Seminole Electric
COOPERATIVE, INC.
IN PARTNERSHIP WITH THOSE WE SERVE

September 24, 2010

Mr. Michael Halpin, Administrator
Siting Coordination Office
Department of Environmental Protection
2600 Blair Stone Road, MS-48
Tallahassee, FL 32399-2400

Re: Seminole Electric Cooperative, Inc.
Midulla Generating Station
Power Plant Certification No. PA89-25
Post-Certification Amendment to Application

Dear Mr. Halpin:

Pursuant to Department of Environmental Protection (Department or DEP) Rule 62-17.205(1), F.A.C., please accept this letter and the attachments thereto as a proposed post-certification amendment to the original Site Certification Application (SCA) for the existing Midulla Generating Station (MGS) power plant site. This proposed post-certification amendment to the SCA relates specifically and exclusively to Seminole's proposal to add a 60 feet (ft) by 80-ft lubricating oil building to the MGS facility, along with approximately 5,524 square feet (ft^2). Of gravel access driveway and 2,240 ft^2 of concrete apron adjacent to that building. In addition, SECI plans to build a small 19- by 38 ft free-standing roof adjacent to an existing administrative building. The proposed structures will result in increased impervious surface area and thus slightly increase stormwater runoff, which drains into an onsite stormwater detention pond. To address whether the existing pond has sufficient storage capacity to attenuate the runoff from the new impervious surface, Environmental Consulting & Technology, Inc. (ECT), conducted a stormwater analysis, which is enclosed as Attachment 1. Please note that this attachment, provided with a P.E. seal, includes graphics depicting the locations of the new structures.

The proposed activities described herein will occur within the existing plant site, and exclusively in upland areas. As explained in the attached ECT report, these activities will not cause any adverse environmental impacts and do not require any changes to the existing Midulla Generating Station Conditions of Certification. All applicable regulations will continue to be met. If the Department concurs, Seminole requests that this letter and its attachment be approved as a Postcertification Amendment to the Site Certification Application.

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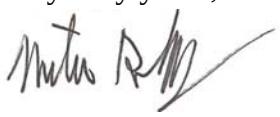
If you or any of the parties have any questions or concerns, or require additional information, please contact , me at (813) 963-0994, ext. 1224, or Robert Yarbrough at ext. 1228.

Very truly yours,



Mike Roddy
Manager of Environmental Affairs

cc: Ann Seiler, Environmental Specialist, DEP - Office of Siting Coordination
Doug Hyman, DEP SW District
James Alves, Hopping Green & Sams

Environmental Consulting & Technology, Inc.

September 23, 2010
ECT No. 100586-0100

Mr. Robert Yarbrough
Seminole Electric Cooperative, Inc.
P.O. Box 272000
Tampa, Florida 33688-2000

Re: Seminole Electric Cooperative Inc.'s (SECI's) Midulla Generating Station (MGS) Lubricating Oil Building Stormwater Analysis

Dear Robert:

I am submitting this hydraulic analysis to evaluate the stormwater from a proposed lubricating oil building and a roof addition at MGS.

SECI plans to add a 60-foot (ft) by 80-ft lubricating oil building to the MGS facility, along with approximately 5,524 square feet (ft^2) of gravel access driveway and 2,240 ft^2 of concrete apron adjacent to the building. In addition, SECI plans to build a small 19- by 38-ft free-standing roof adjacent to the existing administrative building. The proposed structures will result in increased impervious surface area and thus more stormwater runoff, which drains into an onsite stormwater detention pond. To ensure that the existing pond has sufficient storage capacity to attenuate the runoff from the new impervious surface, Environmental Consulting & Technology, Inc. (ECT), conducted a stormwater analysis presented herein.

In 2004, ECT conducted a stormwater management study (ECT, 2004)[1] for the construction of peaker units on the MGS site and subsequently obtained the permits for the peaker project. Figure 1 presents the drainage basin delineation of the MGS facility. The proposed lubricating oil building (located in Sub-basin 5B) and the proposed roof addition (located in Sub-basin 6) will not alter the drainage basin divide as shown in Figure 1. Approximately 44 acres of the MGS site area drains into a 4.28-acre stormwater retention pond in Sub-basin 8. To identify land use cover and compute the curve numbers (CN) of the sub-basins, an aerial photograph flown on July 22, 2010, was obtained (Figure 1).

The areas covered by buildings, asphalt, gravel, and grass are determined using the recent aerial photograph (Figure 2). Subsequently, CNs were calculated (Attachment A) based

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[1]Environmental Consulting & Technology, Inc. (ECT). 2004. Stormwater Management Report for Payne Creek Generating Station Peaker Project. ECT No. 030790-0100. August.

on hydrologic soil conditions and the land use distribution after the lubricating oil building and roof construction.

The following subsections provide a description of each sub-basin, its land use, and the rationale used to determine the CN.

SUB-BASIN 1A

Currently, Sub-basin 1A is an open area that was used as a construction lay down area during the original construction of the peaker units. A limestone base was constructed in a majority of the sub-basin area to provide a stable base for construction equipment staging, and an asphalt road was constructed to provide access to the combustion turbines. Since that time, grass has grown into this area making it somewhat more pervious. It is modeled as Open Space, Poor Condition.

SUB-BASIN 1B

The majority of Sub-basin 1B is the power block for the peaker project combustion turbines and substation. Ground cover is predominately gravel and buildings.

SUB-BASIN 1C

Land cover within Sub-basin 1C primarily consists of dense grass. A small gravel-covered gas metering and gas regulating station are located in the sub-basin.

SUB-BASIN 1D

Sub-basin 1D consists of a grassy area and a drainage channel.

SUB-BASIN 3

The plant's existing substation is located within this sub-basin, and the majority of the land cover is gravel.

SUB-BASIN 4

Sub-basin 4 is the combined cycle site, and the land cover is mainly concrete and gravel.

SUB-BASIN 5A

Sub-basin 5A was originally used as construction parking area during the project construction. Since that time, grass has grown into this area making it somewhat more pervious. It is modeled as Open Space, Poor Condition.

SUB-BASIN 5B

The proposed lubricating oil building will be located in Sub-basin 5B (Figure 3). The existing land use consists of two warehouse buildings, equipment storage area (shell), and open space (grass). A large portion of Sub-basin 5B was originally designated as a construction laydown area. However, only a small portion of this planned laydown area is currently used. The proposed lubricating oil building is included in this stormwater analysis.

