CE 3372 Water Systems Design
Exam 3
Fall 2016

Instructions:

1. Be sure to put your name on **each** sheet(including this one!).
2. Choose the closest answer for questions with multiple choice answers; show work if you desire partial credit (e.g. arithmetic mistakes cost less if you include your work).
3. Please fill out the peer review (last sheet) of the exam. Reserve about 8 minutes for the review.

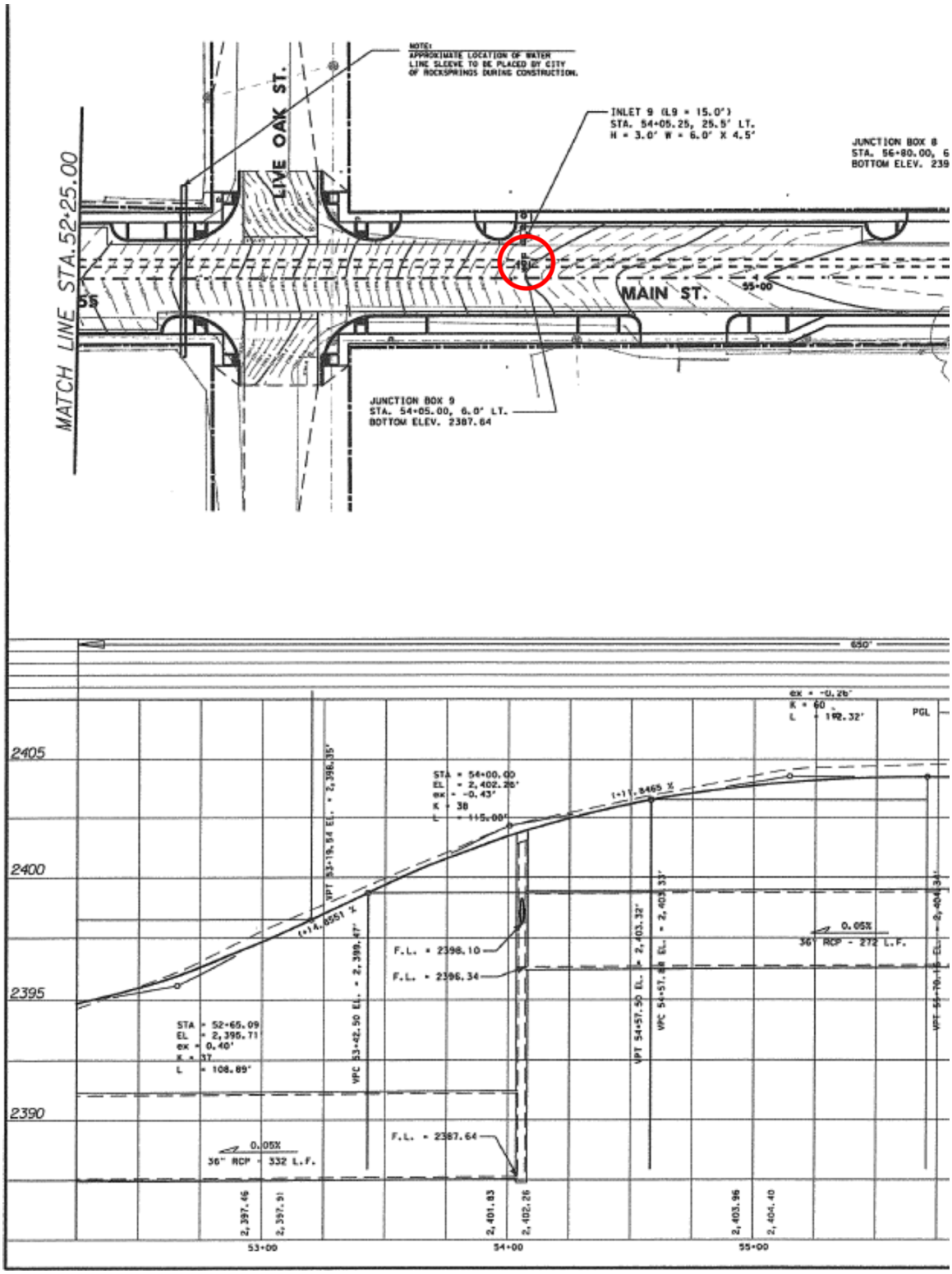


Figure 1: Plan and profile of a storm sewer system

1. The upper panel of the drawing in Figure 1 is the:
   a) profile view.
   b) elevation view.
   c) plan view.
   d) compliance view.
2. The design flow in Figure 1 from:
   a) Right-to-Left.
   b) Left-to-Right.
   c) Top-to-Bottom (downward).
   d) Bottom-to-Top (upward).
3. The red circle on Figure 1 locates a junction box. The **bottom** elevation of the **junction box** indicated on the drawing is:
   a) 2387.64 feet
   b) 2396.34 feet
   c) 2398.10 feet
   d) 2401.83 feet
   e) 2402.26 feet
   f) 2402.25 feet
   g) 2403.32 feet
4. The lower part of the drawing in Figure 1 shows conduits connecting to the junction box. The number (how many) of conduits depicted are:
   a) 5 conduit.
   b) 4 conduit.
   c) 3 conduits.
   d) 2 conduits.
   e) 1 conduits.
   f) 0 conduits.

5. The conduit that connects to the junction box from the left side of the drawing in Figure 1 has a diameter of:

   a) 48 inches.

   b) 36 inches.

   c) 30 inches.

   d) 24 inches.

   e) 18 inches.

   f) 12 inches.

6. The slope (in percent) of the storm sewer conduit that connects to the junction box from the left side of the drawing in Figure 1 is:

