

## HYDRAULICS LABORATORY FACULTY AND STAFF

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Colorado State University has pioneered the use of Planter Box Technology. Using mobile boxes to house vegetated plots allows multiple plots to be grown and tested in a single season. Planter Box Technology reduces the cost and time associated with testing vegetated reinforcement systems.



## EROSION CONTROL PERFORMANCE TESTING

## EROSION CONTROL PERFORMANCE TESTING

For over 50 years, Colorado State University (CSU) has been a leader in the erosion control industry. Our professional staff has over 100 years combined experience in erosion control research including performance testing of vegetated and unvegetated erosion control products under channelized, overtopping, and pipe outlet conditions. CSU partners with a multitude of agencies and private companies to facilitate applied erosion control technology.

Erosion control performance testing continues to be an area of industry interest. With the development of many new testing protocols and an abundance of new products, performance testing has become a vital component of product development. CSU is meeting the industry's need for performance testing with expert staff, and state-of-the-art facilities and equipment.



Our laboratory uses cutting edge data collection instruments to provide a variety of high quality data. The specialized instruments available include a multitude of velocity instruments that measure mean and instantaneous velocities in 1-D, 2-D, or 3-D. In addition, our laboratory has an ultrasonic ranging system that provides real time scour monitoring and mapping, and a high frequency laser scanning system which allows full pre-test and post-test topographic surveys.



## HYDRAULICS LABORATORY EROSION CONTROL FACILITIES

Colorado State University has a variety of erosion control facilities which are part of a unique research center designed for hydraulic model studies, testing and calibration in the fields of open channel and closed conduit hydraulics.

Common erosion control studies performed at the Engineering Research Center include:

- Unvegetated Erosion Control Products
- Vegetated Erosion Control Products
- Overtopping Conditions
- Pipe Outlet Scour Testing
- Local Scour Phenomena



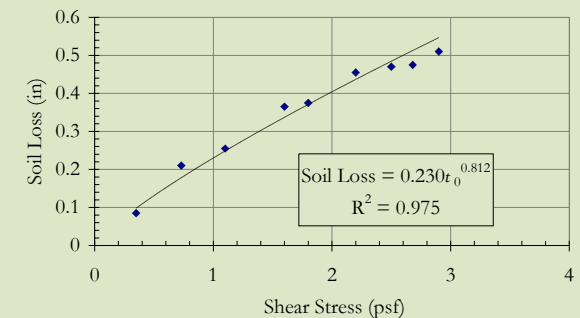
Currently, there are 12 erosion control facilities utilized at the Engineering Research Center Hydraulics Laboratory. Table 1 summarizes the dimensions and capacities of the available erosion control facilities.

Table 1: ERC Erosion Control Facilities

Facility Name	Maximum Discharge (cfs)	Maximum Slope (%)	Flume Dimensions (ft)
2-foot	11	8	2 x 60
4-foot	22	3	4 x 60
4-foot Steep	22	50	4 x 30
6-foot	55	22	6 x 40
8-foot	100	2	8 x 200
10-foot	170	50	10 x 120
S. East Tarbela	200	Fixed - 13	6 or 4 x 60
S. Center Tarbela	200	Fixed - 13	6 x 60
Tarbela	200	Fixed - 0	20 x 110
Floor Models (3)	Variable	Variable	Variable

## EROSION CONTROL TESTING DATA ANALYSIS

Our professionals can provide a variety of different types of data analysis. Common unvegetated analysis includes identifying the shear stress corresponding to 0.5 in. of soil loss which defines the product threshold. The following figure presents a typical product of data analysis for unvegetated performance testing.



For vegetated testing, the relationship between blade density and discharge is considered a key indicator of performance. In addition, vegetative retardance class can be determined from performance testing.

