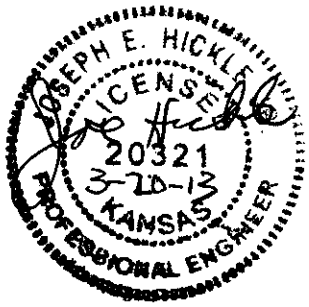
DRAINAGE PLAN

SPIRIT NORTH MANUFACTURING FACILITY

PROJECT NO. 35-12682-6780

PREPARED BY
Professional Engineering Consultants, P.A.
303 S. Topeka
Wichita, KS 67202
316-262-2691
316-262-3003 Fax



March 2013

PEC
www.pec1.com

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Notice of Intent (NOI)
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I. Narrative

Spirit AeroSystems is proposing a new manufacturing facility west of Oliver and south of 31st Street in Sedgwick County. This Drainage Plan is to control storm water runoff and prevent sediment from leaving the site. A Notice of Intent (NOI) permit application was approved by the Kansas Department of Health and Environment (KDHE) and is enclosed.

Enclosed sheet C-1 is a preliminary grading plan. Enclosed as part of the NOI are the erosion control site plan drawing (Sheet C-2) and three standard erosion control detail sheets C- 3, 4 and 5. A proposed condition site drainage plan, Sheet C-6 is enclosed identifying the location of two dry detention ponds, ten drainage basins, storm sewer piping network and three proprietary water quality BMP units to be installed in the storm sewer system. Sheet C-7 is an existing condition drainage map of the site on aerial photography. Proprietary water quality BMP devices shall provide a minimum of 73% reduction of TSS (Total Suspended Solids).

The site drainage plan includes calculation Tables 1, 2, 3 and 4 of drainage basins within the platted site, runoff curve numbers, water quality TSS removal, pond volume capacities and pre vs. post discharge rates from various precipitation events up to the 100-year storm. Area soils are HSG type D according to the Sedgwick County Soil Survey. Table 1 presents hydrology and water quality calculations. The site improvements are redevelopment of existing impervious acres prior to the current local storm water ordinance. Basins 2 and 10 flow offsite under current conditions without storm sewers and no development is planned in these basins. The remaining drainage basins have runoff directed to a dry detention facility and or to a water quality BMP unit. Tables 2 and 3 present pond volume calculations.

A HEC-HMS storm water computer model of the site was prepared inputting the data in Tables 1, 2 and 3. A minimum time of concentration of ten minutes was used in most drainage basins due to the highly urbanized nature of the site and rapid runoff response from small areas. The time of concentration for Basin 1 was based on 10 minutes to the first drainage inlet in a remote parking lot and storm sewer pipe travel time of 3 minutes resulting in 13 minute time of concentration to the northwest pond. The model simulates the various rainfall events from the two-year to the 100-year recurrence frequency. Table 4 presents that the collective peak storm water runoff rates leaving the site under the developed condition are less than the existing condition discharge rates for the different recurrence interval storms. Adequate storm water detention is provided.

A copy of the proposed plat is enclosed. The storm water model is provided on CD. A digital copy of this report will be provided upon request of a review agency.

Storm water regulations for channel bank protection is not required per mapping recently provided by the City of Wichita that identifies this site does not discharge to an erodible natural stream.

This plan will serve as documentation to the City of Wichita, Sedgwick County and the Kansas Turnpike Authority (KTA) that peak storm water discharges are controlled from the proposed site in accordance with applicable regulations.

Water quality BMP units shall be inspected and cleaned out annually.

Kansas
Department of Health and Environment

NOTICE OF INTENT (NOI)

For Authorization to Discharge Stormwater Runoff from Construction Activities
In accordance with the Kansas Water Pollution Control General Permit
Under the National Pollutant Discharge Elimination System (NPDES)

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form requests authorization for coverage under the Kansas Water Pollution Control general permit, or KDHE issued successor permits, issued for stormwater runoff from construction activities in the State of Kansas. Becoming a permittee obligates the discharger to comply with the terms and conditions of the general permit. **Completion of this NOI does not provide automatic coverage under the general permit. Coverage is provided and discharge permitted when the Kansas Department of Health and Environment (KDHE) authorizes the discharge of stormwater runoff from the construction activities identified on the NOI and supporting documentation. A signed and dated copy of the first page of the NOI indicating the Authorization will be provided to the owner or operator, or all three pages for Conditional Authorizations.** Upon authorization of the construction activity discharge, a Kansas permit number and a Federal permit number will be assigned to the construction project. **A complete request for Authorization for coverage under the general permit must be submitted or the request will not be processed (see listing on Page 3 of this NOI).** KDHE will notify owners or operators whose Notice of Intent (NOI) and supporting documentation for Authorization of stormwater runoff associated with construction activities are incomplete, deficient, or denied.
Please Print or Type.

I. OWNER OR OPERATOR ADDRESS, BILLING, CONTACT & RECORDS LOCATION INFORMATION

A. Owner or Operator's Name: Mark E. Cathey
Company Name: Spirit Aerosystems
Owner or Operator's Phone: (316) 209-1351
Mailing Address: 3801 S. Oliver
City: Wichita State: KS Zip: 67210

B. Billing Contact Name: John Hetherington
Billing Contact Address (if different): _____
City: _____ State: ____ Zip: _____

C. Contact Name: John Hetherington
Company Name: Spirit Aerosystems
Contact Phone: (316) 209-1351
Mailing Address: 3801 S. Oliver
City: Wichita State: KS Zip: 67210
E-mail Address (optional): _____

D. Address where records will be kept (if not on-site):
Records Address: _____
City: _____ State: ____ Zip: _____

II. SITE INFORMATION

A. Project Name: Spirit Areosystems Fuselage Factory Expansion
Site Address: 3801 S. Oliver
City: Wichita State: KS Zip: 67210
(Nearest City to Project)
County: Sedgwick

B. LEGAL SITE DESCRIPTION:
____ QTR of ____ QTR of NE QTR Section: 11
Township: 28S South; Range: 1 ■ E ☐ W
Latitude: _____, Longitude: -
Deg. Min. Sec. Deg. Min. Sec.

