

## Background

The Lakes at Green Valley Industrial Park is a quickly growing area. As the Spalding County Development Authority (SCDA) continues to attract companies to the industrial park, a desire for a scenic, functional green space has risen. The site is approximately 49 acres with two lakes on site. The SCDA wants this park to be an attraction for the residents of Griffin, GA. The SCDA has developed its own sustainable rating system comparable to the Leadership in Energy and Environmental Design (LEED) certification standards. The Lakes at Green Valley is the only industrial park to have a ratings system like this on the east coast south of New Jersey.





**College of Engineering UNIVERSITY OF GEORGIA** 







## **Park Features**

- Dog Park
- Basketball Courts
- Tennis Courts
- Aquatic Center
- Walking Trail
- Frisbee Golf
- Life Size Chess
- Playgrounds
- Docks
- Restrooms



AKA Civil Engineering aimed to design an attraction for the residents of Griffin, Georgia that still maintained an environmentally friendly concept. Griffin lacks both a dog park and aquatic center, so these were both important qualities to include in the design. The firm created a water-centric area that is both aesthetically pleasing and functionally useful.

The ponds in the middle of the site were also useful for stormwater management. After running a hydrologic analysis, the team calculated that the two ponds were more than capable of handling the post-development runoff created from the new construction. Therefore no detention pond was needed for the design.

# **Recreational Area at Lakes at Green Valley** Team Members: Austin Horvat, Kody Trowbridge, Anna Timm Faculty Advisor: Dr. Durham, Dr. Christian

## Cost

AKA Civil was given no budget for the site design, however the team still did their best to minimize using green by cost materials and creating a more natural park. The cost for the site alone (not including building cost of the aquatic center) came out to roughly \$2.4 million.

# Design

# Sponsor/Client: Archway/ Spalding Development Authority



100 200 300 SCALE: 1"=100'

# LAKES AT GREEN VALLEY INDUSTRIAL PARK

# SITE CONSTRUCTION PLANS

**PREPARED FOR: GRIFFIN-SPALDING DEVELOPMENT AUTHORITY 109 EAST SOLOMON STREET** GRIFFIN, GA 30224-1009



DRIFTMIER ENGINEERING CENTER **597 DW BROOKS DRIVE** ATHENS, GA 30602 912-230-7334 (CELL)





