

5.4 Data Evaluation

5.4.1 Objective

Once the needed data have been collected, the next step is to compile it into a usable format. The designer must ascertain whether the data contains inconsistencies or other unexplained anomalies which might lead to erroneous calculations or results. Analyze the data to draw all of the various pieces of collected information together, and to fit them into a comprehensive and accurate representation of the hydrologic and hydraulic characteristics of a particular site.

5.4.2 Evaluation

Experience, knowledge, and judgment are important parts of data evaluation. It is in this phase that reliable data is separated from that which is less reliable and historical data is combined with that obtained from measurements. The designer shall evaluate data for consistency and identify any changes from established patterns. The designer must review previous studies, old plans, etc., for types and sources of data, how the data was used and any indications of accuracy and reliability. Historical data shall be reviewed to determine whether significant changes have occurred in the watershed and whether the data can be used. Data acquired from the publications of established sources such as the USGS can usually be considered as valid and accurate.

Basic data, such as streamflow data derived from non-published sources, shall be evaluated and summarized before use. Maps, aerial photographs, and land use studies shall be compared with one another and with the results of the field survey. Any inconsistencies shall be resolved. General references shall be consulted to help define the hydrologic character of the site or region under study and to aid in the analysis and evaluation of data.

5.4.3 Sensitivity

Often sensitivity studies are useful in evaluating data and the importance of specific data items to the final design. They consist of conducting a design with a range of values for specific data items. The effect on the final design can then be established. This is useful in determining what specific data items have major effects on the final design and the importance of possible data errors. Time and effort can then be spent on the more sensitive data items making sure these data are as accurate as possible. This does not mean that inaccurate data are accepted for less sensitive data items, but it allows prioritization of the data collection process given a limited budget and time allocation.

The results of this type of data evaluation will provide a reliable description of the site with the limited time and resources committed to this effort. The effort of data collection and evaluation shall be commensurate with the importance and extent of the project and/or facility.