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December 31, 2003

Ms. Maya E. Zaitzevsky, Project Coordinator
Department of City Planning
Environmental Review Section
200 North Spring Street, Room 763
Los Angeles, CA 90012-2601

Re: Canyon Hills Draft EIR
ENV-2002-2481-EIR
SCH #2002091018

Supplemental comments in addition to my letter & exhibits of December 29, 2003

Dear Ms. Zaitzevsky:

Please accept these additional comments with my sincere apology for not being able to devote the time to fully develop them in my original letter. I was afraid I would miss the deadline if I didn't go ahead and send in my initial comments before I had sufficient time to fully develop other thoughts and observations.

I am now taking the time to submit a few additional comments within the "grace period" because I feel this project is a very important issue to our community that deserves serious attention.

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Unfortunately, in my line of work, my time is completely committed to critical deadlines during the entire month of December until all is "done" on the very last day of the year. Given the enormity of the DEIR, it took a long time to attempt to read and relate to the contents and convert numerous observations into a coherent discussion.

I fear some important issues may have been obscured in my ramblings resulting from working until 4am to get the original letter assembled.

Again, this letter serves as additional comments, not intended to nullify my original letter. However, I will attempt to clearly indicate areas where I have reiterated or clarified my original comments as opposed to introducing new comments, because I don't want to make your job any harder than it already is. I do hope that these additional comments will help to better understand some of the more abstract points in the original letter.

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LEVELS OF SIGNIFICANCE

1. I touched on this only briefly in concept in various sections of my original letter, and I wish to elaborate a bit on this subject. I am concerned that the DEIR consultants are incorrectly regarding certain impacts as "insignificant" by way of mitigation measures that have not been established as "enforceable". I understand that the EIR is supposed to "focus" on significant impacts, but I do not believe that it is supposed to be dismissing possibly significant impacts as suddenly "less than significant" by way of the unenforceable measures. For example, assertion of CC&R's as a mitigation measure is not supported with a discussion of how they are legally enforceable. It is commonplace for homeowners to challenge the authority of "restrictions" in CC&R's, which also can be, and often are, amended by the membership (homeowners) either by a majority vote or sometimes by petitioning the court even without a majority vote (Civil code 1356). This is very likely to occur where the interests of the project homeowners are in direct conflict with the interests of the existing community.
2. I am concerned that it is not clearly indicated in the DEIR which of the proposed mitigation measures were suggested by the project proponents as opposed to the Lead Agency.

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From the CEQA Guidelines:

15126.4 Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects.

(a)(1)(A) The discussion of mitigation measures **shall distinguish between** the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons which are not included but the lead agency determines could reasonably be expected to reduce adverse impacts if required as conditions of approving the project. This discussion shall identify mitigation measures for each significant environmental effect identified in the EIR.

(a)(1)(B) Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. **Formulation of mitigation measures should not be deferred until some future time.** However, measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way.

(a) (2) Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments.

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Many of the mitigation measures discussed throughout various impact categories do not meet the enforceability test. For example:

- **Water Quality – Long-Term Operational Impacts** (page IV.C-15) To "educate" residents, "adopt" programs termed "Integrated Pest Management" in HOA rules, and post signs is of little practical value. It is not enforceable. The consultants have considered "Best Management Practices" to determine that the significant impact of potential runoff pollution is less than significant. Especially since this proposed project site has heretofore experienced extremely low human impact, and very little exposure to runoff pollution, I don't think that potential pollution from 280 households is insignificant in **a major watershed area** that feeds the San Fernando groundwater basin, whether or not "BMP" is implemented. The LADWP states that normally about 15% of the Los Angeles water supply is derived from the groundwater. The BMP's cannot capture all the pesticides and fertilizers that will be used, nor will they capture the residue from the lawn mowers and blowers and other gasoline powered two-stroke and four-stroke engines (including the all too popular gas powered scooters). The pollution will settle on and around this area and it will be the rain, not man, that will determine the course, a good portion of which will end up in the underground water tables. This is inappropriately dismissed as insignificant, even in light of the measures proposed. 184-3

- **Reiteration: Transportation/Traffic – Emergency Access** (page IV.I-13). With regard to the secondary ingress/egress being limited to "emergency only", nothing has been provided in the DEIR to indicate how this can be permanently enforced and never changed. It was changed in the "Crystal View" project after construction. The project residents would stand to gain much "convenience" by changing the locked status of those emergency gates, while the existing community would have much to lose. It would be lobbied to the City as a safety issue and the City wouldn't dare deny it on those grounds. This uncertainty is significant because without an enforceable restriction as to the use of these roads as "emergency only", there would be resulting significant negative impact on the existing community that has not been explored in the environmental review process, and therefore an exploration as to the negative impacts and proposed mitigation **"deferred until some future time".** 184-4

- **Transportation/Traffic – Emergency Access- Alternatives considered but not proposed.** Since emergency access via Woodward was apparently considered but not proposed in any of the alternatives in the DEIR, if this is revisited as an option during any phase of the project assessment, including any discretionary action, it would also result in a significant negative impact that was not adequately explored during the environmental review phase. Although the access via Inspiration Way or Verdugo Crestline is highly questionable with respect to its suitability, the access via Woodward Avenue is no more suitable. Realizing that this option was not discussed in detail in exhaustive detail in the DEIR because it was not officially proposed, it was noted that the Woodward Avenue access would require additional grading and substantial additional construction of a new road, and a considerably greater elevation incline and decline. However, the DEIR failed to discuss that **the point of access** 184-5

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for Woodward Avenue is not "direct", requiring a "jog" via either Glenties Lane or Glenties Way to McGroarty and then from McGroarty to either Woodward Avenue or McVine to Foothill Blvd. The indirect nature of this "escape route" through narrow streets, potential dead-ends and cul-de-sac's could cause considerable chaos in an evacuation unless conducted with extensive authoritative presence to direct vehicles away from the inappropriate connecting residential streets. I also question the statement that Woodward is an improved 40-foot right of way, except for the section North of McGroarty (between Foothill and McGroarty). I do not believe the section South of McGroarty, towards the hillside, is that large. There is also little to no setback of the existing houses where Glenties joins the unimproved (but named) "Woodward" Avenue south of McGroarty St. It is unlikely that it meets LAFD standards. Please see the accompanying Exhibits with respect to the aerial photograph and topographic representation of the area around Glenties and Woodward. 184-5

