Tinker's Creek WATERSHED PARTNERS
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LA CES Landscape Architecture Continuing Education System™

Webinar #2 Quiz – LA CES 2 CEUs

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In order to receive your CEU certificate, you must:

1) Have a 75% passing rate on this quiz. Please answer all questions
2) Sign the quiz prior to emailing responses to Kate Chapel kchapel@tinkerscreekwatershed.org

Questions for Reducing Erosion in Yellow Creek with Storm Water Management and Stream REstoration ; Presented by Bob Hawley, Ph.D, P.E and David Koontz, P.E., S.I.

Please circle your answer

1) How are stormwater and stream erosion related?
    a. Stormwater and stream erosion are not related in any way
    b. Stormwater may contribute to stream erosion sometimes
    c. Stormwater will always contribute to stream erosion
    d. None of the above

2) How big is the Yellow Creek watershed?
    a. Tiny (just a few streams with < 1 sq.mi. of total drainage area)
    b. Decent size (~100 miles of streams with a total drainage area of ~31.4 sq.mi.)
    c. Very large (it's one of Ohio's major creeks with a watershed of several hundred sq.mi.)
    d. None of the above

3) What are some strategies to help reduce stream erosion?
    a. Detention basin retrofits
    b. Bankfull wetlands
    c. Installing new stormwater controls (amended swales, new detention, etc.)
    d. Stream restoration
    e. All of the above

4) Depressed areas in floodplains that support wetland vegetation and are hydraulically connected to an adjacent stream during large flows
    a. Are sometimes referred to as bankfull wetlands
    b. Can sometimes support off-channel habitat for fish
    c. Make good habitat for phragmites (common reed)
    d. All of the above
    e. (a) and (b) only

5) Wetlands dominated by phragmites (common reed)
    a. Are likely to support a wide diversity of native plants and animals
    b. Are definitely going to be high quality wetlands (Ohio Category 3)
    c. Could likely benefit from more fluctuating water levels
    d. All of the above
6) Stream bank erosion
    a. Is a natural process
    b. Can be exacerbated by inadequately managed stormwater runoff

c. Can be mitigated by stream restoration
d. All of the above

7) On a chronically unstable stream network with many miles of eroding banks
   a. Stream restoration should always be your first priority
   b. Stormwater controls should never be your first priority
   c. Stakeholder input, site constraints, and funding are not important
   d. Sometimes the most optimum solution involves a combination of stormwater controls and stream restoration
8) Stream restoration
   a. Is always easy and inexpensive
   b. Never involves permitting
   c. Can improve habitat and water quality
   d. None of the above
9) Stormwater controls
   a. Can improve stream habitat and water quality
   b. Can never be optimized to reduce stream erosion
   c. Are never cost effective
   d. None of the above
10) Investments and management decisions by a stormwater district should consider input from
   a. Rate payers and advisory board members
   b. Regulators and environmental groups
   c. Developers and industry groups
   d. All of the above

Questions for Modified BMPs for Nuisance in Toledo; Presented by Andy Stepnick, P.E.

Please circle your answer

1. The suggested "sweet spot" for perforated underdrain is located vertically:
   a. Below the water line.
   b. Below the water line but above the gas line.
   c. Below the gas line but above the water line.
   d. It will vary because the pipe is at a slope.

2. The suggested self-cleaning velocity of the bioretention underdrain, per the Ohio Rainwater Manual is:
   a. Between 0.5 – 1.4 FPS as per guidance for agricultural drain tile.
   b. 2 FPS, which is the same as what Toledo uses for sanitary pipe design.
   c. 3 FPS, which is the same as what Toledo uses for storm pipe design.
   d. N/A

3. Filter Fabric is important in the bioretention profile because:
   a. Filter Fabric keeps dirt from migrating into the stone.
   b. Filter Fabric traps geothermal heat keep the underdrain warm.
   c. Filter Fabric was removed from the 2014 bioretention guidance updates in order to help dirt vertically migrate into the stone.
   d. Filter Fabric was removed from the 2014 bioretention guidance updates in favor of a new filter layer spec between the soil mix and the stone.

4. For rock around the underdrain, the presenter prefers:
   a. To use #7 stone in place of the #57 stone.
   b. To use #57 stone in place of the #7 stone.
   c. To use pure #5 stone instead of the #57 blend of #5 - #7

5. To modify the height of the standard bioretention cross section, which component does the presenter alter?
   a. The rock around the pipe is removed and the bioretention soil is the only component used.
   b. The depth of the bioretention soil is reduced.

c. The filter layer is removed.
d. None of the above.

6 The presenter sized his projects according to the following:
a. Sized to handle the exact drainage capacity as would be a curb and gutter street.
b. Sized to store the 100 year flood and thereby greatly decrease the loading on the grey infrastructure system in the location of the project and even decrease the Q100 in the receiving stream.
c. Sized to handle approximately the first flush, to supplement the existing drainage system. Flows greater than the capacity of the BMPs will bypass them and flow according to the pre-existing drainage route.

7. It is recommended to locate the perforated drainage tile:
a. Outside the drip line of existing trees.
b. No closer than 5 feet from the outside diameter of the tree at the base of the trunk.
c. No closer than 10 feet from the center of the trunk as a rule.
d. It doesn't matter how close to a tree it is installed because the pipe is perforated.

8. A sinkhole from vertical scour is most likely to arise:
a. Shortly after construction, at the edge of the infiltration bed, due to the filter layer not having been compacted against the side of the excavation.
b. Shortly after construction, directly over the underdrain, due to lack of vegetation.
c. During construction, where infiltration beds have become choked with construction sediment, due to decreased flow.

9. Re-seed the disturbed construction areas:
a. All at once, in order to get the most consistent turf grass throughout.
b. Seed all of the areas except the infiltration bed, and save the bed for last so that any fines that have been collected can be removed one last time before seeding.

10. If an infiltration bed drains slow, the culprit is most likely:
a. A clogged underdrain.
b. A clogged filter layer between the bioretention soil and the stone.
c. A clogged layer of collected fines at the very top of the bioretention soil.

I, _____, certify that I have attended this webinar and performed this quiz.
Name

_____ _____
Signature *Date*

Please email this quiz to Kate Chapel kchapel@tinkerscreekwatershed.org to obtain your certificate