

Western Chapter News

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Serving Erosion Control Professionals
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Community College Tests Erosion Control Blankets by John McCullah and Vance Howard

Introduction

In the fall of 1998, Shasta Community College (Redding, California) implemented a comparative study of thirteen different erosion control blankets. Greenfix America provided the funding for the study. Greenfix America, Calipatria, CA and Reed & Graham, Inc., Sacramento, California, provided erosion control blankets for the study. The erosion control blankets used were produced by many different manufacturers including: Greenfix America, American Excelsior, Xcel, and North American Green. These blankets are referred to in the industry as Rolled Erosion Control Product (RECPs). RECPs are protective mulch blankets produced from organic fibers which are intended to temporarily stabilize and protect the soil surface from rain-drip impact and surface erosion until plant cover can become established. There are many different materials from which the RECPs are constructed. For this study Shasta College used RECPs made from straw, rice straw, straw/coconut, coconut, and aspen fibers (excelsior). The RECPs were compared with straw mulch and of course bare soil.

Instructors and students from various classes, including Watershed Restoration, Heavy Equipment Operation, Soils, Ecosystem Inventory, and Natural Resources Statistics, conducted the study from October 1998 through June 1999. One of the most notable results of the study was that on average the blankets provided an 81% reduction in soil loss.

Also noteworthy was the average soil loss of the equivalent of nearly 25 tons/acre on the bare soil plots, with no observed rills or gullies.

Site

A site on the Shasta Community College campus in Redding, California was chosen for the study. The study was conducted on the outer slope of the levee of a recently constructed water treatment detention pond. The study area was graded and "track walked" to ensure a uniform soil surface. Additionally, the slope was raked by hand to create a uniform seedbed. The slope was set to a gradient of 1 3/4 : 1, or approximately 60%. Slope length was approximately 16 feet. The slope was compacted to a depth of 6-8 inches. The soil



type for the study area was classified as Churn Loam (CdA) and the textural class was a gravelly to sandy clay loam and the erosion hazard was low to moderate (Soil Survey of Shasta County Area, 1974). This soil texture happens to be very representative of the urbanizing regions within the Redding area. The slope aspect was northeast.

Study

The purpose of the study was to test the effectiveness of RECPs to prevent erosion, aid in grass seed germination, and also to test the durability of the various blanket types e.g. straw, straw/coconut, excelsior. However, the durability test was not con-

(Continued on page 3)

President's Message

Dear Western Chapter Members,

As this newsletter goes to press, we get closer to the 32nd Annual IECA Conference and Exposition. This year's conference takes place in Las Vegas, February 5-9. The five-day program is packed with training courses, poster sessions, technical papers, special sessions, and training workshops. Members of the Western Chapter organized three new training courses, Growth Strategies and Strategic Planning Processes for Contractors, Estimating and Bidding Strategies for Bottom Line Success, and Soil Characteristics and Improvement for Sustainable Erosion Control Vegetation. We are excited about these new courses and expect them to be well attended. The conference also includes the perennially popular Hydrodeo, and field tours. Don't miss the Western Chapter sponsored closing session.

Our Chapter meeting will take place at the conference on Wednesday, February 7th, from 11 to 12 AM. We need feedback on the location of the upcoming regional conference in March of 2002. Some ideas include San Diego, Catalina Island, Berkeley, and Hawaii. Please let us know your opinion, and start thinking about topics and presentations. Our conference in San Diego in 1998 was quite successful, and we intend to continue offering great regional erosion control information and resources. We encourage participation in all aspects of Chapter business.

Please visit us at our booth. We hope to have our new and improved web site up and running. We will have numerous items for sale, including nylon briefcases, hats, and t-shirts, as well as magnetic name tags for our new members. We will be raffling off a free registration for the 2002 conference.

We have a busy year beyond the conference. The Western Chapter is sponsoring two field tours, a summer trip to the Napa Valley, and a fall trip to southern California. The field tours are always popular, as they give members an opportunity to look at projects in the field and share perspectives. And we always have fun. The dates and details will be posted in the next newsletter or on our web site.

Lastly, Reno/Minden members held another social get-together in Reno on December 12. Seven locals shared dinner and stories. Jeff Jesch, our newest member, joined us. Jeff is an Engineer and Contractor, and he brings much knowledge and enthusiasm to our organization. Welcome Jeff! We hope to have our next social in Tahoe, and involve more and different members.

See you in Vegas!