CONFLICTING MITIGATION MEASURES

3. I am very concerned that certain "mitigation measures" intended to render one impact category as "less than significant" (in the consultant's opinion), in fact introduces a **NEW significant negative impact**. Every proposed mitigation measure should be checked against it's potential to cause a new negative impact in another respect. Since they are discussed in separate sections of the DEIR, it is probably not immediately evident. **For example, as touched upon briefly in my original letter, the mitigation measures for erosion control during construction,** while clearly referencing the LAMC building code, doesn't serve to explore "environmental impact", since it actually represent an increased threat to the future health and safety of the residents not only of the proposed project, but the community to the North, Northeast, and Northwest, by way of setting up conditions of increased risk of fire and erosion through use of "fast-growing grasses" (native species were not specifically proposed). The non-specific "reseeding" and "planting fast growing annual grasses" has the clear potential to significantly alter the composition of the surrounding "undeveloped" site. The insidious erosion control mitigation measure, (ultimately compounded with the similar introduction from the future residents "gardens") will render the concept of "preservation of open space" null and void, as it will expose the heretofore relatively undisturbed site to a cycle of more frequent burns, and will actually decrease soil stability. I would think that the principles of best management practices for seeding after wildfires would logically be similar to practices of seeding areas affected by grading and other construction disturbance. Please see the discussion and accompanying scientific references contained within the California Native Grasses Association discussion on "Seeding After Wildfires in California: Seed with Natives". Also see accompanying reference of the California Native Plant Society Statement of Policy on Seeding After Wildfire. It 184-6

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should be noted that the chaparral is adapted to a cycle of relatively infrequent burns, from which it can recover. Many of the non-native grasses come from ecosystems dependent upon the frequent cycle of burning, (such as the African grasses). As my original thought was with respect to the eventual conversion of the chaparral caused by the new influx of introduced non-native species from the eventual project homeowners, it wasn't until after having read sections of the DEIR numerous times that I realized the briefly mentioned erosion mitigation measures would dramatically accelerate that process. Not only will destroy the habitat for the wildlife, but will render it more susceptible to threats of frequent burning and erosion, causing a threat to the project and the community generally to the North. **Very careful consideration needs to be given to the specifics of the questionable [erosion] mitigation measures.** While it's generally been held that property owners are not held liable for hazards resulting from the natural, unaltered condition of the land, they are accountable for the hazards resulting from their alteration of the land; in this case grading and actively participating in the alteration of the surrounding plant communities in an established Very High Fire Hazard Severity and High Wind Velocity and Landslide Zone. 184-6

ABSTRACT – North-facing slopes, Project Description, Site Map, Aesthetics

- It was very unclear as to how the grading and/or project construction would affect the North/Northwest ridges. It looked like the proposed grading would go at least all the way up to the very top of the ridge(?) It was not evident how that would affect the vegetation/soil and impact erosion on the North-facing slopes, or whether anything would be visible from the North side of the project? Currently, the relatively steep, undeveloped north-facing slopes are not only an important part of the community aesthetics, but also an extension of the relatively undisturbed native habitat. Those slopes on those foothills and the wildlife it brings mean so much to so many in our community who rely upon this as their route to walk, jog, ride their bikes, and generally enjoy the relaxation and joy that it brings to them here in the foothills. The streets around the foothills are a magnet for people on their daily exercise routines, including so many young parents with their children in strollers. It would be such a loss to so many in the community to the North if they were subjected to the blight and loss of recreational enjoyment. 184-7

Thank you for indulging me to clarify and augment some of the original comments.

Respectfully,

Rhonda Herbel

MAPQUEST

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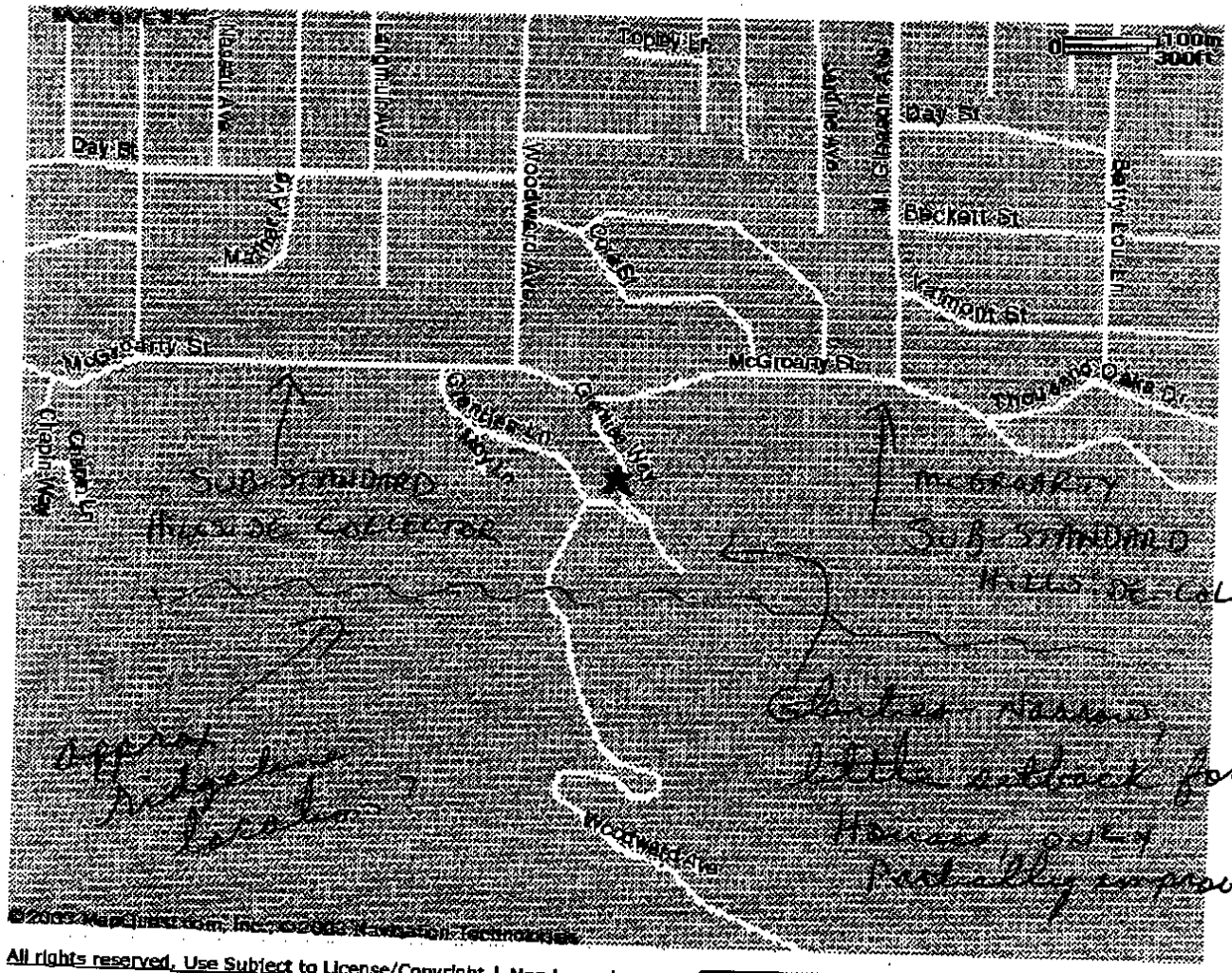
7936 GLENTIES WAY
SUNLAND CA
91040-3313 US