SUB-BASIN 5C

A truck turnaround and demineralized water tank are in Sub-basin 5C along with two water tanks and a treatment facility. The rest of this sub-basin is open space (grass).

SUB-BASIN 6

Sub-basin 6 includes a substation, an administrative building, and a water treatment building. The land cover in this area is mainly concrete and gravel. The area between the administrative building and the water treatment building is currently covered by gravel. SECI plans to build a 19- by 38-ft free-standing roof between the two buildings.

SUB-BASIN 7 AND 7A

This area includes a fuel tank within a containment berm that drains though an oil/water separator to the NPDES wastewater system. Stormwater is contained within the bermed area and released to the NPDES wastewater system. Therefore, the area within the containment berm was not considered in the detention pond analysis.

SUB-BASIN 8

Sub-basin 8 includes an existing 4.28-acre stormwater pond. The bottom elevation of the existing stormwater pond is 114 feet National Geodetic Vertical Datum (ft-NGVD). The control structure of the detention pond includes a 4-inch bleed-down orifice (at elevation 120 ft-NGVD), a 15-ft overflow weir (at elevation 121.1 ft-NGVD), and a 100-ft emergency spillway (at elevation 123.0 ft-NGVD). The top elevation of the berm around the detention pond is 125 ft-NGVD. Table 1 provides the stage-area-volume information.

Table 1. Stage-Area-Volume Information for the Stormwater Detention Pond

Stage (ft-NGVD)	Area (acre)	Volume (ac-ft)
114	1.58	0.00
115	0.52	1.05
116	1.80	2.21
117	1.91	4.06
118	2.29	6.16
119	2.98	8.80
120	3.43	12.00
121	3.60	15.52
122	3.76	19.20
123	3.93	23.04
124	4.10	27.06
125	4.28	31.25

Source: ECT, 2010.

SUB-BASIN 9

Sub-basin 9 includes a truck turnaround area. It is mostly grass with some asphalt.

Table 2 lists the CN values determined for each sub-basin. The CN for Sub-basin 5B includes the addition of the proposed lubricating oil building and driveways, and the CN for Sub-basin 6 includes the proposed small, free-standing roof construction.

Table 2. Postconstruction Stormwater Sub-basin CNs

Sub-basin ID	Sub-basin Area (acres)	CN (Post-Lubricating Oil Building and Post-Roof Construction)
1A	3	93
1B	7.6	94
1C	4.6	82
1D	1.2	83
3	3.7	90
4	2.1	95
5A	4.7	85
5B	4.5	87
5C	3.5	87
6	3.7	94
8	5.4	98
Composite	**44.0**	**90.4**

According to ECT (2004), the CN used in the predevelopment condition for the site was 85. Time of concentration (Tc) for these sub-basins remains the same as originally computed by ECT (2004).

The Interconnected Channel and Pond Routing Model (ICPR) was used to compute the surface runoff and pond discharge hydrograph with the proposed construction under a 25-year, 24-hour storm event (8.5 inches). Attachment B contains the model inputs/outputs. According to the model results, the peak discharge from the stormwater pond under the post-lubricating oil building and the post-roof construction conditions is 78.2 cubic feet per second (cfs). According to ECT (2004), the predevelopment peak discharge under a 25-year, 24-hour storm event was 85.8 cfs. The postlubricating oil building and post-roof construction peak discharge is less than the predevelopment discharge. Therefore, the peak flow requirement is met.

According to ECT (2004), the stormwater treatment system (wet detention) provides an adequate treatment volume (1 inch of runoff) for the project site. The required treatment volume has not changed as MGS has not expanded its overall site area. Therefore, the treatment volume requirement is met.

The ICPR model results indicate that the peak water level in the stormwater pond under a 25-year, 24-hour storm event is 122.96 ft, which provides approximately 2.04 ft of free-board in the pond.

Based on the results of this stormwater analysis, the existing stormwater treatment system has sufficient storage and attenuation capacity to accommodate the proposed lubricating oil building construction and roof addition.

Please let me know if you have any questions regarding this stormwater analysis.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Ivan B. Chou, P.E., 30688
Principal Engineer

