

Hydro Seeding

Erosion Control Solution to Charred Southern Calif. Landscape

California Wildfires Case Study

By Nathan Odgaard, Swanson Russell Associates



After the October 2003 wildfires in Southern California, a 15-mile stretch of highway in Simi Valley needed emergency erosion control. The strong seasonal winds in Southern Calif., the Santa Anas, would begin blowing the layers of ash and silt onto the roadways and private properties. The other concern was the rain running the ash and sediments into the storm drains.

Every erosion control and seeding project presents new challenges, new learning opportunities and a sense of fulfillment for Ron Dietz. This explains why Dietz, president of Dietz Hydroseeding Co. in Sylmar Calif., looks forward to going to work each day, even after more than 30 years in the business involving hundreds of projects.

As the name implies, Dietz's company specializes in the hydroseeding of landscapes, including public works, remediation projects, sports fields, golf courses, schools and parks. For each project, his specialized landscape contracting company sets out to provide seed and the latest in technologies to establish vegetation and/or to provide erosion control. It's a rewarding job, Dietz says, in which no two projects are alike.

“With a lot of the work that we do, like habitat restoration and post-wildfire seeding, you feel a sense of pride and accomplishment because you are benefiting the community and helping the environment,” he said. “We also donate a lot of our time and work to Little League fields and other youth sports fields, which is also very rewarding. On top of that, I like to be outdoors and I enjoy learning about the different seeds, soil and plants that we work with.”

One of Dietz's more memorable and educational experiences came about as a result of his efforts to provide erosion control after the October 2003 wildfires in Southern California. Dietz was commissioned by Caltrans, California's Department of Transportation, to help find an erosion control solution to keep a thick blanket of ash and silt, left behind after the fires, from running off onto roadways and private property, and into storm drains along a 15-mile stretch of highway in Simi Valley.



BFM is applied with water and adheres to the surface in a blanket-like cover. According to Dietz, BFM is easier and quicker to apply, plus it anchors to the soil and provides more ground coverage than blankets. It is also biodegradable and nontoxic.

Caltrans deemed this an “emergency project.” The layer of loose silt and ash resting on the steep embankments and hillsides along highways 118 and 23 raised many safety concerns. The silt and ash was susceptible to being swept away by rain, creating mudslides and clogging storm drains that could result in hazardous driving conditions and damage to the roads. There was also concern about Santa Ana winds picking up and blowing the fine silt and ash onto the roadway, hindering visibility and driving conditions.

These concerns brought to light the need to implement an erosion control plan to keep the silt and ash in its place. Caltrans saw the need to provide both short-term and long-term results. It sought to immediately control erosion, protect the public and property, and at the same time encourage native seed germination and introduce, or in this case restore, plant life. After all, vegetation is the best form of erosion control.

Dietz and his crew were under the gun to move quickly and complete the project before the winter rains. This massive undertaking required major consideration of a variety of erosion control products. Dietz’s goal was to recommend the most efficient, cost effective and accessible product on the market, and one that could be applied rapidly.

“We considered several different products,” said Dietz. “Considering the criteria and the situation, hydraulic application of the product was the optimal way to cover a large area quickly. From there, we had to select the product that would be most readily available for us to expedite this project yet achieve the desired results.”

One thing Dietz appreciates about his job is the opportunity to work with various experts in the field and the valuable input offered to determine the best course of action to take and the most appropriate product to use. This helps ensure that the project will be done right. In this case, Dietz was involved in a team effort with Caltrans officials, U.S. Fish and Wildlife, the U.S. Army Corps of Engineers, and soil and geological experts from Cal Poly San Louis Obispo University.



Dietz Hydroseeding Co. of Sylmar Calif. was commissioned by Caltrans, California's Department of Transportation to immediately begin erosion control measures with native seed germination and restoration of plant life. A bonded fiber matrix (BFM), also called a hydraulic blanket, was used, versus rolled blankets. Rolled blankets are ideal for accessible slopes with smooth graded surfaces, but here the hills weren't easily accessible nor smooth, plus installation time was an important factor.

“We conducted a site survey and then held a roundtable discussion to discuss what we were trying to achieve and what would be the most efficient, cost-effective method to achieve these goals,” Dietz said. “It was a pleasure to be involved with a group of people who represented different niches and who provided expertise that allowed us to create an efficient plan so quickly.”

For this particular project, the team determined a bonded fiber matrix (BFM), which is also referred to as a hydraulic blanket, offered advantages over other products as an erosion control solution, including rolled blankets.

Rolled blankets are ideal for low flow ditches and channels, and can also be applied to accessible slopes with smooth graded surfaces. The hillsides ravaged by the wildfires, however, were neither accessible nor smooth and installation time was an important factor.

BFM is hydraulically-applied and interlocks on the surface to form a continuous blanket-like cover. But, a BFM not

only is easier and quicker to apply, it also is typically more effective. A BFM mixes with and anchors to the soil and provides more ground coverage than blankets, which is important when applying mulch to rocky and uneven terrain. They are also biodegradable and nontoxic.

Dietz chose Conwed(R) Fibers 2500, a BFM from Profile Products LLC. The product consists of thermally refined wood and a multi-dimensional tackifier to produce greater water holding capacity for more complete germination and faster vegetation establishment. Dietz also was impressed with the availability of the product.

“Getting the product in a timely manner was a non-issue,” Dietz said. “Through the distributor, S&S Seeds, 130 tons of the material was delivered in three days. This was possible because of the product’s shelf life, but also because we talked to Profile about the urgency of receiving and applying it. They made sure that we got it when we needed it.”