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<ol> <li>The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year in which the land-disturbing activity was permitted. This checklist is for a Stand Alone Development.</li> </ol>	storm water collection system. Excess product, materials used with these products and product containers will be disposed of according to manufacturers specifications and recommendations. Concrete Truck Washing - No concrete trucks will be allowed to wash out or discharge surplus concrete of drum wash water onsite. Fertilizer/ Herbicides - These products will be applied at rates that do not exceed the manufacturer's specifications or above the guidelines set forth in the crop
<ol> <li>Level II certification number issued by the Commission, signature and seal of the certified design professional. Shown on each ES&amp;PC plan sheets.</li> </ol>	establishment or in the GSWCC Manual for Erosion and Sediment Control in Georgia. Any storage of these materials will be under roof in sealed containers. Building Materials - No building or construction materials will be buried or disposed of onsite. All such material will be disposed of in proper waste disposal procedures.
<ol> <li>Limit of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the EPD District Office.</li> <li>If EPD approves the request to disturb 50 acres or more at any one time, the plan must include at least 4 of the BMPs listed in Appendix 1 of this checklist.*</li> <li>Disturbed area is less than 50 acres</li> </ol>	27. Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization). Shown on detail sheet
4. The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls. David Luck- Director of Spalding Development Authority	28. Provide complete requirements of inspections and record keeping by the primary permittee.* Primary Permittee -
david@gsda.net 5. Provide the name, address and phone number of primary permittee.	(1) Each day when any type of construction activity has taken place at a primary permittee's site, certified personnel provided by the primary permittee
Lakes at Green Valley Industrial Park 109 East Solomon St	shall inspect: (a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment;
Griffin, GA 30224	(b) all locations at the primary permittee's site where vehicles enter or exit the site for evidence of off-site sediment tracking.
6. Note total and disturbed acreage of the project or phase under construction. Total Project Acreage: 45	These inspections must be conducted until a Notice of Termination is submitted.
7. Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.	(2) Measure rainfall once every 24 hours except any non-working Saturday, non-working Sunday and non-working Federal holiday until a Notice of Termination is submitted. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a coording of largest perspected for the region.
33.2322 N 84.21869 W 8. Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.	a seeding of largest perennials appropriate for the region. (3) Certified personnel (provided by the primary permittee) shall inspect at least once every seven (7) calendar days and within 24 hours of the end of a storm that is
Shown on plan sheets	0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or on any non-working Saturday, non-working Sunday or any non-working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day, whichever occurs first):
<ol> <li>Description of the nature of construction activity.</li> <li>Construction will include the construction of a new building, parking area, sports courts, Aquatic Center, and associated infrastructure.</li> </ol>	(a) disturbed areas of the primary permittee's construction site; (b) areas used by the primary permittee for the storage of materials that are exposed to precipitation; and
10. Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary. Vicinity Map shown on Cover	(c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the primary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are
11. Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, etc. which may be affected.	effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation, and a seeding of target perennials appropriate for the region, the permittee must comply with PartIV.D.4.a.(4). These inspections must be conducted until a Notice of Termir
The site drains into an existing pond on site. 12. Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan as stated on page 15 of the permit.	submitted. (4) Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is submitted to the
"I certify under penalty of law that this Plan was prepared after a site visit to the location described herein by myself or my authorized agent, under my supervision."	areas of the site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas sh inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving waters(s). Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations
Certified By Certification #	or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). (5) Based on the results of each inspection, the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and Pollution Control Pla
13. Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs	the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practical b case later than the seven (7) calendar days following each inspection. The Primary Permittee must amend the Plan in accordance with Part IV.D.4.b.(5). when a secondary per
and sampling to meet permit requirements as stated on page 15 of the permit.*	notifies the primary permittee of any Plan deficiencies. (6) A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase(i.e., initial, intermediate c
"I certify that the Permittee's Erosion, Sedimentation and Pollution Control Plan provides for an appropriate and comprehensive system of Best Management Practices required by the Georgia Water Quality Control Act and the document "Manual for Erosion and Sediment Control in Georgia" (Manual) published by the State Soil and Water Conservation Commission as of January 1 of the year in which land-disturbing activity was permitted, provides for the sampling of the receiving water(s) or the sampling of the storm water outfalls and that the designed system of best management practice and sampling methods is expected to meet the requirements contained in the General NPDES Permit No. GAR 100003."	major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(5)., of the perm be made and retained at he site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and a Notice of Termination has been submitted to EPD. Such reports shall be readily available by the end of the second business day and/or work and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify
Certified By	incident, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The shall be signed in accordance with Part V.G.2. of this permit. Secondary Permittees:
14. Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation."*	This master list to be kept up-to-date by the primary permittee and kept at the construction site. Secondary Permittees sign when receiving plans. All secondary permittees must submit secondary NOI at least 14 days prior to beginning construction activity. NAME:
I certify that the site was in compliance with the ES&PC Plan on the date of inspection. Date of Inspection:	Company Phone: Address Fax: GSWCC Level 1A Certification No
GSWCC LEVEL II Design Professional Certification #	Signature
Inspections revealed the following discrepancies:	NAME: Company Phone:
	Address Fax: GSWCC Level 1A Certification No
15. Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers	NAME:
