating the wetland cells. This feature will serve as a water control structure between the two wetland cells and will be structured with rock cross-veins to control water flows to reduce downcutting. The dredging of the lower shelf will be completed so that hillock wetland pockets will exist in the proposed pool elevation. These hillocks will be planted with native wetland vegetation and allow for wetland terrestrial habitat throughout the lower shelf. All work will be completed in a dry condition by releasing a maintenance valve to drain OW 2. In addition, the existing outlet control structure (OCS) will be modified to reduce downstream channel and bank erosion during peak stormflows.

Stream 1 (Bank Stabilization)

The project will propose the stabilization of banks along 372-linear feet (LF) of Stream 1. The stabilization will include the removal of deposited sediments from offsite accelerated bank erosion to re-establish pools below existing culverts and installing structural protection along the stream banks. The project will result in the placement of 50 cubic yards (CY) of stream bank stabilization materials below the OHWM over the 372 LF section (less that one CY per running foot). A list of the stream bank stabilization measures will be included as follows:

- Stone toe protection and re-establishing pool section immediately downstream of the East Jones Crossing culvert and adjacent storm drainage outfall;
- Stone toe protection and laying back slopes;
- Gravel point bar in stream for larger storm events to activate and prevent further erosion of opposite stream bank;
- J-hook and stone toe protection to pull water away from eroding banks;
- Replacement of an existing storm drain outfall that is failing.

A figure of the streambank stabilization activities is included in Attachment C: Figure 13.

<u>Purpose of Activity</u>

The purpose of the project is to improve pedestrian mobility and access to green spaces in the City of Johns Creek community through the construction of new pedestrian walkways and outdoor spaces that will utilize existing aquatic resources and restoration activities as amenities. The existing natural aquatic features within Technology Park have been identified by the community and stakeholders as natural features that can be showcased to create an outdoor community space that improves mobility and recreational areas. The project intends to utilize the existing aquatic resources as amenity features while proposing to restore and enhance their ecological functions.

The project intends to conform with The City of Johns Creek 2018 Comprehensive Plan – Adopted Town Center Vision and Plan, which outlines the City's goals and the community's desires by introducing new parks and improving the pedestrian transportation infrastructure. The plan identifies Technology Park (site) as the location for the new Town Center which will ultimately

include a larger mixed-use development and influx of residential buildings. The project intends to conform with The City of Johns Creek 2018 Comprehensive Plan – Adopted Town Center Vision and Plan by improving both the transportation infrastructure and by creating new park space for future residents and the community.

EXISTING SITE/BUFFER CONDITIONS

The site currently contains numerous commercial developments adjacent to and surrounding a large stream and open water system. The site is bound on all sides by commercial developments, Medlock Bridge Road, E Johns Crossing, Lakefield Drive, and Johns Creek Parkway. Additionally, a concrete walkway, bridge crossing, and viewing areas surround Open Water 1 (OW 1) where improvements associated with this project are proposed.

The rapid development of the watershed and associated accelerated erosion activity in the watershed of the project has resulted in an excessive amount of sediment deposition which can be observed in the upstream portion of OW 1.

While a majority of the site is maintained landscaping from development, portions of the site surrounding the aquatic resources contain mixed-age pine and hardwood forest. The vegetated areas on the site contain a dominant canopy of loblolly pine (*Pinus taeda*), white oak (*Quercus alba)*, sweet gum *(Liquidambar styraciflua),* and red maple *(Acer rubrum)*.

Kimley-Horn scientists investigated the project site on March 24, 2022, for the presence of aquatic features that may be regulated waters of the United States. During this field study five (5) streams, three (3) wetlands, and two (2) open water ponds were identified. A depiction of these waters and their buffers is included as Attachment C: Figure 8, and a boundary survey is included in Attachment C: Figure 7.

Project photos can be found in Attachment D.

Streams

Stream 1 is an approximately 0.10-acre (444 LF) perennial stream flowing south through the center of the project site. Stream 1 originates below a culvert underneath East Johns Crossing. Stream 1 continues south before entering Open Water 1. Stream 1 ranges from approximately 5 to 15 feet wide at its point of wrested vegetation (PWV), and 5 to 20 feet at its TOB. The proposed crossing of Stream 1 will occur where the stream width is approximately 10 feet. Stream 1 substrate consists of cobble, gravel, sand, and silt. Stream 1 is likely considered a federally jurisdictional water and buffered water of the State and City. Dominant vegetation around Stream 1 consists of loblolly pine, river birch (*Betula nigra*), and maintained grass spp.