Notes:



WOODWARD ACCESS PROBLEMS

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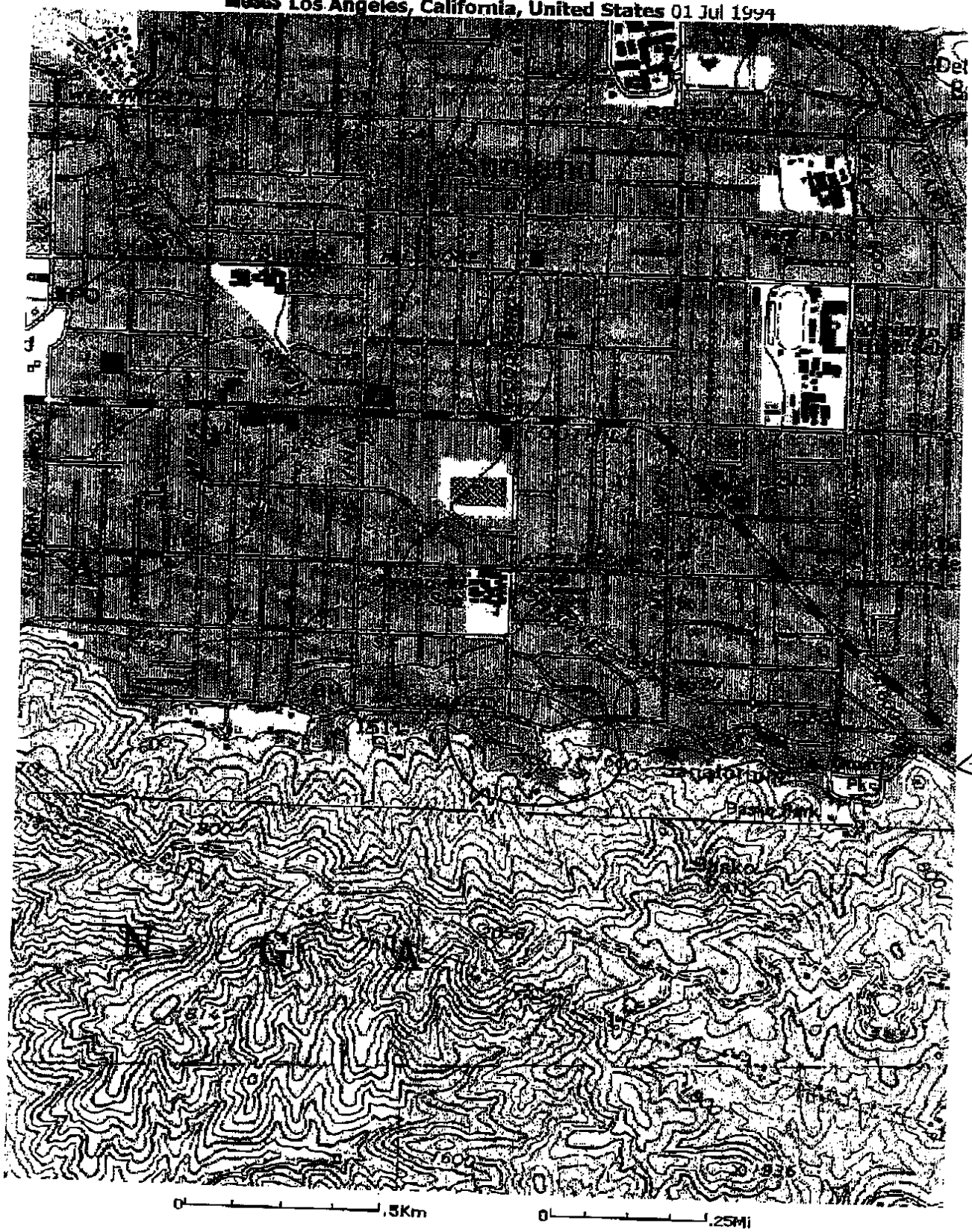
USGS Los Angeles, California, United States 01 Jul 1994



NOTE the indirect Route from WOODWARD AVE Via Glenties Lane or Glenties Way and the relatively large elevation gain

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USGS Los Angeles, California, United States 01 Jun 1994