as measured from the point of wrested vegetation without first acquiring the necessary variances and permits." Shown on Plan Sheets	Company Phone: Address Fax:
16. Clearly note the statement that "Amendments/ revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*Any deviations from the ES&PC Plan which effect the hydraulic component of BMPs must be certified by the design professional. "*Any deviations from the ES&PC Plan which effect the hydraulic component of BMPs must be certified by the design professional."	GSWCC Level 1A Certification NoSignature
17. Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a section 404 permit."* Shown on Plan Sheets	Company Phone: Address Fax:
18. Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."	GSWCC Level 1A Certification No Signature 29. Provide complete requirements of sampling frequency and reporting of sampling results.*
Shown on Plan Sheets 19. Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for	Sampling Frequency: 1. The primary permittee must sample in accordance with the Plan at least once for each rainfall event described below. For a qualifying event, the permittee shall sample at the beg
effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source." Shown on Plan Sheets	of any storm water discharge to a monitored receiving water and/or from a monitored outfall location within forty-five (45) minutes or as soon as possible. 2. However, where the manual and automatic sampling are impossible (as defined in this permit), or are beyond the permittee's control, the permittee shall take
20. Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."	samples as soon as possible, but in no case more than twelve (12) hours after the beginning of the storm water discharge. 3. Sampling by the permittee shall occur for the following events:
Shown on Plan Sheets 21. Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream of and within the same	(a). For each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a storm water discharge that occurs du normal business hours as defined in this permit after all clearing and grubbing operations have been completed, but prior to completion of a mass grading operations, in the drainage that occurs du
watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the	of the location selected as the sampling location.
BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment.* N/A: No storm water shall be discharged into an Impaired Stream Segment.	(b). In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inches with a storm water discharge that occurs during normal business hours as defined in this permit either 90 days after the first sampling event or after all mass grading operations have been com
22. If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 21 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.	but prior to submittal of a NOT, in the drainage area of the location selected as the sampling location, whichever comes first; (c). At the time of sampling performed pursuant to (a) and (b) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed
N/A 22. DNDs for concrete weakdown of table, concrete mixer chutes, happens and the rear of the vehicles. Weakout of the drum at the construction site is prohibited *	installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the
23. BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drum at the construction site is prohibited.* Washout of the drum and washing down of tools, concrete mixer chutes, hoppers and the rear of vehicles at	for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours* until the selected turbidity standard is attained, or until post-storm event inspections determine that BMPs are properly designed, installed and maintained;
the construction site, is prohibited. 24. Provide BMPs for the remediation of all petroleum spills and leaks.	(d). Where sampling pursuant to (a), (b), or (c) above is required but not possible (or not required because there was no discharge ), the permittee, in accordance with Part IV.D.4.a.(6), must include a written justification in the inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any
-Local, State, and manufacturer's suggested methods for spill remediation shall be posted on site and explained to personnel.	subsequent sampling obligations under (a), (b) or (c) above; and
-Materials and equipment for spill cleanup shall be kept in the material storage area (i.e. brooms, mops, rags, goggles, gloves, cat litter, etc.) -All spills shall be addressed immediately	(e) Existing construction activities, i.e., those that are occurring on or before the effective date of this permit, that have met the sampling required by (a) above shall sample in accordance with (b). Those existing construction activities that have met the sampling required by (b) above shall not be required to conduct additional sampling other than as
-Any spill that impacts surface water requires the NRC (National Response Center) to be contacted within 24 hrs 800-426-2675.	required by (c) above.
-Spills greater than 25 gallons with no surface water impacts require the Georgia EPD to be contacted within 24 hrs. -Spills less than 25 gallons with no surface water impacts require local authorities to be contacted as required.	*Note that the Permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows t
-The contractor shall notify the Engineer if more than 1320 gallons of oil/fuel will be stored onsite or if any piece of equipment has a oil/fuel capacity	sampling at anytime of the day or week.
greater than 660 gallons so that a Spill Prevention Containment and Countermeasures Plan can be prepared by the Engineer. 25. Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction	Reporting Requirements:
operations have been completed.*	1. The applicable permittees are required to submit a summary of the monitoring results to the EPD at the address shown in Part II.C. by the fifteenth
Permanent grassing will continue to reduce storm water pollutants after the completion of construction. 26. Description of the practices that will be used to reduce the pollutants in storm water discharges.*	day of the month following the reporting period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results
Product Specific Practices:	on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in
Petroleum Based Products - Containers for products such as fuels, lubricants and tars will be inspected daily for leaks and spills. This includes on-site vehicle and machinery daily inspections and regular preventative maintenance of such equipment. Equipment maintenance areas will be located away from state water, natural	this permit must be reported in a similar manner to the EPD. The sampling reports must be signed in accordance with Part V.G.2. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.
drains and storm water drainage inlets. In addition, temporary fueling tanks shall have a secondary containment liner to prevent/ minimize site contamination.	2. All monitoring results shall include the following information:
Discharge of oils, fuels and lubricants is prohibited. Proper disposal methods will include collection in a suitable container and disposal as required by local and State regulations. Points/Finishes/Solvents - All products will be stored in tightly sealed original containers when not in use. Excess product will not be discharged to the	a. The rainfall amount, date, exact place, and time of sampling or measurements; b. The name(s) of the certified personnel who performed the sampling and measurements;
	c. The date(s) analyses were performed;