September 23, 2010
Date

IBC/tsw

Enclosures

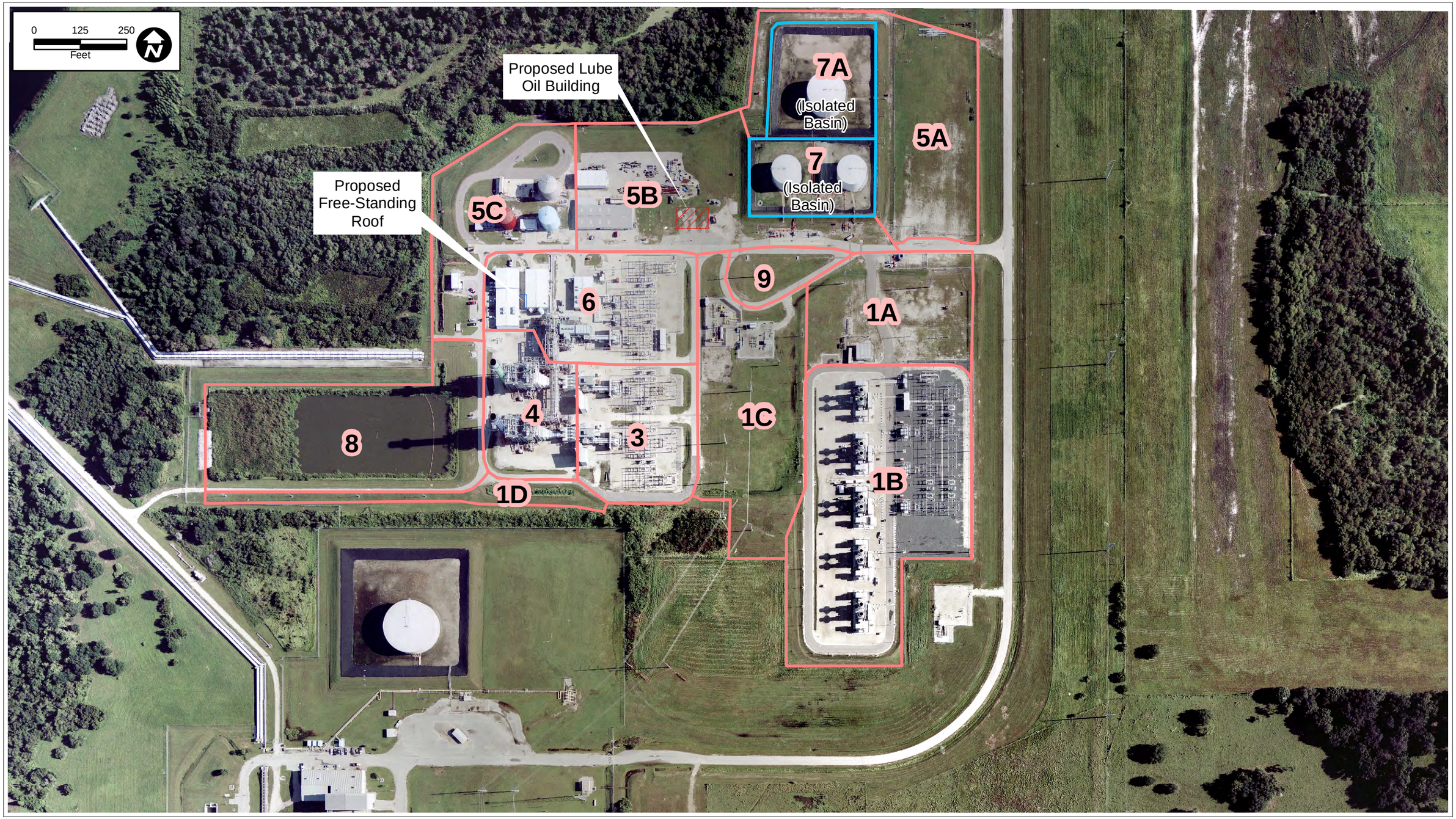


FIGURE 1.
AERIAL PHOTO AND DRAINAGE BASIN DELINEATION
MIDULLA GENERATING STATION

Sources: ECT, 2010.

ECT
Environmental Consulting & Technology, Inc.

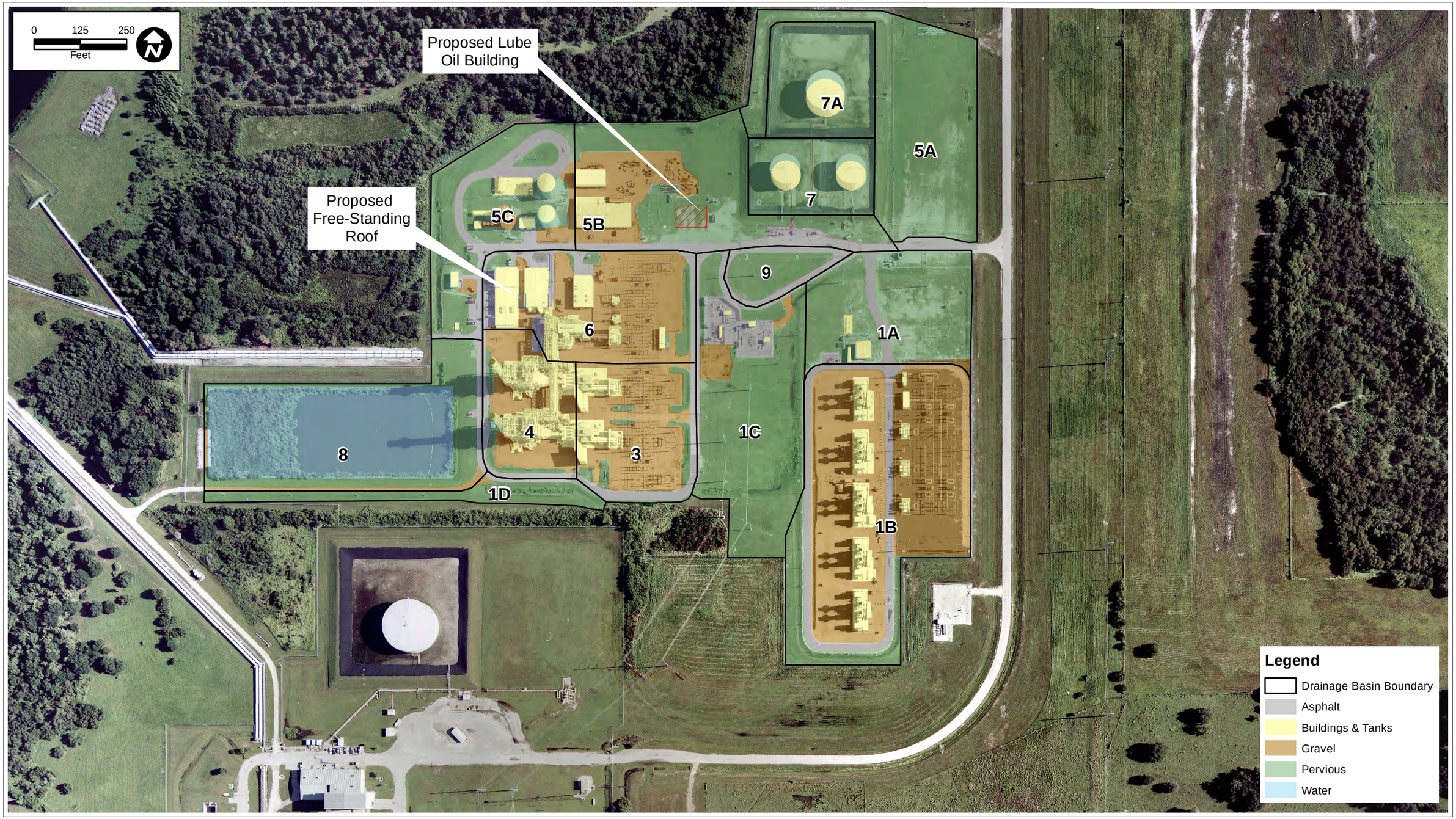


FIGURE 2.
LAND COVER MAP
MIDULLA GENERATING STATION

Sources: ECT, 2010.

ECT
Environmental Consulting & Technology, Inc.