For Official Use Only:

Received RECEIVED FEB 8 2013 BUREAU OF WATER	Amount Paid: 360	Authorized: ☒ Y; ☐ N
	Date: 2-8-13	Is Authorization Conditional? ☒ Y; ☐ N (if yes, see page 3 of NOI for conditions)
	Initials: dg	
	Check No.: 5038155	
		Reviewer
Secretary, Kansas Department of Health and Environment		Date 3/6/13
KS Permit No.: _____	Federal Permit No.: _____	

Send completed 3 page NOI form with original signature and all appropriate submittals (see page 3 of NOI) to:

Kansas Department of Health and Environment
Bureau of Water, Industrial Programs Section
1000 SW Jackson, Suite 420
Topeka, KS 66612-1367

Note: A copy of the permit can be obtained at: www.kdheks.gov/stormwater or by submitting a written request to KDHE.

KDHE Contact Information:
Phone: (785) 296-5545
E-mail: stormwater@kdheks.gov

C. EXISTING CONDITIONS/USES

1) Is any part of the project located on Indian Country land? ☐ Y; ■ N
If yes: Contact EPA regarding discharging stormwater runoff from industrial activities on Indian Country land.

2) If stormwater runoff drains to or through a Municipal Separate Storm Sewer System (MS4): MS4 Name: City of Wichita

3) Name of the first receiving water, stream, or lake: Arkansas River, River Basin: Lower Arkansas

4) Are contaminated soils present on the site or is there groundwater contamination located within the site boundary? ☐ Y; ■ N
If yes: On separate paper please explain in detail the locations, contaminants and concentrations.

5) Are there any contaminated soils that will be disturbed or any contaminated groundwater that will be pumped by the proposed construction activity? ☐ Y; ■ N
If yes: On separate paper provide a description of the special erosion and sediment control measures to be utilized.

6) Are there any surface water intakes for public drinking water supplies located within ½ mile of the site discharge points? ☐ Y; ■ N

7) Are there any known historical or archeological sites present within the site boundary or any historic structures located within 1000 feet of the project site? ☐ Y; ■ N
Note: Include documentation of project-specific coordination with the Kansas Historical Society in making this determination.

8) Is any threatened or endangered species habitat located within the site boundary or in the receiving water body? ☐ Y; ■ N
Note: Include documentation of project-specific coordination with the Kansas Department of Wildlife, Parks & Tourism in making this determination.

9) Will the project *impact the line or grade* of a stream or does it include dredge or fill of a potential jurisdictional water body or wetlands? ☐ Y; ■ N
If yes: Include documentation of project-specific coordination with the US Army Corps of Engineers and/or the Kansas Department of Agriculture, Division of Water Resources in making this determination.

10) Are any Critical Water Quality Management Areas, Special Aquatic Life Use Waters, or Outstanding National Resource Waters located within ½ mile of the facility boundary? ☐ Y; ■ N

If yes, list the names of all such areas and waters: _____

D. PROJECT DESCRIPTION

1) Project Description: Construction of a new 360,000 square foot fuselage factory expansion (FFE) and associated exterior improvements

2) Does this NOI include all proposed soil disturbing activities associated with the entire common plan of development? ■ Y; ☐ N
If no, explain what development areas of the site are not included in this NOI and provide contact information, if available, for the party or parties that own or have operational control of these areas:

3) Anticipated project Start Date: March 2013, and Completion Date: June 2014

4) Estimated total area to be disturbed: 21.3 Acres Total area of the site: 21.3 Acres

5) Do you plan to disturb ten or more acres that are within a common drainage area? ☐ Y; ■ N
If yes, will a sedimentation basin be installed in that drainage area? (Attach design calculations for each sedimentation basin.) If a sediment basin is not feasible, on a separate sheet explain what similarly effective erosion and sediment control measures will be implemented in lieu of a sedimentation basin. ☐ Y; ☐ N

E. Maps

Include an area map showing the outline of the construction site and the general topographic features of the area at least one mile beyond the project site boundary.

F. EROSION CONTROL PLAN AND BEST MANAGEMENT PRACTICES

1) Provide a site plan showing the existing contour, proposed contour, the erosion control measures and the locations of stormwater management or pollution control features including BMPs. Incorporate details and notes as necessary to describe the erosion control plans and BMPs.

2) Provide a description of the best management practices which will be utilized to control erosion, sedimentation and other pollutants in stormwater runoff during construction.

3) Provide a summary of the sequence of major soil disturbing activities and the corresponding erosion control measures or BMPs.

4) Provide the name and License or Certification Number of the engineer, geologist, architect, landscape architect, or Certified Professional in Erosion and Sediment Control (CPESC) under which the construction stormwater pollution prevention plan has been developed.

Joseph E. Hickle, P.E.	20321	Civil Engineer
Name	License or Certification Number	Profession or Field (Engineer, Architect, etc.)

III. ANNUAL FEE

Enclose a check for the first year of the annual permit fee specified in K.A.R. 28-16-56 et seq. as amended. Make the check payable to "KDHE". Per K.A.R. 28-16-56, as amended, the current annual permit fee for this general permit is $60. An invoice for the annual permit fee will be sent to the contact person requesting a permit until such time as the permittee submits a Notice of Termination (NOT).

Failure to pay the annual fee will result in termination of the construction stormwater discharge Authorization.

IV. OWNER OR OPERATOR CERTIFICATIONS

I, the undersigned, certify that a Stormwater Pollution Prevention Plan (SWP2 Plan) will be or has been developed for the construction site described in this NOI and supporting documentation. I further certify that the plan will be implemented at the time construction begins, and, as required by the NPDES general permit for Stormwater Runoff from Construction Activity, will revise the SWP2 plan if necessary.