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e or final), mit shall orking day itify an e report

- e. The name(s) of the certified personnel whe f. References and written procedures, when
- g. The results of such analyses, including the
- tapes, etc., used to determine these resul
  - h. Results which exceed 1000 NTU shall be r

3. All written correspondence required by this permit s of the EPD according to the schedule in Appendix A site or the proof of submittal shall be readily availab submitted in accordance with Part VI. If an electroni copy must also be submitted by return receipt certified

30. Provide complete details for retention of records as per Pa 1. The primary permittee shall retain the following recor commencement of construction until such time as a NO

e. A copy of all inspection reports generated f. A copy of all violation summaries and viola

g. Daily rainfall information collected in acc 2. Copies of all Notices of Intent, Notices of Termination and all original strip chart recordings for continuous mor data used to complete the Notice of Intent to be covered used it for a period of at least three years from the date permittee's primary place of business once the construc

31. Description of analytical methods to be used to collect and Stormwater Sampling:

notification to the permittee.

Sample Analysis - Storm water samples are to be analyzed in a document titled "NPDES Storm Water Sampling Guidance Docu discharge of storm water runoff from disturbed areas where bes shall constitute a separate violation for each day on which such Appendix B in Permit No 100001. The NTU is based upon the c supports warm water fisheries.

### 32. Appendix B rationale for NTU values at all outfall sampling NTU Value is 50.

33. Delineate all sampling locations, perennial and intermittent See sheet 3 & 4

34. A description of appropriate controls and measures that wi intermediate grading and drainage BMPs, and (3) final BMPs. F drainage BMPs, and final BMPs are the same, the plan may co The initial BMPs shall be the construction exit, dust co Intermittent BMPs shall include inlet sediment traps,

shall be the permanent seeding and outlet protection.

35. Graphic scale and north arrow. Shown on all plan sheets

N/A

36. Existing and proposed contour lines with contour lines draw shown on the plan sheets.

37. Use of alternative BMPs whose performance has been doo or the Georgia Soil and Water Conservation Commission). Plea No alternative BMPs are proposed

38. Delineation of the applicable 25-foot or 50-foot undisturbed areas of impact.

39. Delineation of on-site wetlands and all state waters located N/A

40. Delineation and acreage of contributing drainage basins or The site drains into a existing pond on site.

41. Provide hydrology study and maps of drainage basins for t should include each individual basin draining to, through and from See sheet 3.

42. An estimate of the runoff coefficient or peak discharge flow Pre-Development Runoff Coefficient: 0.34 Post Development Runoff Coefficient: 0.46

43. Storm-drain pipe and weir velocities with appropriate outlet Shown on plan sheets

44. Soil series for the project site and their delineation. The site consists of Cecil Sandy Loam (CYC, CYC2, C

## 45. The limits of disturbance for each phase of construction.

Limits of disturbance for all phases shown on each she 46. Provide a minimum of 67 cubic yards of sediment storage common drainage location. Sediment storage volume must be justification explaining the decision to use equivalent controls is not provided. A written justification as to why 67 cubic yards calculations used by the design professional to obtain the requi required to utilize outlet structures that withdraw water from the explaining this decision must be included in the plan.

Sediment Storage Required: 2245 CY (67 CY/ac \* 33. Sediment Storage Provided: To be calculated

47. Location of Best Management Practices that are consisten Manual, Chapter 6, with legend.

Shown on plan sheets

48. Provide detailed drawings for all structural practices. Spec See detail sheet

49. Provide vegetative plan, noting all temporary and permaner site specific for appropriate time of year that seeding will take p