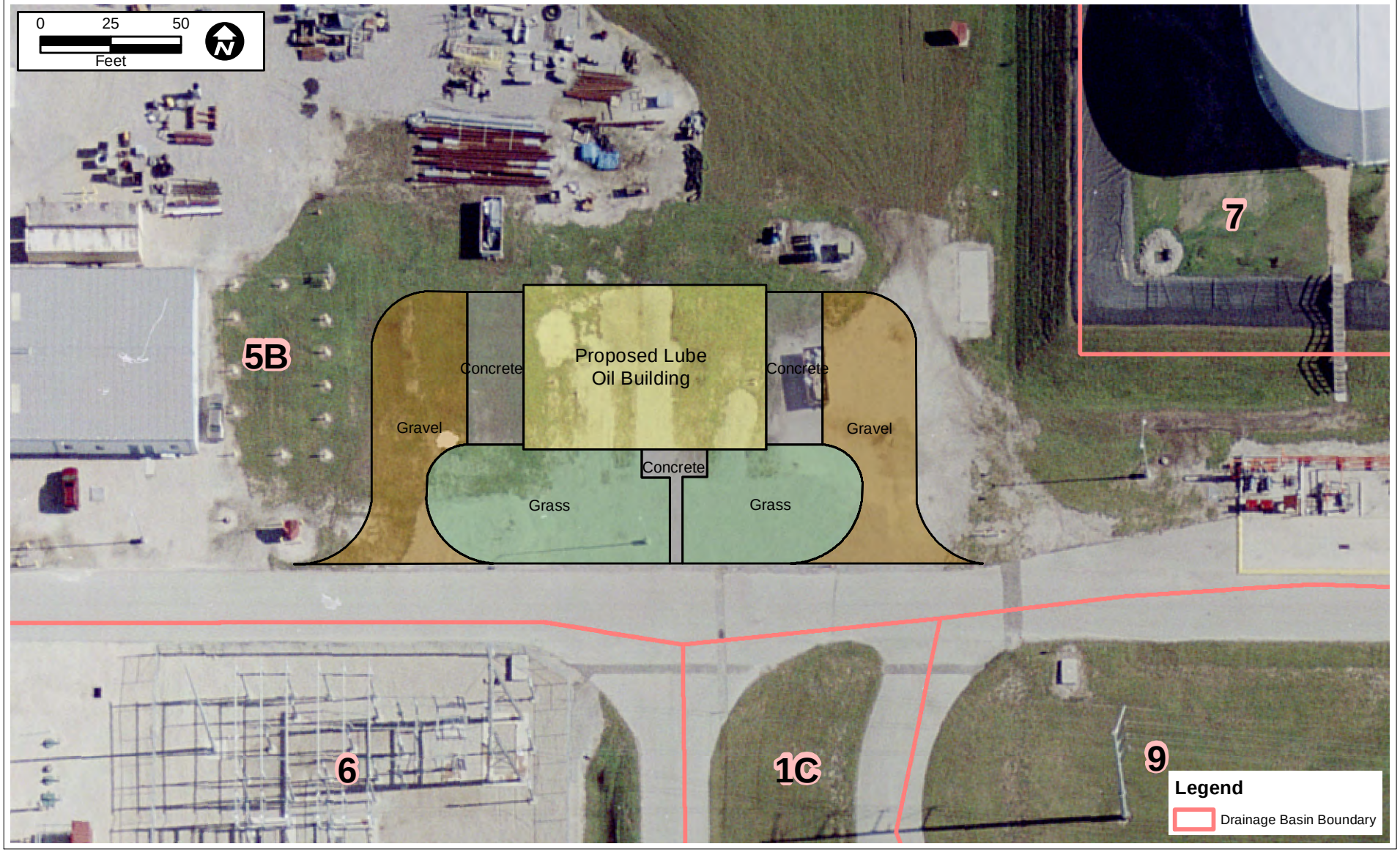


FIGURE 3.
PROPOSED LUBRICATING OIL BUILDING
MIDULLA GENERATING STATION

Sources: ACT,inc., 2008; ECT, 2010.

ECT
Environmental Consulting & Technology, Inc.

ATTACHMENT A

CURVE NUMBER COMPUTATIONS

Runoff curve number and runoff - Basin 1A As-of 7-22-10

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Asphalt access drive	98			0.2	16.8
D	Limerock/grass	93			2.9	267.0
[1] Use only one CN source per line		**Totals** ➡			3.0	283.8

CN (weighted) = total product / total area = 283.7749 / 3.042149 = 93.28106 **Use CN** ➡ **93**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	7.56		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 1B

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Asphalt access drive	98			1.5	146.6
D	Combustion Turbine Pads	98			0.8	74.2
D	Asphalt Parking	98			0.03	2.7
D	Auxiliary Control building	98			0.04	3.6
D	Sod	80			0.78	62.3
D	Gravel*	95			4.46	424.1
[1] Use only one CN source per line		**Totals** ➡			7.6	713.5

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{713.5251}{7.560629} = 94.37378$ **Use CN** ➡ **94**

* Gravel will be palced over existing limerock area therefore the curve number for limerock will be used

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	7.68		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 1C As-of 7-22-10

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Gravel fuel station	91			0.2	19.5
D	Gravel pressure regulating station	91			0.1	8.4
D	1/2 of asphalt access road	98			0.28	27.6
D	Soded area	80			3.98	318.5
[1] Use only one CN source per line		**Totals** ➡			4.6	373.9

CN (weighted) = total product / total area = 373.934 / 4.56871 = 81.84674 **Use CN** ➡ **82**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	6.24		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 1D

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	1/2 of asphalt access road	98			0.2	15.7
D	Soded area	80			1.0	79.5
[1] Use only one CN source per line		**Totals** ➡			1.2	95.2

CN (weighted) = total product / total area = 95.16694 / 1.153512 = 82.50188 **Use CN** ➡ **83**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	6.36		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 3

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Substation gravel*	91			3.1	286.1
D	1/2 of asphalt access road*	98			0.2	18.9
D	Soded area	80			0.34	27.0
[1] Use only one CN source per line		**Totals** ➡			3.7	332.0

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{332.0214}{3.674518} = 90.35781$ **Use CN** ➡ **90**

* included existing and expanded area

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	7.20		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 4

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Concrete combustion turbine pads	98			1.6	159.4
D	1/2 of asphalt access road*	98			0.1	12.6
D	Soded area	80			0.37	29.7
[1] Use only one CN source per line		**Totals** ➡			2.1	201.7

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{201.6852}{2.126148} = 94.85945$ **Use CN** ➡ **95**

* included existing and expanded area

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	7.80		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 5A As-of 7-22-10

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Gravel construction parking	89			2.1	183.4
D	Asphalt access road	98			0.1	13.5
D	Soded area	80			2.46	196.8
[1] Use only one CN source per line		**Totals** ➡			4.7	393.6

CN (weighted) = total product / total area = 393.6492 / 4.657874 = 84.51262 **Use CN** ➡ **85**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	6.60		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 5B with Proposed Lube Oil Bldg.

