Continuing Education Course #078
Dredging and the Environment - Part 2
Dredging of Contaminated Sediments

1. In the Marine Environment – contaminants tend to bind more readily and in higher concentrations to what type of soils?
- a. Sandy.
- b. Gravely
- c. Fine, Silty.
- d. None of the above.

2. What are the most critical field work related factors in the design of a remedial dredging project?
- a. Sufficient and accurate survey
- b. Close coordination of sediment sampling to the acquired survey data
- c. Consistent & Persistent Quality Control during field procedures
- d. All of the above

3. In most governmental jurisdictions what would the preferred beneficial re-use method for disposal of dredge materials be when they contain no measurable contaminants?
- a. Deep open water disposal
- b. Wetland habitat restoration or reclamation
- c. Landfill cover
- d. None of the above

4. In most governmental jurisdictions what would the preferred method for disposal of dredge materials be when they contain “low to moderate” levels of contaminants?:
- a. Deep open water disposal
- b. Wetland habitat restoration
- c. Landfill cover
- d. None of the above

5. In most governmental jurisdictions what would the preferred method for disposal of dredge materials be when they contain “moderate, but below Hazardous” levels of contaminants?
- a. Deep open water disposal
- b. Wetland habitat restoration
- c. Secure Licensed Upland Sites
- d. None of the above

6. Before contaminated dredged sediments can be trucked over the road they require some form of stabilization – such as mixing with cement or fly ash.
- a. True
- b. False

7. What type of survey that gives 100% bottom coverage is best suited for water less than 8 feet deep?

- a. Multibeam
- b. Dual Frequency
- c. Multi-Transducer
- d. All of the above

8. Obtaining Multibeam and Dual Frequency survey data for a project can provide what important site assessment information?

- a. Elevations of top Layers of soft (fluid like) sediment
- b. Elevations of deeper Layers of consolidated sediment
- c. Identification of surface or buried debris or obstructions
- d. All of the above

9. Obstructions and Debris that show up as “dark spots” (as in Figure 2) on dual frequency survey charts are so obvious that they rarely need field confirmation.

- a. True
- b. False

10. Debris in urban dredging sites causes what issues with “Environmental” Clamshell Buckets?

- a. The finished dredged bottom will be rough
- b. This is rarely a problem for this type of bucket
- c. The debris can prevent full closure of the bucket – which can lead to turbidity compliance issues
- d. None of the above

11. The “Environmental” clamshell bucket is most suited for dredging what type of material?

- a. Soft and fluid like sediment
- b. Gravel
- c. Hard sand
- d. Dense clay

12. Dual Frequency surveys can help to identify and quantify buried deposits of sand near storm drain outfalls.

- a. True
- b. False

13. What type of sampling tool is generally best as well as most cost effective for use in water 30 to 50 feet deep?

- a. Clear Lexan tube “hand” sampling
- b. Vibracore Sampling
- c. Driven split spoon sample tube
- d. None of the above

14. The Vibracore sampler is best for sampling very soft, fluid like mud.

- a. True
- b. False

15. Scale model dewatering tests of sediment samples – called “Bench” testing – provides what project related information.

- a. The best dewatering polymers for use with that particular sediment
- b. Information that will help size the needed staging areas
- c. Information relating to the levels of residual contaminants in dewatering process effluent
- d. All of the above

16. The “Shear Vane” test provides what important project design information?

○ a. Erosion resistance of sediments
○ b. Sediment elutriate levels
○ c. Ability of the dredged footprint to support capping
○ d. All of the above

17. Most common dredges perform the underwater excavation process by swinging in an arc shaped sweep.
○ a. True
○ b. False

18. Properly operated – the "Round nose" clamshell bucket tends to leave a more level dredged bottom than the "Environmental" clamshell bucket.
○ a. True
○ b. False

19. The finished dredged footprint that resembles the "furrows" of a plowed field would be typical of what kind of dredge?
○ a. Mechanical
○ b. Hydraulic
○ c. "Mudcat" or horizontal auger
○ d. None of the above

20. Which of the following electronic devices does not contribute significantly to the accuracy of the finished dredging template?
○ a. GPS Positioning System
○ b. Electronic Tide Gauge
○ c. Manual Ladder Depth Gauge
○ d. On Board Computer

21. Most commercially available dredges have little difficulty fine grading and trimming side slopes.
○ a. True
○ b. False

22. "Box cutting" refers to what dredging function?
○ a. The ability of a dredge to trim sediment away from vertical surfaces – such as bulkheads
○ b. The ability of a dredge to work in low overhead clearance conditions
○ c. The normal accepted practice that a dredge uses to excavate the side slopes at the project work area limits
○ d. None of the above

23. Industry practice with respect to side slope excavation requires that the dredge be able to work within a one foot tolerance of the side slope shown on plans.
○ a. True
○ b. False

24. Which of the following dredging methods is likely to leave the flattest finished dredge footprint.
○ a. Conventional Hydraulic dredge
○ b. Mechanical dredge using a "round nosed" heavy digging bucket
○ c. Horizontal auger (MudCat style) Hydraulic dredge
○ d. All of the above

25. The best first step in the design process for a waterway remediation design project is to obtain complete hydrographic survey information.

○ a. True
○ b. False