> January 1 - March 1 Common Bermuda grass Rye 1/2 BU/ac (28 lb) March 2 - June 1 Common Bermuda grass June 2 - September 1 Common Bermuda grass September 2 - Dec 31 Common Bermuda grass

e. The name(s) of f. References and g. The results of su tapes, etc., use h. Results which e i. Certification state ritten correspondence e EPD according to the or the proof of submit nitted in accordance of must also be submit mplete details for reterimary permittee shat cement of construction a. A copy of all No b. A copy of the E c. The design proof d. A copy of all sa e. A copy of all in f. A copy of all viol g. Daily rainfall in	ilyses were initiated; ithe certified personnel who performed the analyses; written procedures, when available, for the analytical techniques or methods used; and uch analyses, including the bench sheets, instrument readouts, computer disks or ad to determine these results. xeceed 1000 NTU shall be reported as "exceeds 1000 NTU;" and terment that sampling was conducted as per the Plan. ere required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office the schedule in Appendix A of this permit. The applicable permittees shall retain a copy of the proof of submittal at the construction ittal shall be readily available at a designated location from commencement of construction until such time as a NOT is with Part VI. If an electronic submittal is provided by EPD then the written correspondence may be submitted electronically; if required, a paper ted by return receipt certified mail or similar service. Intent the following records at the construction site or the records shall be readily available at a designated alternate location from on until such time as a NOT is submitted in accordance with Part VI: optices of Intent submitted to EPD; crossion, Sedimentation and Pollution Control Plan required by this permit; fessional's report of the results of the inspection conducted in accordance with Part IV.A.5 of this permit; impling information, results, and reports required by this permit; ispection reports generated in accordance with Part IV.D.4.a. of this permit; iation summaries and violation summary reports generated in accordance with Part III.D.2. of this permit; and normation collected in accordance with Part IV.D.4.a. (2) of this permit; and, Notices of Termination, inspection reports, sampling reports (including all calibration and maintenance records	REVISIONS				A CIVIL ENGINEERING	ATHENS, GA 30602 912-230-7334 CELL
d to complete the No r a period of at least	ordings for continuous monitoring instrumentation)or other reports requested by EPD, , Erosion, Sedimentation and Pollution Control Plans, records of all otice of Intent to be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or three years from the date that the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the pusiness once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at any time upon written					AK	n n
npling: s - Storm water samp 'NPDES Storm Wate rm water runoff from a separate violation for ermit No 100001. The vater fisheries.	is to be used to collect and analyze the samples from each location.* oles are to be analyzed in accordance with methodology and test procedures established by 40 CFR Part 136 and the guidance er Sampling Guidance Document. EPA 833-B-92-001." Stormwater is to be sampled for nephelometric turbidity units (NTU) at the outfall location. A disturbed areas where best management practices have not been properly designed, installed, and maintained for each day on which such condition results in the turbidity of the discharge exceeding 50, the value that was selected from ne NTU is based upon the disturbed acreage for the project site, the surface water drainage area, and receiving water which alues at all outfall sampling points where applicable.*						
at 3 & 4 n of appropriate cont ading and drainage B and final BMPs are t tial BMPs shall be the	, perennial and intermittent streams and other water bodies into which storm water is discharged. trols and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs, (2) 3MPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and the same, the plan may combine all of the BMPs into a single phase.* <i>The construction exit, dust control, silt fence, skimmer, inlet sediment traps, temporary mulching, and temporary seedings.</i> <i>Iude inlet sediment traps, skimmer, silt fence, construction exit, outlet protection, temporary mulching, temporary and permanent seeding. The final BMPs outlet protection.</i>				ARK		
le and north arrow. on all plan sheets					⊿ ⊿		RITY
l proposed contour li on the plan sheets.	ines with contour lines drawn at an interval in accordance with the following: Map Scale 1 inch = 100ft or larger scale				-RIA		UTHOR
	performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD ervation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org. roposed		C.	)	LSUC		NT A
of the applicable 25-	foot or 50-foot undisturbed buffers adjacent to state waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all		UTF	) - 	IN	NT N	FOR: DPMEN
	and all state waters located on and within 200 feet of the project site.		Z	, , ,	У Ц		RED F VELO
e drains into a existir rology study and ma ach individual basin heet 3. of the runoff coeffici evelopment Runoff C evelopment Runoff C	aps of drainage basins for both the pre- and post-develorped conditions.*Hydrology study and drainage maps should be separate from the Plan. Maps draining to, through and from the project site, with each one delineated, labeled and showing its total acreage. ient or peak discharge flow of the site prior to and after construction activities are completed. <i>Coefficient: 0.34</i>		GENERAI		FN VAL	ALDING C	PREPAF PALDING DEV
on plan sheets or the project site an	Ind their delineation.				L R F	SP/	FIN-S
f disturbance for eac of disturbance for all inimum of 67 cubic y ge location. Sedimer aining the decision to A written justification d by the design profe te outlet structures th ecision must be inclu	d: 2245 CY (67 CY/ac * 33.5 ac)				I AKFS AT (	1	GRIFF
Best Management P r 6, with legend. <i>on plan sheets</i>	Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the						
<i>tail sheet</i> etative plan, noting a	structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia. all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be ear that seeding will take place and for the appropriate geographic region of Georgia.	2018-04-09			DRAWN BY: XXX	KED BY: XXX	: N/A
ry 1 - March 1 2 - June 1	Common Bermuda grass 5 lb/ac unhulled and 5 lb/ac hulled Rye 1/2 BU/ac (28 lb) Common Bermuda grass 10lb/ac hulled	DATE			DRAW	CHECKED	SCALE: N/A
- September 1 nber 2 - Dec 31	Common Bermuda grass Tollovac Indied Common Bermuda grass 5 lb/ac unhulled and 5 lb/ac hulled Browntop millet 10lb/ac Common Bermuda grass 10lb/ac hulled						
	Rye 1/2 BU/ac (28 lb)				C	1	
					SHE	ET:	
		1					]



