Can we use AMCO Clear® standards to verify turbidity calibration in Hunter Lab sphere instruments?

In turbidity, two types of liquid standards are used to check or verify instrument calibration, formazin (user-prepared formazin or commercial stock formazin suspension) and AMCO Clear standards (Styrene divinylbenzene suspensions).

In USEPA Method 180.1, AMCO Clear standards can be used as standards for a nephelometer, which has the detector positioned at 90° to the light source. Our instruments have detectors centered at 0° relative to incident beam with a wavelength range from 400-700, mentioned as Light attenuation unit design (AU) in ASTM D7315. The AMCO standards have sub-micron particles (0.02-0.2 micron) while formazin have a wide range particle size, 0.1-10 micron, (most of them above 1 micron). It is said that sub-micron particles scatter short wavelengths light (white light) at optimally 90°. In all, this AMCO Clear standards are not suitable to use for our sphere instruments. And the formazin standards can be used to check/verify turbidity calibration of our sphere instruments. Following are the sources for formazin turbidity standards.

Hach Company
Loveland, CO 80538 USA
+970-669-3050
www.hach.com

RICCA Chemical Company
Arlington, TX 76094 USA
+817-461-5601
www.riccachemical.com

Customer should choose a technology/design based on their application. 10 designs are mentioned in ASTM D7315. And it is said that technologies of these designs may not measure all aspects (absorption and scatter) of a sample. Several different technologies are available for use in the measurement of high-level turbidity. Some technologies may be better suited for specific types of samples depending on the application and measurement criteria. Following is the flow chart from ASTM D7315 to help assist in selecting the best technology for the specific application.

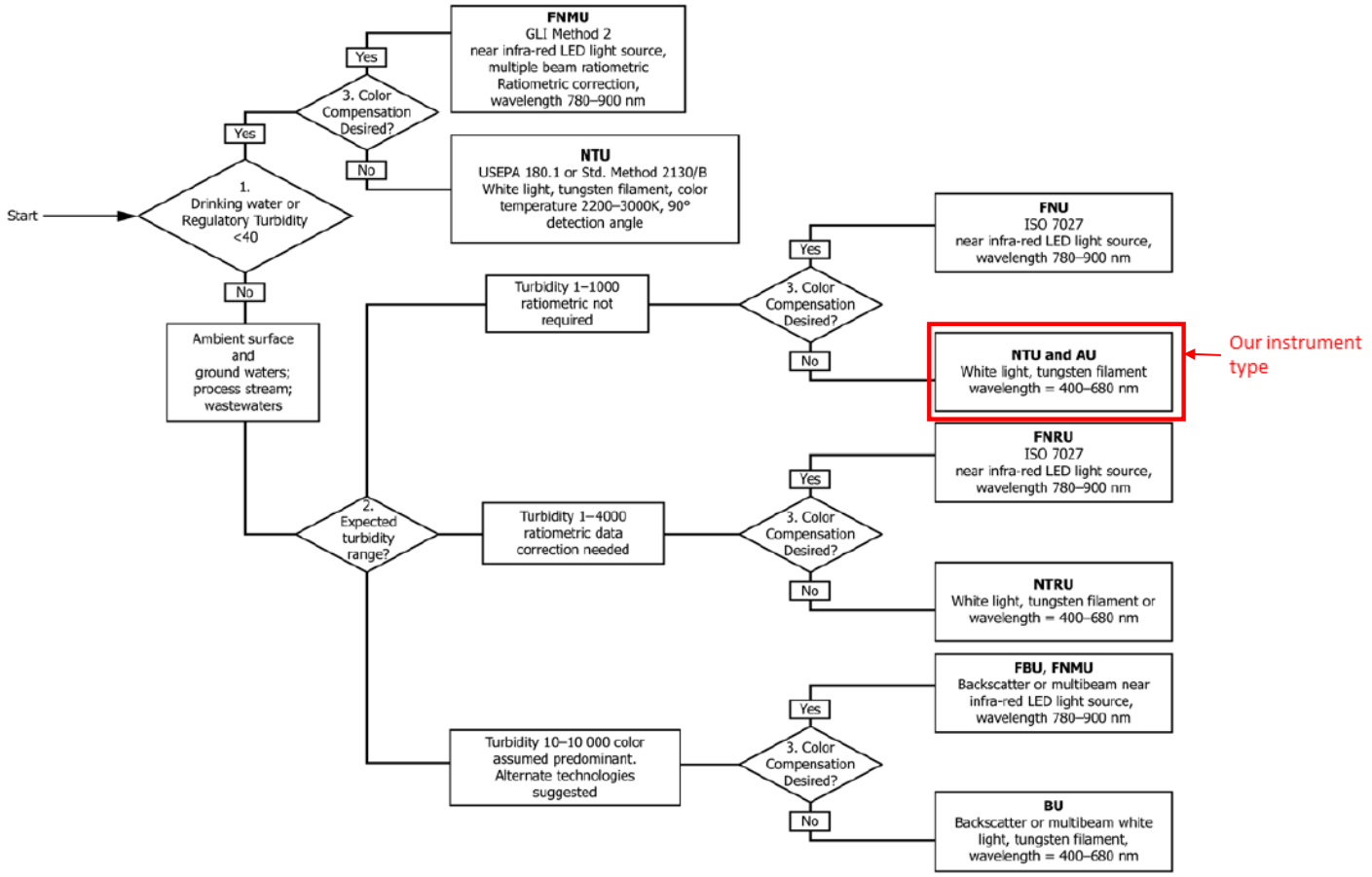

FIG. X2.1 Selection Criteria Flowchart for High-Level Turbidity Measurement