Julie Etra
Western Chapter IECA President

Calendar of Events

January 31:

Sacramento Landscape and Nursery Expo. Sacramento, CA.

February 4-7:

NACD 55th Annual Meeting. Fort Worth, TX.

February 5-9:

32nd Annual IECA Conference and Expo 2001. Las Vegas, NV.

February 12-17:

50th Annual Convention of the Land Improvement Contractors of America. Orlando, FL.

February 20:

Reno Trade Show and Conference. Reno, NV.

February 21-22:

CLCA Landscape Industry Show. Long Beach, CA.

March 8-9:

CLE International's 8th Annual Conference "Western Water Law." Denver, CO.

April 23-27:

Integrated Mining and Land Reclamation Planning Short Course and Workshop. Reno, NV

April 26-30:

International Symposium on Soil Erosion Management. Taiyuan, China.

See "Announcements" on page 9 for more information on the events listed above.



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ducted, as we were unable to obtain the proper instrumentation necessary to perform this part of the study. This paper will focus on the erosion (soil loss) portion of the study. A total of 15 study

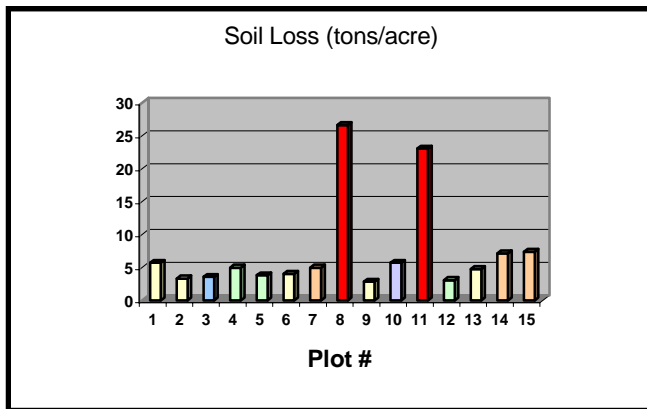
plots were created at the site. All plots were seeded with *Elymus glaucus* (blue wild rye), a local native grass, at a rate of 40#/acre. A total of 12 different blankets were installed in October 1998 by Shasta College faculty and students. The blankets were installed using the manufacturers instructions and under the supervision of a Certified Professional Erosion Control Specialist (CPECS). All blankets were installed at a length of

14 feet and width of 8 feet. The tops of the blankets were keyed-in at the top of the slope. One plot was mulched with straw mulch and two plots were left as controls (bare soil with seed only).

Before the first winter storm of downsput. A filter fabric screen was fastened to the outer end of the downsput to keep sediment from escaping.

Results

The troughs were emptied by hand



Plot #	Product
1	Rice Straw w/ 2-sided Netting - WS072 (Greenfix)
2	Rice Straw/Coconut w/ 2-sided Plastic Netting - CFSOS072R (Greenfix)
3	"Quickgrass" Curlex II (American Excelsior)
4	Straw w/ Biodegradable Netting - S75BN (North American Green)
5	Straw w/ Double Netting - S150 (North American Green)
6	Rice Straw/Coconut w/ 2-sided Biodegradable Netting - CFSOS072B (Greenfix)
7	Super Duty Excelsior - SD3 (Xcel)
8	Control - No Treatment
9	Rice Straw w/ 2-sided Biodegradable Netting - WS072B (Greenfix)
10	Seed and Straw Mulch
11	Control - No Treatment
12	Straw/Coconut - SC150 (North American Green)
13	Enka/Coconut Composite (Greenfix)
14	Superior Excelsior - S2 (Xcel)
15	Regular Excelsior - R (Xcel)

1998-'99, sediment collection troughs were installed at the base of each study plot. The collection trough was a pre-manufactured 11" deep continuous/ (seamless) gutter, 6 feet long, with end caps and a downspout nipple attached. The 3" flange on the gutters was pounded into the slope to ensure the sediment-laden runoff went into the trough, not under. The gutters were installed with a 1-2% drop towards the

a total of four times throughout the winter season. The City of Redding Grading Ordinance defines the winter season to be Oct. 15th – June 1st, so that criteria was adopted for this study. Five gallon buckets were labeled and assigned to each plot for the collection and storage of sediment from each trough. At the end of the winter season the depth of the

(Continued on page 5)

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Contractor's Corner

As winter is upon us, the contracting world slows down or even comes to a complete halt.

