2010 Twitchell Canyon Fire
Fishlake National Forest
Channel Treatment Effectiveness Study
Using Straw bale check dams

- Site elevations: 2070 to 2225 m (6800 to 7300 ft)
- Total rainfall and intensity with 5 tipping bucket rain gauges
- Catchment sediment yields from the 5 pairs ~ 0.2 to 1.6 ha (0.5 to 4 ac)
- Hillslope sediment yields
- Hillslope and channel ground cover (soil, veg, litter...)
- Soil particle size and % Organic matter of sediment
- Channel cross sections for each catchment
Using silt fences to monitor treatment effectiveness
No treatment vs treatment
21% channel gradient
Check dam 1 (upper)-- 3.7 tons
Check dam 2 (lower)-- 2.4 tons
Filled from:
5-year event with an $I_{10} = 2.34$ in hr$^{-1}$
15% channel gradient.
Sediment discharge: 1.7 tons ac⁻¹ per year

Straw bale check dam filled, captured 1.5 tons of sediment, from an I₁₀ event (1.08 in hr⁻¹₀) that was less than a 1-year event.

Confinement of channel greatly reduced storage capacity despite low gradient.
25% channel gradient

Filled to capacity from a 1 year rain event \( I_{10} = 1.26 \text{ in hr}^{-1} \), captured 1.1 tons.
Trash rack effect – wooden stakes increasing spillway height