Stream 2 is an approximately 0.16-acre (531 LF) perennial stream flowing south through the center of the project site. Stream 2 originates below the impoundment of Open Water 1 and flows south before entering Open Water 2. Stream 2 ranges from approximately 6 to 30-feet at its PWV, and 6 to 35-feet at its TOB. The proposed crossing of Stream 2 will occur where the stream width is approximately 15 feet. Stream 2 substrate consists of cobble, gravel, sand, and silt. Stream 2 is likely considered a federally jurisdictional water and buffered water of the State and City. Dominant vegetation around Stream 2 consists of loblolly pine, tulip poplar, Chinese privet, sweet gum, and red maple.

Stream 3 is an approximately 0.14-acre (636 LF) perennial stream flowing south through the center of the project site. Stream 3 originates below the impoundment of Open Water 2 and flows south before it leaves the site through a culvert underneath Johns Creek Parkway. Stream 3 ranges from approximately 6 to 15-feet wide at its PWV, and 6 to 20 feet wide at its TOB. The proposed crossing of Stream 3 will occur where the stream width is approximately 15 feet. Stream 3 substrate consists of cobble, gravel, sand, and silt. Stream 3 is likely considered a federally jurisdictional water and a buffered water of the State and City. Dominant vegetation around Stream 3 consists of loblolly pine, tulip poplar, Chinese privet, sweet gum, and red maple.

Stream 4 is an approximately 0.006-acre (74 LF) intermittent stream located in the center of the site near the outfall of Open Water 1. Stream 4 begins at culvert and flows west before converging with Stream 2. Stream 4 is approximately 4-feet wide at its PWV, and 4 to 5-feet wide at its TOB. Stream 4 contains a substrate that consist mostly of gravel, sand, and silt. Stream 4 is likely considered a federally jurisdictional water and buffered water of the State and City. Dominant vegetation around Stream 4 consists of loblolly pine, tulip poplar, Chinese privet, sweet gum, and red maple.

Stream 5 is an approximately 0.11-acre (1,018 LF) intermittent stream located near the eastern boundary of the site. Stream 5 begins at a culvert outfall and drains west before converging with Stream 1. Stream 5 is approximately 4 to 12-feet wide at its PWV, and 5 to 15-feet wide at its TOB. Stream 5 contains a substrate that consist mostly of cobble, gravel, sand, and silt. Stream 5 is likely considered a federally jurisdictional water and a buffered water of the State and City. Dominant vegetation around Stream 5 consists of loblolly pine, tulip poplar, Chinese privet, sweet gum, and red maple.

Wetlands

Wetland A is an approximately 0.093-acre palustrine forested/emergent (PFO/PEM) jurisdictional wetland located in the central portion of the project site adjacent to Open Water 1 and Stream 1. Wetland A appeared to receive hydrology primarily from inundation and saturation from Open Water 1, Stream 1, and groundwater. Wetland A is dominated by vegetation that consists of river birch, black willow (*Salix nigra*), and common rush (*Juncus effusus*). Wetland A contains hydric soil indicators, hydrophytic vegetation, and wetland hydrology satisfying the three criteria outlined in the 1987 United States Army Corps of Engineers Wetlands Delineation Manual and the associated Regional Supplement.

Wetland B is an approximately 0.029-acre palustrine emergent (PEM) jurisdictional wetland located in the central portion of the project site adjacent to Open Water 1. Wetland B appeared to receive hydrology primarily from inundation and saturation from Open Water 1 and groundwater. Wetland B is dominated by vegetation that consists of common rush and Japanese stiltgrass (*Microstegium vimineum*). Wetland B contains hydric soil indicators, hydrophytic vegetation, and wetland hydrology satisfying the three criteria outlined in the 1987 United States Army Corps of Engineers Wetlands Delineation Manual and the associated Regional Supplement.

Wetland C is an approximately 0.24-acre palustrine forested/emergent (PFO/PEM) jurisdictional wetland located in the central portion of the project site adjacent to Open Water 2. Wetland C appears to receive hydrology from both groundwater and inundation/saturation from Open Water 2. Wetland C is dominated by vegetation that consists red maple, sweetgum, American hornbeam (*Carpinus caroliniana*), and common rush. Wetland C contains hydric soil indicators, hydrophytic vegetation, and wetland hydrology satisfying the three criteria outlined in the 1987 United States Army Corps of Engineers Wetlands Delineation Manual and the associated Regional Supplement.

Open Water

Open Water 1 is an approximately 5.28-acre lacustrine limnetic (L1) jurisdictional water located in the center of the project site. Open Water 1 is fed by Stream 1 and 1 and drains south through Stream 2.

