

## Section 319 Success Stories

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**Title:** Rural Roads Erosion Control Assistance in Santa Cruz County, California

**319 Funding Recipient:** Santa Cruz County Resource Conservation District

**Introduction:** In Santa Cruz County, rural non-county roads have been identified as a major source of sediment by watershed plans, assessments, and Sediment TMDL reports. The Santa Cruz County Resource Conservation District (SCCRCD) has been addressing erosion/sediment issues related to roads since 1996. This program provides technical and cost share assistance to private road associations to facilitate the construction of erosion control projects as a means of managing excessive sediment loads generated by these roads in critical TMDL listed watersheds. The result of the program has been the construction of 17 rural road erosion control projects, six technical workshops, five watershed/rural road tours, four technical training sessions, and six newsletters. The rural roads program continues to implement erosion control projects with direct water quality benefits and now includes four major watersheds found in Santa Cruz County.

**Problem:** Currently the rural roads program is being implemented on non-county rural roads in the San Lorenzo River, Soquel Creek and Aptos/Valencia Creek Watersheds of Santa Cruz County, on the Central Coast of California. Due to highly erosive soils, substantial rainfall, the existence of several fault zones, and steep terrain the watersheds are susceptible to high rates of erosion. Inadequately constructed and maintained roads within this type of environment continue to add sediment to the waterways within the watershed. Sediments contribute to direct and indirect impacts to Coho and steelhead populations found in the watershed as well as coastal marine ecosystems that are part of the Monterey Bay National Marine Sanctuary. Roads, as a source of sediment input into these watershed waterways, have been researched and well documented over the years in sediment TMDL reports and watershed assessments for all three watersheds.



Erosion from rural roads in Santa Cruz County contributes significant quantities of sediment to impaired TMDL listed watersheds.

**Project Highlights:** Erosion control work through 319 grants began in 1996 with a \$120,700 grant from the State Water Resources Control Board (SWRCB) to construct three erosion control projects in the San Lorenzo Creek Watershed. Following this work, a TMDL Technical Report and Implementation Plan for San Lorenzo watershed was completed as well as watershed assessments for the Soquel Creek, and Aptos/Valencia Creek watersheds. These reports indicated that rural roads were a significant source of sediment for all of these 303(d) listed watersheds. In order to address road related sediment sources in a more programmatic manner, the SCCRCD applied for and received two additional grants from the SWRCB totaling \$713,569. These grants have allowed the SCCRCD to expand the roads program to include the Soquel Creek, and Aptos/Valencia Creek watersheds. Over the course of 10 years, that program has resulted in 17 rural road erosion control projects. Fifteen of these projects have been implemented in Boulder Creek and Felton areas of the San Lorenzo River watershed. Additionally, one project was completed in the Soquel Creek watershed and one in the Aptos/Valencia Creek watershed.

Recently the SCCRCD received a fourth grant in the amount of \$816,746 to continue its program through 2008. To date, the dollars expended have been matched by grants from the State Coastal Conservancy, The Fish America Foundation, and the Department of Fish and Game and in kind and cash match from private road associations totaling more than \$993,000.

Rural road erosion control projects begin with a site visit with a private road association, an SCCRCD Project Manager, and a Natural Resources Conservation Services (NRCS) representative to document erosion control issues. The identified erosion problems are then reviewed and prioritized by a voluntary Technical Advisory Committee (TAC). Following this review, Pacific Watershed Associates (PWA) completes designs for projects that have high resource protection value and willing landowners. The SCCRCD then works with road associations and local contractors to facilitate the implementation of these project designs. The projects range in size and extent, but include a range of erosion control Best Management Practices (BMP) such as velocity dissipaters, water bars, properly sized and installed culverts, and out-sloping to direct water off the road.



Workers install a properly sized culvert to capture water emanating from steep slopes above this rural road and direct it to a location protected from erosion.



A group of local contractors, public agencies, and representatives from road associations learn about erosion control practices during a SCCRCD sponsored rural roads workshop

In addition to the implementation of erosion control projects, the program seeks to provide technical assistance through education and outreach efforts to rural landowners and road associations. Results include the development of a BMP Training Program for local contractors, six road workshops, five watershed tours, and four technical training sessions for watershed groups, and education and outreach materials such as six individual newsletters. The program also resulted in the creation of a Private Roads Maintenance Guide for Santa Cruz County. This guide provides user friendly technical information on a broad range of erosion control techniques and is widely distributed to private road associations and other interested parties.

**Future Directions:** The need for additional erosion control on public and private roads in Santa Cruz County noted in numerous TMDL reports and watershed assessments continues to grow and the SCCRCD is expanding its efforts to meet these needs. In December of 2006 the SCCRCD initiated an additional grant of \$816,746 from the SWRCB to continue to provide technical assistance, conduct new road assessments, and design and construct an additional 9-12 rural road erosion control

projects. This new grant will help implement the Pajaro River sediment TMDL by expanding the program into the Lower Pajaro River Watershed. It will also help develop projects in partnership with California State Parks who recently, in partnership with the California Geological Survey, completed assessments for the entire state park road network found in Santa Cruz County. An exciting component of the new grant is, in addition to road work, it will allow the SCCRCD to help residential home owners improve drainage on their properties.

**Results:** The success of individual projects is documented using photo-monitoring techniques to collect pre and post construction conditions for all erosion control projects. In order to expand our ability to quantitatively measure sediment load reductions the SCCRCD, Coastal Watershed Council (CWC) and Balance Hydrologics Inc. developed monitoring protocol to estimate total sediment load reductions for each project and the program as a whole. This monitoring protocol is now being field tested and refined on the erosion control projects implemented in 2006.

**Partners and Funding:** The Rural Roads program relies on a diverse partnership with agencies, nonprofits, local governments, private consultants, and rural road associations to implement its construction, education and outreach, and monitoring work. The primary funding agencies include the State Water Resources Control Board and the California Coastal Conservatory. Project partners include the Natural Resources Conservation Service (technical assistance), Pacific Watershed Associates (road assessments and design), Coastal Watersheds Council (monitoring), Swanson Hydrology and Geomorphology, Balance Hydrologics, Inc. (monitoring protocols), the Community Action Board of Santa Cruz, Natural Resources and Employment Program (local labor), and private road associations (in-kind and financial match). Other important partners include the County of Santa Cruz, the City of Santa Cruz, San Lorenzo Watershed Caretakers, California State Parks, the San Lorenzo Valley Water District, San Lorenzo Valley High School Watershed Academy, the Valley Woman's Club, Granite Construction, and the Zayante Fire Department.

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