   a) 14.6551%

   b) 11.8465%

   c) 0.5%

   d) 0.3%.

   e) 0.08%

   f) 0.05%

   g) 0.03%.

7. The land surface elevation at the junction box on Figure 1 is:

   a) 2387.64 feet

   b) 2396.34 feet

   c) 2398.10 feet

   d) 2401.83 feet

   e) 2402.26 feet

   f) 2402.25 feet

   g) 2403.32 feet

8. Relative to the junction box, the flow-line (invert) elevation of the left-most sewer pipe on Figure 1 is:

   a) 2387.64 feet

   b) 2396.34 feet

   c) 2398.10 feet

   d) 2401.83 feet

   e) 2402.26 feet

   f) 2402.25 feet

   g) 2403.32 feet

9. Relative to the junction box, the flow-line (invert) elevation of the right-most sewer pipe on Figure 1 is:

   a) 2387.64 feet

   b) 2396.34 feet

   c) 2398.10 feet

   d) 2401.83 feet

   e) 2402.26 feet

   f) 2402.25 feet

   g) 2403.32 feet

10. Relative to the junction box, the soffit (crown) elevation of the left-most sewer pipe on Figure 1 is:

    a) 2387.64 feet

    b) 2390.34 feet

    c) 2398.10 feet

    d) 2401.83 feet

    e) 2402.26 feet

    f) 2402.25 feet

    g) 2403.32 feet

11. Relative to the junction box, the soffit (crown) elevation of the right-most sewer pipe on Figure 1 is:

    a) 2387.64 feet

    b) 2396.34 feet

    c) 2398.10 feet

    d) 2399.34 feet

    e) 2402.26 feet

    f) 2402.25 feet

    g) 2403.32 feet

Figure 2 is a schematic of a water distribution network. The blue arrows represent demand at the nodes. The grey arrows represent discharge in the adjacent pipes. The red arrow represents flow entering the network from some external source.

