

Exercise 4 – Group Exercise

Given:

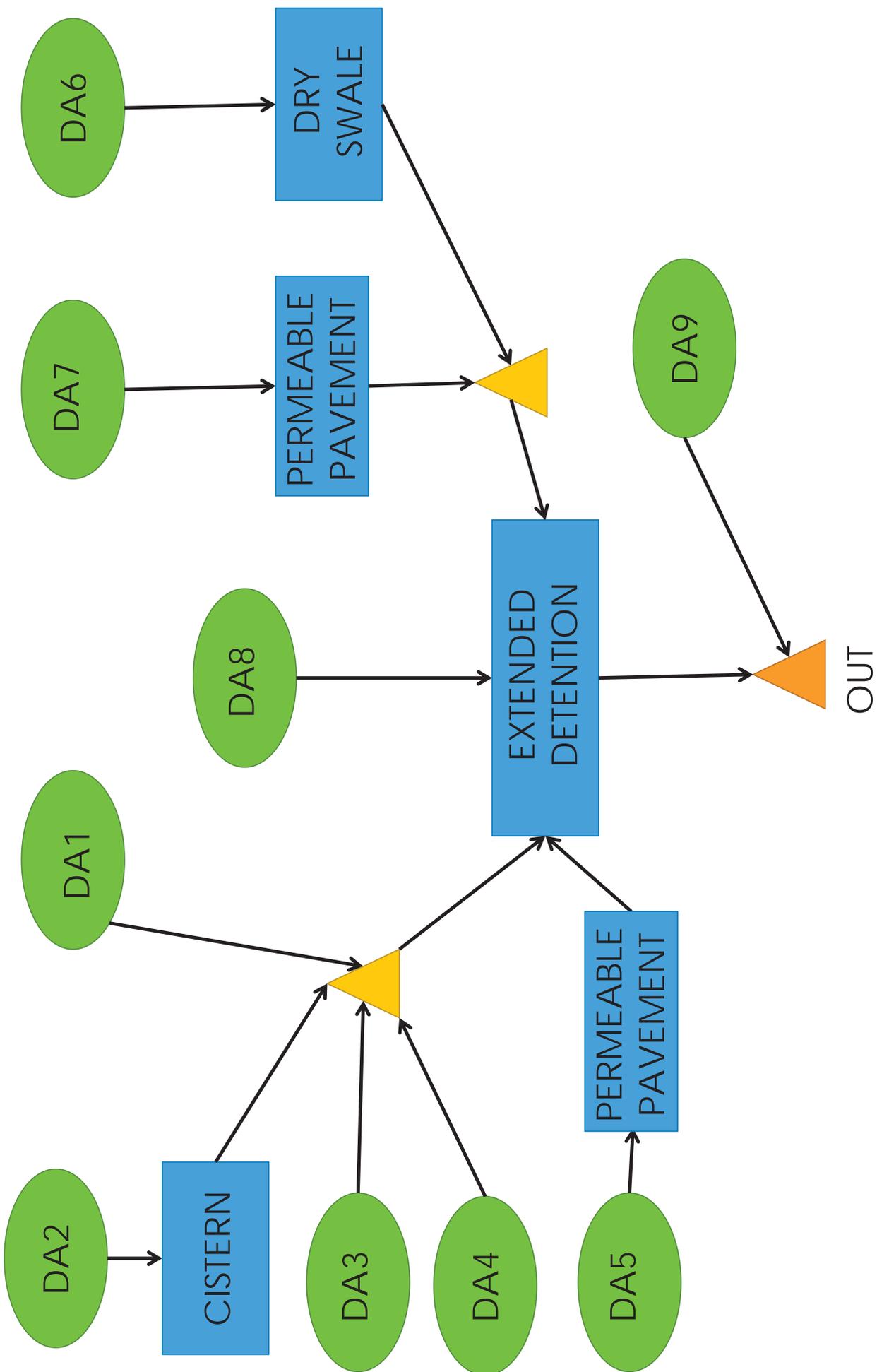
- ◆ The Drainage Schematic and Node Diagram Provided

Evaluate:

Can some drainage areas be grouped together? How?
How would you input the system into the Runoff Reduction Spreadsheet?
What is the total drainage area to BMP5 (Extended Detention)?
What is the T_v for BMP5 (reduced by upstream practices)?
Would the site satisfy the water quality requirements?

