Addressing the Sediment Problem in Sonoma Creek Watershed

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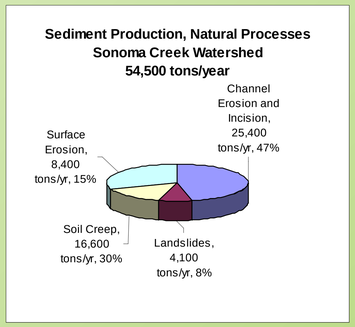
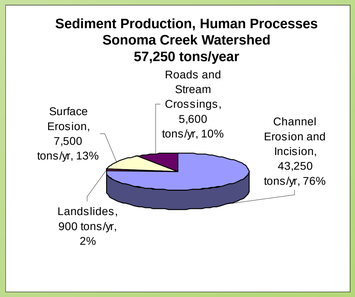
1996—Section 303(d) Listing
Sonoma Creek is listed as impaired for sediment, nutrients, and pathogens under the Clean Water Act. Sediment listing is based on evidence of watershed erosion and fisheries decline. Sonoma Creek and tributaries watershed, about 100 square miles in size above current tidal limit, receives up to 50 inches of rainfall per year.

2006—Sonoma Creek Watershed Limiting Factors Analysis
Study identifies sediment among several factors limiting health and survival of diverse assemblage of aquatic species that include steelhead/rainbow trout, Chinook salmon, and California freshwater shrimp.

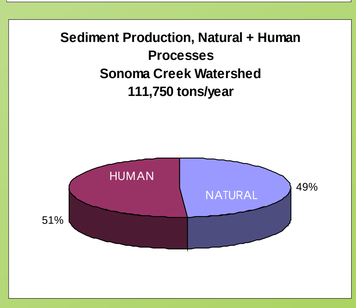
Sediment Source Analysis shows that over 70 percent of human-caused sediment in Sonoma's creeks comes from erosion of channels (as they adjust to altered stream network with added ditches, storm drains, and impervious surfaces).





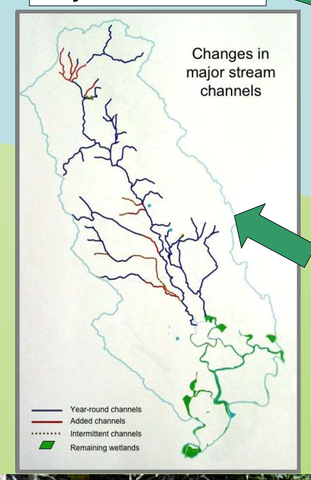
Streams produce and carry sediment during storms such as 100+ year flow in Sonoma Creek, which peaked at 20,300 cubic feet per second on December 31, 2005 (at Agua Caliente Road, catching drainage area of 58 square mi).

2006—Sonoma Creek Watershed Sediment Source Analysis
Study identifies sediment sources in watershed and estimates rates of sediment supply for each source—**channels, roads, and surfaces**—between years 1800 and 2005**. Hydromodification** is found to be chief reason for sediment problem in Sonoma Creek.



2007—Stream Stewardship Program
Program involves, teaches, and coordinates landowners in Sonoma Valley, encouraging restoration along stream reaches.

Land use changes over 150 years have intensified stream and surface flows, increasing erosion and resulting in pervasive channel incision. During floods, incised streams erode beds and banks at higher-than-natural rates, increasing human-caused sediment supply.



Channel connections and straightening were largely completed by 1877. Increased ditching, piping, and hardening of surfaces followed.

2008—Adoption of Basin Plan Amendment
California Regional Water Quality Control Board adopts Sonoma Creek TMDL Implementation Plan (later approved by EPA).

2010—Restoration Site Prioritization Pilot Study
Study integrates data from Sediment Source Analysis into digital formats and includes pilot GIS analysis to inform prioritization of reaches needing restoration.

2002 to present—Suspended sediment monitoring is conducted at continuous automated station and grab-sampling locations, as empirical check on source estimates.

2011—Restoration Site Prioritization Study
Study launches in May 2011 to expand 2010 pilot study to entire watershed, refining sediment source estimates (including effects of 2005 flood) and developing channel modeling capabilities.

Restoration focuses on increasing protective vegetation on highly erodible stream banks to reduce sediment supply and increase channel stability.

Acknowledgements go to Sonoma Creek landowners, TMDL Steering Committee, San Francisco Bay Regional Water Quality Control Board (RWQCB), Watershed Sciences, Martin Trso, P.G., Talon Associates LLC, Tessera Consulting, Southern Sonoma County Resource Conservation District, and Sonoma County Water Agency. Funding for this work has been provided by USEPA, San Francisco Foundation Bay Fund, California Department of Conservation, and Sonoma County Water Agency.

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