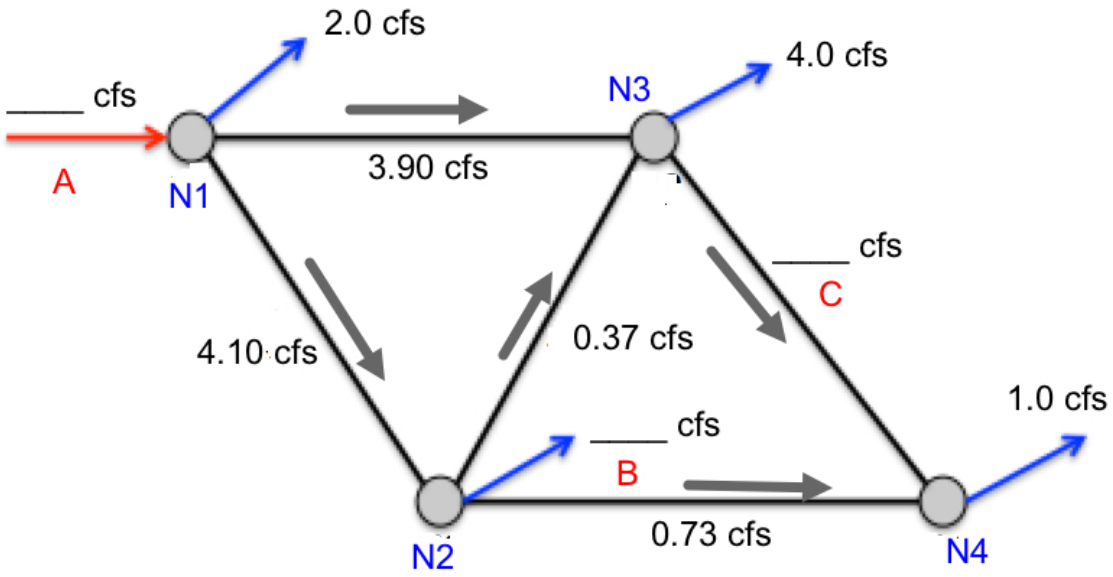


Figure 2: Schematic of a distribution network

12. The number of nodes (how many) in the diagram on Figure 2 is:
    a) 5
    b) 4
    c) 3
    d) 2
    e) 1
13. The number of pipes (how many) in the diagram on Figure 2 is:
    a) 5
    b) 4
    c) 3
    d) 2
    e) 1
14. The number of unique closed loops (how many) in the diagram on Figure 2 is:
    a) 5
    b) 4
    c) 3
    d) 2
    e) 1
15. The discharge in the pipe that joins nodes N1 and N3 on Figure 2 is:
    a) 0.37 cfs.
    b) 0.73.cfs.
    c) 1.0 cfs.
    d) 3.0 cfs.
    e) 4.0 cfs.
    f) 4.10 cfs
    g) 10.0 cfs

16. The discharge in the pipe that joins nodes N1 and N2 on Figure 2 is:
    a) 0.73.cfs.
    b) 1.0 cfs.
    c) 2.0 cfs.
    d) 3.0 cfs.
    e) 4.0 cfs.
    f) 4.10 cfs
    g) 10.0 cfs
17. The discharge in the pipe that joins nodes N2 and N4 on Figure 2 is:
    a) 0.27 cfs.
    b) 0.37 cfs.
    c) 0.73.cfs.
    d) 1.0 cfs.
    e) 3.0 cfs.
    f) 4.10 cfs
    g) 10.0 cfs
18. The discharge in the pipe that joins nodes N3 and N4 on Figure 2 is:
    a) 0.27 cfs.
    b) 0.37 cfs.
    c) 0.73.cfs.
    d) 1.0 cfs.
    e) 2.0 cfs.
    f) 3.0 cfs.

19. The demand at node N2 on Figure 2 is:

    a) 1.0 cfs.

    b) 2.0 cfs.

    c) 3.0 cfs.

    d) 4.0 cfs.

    e) 10.0 cfs

20. The discharge in the (RED) supply pipe that injects water at node N1 on Figure 2 is:

    a) 1.0 cfs.

    b) 2.0 cfs.

    c) 3.0 cfs.

    d) 4.0 cfs.

    e) 10.0 cfs

Each pipe in Figure 3 is a circular conduit, with a Manning's roughness coefficient of $n = 0.01$. The pipeline system is laid on a slope of 1-percent ($S_0 = 0.01$). The invert elevation at the upstream end of the system is 98.53 ft above MSL. Contributing inflows between each pipe are shown, the pipes connect in appropriate vault boxes.