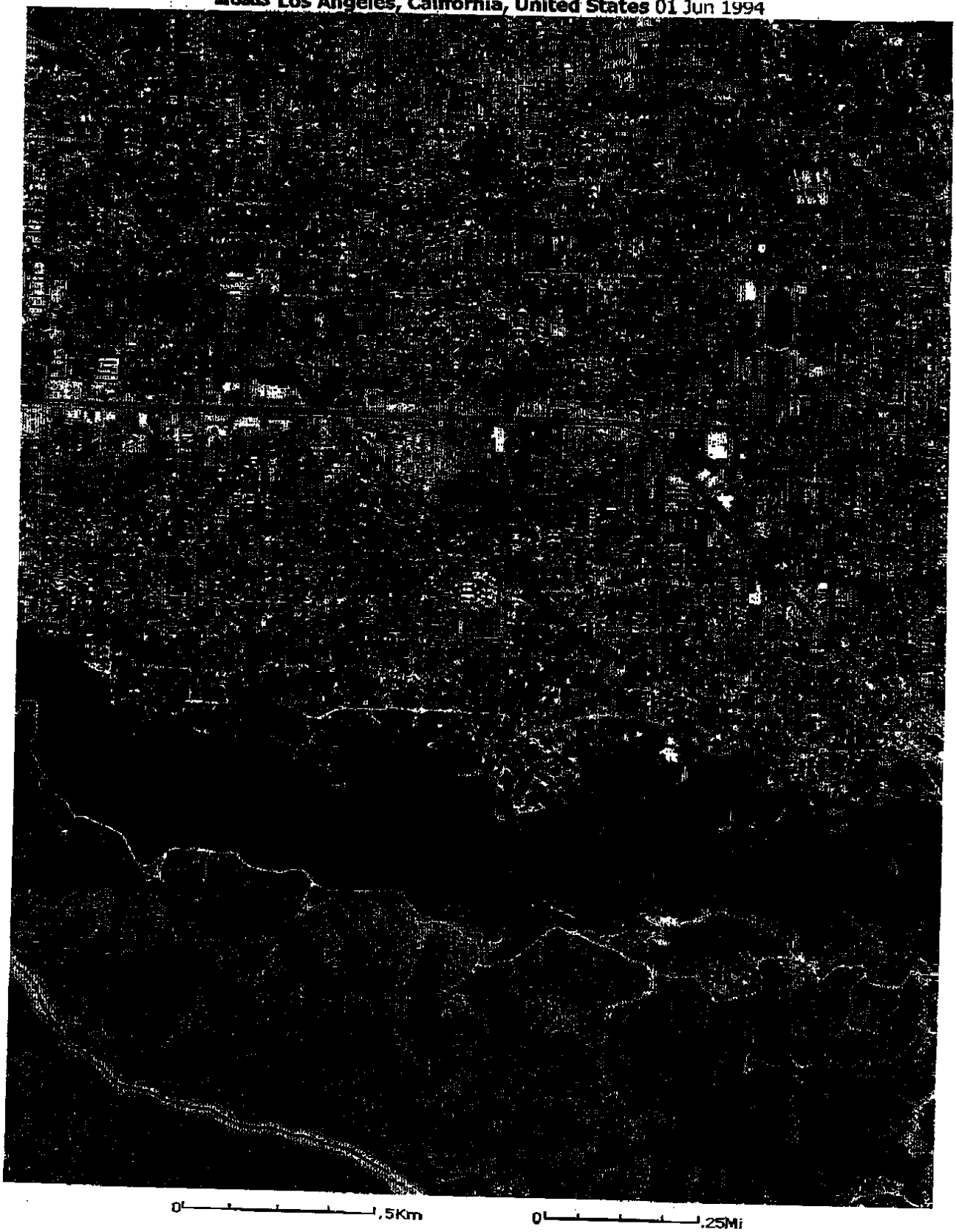

Image courtesy of the U.S. Geological Survey

WOODWARD AVE ACCESS PROBLEMS

Seeding After Wildfires in California: Seed with Natives

Human development in chaparral and other native plant communities increases the risk of destructive wildfires. The recent firestorms that have devastated southern California are a tragic example of this trend. Fire is only one aspect of these tragedies. Accelerated erosion following wildfire can represent an additional threat to life and property. As a result, public agencies are under great pressure to seed burned areas as a solution to erosion prevention. There is a widely held belief that broadcast seeding of exotic annual grasses is necessary to reduce runoff and erosion. There is a growing body of evidence suggests that seeding annual grasses after wildfires may have little effect on erosion and runoff especially in southern California where slope and soil instability is great and winter storms can be destructive (Gautier and Zedler 1982). Indeed, seeding with exotic annual grasses can have a long-term negative impact on native vegetation composition and structure (Conard *et al* 1991). This is not to say that seeding wildfire burn sites should not be done. There are physical and ecological reasons to seed burned and disturbed slopes after fire with appropriate grass and herbaceous plant species. For example, seeding can mitigate the damage to the riparian corridor and fishery habitat. Seeding has a positive impact on wildlife habitat and cover. Concentrating seeding efforts on physically disturbed ground such as bulldozed fire lines and access roads created by fire suppression activities is an important erosion control practice. While seeding may not arrest erosion the first season, there is evidence that second and third year sediment discharge is reduced. It is important to have clear objectives and keep in sight the relationship between short and long-term effects of seeding.

What are some of the pertinent facts related to this controversial issue?

- Seeded annual grasses are slow to become established in the absence of ideal early gentle rains and intense early storms erode reseeded slopes at the same rate as unseeded slopes (Griffin 1982, Gautier and Zedler 1982).
- Most of the sediment discharge from watersheds is derived from existing drainage channel materials and natural dry creep (dry ravel) of materials into these channels (Wakimoto 1979, Scott and Williams 1978, Rice 1973).
- Seeding does not cure poor infiltration rates related to lack of shrub, tree or debris cover and hydrophobic soil layers caused by the heat pulse of hot burns (Gautier and Zedler 1982).
- Heavy annual grass seeding suppresses the recovery of native vegetation including herbaceous fire-following annuals, woody perennials, and tree seedlings (Conard *et al* 1991, Griffin 1982, Gautier 1982, Conrad 1979,Schultz *et al* 1955). Natural annual and perennial plant regrowth provides equal or greater watershed protection than seeded annual grasses (Graves 1979).
- Seeding large areas of montane forest is expensive and is often erratic (Hammond 1977).
- A successful seeded stand of annual grasses, especially Italian ryegrass (*Lolium multiflorum*) results in dry flashy fuels that can carry an injurious fire within the next year following the first seeding (Griffin 1982).
- Annual grass seeding fosters large rodent populations that result in heavy native plant browsing and predation (Griffin 1982).

