

If possible, high water elevations for the same flood event should be obtained at points upstream, at the structure site and downstream of the site. When wide flood plains are encountered, elevations are desirable along the edge of the flood plain in addition to those along the stream. Most important, each high water elevation given should be a confirmed sighting, never obtained by paralleling a given elevation up or downstream. The exact location at which the elevation was taken should be referenced to the traverse because the water surface elevation is seldom flat or level either longitudinally or transversely.

Personnel experienced in identifying high water marks are extremely important because the apparent quality of evidence of high water can be deceiving. Evidence of high water on the upstream side of a tree or building will reflect a stage higher than the true high water and marks taken within the drawdown area of a structure or another obstruction will reflect a lower than normal stage than existed. Stages affected by ice, logjams, confluence, varying land use (such as forested areas subsequently cleared), aggrading or degrading channels, and railroad or highway structures can be misleading if the abnormal stage is not recognized.

Information on high water elevations can be obtained by observing seed and mud lines on tree trunks and bridge abutments, wash lines and fine debris lines on banks, wisps of grass or hay lodged in tree limbs and fences, and evidence of erosion and scour. Interviews with residents, commercial and school bus drivers, mail carriers, law enforcement officers, highway and railroad maintenance personnel, and others who might have reason to observe unusual floods will yield additional information. The date of the flood occurrence, the name, address, and phone number of the observer and the stage and location of the observation should be recorded. It is desirable to obtain high water marks from several sources for the same flood event as a cross-reference on the information. The observed frequency of occurrence should be noted since reliable information that a stream reaches a certain elevation every two or three years provides important frequency information for the designer. A few hours spent in interviewing several people who are familiar with the flood history of a stream can result in substantial savings in construction cost, liability, and future maintenance costs through improvements in the design.

The collection of high water data after any significant flood event is very important. The District Hydraulic Unit in each district is responsible for coordinating this data collection program.

A considerable period of time usually elapses between the initial survey for a highway project and actual construction. During this period, additional information should be collected if a reasonably large flood event occurs. This requires preparation in advance of the flood so that resources can be quickly mobilized when a flood occurs.

Correlation of stage at the structure site with discharge relationship by providing one or more known points on a rating curve that otherwise might be used entirely on computations. Data should be collected for as many past flood events as possible in order to aid both the hydrologic and hydraulic analysis.