We have the time to look back and reflect on our projects, to take note on the "good" ones and the "bad" ones during the past year.

There are always situations we wished we would have handled differently or paid more attention to. Did we pay enough attention to the risk involved on the job prior to bid time? Are we taking on more work at a particular time than we are comfortable with? When was the last time you didn't take the time to pre lien a project and later regretted it? Did you carefully calculate the cost of production during the winter months? How do you anticipate working around a general contractor's schedule that is unorganized and slower than you anticipated? How do you deal with damage caused by others, either to your completed work or equipment?

The list goes on and on. These are just a few of the issues, concerns and ongoing problems we relate to as contractors.

There is a great deal involved with being successful in the business world today. Contracting is tough, very tough! Our competitors come and go, and yet there are many of us that have been around along time. Here in the Western Chapter states there are quite a few successful contractors.

Hope to see a great contractor turnout at the upcoming IECA 2001 conference in Las Vegas! There are quite a few terrific courses being offered at the conference directly related to contractors. Hope we all see the value in these courses, to assist us all in being even more knowledgeable and successful.

I personally feel it is always worthwhile to learn new skills, to brush up on our abilities to be better estimators, office managers, field supervisors or whatever "hat" you happen to be wearing.

May you all have a prosperous New Year ahead!

Please feel free to contribute to Contractor's Corner. Send thoughts, ideas, etc. care of:
Claudia J. Zachreson, CPESC
Kelley Erosion Control, Inc.
2395-B Tampa St.
Reno, NV 89512

Advertising Information

Advertising in the Western Chapter IECA Newsletter is a great deal! Benefits include:

- ✓ Inclusion in both the on-line version and the standard paper version.
- ✓ Direct links to your website on the on-line version.
- ✓ Distribution to the people who need your products/services the most – erosion control professionals.
- ✓ Distribution at trade shows, seminars, conferences, short courses and field tours.
- ✓ And you will be helping to make the Western Chapter IECA Newsletter the best in the industry.

The Western Chapter IECA Newsletter is distributed quarterly to members of the Western Chapter IECA. Additionally, each year the January issue will be a Special Color Edition that will be distributed at the Annual IECA Conference.

If you have any questions or would like more information, please contact Vance Howard at:
Phone: (530) 757-1156 Fax: (530) 247-1601
E-mail: heyfance@hotmail.com

Are You A Member?

To become a member of the IECA, or to become a Western Chapter member (if you are already an IECA member) contact IECA Headquarters:

(800) 455-4322
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(Continued from page 3)

sediment in each bucket was measured and a volume of sediment was calculated for each plot. The dry weight for a sample of soil with a known volume was determined. The dry weight for the sediment from each plot was calculated (in tons). The area of each plot was the same (112 sq. ft.) and was converted to acres. Soil loss was determined for each plot and is presented as tons/acre.

Average soil loss from the blanketed and straw mulched plots was 4.71 tons/acre, with a range from 3.09 to 7.36 tons/acre. The two unblanketed control plots showed an average soil loss of 24.83 tons/acre (23.04 and 26.61 tons/acre). It is important to note that no rills or gullies formed on the control plots. The use of RECPs and/or mulch resulted in an 81% reduction in soil loss compared to bare soil.

Conclusions

The results of this study indicate that without proper erosion control (blankets, mulching, etc.) on 60% slopes, approximately 25 tons/acre of soil (mostly fines) can be expected to be lost without the typical indicators of erosion (rills and gullies) even forming. This could be important information for the development/construction industry,

as well as the public agencies that monitor and enforce the rules regulating discharge of storm water off-site.

It can be reasonably assumed that if rills are visible then the erosion rate will be much higher. Therefore on unprotected construction site slopes composed of sandy or gravelly clay or loam soils, and even those with a low to moderate erosion hazard, the erosion and sediment rates will exceed 25 tons/acre. Conversely, the solutions are very simple. A protective covering of mulch will reduce the erosion and sedimentation by over 80%.

The Environmental Protection Agency (EPA) estimates that bare, unprotected soil from construction activities produce between 20-100 ton/ac. The Shasta College Study verifies the EPA estimates. The cumulative impacts to our national rivers and streams from these types of land disturbing activities are huge. The EPA is trying to address these "non-point" sources of pollution through the National Pollution Discharge Elimination System (NPDES) program, which is part of the Clean Water Act. A very clear statute of the NPDES regulations require that construction sites receive "surface stabilization practices" prior to the winter sea-

son.

