



ROWD FLOW TEST
Standard Size ROWD
With 6-Inch Pump

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INTRODUCTION

On June 19, 2019, a ROWD flow test was performed on a standard size unit using water appropriated from the Chippewa River. Flow tests were performed on 2 degree and 5 degree slopes with a 3-inch trash pump and a 6-inch trash pump. The purpose of this test was to try and identify the max flow rate of a standard size ROWD sled on different slopes.

A ROWD sled on level terrain has a maximum holding capacity of 1,816 gallons. This is the volume of water the unit will hold up to the middle of the upper rail (32 inches of water). This allows for a few inches of free board before the unit would overflow.

EQUIPMENT

The pumps used were a Honda 3-inch gas trash pump with a max flow rate of 370 GPM and a diesel power prime 6-inch trash pump capable of 2,775 GPM.

The ROWD sled used was a standard size 8-foot 6-inches by 20-foot 6-inches. The filter material used in the test were straw bales sourced from the local farm and ranch store. Bales measured 34-inches by 14-inches by 16-inches. The filter bag used was a 4-foot 6-inches by 15-feet, 8-pound nonwoven filter bag. The fabric liner used was 8-pound non-woven filter fabric.

TEST

Test were first run with a 3-inch trash pump at 2 percent grade. While the pump was running the water level in the ROWD sled was monitored and documented on 30 second intervals. The 3-inch pump was allowed to idle two minutes before being turned to full throttle. The pump was allowed to run for 25 minutes before being shut off. During this time the water depth slowly increased to about five and one tenth inches. Every few minutes the water rose about a tenth of an inch.

Once the 3-inch pump was shut off the sled was given time to drain while the 6-inch pump was being rigged up. The 6-inch pump was allowed to run at half throttle for 5 minutes then three quarters throttle for 5 minutes then full throttle for 12 minutes. The water level was monitored and recorded. At full throttle the water level was 14.5 inches after five minutes.



The pump was shut off and the sled was allowed to drain before being positioned on a 5-degree slope. The test with the 6-inch pump was repeated on the 5-degree angle. The pump was allowed to run for six minutes on three quarters throttle before being turned up to full throttle for 9 minutes. For the last six minutes the water was a constant 22 inches deep at the deepest part of the sled.

RESULTS

The ROWD sled was more than capable of handling the flow rate with the 3 inch and 6-inch pump both on a 2-degree slope and a 5-degree slope. The highest water level observed was with the 6-inch pump on the 5-degree slope. Based on this observation using this water source and filter material the ROWD sled could have handled a higher flow rate or could be operated on a steeper slope. On the two degree slope the ROWD sled was less than half full when using the 6-inch pump on full throttle.

Using different filter material, water sources and flow rates could cause different results. As filter material begins to trap sediment results could vary.