Critical Depth Reviewer Check List

Site\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reviewer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Field Survey

* Field survey raw data is available?
* Standard techniques used to complete field survey?
* Instrument calibrations performed before survey and documented? (peg test for levels, total station manufacturers calibration)
* Closure error computed and applied if necessary?
* Field notes complete in regards to field party assignments, instrumentation (serial numbers), field conditions, coordinates of starting point hub, beginning azimuth orientation, etc.?
* High Water Marks listed in field notes along with quality description?
* Were high water marks surveyed on both banks?
* Were high water marks obtained upstream and downstream of the 2-sections to sufficiently extend the HWM profiles for proper examination and interpretation of the profiles?
* Were stream bed elevations obtained upstream and downstream of the critical-depth section to allow for comparison between critical slope and bed slopes?
* Notes on roughness properties included?
* Is a good field sketch present? Includes: location of cross sections, hubs, RMs, structures, description of major roughness elements (trees, brush, boulders, etc), gage locations, CSG, main channel, road embankments, and other pertinent objects or points of reference. The plan-view sketch should also contain the approximate location and “view direction” of photographs taken. Cross section sketches should be included that include details vegetation, obstructions, or anything that might impact boundary roughness.
* Are RM’s from the gage included in survey?
* If soundings for cross section taken (ADCP, manual weight, etc), were these properly documented in the package?
* Adequate photo documentation of site?
* Was the potential for debris flows examined in field and dismissed? Do you concur?
* Was the control section where critical depth supposedly occurred identified and surveyed properly?
* Was the approach section located at least 2.5 times the mean depth upstream of control section or at least one flood-channel width upstream of control section?

Data Reduction and Computations

* Was baseline properly drawn and longitudinal distances established?
* Are the stationing/elevation pairs for each cross sections properly determined? If SACGUI is used, is the “snap too” line located properly for each cross section?
* Is there adequate discussion of determination of n values?
* Is the estimate of n-values at each cross section reasonable?
* Are cross section plots shown?
* Was subdivision done properly and primarily for major breaks in channel geometry?
* If there was any subdivision solely for major changes in roughness, does this subdivision preserve the “complete or nearly complete wetted perimeter” of the geometry as discussed in the criteria outlined in TWRI Book 3 Chapter A15 pp 20-23?
* Was a trial and error method used to compute the Q, whereby the critical section elevation was varied such that the routed energy to the approach section results in a value of computed WS Elevation at approach that matches the surveyed approach elevation?
* Was critical slope computed and compared with the bed slopes upstream and downstream of the critical-depth section?

Quality Assessment

* Do you see evidence that critical depth occurred at the critical depth location?
* Is there enough length of supercritical flow channel downstream of the critical depth location to ensure good getaway conditions and no backwater?
* Are alpha values large? Quality goes down with large alpha values.
* Has a sensitivity analysis been done? (sensitivity to water surface profile, roughness, etc)

Overall

* Computation package complete per TWRI Book 3 Chapter A1 page 30?
* Is this a good site for the indirect and does the site appear to be properly selected? If this site is less than suitable, are there specific caveats or other details as to why a more suitable location was not chosen?
* Do you concur with the Q for this measurement?
* Do you concur with peak stage assigned to this measurement?
* Do you concur with the quality rating (good, fair, poor) for this measurement?
* Is this measurement reasonable when you compare with Crippen and Bue envelope curves for the region of the country?