Open Water 2 is an approximately 3.50-acre lacustrine limnetic (L1) jurisdictional water located in the center of the project site. Open Water 2 is fed by Stream 2 and drains south through Stream 3 which ultimately converges with Johns Creek and the Chattahoochee River.

BUFFER DISTURBANCE HARDSHIPS / JUSTIFICATION

Avoidance and minimization of impacts to stream buffers has been made to the furthest extent practicable while still achieving the needs and purpose of the project. Alternatives to the proposed project that would otherwise avoid or further minimize buffer impacts while achieving the project purpose and need are not feasible. The project footprint was designed to avoid and minimize impacts to city buffers to the furthest extent practicable while meeting the project's needs,

however, results in unavoidable impacts. Complete avoidance of impacts to the city buffers is not practical as the project is inherently designed around existing buffered aquatic resources and includes improvements to the aquatic resources and the existing infrastructure located in the city buffers.

Given the location of the aquatic resources on the project site and the inherent intent of this project to enhance existing aquatic features and their buffers, the project development would be prevented or severely limited unless for the encroachment into City of Johns Creek stream buffers. As such, strict adherence to the minimal buffer requirements would essentially prevent any of the aquatic and buffer improvements of this proposed development.

Alternatives to the project are not possible as the projects' purpose is to construct new greenspace amenities while restoring and enhancing the aquatic features and their associated buffers. Complete avoidance of aquatic features and their buffers would not serve to meet the needs and purpose of this project.

While the overall project includes infrastructure improvements, the project also intends to improve aquatic resource conditions from what exists today. The project will result in minimal adverse loss of aquatic resources and the improvement of buffer conditions from what exists today. The project has been designed to restore aquatic features for water quality improvement and introduce permanent BMP's to enhance downstream water quality. The qualitative improvements of the stormwater ponds to wetlands and introduction of permanent BMP's are included below.

The project intends to conform with *The City of Johns Creek 2018 Comprehensive Plan – Adopted Town Center Vision and Plan,* which outlines the City's goals and the community's desires by introducing new parks and improving the pedestrian transportation infrastructure. The plan identifies Technology Park (site) as the location for the new Town Center which will ultimately include a larger mixed-use development and influx of residential buildings. The project intends to conform with *The City of Johns Creek 2018 Comprehensive Plan – Adopted Town Center Vision and Plan* by improving both the transportation infrastructure and by creating new park space for future residents and the community.

The use of structural and vegetative erosion and sediment control measures, as shown on the erosion, sediment and pollution control plans, or as deemed necessary during construction by the design engineer, will be used to contain disturbed soils on site and prevent secondary impacts to adjacent wetlands and waters. These measures may include the use of silt fence, hay bales, berms, mats, rock, check dams, gravel, mulches, grasses, slope drains, and other erosion control features, as practical measures to ensure economical, effective, and continuous erosion control during construction and post-construction. Further minimization is provided through implementation of BMPs and compliance with the National Pollutant Discharge Elimination System (NPDES) permit.

<u>Buffer Disturbance Calculations</u>

Buffer Impact Calculations

Area	Impact (SF)	Acres
Disturbance Area within 50' Buffer	211,490	4.86

Buffer Impact Calculations

Area	Impact (SF)	Acres
Existing Impervious Area within 75' Setback	18,951	0.44
Proposed Impervious Area within 75' Setback	93,104	2.14
Net gain of Impervious Area	74,153	1.70

A figure depicting the location and extent of buffer impacts can be found in Attachment C: Figure 15.

STORMWATER MANAGEMENT PLAN

Post Development Total Suspended Solids and/or Stormwater Runoff

The Buffer Mitigation Guidance document states: "*The applicant will use on-site minimum stormwater management standards that conform to guidance established in Section 4.2.3 of the Georgia Stormwater Management Manual (or "Blue Book") to either retain the first 1.0-inch of rainfall on the site or intercept the stormwater runoff from the first 1.2" of rainfall and reduce average annual post-development total suspended solids (TSS) loadings by 80%."*

The project will achieve the interception of stormwater runoff from the first 1.2" of rainfall and reduce the average annual post-development total suspended solids by 85%.

The TSS calculations for the project drainage basin and a proposed site plan with the stormwater quality mitigation plan is included in Attachment E.

The Site Disturbed Area is 17.6-acres, however, the GSMM Stormwater Quality Site Development Review Tool reflects a Total Post-Development Area of 8.95-acres. The discrepancy between the two calculations is the result of two large existing stormwater ponds being located within the Limits of Disturbance. As such, the area of the existing ponds was removed from the Site Disturbed Area and Post Construction Stormwater calculations as the ponds themselves are BMP's.