This study hopefully adds critically needed quantitative data to the information already collected on the magnitude of erosion and sedimentation from construction activities. This study also provides and reaffirms that the most effective, and most necessary, Best Management Practice (BMP) for construction activities is surface stabilization including Mulching, Hydraulic Planting, RECPs or other types of surface cover.

For more information contact John McCullah at Salix Applied Earthcare (530) 247-1600 or john@salixaec.com

"Erosion Quote"

"Man, despite his artistic pretensions and his many accomplishments, owes his existence to a six-inch layer of topsoil and the fact that it rains."

- Author Unknown

The Erosion Gallery



Caution!!! Straw bales can actually cause erosion when placed in stream channels.

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Mycorrhizal Inoculation at the Caltrans Temple Highway Site

by Ted St. John, Ph.D.

Results from inoculating with mycorrhizal fungi have generally been excellent on freshly graded slopes, where native fungi are missing. Nakae Landscaping, the contractor who first used the method, had spectacular results on the San Joaquin Transportation Corridor. Another contractor recently reported 30% seedling survival without inoculation and 90% survival with inoculation, but only when applied with a two-pass system. The project described below used a Caltrans two-pass system with more subtle but still quite worthwhile results.

During 1997, an El Nino rain year, there was a major slope failure on I-5 just north of Temple Highway. Caltrans District 7 had to do extensive grading and construct a massive vertical retaining wall to keep the freeway out of the creek. The project is on Angeles National Forest and disturbed several acres of native vegetation, so Caltrans had to replant the slope for both erosion control and re-creation of the original native habitat.

The project biologist, Linda Taira, recommended inoculating parts of the project with mycorrhizal fungi. Replanting included 160 containerized oak trees (Coast live oak and scrub oak), and those got native, commercial, or no ectomycorrhizal inoculum. The rest of the plants were endomycorrhizal (AM) hosts, and the project team decided to include EndoNet inoculum (supplied by Reforestation Technologies International, Salinas CA) in the hydroseed mix on the southern half of the project. The hydroseeding method, worked out originally by Dr. Morgot Griswold and Nakae Landscaping, was a two-pass system with seeds and inoculum in the first pass and fiber and other components in the second pass. The seed mix was mostly erosion control species like Zorro fescue and fast-growing natives known to perform well on graded slopes. These in-

cluded California poppy and flat-top buckwheat. Added to the mix at the last moment was California brome, a short-lived native perennial grass known to be a good endomycorrhizal host.

By early summer the project was growing but not spectacular. There were native plants throughout the site but the fescue was nearly absent. Native germination was sparse in the dry 1998-99 rainy season, and there was bare ground between the native plants. Some weeds had existed on the site before grading,

and those were well represented in the emerging flora, especially yellow star thistle and two kinds of mustard. The view from above the retaining wall showed a patchwork of natives, sometimes with an overstory of weeds, and bare ground. There was no clearly visible break at the dividing line between inoculated and uninoculated areas.

On closer inspection there seemed to be less bare ground and more natives on the inoculated half. Along with the project biologist, I decided to quantify the cover of existing vegetation on three sets of paired transects. We used a point intercept method, with each footstep along the transect counted as a sample point. At each point we recorded the plant species (or bare ground) intercepted by a vertical projection of that point. The sum of points gives an estimate of percent cover by species. The transects were done on a level area at the immediate base of the retaining wall, a lower level strip of ground that had been ripped, and a wide slope that extended the full width of the project. Each transect was repeated on the inoculated and uninoculated portions of the project, and

included between 150 and 300 intercept points.

The results were rather surprising. The inoculated area had more total plant cover and about twice the native cover (see table). California brome and California poppy contributed most of the difference, with flat-top buckwheat considerably more abundant on two of the three inoculated transects.

The fill had included some topsoil, which contained native mycorrhizal in-

oculum. There were no inoculation effects with the oak trees, which presumably all had become mycorrhizal at the nursery of from the topsoil. An examination of root sample from California brome plants showed 3 of 5 to be mycorrhizal on the uninoculated side

and 5 of 5 mycorrhizal on the inoculated side. There were native fungi in both sets of roots, and the inoculated fungus present in at least one of the uninoculated roots, probably due to unintended dispersal during hydroseeding and other activities on the site. However, the heavier inoculum density added at a cost of a few hundred dollars on the inoculated side had doubled the native plant cover, even in the presence of native inoculum. Most of the benefit probably came during the first weeks when the native inoculum had not yet built up.