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Bowling Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Existing Buildings	98			0.33	32.3
D	Shell equipment storage	91			0.95	86.5
D	Soded area	80			2.25	180.0
D	Proposed Access road	98			0.90	88.2
D	Proposed Lube Oil Building	98			0.11	10.8
[1] Use only one CN source per line		**Totals** ➡			4.5	397.8

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{397.77}{4.54} = 87.61454$ **Use CN** ➡ **88**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	6.96		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 5C As-of 7-22-10

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Gravel Lay Down Areas	91			0.32	29.1
D	Buildings	98			0.17	16.7
D	Water Tanks (3)*	98			0.12	11.8
D	Asphalt Pavement	98			0.84	82.4
D	Sodded area	80			2.03	162.4
[1] Use only one CN source per line		**Totals** ➡			3.5	302.4

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{302.358}{3.481} = 86.85952$ **Use CN** ➡ **87**

* Includes 1 proposed tank and 2 existing

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	6.84		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 6 with proposed roof addition

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Substation	98			1.1	110.5
D	Access Road	98			0.3	28.8
D	Buildings	98			0.46	45.3
D	Parking	98			0.18	17.6
D	Sodded area	80			0.31	25.0
D	Gravel area around buildings	91			1.30	118.2
[1] Use only one CN source per line		**Totals** ➡			3.7	345.4

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{345.3961}{3.674541} = 93.99708$ **Use CN** ➡ **94**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	7.68		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Runoff curve number and runoff - Basin 8

Project	By	Date
MGS Lube Oil Building Addition	SGD	9/23/2010
Location	**Checked**	**Date**
Fort Green, Fl		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN[1] Table 2-2	CN[1] Figure 2-3	CN[1] Figure 2-4	Area ☑ acres ☐ mi2 ☐ %	Product of CN x area
D	Pond	100			4.8	479.2
D	Access Road	98			0.1	10.3
D	Sodded area	80			0.49	38.9
D						
D						
D						
[1] Use only one CN source per line		**Totals** ➡			5.4	528.5

CN (weighted) = total product / total area = 528.4814 / 5.384229 = 98.15359 **Use CN** ➡ **98**

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	25 yr		
Rainfall, P (24-hour) ..... in	8.4		
Runoff, Q ..... in	8.16		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

