1. On average, surveying at least 100 ft. beyond the start and ending station of the waterway is recommended when producing an EFT design.

2. When topographic surveying for use in EFT, it is recommended to survey full width cross sections. Avoid single point shots between grade breaks when possible. Single points can result in “bowties” when the surface is triangulated. Inaccurate surfaces are usually the result of single point survey shots.

3. The width of the cross section needing surveyed can be estimated by approximating the width of the waterway and including an additional fifty-foot survey on either side of the cross section.

4. When surveying a waterway, it is helpful to differentiate between FL shots (where water currently flows) and CL shots (where the planned waterway alignment will be located).
5. Should the error be generated during design, “channel lacks border station…”, the waterway design has reached the outer limits of the survey. More survey is required to triangulate a surface where the design does not intercept the survey boundary.

6. Surveyors may opt to layout waterway centerline flags pre, during, or post survey. Each method may present advantages depending on the preference of the surveyor.

ALIGNMENT

7. When designing the alignment, points too close in proximity to one another on a curve can cause cross sections to intersect. Place alignment stations as far apart as possible, relative to the number of points needed to accomplish the curve.

8. Remember to apply curves after creating an alignment in EFT. Review the curve value column. Curve values less than 50 often result in overlapping cross sections (default design value is 100).
9. Should “cross sections intersect” error be generated during design, consider using the “move vertex” button in the alignment section to increase distance between alignment stations.

10. Using the “snap to point” button located on the toolbar above the map windows is helpful for designing an alignment if the surveyor labeled CL shots during survey.

WATERWAY DESIGN

11. Waterway sizing wizard is helpful for estimates, waterways with few grade breaks, and Q2 documentation.

12. On the info tab the “seeding width” input refers to additional seeding width outside the waterway design. In most cases the user will input “0”.
13. Under the hydrology tab “initial Q fraction (%)” should be set to 100%. Irregularities in watershed make proportioning the runoff Q difficult to model.

14. Under the channel tab the “grade channel start” or “grade channel end” require adequate survey above and below the waterway. Enough survey for EFT to develop a surface model is required.

15. In the profile tab the designer can enter stations by right clicking on the profile and selecting “add stations”. In many cases, this is preferable to “sketch channel” since station values are easier to control to the nearest 5-foot increment. This method also reduces the occurrence of duplicate stations which then need to be deleted, such as when using the “generate channel bottom” command.

16. Remember to check the retardance and vegetal stability after editing a waterway profile during design.

17. When a design is generated for multiple reaches that results in several similar widths and depths, the user should consider consolidating those reaches into a single conservative design width and depth that best represents those reaches.
18. Transitions between different waterway width designs are evenly proportioned over the entire length of the reach. If a reach is more than 50 feet, the transition zone is incorrectly modeled (transitions in the field are usually no more than 50 feet long). Users can insert an additional reach at the transition zone of the waterway (at the same reach grade) to better model the transition.

19. Currently, EFT limits the designer to specify either the width or depth of a waterway, but will not allow the designer to specify both for a valid design. However, EFT will still draw cross sections when both the width and depths is manually entered. This is helpful when applying a single conservative design to multiple reaches while adjusting the waterway profile.

20. Should the error “surface projected beyond surface boundary” be generated during design, remember to check that slopes are not too flat to intersect adjacent OGRND (ex. a deeply incised waterway with steep shoulders.)
21. When printing EFT waterway documentation, the waterway report includes the waterway width at each vertex rather than the reach. This can cause confusion. The waterway profile report is important to help differentiate the start and ending station of a reach.

Reference the profile printout to help determine reach start and stop station where design information is duplicated.

22. When printing waterway documentation, a “run reports” box displays a checkmark next to “waterway documentation”. If multiple waterway designs exist, the user should remember to click the checkmark to display a hidden sub-menu. This allows the user to select which waterway documentation can be printed.

Remember to check the box to display submenu and additional options.