This study shows that inoculation is not always an all-or-nothing proposition, and it is not magic fairy dust. However, it is a sensible, low-cost part of erosion control and restoration that meets a real need and returns real benefits for a small investment.

More information is available from the informational web site www.mycorrhiza.org. You can download and read a number of informative articles in PDF format at www.mycorrhiza.org/downloads.htm, or contact Dr. Ted St. John for hard copies or to discuss your own project (909/679-7650; 909/317-8930 mobile).

	Wall		Ripped		Slope	
	Not inoculated	Inoculated	Not inoculated	Inoculated	Not inoculated	Inoculated
Total Plant cover %	66.4	81.4	23.6	45	38.2	62.8
Summed native cover %	31.3	54.1	65.7	86.3	39.2	69.2

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Technical corner

Surface Roughening - Track Walking BMP reduces erosion by 52%

Implementing these simple "site preparation" BMPs will reduce erosion rates by over 50%! Surface Roughening techniques, including Track Walking, Soil Imprinting and Ripping, were recently tested, using a rainfall simulation device, at San Diego State University, Soil Erosion Research Laboratory. Mike Harding reports the "draft results" of these studies indicate that Soil Imprinting showed an overall average reduction or 76%. Track Walking reduced erosion by 52%.



BMP - Surface Roughening

Definition: Surface Roughening is a technique for roughening a bare soil surface with furrows running across the slope, stair stepping, or tracking with construction equipment.

Purpose: Surface Roughening is intended to aid the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion and provide for sediment trapping.

Conditions Where Practice Applies: All construction slopes require surface roughening to facilitate long-term stabilization with vegetation, particularly slopes steeper than 3:1.

Planning Considerations: Rough slope surfaces are preferred because they aid the establishment of vegetation, improve water infiltration, and increase "hydraulic roughness" which thereby reduces the erosive energy of surface runoff. Graded areas with smooth, hard surfaces may be initially attractive, but such surfaces increase the potential for erosion. A rough, loose soil surface gives a mulching effect that provides more favorable moisture conditions than hard, smooth surfaces; this aids seed germination. It is important to seed and mulch immediately after Surface Roughening, while the soil is loose and friable, as precipitation may result in the soil surface "crusting" over which is not a favorable condition for seed germination.

Advantages: Surface roughening techniques, such as Track Walking, can be implemented while the construction equipment is on-site. Having the bulldozer walk the slope, up and down, will reduce erosion by over 50% and provide superior seedbed preparation.

Disadvantages: Some slopes, such as cuts slopes, may be impossible to access with heavy equipment. Consider con-

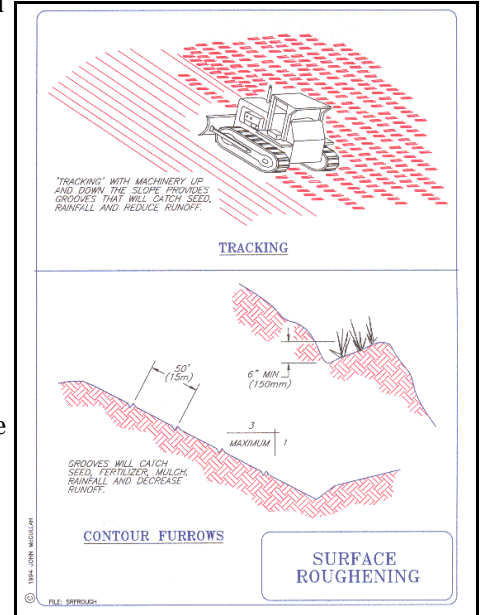
structing a Grooved or Serrated Slope using a bulldozer modified with a slope bar. Hand raking across the slope may be the only way to roughen the slope.

Roughening With Tracked Machinery: Limit roughening with tracked machinery to soils with a sandy textural component or reduced moisture content to avoid undue compaction of the soil surface. Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back-blade during the final grading operation.

Immediately seed and mulch roughened areas to obtain optimum seed germination and growth.

Inspection and Maintenance.

Periodically check the seeded slopes for rills and washes. Fill these areas slightly above the original grade, then reseed and mulch as soon as possible.