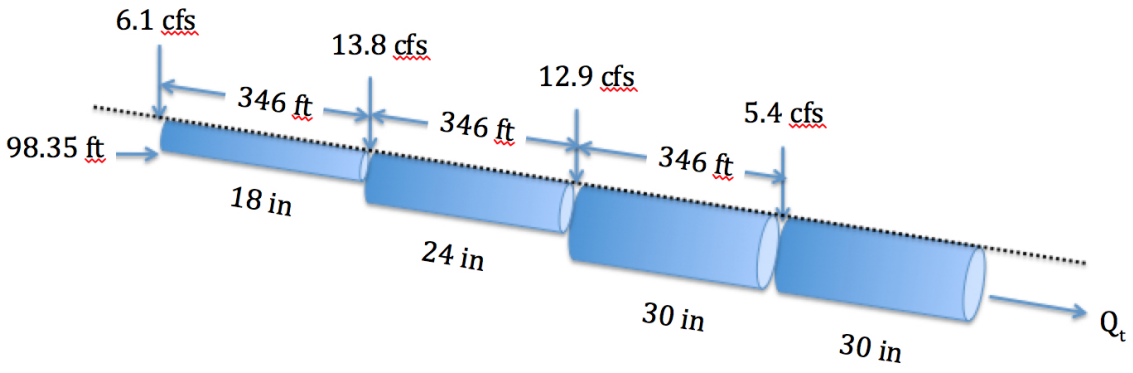
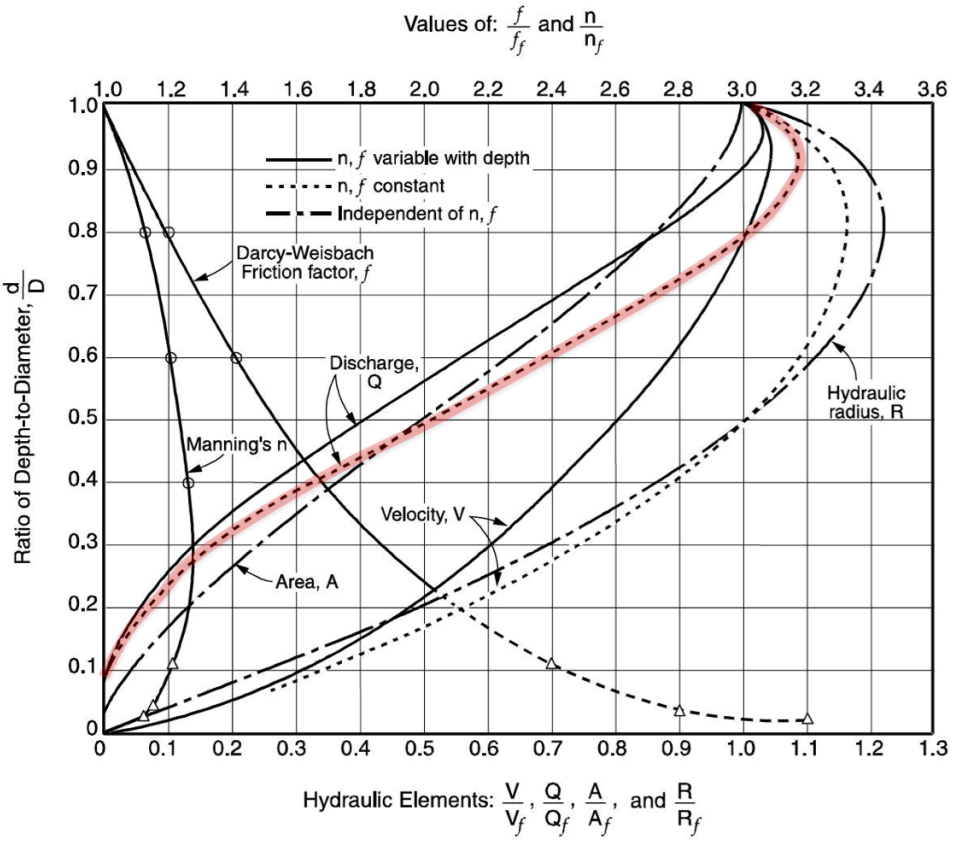


Figure 3: Schematic of a sewer system

21. The discharge in the 18-inch pipe in Figure 3 is:
    a) 38.2 cfs.
    b) 32.8 cfs.
    c) 19.9 cfs.
    d) 6.1 cfs.
22. The discharge in the 24-inch pipe in Figure 3 is:
    a) 38.2 cfs.
    b) 32.8 cfs.
    c) 19.9 cfs.
    d) 6.1 cfs.
23. The discharge in the left-most 30-inch pipe in Figure 3 is:
    a) 38.2 cfs.
    b) 32.8 cfs.
    c) 19.9 cfs.
    d) 6.1 cfs.
24. The discharge in the right-most 30-inch pipe in Figure 3 is:
    a) 38.2 cfs.
    b) 32.8 cfs.
    c) 19.9 cfs.
    d) 6.1 cfs.

25. The depth of flow in the 18-inch pipe in Figure 3 is closest to:
    a) 0.35 ft.
    b) 0.45 ft.
    c) 0.69 ft.
    d) 0.89 ft.
26. The depth of flow in the 24-inch pipe in Figure 3 is closest to:
    a) 0.45 ft.
    b) 0.69 ft.
    c) 0.89 ft.
    d) 1.14 ft.

♦ **HYDRAULIC-ELEMENTS GRAPH FOR CIRCULAR SEWERS**



♦ *Design and Construction of Sanitary and Storm Sewers*, Water Pollution Control Federation and American Society of Civil Engineers, 1970.