I understand that continued coverage under the NPDES general permit for Stormwater Runoff from Construction Activities is contingent upon maintaining eligibility as provided for in the requirements and conditions of the general permit, and paying the annual fee.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Mark E. Cathey — **Signature (owner or operator)**

Jan 28, 2013 — **Date**

Mark E. Cathey Director EHS

Name and Official Title (Please print or type. **Form with original signature must be sent to KDHE.)**

Conditions of Authorization - For Official Use Only:

When indicated, Conditions of Authorization are as follows:

Authorization is conditioned on adding sediment control measures extending along the west edge of the disturbed area by constructing appropriate diversion structures or installing additional silt fence or equivalent measures. JBH

A complete request for Authorization for coverage under the general permit must be submitted or the request will not be processed. A complete request for Authorization includes:

- **An NOI form (construction stormwater) with an original authorized signature;**
- **The annual permit fee for the first year; ($60.)**
- **An area map showing the outline of the construction site and the general topographic features of the area at least one mile beyond the project site boundary;**
- **A detailed site plan showing the existing contours, proposed contours, erosion and sediment control features, locations where stormwater runoff leaves the construction site;**
- **A narrative summary of the additional erosion and sediment control and other best management practices that will be utilized to prevent or reduce contamination of stormwater runoff from the construction activities;**
- **Total drainage area, storage capacity and design calculations for each sedimentation basin; and**
- **Copies of letters or e-mails documenting coordination with appropriate local, state or federal agencies.**

Spirit Aerosystems
Fuselage Factory Expansion

Site Development Pollution Prevention Plan

The intent of this Storm Water Pollution Prevention Plan is to minimize any water quality impacts, in the form of sediment pollution, to the adjoining property. The construction activities anticipated on the project site will include construction of a new 360,000 square foot fuselage factory expansion and all associated exterior improvements.

This Storm Water Pollution Prevention Plan will be implemented to:
1) Abate erosion as soon as possible after disturbance.
2) Prevent sediment from leaving the construction area.
3) Establish permanent vegetation on all unpaved areas disturbed by construction.

SITE DESCRIPTION

The site is located in Section 11, Township 28S, Range 1E in Sedgwick County, City of Wichita (See Attachment A-1). The attachments illustrate the permanent improvements proposed. During construction of these improvements, soil will be disturbed as a result of excavation, trenching for utility installations, and other related activities.

Sequence of Major Activity

The order of activity will be as follows:
1) Install perimeter silt fence barrier and inlet protection.
2) Construct new 360,000 square foot fuselage factory expansion and complete all associated exterior improvements. Complete site grading as shown on attached sheets. Sediment barriers will be installed at drainage ways and areas where water flows away from the site. All disturbed areas will have temporary seeding applied.
3) Permanent seeding shall be applied to restore the site to original condition.

Erosion control measures required to adhere to the goal of the SWPP Plan (prevent sediment from leaving the construction area) will be installed and maintained until erosion abatement of disturbed areas is no longer required. Inspection reports will be regularly documented on the form provided as Attachment B. Additions and modifications to the plan in effect during this period will be documented by the Resident Project Inspector.

CONTROLS

Erosion and Sediment Controls - Stabilization Practices

Temporary Stabilization

Stabilization practices shall be in accordance with Part 7.2.5 of the General Permit

Top soil stock piles and disturbed portions of the site where construction activity temporarily ceases for at least 14 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area. The temporary seed shall be Rye (grain) applied at the rate of 5 lb/1000 SF.

Linear sediment barrier will be required where storm water drains offsite or into a water body. General silt fence locations have been shown on the enclosed Attachment A.
See "KDOT Temporary Erosion-Control Manual" for additional examples of inlet protection and sediment barrier details.

Permanent Stabilization

Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed no later than 14 days after the last construction activity. Prior to seeding a 12-24-12 fertilizer shall be applied to all areas to be stabilized at a rate of 850 lb. /acre. The permanent seed shall be fescue applied at 8 lb / 1000 SF.

WASTE DISPOSAL

Waste Materials

All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will meet all local City of Wichita and State of Kansas solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied as necessary and trash will be hauled to an appropriate trash facility. No construction waste materials will be buried onsite. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and the individual, who manages the day-to-day operations, will be responsible for seeing that these practices are followed.

Hazardous Waste

All hazardous waste materials will be disposed of in the manner specified by local or State regulation or by the manufacturer. Site personnel will be instructed in these practices and the individual, who manages site operations, will be responsible for seeing that these practices are followed.

Sanitary Waste

All sanitary waste will be collected from portable units as required by local regulation.

Off-site Vehicle Tracking

A stabilized construction entrance will be provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept regularly to remove any excess mud, dirt or rock tracked from the site.

Timing of Controls / Measures

Areas where construction activity temporarily ceases shall be stabilized with temporary seed and mulch in accordance with the Temporary Stabilization Section of this attachment and in accordance with Part 7.2.5 of the General Permit. Once construction activity ceases permanently in an area, that area will be stabilized with permanent seed and mulch. After the entire site is stabilized, the accumulated sediment will be removed from the silt fence and the silt fence will be removed.

MAINTENANCE

Inspection Procedures

Erosion and Sediment Control Inspection and Maintenance Practices

These are the inspection and maintenance practices that will be used to maintain erosion and sediment controls.

1. All control measures will be inspected at least once each week and following any storm event of 0.5 inches of rain or greater.
2. All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of discovery.
3. Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.
4. Silt fence will be inspected for depth of sediment, tears, to see if fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

5. Temporary and permanent seeding and planting will be inspected for bare spots, washouts and unhealthy growth.
6. Written inspection reports will be kept with this plan. Reports need to include: the inspector's name and signature, date of inspection, observations on sediment control measures, actions taken or necessary to correct deficiencies, and a listing of areas where construction activities have permanently or temporarily stopped. Inspection Reports shall be in accordance with Part 7.2.10 of the General Permit.

Non-Storm Water Discharge

It is expected that the following non-storm water discharges will occur from the site during the construction period:
1. Water from water line flushing.
2. Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
3. Uncontaminated groundwater (from dewatering excavation).

INVENTORY FOR POLLUTION PREVENTION PLAN

The materials or substances listed below are expected to be present onsite during construction:

Concrete	Detergents	Paint	Tar	Fertilizers
Petroleum based products		Cleaning solvents	Wood	Geotextile fabric
Rebar	Wire mesh fabric	Joint sealant	Aggregate	

SPILL PREVENTION

Material Management Practices

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials to storm water runoff.