The use of the most common reseeded annual grass, annual ryegrass (*Lolium multiflorum*), epitomizes all the deleterious effects of reseeding practices. Annual ryegrass is a heavy feeder on the available nutrients released by fire. Luxuriant growth of ryegrass effectively inhibits native plant regeneration. Unmanaged ryegrass stands are approximately 50% dead matter during the following growing season due to mulch cover and the allelopathic effects that suppressed other plant growth. Other heavy-weight exotic grasses often used to control erosion after wildfires are Panoche red brome (*Bromus madritensis* ssp. *rubens*), softchess (*B. hordeaceus*), Zorro or rattail

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fescue (*Vulpia myuros*), barley (*Hordeum vulgare*), red oats (*Avena sativa*) and Regreen, a sterile *Elymus/Triticum* hybrid. The indiscriminate use of these competitive and noxious annual grasses for wildfire seeding should be curtailed.

It is well known by ecologists and land managers in California that seeding fires with annual grasses is merely treating the symptoms of the broader and more important issue of over fifty years of effective fire suppression. Human development into wildland and chaparral communities intensifies suppression efforts and further exasperates the situation. As lawyers and insurance companies get into the act, pointing fingers at neighboring landowners and public agencies for erosion damage, the pressure to "do something" increases. Concentrating revegetation practices on physically disturbed ground such as bulldozed fire lines, on access roads created by fire suppression activities, and buffer areas along burned-out riparian corridors are perhaps the most effective possible erosion control practices. Native perennial grasses such as Cucamonga brome (*Bromus arizonicus*), California brome (*B. carinatus*), blue wildrye (*Elymus glaucus*), meadow barley (*Hordeum brachyantherum*), and six-weeks fescue (*Vulpia microstachys*), gives agencies and land managers a powerful tool to treat the long-range effects of erosion while providing cover and forage for wildlife and inhibiting the invasion of exotic weeds and grasses into our open space lands. Rather than promulgating ecosystem instability these plant materials encourage the natural succession processes of California's native plant communities.

References Cited

Conard, S.G., J.C. Regelbrugge, and R.D. Wills. 1991. Preliminary effects of ryegrass seeding on postfire establishment of natural vegetation in two California ecosystems. 11th Conference on Fire and Forest Meteorology. April 16-19. Missoula, Mt. 8 pp.

Conrad, E.E. 1979. Emergency post-fire seeding using annual grass. CHAPS Newsletter, USDA Forest service, Chaparral Research and Development Program, p. 5-8.

Gautier, C.R. 1982. The effects of ryegrass on erosion and natural vegetation recovery after fire. Proc. of the Sym. on Dynamics and Management of Mediterranean-Type Ecosystems. USDA For. Ser. Gen Tech. Rep. PSW-58 p. 559.

Gautier, C.R. and P.H. Zedler. 1982. Does emergency revegetation reduce or increase sediment yields from chaparral watersheds? Chap. Res. Mgt. Newsletter. UC Coop Est.,San Diego, CA pp. 6-8.

Griffin, J.R. 1982. Pine seedlings, native ground cover, and *Lolium multiflorum* on the Marble-Cone burn, Santa Lucia Range, California. Madrono, 29(3): 177-188.

Graves, W. 1979. Floods and erosion-annual ryegrass "myth". Chap. Res. Mgt. Newsletter, UC Coop Est., San Diego, CA. p. 1-2.

Hammond, R.R. 1977. Marble Cone burn rehabilitation: accomplishment, critique, and recommendations. Monterey Ranger District, Los Padres Natl. For., King City, CA.

Rice, R.M. 1974. The hydrology of chaparral Soils. In: Sym on Living with the Chaparral, Proc. Sierra Club Special Pub., p. 27-34.

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Schultz, A.M., J.L. Launchbaugh, and H.H. Biswell. 1955. Relationship between grass density and brush seedling survival. Ecology. 36(2): 226-238.

Scott, K.M. and R.P. Williams. 1978. Erosion and sediment yields in the Transverse Ranges, southern California. U.S. Geol. Surv. Prof. Paper 1030, 37 pp.

Wakimoto, R.H. 1979. Comments on seeding burned chaparral with annual ryegrass. CHAP Newsletter, Forest Fire Lab., Riverside, CA p. 3-4.

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Statement of Policy Seeding After Wildfire

Adopted December 2, 1995

POLICY: The California Native Plant Society (CNPS) strongly urges public agencies to allow burned wildland areas to revegetate naturally and opposes the practice of artificially seeding undisturbed burned watersheds.

The CNPS recognizes the serious dangers posed by post-fire flooding and erosion, and that there are liability issues faced by public agencies; however, significant evidence is available that seeding of burned wildlands is ineffective at protecting life and property and can impair the recovery of native plant communities.

Background

Fire is a natural process in most California ecosystems, many of which are experiencing increased urbanization. Many plant communities and species are specifically adapted to periodic fires. Fire suppression policies have resulted in unnaturally high fuel levt6ls in many wildland areas close to human habitation. Consequently, these areas are susceptible to catastrophic wildfires that remove vegetative cover from vast expanses of land. Burned watersheds are prone to accelerated runoff, erosion, and debris flows, which pose dangers to life and property downslope. In attempts to prevent or alleviate these dangers, burned areas have often been seeded with grasses or other plant species that are expected to provide rapid vegetative coverage of slopes, thereby stabilizing the soil and reducing the magnitude of flooding.

Millions of tax dollar's have been spent on aerial seeding of burned areas. At the same time, a growing and convincing body of scientific evidence indicates that seeding is generally ineffective in reducing erosion, and is ecologically disruptive to native plant and animal communities.

This position statement addresses seeding of undisturbed wildlands following wildfire. Firelines, roads, helicopter landing pads and other severely disturbed areas may be unable to rapidly recover and revegetate following fire. Seeding with local native species may therefore be effective in reducing post-fire erosion from such severely disturbed soils.