27. The relatively hilly light industrial district drainage area that contributes to the inlet that drains into junction between the 18-inch and 24-inch pipe has a time of concentration of 30 minutes. The rainfall depth for a 10-percent chance, 1/2 hour storm is 2.2 inches. If the flow contribution to the 24-inch pipe is the result of a 10-percent chance storm, estimate the size, in acres, of the contributing drainage area.

Table 1 Runoff Coefficients for the Rational Method

	FLAT	ROLLING	HILLY
Pavement & Roofs	**0.90**	**0.90**	**0.90**
Earth Shoulders	0.50	0.50	0.50
Drives & Walks	0.75	0.80	**0.85**
Gravel Pavement	**0.85**	**0.85**	**0.85**
City Business Areas	0.80	**0.85**	**0.85**
Apartment Dwelling Areas	0.50	0.60	0.70
Light Residential: 1 to 3 units/acre	0.35	0.40	0.45
Normal Residential: 3 to 6 units/acre	0.50	0.55	0.60
Dense Residential: 6 to 15 units/acre	0.70	0.75	0.80
Lawns	0.17	0.22	0.35
Grass Shoulders	0.25	0.25	0.25
Side Slopes, Earth	0.60	0.60	0.60
Side Slopes, Turf	0.30	0.30	0.30
Median Areas, Turf	0.25	0.30	0.30
Cultivated Land, Clay & Loam	0.50	0.55	0.60
Cultivated Land, Sand & Gravel	0.25	0.30	0.35
Industrial Areas, Light	0.50	0.70	0.80
Industrial Areas, Heavy	0.60	0.80	**0.90**
Parks & Cemeteries	0.10	0.15	0.25
Playgrounds	0.20	0.25	0.30
Woodland & Forests	0.10	0.15	0.20
Meadows & Pasture Land	0.25	0.30	0.35
Unimproved Areas	0.10	0.20	0.30

Note:

- ***Impervious surfaces in bold***
- *Rolling = ground slope between 2 percent to 10 percent*
- *Hilly = ground slope greater than 10 percent*

Figure 4 is a plot of variable cumulative inflow volume versus time for a location and the equivalent constant rate inflow for the same location. Table 1 is a list of time and cumulative volume inflow (same as the graph). A flow-equalization storage tank volume is to be determined.