Good Housekeeping

The following good housekeeping practices will be followed during the construction project.
1. An effort will be made to store only enough product required to do the job.
2. All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
3. Products will be kept in their original container with the original manufacturer's label.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The site superintendent will inspect daily to ensure proper use and disposal of materials onsite.
8. Dump trucks hauling excavated material from the site will be loaded to prevent spilling material while in transport.

Hazardous Products

These practices are used to reduce the risk associated with hazardous materials.
1. Products will be kept in original containers unless they are not resealable.
2. Original labels and material safety data will be retained; they contain important product information.
3. If surplus product must be disposed of, manufacturers or local and State recommended methods for proper disposal will be followed.

Product Specific Practices

The following product specific practices will be followed onsite: None Required

Petroleum Products

All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

Fertilizers

Fertilizers used will be applied using the minimum amounts recommended by the administrative regulations or by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

Paints

All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or State and local regulations.

Concrete Trucks

Concrete trucks will be allowed to washout on site provided an appropriate place to do so is established. The washout area will be located in a vacant area, designated by the developer. It should consist of a large (~15' X 20') area for the trucks to washout in, surrounded by 2' high soil berms to prevent any washout water from entering the streets, storm water sewer or nearby water bodies. Instead of berms, a 2' deep pit would be acceptable, as long as the washout water is contained. When the washout pit needs to be moved or is no longer needed, the concrete sediment is to be excavated and hauled to an appropriate waste disposal site and the pit area is to be graded to final grade and seeded appropriately.

Spill Control Practices

In addition to the good housekeeping and materials management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup.

1. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and location of the information and cleanup supplies.
2. Material and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
3. All spills will be cleaned up immediately after discovery.
4. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
5. Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size of spill.
6. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
7. The site superintendent responsible for day-to-day site operations will be the spill prevention and cleanup coordinator. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

Attachment B

SWPP Plan Inspection Report

Project Inspector: _____
Inspector Signature: _____
Inspection Date: _____

BMP	General Condition (1)	Remarks
Inlet Protection (Area)		
Inlet Protection (Curb)		
Back-of-Curb Protection		
Silt Barrier – Site Perimeter		
Silt Barrier – Pond Perimeter		
Construction Entrance(s)		
Other		

I. Condition Descriptions

A. Good – Condition of BMP is functional and not in need of repair.

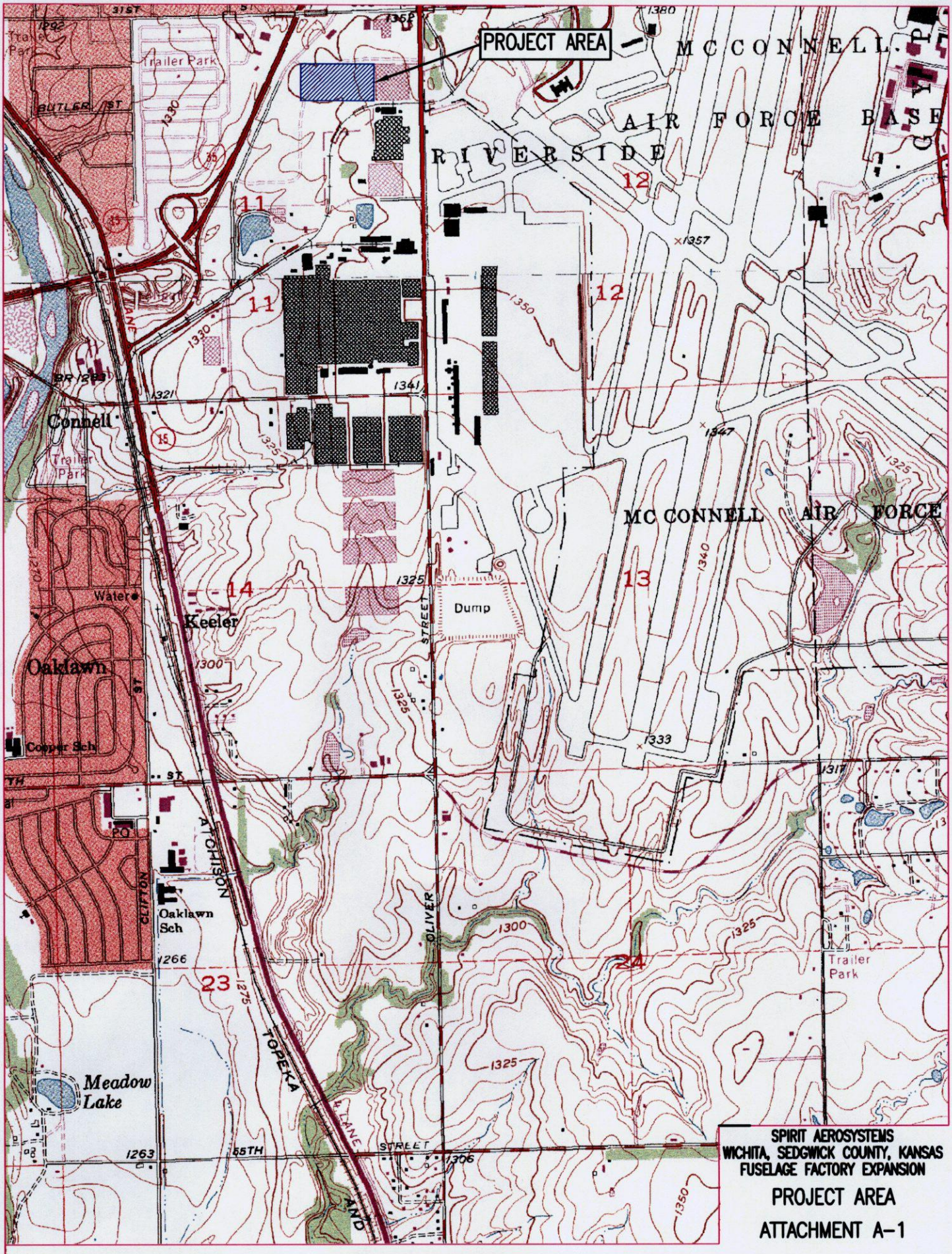
B. Fair – BMP is operable, showing signs of deterioration, but not requiring repair.