Water Quality Protection

Under existing conditions, the drainage basins of the of the project area drain through two (2) stormwater ponds. The project proposes to install a bioretention swales as an initial BMP within each of the project's drainage basins, as well as convert the lower stormwater pond to a stormwater wetland.

Under existing conditions, the site includes 13 drainage basins, Drainage Basin 1 (DB1), Drainage Basin 2 (DB2), Drainage Basin 3 (DB3), Drainage Basin 6 (DB6), Drainage Basin 9 (DB9), Drainage Basin 10 (DB10), Drainage Basin 11 (DB11), Drainage Basin 12a (DB12a), Drainage Basin 12b (DB12b), Drainage Basin 13 (DB13), Drainage Basin 14 (DB14), Drainage Basin 15 (DB15), as well as a bypass drainage basin.

Currently, DB1 through DB15 drain through two (2) stormwater ponds. In order to improve water quality for the proposed project, a bioretention swale will be constructed as the initial BMP within each of the project's drainage basins. Additionally, the project proposes to convert the lower stormwater pond to a stormwater wetland to enhance total suspended solids (TSS) removal rates. As such, each drainage basin will now include three (3) Best Management Practices (BMPs) that consist of bioretention swales (BMP1) a stormwater detention pond (BMP 2), and a stormwater wetland (BMP 3). The bypass drainage basin will drain through BMP's 2 & 3.

The installation of these BMPs will result in a total TSS (lb) load reduction of 46.27%, and a total overall TSS (lb/ac/yr) load reduction of 34.88% from existing conditions.

In order to show that buffer intrusion for the project will result in improved water quality downstream stream, *The Gwinnett County Department of Public Utilities Stormwater Quality Performance Review Form* spreadsheets were utilized to calculate the total reduction of TSS loading rates within the buffer disturbance drainage basins. The TSS removal rate percentages in the Gwinnett tool were modified to conform with the *Georgia Stormwater Management Manual (GSWMM) 2016 Edition* and the applicable BMP's proposed for the project including Bioretention (Bioretention w/ upturned underdrain), Extended Wet Detention (Stormwater Pond), and Construction Wetland (Stormwater Wetlands – Level 2).

The Gwinnett County spreadsheets used to calculate the TSS load reduction in the areas of State stream buffer impacts can be found in Attachment C: Figure 13a-13c.

A description of each basin/sub-basin is included below:

- Drainage Basin 1 – (DB1) is a 0.23-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.23-acres, 0.16-acres will consist of on-site disturbed pervious surfaces and the remaining 0.07-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB1 will be reduced by 40.23% from existing conditions.

- Drainage Basin 2 – (DB2) is a 0.24-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.24-acres, 0.16-acres will consist of on-site disturbed pervious surfaces and the remaining 0.08-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB2 will be reduced by 33.53% from existing conditions.

- Drainage Basin 3 – (DB3) is a 0.46-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.46-acres, 0.33-acres will consist of on-site disturbed pervious surfaces and the remaining 0.12-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB3 will be reduced by 43.89% from existing conditions.

- Drainage Basin 6 – (DB6) is a 2.72-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 2.72-acres, 0.72-acres will consist of on-site disturbed pervious surfaces and the remaining 2.0-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB6 will be reduced by 56.25% from existing conditions.

- Drainage Basin 9 – (DB9) is a 0.11-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.11-acres, 0.07-acres will consist of on-site disturbed pervious surfaces, 0.02-acres will consist of on-site disturbed impervious surfaces, and the remaining 0.02-acres will be on-site undisturbed upland area. The TSS loading rate in (lb/ac/yr) leaving DB9 will be increased by 14.08% from existing conditions.

- Drainage Basin 10 – (DB10) is a 0.15-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.15-acres, 0.09-acres will consist of on-site disturbed pervious surfaces and the remaining 0.06-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB10 will be increased by 21.65% from existing conditions.

- Drainage Basin 11 – (DB11) is a 0.2-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.2-acres, 0.13-acres will consist of on-site disturbed pervious surfaces and the remaining 0.07-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB11 will be reduced by 8.82% from existing conditions.

- Drainage Basin 12a – (DB12a) is a 0.2-acre basin that will treat runoff and enhance water

quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.2-acres, 0.14-acres will consist of on-site disturbed pervious surfaces and the remaining 0.06-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB12a will be reduced by 46.63% from existing conditions.

- Drainage Basin 12b – (DB12b) is a 0.46-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.46-acres, 0.31-acres will consist of on-site disturbed pervious surfaces, 0.09-acres will consist of on-site disturbed impervious surfaces, and the remaining 0.06-acres will be on-site undisturbed upland area. The TSS loading rate in (lb/ac/yr) leaving DB12b will be reduced by 46.50% from existing conditions.