ATTACHMENT B

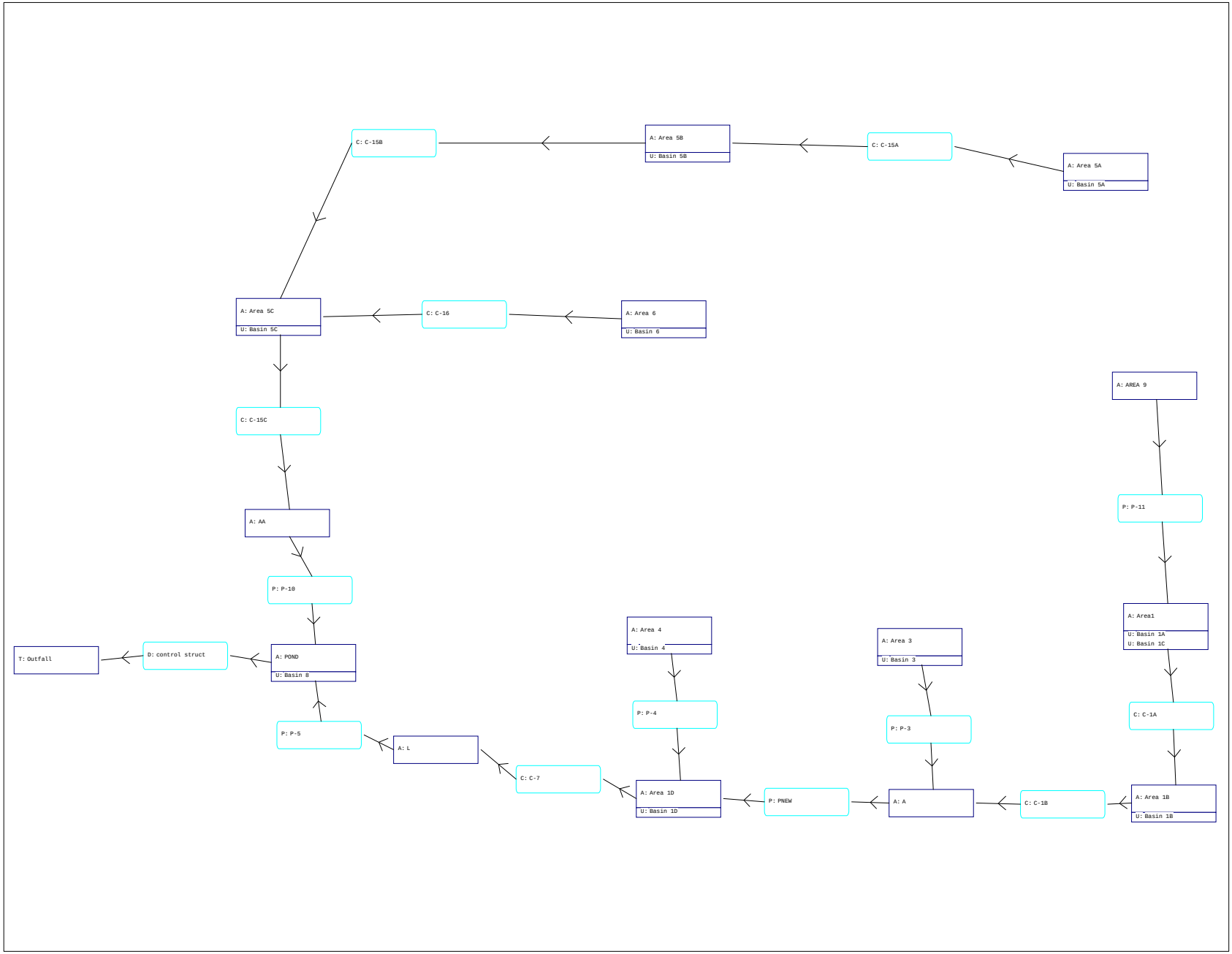
ICPR MODEL INPUT/OUTPUT

MGS Lube/Oil Building Addition
Node Diagram

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



```
================================================================================
==== Basins ====================================================================
================================================================================

         Name: Basin 1A                Node: Area1                 Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh323                  Peaking Factor: 323.0
          Rainfall File: Flmod               Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.400                 Time of Conc(min): 10.00
               Area(ac): 3.000                   Time Shift(hrs): 0.00
           Curve Number: 93.00               Max Allowable Q(cfs): 999999.000
                DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: Basin 1B                Node: Area 1B               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh323                  Peaking Factor: 323.0
          Rainfall File: Flmod               Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.400                 Time of Conc(min): 10.00
               Area(ac): 7.600                   Time Shift(hrs): 0.00
           Curve Number: 94.00               Max Allowable Q(cfs): 999999.000
                DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: Basin 1C                Node: Area1                 Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh323                  Peaking Factor: 323.0
          Rainfall File: Flmod               Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.400                 Time of Conc(min): 37.00
               Area(ac): 4.600                   Time Shift(hrs): 0.00
           Curve Number: 82.00               Max Allowable Q(cfs): 999999.000
                DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: Basin 1D                Node: Area 1D               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh323                  Peaking Factor: 323.0
          Rainfall File: Flmod               Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.400                 Time of Conc(min): 32.00
               Area(ac): 1.200                   Time Shift(hrs): 0.00
           Curve Number: 83.00               Max Allowable Q(cfs): 999999.000
                DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: Basin 3                 Node: Area 3                Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh323                  Peaking Factor: 323.0
          Rainfall File: Flmod               Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.400                 Time of Conc(min): 10.00
               Area(ac): 3.700                   Time Shift(hrs): 0.00
           Curve Number: 90.00               Max Allowable Q(cfs): 999999.000
                DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: Basin 4                 Node: Area 4                Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh323                  Peaking Factor: 323.0
          Rainfall File: Flmod               Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.400                 Time of Conc(min): 10.00
```

Area(ac): 2.100 Time Shift(hrs): 0.00
Curve Number: 95.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 5A Node: Area 5A Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.400 Time of Conc(min): 10.00
Area(ac): 4.660 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 5B Node: Area 5B Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.400 Time of Conc(min): 42.00
Area(ac): 4.500 Time Shift(hrs): 0.00
Curve Number: 88.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 5C Node: Area 5C Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.400 Time of Conc(min): 32.00
Area(ac): 3.500 Time Shift(hrs): 0.00
Curve Number: 87.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 6 Node: Area 6 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.400 Time of Conc(min): 10.00
Area(ac): 3.700 Time Shift(hrs): 0.00
Curve Number: 94.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 8 Node: POND Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.400 Time of Conc(min): 14.00
Area(ac): 5.400 Time Shift(hrs): 0.00
Curve Number: 98.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ====
==========

Name: A Base Flow(cfs): 0.000 Init Stage(ft): 122.000

Group: BASE Warn Stage(ft): 129.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: AA Base Flow(cfs): 0.000 Init Stage(ft): 121.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Area 1B Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 127.500
Type: Stage/Area

Stage(ft)	Area(ac)
126.000	0.1000
127.000	1.5000

Name: Area 1D Base Flow(cfs): 0.000 Init Stage(ft): 122.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Area 3 Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)
126.000	0.0300
127.000	0.0900
128.000	1.2200

Name: Area 4 Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)
126.000	0.0300
127.000	0.1300
128.000	0.4400

Name: Area 5A Base Flow(cfs): 0.000 Init Stage(ft): 129.000
Group: BASE Warn Stage(ft): 133.000
Type: Stage/Area

Stage(ft)	Area(ac)
129.000	0.6000

131.000	2.4600

Name: Area 5B Base Flow(cfs): 0.000 Init Stage(ft): 125.000
Group: BASE Warn Stage(ft): 129.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Area 5C Base Flow(cfs): 0.000 Init Stage(ft): 122.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Area 6 Base Flow(cfs): 0.000 Init Stage(ft): 125.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)
125.000	0.0300
126.000	0.0900
127.000	0.1600
128.000	1.5400

Name: AREA 9 Base Flow(cfs): 0.000 Init Stage(ft): 127.000
Group: BASE Warn Stage(ft): 129.500
Type: Stage/Area

Stage(ft)	Area(ac)
127.000	0.1070
128.000	0.2610
129.000	0.4970

Name: Area1 Base Flow(cfs): 0.000 Init Stage(ft): 127.000
Group: BASE Warn Stage(ft): 129.000
Type: Stage/Area

Stage(ft)	Area(ac)
127.000	0.0100
128.000	0.1000

Name: L Base Flow(cfs): 0.000 Init Stage(ft): 121.000
Group: BASE Warn Stage(ft): 128.500
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Outfall Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: BASE Warn Stage(ft): 121.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	119.000
30.00	120.000

Name: POND Base Flow(cfs): 0.000 Init Stage(ft): 119.800
Group: BASE Warn Stage(ft): 125.500
Type: Stage/Area

Stage(ft)	Area(ac)
119.800	3.4320
121.000	3.5950
122.000	3.7610
123.000	3.9300
124.000	4.1020
125.000	4.2770