C. Poor – BMP can be made operable with immediate attention.

D. Failed – BMP requires replacement.

E. Obsolete – BMP no longer required.

F. N/A – BMP not being employed.



SPIRIT AEROSYSTEMS
WICHITA, SEDGWICK COUNTY, KANSAS
FUSELAGE FACTORY EXPANSION

PROJECT AREA

ATTACHMENT A-1

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

January 23, 2013

Kansas State Historical Society
Deputy SHPO
6425 SW Sixth Avenue
Topeka, KS 66615-1099

Attention: Patrick Zollner

Reference: Request for Consultation
Spirit Aerosystems Fuselage Factory Expansion
City of Wichita, Sedgwick County, KS (Section 11, Township 28S, Range1E)
PEC Project No. 35-12682-6780

Dear Mr. Zollner:

This letter is a request for consultation regarding the proposed project in accordance with 36 CFR 800. As part of the Kansas Department of Health and Environment (KDHE) review process, they require correspondence with SHPO.

A copy of the KDHE Notice of Intent (NOI) form is attached for the referenced project for which approval is required for construction. Attachments are included which depict the area to be disturbed by construction.

The construction activities anticipated on this site include construction of a new 360,000 square foot fuselage factory expansion and associated exterior improvements.

Please call if you have any questions.

Very truly yours,

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

Jaime D. Goering

Jaime D. Goering
Design Engineer

JDG/mc

Encl: As noted

303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 FAX 316-262-3003 www.pec1.com

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

January 23, 2013

Environmental Services Section
Kansas Department of Wildlife & Parks
512 SE 25th Ave
Pratt, KS 67124

Reference: Request for Environmental Review
Spirit Aerosystems Fuselage Factory Expansion
City of Wichita, Sedgwick County, KS (Section 11, Township 28S, Range1E)
PEC Project No. 35-12682-6780

To Whom It May Concern:

This letter is a request for environmental review for the above referenced project. As part of the Kansas Department of Health and Environment (KDHE) review process, they require correspondence with KDWP.

A copy of the KDHE Notice of Intent (NOI) form is enclosed for the referenced project for which approval is required for construction. Attachments depicting the area to be disturbed by construction are also enclosed.

The construction activities anticipated on this site include construction of a new 360,000 square foot fuselage factory expansion and associated exterior improvements.

Please call if you have any questions.

Very truly yours,

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

Jaime D. Goering

Jaime D. Goering
Design Engineer

JDG/mc

Encl: As noted

303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 FAX 316-262-3003 www.pec1.com

City of Wichita/Sedgwick County
Subdivision Drainage Plan Checklist

Submit completed forms to:
City of Wichita Public Works & Utilities, 455 N. Main 8th Floor, Wichita KS 67202; or
Sedgwick County Stormwater Management, 1144 S. Seneca, Wichita KS 67213.

Project Name:	Spirit North Manufacturing Facility				
Total Area of Project:	22.2 acres				
Development Type:	Other	**Other:**	Redevelopment		
Developer Name:	Spirit AeroSystems	**Contact:**	John F. Hetherington	**Phone:**	(316) 209-1351
Email:	John.f.hetherington@spiritaero.com				
Engineer Name:	PEC	**Contact:**	Joe Hickle, P.E.	**Phone:**	(316) 262-2691
Email:	joseph.hickle@pec1.com				

Directions:

(1) Fill-out this checklist completely and include it with the Drainage Plan submittal. This checklist should be included in the bound copy, behind the cover sheet for the submittal. Incomplete Drainage Plans and checklists will not be accepted.

*(2) Indicate whether a plan element is included or not included in the submittal by choosing "**Yes**" or "**No**" from the dropdown list in the **"Element Included?"** column. The question must be answered for every plan element for this checklist to be considered complete. An explanation must be provided for all **"No"** answers.*

Drainage Plan Checklist

#	Plan Element Description	Element Included?	Explanation/Notes
1.0	**General Information**		
1.1	Digital copy of drainage plan, including preliminary Master Grading Plan, preliminary plat and proposed plat, in PDF format and one half size, bound, paper copy.	Yes	
1.2	Professional Engineer's seal, signature and date on plan cover.	Yes	
1.3	Site location map, using color ortho-imagery and showing the project boundaries, a north arrow and an accurate scale.	Yes	
1.4	Narrative of the development type, existing conditions and proposed impacts on stormwater runoff, wetlands, riparian zones and floodplains/floodways.	Yes	
1.5	Discussion of off-site conditions surrounding the proposed development.		Not applicable
1.6	Summary table of runoff calculations (pre/post development).	Yes	
1.7	Narrative description of the type and function of the permanent structural stormwater management facilities.	Yes	
2.0	**Existing Conditions Information**		
2.1	**Existing Conditions Drainage Map**		
2.1.1	On-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations		Original survey is NGVD29 datum conversion to NAVD88 is +0.47 feet
2.1.2	On-site and off-site drainage features, including perennial and intermittent streams (with names labeled), conveyance systems such as open channels, ditches, swales and areas of overland flow. Flow direction must be indicated by arrows.	Yes	
2.1.3	Storm sewer system components, including storm drains, inlets, catch basins, gutters, manholes, headwalls, pipes and culverts. Material and size must be noted for all pipes and culverts.	Yes	
2.1.4	Location and boundaries of natural features such as wetlands, lakes, ponds with the normal water elevation noted, rock outcroppings, wooded areas and tree rows.		Not applicable
2.1.5	Location, dimensions and elevations of existing bridges and culvert crossings.		Not applicable
2.1.6	Location of existing utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	
2.1.7	Groundwater elevations, if applicable.		Not applicable
2.1.8	Delineation of predominant soil based on USDA soil surveys and/or on-site soil borings; indicate NRCS soil name and Hydrologic Soil Group for undisturbed surface soils.		Sedgwick County Soil Survey reports HSG as type D.
2.1.9	Land use types per NRCS nomenclature.		Impervious or pervious per Storm Water Manual
2.1.10	Footprint of existing impervious areas (labeled, area given in acres).		See Table 1
2.1.11	Internal drainage subbasin boundaries used for hydrologic calculations (labeled with ID, total area in acres, impervious area in acres and curve number).	Yes	
2.1.12	Time of concentration flow paths. Indicate and label each segment separately (i.e., overland flow, shallow concentrated, channel1, channel2, etc.). For each segment, provide the appropriate data to calculate Tc (e.g., length, slope, cover type, paved/unpaved, roughness parameters, geometric properties, etc.).		See Narrative Description