- Drainage Basin 13 – (DB13) is a 0.61-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.61-acres, 0.41-acres will consist of on-site disturbed pervious surfaces and the remaining 0.20-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB13 will be reduced by 44.10% from existing conditions.

- Drainage Basin 14 – (DB14) is a 0.69-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.69-acres, 0.52-acres will consist of on-site disturbed pervious surfaces and the remaining 0.17-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB14 will be reduced by 42.69% from existing conditions.

- Drainage Basin 15 – (DB15) is a 0.18-acre basin that will treat runoff and enhance water quality from the project site. Under proposed conditions, the drainage from this basin will first be routed through a bioretention swale (BMP 1) and will then be routed and treated through a stormwater pond (BMP 2) and stormwater wetland (BMP 3). Of the 0.18-acres, 0.09-acres will consist of on-site disturbed pervious surfaces and the remaining 0.09-acres will be on-site disturbed impervious surfaces. The TSS loading rate in (lb/ac/yr) leaving DB15 will be reduced by 32.50% from existing conditions.

- Bypass Drainage Basin – is a 0.99-acre bypass stormwater management basin. Under proposed conditions, the drainage from this basin will first be routed and treated through a stormwater pond (BMP 2) and then a stormwater wetland (BMP 3). Of the 0.99-acres, 0.71-acres will consist of on-site disturbed pervious area, 0.09-acres will consist of on-site disturbed impervious area, and 0.19-acres will consist of undisturbed pervious upland area. TSS in runoff leaving the bypass drainage basin will be reduced by 11.49%.

The project will comply with the City stormwater management regulations. The project engineer will coordinate with the City during the Land Disturbance Permit process to ensure compliance with post-construction stormwater management regulations.

Aquatic / Buffer Habitat Protection

Aquatic habitat protection will be addressed through the purchase of stream and wetland mitigation credits. The proposed project requires that a USACE Section 404 Permit be obtained to impact Waters of the United States. The applicant proposes aquatic/buffer habitat protection through the purchase of 0.23 (2018) wetland credits (1.84 legacy credits) from an agency-approved commercial mitigation bank servicing the Upper Chattahoochee River basin (HUC 03130001).

- **Temperature Control / Shading**

    - The project will maintain the riparian buffers surrounding Streams 1 – 5 and maintain the existing buffer shading for all streams that are not proposed to be impacted. Therefore, stream flows will remain in shaded conditions allowing for temperature control.

- **Streambank Stabilization**

    - Streambank stabilization will be achieved through the revegetation of disturbed buffers, the modification of outlet control structures (OCS) on stormwater ponds to reduce exit velocities and improve downstream channel protection and proposing streambank stabilizing grading and revegetation along Stream 1.

- **Trapping of Sediments**

    - The project proposes to modify the existing stormwater ponds into stormwater wetlands to increase the trapping of sediments as well as introducing bioretention swales along OW1 to further trap sediments entering the system.

- **Removal of Nutrients, Heavy Metals, Pesticides, Other Pollutants**

    - In order to mitigate for lost buffer functions on-site, the project proposes to modify the existing stormwater ponds into stormwater wetlands to improve the removal rates of nutrients, heavy metals, pesticides, and other pollutants.

- **Aquatic Habitat and Food Chain**

    - Aquatic habitat and aquatic food chains will not be adversely impacted by the proposed project, however, will be improved by the overall purpose of the project to construct stormwater wetlands with native wetland vegetation. In order to mitigate for lost buffer functions, the project proposes to avoid impacts to the remaining streams and their associated 25-ft buffers on the property.

- **Terrestrial Habitat, Food Chain and Migration Corridor**

    - Terrestrial habitat, food chains, and migration corridors will not be impacted by the proposed project. The habitat surrounding the streams will be revegetated following the construction of the proposed elevated boardwalks and grading activity. In order to mitigate for lost buffer functions, the project proposes to avoid impacts to remaining streams and their associated 25-ft buffers on the remainder of the property.

- **Buffering of Flood Flows**

    - The outlet control structures of the ponds are proposed to be modified as part of this project. The OCS modifications will allow for stormflows to be captured in each respective pond/wetland then released at a controlled rate which mimics and improves that of existing conditions as to not increase downstream flood stages.

Furthermore, the project proposes the revegetation of the City buffers with native riparian species in accordance with the *City of Johns Creek Stream Buffer Mitigation / Revegetation Standards.* The revegetation plans can be found in Attachment B: Figures 14.