Arguments Against Seeding

The arguments against seeding can be divided into two

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categories:

1) Seeding is ineffective in reducing threats to life and property from post-fire flooding and erosion, and;

2) Seeding has serious negative effects on the recovery of native vegetation.

The references listed at the end of this document form the basis for the following points:

1. Seeding is not a reliable method of reducing post-fire erosion.

A. Some researchers have found that seeded areas can experience greater erosion than comparable unseeded areas [e.g., due to an unexpected increase in gopher activity in seeded plots as demonstrated by Taskey et. al. (1989)].

B. In order for seeding to have an effect on erosion and flooding, seeds need to germinate early in the fall and plants must develop sufficiently to provide cover and root mass before major winter storms. Therefore, seeding requires a precise sequence of meteorological events that cannot be relied upon: the first rains must bring sufficient water for germination, yet be gentle enough so as not to wash seeds off slopes.

C. Similarly, when major storms occur early in the year following a fire, before seeded species are established, seeding has little or no effect on erosion or flooding.

D. Seeding is ineffective on steep slopes (>35%) because the steeper the slope the less likely seeds are to stay in place and germinate successfully. For example, a flush of green grass is often observed at the base of steep slopes with few seeded species present on the slopes themselves [e.g., Janicki (11989)].

E. Seeding has no effect on the process called dry ravel by which soil moves downslope during and subsequent to burning of supporting vegetation. Dry ravel can be a major component of the total sediment yield from burned watersheds (Spittler, 1994).

F. Debris flows (large flows of mud, rocks, and other debris) frequently occur during mid-season storms after soils have become saturated. Seeded plants would not be established by this time.

2. Natural vegetative recovery can be compromised by artificial seeding.

A. Several studies have shown statistically significant reduction in abundance of native seedlings when seeded grasses established successfully (Barro and Conard, 1987; Janicki, 1989; Keeley, 1995; Spittler, 1994; Taskey, 1989).

B. Flashy fuels created by grasses can increase the likelihood of

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a premature reburn, which can result in the elimination of key shrub species from chaparral plant communities, effectively bringing about a typeconversion to a herbaceous community of non-native grasses and forbs (Keeley, 1995).

C. When native shrub seedlings are displaced by seeded grasses, the effects last long beyond the first year or two after the fire. Some evidence indicates that when steep brushland slopes are type-converted to grassland, the incidence of erosion and slope failure can increase markedly due to the shallower interface between roots and underlying soil (Barro and Conard, 1987).

D. In chaparral, native fire-following annuals could be diminished in or eliminated from the soil seed bank if they are repeatedly subjected to competition from artificially seeded grasses. Seeds of these specialized plants lie dormant in the soil between fires and only complete their life cycle in the first year or two after fires. This burst of growth by fire annuals helps to retain nutrients on burned sites (Keeley, 1994; 1995).

E. Artificial seeding can open up previously resistant plant communities to invasions by weedy plants and other pest species, thus decreasing native biological diversity and possibly impairing function of ecosystem processes, some of which protect downstream values. For example, a recent US Forest Service study (Conard and Beyers, 1993) showed that significantly more non-native Brassica was found in plots seeded with ryegrass than in those allowed to revegetate naturally.

Comments on the Use of "Natives" for Post-fire Seeding

The use of native species rather than the traditional European grasses and forbs has been put forth in recent years as a solution to the post-fire seeding dilemma. CNPS urges consideration of the following points with regard to this issue:

A. If species or varieties are used that are native to California, but that are not locally native to the specific area to be seeded, there is the potential for contamination of the local gene pool. This can lead to a loss of vigor in populations endemic to the site, and possibly to a long-term loss of vegetative cover.

B. There has been much discussion of developing large supplies of locally native seeds in order to seed burned areas with genetically appropriate plants that originated at or near the target site. However, the feasibility of this practice is questionable (e.g., Keeley, 1995). Realistically, it is probably beyond the capacity of land managers to collect and store enough seed to cover the many thousands of acres burned each year.

C. As more is learned about the ecological complexity of the native flora and its response to fire, the wisdom of artificially applying seed of any species is called into question. Researchers such as Keeley (1995) stress the potential for

disruption of critical small-scale ecological patterns in burned plant communities.

D. Artificial seeding with any species is not likely to produce significantly better results than allowing natural vegetative recovery.

Comments on the Use of Domesticated Grasses such as Oats or Barley

The use of domesticated species such as cultivated oats (*Avena sativa*) and cereal barley (*Hordeum vulgare*) is frequently proposed as the least dangerous form of seeding. The reason for this is that these species are thought to be unlikely to persist beyond a year or two or to invade the native plant community. Further research is needed to test the validity of these assumptions. Neither available empirical data nor anecdotal accounts are sufficient to show that seeding with these species succeeds in reducing erosion without disrupting native ecosystem recovery.

References Cited

Barro, S.C. and S.G. Conard. 1987. Use of Ryegrass; Seeding as an Emergency Revegetation Measure in Chaparral Ecosystems. USDA Forest Service Pacific Southwest Forest and Range Experimental Station. Gen. Tech. Rept. PSW-102.

Booker, F.A., W. E. Dietrich, and L. M. Collins. 1993. Runoff and Erosion after the Oakland Firestorm: Expectations and Observations. California Geology. Nov./Dec. pp. 159-173.

Conard, S.G. and J.L. Beyers. 1993. The Effects of Fire and Post-fire Seeding on Surface Erosion and Vegetative Development in California Chaparral. USDA Forest Service Pacific Southwest Research Station Forest Fire Laboratory. Riverside, CA.

Conard, S.G., J.C. Regelbrugge, and R.D. Wills. 1991. Preliminary Effects of Ryegrass Seeding on Post-fire Establishment of Natural Vegetation in two California Ecosystems. In: 1 1th Conference on Fire and Forest Meteorology. Missoula, Montana. 8 pp.

Janicki, A. 1989. Report on Emergency Revegetation ofthe Stanislaus Complex Fire, USDA Stanislaus National Forest. 15 pp.

Keeley, J.E. 1995. Future of California Floristics and Systematics: Wildfire Threats to the California Flora. Madrono, Vol. 42, pp. 175-179.