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
2.2	**Existing Conditions Hydrology and Hydraulics Analysis**		
2.2.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	
2.2.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.).	Yes	
2.2.3	Table of existing condition runoff curve numbers with supporting data and calculations.	Yes	
2.2.4	Table of existing condition times of concentration with supporting data and calculations.		See Narrative Description
2.2.5	A summary table of rainfall data used in the hydrologic analysis, and a reference for the source of the data.		Per Storm Water Manual
2.2.6	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as required to illustrate the basis for hydraulic analysis.		Not applicable
2.2.7	Hydrologic and hydraulic analyses for runoff rates, volumes, velocities and elevations. Provide supporting data not specified above and identify assumptions. Include detailed calculations for the 2, 5, 10, 25 & 100-year, 24-hour storm events. Provide results in a tabular form. Provide digital copies of any computer files and models used.	Yes	
3.0	**postdevelopment Conditions Information**		
3.1	**postdevelopment Conditions Drainage Map**		
3.1.1	Proposed project boundary.	Yes	
3.1.2	on-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations.	Yes	Survey was based on NGVD29 with conversion.
3.1.3	Existing on-site and off-site drainage features that are to remain after development, including perennial and intermittent streams (with names labeled), conveyance systems such as open channels, ditches, swales and areas of overland flow. Flow direction must be indicated by arrows.	Yes	
3.1.4	Location and description of off-site through-drainage conveyances which are confined to an easement, dedication and/or reserve.		Not applicable
3.1.5	Footprint of proposed impervious areas, including roads, parking lots, buildings and other structures.	Yes	
3.1.6	Location of proposed utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	
3.1.7	Delineation of predominant soils, based on anticipated soil textures and NRCS guidelines if different from predevelopment soil conditions; indicate NRCS soil name and Hydrologic Soil Group for surface soils.	Yes	
3.1.8	Land use cover per NRCS nomenclature.	Yes	
3.1.9	Internal drainage subbasin boundaries used for hydrologic calculations (labeled with ID, total area in acres, impervious area in acres and curve number).	Yes	
3.1.10	Proposed limits of land disturbing activity (i.e., grading limits).	Yes	
3.1.11	Time of concentration flow paths. Indicate and label each segment separately (i.e., overland flow, shallow concentrated, channel1, channel2, etc.). For each segment, provide the appropriate data to calculate Tc (e.g., length, slope, cover type, paved/unpaved, roughness parameters, geometric properties, etc.).		See Narrative Description
3.2	**Proposed Conveyances Map**		
3.2.1	on-site and off-site drainage features, including perennial and intermittent streams (with names labeled), proposed conveyance systems (such as open channels, ditches, swales and areas of overland flow, including backyard drainage). Flow direction must be indicated by arrows.		Not applicable
3.2.2	Storm sewer system components, including storm drains, inlets, catchbasins, gutters, manholes, headwalls, pipes and culverts. Material and size must be noted for all pipes and culverts.	Yes	
3.2.3	For any subbasin or drainage area > 40 acres, show that the stormwater flow is confined to an open channel with required side benches and freeboard, or conformance to applicable policy and design requirements if partially enclosed.		Not applicable
3.2.4	Location(s) of stormwater management facilities and any associated drainage easements.	Yes	
3.2.5	Proposed energy dissipaters and other channel protection devices.		Not applicable
3.2.6	Location(s) and dimension(s) of proposed channel, bridge and culvert crossings.		Not applicable
3.2.7	Normal pool and 100-year pool elevations for ponds and lakes.	Yes	
3.2.8	Permanent concrete outfall control structure(s) for ponds.		Not applicable
3.2.9	Emergency overflow spillways and top of berm elevations for ponds and other volume/peak discharge control facilities.	Yes	See Tables 2 and 3
3.2.10	Floodplains, ponds, and stormwater management facilities located in reserves.	Yes	
3.3	**postdevelopment Conditions Hydrology & Hydraulics**		

