Continuing Education Course #174
Design of Infiltration
& Extended Detention Basins

1. What removal rate for Total Suspended Solids (TSS) does the NJDEP assign to infiltration basins?
- a. 50%.
- b. 60%.
- c. 80%.
- d. 100%.

2. What is the minimum distance that the bottom of the sand layer in an infiltration basin should be from the groundwater and bedrock?
- a. 2 feet from groundwater and 2 feet from bedrock.
- b. 2 feet from groundwater and 4 feet from bedrock.
- c. 4 feet from groundwater and 2 feet from bedrock.
- d. 4 feet from groundwater and 4 feet from bedrock.

3. Why is it important to construct the basin bottom as nearly as level as possible?
- a. To minimize the amount of earthwork required for the installation.
- b. To prevent compacting the soil.
- c. To maximize the contact area and promote percolation.
- d. To allow for a safe overflow during larger storms.

4. All infiltration basins should be designed to drain fully within 72 hours. If the total inflow into an infiltration basin is 12,500 CF and the outflow (due to percolation) is 0.2 CFS, will the basin drain within the required 72 hours?
- a. Yes.
- b. No.

5. The NJDEP requires that all major developments in NJ recharge stormwater back into the ground in compliance with which of the following?
- a. 100% of the site's average annual pre-developed groundwater recharge volume be maintained after development.
- b. 100% of the difference between the site's pre-development and post-development 2 year runoff volumes be recharged.
- c. Either of the above.
- d. Both of the above.

6. If the NJDEP recharge model shows that insufficient recharge is being provided in the infiltration structure, which of the following can be employed?
- a. Make the bottom area of the infiltration basin larger.
- b. Make the basin deeper.
- c. Direct more impervious surfaces into the basin
- d. All of the above.

7. If the underlying soil has insufficient permeability than an infiltration basin cannot be used.
- a. True.
- b. False.

8. Infiltration basins should not be used in highly permeable soils where there is a significant risk of basement flooding or seepage into septic systems or other subsurface structures.
- a. True.
- b. False.

9. Why should infiltration basins not be used in karst topography?
- a. Because of the potential of them becoming silted in.
- b. Because of the potential for sinkhole formation.
- c. Because they will not provide the required recharge in these areas.
- d. Because they will not provide the required water quality control in these areas.

10. Why should heavy equipment be kept out of the infiltration basin during construction?
- a. To prevent compacting the soil below the basin bottom.
- b. To keep the basin bottom flat.
- c. To reduce the construction cost.
- d. All of the above.

11. Infiltration trenches should be considered lieu of basins in which of the following situations?
- a. In Karst topography.
- b. In sloping terrain.
- c. In cold climates.
- d. In arid climates.

12. Which of the following challenges to infiltration basins can a cold climate present?
- a. The basin can become inoperable during the winter months when the surface is frozen.
- b. The quantity of snowmelt in the spring may be so great as to overwhelm the system.
- c. The pollutant load can have a high concentration of salts and chlorides.
- d. All of the above.

13. Which of the following reduces the remaining moisture in the snowpack ?
- a. Sublimation.
- b. Snow hauling.
- c. Winter snow melt.
- d. All of the above.

14. An infiltration basin in a cold climate must treat all of the runoff from the spring snowmelt within a 24 hour period.
- a. True.
- b. False.

15. What is the relationship between soil moisture content and the amount of snowmelt that becomes runoff?
- a. There is no relationship.
- b. Runoff increases as soil moisture content increases.
- c. Runoff increases as soil moisture content decreases.
- d. There is a complex relationship that is affected by climate, photoperiod, and the amount of snow.

16. Why are infiltration basins recommended in arid climates?
- a. Because they promote recharge.
- b. Because they provide aesthetic benefits.

○ c. Because they are inexpensive compared to other systems.
○ d. Because they provide protection against catastrophic flood events.

17. Infiltration basins suffer the highest rate of failure of any commonly-employed stormwater management practice
○ a. True.
○ b. False.

18. How often should the bottom of an infiltration basin be scraped and have the sediment removed.
○ a. 4 times a year.
○ b. Annually.
○ c. Every five years (unless inspections indicate that it must be done more often).
○ d. Never.

19. How long does an extended detention basin need to store 10% of the runoff to achieve the NJDEP-adopted removal rate of 60%?
○ a. 1 hour.
○ b. 12 hours.
○ c. 24 hours.
○ d. 72 hours.

20. Extended detention basins are sometimes planted with native wetland herbaceous and woody species.
○ a. True.
○ b. False.

21. Which of the following conditions might require a safety bench and/or a fence in an extended detention basin?
○ a. When the maximum water depth is greater than 3 feet.
○ b. When it has a forebay.
○ c. When it is planted with wetlands plants.
○ d. They are never needed.

22. How can adding a forebay to a conventional detention basin provide water quality benefits?
○ a. By trapping sediments.
○ b. By recharging water into the ground.
○ c. By providing for pedestrian safety.
○ d. All of the above.

23. Which of the following is not applicable to retro-fitting a conventional detention basin to an extended detention basin?
○ a. Adding a forebay.
○ b. Adding a safety bench.
○ c. Replacing a straight concrete low-flow channel with a more curvilinear gravel low-flow channel.
○ d. Reconfiguring the outlet structure.

24. Infiltration basins are more efficient than extended detention basins at pollutant removal.
○ a. True.
○ b. False.

25. Infiltration basins can be used in a wider variety of situations than can extended detention basins.
○ a. True.
○ b. False.