Keeley, J.E. 1994. To Seed or not to Seed? Wildfire. March Issue.

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Keeley, J.E. 1991. Seed Germination and Life-History Syndromes in the California Chaparral. The Botanical Review, Vol. 57(2). pp. 85-115.

Spittler, T.E. 1994. Fire and Debris Flow Potential of Winter Storms. In: Proceedings of the Symposium on Brushfires in California Wildlands: Ecology and Resource Management.

Taskey, R.D., C.L. Curtis, and J. Stone. 1989. Wildfire, Ryegrass; Seeding, and Watershed Rehabilitation. USDA Forest Service Gen. Tech. Rept. PSW-109. pp. 115-124.

Background information and references can be obtained by calling CNPS at (916) 447-2677

Additional Background Reading

Barro, S.C., and S.G. Conard. 1991. Fire effects on California chaparral systems: an overview. Environment International, Vol. 17, pp. 135-149.

Beauchamp, R.M. 1994. Fire: the recycler .. the reviver. Environmental Reporter. Spring 1994:4-5.

Conard, S., J.L. Beyers, and P.M. Wohlgemuth. 1995. Impacts of postfire grass seeding on chaparral systems - what do we know and where do we go from here? In: Keeley, J.E. and T.Scott, eds. in California Wildlands: Ecology and Resource Management. Int'l Assn. of Wildland Fire, Fairfield, WA.

Dunne, J., A. Dennis, J.W. Bartolome, and R.M. Barrett. 1991. Chaparral response to a prescribed fire in the Mount Hamilton Range, Santa Clara County, CA. Madrono 38: 21-29.

Franklin, S.E. 1994. The great ryegrass; debate. Environmental Reporter. Spring 1994:6.

Griffin, J.R. 1982. Pine seedlings, native ground cover, and Lolium multiflorum on the Marble Cone burn, Santa Lucia Range, California. Madrono 29(3): 177-88.

Hanes, T.L. 1971. Succession after fire in chaparral in southern California. Ecological Monographs 41: 27-50.

Keeley, S.C., J.E. Keeley, S.M. Hutchinson and A. W. Johnson. 1981. Postfire succession of the herbaceous flora in southern California chaparral. Ecology 62(6): 1608-21.

Pitt, M.D., R.L. Burgy, and H.F. Heady. 1978. Influences of brush conversion and weather patterns on runoff from a northern California watershed- J. Range Management 31(l): 23-27.

Zedler, P.H., C.R. Gautier, and G.S. McMaster. 1983. Vegetation change in response to extreme events: the effect of a short interval between fires in California chaparral and coastal scrub.

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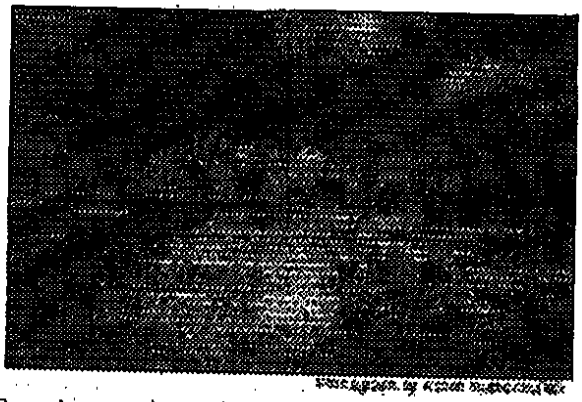
Recurring fires are changing Southern California's ecosystems -- and prescribed burns could make it worse

Friday, November 07, 2003
By John Krist



Recent research suggests increasingly frequent wildfires are opening the door to replacement of native vegetation by exotic weeds, which quickly colonize the post-fire landscape.

More than 700,000 acres of Southern California have been seared over the past few weeks by blow-torch flames that left little more than ashes and the charred skeletons of trees and shrubs in their wake. Although it seems nothing living could withstand that kind of inferno, the sage scrub and chaparral plants that blanket most of Southern California1s coastal mountains are built to thrive despite periodic incineration.

"It's fire-prone but also fire-adapted," said Stephen Davis, a biology professor at Pepperdine University in Malibu, whose campus — located in prime wildfire territory at the edge of the Santa Monica Mountains overlooking the Pacific — provides a perfect laboratory for his studies of the role of fire in chaparral ecosystems.

However, recent research by Davis and others suggests that the region's resilient vegetation faces a new kind of threat, one that not only imperils the natural ecosystem but also human communities that are in the fire zone and depend on native chaparral plants literally to hold the landscape together.

The data also suggest that prescribed burns, upon which many land managers depend to reduce the fire threat posed by accumulation of brush and other fuels, would not prevent the kind of catastrophic blazes that have ravaged Southern California since Oct. 21.

Fire has long been a part of the Southern California landscape, and native plants have evolved a variety of strategies to survive it. For example, laurel sumac has roots that can reach 40 feet deep, Davis said, and plants can regenerate from those roots after the flames pass. Other chaparral plants produce seeds that cannot germinate until heat has cracked their thick, waxy coatings and fire has cleared away the sunlight-blocking tangle of old vegetation.

"In the normal fire cycle, the native plants recover," Davis said.

But the current fire cycle is not normal, according to researchers who have

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studied more than a century of Southern California wildfire data collected by federal, state, and local agencies.

Although their interpretation is not universally embraced by fire experts, those researchers contend that wildfires are occurring more often than they did before suburbs begin creeping into the Southern California mountains. And that increased fire frequency, some scientists say, has set off a cascade of ecological effects, changing vegetation patterns in ways that may heighten the fire danger even more.

Natural wildfire ignition sources are relatively rare in coastal Southern California. Lightning strikes, the cause of most wildland blazes in the Western United States, are infrequent along the Pacific Coast for reasons of topography and climate. As a result, although chaparral plants have evolved to recover quickly after the fire passes, they also have evolved to anticipate relatively long periods between fires. They grow slowly and mature late — "tortoises" of the plant world, Davis called them — some species not producing seeds until they are six to 12 years old.

