



## APPLICATIONS

- Irrigation
- Sanitary Flows
- Industrial Discharge
- Stormwater
- Landfill Leachate
- Acid Mine Discharge
- Surface Waters
- Edge-of-Field Studies
- Mine Dewatering
- Dam Seepage Monitoring

Designed primarily to measure flows in irrigation ditches and channels, the Trapezoidal flume consists of outward sloping walls of varying widths and a flat floor.

The throat of the flume is defined as the narrowest section of the flume. In some cases, the sidewalls of the throat meet at the floor of the flume to form a "V" section with no flat floor. As the flow increases in the Trapezoidal flume, the effective crest width increases as the sidewalls slope outwards.

The result of this is that the Trapezoidal flume has the sensitivity to measure low flows and the capacity to measure high flows, all without a change in floor elevation (as with a Parshall) or the need for a free, spilling discharge off the end of the flume (as with a H Type flume).

For low flows or flat gradients, the Trapezoidal flume is superior to the Parshall flume. The trapezoidal shape of the flume conforms closely to the normal shape of irrigation ditches, particularly those that are concrete lined. This greatly minimizes the amount of transition needed to direct flow into and out of the flume (a side benefit of which is less scouring).



## MATERIAL OPTIONS

- Aluminum
- Galvanized Steel
- Fiberglass (FRP / GRP)
- Lexan
- PVC
- Stainless Steel



**Openchannelflow** manufactures the widest selection of flumes for the measurement of water and wastewater. Accurate and cost effective, **Openchannelflow** flumes are highly customizable and built to withstand the most demanding of applications.

#### STANDARDIZATION

Trapezoidal flumes have not been formalized in a standard (ASTM, ISO, etc.) as the Parshall flume has. Instead, the dimensions for the various size and styles that have been developed have been published in academic journals and research papers.

- Measuring Water in Small Channels with WSC Flume, Washington Agricultural Experiment Station, Circular 200, 1952
- Trapezoidal Flumes for Measuring Flows in Irrigation Channels, USDA-ARS 41-140, March, 1968
- Water Measurement in Small Irrigation Channels Using Trapezoidal Flumes, Transactions of the ASAE, Vol. 9, No. 3, 1966

#### SUBMERGENCE

Trapezoidal flumes were designed from the outset to have good resistance to downstream submergence. As a result, the Submergence Transition,  $S_t$ , of Trapezoidal flumes is high - on average 80%. This compares quite favorably with the Parshall flume - which has submergence transitions from 50-70%.

Unlike the Parshall flume, however, no correction can be made for a Trapezoidal flume that experiences submergence. Care must be taken to ensure that submergence does not occur.

#### CUSTOMIZATION

**Openchannelflow** offers a wide range of mounting, connection, and flow / level measurement accessories to help you customize your flume to your specific site needs.

#### MOUNTINGS



- Free-Standing
- Earthen Channel
- Packaged Metering Manholes
- Above Grade Enclosures

#### FLOW / LEVEL



- Staff Gauges
- Stilling Wells
- Bubbler Tubes
- Ultrasonic Sensor Brackets

#### END CONNECTIONS (INLET)



- Pipe Stubs
- Flanges
- Caulking Collars
- Wing Walls