The undulating surface is easily covered by the fiber matrix, which consists of thermally-refined wood and a multidimensional tackifier for greater water holding capacity, which allows more complete germination and faster vegetation establishment.

The project began November 18, just 10 or 11 days after Caltrans first contacted Dietz about the job. Dietz Hydroseeding used two hydroseeding machines and six crew members to travel diligently along the Caltrans right-of-way that covered a 15-mile stretch of highway, spraying 100 to 150 feet onto the hillsides above and below the road. This created an erosion control buffer zone that would prevent silt and ash runoff onto the roadway, into drainage

ditches and on to adjacent properties, said Dietz.

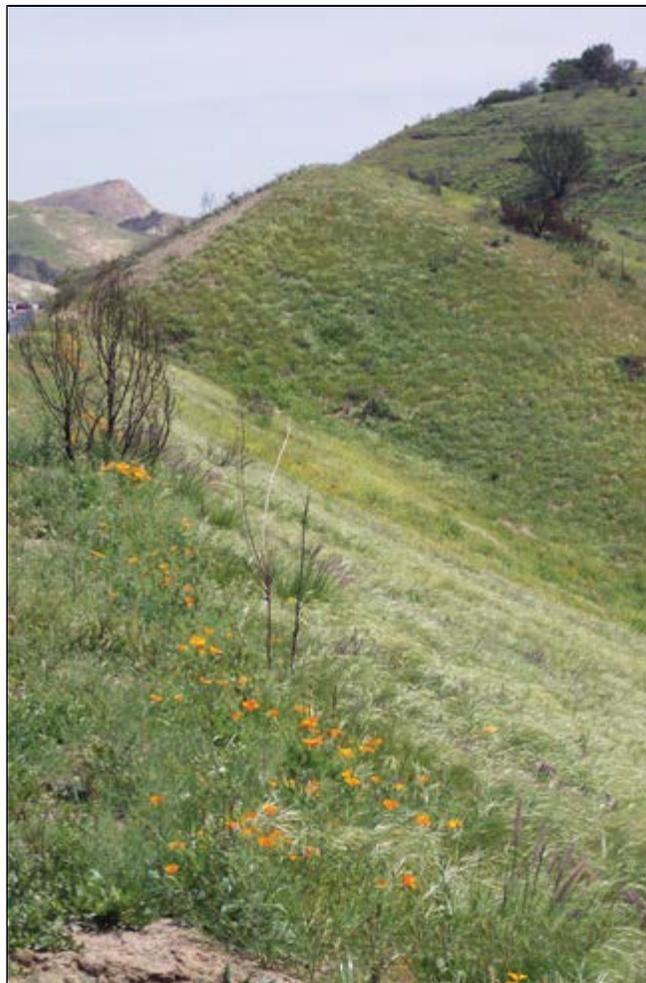
Dietz coated the landscape with two applications. The first consisted of only the Conwed Fibers, while the second included the BFM and a light mix of a variety of native seeds. The type and amount of seed used in the mulch was a topic of discussion at the roundtable meeting. The ash and silt contain and cover seed from the native plants and grasses that burned in the fire, and the results of previous fires showed that regrowth does occur without the need to reseed the landscape by adding it to the mulch.

“We came to a consensus,” he said. “We decided it would be beneficial to include small amounts of indigenous native seed in the mulch to augment plant establishment.”

When seed is incorporated into the mulch, it usually is in the first application to provide greater opportunity for soil contact. In this case, however, the seed was applied with the second application.

“The particular species of seed we were using is more light sensitive than ground temperature sensitive,” Dietz said. “So with the seed being on the top layer of mulch, it received more exposure to the light necessary for it to germinate.”

The BFM was applied at 2,000 pounds per acre (1,000 per each application of a two application process), which Dietz said was not the standard specified rate for BFM. Application rates for similar projects call for 3,000 to 4,000 pounds per acre. Dietz was confident in the product and used a lighter specified rate of mulch, applying a lighter layer of hydraulic blanket to encourage post-fire native species.



Dietz's crew hydroseeded 130 acres in three weeks. The hydraulic blanket stayed intact during Southern California's rainy season to allow the hillsides to grow out.

The results? "The product performed incredibly," and Dietz accomplished his goal of completing the job in three weeks. His crew finished December 9, having covered 15 miles, 130 acres, while working six days a week and 12-hour days.

The hydraulic blanket stayed intact and did its job during Southern California's rainy season and endured five or six rain events, Dietz said, including one that saw more than four inches fall in a 24-hour period in early March.

"There was only clear-water runoff, no washouts and no loss of soil," he added. "The BFM basically glued itself along with the fine silty material to the ground and formed a matrix that held the soil in place but allowed plants to grow through it."

As a bonus, Dietz became a bit of a celebrity, as his work along the high-traffic highways attracted media attention. The Los Angeles Times featured Dietz in an article on his erosion control efforts, and six television crews, including CNN, filmed Dietz and his crew as they transformed the hillside's landscape from bare and black to a vibrant green, the die color used in the mulch. "The visual impact was striking," he said.

Dietz was impressed with the team of experts put together by Caltrans. "They were a very knowledgeable and cohesive team." In addition to the state and federal officials involved in the project, Dietz credits S&S Seeds and Profile Products for their support in helping make the project a success. He relied on his experiences using BFMs, expert opinion, test results, and reassurance from Profile that its fibers would perform well and could be made available in mass quantities.

"This was a very successful project when you consider the tremendous job the BFM did, the dollar per acre cost and the impact of how many acres you can protect in a short time," he said. "Looking beyond the product and at the company, Profile was extremely helpful and gave us confidence things would work out, which they did."

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