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
3.3.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	
3.3.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.).	Yes	
3.3.3	Table of postdevelopment condition runoff curve numbers with supporting data and calculations.	Yes	
3.3.4	Table of postdevelopment condition times of concentration with supporting data and calculations.		See Narrative Description
3.3.5	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as		Not applicable
3.3.6	Hydrologic and hydraulic analyses for runoff rates, volumes, velocities and elevations. Provide supporting data not specified above and identify assumptions. Include detailed calculations for the 2, 5, 10, 25 & 100-year, 24-hour storm events. Provide results in a tabular form. Provide digital copies of any computer files and models used.	Yes	
3.3.7	Downstream peak discharge assessment (10% Rule) results and supporting data and calculations. Provide digital copies of any computer files and models used.		Not applicable
3.3.8	Stage-storage-discharge or other outlet rating curves and inflow/outflow hydrographs for all ponds.	Yes	
3.3.9	Demonstrate that the pond contours on the master grading plan and the stage-storage-discharge data are consistent for all ponds.	Yes	
3.3.10	Demonstrate that all ponds have one foot of freeboard above the 100-year, 24-hour high water level.	Yes	
3.3.11	Demonstrate that runoff from the proposed project site is discharged in the same manner as prior to development, using level spreaders, energy dissipaters, other devices or grading as required, or identify an appropriate flowage easement.	Yes	
3.4	**Stormwater Quantity Control Sizing**		
3.4.1	Hydraulic sizing calculations for all stormwater management controls.	Yes	
3.4.2	Table(s) listing all stormwater management controls. Present the types, sizes, elevations, flows, velocities and depths for each control, as applicable. Verify that velocities are self-cleaning and non-erosive.		See Tables 2 and 3
3.4.3	Typical details (including cross-sections where applicable) for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.		Not applicable
3.5	**Stormwater Quality Management Facilities**		
3.5.1	Table(s) listing all stormwater management facilities. Present the description, % TSS removal value, water quality volume handled, contributing drainage area in acres and contributing impervious area in acres.		See Table 1
3.5.2	Indicate the responsible party for maintenance, as shown in the plat text (i.e., Home Owners Association, Lot Owners Association, property owner, etc.)		Owner
3.5.3	Water quality volume (total and by facility), with supporting data and calculations.		See Table 1
3.5.4	% TSS removal value (total and by facility) with supporting data and calculation. Must be equal to or greater than 80%.		See Table 1
3.5.5	Channel protection volume with supporting data and calculations.		Not applicable
3.5.6	Water quality volume and channel protection volume orifice size calculations.		Not applicable
3.5.7	Other calculations required for each stormwater management facility as specified in the Wichita/Sedgwick County Stormwater Manual.		Not applicable
3.5.8	Typical details (including cross-sections where applicable) for outlet structures, embankments, internal grading, forebays and other siltation prefilters, filtration/infiltration media, vegetation, check dams, operational controls, etc.		Not applicable
4.0	**Floodplains**		
4.1	Reference the source of flood profile, floodplain, floodway and stream discharge information.		Not applicable
4.2	Delineation of nearest base flood elevations.		Not applicable
4.3	Delineation of predevelopment regulatory floodplain/floodway limits using FEMA's current GIS database; limits to be per elevation and scaled location.		Not applicable
4.4	Delineation of postdevelopment regulatory floodplain/floodway limits; limits to be per elevation and scaled location, with project limits shown.		Not applicable
4.5	Floodway data table and discharges.		Not applicable
4.6	Hydrologic and hydraulic study information for local floodplain analysis, unnumbered Zone A elevation determinations and floodplain map revisions or required permits.		Not applicable
4.7	Regulatory floodway and four natural profile models (10, 50, 100 and 500-year) for existing and postdevelopment conditions.		Not applicable
4.8	Floodplains and floodways located within a reserve, where necessary.		Not applicable

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
4.9	Floodplain cut and fill calculations for volume sensitive basins.		Not applicable
4.10	Demonstrate that floodway elevations and velocities do not increase due to construction in the floodway ("No Rise Certification").		Not applicable
5.0	**Federal, State and Local Permits**		
5.1	US Army Corps of Engineers regulatory program permits (Section 404 permit)		Not applicable
5.2	Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Floodplain Fill, Levee, Water Appropriations, Dam Safety permit, etc.).		Not applicable
5.3	FEMA letters of map change/revision - LOMA, LOMR, LOMR-f, CLOMR, etc.; shall be included and approved when project modifies the limits of the floodplain/floodway.		N/A
6.0	**Half Scale Preliminary Master Grading Plan**		
6.1	One set of plans and associated PDF of plans.	Yes	
6.2	Professional Engineer's seal, signature and date.	Yes	
6.3	Title block including subdivision name and phase and dated revision documentation.	Yes	
6.4	Future phases shown but cross-hatched as information only.		Not applicable
6.5	Scale, not greater than 1-inch = 60 feet.	Yes	
6.6	North arrow.	Yes	
6.7	Index or legend key.	Yes	
6.8	Benchmarks (minimum of 2) used for site control (NAVD 88 vertical datum).	Yes	NGVD29
6.9	Existing contours of entire site with contour interval of one foot.	Yes	
6.10	Proposed contours for channels, ponds, and other permanent stormwater management facilities, with contour interval of one foot.	Yes	
6.11	Spot elevations shown to the nearest tenth of a foot for critical locations, including lot and property boundaries.	Yes	
6.12	Proposed lot and street layout.	Yes	
6.13	Locations of underground storm drains.	Yes	
6.14	Overflow locations for storms exceeding storm drain capacity, with elevations.	Yes	
6.15	Top elevations of storm drains at all inlets, manholes, and flow line elevations for all outfalls.		On future construction plans
6.16	Locations of open ditches and lakes.		Not applicable
6.17	Flow direction arrows.	Yes	
6.18	Proposed flow line elevations of all open ditches at maximum 100 foot intervals, and 100-year flood elevations thereon.		Not applicable
6.19	Ponds: Location, bottom elevation, normal pool elevation, 100-year flood elevation, emergency overflow elevation.	Yes	
6.20	Proposed top-of-curb elevations at points where drainage will be required to flow over the curb.		Not applicable
6.21	Platted minimum building opening elevation for each lot, in table form for all lots (excluding basement floor elevations).		Not applicable
6.22	Standard foundation and elevation detail for slab on grade, full basement, view-out, partial view-out and/or walk-out construction.		Not applicable
6.23	Top of foundation elevation for each lot.		Not applicable
6.24	Notation for builders for each lot as to the type of structure that may be constructed and the view-out, walk-out or pad elevation, as applicable.		Not applicable
6.25	Indicate that all lots are above the 100-year flood elevation.		Not applicable
6.26	Indicate that grading around structures conforms to perimeter drainage requirements.		Not applicable
6.27	Indicate that backyard drainage grading conforms to backyard drainage requirements.		Not applicable
6.28	Adjacent subdivision lot lines, with lot labels and subdivision names.		Not applicable
6.29	Boundaries and labels for all easements, rights-of-way and reserves.		See Plat
6.30	Statement on proposed final plat: "*A drainage plan has been developed for the subdivision and all drainage easements, rights-of-way, or reserves shall remain at the established grades and remain unobstructed to allow for the conveyance of stormwater.*"		See Plat
End of Checklist			