Surface Roughening BMP taken from Erosion Draw 3.0 and BioDraw 1.0, Salix Applied Earthcare. Photos courtesy of J. McCullah www.salixaec.com

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Announcements

32nd Annual IECA Conference and Expo, Las Vegas, NV. Feb. 5-9. Plan now to attend the world's foremost educational event dedicated exclusively to erosion and sediment control. For nearly 30 years, IECA has been providing leading-edge solutions to professionals around the world. This event offers you the most useful selection of education, technology and business you will find anywhere under one roof at one time. For more information, visit our conference website at www.ieca.org/conf2001/welcome.html or write to IECA at ecinfo@ieca.org.

Jan. 31. Sacramento Landscape and Nursery Expo. (530) 458-3189 for more information.

February 4-7:

NACD 55th Annual Meeting. Fort Worth, TX. "Bullish on Conservation" Bruce Vincent will be the keynote speaker for the opening session. Please contact the National Association of Conservation Districts Washington office for details (202) 547-6223.

February 12-17:

50th Annual Convention of the Land Improvement Contractors of America. Orlando, FL. "Launching LICA's Future" is the theme for this 50th Anniversary Convention. Convention information contact Paul Sandefur at (270) 274-3403 or Debbie Dickens at (573)635-9694.

February 20:

Reno Trade Show and Conference. Info: (775) 673-0404

February 21-22:

CLCA Landscape Industry Show. Long Beach, CA. Info: (916) 448-2522

March 8-9:

CLE International's 8th Annual Conference "Western Water Law." Denver, CO. "Western Water Law, Water Rights, Quality and Policy in the West" To register for the conference call (800) 873-7130, fax: (303) 321-6320 or e-mail: registrar@cle.com.

April 23-27:

Integrated Mining and Land Reclamation Planning Short Course and Workshop at the Flamingo Hilton in Reno, NV. Phone: (925) 757-7547 or Fax: (925) 757-7997

April 26-30:

International Symposium on Soil Erosion Management. Taiyuan, China. The international conference will give a summary of the achievements of SEMGIS in North China. The official language of the conference will be English. For more information contact: Prof Cai Qiang-guo at phone: 86-10-64889310, fax: 86-10-64889630 or e-mail: caiqg@mx.cei.gov.cn

ARIZONA AND HAWAII IECA MEMBERS!

Attention! Your ideas and participation is requested. The Western Chapter of the IECA would like to start collecting your ideas for upcoming activities in your area or community. We are looking for suggestions on Educational Topics, Field Tours, School Programs, Speakers, and How to Promote IECA Membership in your area. What short courses would you like to see taught in your area? The Western Chapter is looking for everyone's involvement. Please send your ideas and responses to: Claudia J. Zachreson
c/o Kelley Erosion Control, Inc.
2395-B Tampa St.
Reno, NV 89512
Fax: (775) 322-7755
E-mail: czachreson@aol.com

Classified Ads

This is a new section for Western Chapter News and it is FREE to Western Chapter Members. Classified ads are limited to 4-5 lines (approximately 25 words). Content of the ad must be industry related. Examples include: employment opportunities, used equipment to sell, etc. Submit your classified ad to Sandy Mathews.

Phone: (925) 423-6679

Fax: (925) 422-2748

E-mail: mathews6@llnl.gov

Erosion Statistics

"Los Angeles will spend \$150 million dollars over the next six years to battle dust storms emanating from Central California's dry Owens Lake bed."

- from *Landscape Architect* magazine



Western Chapter IECA
c/o SWAG
491 South St. Suite B
Redding, CA 96001

Western Chapter International Erosion Control Association Board of Directors

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A t t e n t i o n !

Many exciting things are happening in the Western Chapter. First, the Western Chapter IECA now has a website (www.wcieca.org). This is where you can go to read the newsletter, view announcements, and stay in touch with what is happening in the Western Chapter. For advertisers this means exposure to EC professionals around the world and a direct link to your company's website.

It is time for you to get involved. This newsletter is for you and your fellow professionals. Share your knowledge of the industry with others—submit an article, a column, or just an announcement. There is a lot happening in the erosion control industry these days (new regulations, new technologies, etc.). Let's communicate and stay ahead of the game.

The Western Chapter is hosting the 32nd Annual IECA Conference and Expo in Las Vegas, NV next month (February 5-9, 2001). Stop by the Western Chapter booth and introduce yourself. Let us know what you expect from Western Chapter News and how you might want to help out, and don't forget to submit your raffle ticket.

Vance Howard, *Editor*

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