==========

==== Pipes ====

==========

Name: P-10 From Node: AA Length(ft): 100.00
Group: BASE To Node: POND Count: 2
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	36.00	36.00
Rise(in):	36.00	36.00
Invert(ft):	120.700	120.500
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.40
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: P-11 From Node: AREA 9 Length(ft): 30.00
Group: BASE To Node: Area1 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	125.800	125.500
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.40
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: P-3 From Node: Area 3 Length(ft): 30.00
Group: BASE To Node: A Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	0.40
Invert(ft):	122.500	122.300	Exit Loss Coef:	1.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	P-4	From Node: Area 4	Length(ft): 30.00
Group:	BASE	To Node: Area 1D	Count: 1
			Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	0.40
Invert(ft):	122.300	122.000	Exit Loss Coef:	1.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	P-5	From Node: L	Length(ft): 110.00
Group:	BASE	To Node: POND	Count: 2
			Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	36.00	36.00	Flow:	Both
Rise(in):	36.00	36.00	Entrance Loss Coef:	0.40
Invert(ft):	120.300	120.000	Exit Loss Coef:	1.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	PNEW	From Node: A	Length(ft): 300.00
Group:	BASE	To Node: Area 1D	Count: 2
			Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	36.00	36.00	Flow:	Both
Rise(in):	36.00	36.00	Entrance Loss Coef:	0.40
Invert(ft):	123.000	121.700	Exit Loss Coef:	1.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
			Inlet Ctrl Spec:	Use dn

```
 Bot Clip(in): 0.000          0.000                      Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


================================================================================
==== Channels ==================================================================
================================================================================

          Name: C-15A               From Node: Area 5A           Length(ft): 425.00
         Group: BASE                  To Node: Area 5B                Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 128.000        125.000                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.025000       0.025000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


--------------------------------------------------------------------------------------------------
          Name: C-15B               From Node: Area 5B           Length(ft): 620.00
         Group: BASE                  To Node: Area 5C                Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 124.800        121.900                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.025000       0.025000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 6.000          6.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


--------------------------------------------------------------------------------------------------
          Name: C-15C               From Node: Area 5C           Length(ft): 200.00
         Group: BASE                  To Node: AA                     Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 122.000        121.000                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.032000       0.032000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
```

```
    Aux XSec1:                                        Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 8.000          8.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: C-16               From Node: Area 6            Length(ft): 85.00
        Group: BASE                 To Node: Area 5C                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 122.000        121.900                             Flow: Both
TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
  Manning's N: 0.032000       0.032000                   Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                  Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
    Aux XSec1:                                       Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 8.000          8.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: C-1A               From Node: Area1             Length(ft): 510.00
        Group: BASE                 To Node: Area 1B                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 126.000        124.000                             Flow: Both
TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
  Manning's N: 0.025000       0.025000                   Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                  Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
    Aux XSec1:                                       Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 8.000          8.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: C-1B               From Node: Area 1B           Length(ft): 270.00
        Group: BASE                 To Node: A                      Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 124.000        123.000                             Flow: Both
TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
  Manning's N: 0.025000       0.025000                   Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                  Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
    Aux XSec1:                                       Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
```

Depth(ft):		
Bot Width(ft):	8.000	8.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Name: C-7 From Node: Area 1D Length(ft): 270.00
Group: BASE To Node: L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	122.500	121.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.032000	0.032000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	8.000	8.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

==========

Drop Structures

==========

Name: control struct From Node: POND Length(ft): 24.00
Group: BASE To Node: Outfall Count: 3

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	36.00	36.00	Solution Algorithm:	Automatic
Rise(in):	36.00	36.00	Flow:	Both
Invert(ft):	119.700	119.600	Entrance Loss Coef:	0.400
Manning's N:	0.013000	0.013000	Exit Loss Coef:	1.000
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 3 for Drop Structure control struct ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Circular	Orifice Disc Coef:	0.600
Span(in):	4.00	Invert(ft):	120.000
Rise(in):	4.00	Control Elev(ft):	120.000

*** Weir 2 of 3 for Drop Structure control struct ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	180.00	Invert(ft):	121.100
Rise(in):	36.00	Control Elev(ft):	121.100

*** Weir 3 of 3 for Drop Structure control struct ***

TABLE

Count: 1 Bottom Clip(in): 0.000
Type: Vertical: Fread Top Clip(in): 0.000
Flow: Both Weir Disc Coef: 3.200
Geometry: Rectangular Orifice Disc Coef: 0.600

Span(in): 1200.00 Invert(ft): 123.000
Rise(in): 48.00 Control Elev(ft): 123.000

==========
==== Hydrology Simulations ==========
==========

Name: 25yrpro
Filename: N:\Project_files\2010\10-0586 MGS Stormwater Eval\POST25.R32