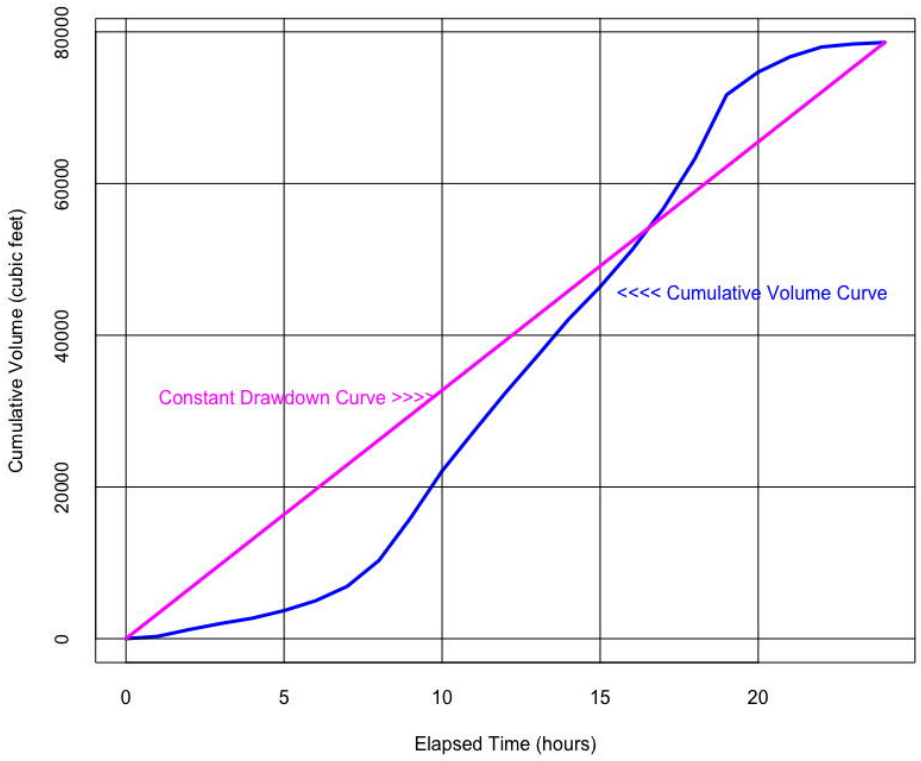


Figure 4: Variable and Constant Draft Curve for Flow Equalization

28. The cumulative volume of inflow (or draft) every 24 hours indicated by Figure 4 and/or Table 1 is

    a) 80,000 ft^3

    b) 78,600 ft^3

    c) 63,300 ft^3

    d) 32,400 ft^3

    e) 19,650 ft^3

    f) 13,100 ft^3

Table 1: Variable Draft Table for Flow Equalization

Hour	Cum. Vol. (ft^3)	Hour	Cum. Vol. (ft^3)
0	0	–	–
1	300	13	37,200
2	1,200	14	42,100
3	2,000	15	46,400
4	2,700	16	51,200
5	3,700	17	56,700
6	5,000	18	63,300
7	6,900	19	71,700
8	10,300	20	74,700
9	15,900	21	76,700
10	22,100	22	78,000
11	27,300	23	78,400
12	32,400	24	78,600

29. The flow rate (cubic feet per hour) indicated by the constant drawdown curve indicated by Figure 4 and/or Table 1 is

    a) 1211 ft^3/hr

    b) 1232 ft^3/hr

    c) 2425 ft^3/hr

    d) 3275 ft^3/hr

    e) 20,000 ft^3/hr

    f) 40,000 ft^3/hr

30. The largest maximum absolute deviation between the constant drawdown line and the variable inflow curve indicated by Figure 4 and/or Table 1 is:

    a) 18,600 ft^3

    b) 17,905 ft^3

    c) 16,025 ft^3

    d) 15,900 ft^3

    e) 14,650 ft^3

    f) 13,575 ft^3

31. The second largest maximum absolute deviation between the constant drawdown line and the variable inflow curve indicated by Figure 4 and/or Table 1 is:

    a) 18,600 ft^3

    b) 17,905 ft^3

    c) 16,025 ft^3

    d) 15,900 ft^3

    e) 14,650 ft^3

    f) 13,575 ft^3

32. The recommended flow equalization storage volume indicated by Figure 4 and/or Table 1 is:

    a) 51,200 ft^3

    b) 46,400 ft^3

    c) 42,100 ft^3

    d) 37,200 ft^3

    e) 32,400 ft^3

    f) 31,925 ft^3

33. Attached are a SWMM input file and SWMM summary file for a particular sewer system. Using these files, draw sketch of the sewer system, indicate on your sketch where flow enters the system, where it exits the system, and the magnitude of flow as indicated in the files.

    (a) Interpret the files and sketch a plan view of the system. Label the nodes and links using the naming convention in the file(s); indicate flow directions on the sketch.

(b) Interpret the files and sketch an elevation view of the system. Use the node and link naming conventions in the file(s). Label the sewer diameters, the invert elevations at each node, and the water surface elevations.

(c) Which drawing below is representative of the downstream (outfall) boundary condition in the SWMM model?