Helpful Hints:

- 1. Use the skills you developed earlier.*
- 2. Understand the difference between site area and drainage area data*
- 3. Understand there are many different ways of entering a site drainage network into the spreadsheet*
- 4. Use your time to do what you can. The instructor will walk through a solution following the group exercise.*



PROPOSED PROJECT AREA DATA:

PROJECT AREA	6.7 ACRES ±
OPEN SPACE (PROJECT LIMITS)	3.50 ACRES ±
MANAGED TURF (PROJECT LIMITS)	1.25 ACRES ±
IMPERVIOUS (PROJECT LIMITS)	1.95 ACRES ±
CURVE NUMBER	79

PROPOSED SITE DATA						
DA	AREA (AC)	TREATED IN DA?	TREATMENT	IMPERVIOUS AREA (AC)	OPEN SPACE (AC)	MANAGED TURF (AC)
1	0.9	NO	-	0.10	0.75	0.05
2	0.2	YES	CISTERN	0.20	0.00	0.00
3	0.3	NO	-	0.1	0.20	0.00
4	0.3	NO	-	0.15	0.07	0.05
5	0.3	YES	PERM. PAVEMENT	0.3	0.00	0.00
6	1.8	YES	DRY SWALE	0.65	0.65	0.50
7	0.2	YES	PERM. PAVEMENT	0.2	0.00	0.00
8	0.7	YES*	EXTENDED DETENTION	0.2	0.00	0.50
9	0.7	NO	-	0.05	0.46	0.15
TOTAL	5.4	-	-	1.95	2.13	1.25

NOTE: ASSUME 5 MINUTES FOR TIME OF CONCENTRATION FOR EACH WATERSHED. ASSUME ALL SOILS ARE "C."

*BIORETENTION IN DA 8 CAPTURES DRAINAGE FROM DA'S 1-7 AS WELL, THESE ADDITIONAL AREAS ARE NOT INCLUDED IN THE DA 8 AREA.

BMP LIST	
ID	TYPE
1	CISTERN
2	PERMEABLE PAVEMENT L1
3	DRY SWALE L2
4	PERMEABLE PAVEMENT L1
5	EXTENDED DETENTION L1

LEGEND:

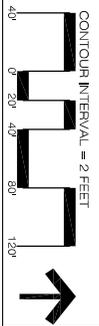
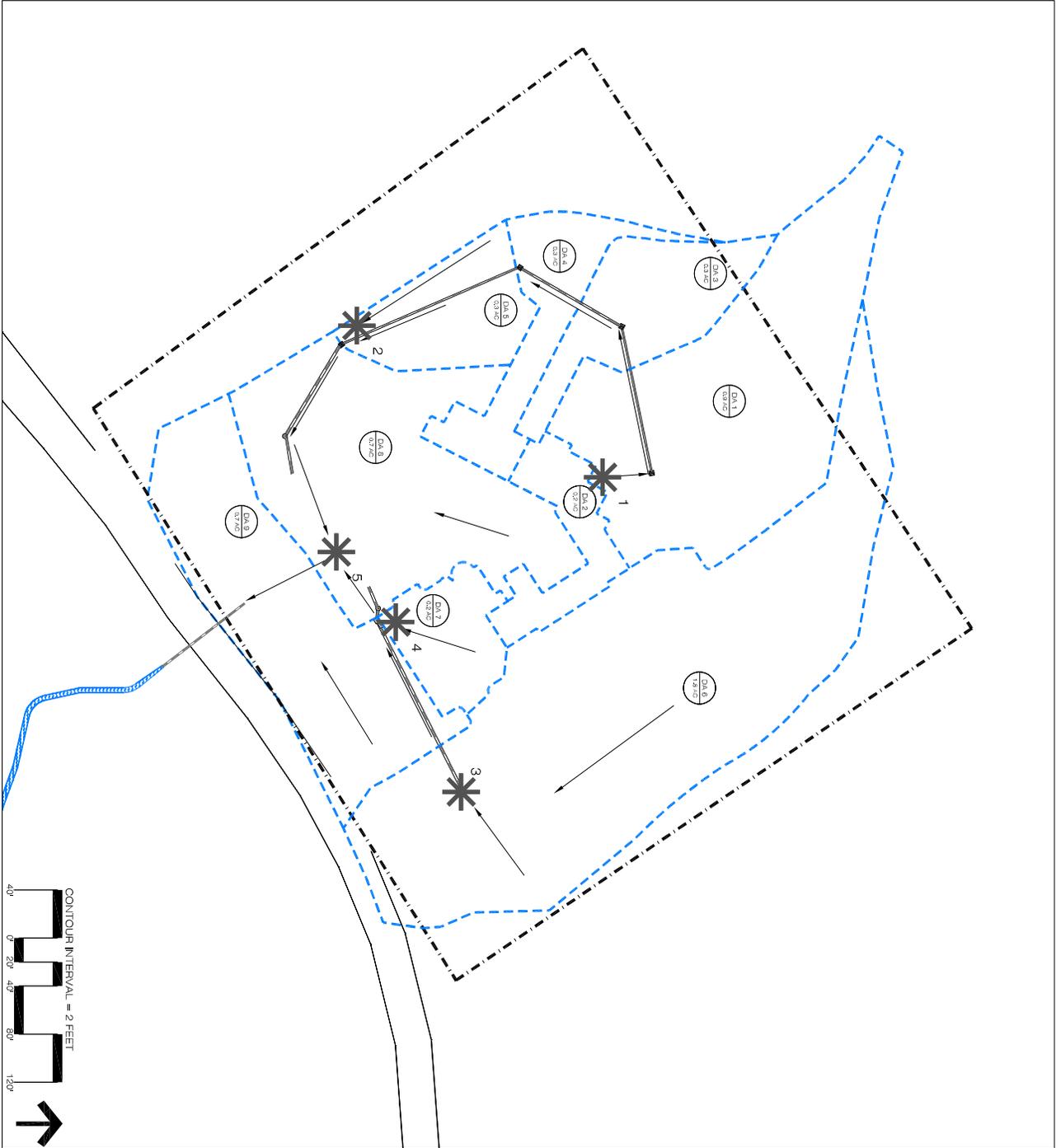
-  PROJECT LIMITS
-  PROPOSED DRAINAGE AREA
-  EXISTING CULVERT
-  PROPOSED SITE BMP

PROPOSED PROJECT AREA DATA:
 PROJECT AREA 6.7 ACRES ±
 OPEN SPACE (PROJECT LIMITS) 3.50 ACRES ±
 MANAGED TURF (PROJECT LIMITS) 1.25 ACRES ±
 IMPERVIOUS (PROJECT LIMITS) 1.95 ACRES ±
 CURVE NUMBER 79

PROPOSED SITE DATA					
DA	TREATMENT	IMPERVIOUS	CORN	MANAGED	
NO.	TYPE	AREA (AC)	SPACE (AC)	TURF (AC)	
1	NO	0.10	0.75	0.05	
2	YES	0.20	0.00	0.05	
3	NO	0.11	0.20	0.05	
4	NO	0.15	0.01	0.05	
5	YES	0.2	0.00	0.05	
6	YES	0.65	0.05	0.50	
7	YES	0.2	0.00	0.00	
8	YES	0.2	0.00	0.50	
9	NO	0.05	0.04	0.15	
TOTAL		1.95	2.13	1.25	

NOTES: 1. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS TO PREVENT STORMWATER FROM ENTERING THE CURB AND GUTTERS. 2. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 3. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 4. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 5. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 6. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 7. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 8. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS. 9. ALL IMPERVIOUS AREAS ARE TO BE COVERED WITH PERFORATED CURB AND GUTTERS.

ID	TYPE
1	OPEN
2	PERFORATED CURB AND GUTTERS
3	PERFORATED CURB AND GUTTERS
4	PERFORATED CURB AND GUTTERS
5	PERFORATED CURB AND GUTTERS



APRIL 2014			
SMALLTOWN, VIRGINIA DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES			
REVISIONS			
NO.	DESCRIPTION	BY	APPROVED
1	DESIGNED BY: K PROPST		
2	DRAFTED BY: K PROPST		
3	CHECKED BY: J SMITH		
4	APPROVED BY: THE STORMWATER PLANNING DIVISION		
STORMWATER PLANNING DIVISION		T&L COMMERCIAL DEVELOPMENT DRAINAGE SCHEMATIC	
DEQ TRAINING CASE STUDY			
SCALE 1"=40'			