HYDROLOGY AND WATER QUALITY COMPUTATIONS
TABLE 1

HSG=D BASIN	ACRES	PRE PERVIOUS CN = 88 ACRES	PRE IMPERV CN = 98 ACRES	WT CN	POST PERVIOUS CN = 88 ACRES	POST IMPERV CN = 98 ACRES	WT CN	WATER QUALITY PERVIOUS ACRES	WATER QUALITY POND ACRES	EXISTING IMPERVIOUS ACRES	EXISTING 30% ACRES	PROPOSED IMPERVIOUS ACRES	PROPOSED 100% ACRES	FLOWS TO WQ BMP UNIT
1	7.48	6.55	0.93	89.24	0	7.48	98	0.92	0.21	0.93	0.28	5.42	5.42	YES
2	0.9	0	0.9	98	0	0.90	98	0.00	0.00	0.00	0.00	0.00	0.00	NO
3	1.29	0	1.29	98	0	1.29	98	0.00	0.00	1.29	0.39	0.00	0.00	YES
4	0.61	0.61	0	88	0	0.61	98	0.00	0.00	0.00	0.00	0.61	0.61	YES
5	0.54	0	0.54	98	0	0.54	98	0.00	0.00	0.54	0.16	0.00	0.00	YES
6	1.73	0.23	1.5	96.67	0	1.73	98	0.00	0.00	1.15	0.35	0.58	0.58	YES
7	2.67	0	2.67	98	0	2.67	98	0.00	0.00	2.67	0.80	0.00	0.00	YES
8	1.28	1.02	0.26	90.03	1.19	0.09	88.67	0.82	0.00	0.00	0.00	0.91	0.91	YES
9	4.55	3.18	1.37	91.01	0	4.55	98	0.91	0.12	1.37	0.41	2.14	2.14	YES
10	1.17	1.17	0	88	1.17	0	88	1.17	0.00	0.00	0.00	0.00	0.00	NO
TOTAL	22.22										2.385		9.66	ACRES

REQUIRED TREATMENT AREA	12.05	ACRES
	80	%TSS
REQUIRED	9.64	AC-TSS
PROVIDED TREATMENT AREA *	13.28	ACRES
3- BMPs EFFICIENCY	73	%TSS
PROVIDED	9.69	AC-TSS

* INCLUDES PORTIONS OF BASINS 1,4,5,6,8 AND 9.
PROPRIETARY WATER QUALITY UNITS TO PROVIDE A MINIMUM OF 73% TSS REDUCTION

NW DETENTION POND STORAGE
TABLE 2

	NGVD29 ELEV FT	AREA AC	AREA SF	DEPTH FT	AVG AREA SF	INCR VOL CF	POND VOLUMES TOTAL VOL CF	POND VOLUMES TOTAL VOL AF
STATIC	1345	0.049	2135					0
				1	2670	2670.0		
	1346	0.074	3205				2,670	0.06
				1	3790	3789.5		
	1347	0.100	4374				6,460	0.15
				1	5008	5007.5		
	1348	0.129	5641				11,467	0.26
				1	6318	6317.5		
	1349	0.161	6994				17,785	0.41
				1	7733	7733.0		
	1350	0.194	8472				25,518	0.59
				0.2	8628	1725.7		
100 yr-STAGE	1350.2	0.202	8785				27,243	0.63
				0.8	9410	7527.8		
	1351	0.230	10035				34,771	0.80

BUILDING DETENTION POND STORAGE
TABLE 3

	NGVD29 ELEV FT	AREA AC	AREA SF	DEPTH FT	AVG AREA SF	INCR VOL CF	POND VOLUMES TOTAL VOL CF	POND VOLUMES TOTAL VOL AF
STATIC	1345	0.034	1481					0
				1	2047	2047.3		
	1346	0.060	2614				2,047	0.05
				1	3049	3049.2		
	1347	0.080	3485				5,097	0.12
				1	3855	3855.1		
	1348	0.097	4225				8,952	0.21
				0.8	4748	3798.4		
100 yr-STAGE	1348.8	0.121	5271				12,750	0.29
				1.2	5924	7109.0		
	1350	0.151	6578				19,859	0.46
				1	7231	7231.0		
	1351	0.181	7884				27,090	0.62
				1	8603	8603.1		
	1352	0.214	9322				35,693	0.82

DETENTION CALCS
TABLE 4

	DETENTION CALCS		PEAK FLOW RATES		
	YEAR	YEAR	YEAR	YEAR	YEAR
PRE COND.	2	5	10	25	100
BASIN	CFS	CFS	CFS	CFS	CFS
1 NW POND	25.9	35.4	42.1	50.7	66.7
2 OFFISTE	3.8	4.9	5.7	6.6	8.5
3 OFFSITE	5.4	7.0	8.1	9.5	12.2
4 OFFSITE	2	2.8	3.4	4.1	5.4
5 OFFSITE	2.3	2.9	3.4	4.0	5.1
6 SW BLDG	7.1	9.3	10.8	12.7	16.3
7 SE BLDG	11.2	14.5	16.8	19.7	25.3
8 SW OFFSITE	4.5	6.2	7.3	8.8	11.5
9 BLDG POND	16.5	22.3	26.4	31.5	41.3
10 OFFSITE	3.9	5.4	6.4	7.8	10.3
TOTAL	82.6	110.7	130.4	155.4	202.6
POST COND.					
BASIN					
1 NW POND	24.8	31.1	34.6	38.7	45.3
2 OFFISTE	3.8	4.9	5.7	6.6	8.5
3 OFFSITE	5.4	7.0	8.1	9.5	12.2
4 OFFSITE	2.6	3.3	3.8	4.5	5.8
5 OFFSITE	2.3	2.9	3.4	4.0	5.1
6 SW BLDG	7.3	9.4	10.9	12.8	16.4
7 SE BLDG	11.2	14.5	16.8	19.7	25.3
8 SW OFFSITE	4.4	6.0	7.1	8.6	11.4
9 BLDG POND	16.6	21.5	24.9	29.0	35.6
10 OFFSITE	3.9	5.4	6.4	7.8	10.3
TOTAL	82.3	106.0	121.7	141.2	175.9
POST DISCHARGES ARE LESS THAN PRE					