	REVISIONS	AKA CIVIL ENGINEERING 597 DW BROOKS DRIVE ATHENS, GA 30602 912-230-7334 CELL
	EXISTING CONDITIONS	LAKES AT GREEN VALLEY INDUSTRIAL PARK SPALDING COUNTY, GA PREPARED FOR: GRIFFIN-SPALDING DEVELOPMENT AUTHORITY
0 100 200 300 400 SCALE: 1"=100'	DATE: 2018-04-09	DRAWN BY: XXX CHECKED BY: XXX SCALE: 1":100' (FOR 24"X36")
MAGNETIC NORTH		G2 Sheet:

















MANHOLE	REVISIONS				AKA CIVIL ENGINEERING 597 DW BROOKS DRIVE	ATHENS, GA 30602 912-230-7334 CELL
LINE B G MANHOLE 51.83' 840.04' 842.04'					SPALDING COUNTY, GA	PREPARED FOR: GRIFFIN-SPALDING DEVELOPMENT AUTHORITY
	DATE: 2018-04-09		DRAWN BY: XXX		СНЕСКЕЛ ВУ: ХХХ	SCALE: 1":40' (FOR 24"X36")
		(		<b>З</b> -		3

-870

- EXISTING RIM: 861 SUMP: 8 INV IN:

860

-840





REVISIONS		AKA CIVIL ENGINEERING	912-230-7334 CELL				
PROPOSED SEWER LINE B PLAN		SPALDING COUNTY, GA	PREPARED FOR: GRIFFIN-SPALDING DEVELOPMENT AUTHORITY				
DATE: 2018-04-09	DRAWN BY: XXX	CHECKED BY: XXX	SCALE: 1":40' (FOR 24"X36")				
C3-5 Sheet:							











St





### Notes

- 1.  $L_a$  is the length of the riprap apron.
- 2. D = 1.5 times the maximum stone diameter but not less than 6".
- 3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the bank, whichever is less.
- 4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

## **RIP RAP OUTLET PROTECTION** NTS





ESTABLISHING A TEMPORARY VEGETATIVE COVER WITH FAST GROWING SEEDINGS.



<sup>3</sup> 12 MONTHS OR UNTIL ESTABLISHMENT OF FINISHED GRADE OR PERMANENT VEGETATION. SITE PREPARATION:

- \* GRADING AND SHAPING
- \* SEED BED PREPARATION
- \* APPLY LIME AND FERTILIZER
- \* PLANT SEEDING, SELECT SPECIES BY SEASON
- AND REGION
- \* APPLY MULCHING MATERIAL IF NEEDED IRRIGATE IF NEEDED, BUT NOT AT RATE TO &AUSE EROSION



REVISIONS REVISIONS AKA CIVIL ENGINEERING 597 DW BROOKS DRIVE ATHENS, GA 30602 912-230-7334 CELL								
<b>EROSION SEDIMENT &amp; POLLUTION CONTROL DETAILS</b>		SPALDING COUNTY, GA	PREPARED FOR: GRIFFIN-SPALDING DEVELOPMENT AUTHORITY					
DATE: 2018-04-09	DRAWN BY: XXX	CHECKED BY: XXX	SCALE: 1":100' (FOR 24"X36")					
E2 Sheet:								