Override Defaults: No

Time(hrs)	Print Inc(min)
13.000	15.00
18.000	5.00
36.000	15.00

==========
==== Routing Simulations ==========
==========

Name: 25 yr post Hydrology Sim: 25yrpro
Filename: N:\Project_files\2010\10-0586 MGS Stormwater Eval\25yr post.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 0.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.0000 Max Calc Time(sec): 0.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes
OP_TABLES	Yes

```
             Basin Name: Basin 1A
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area1
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 1.33
    Comp Time Inc (min): 1.33
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 10.00
       Time Shift (hrs): 0.00
              Area (ac): 3.000
   Vol of Unit Hyd (in): 1.001
           Curve Number: 93.000
               DCIA (%): 0.000

         Time Max (hrs): 12.02
         Flow Max (cfs): 16.117
    Runoff Volume (in): 7.563
    Runoff Volume (ft3): 82360.286


--------------------------------------------------------------------------------

             Basin Name: Basin 1B
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area 1B
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 1.33
    Comp Time Inc (min): 1.33
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 10.00
       Time Shift (hrs): 0.00
              Area (ac): 7.600
   Vol of Unit Hyd (in): 1.000
           Curve Number: 94.000
               DCIA (%): 0.000

         Time Max (hrs): 12.02
         Flow Max (cfs): 41.103
    Runoff Volume (in): 7.683
    Runoff Volume (ft3): 211959.646


--------------------------------------------------------------------------------

             Basin Name: Basin 1C
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area1
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 4.93
    Comp Time Inc (min): 4.93
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 37.00
       Time Shift (hrs): 0.00
              Area (ac): 4.600
   Vol of Unit Hyd (in): 1.000
```

```
           Curve Number: 82.000
               DCIA (%): 0.000

         Time Max (hrs): 12.33
         Flow Max (cfs): 12.486
     Runoff Volume (in): 6.237
    Runoff Volume (ft3): 104146.754


--------------------------------------------------------------------------------

             Basin Name: Basin 1D
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area 1D
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 4.27
    Comp Time Inc (min): 4.27
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 32.00
       Time Shift (hrs): 0.00
              Area (ac): 1.200
   Vol of Unit Hyd (in): 1.000
           Curve Number: 83.000
               DCIA (%): 0.000

         Time Max (hrs): 12.23
         Flow Max (cfs): 3.574
     Runoff Volume (in): 6.360
    Runoff Volume (ft3): 27703.750


--------------------------------------------------------------------------------

             Basin Name: Basin 3
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area 3
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 1.33
    Comp Time Inc (min): 1.33
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 10.00
       Time Shift (hrs): 0.00
              Area (ac): 3.700
   Vol of Unit Hyd (in): 1.000
           Curve Number: 90.000
               DCIA (%): 0.000

         Time Max (hrs): 12.02
         Flow Max (cfs): 19.384
     Runoff Volume (in): 7.203
    Runoff Volume (ft3): 96738.649


--------------------------------------------------------------------------------

             Basin Name: Basin 4
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area 4
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
```

```
         Peaking Fator: 323.0
    Spec Time Inc (min): 1.33
    Comp Time Inc (min): 1.33
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 10.00
       Time Shift (hrs): 0.00
              Area (ac): 2.100
   Vol of Unit Hyd (in): 1.000
           Curve Number: 95.000
               DCIA (%): 0.000

         Time Max (hrs): 12.02
         Flow Max (cfs): 11.423
     Runoff Volume (in): 7.803
    Runoff Volume (ft3): 59483.396


--------------------------------------------------------------------------------

             Basin Name: Basin 5A
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area 5A
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 1.33
    Comp Time Inc (min): 1.33
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 10.00
       Time Shift (hrs): 0.00
              Area (ac): 4.660
   Vol of Unit Hyd (in): 1.000
           Curve Number: 85.000
               DCIA (%): 0.000

         Time Max (hrs): 12.04
         Flow Max (cfs): 23.065
     Runoff Volume (in): 6.603
    Runoff Volume (ft3): 111687.451


--------------------------------------------------------------------------------

             Basin Name: Basin 5B
             Group Name: BASE
             Simulation: 25yrpro
              Node Name: Area 5B
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh323
          Peaking Fator: 323.0
    Spec Time Inc (min): 5.60
    Comp Time Inc (min): 5.00
          Rainfall File: Flmod
   Rainfall Amount (in): 8.400
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 42.00
       Time Shift (hrs): 0.00
              Area (ac): 4.500
   Vol of Unit Hyd (in): 1.000
           Curve Number: 88.000
               DCIA (%): 0.000

         Time Max (hrs): 12.33
         Flow Max (cfs): 12.458
     Runoff Volume (in): 6.951
    Runoff Volume (ft3): 113544.586
```

```
            Basin Name: Basin 5C
            Group Name: BASE
            Simulation: 25yrpro
             Node Name: Area 5C
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323
         Peaking Fator: 323.0
   Spec Time Inc (min): 4.27
   Comp Time Inc (min): 4.27
         Rainfall File: Flmod
  Rainfall Amount (in): 8.400
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 32.00
      Time Shift (hrs): 0.00
              Area (ac): 3.500
  Vol of Unit Hyd (in): 1.000
           Curve Number: 87.000
               DCIA (%): 0.000

        Time Max (hrs): 12.23
        Flow Max (cfs): 11.055
    Runoff Volume (in): 6.840
   Runoff Volume (ft3): 86896.915
```

```
            Basin Name: Basin 6
            Group Name: BASE
            Simulation: 25yrpro
             Node Name: Area 6
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323
         Peaking Fator: 323.0
   Spec Time Inc (min): 1.33
   Comp Time Inc (min): 1.33
         Rainfall File: Flmod
  Rainfall Amount (in): 8.400
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 10.00
      Time Shift (hrs): 0.00
              Area (ac): 3.700
  Vol of Unit Hyd (in): 1.000
           Curve Number: 94.000
               DCIA (%): 0.000

        Time Max (hrs): 12.02
        Flow Max (cfs): 20.011
    Runoff Volume (in): 7.683
   Runoff Volume (ft3): 103190.880
```

```
            Basin Name: Basin 8
            Group Name: BASE
            Simulation: 25yrpro
             Node Name: POND
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323
         Peaking Fator: 323.0
   Spec Time Inc (min): 1.87
   Comp Time Inc (min): 1.87
         Rainfall File: Flmod
  Rainfall Amount (in): 8.400
  Storm Duration (hrs): 24.00
                Status: Onsite
```

```
     Time of Conc (min): 14.00
       Time Shift (hrs): 0.00
              Area (ac): 5.400
   Vol of Unit Hyd (in): 1.000
          Curve Number: 98.000
              DCIA (%): 0.000

         Time Max (hrs): 12.07
         Flow Max (cfs): 26.736
     Runoff Volume (in): 8.162
    Runoff Volume (ft3): 159997.897
```

MGS Lube/Oil Building Addition
Node Min/Max Report

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
A	BASE	25 yr post	12.11	125.901	129.000	-0.3000	3736	0.00	130.346	12.11	74.453
AA	BASE	25 yr post	12.14	123.581	128.500	0.0047	2488	12.17	55.559	12.19	56.186
Area 1B	BASE	25 yr post	0.00	126.000	127.500	0.0041	11663	12.00	63.530	0.00	105.962
Area 1D	BASE	25 yr post	12.11	124.347	128.500	-0.0049	3488	12.07	87.271	12.14	87.295
Area 3	BASE	25 yr post	12.10	126.658	128.500	-0.0050	3028	12.00	19.090	0.00	24.385
Area 4	BASE	25 yr post	0.00	126.000	128.500	-0.0049	1312	12.00	11.267	0.00	26.593
Area 5A	BASE	25 yr post	0.00	129.000	133.000	0.0048	28413	12.00	22.656	0.00	26.752
Area 5B	BASE	25 yr post	12.08	125.870	129.000	-0.0038	6402	12.03	30.959	11.95	37.250
Area 5C	BASE	25 yr post	12.14	123.681	128.500	0.0036	7680	0.00	210.190	12.17	55.559
Area 6	BASE	25 yr post	0.00	125.000	128.500	-0.0034	2356	12.00	19.732	0.00	209.038
AREA 9	BASE	25 yr post	0.00	127.000	129.500	0.0050	4662	0.00	0.000	0.01	0.742
Area1	BASE	25 yr post	0.00	127.000	129.000	-0.0041	4389	12.01	24.093	0.00	33.215
L	BASE	25 yr post	12.11	124.241	128.500	-0.0050	3620	12.14	87.295	12.17	88.485
Outfall	BASE	25 yr post	30.00	120.000	121.000	0.0001	0	12.67	78.248	0.00	0.000
POND	BASE	25 yr post	12.67	122.960	125.500	0.0029	171215	12.16	166.587	12.67	78.248