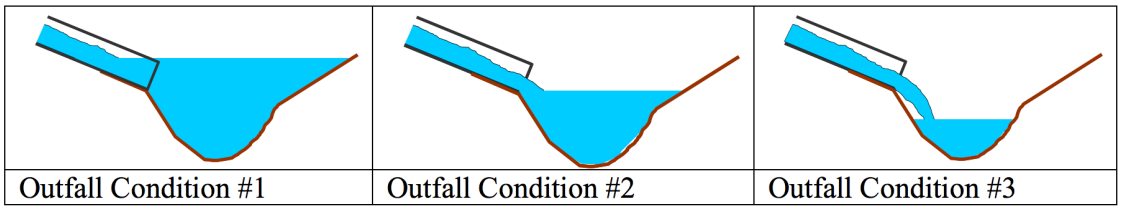


Figure 5: Conceptual downstream boundary conditions

```
EXAM #2  SWMM INPUT FILE (.inp)

[TITLE]

 [OPTIONS]
 FLOW_UNITS           MGD
 INFILTRATION         HORTON
 FLOW_ROUTING         DYNWAVE
 START_DATE           04/08/2010
 START_TIME           00:00:00
 REPORT_START_DATE    04/08/2010
 REPORT_START_TIME    00:00:00
 END_DATE             04/09/2010
 END_TIME             00:00:00
 SWEEP_START          01/01
 SWEEP_END            12/31
 DRY_DAYS             0
 REPORT_STEP          00:15:00
 WET_STEP             00:15:00
 DRY_STEP             01:00:00
 ROUTING_STEP         0.5
 ALLOW_PONDING        NO
 INERTIAL_DAMPING     NONE
 VARIABLE_STEP        0.75
 LENGTHENING_STEP     0
 MIN_SURFAREA         0
 NORMAL_FLOW_LIMITED  FROUDE
 SKIP_STEADY_STATE    NO
 FORCE_MAIN_EQUATION  H-W
 LINK_OFFSETS         DEPTH
 MIN_SLOPE            0

 [EVAPORATION]
 ;;Type       Parameters
 ;;---------- ----------
 CONSTANT     0.0

 [JUNCTIONS]
 ;;               Invert     Max.       Init.      Surcharge  Ponded
 ;;Name           Elev.      Depth      Depth      Depth      Area
 ;;-------------- ---------- ---------- ---------- ---------- ----------
 1                0.075      0          5.92       0          0
 2                0.15       0          5.85       0          0
```

```
3                .225       0          5.77       0          0
4                .3         0          5.70       0          0
5                .375       0          5.62       0          0
6                .45        0          5.55       0          0

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
7                0          FIXED      6                NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Max.
;;Name           Node             Node             Length     N          Offset     Offset     Flow       Flow
;;-------------- ---------------- ------ ---------- ---------- ---------- ---------- ---------- ---------- ----------
1                6                5                15         0.01       0          0          0          0
2                5                4                15         0.01       0          0          0          0
3                4                3                15         0.01       0          0          0          0
4                3                2                15         0.01       0          0          0          0
5                2                1                15         0.01       0          0          0          0
6                1                7                15         0.01       0          0          0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
1                RECT_CLOSED  10               14         0          0          1
2                RECT_CLOSED  10               14         0          0          1
3                RECT_CLOSED  10               14         0          0          1
4                RECT_CLOSED  10               14         0          0          1
5                RECT_CLOSED  10               14         0          0          1
6                RECT_CLOSED  14               10         0          0          1

[LOSSES]
;;Link           Inlet      Outlet     Average    Flap Gate
;;-------------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node           Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
6                FLOW             ""               FLOW     1.0      1.0      35.0

[REPORT]
```

```
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
1                -584.757           8436.268
2                466.491            8423.127
3                1741.130           8396.846
4                2897.503           8383.706
5                3843.627           8357.424
6                4618.922           8291.721
7                -1517.740          8423.127

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
1                3896.189           8357.424


EXAM #2 SWMM SUMMARY REPORT

 EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.014)
   ------------------------------------------------------------


   ***********************************************************
   NOTE: The summary statistics displayed in this report are
   based on results found at every computational time step,
   not just on results from each reporting time step.
   ***********************************************************

   ***************
```

Analysis Options
****
Flow Units ..... MGD
Process Models:
  Rainfall/Runoff ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Water Quality ..... NO
Flow Routing Method ..... DYNWAVE
Starting Date APR-08-2010 00:00:00
Ending Date APR-09-2010 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:15:00
Routing Time Step ..... 0.50 sec

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	107.407	35.000
External Outflow	107.407	35.000
Internal Outflow	0.000	0.000
Evaporation Loss	0.000	0.000
Initial Stored Volume	0.159	0.052
Final Stored Volume	0.159	0.052
Continuity Error (%)	0.000	

****
Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
All links are stable.

****
Routing Time Step Summary
****
Minimum Time Step : 0.50 sec
Average Time Step : 0.50 sec
Maximum Time Step : 0.50 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min
1	JUNCTION	5.93	6.23	6.31	0 00:00
2	JUNCTION	5.85	6.20	6.35	0 00:00
3	JUNCTION	5.78	6.11	6.34	0 00:00
4	JUNCTION	5.70	6.04	6.34	0 00:00
5	JUNCTION	5.63	5.95	6.33	0 00:00
6	JUNCTION	5.55	5.91	6.36	0 00:00
7	OUTFALL	6.00	6.00	6.00	0 00:00

****
Node InFlow Summary
****

Node	Type	Maximum Lateral Inflow MGD	Maximum Total Inflow MGD	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal
1	JUNCTION	0.000	76.598	0 00:00	0.000	34.997
2	JUNCTION	0.000	73.277	0 00:00	0.000	34.998
3	JUNCTION	0.000	72.687	0 00:00	0.000	34.998

4	JUNCTION	0.000	70.795	0	00:00	0.000	34.997
5	JUNCTION	0.000	49.643	0	00:00	0.000	34.997
6	JUNCTION	35.000	35.000	0	00:00	34.998	34.998
7	OUTFALL	0.000	72.431	0	00:00	0.000	34.997

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq. Pcnt.	Avg. Flow MGD	Max. Flow MGD	Total Volume 10^6 gal
7	99.99	35.002	72.431	34.997
System	99.99	35.002	72.431	34.997