Cost Estimate					
Item	Cost	Units	Quanitity	Total	
Paving					
Asphalt Drive	\$1.64	sq ft	30,500.00	\$50,020.00	
Concrete Sidewalk	\$4.00	sq ft	40,400.00	\$161,600.00	
Concrete Curb	\$5.00	LF	7,000.00	\$35,000.00	
			Total	\$246,620.00	
Parking Lot					
Asphalt	\$1.64	sq ft	71,000.00	\$116,440.00	
Grading	\$60.00	/space	200	\$12,000.00	
Drainage	\$115.00	/space	200	\$23,000.00	
Paint	\$3.88	/18 ft stripe	220	\$853.60	
Lighting	\$150.00	ea	15	\$2,250.00	
			Total	\$154,543.60	
Public Utilities					
2" Water Main	\$4.00	LF	510.00	\$2,040.00	
6" Water Main	\$7.00	LF	335.00	\$2,345.00	
2"x6" Connecting Tee	\$350.00	ea	1.00	\$350.00	
6"x6" Connecting Tee	\$330.00	ea	1.00	\$330.00	
Main Tap	\$2,000.00	ea	2	\$4,000.00	
Hydrant	\$2,000.00	ea	3	\$6,000.00	
Sewer	\$25.00	LF	2,750.00	\$68,750.00	
Manhole	\$2,000.00	ea	10	\$20,000.00	
Electricity	\$15,000.00	LS	1.00	\$15,000.00	
			Total	\$118,815.00	
Demolition/Grading					
Demo Buildings on Site	\$13,000.00	each	1	\$13,000.00	
Grading		sq ft	218000	\$800,000.00	
Surveying		LS	1	\$50,000.00	
			Total	\$863,000.00	
Fields/Courts					
Tennis	\$65,000.00	/court	3	\$195,000.00	
Basketball	\$25,000.00	/court	2	\$50,000.00	
			Total	\$245,000.00	
Landscaping					
Trees	\$15,000.00	LS	1	\$10,000.00	
Shrubbery	\$5,000.00	LS	1	\$2,500.00	
Red Maple	\$80.00	ea	6	\$480.00	
Georgia Basil	\$12.00	ea	15	\$180.00	
Southern Magnolia	\$80.00	ea	10	\$800.00	
Winterberry Holly	\$22.00	ea	8	\$176.00	

Loblolly Bay Crepe Myrtle Facilities Picnic Tables Restrooms Lighting	\$50.00 \$400.00 \$100,000.00 \$150.00	еа	23 Total	\$1,150.00 \$15,446.00	
FacilitiesPicnic TablesRestrooms	\$100,000.00		Total		
Picnic Tables Restrooms	\$100,000.00				
Picnic Tables Restrooms	\$100,000.00				
Restrooms	\$100,000.00		18	\$7,200.00	
		LS	2	\$200,000.00	
LIUIIIIU			4	\$600.00	
5 * 5	-		Total	\$207,800.00	
Recreational				, , , , , , , , , , , , , , , , , , , ,	
Playground	\$55,000.00	ea	2	\$110,000.00	
Playground Surface		per lb	114,000.00	\$22,800.00	
Dock	\$40.00		160	\$6,400.00	
Kayak Launch		/ramp kit	2	\$1,300.00	
Benches	\$500.00		30	\$15,000.00	
Fencing	\$8.00			\$0.00	
Trash Receptacle	\$200.00		20	\$4,000.00	
Lighting	\$150.00		20	\$3,000.00	
Frisbee Golf	\$150.00		9	\$1,350.00	
Life Size Chess	\$500.00		1	\$500.00	
Dog Park- Fencing	\$15.00		1000	\$15,000.00	
Dog Park Gate		per gate	2	\$200.00	
Dog Poop Bag Dispenser		per receptacle	3	\$600.00	
Dog Park Water Fountain		per fountain	1	\$3,000.00	
	+-,		Total	\$183,150.00	
Walking Trail				, ,	
Clearing/Grubbing	\$2,550.00	acre	2.4	\$6,120.00	
Granular Surfacing	\$0.50		104,252.00	\$52,126.00	
	<b>,</b>		Total	\$58,246.00	
Erosion Control					
Silt Fence		per 100 ft roll	50	\$2,500.00	
Skimmer 8"	\$5,000.00		2	\$10,000.00	
Skimmer 4"	\$1,320.00		1	\$1,320.00	
Outlet Protection	\$1,900.00		1	\$1,900.00	
Temporary Mulching	\$1,400.00		1.28	\$1,792.00	
Temporary Seeding	\$1,050.00		1.38	\$1,449.00	
Construction Exit	\$2,400.00	per exit	1	\$2,400.00	
			Total	\$21,361.00	
Contingencies					
8% of Project Total				\$169,118.53	
			Total (no conting	\$2,113,981.60	