Humans now start most of the fires that erupt each year in Southern California, and they do so far more often than thunderstorms ever did. Recent events provide a stark illustration: Of the eight major chaparral fires that recently burned the region, most are suspected or known to have been the work of arsonists, according to the California Department of Forestry and Fire Protection. The biggest of the blazes, the Cedar Fire in San Diego County, was started by a lost hunter who set off a signal flare.

"When you have 13 million or more people living in the area, the chance increases that you'll have fires," Davis said.

Increased population does correlate with more frequent wildfires, according to an analysis of the California Statewide Fire History Database by researchers Jon Keeley, C. J. Fotheringham, and Marco Morais, whose work was published in the June 1999 issue of *Science*. Analyzing records that for some counties date to the late 1800s and for the rest reach back at least to 1910, they found a marked increase in fire frequency since the middle of the 20th century.

In some coastal counties of Central and Southern California, the change has been particularly dramatic. In Ventura County, for example, what the researchers refer to as the "fire rotation interval" — the time it takes wildfires to burn acreage equivalent to the entire brush-covered area of the county — dropped from 121 years before 1950 to just 34 after. In Riverside County, the interval fell from 225 years to 38.

When fires occur more frequently than before, several things happen, Davis said. In some cases, fire may sweep through an area so soon after the previous blaze that the most recent crop of chaparral plants has not yet matured enough to produce seeds, preventing regeneration.

More frequent fires also means less buildup of fuel, potentially leading to fires that burn cooler. While that might sound like a good thing, it sometimes is not, Davis said. Cooler fires don't kill weed seeds the way hot fires do. This allows invasive grasses and other nonnative plants — which typically sprout more quickly after a fire than native plants, allowing them to hog water, nutrients, and sunlight — to spread from roads, pastures, and trails, where they've been introduced by hikers, livestock, and passing vehicles. What was a healthy community of chaparral or sage scrub vegetation is taken over by invasive grasses and other weeds, which provide less food and habitat for wildlife than native plants.

That fire-aided invasion process has been documented by Richard Minnich, a geography professor at the University of California, Riverside, who examined

aerial photographs of the nearby Box Springs Mountains taken between 1931 and 1995. In this area — which burned more frequently than the county-wide average — the images showed chaparral and sage scrub being gradually displaced by alien grasses as the fire rotation interval fell from 30 years to eight years. Chaparral coverage in the study area dropped from 1,137 acres to 109 acres — "mostly fragments fortuitously skipped by fire," he noted in a paper describing his research — while sage scrub habitat fell from 2,577 acres to 1,137 acres. For the most part, the native vegetation was replaced by European annual grasses and weeds, such as cheat grass, oats, and mustard.

Davis and other biologists say they have seen this process, which they call "type conversion," occur throughout Southern California. It's bad for a number of reasons, Davis said. One of them is that nonnative weeds do not hold together the steep, unstable slopes of the coastal mountains the way deep-rooted native plants do, worsening the danger of landslides and erosion during the first rainy season following a fire.

That danger is already severe in the areas burned by the current outbreak of wildfires.

"The landscape is now extremely susceptible to accelerated erosion and flooding," said Pete Wohlgemuth, a hydrologist at the U.S. Forest Service's Riverside Fire Lab.

By stripping the water-absorbing leaf litter from the ground, incinerating the organic material in the soil — which makes it denser and less porous — and burning away the vegetative cover that protects the ground from the impact of rain, the fires have created perfect conditions for destructive debris flows and mudslides when the winter rains arrive.

"There's an incredible amount of energy in raindrops that we just take for granted," Wohlgemuth said.

Although seeding, mulching, and construction of debris barriers can limit the threat in some areas, many neighborhoods recently spared by flames will be threatened by mud and water within coming weeks.

"To tell you the truth, your options are fairly limited," he said.

Although the plants and animals who live in stream courses and other natural drainage channels are adapted to the periodic violence inflicted by flooding, mudslides, and debris flows — the bigger, more obstreperous cousins of mudslides, in which entire hillsides turn into fast-moving battering rams of rocky goo — human impacts have also affected their ability to ride out the erosional aftermath of wildfires, Wohlgemuth said.

Habitat fragmentation and other effects of urban growth have rendered many aquatic and riparian species rare or endangered, and in many cases populations of these species are isolated from one another. If a wall of mud slams into their habitat — obliterating, for example, a stretch of streambed that's home to the only group of arroyo toads or red-legged frogs left in a watershed — it can spell the end for that group.

"You might have local populations of endangered species get extirpated," Wohlgemuth said.

Besides increasing the chance of destructive erosion, the conversion of chaparral and sage scrub to nonnative grassland is potentially dangerous for another reason: Nonnative grasses die or go dormant in summer, creating large patches of flashy fuel that's more easily ignited than native shrubs. When fire does break out, these scattered patches of grass can help speed the leapfrogging spread of the flames.

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The research by Keeley, Fotheringham, and Morais — who at time the study was published worked for the U.S. Geological Survey, the University of California at Los Angeles, and Santa Monica Mountains National Recreation Area, respectively — also contradicts recent claims that more money for prescribed burning might prevent disastrous fires such as those afflicting Southern California.

Under the right conditions, fuel reduction through thinning and prescribed burning has been shown to reduce the threat of devastating fires in conifer forests, one of the reasons it has increasingly been adopted by National Forest Service and National Park Service land managers.

But prescribed burns in sage and chaparral, particularly where there is a threat of invasion by nonnative grasses, might actually make things worse, scientists say. In any event, under Santa Ana conditions in the chaparral zone of Southern California, fire doesn't discriminate between thick, old stands of brush and thin, young stands of brush, Keeley and his colleagues found; it burns equally ferociously in both. And Santa Ana conditions, they noted, "are responsible for the majority of area burned in California brushlands."

"Large catastrophic wildfires in brush-covered regions of California are often driven by high winds," they wrote. "Under these conditions, fires readily burn through all age classes of fuels, and thus, rotational burning programs that attempt to modify vast stretches of chaparral landscape ... are not likely to be effective in stopping these catastrophic wildfires."

John Krist is a senior reporter and Opinion page columnist for the Ventura (Calif.) County Star. *A journalist for nearly 20 years, he writes frequently about environmental issues and Western land-use policy.*

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