

57: Damn Fine Sluice™ (DFS) – 1990s research in New Mexico

The Damn Fine Sluice™ (DFS) was invented by Phil Hontz of New Mexico in the 1990s. The device was never patented as it had been discussed widely on internet forums and is a direct descendant of earlier innovations based on the research on larger sluices in the Yukon tests by Owen Poor and Randy Clarkson [8] and more particularly the sluices tested by James Hamilton and George Poling [7] that had raised expanded metal mesh riffles on unbacked Nomad™ matting (miner's moss). These sluices achieved >90% gold recovery down to about 150µ nominal diameter.

The Damn Fine Sluice™ is a considerable advance on these earlier sluices in being able to recover >90% gold recovery down to about 50µ nominal diameter, although rigorous testing does not appear to have been done.

The DFS is manufactured by the Damn Fine Equipment Co (www.damnfinesluice.com). This is part of relentless effort by recreational miners in North America to recover fine gold using small sluices for small dredges, high bankers and clean-ups.

The Damn Fine Sluice™ consists of a smooth slick plate followed by a section of tiny raised expanded metal mesh fitted on matting, all set in a short sluice-box. The unit is about 1.19m long and 25cm wide, and weighs 3.63 kilos. It includes a pair of adjustable legs to aid setting up.

The DFS is an in-stream sluice, with a flared intake ('fixed wings') to help funnel water into the mouth of the sluice and to aid stability. The first section is a long slick plate to encourage laminar flow to guide heavy particles into a section of tiny raised expanded metal riffles clamped on "heavy duty" unbacked Nomad™ matting.

The DFS, being an in-stream sluice, lacks a hopper and screen, and has no means of recirculating water. Nor is it designed to catch gold nuggets.

Operation

The DFS is an in-stream sluice, positioned in shallow fast-flowing water. If necessary rocks are arranged to form a temporary dam or weir to ensure flow is adequate and fast. The legs are adjusted to ensure the DFS is sloping downstream and yet is level across its width.

Pay gravel is screened at about 2mm and the oversize discarded after checking for nuggets. The undersize is put on the leading edge of the slick-plate, a small quantity at a time.

The pay gravel is swept through the sluice by the water current. After the small mound of pay gravel has been cleared by this means a fresh mound is added. The current causes the pay gravel to spread out across the width of the slick plate to assume laminar (non-turbulent) flow consisting of a bottom-hugging traction carpet of black sand overlain by a traction carpet of lights.

The traction carpet of black sand is pulled into the vortices (rollers) of the riffles and the gold burrows into the underlying layer of Nomad™ matting. The lighter minerals and surplus black sand are swept out as tailings.

Eventually the Nomad™ matting becomes hard packed. Clean-up is rapid, as the riffles are easily removed by turning the wing-nuts on the ends of bolts that secure them, and the matting is lifted clear. The riffles, matting and sluice-box are then flushed clean into a bowl or suchlike if needs be with a few drops of detergent added to founder any float gold. Later the contents of the bowl are cleaned by panning, tabling or other means.

Adoption by placer gold miners

The outstanding success of the DFS in recovering fine placer gold led to its immediate and continuing popularity among recreational miners and has inspired many other devices such as the PopandSon sluice.

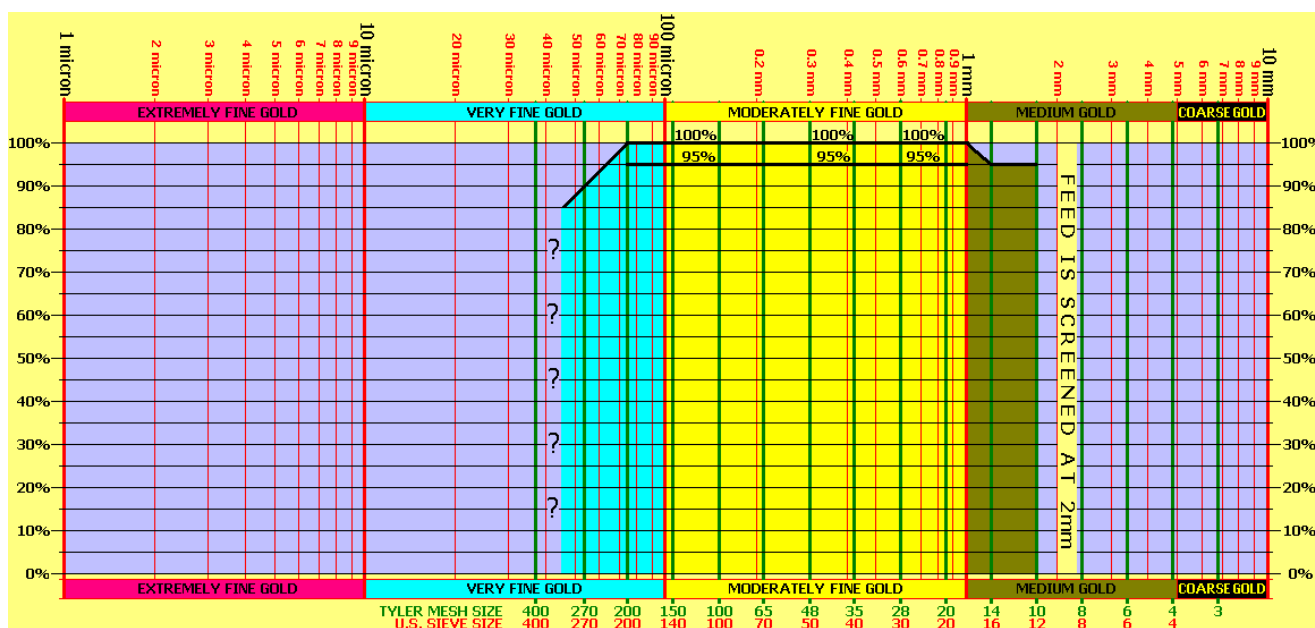


Figure 120. GOLD RECOVERY BY DAMN FINE SLUICE™ - generalised
 Recovery of placer gold by Damn Fine Sluice™ according to reports by many users. (compiler: Robin Grayson)