			Grand Total	\$2,283,100.13			
Side Notes							
Cost for Aquatic Center construction was not included as we were responsible for construction and site designs							
Costs for labor were also not included. The SCDA mentioned labor being handled by the county.							
The standard Spalding County restrooms and playgrounds were used.							

Cost Estimate	Cost	Units	Quanitity	Total	Notes
item	Cost	Units	Quantity	TOTAL	Notes
Paving					
Asphalt Drive	\$1.64	sa ft	15,250.00	\$25,010.00	
Concrete Sidewalk	\$4.00		20,200.00	\$80,800.00	
Concrete Curb	\$5.00		3,500.00	\$17,500.00	
			Total	\$123,310.00	
Parking Lot				<i><i><i></i></i></i>	
Asphalt	\$1.64	sa ft	35,500.00	\$58,220.00	
Grading		/space	100	\$6,000.00	
Drainage	\$115.00		100	\$11,500.00	
Paint		/18 ft stripe	110	\$426.80	
Lighting	\$150.00		8	\$1,200.00	
			Total	\$77,346.80	
Public Utilities					
2" Water Main	\$4.00	LF	330.00	\$1,320.00	
6" Water Main	\$7.00		335.00	\$2,345.00	
2"x6" Connecting Tee	\$350.00	еа	1.00	\$350.00	
6"x6" Connecting Tee	\$330.00	ea	1.00	\$330.00	
Main Tap	\$2,000.00	ea	2	\$4,000.00	
Hydrant	\$2,000.00	ea	2	\$4,000.00	
Sewer	\$25.00	LF	1,500.00	\$37,500.00	
Manhole	\$2,000.00	ea	5	\$10,000.00	
Electricity	\$15,000.00	LS	1.00	\$15,000.00	
			Total	\$74,845.00	
Demolition/Grading					
Demo Buildings on Site	\$13,000.00	each	1	\$13,000.00	
Grading		sq ft	109000	\$450,000.00	
Surveying				\$50,000.00	
			Total	\$513,000.00	
Landscaping					
Red Maple	\$80.00	ea	6	\$480.00	
Georgia Basil	\$12.00	ea	15	\$180.00	
Crepe Myrtle	\$50.00	ea	10	\$500.00	
			Total	\$1,160.00	
Facilities					
Picnic Tables	\$400.00	ea	5	\$2,000.00	
Restrooms	\$100,000.00	LS	1	\$100,000.00	
Lighting	\$150.00	ea	4	\$600.00	
Trash Receptacle	\$200.00	ea	6	\$1,200.00	
Benches	\$500.00	ea	5	\$2,500.00	
			Total	\$106,300.00	

Erosion Control					
Silt Fence	\$50.00	per 100 ft roll	50	\$2,500.00	
Skimmer 8"	\$5,000.00	ea	2	\$10,000.00	
Skimmer 4"	\$1,320.00	ea	1	\$1,320.00	
Outlet Protection	\$1,900.00	ea	1	\$1,900.00	
Temporary Mulching	\$1,400.00	ac	1	\$1,400.00	
Temporary Seeding	\$1,050.00	ac	1	\$1,050.00	
Construction Exit	\$2,400.00	per exit	1	\$2,400.00	
			Total	\$20,570.00	
Contingencies					
8% of Project Total				\$73,322.54	
			Total (no conting	\$916,531.80	
			Grand Total	\$989,854.34	
Side Notes					
Cost for Aquatic Center	construction was r	not included as w	ve were responsible	for construction	and site designs

Costs for labor were also not included. The SCDA mentioned labor being handled by the county.

The standard Spalding County restrooms and playgrounds were used.





The Lakes at Green Valley

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