****
Link Flow Summary
****

Link	Type	Maximum |Flow| MGD	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Max/ Full Flow	Max/ Full Depth

1	CONDUIT	49.643	0	00:00	1.00	0.06	0.59
2	CONDUIT	70.795	0	00:00	1.39	0.09	0.60
3	CONDUIT	72.687	0	00:00	1.41	0.09	0.60
4	CONDUIT	73.277	0	00:00	1.40	0.09	0.61
5	CONDUIT	76.598	0	00:00	1.44	0.10	0.62
6	CONDUIT	72.431	0	00:00	1.88	0.09	0.44

****
Flow Classification Summary
****

	Adjusted	--- Fraction of Time in Flow Class ----						Avg.	Avg.
	/Actual		Up	Down	Sub	Sup	Up	Down	Froude	Flow
Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Number	Change
1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.0000
2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.0000
3	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.0000
4	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.0000
5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.0000
6	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.07	0.0000

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Apr 08 03:09:24 2010
Analysis ended on: Thu Apr 08 03:09:26 2010

Peer Review for CE 3372-2016-3

1) Enter your name and your team mates names. 2) Enter overall project contribution. 3) Select a score (4-1) for each category; use the descriptive prompts to select a score. 4) Enter a grade (A-F) you would assign to each team member. 5) Provide a reason why you selecrted a particular grade. 6) Include any additional written comments below the tabular entries

1) YOUR NAME ==>>>		4	3	2	1	Score	Overall Project Contribution (%)	Grade You Would Assign	Why:
	Communications:	Team member communicated (email,text,phone, face-to-face) same-day.	Team member communicated most times within 1 day	Team member communicated most times within 3 day	Team member did not communicate or did not respond in less than 4				
	Team Meetings:	Team member set-up and attended team meetings	Team member attended most team meetings	Team member attended (1) team meetings	Team member did not attend any team meetings				
	Design/Analysis:	Team member performed design/analysis in supervisory role	Team member performed design/analysis. Work was acceptable as-is	Team member performed some design/analysis; other members had to repair	Team member performed NO design/analysis				
	Copy/Edit Proofreading:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				
	Scheduling:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				

2) TEAM MEMBER ==>>>		4	3	2	1	Score			Why:
	Communications:	Team member communicated (email,text,phone, face-to-face) same-day.	Team member communicated most times within 1 day	Team member communicated most times within 3 day	Team member did not communicate or did not respond in less than 4				
	Team Meetings:	Team member set-up and attended team meetings	Team member attended most team meetings	Team member attended (1) team meetings	Team member did not attend any team meetings				
	Design/Analysis:	Team member performed design/analysis in supervisory role	Team member performed design/analysis. Work was acceptable as-is	Team member performed some design/analysis; other members had to repair	Team member performed NO design/analysis				
	Copy/Edit Proofreading:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				
	Scheduling:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				

3) TEAM MEMBER ==>>>		4	3	2	1	Score			Why:
	Communications:	Team member communicated (email,text,phone, face-to-face) same-day.	Team member communicated most times within 1 day	Team member communicated most times within 3 day	Team member did not communicate or did not respond in less than 4				
	Team Meetings:	Team member set-up and attended team meetings	Team member attended most team meetings	Team member attended (1) team meetings	Team member did not attend any team meetings				
	Design/Analysis:	Team member performed design/analysis in supervisory role	Team member performed design/analysis. Work was acceptable as-is	Team member performed some design/analysis; other members had to repair	Team member performed NO design/analysis				
	Copy/Edit Proofreading:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				
	Scheduling:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				

4) TEAM MEMBER ==>>>		4	3	2	1	Score			Why:
	Communications:	Team member communicated (email,text,phone, face-to-face) same-day.	Team member communicated most times within 1 day	Team member communicated most times within 3 day	Team member did not communicate or did not respond in less than 4				
	Team Meetings:	Team member set-up and attended team meetings	Team member attended most team meetings	Team member attended (1) team meetings	Team member did not attend any team meetings				
	Design/Analysis:	Team member performed design/analysis in supervisory role	Team member performed design/analysis. Work was acceptable as-is	Team member performed some design/analysis; other members had to repair	Team member performed NO design/analysis				
	Copy/Edit Proofreading:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				
	Scheduling:	Team member set the schedule, and turned in the work for the team	Team member produced products according to the team's schedule	Team member was occasionally late with products.	Team member was late or did not produce assigned products				

Additional Comments: